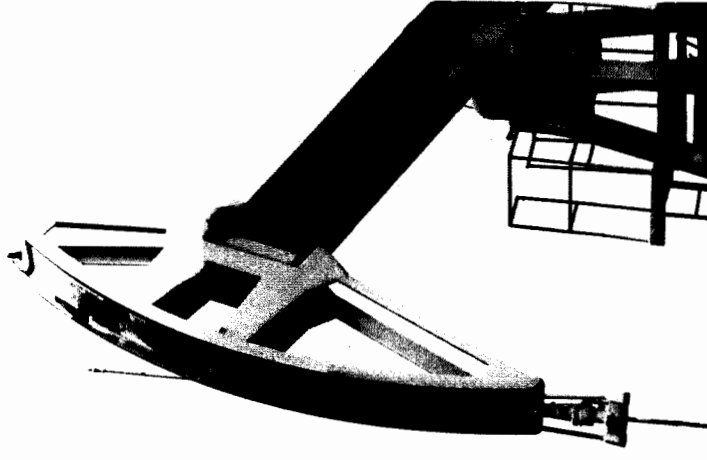


COG Operating LLC

Thunderbird Exploratory Unit
Hearing
Eddy County, New Mexico

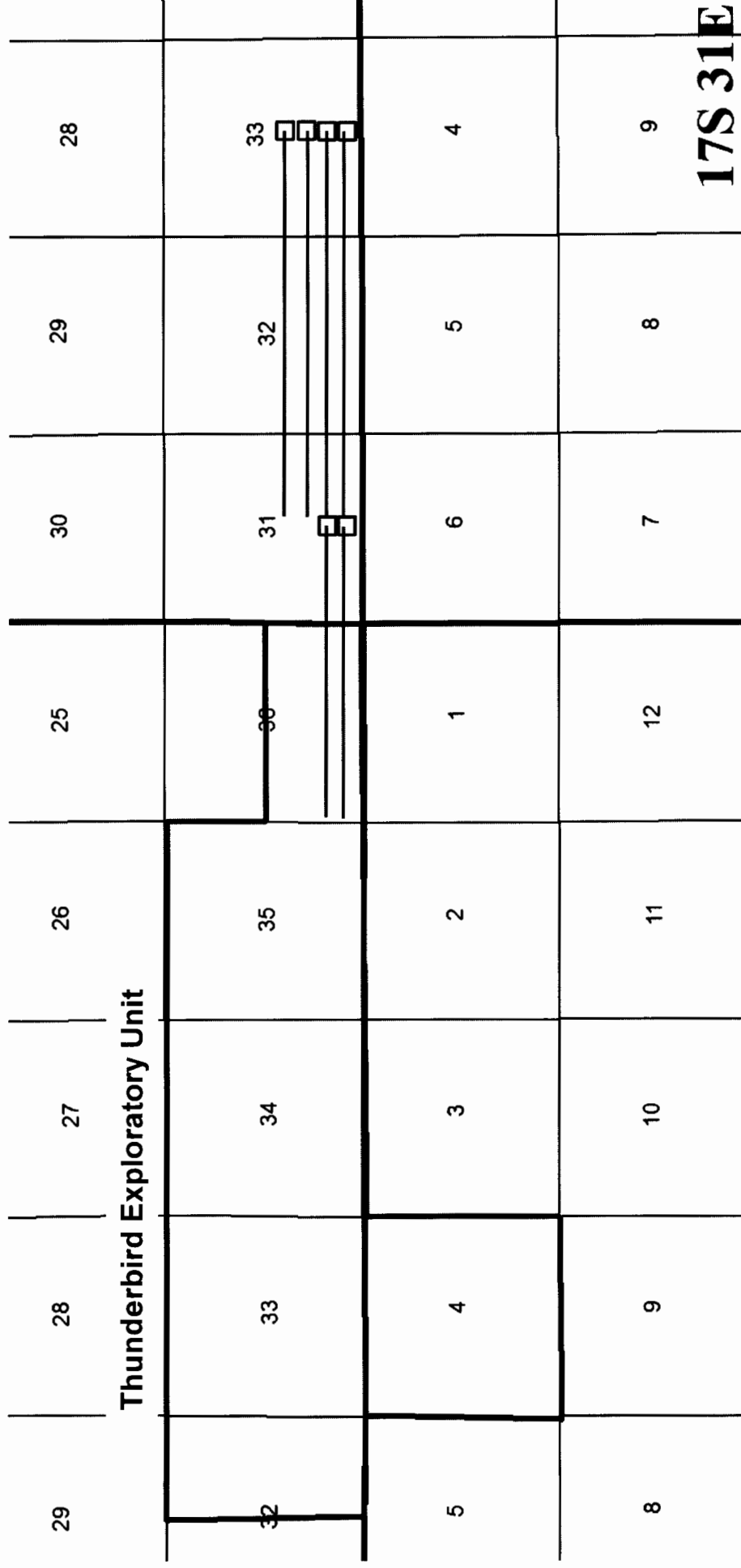


BEFORE THE OIL CONSERVATION DIVISION
EXAMINER HEARING JANUARY 17, 2018

CASE NOS. 15874



COG Plan of Development



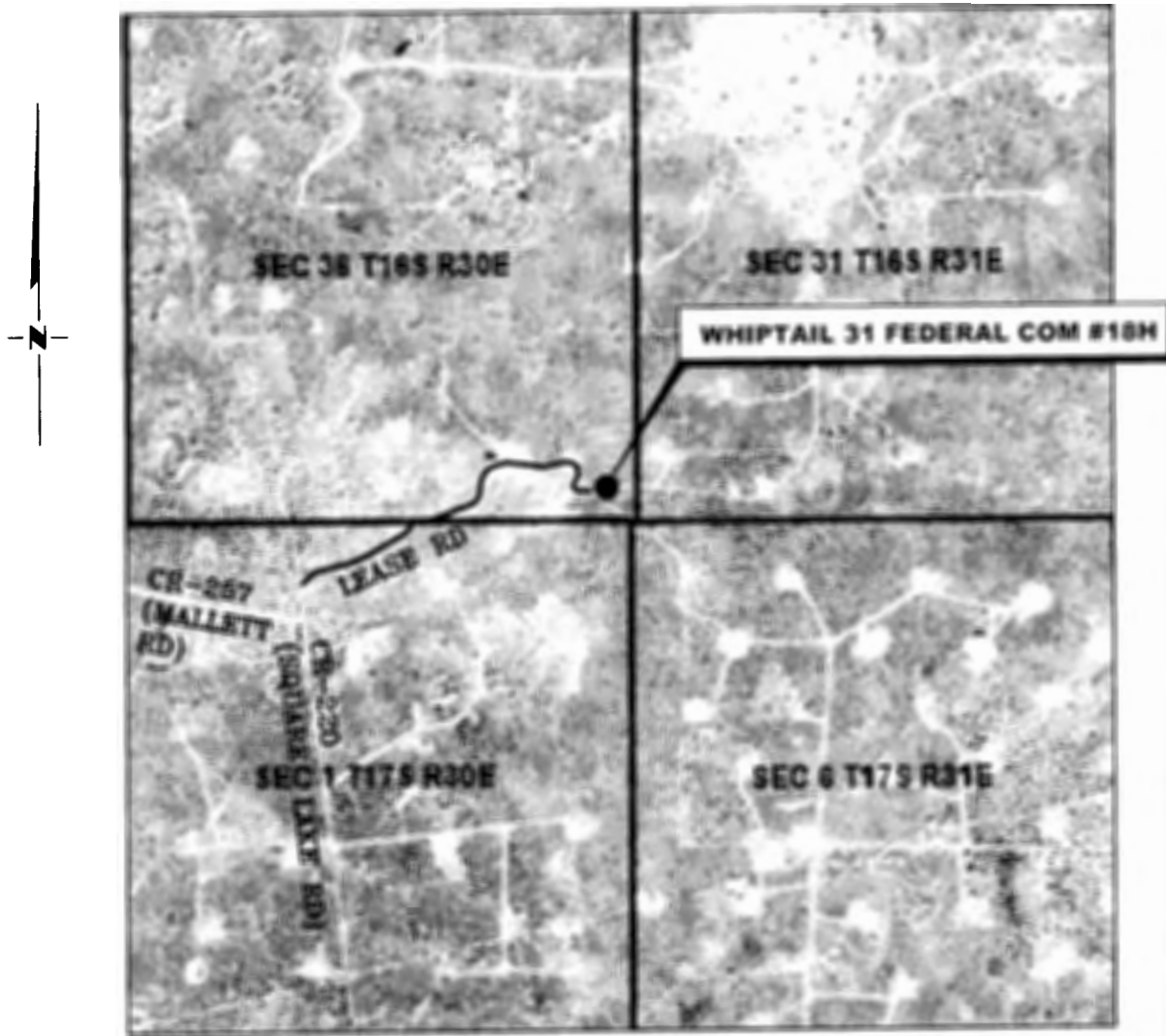
Map Legend

— COG Planned Yeso wells from BLM onsite-approved SHL



VICINITY MAP

NOT TO SCALE



*SECTION 36, TWP. 16 SOUTH, RGE. 30 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
LEASE: Whiptail 31 Federal Com
WELL NO.: 18H

LOCATION: 321' FSL & 270' FEL
ELEVATION: 3816'

Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.:	LS1601039	
DWG. NO.:	1601039VM	

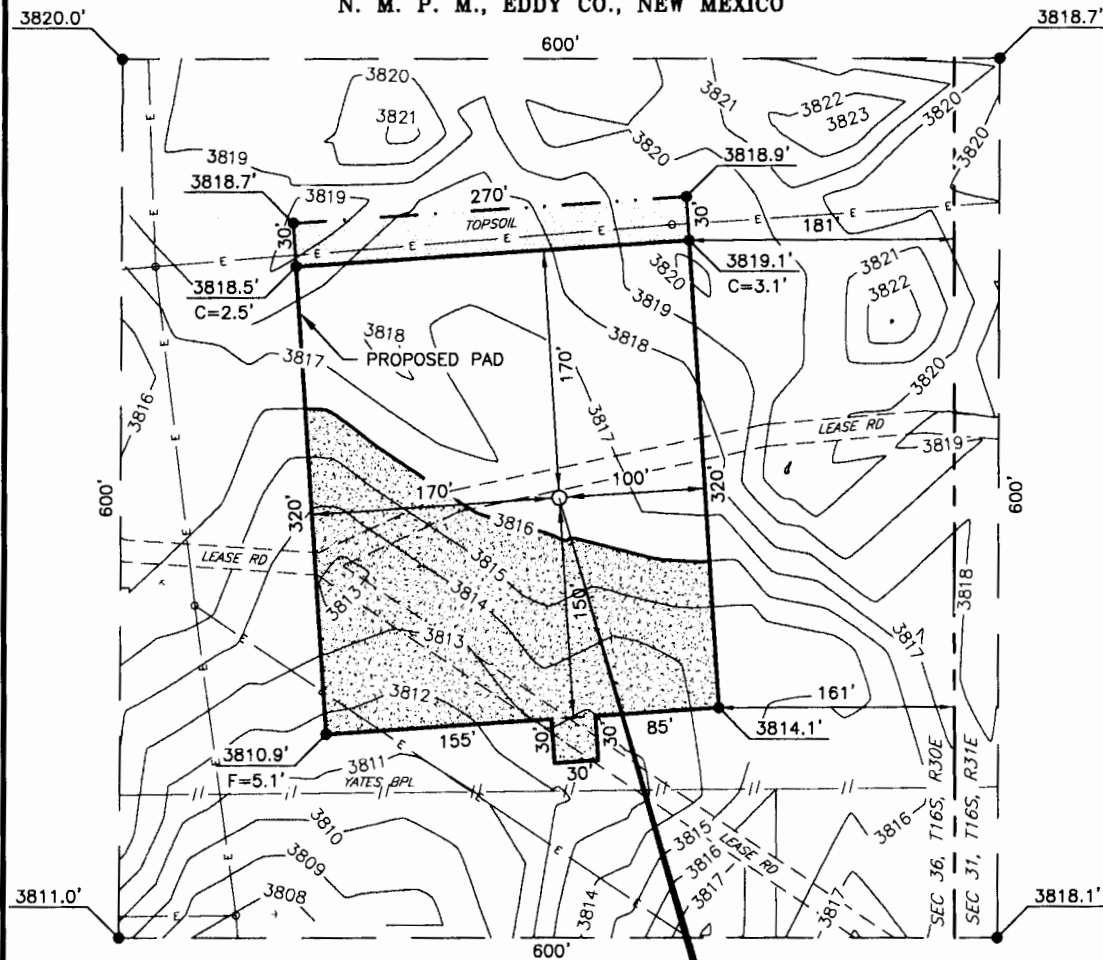
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: N.T.S.
DATE: 2-8-2016
SURVEYED BY: BC/HD
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. 2
Submitted by: COG OPERATING, LLC
Hearing Date: January 17, 2018

COG OPERATING, LLC
WHIPTAIL 31 FEDERAL COM #18H
(321' FSL & 270' FEL)
SECTION 36, T16S, R30E
N. M. P. M., EDDY CO., NEW MEXICO



LEGEND
FILL AREA

DIRECTIONS TO LOCATION

From the intersection of CR-220 (Square Lake) and CR-257 (Mallet);

Go North on CR-220 approx. 350 feet to a lease road on then right;

Turn right and go Northwest approx. 0.6 miles to a "Y" stay left at "Y" and go Northeast approx. 370 feet to location on the right.

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY. BOUNDARY DATA IS SHOWN FROM A PREVIOUS SURVEY REFERENCED HEREON.

SCALE: 1" = 100'
0 50 100
BEARINGS ARE
NAD 27 GRID - NM EAST
DISTANCES ARE
GROUND.

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this plat from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
Robert M. Howett NM PS 19680



Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.:	LS1601039	
DWG. NO.:	1601039PAD	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 2-8-2016
SURVEYED BY: BC/HD
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

Thunderbird Exploratory Unit

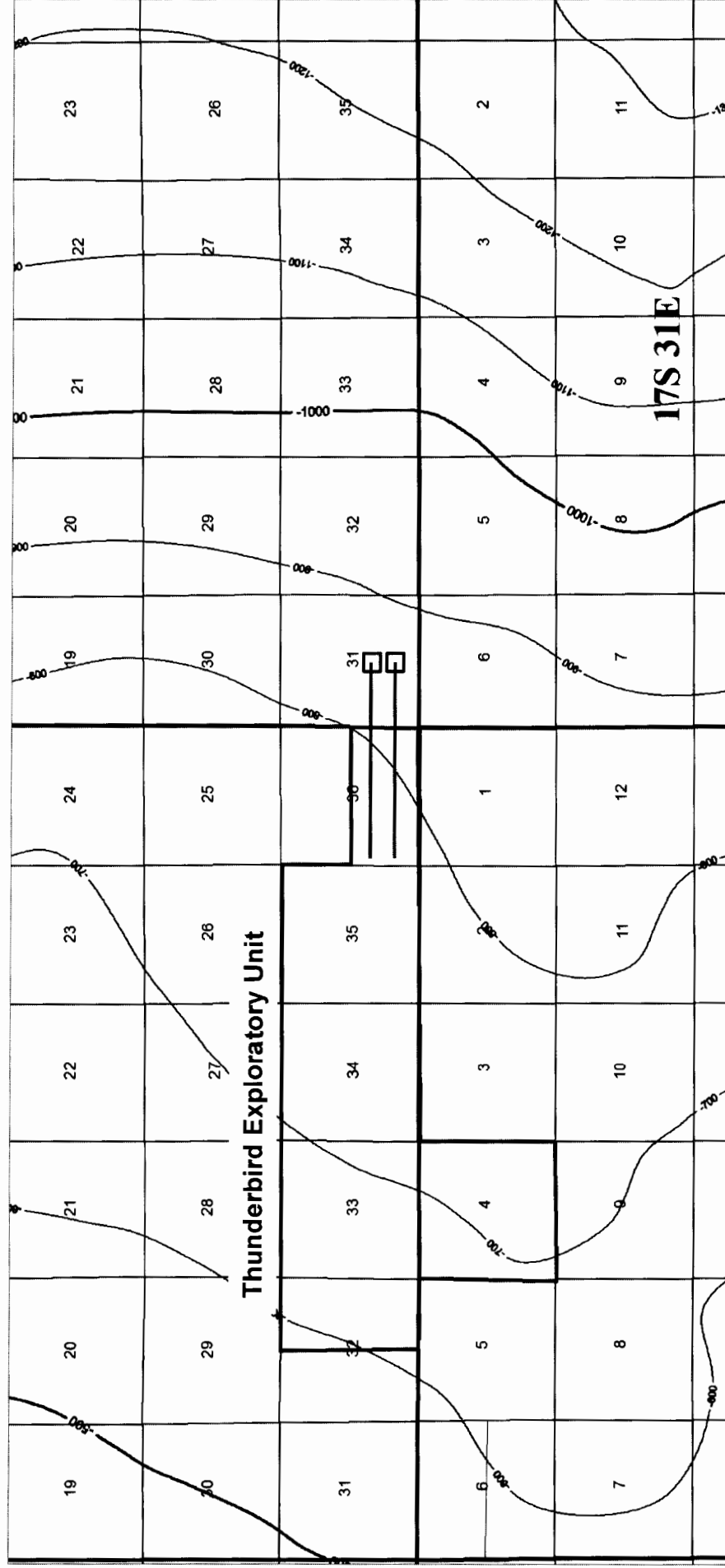
YESO SHELF EDGE


25

☒ Paddock Producer ☒ Paddock Lower Producer
☐ Paddock Upper Producer ☐ Blinebry Producer



Top of Paddock SSTVD (CI=100')



—  COG Planned Yeso wells from BLM onsite-approved SHL



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

**APPLICATION OF APACHE CORPORATION
FOR APPROVAL OF THE THUNDERBIRD
UNIT, IN EDDY COUNTY, NEW MEXICO.**

CASE NO. 15874

SPECIAL EXAMINER HEARING
WEDNESDAY, JANUARY 17, 2018 @ 9:00 A.M.
1220 SOUTH ST. FRANCIS DR, SANTA FE, NM

APACHE CORPORATION'S EXHIBIT LIST

1. APPLICATION FOR UNIT
2. LOCATOR MAP
3. STATE/FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE THUNDERBIRD DEVELOPMENT UNIT AREA
 - Exhibit "A": Map of Unit Area
 - Exhibit "B": Schedule of Ownership
 - Exhibit "C": Thunderbird Stratigraphic Type Log
4. BLM PRELIMINARY APPROVAL
5. SLO PRELIMINARY APPROVAL
6. JULY EMAIL TO CONCHO
7. NOVEMBER EMAIL WITH CONCHO
8. PICTURE OF CONCHO'S WHITETAIL
9. JANUARY EMAIL AND MAP TO CONCHO
10. BLACK SHALE SUBSURFACE EASEMENT EMAIL
11. NEARBY UNITS
12. RECORDING SUPPLEMENT TO THE JOA

13. ORRI RATIFICATIONS
14. AFFIDAVIT OF NOTICE
15. GEOLOGIC DESCRIPTION
16. STRUCTURE MAP
17. WEST-EAST CROSS SECTION
18. NORTH-SOUTH CROSS SECTION
19. PAY SOPHIIH
20. DEVELOPMENT PLAN A AND B
21. APACHE/CONCHO LATERAL LENGTH MAP

Apache Corp./Thunderbird
Examiner's Hearing 12/21/17



RECEIVED OCD
2017 NOV -1 P 3 05

October 30, 2017

Earl E. DeBrine, Jr.
505.848.1810
Fax: 505.848.1891
edebrine@modrall.com

Via E-Mail & U.S. Mail
florene.davidson@state.nm.us

Florene Davidson
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

Case 15874

Re: APPLICATION OF APACHE CORPORATION FOR
APPROVAL OF THE THUNDERBIRD UNIT, IN EDDY
COUNTY, NEW MEXICO

Dear Ms. Davidson:

Enclosed please find three copies of Apache Corporation's Application for the Thunderbird Unit which was sent to you for filing via e-mail Monday, October 30, 2017. Apache requests that the Application be heard on the Division's November 30, 2017 docket.

Thank you for your assistance. Please contact me if you have any questions.

Sincerely,

Earl E. DeBrine, Jr.

EED/kta/W3077225.DOC
Enclosures
cc w/encl.: Jennifer L. Bradfute

Modrall Sperling
Reehl Harris & Sisk
P.A.

Bank of America
Centre
500 Fourth Street
NW
Suite 1000
Albuquerque,
New Mexico 87102

PO Box 2168
Albuquerque,
New Mexico
87103-2168

Tel: 505.848.1800
www.modrall.com

Case No. 15874

Apache

Exhibit 1

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

**APPLICATION OF APACHE CORPORATION
FOR APPROVAL OF THE THUNDERBIRD
UNIT, IN EDDY COUNTY, NEW MEXICO.**

CASE NO. 15874

APPLICATION

Apache Corporation, ("Apache") by and through its attorneys, Modrall, Sperling, Roehl, Harris & Sisk, P.A., files this application with the Oil Conservation Division for an order approving its Thunderbird Resource Development Unit pursuant to 19.15.20.14 NMAC. In support of its application, Apache states:

1. The proposed Unit Area for the Unit consists of approximately 3,198.44 acres of federal and state lands situated in Eddy County, New Mexico, described as follows:

Township 16 South, Range 30 East, N.M.P.M.

Section 32: E/2
Section 33: All
Section 34: All
Section 35: All
Section 36: S/2

Township 17 South, Range 30 East, N.M.P.M.

Section 4: All

2. Apache (OGRID No. 873) is the designated operator under the Unit Agreement. The unitized interval is the stratigraphic equivalent of the top of the Yeso formation encountered at a measured depth of 4,233' down to the

stratigraphic equivalent of the top of the Tubb formation at a measured depth of 5,554' as encountered in the Aspen Federal Com #1 well (API No. 30-015-31656) located in NE/4SW/4, Section 31, Township 16 South, Range 31 East, Eddy County, New Mexico.

3. The Unit Agreement has been approved by a sufficient percentage of the interest owners within the proposed Unit Area to provide effective control of unit operations.

4. Apache has received preliminary approval of the Unit Agreement from the United States Bureau of Land Management and the New Mexico State Land Office.

5. The entire Unit Area will be developed and operated as a single participating area.

6. Pursuant to 19.15.20.14 NMAC, after notice and hearing, the Division may approve the combining of contiguous spacing units into a unitized area.

7. Approval of this Application will be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

WHEREFORE, Apache Corporation requests that this Application be set for hearing before an Examiner of the Oil Conservation Division on November 30, 2017, and that after notice and hearing as required by law, the Division enter its order granting this Application.

Respectfully submitted,

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

By: 

Earl E. DeBrine, Jr.
Jennifer L. Bradfute
Post Office Box 2168
500 Fourth Street NW, Suite 1000
Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
edebrine@modrall.com
jlb@modrall.com

Attorneys for Apache Corporation

W3077248.DOCX

Case No. 15874: Application of Apache Corporation For Approval of the Thunderbird Exploratory Unit, Eddy County New Mexico. Applicant seeks approval of its Thunderbird Exploratory Unit consisting of approximately 3,198.44 acres of federal and state lands situated in all or parts of Sections 12, 33, 34, 35 and 36 of Township 16 South, Range 30 East, N.M.P.M and Section 4 of Township 17 South, Range 30 East, N.M.P.M, Eddy County, New Mexico. The unitized interval is the stratigraphic equivalent of the top of the Yeso formation encountered at a measured depth of 4,233' down to the stratigraphic equivalent of the top of the Tubb formation at a measured depth of 5,554' as encountered in the Aspen Federal Com #1 well (API No. 30-015-31656) located in Section 31, Township 16 South, Range 31 East, Eddy County, New Mexico.

**STATE/FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT FOR THE
DEVELOPMENT AND OPERATION OF THE
THUNDERBIRD DEVELOPMENT UNIT AREA
COUNTY OF EDDY
STATE OF NEW MEXICO**

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EXHIBIT "A"MAP OF UNIT AREA

EXHIBIT "B"SCHEDULE OF OWNERSHIP

EXHIBIT "C"THUNDERBIRD STRATIGRAPHIC TYPE LOG

STATE/FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT FOR THE
DEVELOPMENT AND OPERATION OF THE
THUNDERBIRD DEVELOPMENT UNIT AREA
COUNTY OF EDDY
STATE OF NEW MEXICO

NO. _____

THIS STATE/FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT ("Agreement"), entered into as of the 1st day of October, 2017, by and between the parties subscribing, ratifying, or consenting hereto, sometimes herein referred to individually as "party," and collectively as the "parties hereto,"

THIS AGREEMENT, is limited in applicability to wells within the Unit Area containing a lateral or laterals drilled, completed, or recompleted such that the horizontal component of the completion interval extends at least one hundred feet (100 ft.) in the objective formation (Horizontal Well(s)). All pre-existing and future vertical wells within the unit boundary drilled and completed in the **YESO** formation (Section 3. UNITIZED SUBSTANCES) are excluded from this Agreement.

WITNESSETH:

WHEREAS, the parties hereto are the owners of working, royalty, or other oil and gas interests in the Unit Area subject to this Agreement; and

WHEREAS, the Mineral Leasing Act of February 25, 1920, 41 Statute 437, as amended 30 U.S.C Section 181 et. seq, authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a unit plan of development or operations of any oil and gas pool, field, or like area, or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Section 19-10-45. 46,47 NM Statutes 1978 Annotated) to consent to or approve this Agreement on behalf of the State of New Mexico, insofar as it covers and includes lands and mineral interest of the State of New Mexico; and

WHEREAS, the Oil Conservation Division of the New Mexico Energy and Minerals Department is authorized by an act of the Legislature (Chapter 70 and 71, NM Statutes 1978 Annotated) to approve this Agreement and the conservation provisions hereof; and

WHEREAS, the parties hereto hold sufficient interests in the Unit Area covering the land hereinafter described to give reasonably effective control of operations therein; and

WHEREAS, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operation of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this Agreement their respective interests in the Unit Area, and agree severally among themselves as follows:

1. **ENABLING ACT AND REGULATIONS.** The Acts of March 3, 1909, and of February 25, 1920, as amended, supra, and all valid pertinent regulations including operating and unit plan regulations, heretofore issued thereunder or valid, pertinent, and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal and Indian trust lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal and non-Indian trust

lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this Agreement.

2. UNIT AREA. The following described land is hereby designated and recognized as constituting the Unit Area:

See map attached hereto marked as Exhibit "A," which is hereby designated and recognized as constituting the Unit Area containing **3,198.44** acres, more or less.

Exhibit "A" shows, in addition to the boundary of the Unit Area, the boundaries and identity of tracts and leases in said area to the extent known to the below-designated Unit Operator. Exhibit "B" attached hereto is a schedule showing the acreage, percentage, and kind of ownership of oil and gas interests in all lands in the Unit Area to the extent known to the Unit Operator. However, nothing herein or in Exhibits "A" and "B" ("Exhibits") shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests as are shown in the Exhibits as owned by such party. The Exhibits shall be revised by the Unit Operator whenever changes in the Unit Area or in the ownership interests in the individual tracts render such revision necessary, or when requested by the Authorized Officer, hereinafter referred to as "AO," or when requested by the Commissioner of Public Lands of the State of New Mexico, hereinafter referred to as "Land Commissioner," and not less than four (4) copies of the revised Exhibits shall be filed with the proper Bureau of Land Management office, and one (1) copy thereof shall be filed with the Land Commissioner, and one (1) copy with the New Mexico Oil Conservation Division of the Energy and Minerals Department, hereinafter referred to as the "Division."

The Unit Area shall when practicable be expanded to include therein any additional lands or shall be contracted to exclude lands whenever such expansion or contraction is deemed to be necessary or advisable to conform to the purposes of this Agreement and/or required by the AO and Land Commissioner. Such expansion or contraction shall be effected in the following manner:

(a) Unit Operator, on its own motion (after preliminary concurrence by the AO), or on demand of the AO, or the Land Commissioner (after preliminary concurrence by the AO), shall prepare a Notice of Proposed Expansion or Contraction describing the contemplated changes in the boundaries of the Unit Area, the reasons therefor, any plans for additional drilling, and the proposed effective date of the expansion or contraction, preferably the first day of a month subsequent to the date of notice.

(b) Said notice shall be delivered to the proper Bureau of Land Management office, the Land Commissioner, and the Division, and copies thereof mailed to the last known address of each working interest owner, lessee, and lessor whose interests are affected, advising that thirty (30) days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the AO, the Land Commissioner, and the Division, evidence of mailing of the Notice of Proposed Expansion or Contraction and a copy of any objections thereto which have been filed with Unit Operator, together with an application in quadruplicate for approval of such expansion or contraction and with appropriate joinders.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the AO, the Land Commissioner, and the Division, become effective as of the date prescribed in the notice thereof or such other appropriate date.

(e) If each lease in the Unit Area is not fully developed and wells are not drilled as per section 10 by five (5) years from the effective date of this Agreement, then undeveloped acreage shall be eliminated automatically from this Agreement. The eliminated lands shall correspond to all legal subdivisions of lands (i.e., 40 acres by Government survey or its nearest lot or tract equivalent; in instances of irregular surveys, unusually large lots or tracts shall be considered in multiples of 40 acres or

the nearest aliquot equivalent thereof; and all lands of the State of New Mexico embracing undeveloped regular well spacing or proration units) and such lands shall no longer be a part of the Unit Area and shall no longer be subject to this Agreement, unless diligent drilling operations are in progress in the Unit Area in which event all such lands shall remain subject hereto for so long as such drilling operations are continued diligently, with not more than six (6) months elapsing between the completion of one such well and the commencement of the next such well.

As lands are eliminated, the Unit Area will contract to existing producing regular well spacing or proration units as defined by the Division.

Any expansion of the Unit Area pursuant to this section which embraces lands theretofore eliminated pursuant to this subsection 2(e) shall not be considered automatic commitment or recommitment of such lands.

If conditions warrant extension of the five (5)-year period specified in this subsection, a single extension of not to exceed two (2) years may be accomplished by consent of the owners of ninety percent (90%) of the working interest in the current undeveloped area in the Unit Area and the owners of sixty percent (60%) of the basic royalty interests (exclusive of the basic royalty interests of the United States) in the undeveloped area of the Unit Area with approval of the AO and Land Commissioner.

(f) During the ongoing development as per section 10, if a well is drilled to develop leases and plugged within one (1) year and diligent drilling operations are not in progress on the leases/Unit Area, then the lands covering these leases in this area shall be evaluated for elimination from the unit by the AO and Land Commissioner. The eliminated lands shall correspond to all legal subdivisions of lands (i.e., 40 acres by Government survey or its nearest lot or tract equivalent; in instances of irregular surveys, unusually large lots or tracts shall be considered in multiples of 40 acres or the nearest aliquot equivalent thereof), and such lands shall no longer be a part of the Unit Area and shall no longer be subject to this Agreement.

3. UNITIZED SUBSTANCES. All oil and gas from the stratigraphic equivalent of the top of the Yeso formation encountered at a measured depth of 4,233 feet down to the stratigraphic equivalent of the top of the Tubb formation at a measured depth of 5,554 feet as encountered in the Aspen Federal Com #1 well in Section 31, Township 16 South, Range 31 East, N.M.P.M. (API #30-015-31656), are unitized under the terms of this Agreement and herein are called "Unitized Substances" (see type log attached as Exhibit "C").

4. UNIT OPERATOR. Apache Corporation is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in the capacity and not as an owner of interest in Unitized Substances, and the term "working interest owner" when used herein shall include or refer to Unit Operator as the owner of a working interest only when such an interest is owned by it.

5. RESIGNATION OR REMOVAL OF UNIT OPERATOR. Unit Operator shall have the right to resign at any time prior to the establishment of unitized production or areas hereunder, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six (6) months after notice of intention to resign has been served by Unit Operator to all working interest owners and the AO, the Land Commissioner, and the Division, and until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment, whichever is required by the AO as to Federal and Indian trust lands and the Division as to State and Fee lands, unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

Unit Operator shall have the right to resign in like manner and subject to like limitations as above provided at any time after a producing Unit Area established hereunder

is in existence, but in all instances of resignation or removal, until a successor Unit Operator is selected and approved as hereinafter provided, the working interest owners shall be jointly responsible for performance of the duties of Unit Operator, and shall not later than thirty (30) days before such resignation or removal becomes effective appoint a common agent to represent them in any action to be taken hereunder.

The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of working interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the AO and the Land Commissioner.

The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title, or interest as the owner of a working interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, materials, and appurtenances used in conducting the unit operations to the newly qualified successor Unit Operator or to the common agent, if no such new Unit Operator is selected, to be used for the purpose of conducting unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment, or appurtenances needed for the preservation of any wells.

6. SUCCESSOR UNIT OPERATOR. Whenever the Unit Operator shall tender its resignation as Unit Operator or shall be removed as hereinabove provided, or a change of Unit Operator is negotiated by the working interest owners, the owners of the working interests according to their respective acreage interest in the Unit Area shall, pursuant to the approval of the parties requirements of the below-defined Operating Agreement, select a successor Unit Operator. Such selection shall not become effective until,

(a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and

(b) the selection shall have been approved by the AO and by the Land Commissioner.

If no successor Unit Operator is selected and qualified as herein provided, the AO and the Land Commissioner, at their election, may declare this Agreement terminated.

7. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT. If the Unit Operator is not the sole owner of working interests, costs and expenses incurred by the Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of working interests, all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of working interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the working interest owners and the Unit Operator as provided in this section, whether one or more, are collectively considered the Unit Operating Agreement, herein referred to as the "Operating Agreement". Such Operating Agreement shall also provide the manner in which the working interest owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other independent contracts, and such other rights and obligations as between Unit Operator and the working interest owners as may be agreed upon by Unit Operator and the working interest owners; however, no such Operating Agreement shall be deemed either to modify any of the terms and conditions of this Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement, and in case of any inconsistency or conflict between this Agreement and the Operating Agreement, this Agreement shall govern. Two copies of any Operating Agreement executed pursuant to this section shall be filed in the proper Bureau of Land Management office, and one (1) true copy with the Land Commissioner, and one (1) true copy with the Division prior to approval of this Agreement. If any party to this Agreement currently owns either no interest or only an overriding royalty interest in the Unit Area or said formation, or those lands covered by leases described on Exhibit "B," then such party shall have no obligations whatsoever, whether monetary or otherwise, to

the other parties hereto or to the Unit Operator, at any time or in the future.

8. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR. Except as otherwise specifically provided herein, the exclusive right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating, and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Acceptable evidence of title to said rights shall be deposited with Unit Operator and, together with this Agreement, shall constitute and define the rights, privileges, and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or Operating Agreement, it being understood that under this Agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

9. DRILLING TO DISCOVERY. This Agreement is warranted and determined necessary due to the ongoing resource development occurring in the area. For all purposes of this Agreement, the Thunderbird Unit #5H well with a surface location in the SW/4NE/4 of Section 33, Township 16 South, Range 30 East, N.M.P.M., and a 7,800 foot horizontal lateral in the Yeso formation, shall hereby be approved by the AO and the Land Commissioner as the obligation well necessary to validate this Agreement. Within six (6) months of final approval of this Agreement, the Operator shall submit a paying well determination to the AO and the Land Commissioner to determine if this well produces in paying quantities (to-wit: quantities sufficient to repay the costs of drilling, completing, and producing operations, with a reasonable profit). The paying well determination shall include at least six (6) months of actual production. If the aforementioned well is not capable of producing in paying quantities, then the Unit Operator shall continue drilling one well at a time, allowing not more than six (6) months between the completion of one well and the commencement of drilling operations for the next well, until a well capable of producing Unitized Substances in paying quantities is completed to the satisfaction of the AO if it be on Federal land, the Land Commissioner if on State land, or the Division if on Fee land, or until it is reasonably proved that the Unit Area is incapable of producing Unitized Substances in paying quantities in the formations drilled hereunder. All other wells are to be drilled as prescribed in section 10. Nothing in this section shall be deemed to limit the right of the Unit Operator to resign as provided in section 5 hereof, or as requiring Unit Operator to commence or continue any drilling during the period pending such resignation becoming effective in order to comply with the requirements of this section.

The AO and the Land Commissioner may modify any of the drilling requirements of this section by granting reasonable extensions of time when, in their opinion, such action is warranted.

Upon failure to commence any well as provided for in this section within the time allowed including any extension of time granted by the AO and the Land Commissioner, this agreement will automatically terminate. Upon failure to continue drilling diligently any well commenced hereunder, the AO and the Land Commissioner may, after fifteen (15) days' notice to the Unit Operator, declare this Agreement terminated. The failure to commence a well subsequent to the drilling of the initial obligation well, or in the case of multiple well requirements, if specified, subsequent to the drilling of those multiple wells, as provided for in this (these) section(s), within the time allowed including any extension of time granted by the AO and the Land Commissioner, shall cause this Agreement to terminate automatically. Upon failure to continue drilling diligently any well other than the obligation well(s) commenced hereunder, the AO and the Land Commissioner may, after fifteen (15) days' notice to the Unit Operator, declare this Agreement terminated. Failure to commence drilling the initial obligation well, or the first of multiple obligation wells, on time and to drill it diligently shall result in the Agreement approval being declared invalid *ab initio* by the AO and the Land Commissioner. In the case of multiple well requirements, failure to commence drilling the required multiple wells beyond the first well, and to drill them diligently, may result in the Agreement approval being declared invalid *ab initio* by the AO and the Land Commissioner. Once the Agreement is terminated all existing well production will be reported and allocated on a lease basis and if necessary a Communitization Agreement may be required.

10. PLAN OF FURTHER DEVELOPMENT AND OPERATION. The Unit Operator shall submit for the approval of the AO and the Land Commissioner an acceptable initial Plan of Development and Operation ("POD") for the Unit Area which, when approved, shall constitute the further drilling and development obligations of the Unit Operator under this Agreement for the period specified therein. All unit wells within the Unit Area shall be named according to the unit name with "Unit" in the well name and number consecutively.

Within twelve (12) months after the completion of a well capable of producing Unitized Substances in paying quantities, the Unit Operator shall submit for the approval of the AO, the Land Commissioner, and the Division, an updated acceptable POD for the Unit Area which, when approved by the AO, the Land Commissioner, and the Division, shall constitute the further drilling and development obligations of the Unit Operator under this Agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for the approval of the AO, the Land Commissioner, and the Division, a POD for an additional specified period for the development and operation of the Unit Area. Subsequent PODs should normally be filed on a calendar year basis not later than March 1st each year. Any proposed modification or addition to the existing POD should be filed as a supplement to the POD.

Any POD submitted pursuant to this section shall provide for the timely exploration of the Unit Area and for the diligent drilling necessary to fully develop the entire Unit Area. This plan shall be as complete and adequate as the AO, the Land Commissioner, and Division may determine to be necessary for timely development and proper conservation of the oil and gas resources of the Unit Area and shall:

- (a) specify the number and locations of any wells to be drilled and the proposed order and time for such drilling; and
- (b) provide a summary of operations and production for the previous year.

PODs shall be modified or supplemented when necessary to meet changed conditions or to protect the interests of all parties to this agreement. Reasonable diligence shall be exercised in complying with the obligations of the approved POD. The AO, the Land Commissioner, and the Division are authorized to grant a reasonable extension of the 12-month period herein prescribed for submission of an initial POD where such action is justified because of unusual conditions or circumstances. A POD for the Unit Area shall no longer be required once the Unit Area is determined to be fully developed by the AO, the Land Commissioner, and the Division, and to be evaluated on a case by case basis.

11. PARTICIPATION AFTER DISCOVERY. Upon completion of the first well capable of producing unitized substances in paying quantities, or as soon thereafter as required by the AO and the Land Commissioner, the Unit Operator shall submit for approval by the AO and the Land Commissioner, a schedule, based on subdivisions of the public-land survey or aliquot parts thereof, of all land in the Unit Area. These lands shall constitute a participating area on approval of the AO and the Land Commissioner, effective as of the date of completion of such well or the effective date of this unit agreement, whichever is later. The acreages of both Federal and non-Federal lands shall be based upon appropriate computations from the courses and distances shown on the last approved public-land survey as of the effective date of the participating area. The schedule shall also set forth the percentage of unitized substances to be allocated, as provided in Section 12, to each committed tract in the participating area so established, and shall govern the allocation of production commencing with the effective date of the participating area. The participating area so established shall be revised from time to time as provided in Section 2, subject to the approval of the AO and the Land Commissioner, to include additional lands then regarded as reasonably proved to be productive of unitized substances in paying quantities or which are necessary for unit operations, or to exclude lands then regarded as not reasonably proved to be productive of unitized substances in paying quantities, and the schedule of allocation percentages shall be revised accordingly. The effective date of any revision shall be the first of the month in which the knowledge or information is obtained on which such revision is predicated; provided, however, that a more appropriate effective date may be used if justified by Unit Operator and approved by the AO and the Land Commissioner. No land shall be excluded from a participating area on account of depletion of its unitized substances, except that any participating area established under the

provisions of this unit agreement shall terminate automatically whenever all completions in the formation on which the participating area is based are abandoned.

Regardless of any revision of the participating area, nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of the participating area.

In the absence of agreement at any time between the Unit Operator, the AO, and the Land Commissioner as to the proper definition or redefinition of the participating area, or until a participating area has been established, the portion of all payments affected thereby shall, except royalty due the United States and the State of New Mexico, be impounded in a manner mutually acceptable to the owners of committed working interests. Royalties due the United States and the State of New Mexico shall be determined by the AO for Federal Lands and the Land Commissioner for State Lands, and the amount thereof shall be deposited, as directed by the AO and the Land Commissioner, until a participating area is finally approved and then adjusted in accordance with a determination of the sum due as Federal royalty on the basis of such approved participating area.

Whenever it is determined, subject to the approval of the AO and the Land Commissioner, that a well drilled under this agreement is not capable of production of unitized substances in paying quantities and inclusion in the participating area of the land on which it is situated is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be allocated to the land on which the well is located by communitization agreement or on a lease basis for the individual well. Settlement for working interest benefits from such a nonpaying unit well shall be made as provided in the unit operating agreement.

Subject to the foregoing paragraphs, it is the intention of the Unit Operator, the AO, and the Land Commissioner to develop one participating area within the boundaries as better described on Exhibit A.

12. ALLOCATION OF PRODUCTION. All Unitized Substances produced under this Agreement, except any part thereof used in conformity with good operating practices within the Unit Area for drilling, operating, and other production or development purposes, or for repressuring or recycling in accordance with a POD that has been approved by the AO and the Land Commissioner, or unavoidably lost, shall be deemed to be produced equally on an acreage basis from the several tracts of unitized land and unleased Federal land, if any, included in the Unit Area. Each such tract shall have allocated to it such percentage of said production as the number of acres of such tract bears to the total acres of the Unit Area and unleased Federal land, if any. There shall be allocated to the working interest owners(s) of each unitized tract in said Unit Area, in addition, such percentage of the production attributable to the unleased Federal land within the Unit Area as the number of acres of such unitized tract included in the said Unit Area bears to the total acres of the Unit Area, for the payment of the compensatory royalty specified in section 16 of this Agreement. Allocation of production hereunder for purposes other than for settlement of the royalty, overriding royalty, or payment out of production obligations of the respective working interest owners, including compensatory royalty obligations under section 16, shall be prescribed as set forth in the Operating Agreement or as otherwise mutually agreed by the affected parties. It is hereby agreed that production of unitized substances from the Unit Area shall be allocated as provided herein, regardless or whether any wells are drilled on any particular part or tract of the Unit Area.

13. ROYALTY SETTLEMENT. The United States, the State of New Mexico, and any royalty owner who is entitled to take in kind a share of the substances now unitized hereunder shall hereafter be entitled to the right to take in kind its share of the Unitized Substances, and Unit Operator, or the working interest owner in case of the operation of a well by a working interest owner as herein provided for in special cases, shall make deliveries of such royalty share taken in kind in conformity with the applicable contracts, laws, and regulations. Settlement for royalty interest not taken in kind shall be made by working interest owners responsible therefore under existing contracts, laws, and regulations, or by the Unit Operator on or before the last day of each month for Unitized Substances produced during the preceding calendar month; provided, however, that

nothing in this section shall operate to relieve the responsible parties of any land from their respective lease obligations for the payment of any royalties due under their leases.

If gas obtained from lands not subject to this Agreement is introduced into the Unit Area hereunder, for use in repressuring, stimulation of production, or increasing ultimate recovery in conformity with a POD approved by the AO and the Land Commissioner and the Division, a like amount of gas, after settlement as herein provided for any gas transferred from any other area and with appropriate deduction for loss from any cause, may be withdrawn from the formation into which the gas is introduced, royalty free as to dry gas, but not as to any products which may be extracted therefrom; provided that such withdrawal shall be at such time as may be provided in the approved POD or as may otherwise be consented to by the AO and the Land Commissioner and the Division as conforming to good petroleum engineering practice; and provided further, that such right of withdrawal shall terminate on the termination of this Agreement.

Royalty due to the United States shall be computed as provided in 30 CFR Group 200 and paid in value or delivered in kind as to all Unitized Substances on the basis of the amounts thereof allocated to unitized Federal land as provided in section 12 at the rates specified in the respective Federal lease, or at such other rate or rates as may be authorized by law or regulation and approved by the AO, provided, that for leases on which the royalty rate depends on the daily average production per well, said average production shall be determined in accordance with the operating regulations as though the Unit Area were a single consolidated lease.

Royalty due on account of State lands shall be computed and paid on the basis of all Unitized Substances allocated to such lands.

14. RENTAL SETTLEMENT. Rental or minimum royalties due on leases committed hereto shall be paid by the appropriate working interest owners under existing contracts, laws, and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty due under their leases. Rental or minimum royalty for lands of the United States and Indian trust lands subject to this Agreement shall be paid at the rate specified in the respective leases from the United States and Indian trust lands, unless such rental or minimum royalty is waived, suspended, or reduced by law or by approval of the Secretary of the Interior or his duly authorized representative.

Rentals on State lands subject to this Agreement shall be paid at the rate specified in the respective leases.

With respect to any lease on non-Federal or non-Indian trust land containing provisions which would terminate such lease unless drilling operations are commenced upon the land covered thereby within the time therein specified or rentals are paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provision of this Agreement, be deemed to accrue and become payable during the term thereof as extended by this Agreement and until the required drilling operations are commenced upon the land covered thereby, or until the Unit Area establishes production.

15. CONSERVATION. Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to State or Federal law or regulation.

16. DRAINAGE. (a) The Unit Operator shall take such measures as the AO and the Land Commissioner deems appropriate and adequate to prevent drainage of Unitized Substances for unitized land by wells on land not subject to this Agreement, which shall include the drilling of protective wells and which may include the payment of a fair and reasonable compensatory royalty, as determined by the AO, as to Federal leases, and the Land Commissioner, as to State leases.

(b) Whenever the participating area approved under section 11 of this agreement contains unleased Federal lands, the value of 12½ percent of the production that would be allocated to such Federal lands under section 12 of this agreement, if such lands were leased, committed, and entitled to participation, shall be payable as compensatory royalties

to the Federal Government. Parties to this agreement holding working interests in committed leases within the applicable participating area shall be responsible for such compensatory royalty payment on the volume of production reallocated from the unleased Federal lands to their unitized tracts under section 12. The value of such production subject to the payment of said royalties shall be determined pursuant to 30 CFR part 206. Payment of compensatory royalties on the production reallocated from unleased Federal land to the committed tracts within the participating area shall fulfill the Federal royalty obligation for such production, and said production shall be subject to no further royalty assessment under section 13 of this agreement. Payment of compensatory royalties as provided herein shall accrue from the date the committed tracts in the participating area that includes unleased Federal lands receive a production allocation, and shall be due and payable monthly by the last day of the calendar month next following the calendar month of actual production. If leased Federal lands receiving a production allocation from the participating area become unleased, compensatory royalties shall accrue from the date the Federal lands become unleased. Payment due under this provision shall end when the unleased Federal tract is leased or when production of unitized substances ceases within the participating area and the participating area is terminated, whichever occurs first.

17. LEASES AND CONTRACTS CONFORMED AND EXTENDED. The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or operation for oil or gas on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect and the parties hereto hereby consent that the Secretary of the Interior, as to Federal leases and the Land Commissioner, as to State leases, each by his approval hereof, or by the approval hereof by his duly authorized representative, shall and does hereby establish, alter, change, or revoke the drilling, producing, rental minimum royalty, and royalty requirements of Federal and Indian leases and State leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this Agreement, and, without limiting the generality of the foregoing, all leases, subleases, and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to each and every separately owned tract subject to this Agreement, regardless of whether there is any development of any particular tract of this Unit Area.

(b) Drilling and producing operations performed hereunder upon any tract in the Unit Area will be accepted and deemed to be performed upon and for the benefit of each and every tract of unitized land, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on the land therein embraced.

(c) Suspension of drilling or producing operations on all unitized lands pursuant to direction or consent of the AO and the Land Commissioner, or his duly authorized representative, shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of unitized land. A suspension of drilling or producing operations limited to specified lands shall be applicable only to such lands.

(d) Each lease, sublease, or contract relating to the exploration, drilling, development, or operation for oil or gas of lands other than those of the United States and the State of New Mexico committed to this Agreement which, by its terms might expire prior to the termination of this Agreement, is hereby extended beyond any such terms so provided therein so that it shall be continued in full force and effect for and during the term of this Agreement.

(e) Any Federal lease committed hereto shall continue in force beyond the term so provided therein or by law as to the land committed so long as such lease remains subject hereto, provided that a well capable of production of Unitized Substances in paying quantities is established in paying quantities under this Agreement prior to the expiration date of the term of such lease, or in the event actual drilling operations are commenced in the Unit Area, in accordance with provisions of this Agreement, prior to the end of the primary term of such lease and are being diligently prosecuted at that time, such Federal lease shall be extended for two (2) years, and so long thereafter as oil or gas is produced in paying quantities in accordance with the provisions of the Act of February 25, 1920, as

amended.

(f) Each sublease or contract relating to the operation and development of Unitized Substances from lands of the United States committed to this Agreement, which by its terms would expire prior to the time at which the underlying lease, as extended by the immediately preceding paragraph, will expire, is hereby extended beyond any such term so provided therein so that it shall be continued in full force and effect for and during the term of the underlying lease as such term is herein extended.

(g) The segregation of any Federal lease committed to this Agreement is governed by the following provision in the fourth paragraph of Section 17 (j) of the Mineral Leasing Act, as amended by the Act of September 2, 1960 (74 Stat. 78 I-784)(30 U.S.C. 226 (m)), "Any (Federal) lease heretofore or hereafter committed to any such (Unit) plan embracing lands that are in part within and in part outside the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization. Provided, however that any such lease as to non-unitized portion shall continue in force and effect for the term thereof, but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in paying quantities."

If the public interest requirement is not satisfied, the segregation of a lease and/or extension of a lease pursuant to 43 CFR 3107.3-2 and 43 CFR 3107.4, respectively, shall not be effective.

(h) In the event the initial test well is commenced prior to the expiration date of the shortest term State Lease within the Unit Area, any lease embracing lands of the State of New Mexico which is made the subject to this Agreement, shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(i) Any lease embracing lands of the State of New Mexico having only a portion of its lands committed hereto, shall be segregated as to the portion committed and the portion not committed, and the terms of such lease shall apply separately to such segregated portions commencing as the effective date hereof; provided, however, that notwithstanding any of the provisions of this Agreement to the contrary, such lease shall continue in full force and effect beyond the term provided therein as to all lands embraced in such lease, if oil or gas is being produced in paying quantities from some part of the lands embraced in such lease at the expiration of the fixed term of such lease; or if, at the expiration of the fixed term, the lessee or the Unit Operator is then engaged in bona fide drilling or reworking operations on some part of the lands embraced in such lease, then the same as to all lands embraced therein shall remain in full force and effect so long as such operations are being diligently prosecuted, and if they result in the production of oil or gas, said lease shall continue in full force and effect as to all the lands embraced therein, so long thereafter as oil or gas in paying quantities is being produced from any portion of said lands.

18. COVENANTS RUN WITH LAND. The covenants herein shall be construed to be covenants running with the land with respect to the interests of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance of interest in land or lease subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest. No assignment or transfer of any working interest, royalty, or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic, or certified copy of the instrument of transfer.

19. EFFECTIVE DATE AND TERM. This Agreement shall become effective _____, when approved by the AO and the Land Commissioner or their duly authorized representative and shall automatically terminate five (5) years from said effective date unless:

(a) Upon application by the Unit Operator such date of expiration is extended by the AO and the Land Commissioner; or

(b) it is reasonably determined prior to the expiration of the fixed terms or any extension thereof that the Unit Area is incapable of production of Unitized Substances in paying quantities in the formations tested hereunder, and after notice of intention to terminate this Agreement on such ground is given by the Unit Operator to all parties in interest at their last known addresses, this Agreement is terminated with approval of the AO and the Land Commissioner; or

(c) a valuable discovery of Unitized Substances in paying quantities has been made or accepted in the Unit Area during said initial term or any extension thereof, in which event this Agreement shall remain in effect for such term and so long thereafter as Unitized Substances can be produced as to Federal or Indian trust lands and are being produced as to State lands in quantities sufficient to pay for the cost of producing same from wells in the Unit Area. Should production cease and diligent drilling or re-working operations to restore production or new production are not in progress or reworking within sixty (60) days and production is not restored or should new production not be obtained in paying quantities on committed lands within this Unit Area, this Agreement will automatically terminate effective the last day of the month in which the last unitized production occurred, or

(d) it is voluntarily terminated as provided in this Agreement. Except as noted herein this Agreement may be terminated at any time prior to the discovery of Unitized Substances which can be produced in paying quantities by not less than seventy-five percent (75%), on an acreage basis, of the working interest owners signatory hereto, with the approval of the AO and the Land Commissioner. The Unit Operator shall give notice of any such approval to all parties hereto. If the public interest requirement is not satisfied, the approval of this unit by the AO and the Land Commissioner shall be invalid.

20. RATE OF PROSPECTING, DEVELOPMENT, AND PRODUCTION. The AO is hereby vested with authority to alter or modify from time to time, in his discretion, the quantity and rate of production under this Agreement when such quantity and rate are not fixed pursuant to Federal or State law, or do not conform to any State-wide voluntary conservation or allocation program which is established, recognized, and generally adhered to by the majority of operators in such State. The above authority is hereby limited to alteration or modifications which are in the public interest. The public interest to be served and the purpose thereof, must be stated in the order of alteration or modification. Without regard to the foregoing, the AO is also hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and the quantity and rate of production under this Agreement when such alteration or modification is in the interest of attaining the conservation objectives stated in this Agreement and is not in violation of any applicable Federal or State law, provided, further, that no such alteration or modification shall be effective as to any land of the State of New Mexico, as to the rate of prospecting and developing in the absence of the specific written approval thereof by the Land Commissioner and also to any lands of the State of New Mexico subject to this Agreement as to the quantity and rate of production in the absence of specific written approval thereof by the Division.

Powers in the section vested in the AO shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen (15) days from notice.

21. APPEARANCES. Unit Operator shall, after notice to other parties affected, have the right to appear for and on behalf of any and all interest affected hereby before the Department of the Interior, and the Land Commissioner, and the Division, and to appeal from orders issued under the regulations of said Department and the Land Commissioner and the Division or to apply for relief from any of said regulations, or in any proceedings relative to operations before the Department and the Land Commissioner and the Division or any other legally constituted authority, provided, however, that any other interested party shall also have the right at its own expense to be heard in any such proceeding.

22. NOTICES. All notices, demands, or statements required hereunder to be given or rendered to the parties hereto shall be in writing and shall be personally delivered to the party or parties, or sent by postpaid registered or certified mail, to the last known address of the party or parties.

23. NO WAIVER OF CERTAIN RIGHTS. Nothing contained in this Agreement

shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State where unitized lands are located, or of the United States, or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive.

24. UNAVOIDABLE DELAY. All obligations under this Agreement requiring the Unit Operator to commence or continue drilling, or to operate on, or produce Unitized Substances from any of the lands covered by this Agreement, shall be suspended while the Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State, or municipal law or agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials or equipment in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

25. NONDISCRIMINATION. In connection with the performance of work under this Agreement, the Unit Operator agrees to comply with all the provisions of Section 202 (1) to (7) inclusive of Executive Order 11246 (30 F.R. 12319), as amended, which are hereby incorporated by reference in this Agreement.

26. LOSS OF TITLE. In the event title to any tract of the Unit Area shall fail and the true owner cannot be induced to join in this Agreement, such tract shall be automatically regarded as not committed hereto, and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title to any royalty, working interest, or other interests subject thereto, payment or delivery on account thereof may be withheld without liability for interest until the dispute is finally settled; provided, that, as to Federal and State lands or leases, no payments of funds due the United States or the State of New Mexico should be withheld, but such funds shall be deposited as directed by the AO and such funds of the State of New Mexico shall be deposited as directed by the Land Commissioner, to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

27. NON-JOINDER AND SUBSEQUENT JOINDER. If the owner of any substantial interest in a tract within the Unit Area fails or refuses to subscribe or consent to this Agreement, the owner of the working interest in that tract may withdraw the tract from this Agreement by written notice delivered to the proper Bureau of Land Management office, the Land Commissioner, the Division, and the Unit Operator prior to the approval of this Agreement by the AO and the Land Commissioner. Any oil or gas interests in lands within the Unit Area not committed hereto prior to final approval may thereafter be committed hereto by the owner or owners thereof subscribing or consenting to this Agreement, and, if the interest is a working interest, by the owner of such interest only subscribing to the Operating Agreement.

After operations are commenced hereunder, the right of subsequent joinder, as provided in this section, by a working interest owner is subject to such requirements or approval(s), if any, pertaining to such joinder, as may be provided for in the Operating Agreement. After final approval hereof, joinder by a non-working interest owner must be consented to in writing by the working interest owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such non-working interest. A non-working interest may not be committed to this unit agreement unless the corresponding working interest is committed hereto. Joinder to this Agreement by a working interest owner, at any time, must be accompanied by appropriate joinder to the Operating Agreement, in order for the interest to be regarded as committed to this Agreement. Except as may otherwise herein be provided, subsequent joinders to this Agreement shall be effective as of the date of the filing with the AO, the Land Commissioner, and the Division of duly executed counterparts of all or any papers necessary to establish effective commitment of any interest and/or tract to this Agreement.

28. COUNTERPARTS. This Agreement may be executed in any number of

counterparts, no one of which needs to be executed by all parties, or may be ratified or consented to by separate instrument in writing specifically referring hereto and shall be binding upon all those parties who have executed such a counterpart, ratification, or consent hereto with the same force and effect as if all such parties had signed the same document and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands within the Unit Area.

29. SURRENDER. Nothing in this Agreement shall prohibit the exercise by any working interest owner of the right to surrender interest vested in such party by any lease, sublease, or operating agreement as to all or any part of the lands covered thereby, provided that each party who will or might acquire such working interest by such surrender or by forfeiture as hereafter set forth, is bound by the terms of this Agreement.

If, as a result of any such surrender, the working interest rights as to such lands become vested in any party other than the fee owner of the Unitized Substances, said party may forfeit such rights and further benefits from operation hereunder as to said land to the party next in the chain of title who shall be and become the owner of such working interest.

If, as a result of any such surrender or forfeiture, working interest rights become vested in the fee owner of the Unitized Substances, such owner may:

- (a) accept those working interest rights subject to this Agreement and the Operating Agreement, or
- (b) lease the portion of such land subject to this Agreement and the Operating Agreement, or
- (c) provide for the independent operation of any part of such land.

If the fee owner of the Unitized Substances does not accept the working interest rights subject to this Agreement and the Operating Agreement or lease such lands as above provided within six (6) months after the surrender or forfeited working interest rights become vested in the fee owner, the benefits and obligations of operations accruing to such lands under this Agreement and the Operating Agreement shall be shared by the remaining owners of unitized working interests in accordance with their respective working interest ownerships, and such owners of working interests shall compensate the fee owner of Unitized Substances in such lands by paying sums equal to the rentals, minimum royalties, and royalties applicable to such lands under the lease in effect when the lands were unitized.

An appropriate accounting and settlement shall be made for all benefits accruing to or payments and expenditures made or incurred on behalf of such surrendered or forfeited working interest subsequent to the date of surrender or forfeiture, and payment of any monies found to be owing by such an accounting shall be made as between the parties within thirty (30) days.

The exercise of any right vested in a working interest owner to reassign such working interest to the party from whom obtained shall be subject to the same conditions as set forth in this section in regard to the exercise of a right to surrender.

30. TAXES. The working interest owners shall render and pay for their account and the account of the royalty owners all valid taxes on or measured by the Unitized Substances in and under or that may be produced, gathered, and sold from the land covered by this Agreement after its effective date, or upon the proceeds derived therefrom. The working interest owners on each tract shall and may charge the proper proportion of said taxes to royalty owners having interest in said tract, and may currently retain and deduct a sufficient amount of the Unitized Substances or derivative products, or net proceeds thereof, from the allocated share of each royalty owner to secure reimbursement for the taxes so paid. No such taxes shall be charged to the United States or the State of New Mexico or to any lessor who has a contract with his lessee which requires the lessee to pay such taxes.

31. NO PARTNERSHIP. It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing contained in this Agreement, expressed or implied, nor any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

32. SURFACE AND ENVIRONMENTAL PROTECTION STIPULATIONS.

Nothing in this Agreement shall modify or change either the special Federal lease stipulations relating to surface management or such special Federal lease stipulations relating to surface and environmental protection, attached to and made a part of Oil and Gas Leases covering lands within the Unit Area.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

UNIT OPERATOR AND WORKING INTEREST OWNER


Apache Corporation

Address: 303 Veterans Airpark Lane, Suite 1000, Midland, TX 79705

By: Amy D. Lindsey

Title: Attorney in Fact

Date of Execution _____

WORKING INTEREST OWNERS

Black Shale Minerals, LLC

Address: P.O. Box 2243, Longview, TX

By: _____

Title: _____

Date of Execution _____

Oxy USA WTP, Limited Partnership

Address: P.O. Box 27570, Houston, TX 77227

By: _____

Title: _____

Date of Execution _____

RATIFICATION BY THE LESSEES OF RECORD

Shelmar E & P NM, LP

Address: P.O. Box 3176, Midland, Texas 79702

By: _____

Title: _____

Date of Execution _____

Tract 1: NMLC 060325, NW/4 & SE/4 of Sec. 33-16S-30E; Lot 3, 4, S/2NW/4, & SE/4 of Sec. 4-17S-30E

Tract 2: NMNM 002425, NE/4 & SW/4 of Sec. 33-16S-30E; Lot 1, 2, S/2NE/4, N/2SW/4 & SE/4SW/4 of Sec. 4-17S-30E

Tract 3: NMNM 002427, W/2 of Sec. 34-16S-30E

Tract 4: NMNM 002427, NE/4 of Sec. 34-16S-30E

Tract 5: NMNM 002427, SE/4 of Sec. 34-16S-30E

Tract 6: NMLC 063926, N/2 & S/2S/2 of Sec. 35-16S-30E

Tract 7: NMLC 063926, NW/4SW/4 of Sec. 35-16S-30E

Tract 8: NMLC 063926, NE/4SW/4 of Sec. 35-16S-30E

Tract 9: NMLC 063926, NW/4SE/4 of Sec. 35-16S-30E

Tract 10: NMLC 063926, NE/4SE/4 of Sec. 35-16S-30E

Tract 12: State of NM B-2175-10, E/2 of Sec. 32-16S-30E

Nothing in this Agreement shall modify or change either the special Federal lease stipulations relating to surface management or such special Federal lease stipulations relating to surface and environmental protection, attached to and made a part of Oil and Gas Leases covering lands within the Unit Area.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

UNIT OPERATOR AND WORKING INTEREST OWNER

Apache Corporation

Address: 303 Veterans Airpark Lane, Suite 1000, Midland, TX 79705

By: Amy D. Lindsey

Title: Attorney in Fact

Date of Execution _____

WORKING INTEREST OWNERS

Black Shale Minerals, LLC

Address: P.O. Box 2243, Longview, TX

By: Frank B. H. K.

Title: Manager

Date of Execution 1/2/10

Oxy USA WTP, Limited Partnership

Address: P.O. Box 27570, Houston, TX 77227

By: _____

Title: _____

Date of Execution _____

RATIFICATION BY THE LESSEES OF RECORD

Shelmar E & P NM, LP

Address: P.O. Box 3176, Midland, Texas 79702

By: _____

Title: _____

Date of Execution _____

Tract 1: NMLC 060325, NW/4 & SE/4 of Sec. 33-16S-30E; Lot 3, 4, S/2NW/4, & SE/4 of Sec. 4-17S-30E

Tract 2: NMNM 002425, NE/4 & SW/4 of Sec. 33-16S-30E; Lot 1, 2, S/2NE/4, N/2SW/4 & SE/4SW/4 of Sec. 4-17S-30E

Tract 3: NMNM 002427, W/2 of Sec. 34-16S-30E

Tract 4: NMNM 002427, NE/4 of Sec. 34-16S-30E

Tract 5: NMNM 002427, SE/4 of Sec. 34-16S-30E

Tract 6: NMLC 063926, N/2 & S/2S/2 of Sec. 35-16S-30E

Tract 7: NMLC 063926, NW/4SW/4 of Sec. 35-16S-30E

Tract 8: NMLC 063926, NE/4SW/4 of Sec. 35-16S-30E

Tract 9: NMLC 063926, NW/4SE/4 of Sec. 35-16S-30E

Tract 10: NMLC 063926, NE/4SE/4 of Sec. 35-16S-30E

Tract 12: State of NM B-2175-10, E/2 of Sec. 32-16S-30E

UNIT OPERATOR AND WORKING INTEREST OWNER

Apache Corporation

Address: 303 Veterans Airpark Lane, Suite 1000, Midland, TX 79705

By: Amy D. Lindsey

Title: Attorney in Fact

Date of Execution _____

WORKING INTEREST OWNERS

Black Shale Minerals, LLC

Address: P.O. Box 2243, Longview, TX

By: _____

Title: _____

Date of Execution _____

Oxy USA WTP, Limited Partnership

Address: P.O. Box 27570, Houston, TX 77227

By: 

Title: **Bradley S. Dusek**

Date of Execution **Attorney-in-fact**

11/15/17

JVS

RATIFICATION BY THE LESSEES OF RECORD

Shelmar E & P NM, LP

Address: P.O. Box 3176, Midland, Texas 75201

By: _____

Title: _____

Date of Execution _____

Tract 1: NMLC 060325, NW/4 & SE/4 of Sec. 33-16S-30E; Lot 3, 4, S/2NW/4, & SE/4 of Sec. 4-17S-30E

Tract 2: NMNM 002425, NE/4 & SW/4 of Sec. 33-16S-30E; Lot 1, 2, S/2NE/4, N/2SW/4 & SE/4SW/4 of Sec. 4-17S-30E

Tract 3: NMNM 002427, W/2 of Sec. 34-16S-30E

Tract 4: NMNM 002427, NE/4 of Sec. 34-16S-30E

Tract 5: NMNM 002427, SE/4 of Sec. 34-16S-30E

Tract 6: NMLC 063926, N/2 & S/2S/2 of Sec. 35-16S-30E

Tract 7: NMLC 063926, NW/4SW/4 of Sec. 35-16S-30E

Tract 8: NMLC 063926, NE/4SW/4 of Sec. 35-16S-30E

Tract 9: NMLC 063926, NW/4SE/4 of Sec. 35-16S-30E

Tract 10: NMLC 063926, NE/4SE/4 of Sec. 35-16S-30E

Tract 12: State of NM B-2175-10, E/2 of Sec. 32-16S-30E

Tract 13: State of NM B-6672-06, NW/4SW/4, W/2SE/4, & SE/4SE/4 of Sec. 36-16S-30E

Tract 14: State of NM B-3006-24, NE/4SW/4 of Sec. 36-16S-30E

Tract 16: State of NM V-733, SE/4SW/4 of Sec. 36-16S-30E

Nothing in this Agreement shall modify or change either the special Federal lease stipulations relating to surface management or such special Federal lease stipulations relating to surface and environmental protection, attached to and made a part of Oil and Gas Leases covering lands within the Unit Area.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

UNIT OPERATOR AND WORKING INTEREST OWNER

Apache Corporation

Address: 303 Veterans Airpark Lane, Suite 1000, Midland, TX 79705

By: Amy D. Lindsey

Title: Attorney in Fact

Date of Execution _____

WORKING INTEREST OWNERS

Black Shale Minerals, LLC

Address: P.O. Box 2243, Longview, TX

By: _____

Title: _____

Date of Execution _____

Oxy USA WTP, Limited Partnership

Address: P.O. Box 27570, Houston, TX 77227

By: _____

Title: _____

Date of Execution _____

RATIFICATION BY THE LESSEES OF RECORD

Shelmar E & P NM, LP

Address: P.O. Box 3176, Midland, Texas 79702

By: S. Paul Anderson

Title: Manager

Date of Execution 11/8/2018

Tract 1: NMLC 060325, NW/4 & SE/4 of Sec. 33-16S-30E; Lot 3, 4, S/2NW/4, & SE/4 of Sec. 4-17S-30E

Tract 2: NMNM 002425, NE/4 & SW/4 of Sec. 33-16S-30E; Lot 1, 2, S/2NE/4, N/2SW/4 & SE/4SW/4 of Sec. 4-17S-30E

Tract 3: NMNM 002427, W/2 of Sec. 34-16S-30E

Tract 4: NMNM 002427, NE/4 of Sec. 34-16S-30E

Tract 5: NMNM 002427, SE/4 of Sec. 34-16S-30E

Tract 6: NMLC 063926, N/2 & S/2S/2 of Sec. 35-16S-30E

Tract 7: NMLC 063926, NW/4SW/4 of Sec. 35-16S-30E

Tract 8: NMLC 063926, NE/4SW/4 of Sec. 35-16S-30E

Tract 9: NMLC 063926, NW/4SE/4 of Sec. 35-16S-30E

Tract 10: NMLC 063926, NE/4SE/4 of Sec. 35-16S-30E

Tract 12: State of NM B-2175-10, E/2 of Sec. 32-16S-30E

Tract 13: State of NM B-6672-06, NW/4SW/4, W/2SE/4, & SE/4SE/4 of Sec. 36-16S-30E
Tract 14: State of NM B-3006-24, NE/4SW/4 of Sec. 36-16S-30E
Tract 16: State of NM V-733, SE/4SW/4 of Sec. 36-16S-30E

Oxy USA WTP, Limited Partnership

Address: 5 Greenway Plaza, Suite 110, Houston, TX 77046

By: _____

Title: _____

Date of Execution _____

Tract 17: State of NM B-8569-12, SW/4SW/4 of Sec. 36-16S-30E

Apache Corporation

Address: 303 Veterans Airpark Lane, Suite 1000, Midland, TX 79705

By: Amy D. Lindsey

Title: Attorney in Fact

Date of Execution _____

Tract 11: NMNM-137453, SW/4SW/4 of Sec. 4-17S-30E

ACKNOWLEDGMENT

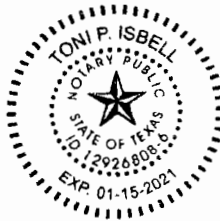
STATE OF TEXAS §

§

COUNTY OF MIDLAND §

BEFORE ME, the undersigned authority, on this day personally appeared Amy D. Lindsey, as Attorney-in-Fact for Apache Corporation, a Delaware corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 18 day of December, 2017.



Toni P Isbell
Notary Public, State of Texas

TONI P ISBELL
Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

STATE OF _____ §

§

COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, as _____ for Black Shale Minerals, LLC, a Texas limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

Tract 13: State of NM B-6672-06, NW/4SW/4, W/2SE/4, & SE/4SE/4 of Sec. 36-16S-30E
Tract 14: State of NM B-3006-24, NE/4SW/4 of Sec. 36-16S-30E
Tract 16: State of NM V-733, SE/4SW/4 of Sec. 36-16S-30E

Oxy USA WTP, Limited Partnership

Address: 5 Greenway Plaza, Suite 110, Houston, TX 77046

By: _____

Title: _____

Date of Execution _____

Tract 17: State of NM B-8569-12, SW/4SW/4 of Sec. 36-16S-30E

Apache Corporation

Address: 303 Veterans Airpark Lane, Suite 1000, Midland, TX 79705

By: Amy D. Lindsey

Title: Attorney in Fact

Date of Execution _____

Tract 11: NMNM-137453, SW/4SW/4 of Sec. 4-17S-30E

ACKNOWLEDGMENT

STATE OF TEXAS §

§

COUNTY OF MIDLAND §

BEFORE ME, the undersigned authority, on this day personally appeared Amy D. Lindsey, as Attorney-in-Fact for Apache Corporation, a Delaware corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ____ day of _____, 2017.

Notary Public, State of Texas

Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

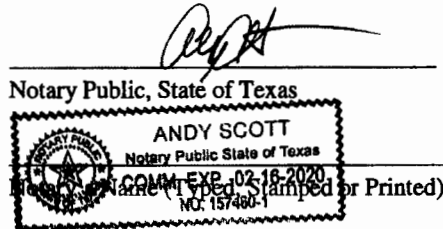
STATE OF Texas §

§

COUNTY OF Gregg §

BEFORE ME, the undersigned authority, on this day personally appeared Frank Butler, as Manager for Black Shale Minerals, LLC, a Texas limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 2nd day of January, 2018.



ACKNOWLEDGMENT

STATE OF _____ §
§
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, as _____ for Oxy USA WTP, L.P., a _____ (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 2017.

Notary Public, State of Texas

Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

STATE OF _____ §
§
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, as _____ for Shelmar E & P, NM, LP, a _____ (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 2017.

Notary Public, State of Texas

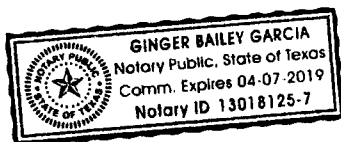
Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

STATE OF Texas §
§
COUNTY OF Harris §

BEFORE ME, the undersigned authority, on this day personally appeared Bradley S. Dusek, as Attorney-in-Fact of Occidental Petroleum manager LLC, WTP, L.P., a Delaware (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 15th day of November, 2017.



Ginger B. Garcia
Notary Public, State of Texas

Ginger B. Garcia
Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

STATE OF _____ §
§
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, as _____ for Shelmar E & P, NM, LP, a _____ (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 2017.

Notary Public, State of Texas

Notary's Name (Typed, Stamped or Printed)

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ____ day of _____, 2017.

Notary Public, State of Texas

Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

STATE OF _____ §
§
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, as _____ for Oxy USA WTP, L.P., a _____ (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ____ day of _____, 2017.

Notary Public, State of Texas

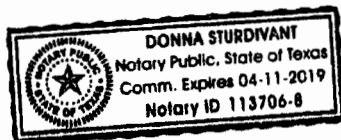
Notary's Name (Typed, Stamped or Printed)

ACKNOWLEDGMENT

STATE OF Texas §
§
COUNTY OF Midland §

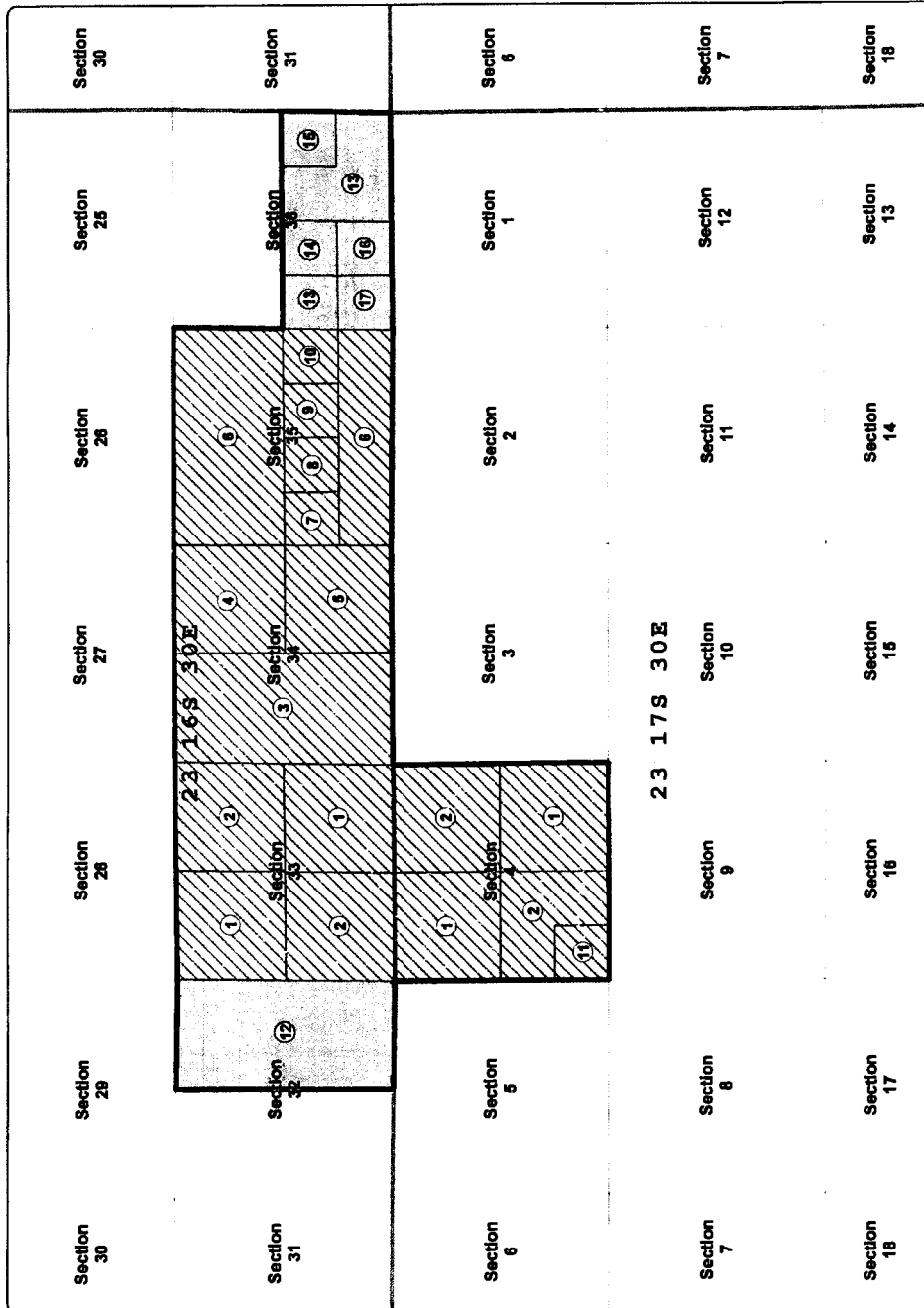
BEFORE ME, the undersigned authority, on this day personally appeared S. Paul Anderson, as Manager for Shelmar E & P, NM, LP, a Texas (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that she executed the same as the act and deed of said corporation, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 8th day of January, 2018.



Donna Sturdivant
Notary Public, State of Texas

Donna Sturdivant
Notary's Name (Typed, Stamped or Printed)

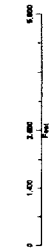


Legend

- THUNDERBIRD UNIT - 3,198.44 AC
- FEDERAL - 2,558.44 AC
- STATE - 640 AC
- FEDERAL/OPEN

EXHIBIT "A" THUNDERBIRD RESOURCE DEVELOPMENT UNIT EDDY COUNTY, NEW MEXICO TOWNSHIP 16S, RANGE 30E, N.M.P.M. TOWNSHIP 17S, RANGE 30E, N.M.P.M.

Apache



TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE			
1	T16S-R30E, N.M.P.M., Section 33: NW/4, SE/4 T17S-R30E, N.M.P.M., Section 4: Lot 3, 4, S/2NW/4, SE/4	639.09	NM1C-060325 Effective 12/31/1938 HBP	USA - All (12.5%)	Christine Thompson	100.00%	Marshall & Winston, Inc.	0.250000%	Apache Corporation	75.000000%
							John W. Bockman	0.750000%	Chisos, LTD	12.500000%
							Kimberly Ann Evans	0.500000%	Black Shale Minerals, LLC	12.500000%
							KRI Oil & Gas, LLC	0.083333%		
							Jean Seybert	0.083333%		
							Patricia J. Allen, Life Estate	0.083333%		
							Remaindermen: Danny H. and Ann			
							R. Allen			
							Austin Wright	0.062500%		
							Gloria Mefford	0.062500%		
							Julia May Lutz	0.062500%		
							Kathy Gail Brawley	0.062500%		
							Hope Royalties, LLC	0.083333%		
							Rolla R. Hinkle, III	0.083334%		
							Madison M. Hinkle	0.083334%		
							M. W. and Hattie Evans Heirs	1.000000%		
							Graham Peterson	0.125000%		
							Georgi Davis Duwe	0.062500%		
							Priscilla Davis Gravely	0.062500%		
							Floyd H. Davis	0.062500%		
	Sidney Davis Trust	0.062500%								
	Norma P. Walker	0.062500%								
	Mavis P. Alexander Heirs	0.062500%								
	Leonard Family Trust UTA 2/1/2006	1.000000%								
	Albuquerque Lodge #461 B.P.O.E.	0.500000%								
	Clara B. McCroden Trust	1.000000%								
	Gretchen B. Nearburg	0.437500%								
	Joan L. Ingram	0.437500%								
	John M. Little	0.125000%								
	Manix Royalty, LTD	0.875000%								
	Black Shale Minerals, LLC	0.312500%								
	Chisos, LTD	0.312500%								
	SAC Investments I, LP	0.187500%								
2	T16S-R30E, N.M.P.M., Section 33: NE/4, SW/4 T17S-R30E, N.M.P.M.	599.35	NM-002425 Effective 12/1/1938 HBP	USA - All (12.5%)	Christine Thompson	100.00%	Marshall & Winston, Inc.	0.250000%	Apache Corporation	75.000000%
							John W. Bockman	0.750000%	Chisos, LTD	12.500000%
							Kimberly Ann Evans	0.500000%	Black Shale Minerals, LLC	12.500000%
							KRI Oil & Gas, LLC	0.083333%		

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
3	T16S-R30E, N.M.P.M. Section 34: W/2	320.00	NM-002427 Effective 12/31/1998 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	Jean Seybert 0.083333%
							Patricia J. Allen, Life Estate Remaindermen: Danny H. and Ann 0.083334%
							R. Allen Austin Wright Gloria Mefford Julia May Lutz Kathy Gail Brawley Hope Royalties, LLC Rolla R. Hinke, III Madison M. Hinkle M.W. and Hattie Evans Heirs Graham Peterson Georgi Davis Duwe Priscilla Davis Gravely Floyd H. Davis Sidney Davis Trust Norma P. Walker Mavis P. Alexander Heirs Wallingford Interests, Ltd. Mesa Croft, LLC Gretchen B. Nearburg Joan L. Ingram John M. Little Manix Royalty, LTD Black Shale Minerals, LLC Chisos, LTD SAC Investments I, L.P.
3	T16S-R30E, N.M.P.M. Section 34: W/2	320.00	NM-002427 Effective 12/31/1998 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	Bank of America, N.A., Sole Trustee of the Selma E. Andrews Trust FBO Peggy Barrett Bank of America, N.A., Sole Trustee of the Selma E. Andrews Perpetual Charitable Trust Braille Institute of America Marshall & Winston, Inc. Bradley C. Miles, Life Estate Remaindermen: Melanie Marie Miles Hirschfeld and Mathew Carson Cottingham Miles Ward Investments, LTD Higgins Trust, Inc. T.J. Cox, Heirs and Assigns
							0.044755%
							Apache Corporation Chisos, Ltd. Black Shale Minerals, LLC 75.000000% 12.500000% 12.500000%
3	T16S-R30E, N.M.P.M. Section 34: W/2	320.00	NM-002427 Effective 12/31/1998 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	0.089508%
							0.115737%
							0.250000%
3	T16S-R30E, N.M.P.M. Section 34: W/2	320.00	NM-002427 Effective 12/31/1998 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	0.250000%
							0.062500%
							0.250000%

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
4	T16S-R30E, N.M.P.M. Section 34: NE/4	160.00	NM-007427 Effective 12/31/1938 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	<div> <div>Columbine II, LP</div> <div>0.312500%</div> </div> <div> <div>First Presbyterian Church of Emporia</div> <div>0.062500%</div> </div> <div> <div>M.W. Coll & wf. Lillian Coll, Heirs & Assigns</div> <div>0.187500%</div> </div> <div> <div>David F. James, Trustee of the James Petroleum Trust</div> <div>0.125000%</div> </div> <div> <div>Leonard Family Trust UTA 2/1/2006</div> <div>1.750000%</div> </div> <div> <div>Albuquerque Lodge #461 B.P.O.E.</div> <div>0.875000%</div> </div> <div> <div>Clara B. McCorden Trust</div> <div>1.750000%</div> </div> <div> <div>Gretchen B. Nearburg</div> <div>0.437500%</div> </div> <div> <div>Joan L. Ingram</div> <div>0.437500%</div> </div> <div> <div>John M. Little</div> <div>0.125000%</div> </div> <div> <div>Manix Royalty, LTD</div> <div>1.375000%</div> </div> <div> <div>Black Shale Minerals, LLC</div> <div>0.484375%</div> </div> <div> <div>Chisos, LTD</div> <div>0.484375%</div> </div> <div> <div>SAC Investments I, L.P</div> <div>0.187500%</div> </div> <div> <div>Bank of America, N.A., Sole Trustee of the Selma E. Andrews Trust FBO Peggy Barrett</div> <div>0.044755%</div> </div> <div> <div>Bank of America, N.A., Sole Trustee of the Selma E. Andrews Perpetual Charitable Trust</div> <div>0.089508%</div> </div> <div> <div>Braille Institute of America Marshall & Winston, Inc.</div> <div>0.115737%</div> </div> <div> <div>Bradley C. Miles, Life Estate Remaindermen: Melanie Marie Miles Hirschfeld and Matthew Carson Cottingham Miles Ward Investments, LTD</div> <div>0.250000%</div> </div> <div> <div>Higgins Trust, Inc.</div> <div>0.062500%</div> </div> <div> <div>T.J. Cox, Heirs and Assigns</div> <div>0.250000%</div> </div> <div> <div>Columbine II, LP</div> <div>0.125000%</div> </div> <div> <div>First Presbyterian Church of Emporia</div> <div>0.312500%</div> </div> <div> <div>M.W. Coll & wf. Lillian Coll, Heirs & Assigns</div> <div>0.062500%</div> </div> <div> <div>David F. James, Trustee of the James Petroleum Trust</div> <div>0.187500%</div> </div> <div> <div>Gretchen B. Nearburg</div> <div>0.125000%</div> </div> <div> <div>Joan L. Ingram</div> <div>0.437500%</div> </div> <div> <div>John M. Little</div> <div>0.437500%</div> </div> <div> <div>Manix Royalty, LTD</div> <div>0.125000%</div> </div> <div> <div>Manix Royalty, LTD</div> <div>3.562500%</div> </div> <div> <div>Apache Corporation</div> <div>75.000000%</div> </div> <div> <div>Chisos, Ltd.</div> <div>12.500000%</div> </div> <div> <div>Black Shale Minerals, LLC</div> <div>12.500000%</div> </div>

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
5	<u>T165-R30E, N.M.P.M.</u> Section 34: SE/4	160.00	NM-002427 Effective 12/31/1998 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	<div> <div>Black Shale Minerals, LLC</div> <div>Chisos, LTD</div> <div>SAC Investments I, L.P</div> </div> <div> <div>0.757813%</div> <div>0.757812%</div> <div>0.187500%</div> </div>
						100.00%	<div> <div>Bank of America, N.A., Sole Trustee of the Selma E. Andrews Trust FBO Peggy Barrett</div> <div>Bank of America, N.A., Sole Trustee of the Selma E. Andrews Perpetual Charitable Trust</div> <div>Braille Institute of America Marshall & Winston, Inc.</div> <div>Bradley C. Miles, Life Estate</div> <div>Remaindermen: Melanie Marie Miles Hirschfeld and Matthew Carson Cottinsham Miles</div> <div>Ward Investments, LTD</div> <div>Higgins Trust, Inc.</div> <div>T.J. Cox, Heirs and Assigns</div> <div>Columbine II, LP</div> <div>First Presbyterian Church of Emuoria</div> <div>M.W. Coll & wf. Lillian Coll, Heirs & Assigns</div> <div>David F. James, Trustee of the James Petroleum Trust</div> <div>P.B. English & wf. Ruby English, Heirs & Assigns</div> <div>Willowbrook Resources</div> <div>Gretchen B. Nearburg</div> <div>Joan L. Ingram</div> <div>John M. Little</div> <div>Manix Royalty, LTD</div> <div>Black Shale Minerals, LLC</div> <div>Chisos, LTD</div> <div>SAC Investments I, L.P</div> <div>ConocoPhillips Company</div> </div> <div> <div>0.044755%</div> <div>0.089508%</div> <div>0.115737%</div> <div>0.250000%</div> <div>0.250000%</div> <div>0.062500%</div> <div>0.250000%</div> <div>0.125000%</div> <div>0.312500%</div> <div>0.062500%</div> <div>0.187500%</div> <div>0.125000%</div> <div>0.009571%</div> <div>0.006152%</div> <div>0.437500%</div> <div>0.437500%</div> <div>0.125000%</div> <div>3.551563%</div> <div>0.756445%</div> <div>0.756445%</div> <div>0.187500%</div> <div>0.006152%</div> </div> <div> <div>Apache Corporation Chisos, Ltd.</div> <div>Black Shale Minerals, LLC</div> </div> <div> <div>75.000000%</div> <div>12.500000%</div> <div>12.500000%</div> </div>
6	<u>T165-R30E, N.M.P.M.</u> Section 35: N/2, S/2S/2	480.00	LC-063926 Effective 1/1/1940 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	<div> <div>Bank of America, N.A., Sole Trustee of the Selma E. Andrews Trust FBO Peggy Barrett</div> <div>Bank of America, N.A., Sole Trustee of the Selma E. Andrews Perpetual Charitable Trust</div> </div> <div> <div>0.044755%</div> <div>0.089508%</div> </div> <div> <div>Apache Corporation Chisos, Ltd.</div> <div>Black Shale Minerals, LLC</div> </div> <div> <div>75.000000%</div> <div>12.500000%</div> <div>12.500000%</div> </div>

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
7	T16S-R30E, N.M.P.M., Section 35: NW/4SW/4	40.00	LC-063926 Effective 1/1/1940 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	Braille Institute of America	0.115737%
						Marshall & Winston, Inc.	0.250000%
						Bradley C. Miles, Life Estate	0.250000%
						Remaindermen: Melanie Marie	
						Miles Hirschfeld and Matthew	
						Carson Cottingham Miles	0.250000%
						Higgins Trust, Inc.	0.062500%
						First Presbyterian Church of	
						Emporia	
						M.W. Coll & wf. Lillian Coll, Heirs &	0.187500%
						Assigns	
						David F. James, Trustee of the James	0.125000%
						Petroleum Trust	
						Ward Investments, LTD	0.062500%
						T.J. Cox, Heirs and Assigns	0.125000%
						Atlantic Richfield	0.312500%
						Gretchen B. Nearburg	0.437500%
						Joan L. Ingram	0.437500%
						John M. Little	0.125000%
						Manix Royalty, LTD	3.062500%
						Black Shale Minerals, LLC	0.312500%
						Chisos, LTD	0.312500%
						SAC Investments I, L.P	0.187500%
						Bank of America, N.A., Sole Trustee	0.044755%
						of the Selma E. Andrews Trust FBO	
						Peggy Barrett	
						Bank of America, N.A., Sole Trustee	0.089508%
						of the Selma E. Andrews Perpetual	
						Charitable Trust	
						Braille Institute of America	0.115737%
						Marshall & Winston, Inc.	0.250000%
						Higgins Trust, Inc.	0.250000%
						Bradley C. Miles, Life Estate	0.250000%
						Remaindermen: Melanie Marie	
						Miles Hirschfeld and Matthew	
						Carson Cottingham Miles	
						First Presbyterian Church of	0.062500%
						Emporia	
						David F. James, Trustee of the James	0.125000%
						Petroleum Trust	
						M.W. Coll & wf. Lillian Coll, Heirs &	0.187500%
						Assigns	
						Ward Investments, LTD	0.062500%

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
8	T16S-R30E, N.M.P.M. Section 35: NE/4SW/4	40.00	LC-063926 Effective 1/1/1940 HBP	USA - All (Sliding Scale 12.5% to 32%)	Christine Thompson	100.00%	T.J. Cox, Heirs and Assigns
							0.125000%
							Atlantic Richfield
							0.312500%
							Agnes Williams Mulcock
							0.390625%
							Gretchen B. Nearburg
							0.437500%
							Joan L. Ingram
							0.437500%
							John M. Little
							0.125000%
							Manix Royalty, LTD
							1.500000%
							Black Shale Minerals, LLC
							0.062500%
							Chisos, LTD
							0.062500%
							SAC Investments I, L.P
							0.187500%
							Bank of America, N.A., Sole Trustee
							0.044755%
							of the Selma E. Andrews Trust FBO
							Peggy Barrett
							Bank of America, N.A., Sole Trustee
							0.089508%
							of the Selma E. Andrews Perpetual
							Charitable Trust
							Braille Institute of America
							0.115737%
							Marshall & Winston, Inc.
							0.250000%
							Bradley C. Miles, Life Estate
							0.250000%
							Remaindermen: Melanie Marie
							Miles Hirschfeld and Matthew
							Carson Cottingham Miles
							0.250000%
							Higgins Trust, Inc.
							0.062500%
							First Presbyterian Church of
							Emporia
							0.125000%
							David F. James, Trustee of the James
							Petroleum Trust
							M.W. Coll & wf. Lillian Coll, Heirs &
							Assigns
							0.187500%
							Ward Investments, LTD
							0.062500%
							T.J. Cox, Heirs and Assigns
							0.125000%
							Atlantic Richfield
							0.312500%
							Evans T. Williams
							1.562500%
							James and Agnes Mulcock
							Revocable Trust
							1.562500%
							Gretchen B. Nearburg
							0.437500%
							Joan L. Ingram
							0.437500%
							John M. Little
							0.125000%
							Manix Royalty, LTD
							1.500000%
							Black Shale Minerals, LLC
							0.312500%
							Chisos, LTD
							0.312500%
							SAC Investments I, L.P
							0.187500%

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
11	T17S-R30E, N.M.P.M. Section 4: SW/4SW/4	40.00	NM-137453 Effective Date Pending	USA - All (12.5%)	Apache Corporation	100.00%	0.250000%
11 FEDERAL TRACTS TOTALING 2,558.44 acres or 79.99% of the Unit Area							
12	T16S-R30E, N.M.P.M. Section 32: E/2	320.00	ST NM B-2175-10 Effective 10/10/1933 HBP	State of New Mexico - All (12.5%)	Christine & James Thompson, Jr.	100.00%	0.437500%
13	T16S-R30E, N.M.P.M. Section 36: NW/4SW/4,	160.00	ST NM B-6672-06 Effective 09/10/1936	State of New Mexico All (12.5%)	Christine & James Thompson, Jr.	100.00%	5.488750%
							0.437500%
							Apache Corporation
							Chisos, LTD
							Black Shale Minerals, LLC
							0.437500%
							0.125000%
							4.500000%
							0.875000%
							0.875000%
							0.187500%
							0.437500%
							0.437500%
							0.125000%
							1.500000%
							0.312500%
							0.312500%
							0.187500%
							0.090000%
							Apache Corporation
							100.000000%
							75.000000%
							12.500000%
							12.500000%
							0.75000000
							0.12500000

TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
	W/2SE/4, SE/4SE/4		HBP			Joan L. Ingram John M. Little Manix Royalty, Ltd. Black Shale Minerals, LLC Chisos, LTD SAC Investments I, L.P	0.437500% Black Shale Minerals, LLC 0.125000% 2.265625% 0.062500% 0.062500% 0.187500%
14	T16S-R30E, N.M.P.M., Section 36: NE/4SW/4	40.00	ST NM B-3006-24 Effective 06/11/1934 HBP	State of New Mexico All (12.5%)	Christine & James Thompson, Jr. 100.00%	Brown Jackson Wheatley Special Agency Gretchen B. Nearburg Joan L. Ingram John M. Little SAC Investments I, L.P	7.500000% Apache Corporation 3.125000% Chisos, LTD 0.437500% Black Shale Minerals, LLC 0.437500% 0.125000% 0.187500%
15	T16S-R30E, N.M.P.M., Section 36: NE/4SE/4	40.00	ST NM B-3006-24 Effective 06/11/1934 HBP	State of New Mexico All (12.5%)	Christine & James Thompson, Jr. 100.00%	Agnes F. Graf Gretchen B. Nearburg Joan L. Ingram John M. Little Manix Royalty, Ltd. Black Shale Minerals, LLC Chisos, LTD SAC Investments I, L.P Allaire Dwyer	3.125000% Apache Corporation 0.437500% Chisos, LTD 0.437500% Black Shale Minerals, LLC 0.125000% 0.875000% 0.312500% 0.312500% 0.187500% 3.125000%
16	T16S-R30E, N.M.P.M., Section 36: SE/4SW/4	40.00	ST NM V-733 Effective 06/01/1983 HBP	State of New Mexico All (16.67%)	J. Cleo Thompson & James Cleo Thompson, Jr. L.P. 100.00%	None	0.000000% Apache Corporation 100.000000%
17	T16S-R30E, N.M.P.M., Section 36: SW/4SW/4	40.00	ST NM B-8569-12 Effective 03/11/1940 HBP	State of New Mexico All (12.5%)	OXY USA WTP Limited Partnership 100.00%	None	0.000000% OXY USA WTP, LP 100.000000%

6 STATE TRACTS TOTALING 640.00 acres or 20.01% of the Unit Area

3198.44

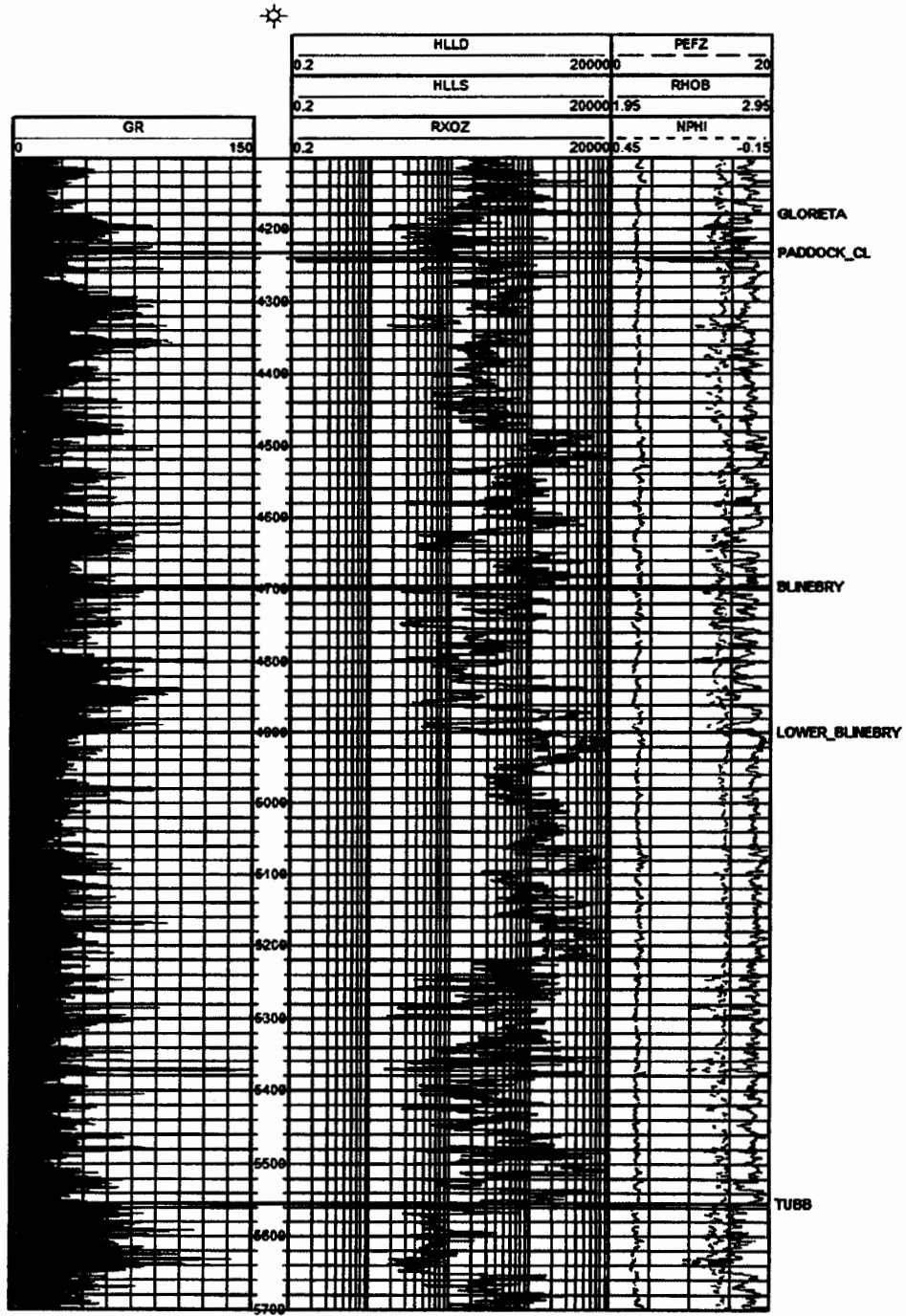
TRACT NUMBER	DESCRIPTION OF LANDS	ACRES	SERIAL NUMBER AND EXPIRATION DATE	BASIC ROYALTY AND PERCENTAGE	LESSEE OF RECORD AND PERCENTAGE	OVERRIDING ROYALTY AND PERCENTAGE	WORKING INTEREST AND PERCENTAGE
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RECAPITULATION

Tract #1					19.981%		
Tract #2					18.739%		
Tract #3					10.005%		
Tract #4					5.002%		
Tract #5					5.002%		
Tract #6					15.007%		
Tract #7					1.251%		
Tract #8					1.251%		
Tract #9					1.251%		
Tract #10					1.251%		
Tract #11					1.251%		
Tract #12					10.005%		
Tract #13					5.002%		
Tract #14					1.251%		
Tract #15					1.251%		
Tract #16					1.251%		
Tract #17					100.00%		
TOTAL							
	2,558.44 Acres of Federal Lands				79.99%		
	640.00 Acres of State of New Mexico Lands				20.01%		
	TOTAL			3,198.44	100.00%		

Thunderbird Unit Area Exhibit "C" Type Log

Well: Aspen Federal Com #1
 API: 30-015-31656
 Operator: Chi Operating Inc.
 Location: NE/4SW/4, Section 31-T16S-R31E, Eddy County, New Mexico





United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E. Greene
Carlsbad, New Mexico 88220-6292
www.blm.gov/nm



Apache Corp.

JAN - 2 2018

Permian Land Dept.

NM135686X
3180 (P0220)

Reference:
Application and Request for Designation
Thunderbird Development Unit

December 19, 2017

Apache Corporation
Attn: Laci Lawrence Stretcher
303 Veterans Airpark Ln, Suite 1000
Midland, TX 79705-9909

Dear Laci Lawrence Stretcher:

Your application of March 1 2017, filed with the Bureau of Land Management (BLM) Carlsbad Field Office, requests the designation of the Thunderbird Development Unit area, embracing 3,198.44 acres, more or less, in Eddy County, New Mexico, as logically subject to resource development under the unitization provisions of the Mineral Leasing Act as amended.

Pursuant to public interest requirements and unit plan regulations 43 CFR 3180, the land requested as outlined on your plat marked Exhibit "A" and Exhibit "B", the Thunderbird Development Unit area, Eddy County, New Mexico, is hereby designated as a logical unit area and has been assigned agreement number NM135686X. This designation is for all oil and gas from the Yeso formation only and valid for a period of one year from the date of this letter. This approval is subject to like approval by the New Mexico State Commissioner of Public Lands.

The resource development unit agreement to be submitted for the area designated shall provide for a horizontal well located in the SWNE of Section 33, T. 16 S., R. 30 E., Eddy County, New Mexico, to adequately test the Yeso formation, or to an approximate total vertical depth of 4,715 feet with the Pilot being drilled to 5,900 feet. The measured depth of the well will be 12,623 feet. The surface hole location is 2,315 feet from the north line and 1,955 feet from the south line in the SWNE of Section 33, T. 16 S., R. 30 E., Eddy County, New Mexico. The bottom hole

location is 330 feet from the south line and 2,159 feet from the east line in the SWSE of Section 4, T. 17S., R 30E., Eddy County, New Mexico.

Case No. 15874

Apache
Exhibit 4

The Thunderbird Unit #5H well will be the first designated obligation horizontal well to test the Yeso formation for the unit. As stated in paragraph 3 in the unit agreement unitized substances are as follows:

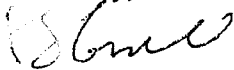
"All oil and gas from the stratigraphic equivalent of the top of the Yeso formation encountered at a measured depth of 4,233 feet down to the stratigraphic equivalent of the top of the Tubb formation at a measured depth of 5,554 feet as encountered in the Aspen Federal Com #1 well in Section 31, Township 16 South, Range 31 East, N.M.P.M. (API #30-015-31656), are unitized under the terms of this Agreement and herein are called "Unitized Substances" (see type log attached as Exhibit "C")."

Your proposed use of a modified form of the model onshore unit agreement for unproven areas in 43 CFR 3186.1 and provided by the BLM Carlsbad Field Office, is accepted.

In the absence of any type of land requiring special provisions or of any objections not now apparent, a duly executed agreement identical with said form, modified as outlined above, will be approved if submitted in approvable status within a reasonable period of time. However, notice is hereby given that the right is reserved to deny approval of any executed agreement submitted that, in our opinion, does not have the full commitment of sufficient lands to afford effective control of operations in the unit area.

Please include the latest status of all acreage when the executed agreement is submitted for final approval. In preparing Exhibits "A" and "B", the format of the sample exhibits of the model form shall be followed. A minimum of three copies of the executed agreement shall be submitted with your request for final approval.

Please contact Chris Walls at 575-234-2234 or James Glover at 505-954-2139 if you have any questions.

Sincerely,

for Field Manager
Lands and Minerals

Enclosure
cc: Commissioner of Public Lands
NM9210
NMP0220



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E. Greene
Carlsbad, New Mexico 88220-6292
www.blm.gov/nm



Apache Corp.

JAN - 2 2018

Permian Land Dept.

NM135686X
3180 (P0220)

Reference:
Application and Request for Designation
Thunderbird Development Unit

December 19, 2017

Apache Corporation
Attn: Laci Lawrence Stretcher
303 Veterans Airpark Ln, Suite 1000
Midland, TX 79705-9909

Dear Laci Lawrence Stretcher:

Your application of March 1 2017, filed with the Bureau of Land Management (BLM) Carlsbad Field Office, requests the designation of the Thunderbird Development Unit area, embracing 3,198.44 acres, more or less, in Eddy County, New Mexico, as logically subject to resource development under the unitization provisions of the Mineral Leasing Act as amended.

Pursuant to public interest requirements and unit plan regulations 43 CFR 3180, the land requested as outlined on your plat marked Exhibit "A" and Exhibit "B", the Thunderbird Development Unit area, Eddy County, New Mexico, is hereby designated as a logical unit area and has been assigned agreement number NM135686X. This designation is for all oil and gas from the Yeso formation only and valid for a period of one year from the date of this letter. This approval is subject to like approval by the New Mexico State Commissioner of Public Lands.

The resource development unit agreement to be submitted for the area designated shall provide for a horizontal well located in the SWNE of Section 33, T. 16 S., R. 30 E., Eddy County, New Mexico, to adequately test the Yeso formation, or to an approximate total vertical depth of 4,715 feet with the Pilot being drilled to 5,900 feet. The measured depth of the well will be 12,623 feet. The surface hole location is 2,315 feet from the north line and 1,955 feet from the south line in the SWNE of Section 33, T. 16 S., R. 30 E., Eddy County, New Mexico. The bottom hole

location is 330 feet from the south line and 2,159 feet from the east line in the SWSE of Section 4, T. 17S., R 30E., Eddy County, New Mexico.

Case No. 15874

Apache
Exhibit 4

The Thunderbird Unit #5H well will be the first designated obligation horizontal well to test the Yeso formation for the unit. As stated in paragraph 3 in the unit agreement unitized substances are as follows:

"All oil and gas from the stratigraphic equivalent of the top of the Yeso formation encountered at a measured depth of 4,233 feet down to the stratigraphic equivalent of the top of the Tubb formation at a measured depth of 5,554 feet as encountered in the Aspen Federal Com #1 well in Section 31, Township 16 South, Range 31 East, N.M.P.M. (API #30-015-31656), are unitized under the terms of this Agreement and herein are called "Unitized Substances" (see type log attached as Exhibit "C")."

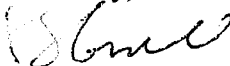
Your proposed use of a modified form of the model onshore unit agreement for unproven areas in 43 CFR 3186.1 and provided by the BLM Carlsbad Field Office, is accepted.

In the absence of any type of land requiring special provisions or of any objections not now apparent, a duly executed agreement identical with said form, modified as outlined above, will be approved if submitted in approvable status within a reasonable period of time. However, notice is hereby given that the right is reserved to deny approval of any executed agreement submitted that, in our opinion, does not have the full commitment of sufficient lands to afford effective control of operations in the unit area.

Please include the latest status of all acreage when the executed agreement is submitted for final approval. In preparing Exhibits "A" and "B", the format of the sample exhibits of the model form shall be followed. A minimum of three copies of the executed agreement shall be submitted with your request for final approval.

Please contact Chris Walls at 575-234-2234 or James Glover at 505-954-2139 if you have any questions.

Sincerely,


for Field Manager
Lands and Minerals

Enclosure

cc: Commissioner of Public Lands

NM9210

NMP0220



Aubrey Dunn
COMMISSIONER

State of New Mexico
Commissioner of Public Lands

310 OLD SANTA FE TRAIL
P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

COMMISSIONER'S OFFICE

Phone (505) 827-5760

Fax (505) 827-5766

www.nmstatelands.org

March 13, 2017

Apache Corporation
ATTN: Ms. Laci Lawrence
303 Veterans Airpark Lane, Suite 3000
Midland, TX 79705-9909

Re: Preliminary Approval
Thunderbird Unit
Eddy County, New Mexico

Dear Ms. Lawrence:

This office has received the unexecuted copy of the unit agreement that you have submitted for the proposed Thunderbird Unit area, Eddy County, New Mexico. This agreement meets the general requirements of the Commissioner of Public Lands, who has this date granted you preliminary approval as to form and content.

Preliminary approval shall not be construed to mean final approval of this agreement in any way and will not extend any short-term leases until final approval and an effective date have been given.

When submitting your agreement for final approval, please include the following:

1. Application for final approval by the Commissioner setting forth the tracts that have been committed and the tracts that have not been committed.
2. Pursuant to Rule 19.2.100.51, a statement of facts showing that:
 - a. The agreement will tend to promote the conservation of oil and gas and the better utilization of reservoir energy.
 - b. Under the proposed unit operation, the State of New Mexico will receive its fair and equitable share of the recoverable oil and gas in place under its lands in the proposed unit area.
 - c. Each beneficiary institution of the State of New Mexico will receive its fair and equitable share of the recoverable oil and gas under its lands within the unit area.
 - d. The unit agreement is in other respects for the best interest of the Trust.

Case No. 15874

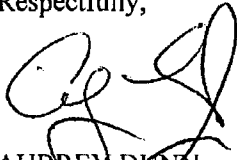
Apache
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Apache Corporation
March 13, 2017
Page 2

3. All ratifications from the Lessees of Record and Working Interest Owners. All signatures should be acknowledged by a notary and one set must contain original signatures.
4. Approval order from the New Mexico Oil Conservation Division. State Land Office approval is conditioned upon approval by the New Mexico Oil Conservation Division.
5. One copy of the Unit Operating Agreement (if applicable).
6. A \$600 filing fee. The filing fee is \$100 for each section or partial section included in the unit, whether federal, state, or privately owned.

If you have any questions or if we may be of further assistance, please contact Units Manager Marilyn Gruebel at 505.827.5791.

Respectfully,



AUBREY DUNN
COMMISSIONER OF PUBLIC LANDS

AD/mmg

cc: NMOCD - Attn: Mr. Daniel Sanchez
TRD - Attn: Ms. Billie Luther
RMD - Attn: Mr. Danny Martinez
BLM - Attn: Mr. Chris Walls
Reader File

From: Stretcher, Laci
Sent: Monday, July 24, 2017 7:28 AM
To: 'Adam Reker'
Cc: Dylan Park; Katie Fields
Subject: RE: SWSW of Sec 4, T17S-R30E

Good morning Adam,

The JOA is still being negotiated between the parties, so it is not available for Concho's review. We are using a 1989 form with horizontal provisions as a starting point if that's helpful.

Thanks,

LACI LAWRENCE STRETCHER, RPL
direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [mailto:AREker@concho.com]
Sent: Monday, July 24, 2017 8:19 AM
To: Stretcher, Laci <Laci.Stretcher@apachecorp.com>
Cc: Dylan Park <DPark@concho.com>; Katie Fields <KFields@concho.com>
Subject: RE: SWSW of Sec 4, T17S-R30E

Hey Laci,

I have read through the unit agreement. I see that the unit is not effective until February 1, 2018... But do you have the unit operating agreement as well?

I realize it won't be final but I'd like to see it as part of my due diligence on the subject tract.

Thanks,
AR

From: Stretcher, Laci [mailto:Laci.Stretcher@apachecorp.com]
Sent: Monday, July 17, 2017 8:41 AM
To: Adam Reker
Cc: Dylan Park
Subject: [External] RE: SWSW of Sec 4, T17S-R30E

**** External email. Use caution. ****
Good morning Adam,

I did not have any voicemails from you last week or unanswered emails. Did you leave a message? If so, I might need to have IT check my computer/phone. I'm working on some critical deadlines right now, so if you are having issues getting in contact with me, I would like to have them check it out.

The Thunderbird Unit agreement and Exhibit A are attached. We began working on this unit over 1.5 years ago, and the BLM required the 40 acres in Section 4 be added to the unit because it is considered stranded acreage. The unit has received preliminary approval from the BLM and SLO. Apache owns a substantial working interest in the unit and plans on drilling beginning this year and into next.

Please let me know if you have questions.

Thanks,

LACI LAWRENCE STRETCHER, RPL

direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [<mailto:AREker@concho.com>]
Sent: Monday, July 17, 2017 8:06 AM
To: Stretcher, Laci <Laci.Stretcher@apachecorp.com>
Cc: Dylan Park <DPark@concho.com>
Subject: SWSW of Sec 4, T17S-R30E

Good Morning,

I noticed that the subject tract is up for sale on the BLM sale. The note attached to it said that it was subject to Apache's Thunderbird Development Agreement. Can I get a copy or recording information of said agreement? I don't know that we have a budget to go after this tract, but I have to cover my bases since we are drilling right next door.

I called and tried to leave a message about this matter last week, but haven't heard anything. Just wanted to follow up.

Respectfully,
AR

Adam Reker, RPL
Landman - NM Shelf Operations
Concho Center 1, Office # 702
600 W. Illinois Avenue
Midland, TX 79701
432.685.2515 | areker@concho.com



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From: Stretcher, Laci
Sent: Thursday, November 30, 2017 10:13 AM
To: 'Adam Reker'
Cc: Dollins, Rick
Subject: RE: Thunderbird Unit

Hi Adam,

I spoke with management, and we are not able to change the unit boundaries this late in the game. Apache would need to begin the unitization process from the beginning if we removed the S/2 of Sec. 36 from the unit boundaries. In addition to the time and money spent on title opinions and notifications relevant to the current boundaries, Apache completed a significant transaction that depends on the unit as is. Management is also curious why Concho did not raise this issue when you received the unit boundaries in July of this past year.

I spoke with the BLM about the potential issue, and they do not consider the acreage stranded at this point in time. I keep hoping for some solution, but I do not see any unless Concho wants to change its development to the east so that its own acreage is included in the future development plans.

One thing Concho might consider is the timeline attached to this unit. If Apache does not drill up the S/2 of Sec. 36 in five years, the acreage will be excluded from the unit. This is not like the older units where one well can hold hundreds of acres. The acreage would either be drilled by Apache within the term of the unit or it would be available after unit contraction for development at that time.

If Concho decides not to protest or if you have any other ideas, please let me know; otherwise, APA/COG will present their positions to the NM OCD on December 21st and we will go from there.

Thanks,

LACI LAWRENCE STRETCHER, RPL
direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [mailto:AREker@concho.com]
Sent: Thursday, November 30, 2017 8:20 AM
To: Stretcher, Laci <Laci.Stretcher@apachecorp.com>
Subject: RE: Thunderbird Unit

Any word on you guys thoughts for this? I have had a couple people ask about it.

This is a busy week right after the holiday but hopefully things have calmed down.

Please let me know,
AR

From: Adam Reker
Sent: Monday, November 20, 2017 10:32 AM
To: 'Stretcher, Laci'
Subject: RE: Thunderbird Unit

My personal opinion would be that 2019 or 2020 would be more realistic, but those decisions are not made by me. I would think we would want to expand on our stuff that's north of Cedar Lake and then this would be our step-out well. I

can try to track down someone who could give me a better answer based on budget, plans, ROR estimates, etc... but that's my initial thought.

AR

From: Stretcher, Laci [<mailto:Laci.Stretcher@apachecorp.com>]
Sent: Monday, November 20, 2017 10:02 AM
To: Adam Reker
Subject: [External] RE: Thunderbird Unit

Hi Adam,

One quick follow up question. If we went with the 1.5 milers in 31/36, do you think those wells would make Concho's 2018 plans? I know they would require federal permits, which take forever, but I was curious if your team would consider them for drilling in 2018.

Again, I know this is without manager review, but I was curious.

Thanks,

LACI LAWRENCE STRETCHER, RPL
direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [<mailto:AREker@concho.com>]
Sent: Monday, November 20, 2017 9:52 AM
To: Stretcher, Laci <Laci.Stretcher@apachecorp.com>
Subject: RE: Thunderbird Unit

Sounds great.

Have a good holiday!

AR

From: Stretcher, Laci [<mailto:Laci.Stretcher@apachecorp.com>]
Sent: Monday, November 20, 2017 9:49 AM
To: Adam Reker
Subject: [External] RE: Thunderbird Unit

Thanks for the update Adam. Many of the managers are out this entire week due to the holiday, so will get back to you next week (probably later in the week). Since the hearing has officially been pushed to December 21st, I think we have some time to negotiate.

Happy Thanksgiving,

LACI LAWRENCE STRETCHER, RPL
direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [<mailto:AREker@concho.com>]
Sent: Monday, November 20, 2017 9:39 AM
To: Stretcher, Laci <Laci.Stretcher@apachecorp.com>
Subject: RE: Thunderbird Unit

Good Morning Laci,

I think we would like to pursue option 1 of what you mentioned below. I would have to talk with managers about what kind of timing we would want to drill those wells.. But that seems to be the best option for Concho given the currently staked wells and Concho's acreage position.

To expand on your point about participation in a 1.5 mile well, if we wanted to name Concho operator of the potential wells in Sections 31 and 36... Any owners who are not on board with our 1.5 mile laterals could be pooled. I don't mind negotiating and utilizing the compulsory pooling process if owners do not have capital/want to commit their capital to the well.

Option 3 sounds like a good backup plan... But I know Conoco has that NW/4 of Section 36 so inclusion of all of Section 36 could mean bringing too many players into it. Don't want too many cooks in the kitchen if you ask me... I'd rather keep COG's NE/4 of Section 36 out of it and try to do a separate deal with Conoco at a later date for the NW/4 (I think the wells get riskier the further north we go, so I'd want to develop other things first).

Please let me know if that sounds okay to you guys. I would formally request that you all exclude the S2 of Section 36 from your unit... After that we won't hold you guys up anymore with your hearing in Santa Fe and we can work toward a Plan of Development for Sections 31 and 36. Do not want to have to go to bat over any of this stuff... We just didn't want to hang that ½ mile in Section 31 out to dry.

Thanks and please let me know what you are thinking and we can get managers involved on both of our ends to get something worked out. I assume you will and I for sure need management approval to lock down whatever we decide.

Respectfully,

AR

From: Stretcher, Laci [<mailto:Laci.Stretcher@apachecorp.com>]

Sent: Friday, November 17, 2017 10:07 AM

To: Adam Reker

Subject: [External] RE: Thunderbird Unit

Adam,

Here are some questions to ponder over the weekend, and we can discuss on Monday. These questions are in no way trying to force Concho into anything or tell you what to do (I add this disclaimer because I've offended COG landmen in the past by brainstorming options). Concho is potentially protesting a unit Apache has spent a large amount of time and money forming, so these questions/ideas are an attempt to find a solution rather than spending legal fees in the NM OCD process. We feel like it's fair to throw out options since we were not aware of this Concho development until two weeks before our hearing, and Apache is seeking some sort of resolution.

1. How far into negotiations is Concho on the Term Assignment of the 80 acres? Would you consider keeping the acreage so that we could drill 1.5 mile laterals starting in Sec. 31 and going west into Section 36?

- This idea would depend on Concho's working interest and the ownership of those tracts in 31. I know what the ownership is in S/2 of Section 36, and I think we could get all partners on board for 1.5 mile laterals.

2. Would Concho consider re-configuring the plan of development for the sections listed below? For instance, if COG owns in the SE/4 of Sec. 33, perhaps 2 mile laterals could start on the 31/32 line and then go east or west. Apache would only participate in the 31/36 wells, but this way all of the acreage is developed.

- Have any permits been submitted for these wells? I know you mentioned the pads had been staked, but I was hopeful the permitting had not started yet.

3. Does COG own anything to the north in these sections? We would consider joining a unit proposed by COG or a large JOA similar to Cedar Lake if that was the case.

None of these ideas have been approved by my managers, but I'm attempting to find some options where both companies win. Let me know what you think. I can talk on Monday morning before 10:30 and the afternoon is free from 3-4:30.

Thanks,

LACI LAWRENCE STRETCHER, RPL

direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [<mailto:AREker@concho.com>]
Sent: Friday, November 17, 2017 8:20 AM
To: Stretcher, Laci <Laci.Stretch@apachecorp.com>
Subject: RE: Thunderbird Unit

We have interest in the NE/4 of Section 36 and have 80 acres of the SW/4 of Section 31 (And are term assigning the other 80).

I have a training this morning, but will have access to my email if that helps! If not we can discuss Monday.

From: Stretcher, Laci [<mailto:Laci.Stretch@apachecorp.com>]
Sent: Friday, November 17, 2017 7:52 AM
To: Adam Reker
Subject: [External] RE: Thunderbird Unit

Do you have some time to talk this morning? We would be willing to make something work. Please have your working interest ready for the N/2 of Section 36 so we could talk about some options for that section. Also, do you own in the SW/4 of Section 31?

I'm free after 9 a.m. this morning, so just let me know what works for you.

Thanks,

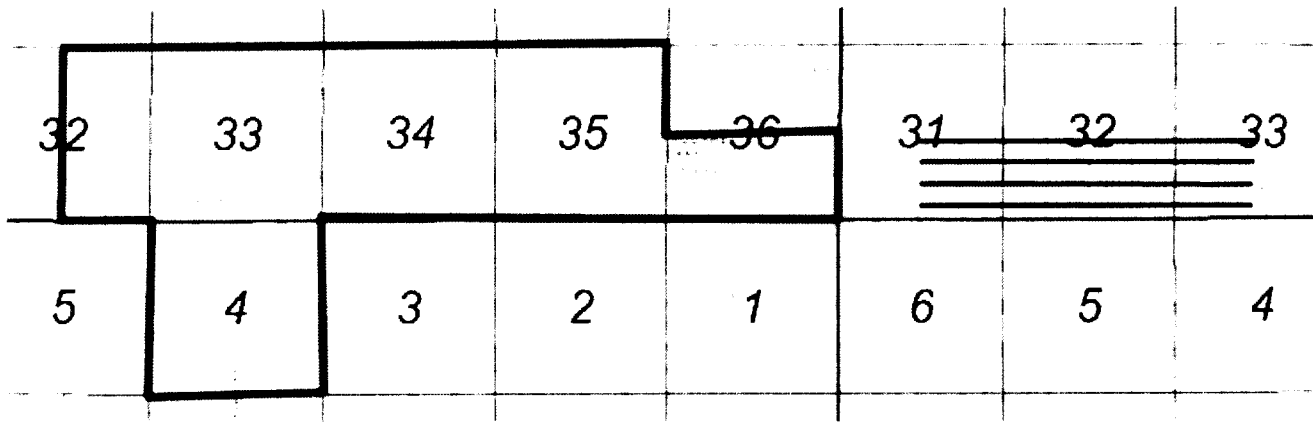
LACI LAWRENCE STRETCHER, RPL

direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [<mailto:AREker@concho.com>]
Sent: Friday, November 17, 2017 7:41 AM
To: Stretcher, Laci <Laci.Stretch@apachecorp.com>
Subject: RE: Thunderbird Unit

There is no proposal of a well currently for the Section 36 acreage. I am not saying that the 320 acres of Section 36 is stranded...But our WI in Section 31 could be if the staked wells to the east are drilled as planned. Additionally, we have acreage in the N2 of Section 36 which we were never approached by you guys to unitize. I didn't know if the unit boundary had a geologic purpose or was done based on you guys lease lines.

This is a very simplified version of one of my concerns (The staked padsites are along a road that runs down the middle of Section 33):



From: Stretcher, Laci [<mailto:Laci.Stretcher@apachecorp.com>]

Sent: Wednesday, November 15, 2017 2:56 PM

To: Adam Reker

Subject: [External] RE: Thunderbird Unit

**** External email. Use caution. ****

Hi Adam,

I need a bit more information before I discuss with management. I'm showing COG owns nothing in the S/2 of Section 36-16S-30E. What sort of proposal would you have for the S/2 of Section 36, and on what basis does Concho consider the 320 acres stranded? The SLO approved our unit boundaries in early 2017, so I know the agency does not consider the acreage stranded.

We are also drilling all legal locations, so no NSLs or anything that gets closer than 330'. The unit boundaries have been approved by the BLM since August 2016, and I believe they have been on the BLM's website since the federal lease sale bulletin (early 2017). I remember sending you the unit information in July, but I have not seen any proposals as you referenced below. What is the plan?

Please send me what you are thinking, and I will meet with management first thing tomorrow to discuss. They are at some manager meeting today, so I will not be able to speak with them until tomorrow.

Thanks,

LACI LAWRENCE STRETCHER, RPL

direct 432-818-1846 | mobile 325-338-7407 |

From: Adam Reker [mailto:AREker@concho.com]

Sent: Wednesday, November 15, 2017 2:29 PM

To: Stretcher, Laci <Laci.Stretcher@apachecorp.com>

Subject: Thunderbird Unit

Good Afternoon Laci,

I am in receipt of a notice for hearing on the Thunderbird Unit. I know you sent the unit boundary our way a while back when it was in the early stages, but I guess you guys are moving quick now!

I was wondering if the S/2 of Section 36 had any geologic basis for being included in the unit or if you guys were following lease lines for that portion? We have some acreage in the area that Sec 36 being put into a unit could severely hinder or even potentially strand.

Would you all consider contracting the unit to exclude Section 36 and working with us on a potential non-unit well there sometime in the future?

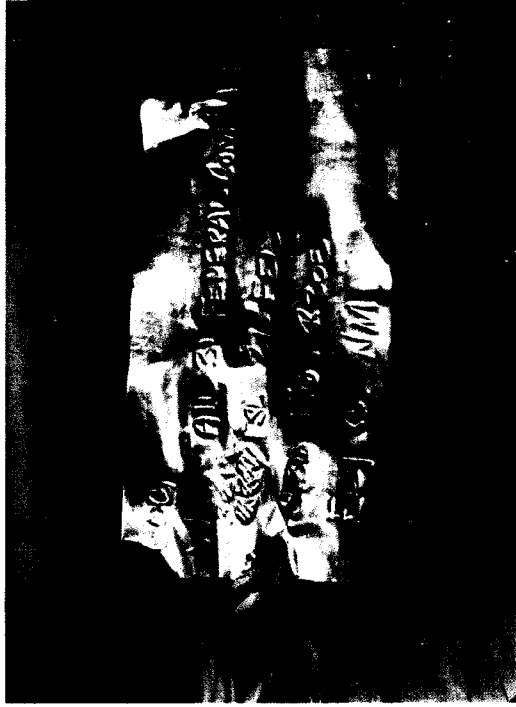
Please let me know,
AR

Adam Reker, RPL
Landman - NM Shelf Operations
Concho Center 1, Office # 702
600 W. Illinois Avenue
Midland, TX 79701
432.685.2515 | areker@concho.com



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COG – Whitetail 36 Federal COM #18H
 321' FSL and 270' FEL
 Section 36-T16S-R30E, NMMPM Eddy County, NM



From: Stretcher, Laci
Sent: Tuesday, January 9, 2018 1:01 PM
To: 'Adam Reker'; 'jchatterton@concho.com'; 'mcarter@concho.com'
Cc: Dollins, Rick
Subject: Apache Proposal on Thunderbird Unit
Attachments: Letter to Concho - Thunderbird Unit Solutions 1.9.2018.pdf;
Thunderbird_Protest_Solutions.pdf

Good afternoon Adam,

Please see the attached letter and map specific to the Thunderbird Unit and Concho's protest. It is my understanding that the hearing date has been moved to next Wednesday, January 17th.

We would appreciate a response once you have some time to review our proposal. I attached the PDF of the map because the colors in the scan are not high quality – a physical version of the packet was mailed today.

Thank you,

LACI LAWRENCE STRETCHER, RPL
LANDMAN

Permian West Region – New Mexico

direct 432-818-1846 | *mobile* 325-338-7407 | *office* Room Number 3116A

APACHE CORPORATION

303 Veterans Airpark Lane, Suite 1000

Midland, TX 79705

U.S.A.

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January 9, 2018

Sent Via Email and Certified Mail 7017-1000-000-8634-7392

COG Operating LLC
Concho Oil and Gas LLC
Attn: Adam Reker
One Concho Center
600 W. Illinois Ave.
Midland, Texas 79701

Re: **Thunderbird Unit Protest Solutions**
Township 16 South, Range 30 East
Sections: All of 33, 34, 35, E/2 of 32, and S/2 of 36
Township 17 South, Range 30 East
Sections: All of 4
Eddy County, New Mexico

Dear Mr. Reker:

Apache's attorney advised us yesterday that Concho will most likely protest the Thunderbird Unit proposed by Apache in Eddy County, New Mexico, at the hearing before the New Mexico Oil Conservation Division. Our previous email correspondence indicated Concho was concerned about its acreage in the SW/4 of Section 31-16S-31E, specifically that it might become stranded if Apache drills unit wells to the west and if Concho drills its own wells to the east. Concho requested that Apache remove the S/2 of Section 36-16S-30E from the Thunderbird Unit so that 1.5 mile wells could be drilled from the SW/4 of Section 31-16S-31E across the S/2 of Section 36-16S-30E.

Apache provided notice to Concho in July of 2017, and no protest or concerns were provided at that time; consequently, Apache continued with its unitization efforts that have resulted in a significant amount of time and money in preparation for unit development as required by the BLM.

If Apache was forced to change the unit boundaries, the entire process of approval with the BLM, SLO, working interest owners, record title owners, and overriding royalty interest owners would begin again. It would take Apache an estimated two years to regain approval from all necessary parties; as a result, this would greatly impact our plan of development for the five sections in the unit. Apache received approval from every required party as of today's date for unitization except the NM OCD, and we are preparing for a robust 2018-2019 drilling program.

Apache agrees that efforts should be made in order to protect correlative rights and prevent waste, and with that sentiment, we offer the following solution that would allow for dual development by Apache and Concho in this area of Eddy County.

Concho staked several wells in the S/2 of Section 36-16S-30E in early 2017 called the Whitetail Federal, presumably to build off-lease locations and drill east into Concho's leasehold acreage in Section 31-16S-31E. Apache will grant Concho a subsurface easement in Section 36-16S-30E so that Concho can move forward with its original development plan for Section 31-16S-31E, as well as keeping its previously staked locations in Section 33-16S-31E.

A map is attached to this letter that shows the potential 1 mile or 1.5 mile lateral locations in the subject sections. These lateral lengths are on trend with the one mile Yeso wells drilled by Apache and Concho in the area. The SLO as the surface owner would be a required party to this solution, but we are hopeful that approval would be granted given that both parties wish to develop their acreage in the area.

Apache believes this solution allows for the development of Concho's acreage and Apache's Thunderbird Unit, which would be a boon to the BLM, NM OCD, SLO, and various interest owners. Apache believes this solution will also avoid the additional litigation costs which may ensue as each party advocates for its interests. We value our relationship with Concho and the successful ventures that occurred in the past (Cedar Lake CA, various trades, etc.), and Apache is hopeful that we can find a mutually beneficial solution.

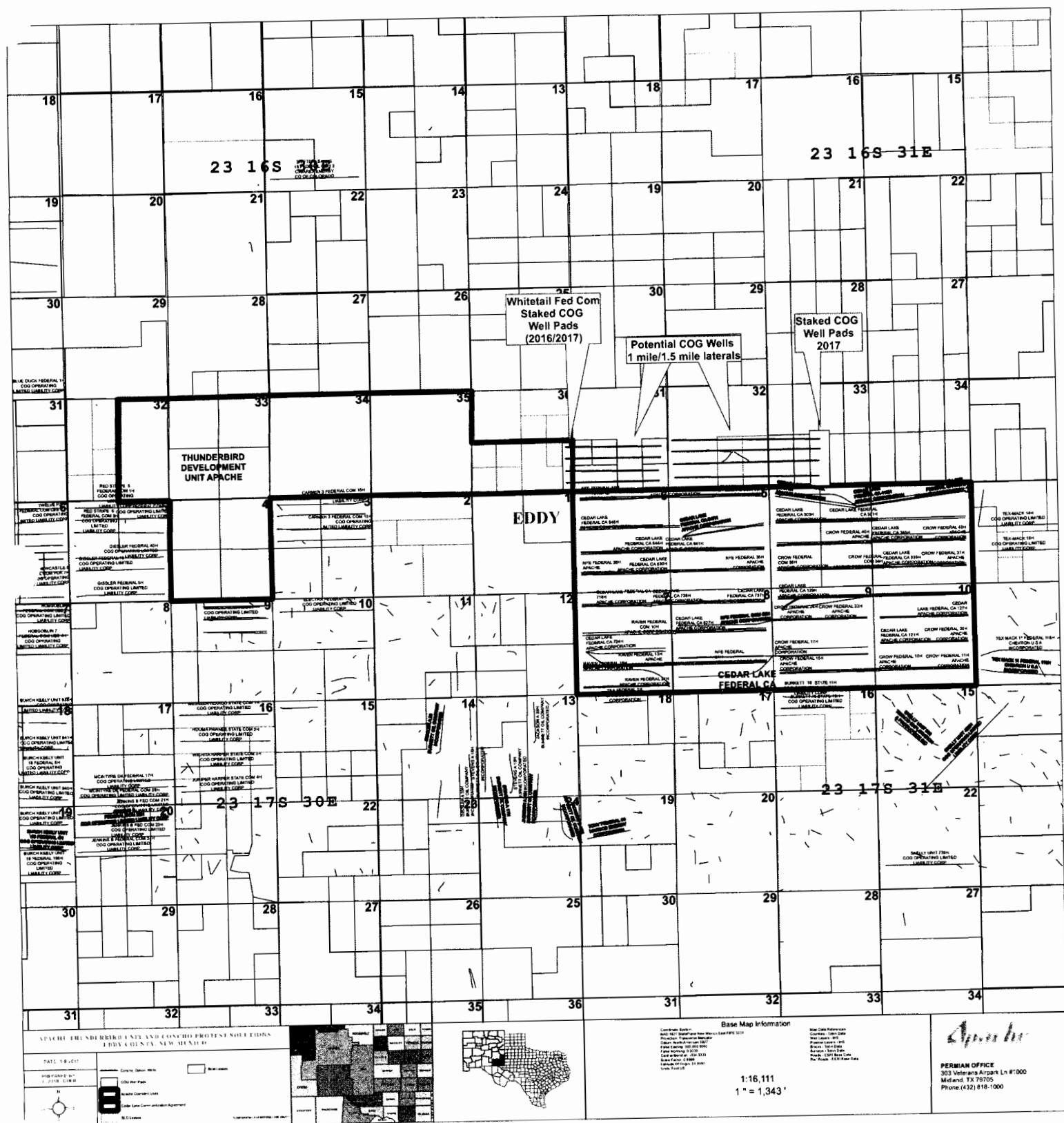
If this solution would work for Concho, please let me know so we can discuss details. If you have any additional ideas that have not been discussed, please let me know.

Sincerely,

APACHE CORPORATION



Laci Stretcher
Landman
432-818-1846



From: Stretcher, Laci
Sent: Friday, January 12, 2018 1:42 PM
To: Adam Reker
Cc: jchatterton@concho.com; Dollins, Rick; mcarter@concho.com
Subject: Fw: Subsurface Easement

Adam,

I wanted to pass along one more consideration for your analysis of my letter earlier this week. The E/2SE/4 of Section 36-16S-30E is owned by Apache, Chisos, and Black Shale. Chisos's interest was farmed out to Apache last year, so Apache and Black Shale would be required for any subsurface easements.

Please see the email below where Black Shale confirms that they will join Apache in the subsurface easement if Concho does not protest the Thunderbird Unit.

If you have any questions, please let me know.

Thank you,

Laci

From: Andy Scott <ascott@buffcoproduction.com>
Sent: Friday, January 12, 2018 12:04 PM
To: Stretcher, Laci
Subject: RE: Subsurface Easement

Black Shale Minerals agrees to join with Apache in granting Concho a subsurface easement for the E/2 SE/4 of 36-16S-30E in exchange for Concho dropping its protest of the Thunderbird Unit.

Thank you,

Andy Scott
Vice President - Land
Buffco Production, Inc.

Office: 903-988-8199 Ext 229
ascott@buffcoproduction.com

BUFFCO
PRODUCTION, INC.

From: Stretcher, Laci [mailto:Laci.Stretcher@apachecorp.com]
Sent: Friday, January 12, 2018 11:11 AM
To: Andy Scott <ascott@buffcoproduction.com>
Subject: Subsurface Easement

Good morning Andy,

As per our conversation, there is a potential conflict with Concho and the Thunderbird Unit boundaries. Apache would like to resolve the issue by granting Concho a subsurface easement in the S/2 of Sec. 36-16S-30E (specifically the E/2SE/4). This would allow Concho to capture its leasehold interest in Section 31-16S-31E. I've attached a map indicating the particular issue and our proposed solution.

Will Black Shale Minerals join Apache in granting Concho a subsurface easement for the E/2SE/4 of Sec. 36-16S-30E in the event Concho drops its protest of the Thunderbird Unit?

Thank you,

LACI LAWRENCE STRETCHER, RPL

LANDMAN

Permian West Region – New Mexico

direct 432-818-1846 | *mobile* 325-338-7407 | *office* Room Number 3116A

APACHE CORPORATION

303 Veterans Airpark Lane, Suite 1000

Midland, TX 79705

U.S.A.

ApacheCorp.com | [LinkedIn](#) | [Facebook](#) | [Twitter](#) | [StockTwits](#) | [YouTube](#)

**MODEL FORM RECORDING SUPPLEMENT TO
OPERATING AGREEMENT AND FINANCING STATEMENT**

THIS AGREEMENT, entered into by and between Apache Corporation, hereinafter referred to as "Operator," and the signatory party or parties other than Operator, hereinafter referred to individually as "Non-Operator," and collectively as "Non-Operators."

WHEREAS, the parties to this agreement are owners of Oil and Gas Leases and/or Oil and Gas Interests in the land identified in Exhibit "A" (said land, Leases and Interests being hereinafter called the "Contract Area"), and in any instance in which the Leases or Interests of a party are not of record, the record owner and the party hereto that owns the interest or rights therein are reflected on Exhibit "A";

WHEREAS, the parties hereto have executed an Operating Agreement dated October 1, 2017 (herein the "Operating Agreement"), covering the Contract Area for the purpose of exploring and developing such lands, Leases and Interests for Oil and Gas; and

WHEREAS, the parties hereto have executed this agreement for the purpose of imparting notice to all persons of the rights and obligations of the parties under the Operating Agreement and for the further purpose of perfecting those rights capable of perfection.

NOW, THEREFORE, in consideration of the mutual rights and obligations of the parties hereto, it is agreed as follows:

1. This agreement supplements the Operating Agreement, which Agreement in its entirety is incorporated herein by reference, and all terms used herein shall have the meaning ascribed to them in the Operating Agreement.
2. The parties do hereby agree that:
 - A. The Oil and Gas Leases and/or Oil and Gas Interests of the parties comprising the Contract Area shall be subject to and burdened with the terms and provisions of this agreement and the Operating Agreement, and the parties do hereby commit such Leases and Interests to the performance thereof.
 - B. The exploration and development of the Contract Area for Oil and Gas shall be governed by the terms and provisions of the Operating Agreement, as supplemented by this agreement.
 - C. All costs and liabilities incurred in operations under this agreement and the Operating Agreement shall be borne and paid, and all equipment and materials acquired in operations on the Contract Area shall be owned, by the parties hereto, as provided in the Operating Agreement.
 - D. Regardless of the record title ownership to the Oil and Gas Leases and/or Oil and Gas Interests identified on Exhibit "A," all production of Oil and Gas from the Contract Area shall be owned by the parties as provided in the Operating Agreement; provided nothing contained in this agreement shall be deemed an assignment or cross-assignment of interests covered hereby.
 - E. Each party shall pay or deliver, or cause to be paid or delivered, all burdens on its share of the production from the Contract Area as provided in the Operating Agreement.
 - F. An overriding royalty, production payment, net profits interest or other burden payable out of production hereafter created, assignments of production given as security for the payment of money and those overriding royalties, production payments and other burdens

Case No.
15874

Apache
Exhibit 12

payable out of production heretofore created and defined as Subsequently Created Interests in the Operating Agreement shall be (i) borne solely by the party whose interest is burdened therewith, (ii) subject to suspension if a party is required to assign or relinquish to another party an interest which is subject to such burden, and (iii) subject to the lien and security interest hereinafter provided if the party subject to such burden fails to pay its share of expenses chargeable hereunder and under the Operating Agreement, all upon the terms and provisions and in the times and manner provided by the Operating Agreement.

- G. The Oil and Gas Leases and/or Oil and Gas Interests which are subject hereto may not be assigned or transferred except in accordance with those terms, provisions and restrictions in the Operating Agreement regulating such transfers.

This agreement and the Operating Agreement shall be binding upon and shall inure to the benefit of the parties hereto, and their respective heirs, devisees, legal representatives, and assigns, and the terms hereof shall be deemed to run with the leases or interests included within the lease Contract Area.

- H. The parties shall have the right to acquire an interest in renewal, extension and replacement leases, leases proposed to be surrendered, wells proposed to be abandoned, and interests to be relinquished as a result of non-participation in subsequent operations, all in accordance with the terms and provisions of the Operating Agreement.
- I. The rights and obligations of the parties and the adjustment of interests among them in the event of a failure or loss of title, each party's right to propose operations, obligations with respect to participation in operations on the Contract Area and the consequences of a failure to participate in operations, the rights and obligations of the parties regarding the marketing of production, and the rights and remedies of the parties for failure to comply with financial obligations shall be as provided in the Operating Agreement.
- J. Each party's interest under this agreement and under the Operating Agreement shall be subject to relinquishment for its failure to participate in subsequent operations and each party's share of production and costs shall be reallocated on the basis of such relinquishment, all upon the terms and provisions provided in the Operating Agreement.
- K. All other matters with respect to exploration and development of the Contract Area and the ownership and transfer of the Oil and Gas Leases and/or Oil and Gas Interest therein shall be governed by the terms and provisions of the Operating Agreement.

3. The parties hereby grant reciprocal liens and security interests as follows:

- A. Each party grants to the other parties hereto a lien upon any interest it now owns or hereafter acquires in Oil and Gas Leases and Oil and Gas Interests in the Contract Area, and a security interest and/or purchase money security interest in any interest it now owns or hereafter acquires in the personal property and fixtures on or used or obtained for use in connection therewith, to secure performance of all of its obligations under this agreement and the Operating Agreement including but not limited to payment of expense, interest and fees, the proper disbursement of all monies paid under this agreement and the Operating Agreement, the assignment or relinquishment of interest in Oil and Gas Leases as required under this agreement and the Operating Agreement, and the proper performance of operations under this agreement and the Operating Agreement. Such lien and security interest granted by each party hereto shall include such party's leasehold interests, working interests, operating rights, and royalty and overriding royalty interests in the Contract Area now owned or hereafter acquired and in lands pooled or unitized therewith or otherwise becoming subject to this agreement and the Operating Agreement, the Oil and Gas when extracted therefrom and equipment situated thereon or used or obtained for use in connection therewith (including, without limitation, all wells, tools, and tubular goods), and accounts (including, without limitation, accounts arising from the sale of production at the wellhead), contract rights, inventory and general intangibles relating thereto or arising therefrom, and all proceeds and products of the foregoing.
- B. Each party represents and warrants to the other parties hereto that the lien and security interest granted by such party to the other parties shall be a first and prior lien, and each party hereby agrees to maintain the priority of said lien and security interest against all

persons acquiring an interest in Oil and Gas Leases and Interests covered by this agreement and the Operating Agreement by, through or under such party. All parties acquiring an interest in Oil and Gas Leases and Oil and Gas Interests covered by this agreement and the Operating Agreement, whether by assignment, merger, mortgage, operation of law, or otherwise, shall be deemed to have taken subject to the lien and security interest granted by the Operating Agreement and this instrument as to all obligations attributable to such interest under this agreement and the Operating Agreement whether or not such obligations arise before or after such interest is acquired.

- C. To the extent that the parties have a security interest under the Uniform Commercial Code of the state in which the Contract Area is situated, they shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by a party for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the lien rights or security interest as security for the payment thereof. In addition, upon default by any party in the payment of its share of expenses, interest or fees, or upon the improper use of funds by the Operator, the other parties shall have the right, without prejudice to other rights or remedies, to collect from the purchaser the proceeds from the sale of such defaulting party's share of Oil and Gas until the amount owed by such party, plus interest, has been received, and shall have the right to offset the amount owed against the proceeds from the sale of such defaulting party's share of Oil and Gas. All purchasers of production may rely on a notification of default from the non-defaulting party or parties stating the amount due as a result of the default, and all parties waive any recourse available against purchasers for releasing production proceeds as provided in this paragraph.
- D. If any party fails to pay its share of expenses within one hundred-twenty (120) days after rendition of a statement therefor by Operator the non-defaulting parties, including Operator, shall, upon request by Operator, pay the unpaid amount in the proportion that the interest of each such party bears to the interest of all such parties. The amount paid by each party so paying its share of the unpaid amount shall be secured by the liens and security rights described in this paragraph 3 and in the Operating Agreement, and each paying party may independently pursue any remedy available under the Operating Agreement or otherwise.
- E. If any party does not perform all of its obligations under this agreement or the Operating Agreement, and the failure to perform subjects such party to foreclosure or execution proceedings pursuant to the provisions of this agreement or the Operating Agreement, to the extent allowed by governing law, the defaulting party waives any available right of redemption from and after the date of judgment, any required valuation or appraisal of the mortgaged or secured property prior to sale, any available right to stay execution or to require a marshalling of assets and any required bond in the event a receiver is appointed. In addition, to the extent permitted by applicable law, each party hereby grants to the other parties a power of sale as to any property that is subject to the lien and security rights granted hereunder or under the Operating Agreement, such power to be exercised in the manner provided by applicable law or otherwise in a commercially reasonable manner and upon reasonable notice.
- F. The lien and security interest granted in this paragraph 3 supplements identical rights granted under the Operating Agreement.
- G. To the extent permitted by applicable law, Non-Operators agree that Operator may invoke or utilize the mechanics' or materialmen's lien law of the state in which the Contract Area is situated in order to secure the payment to Operator of any sum due under this agreement and the Operating Agreement for services performed or materials supplied by Operator.
- H. The above described security will be financed at the wellhead of the well or wells located on the Contract Area and this Recording Supplement may be filed in the land records in the County or Parish in which the Contract Area is located, and as a financing statement in all recording offices required under the Uniform Commercial Code or other applicable state statutes to perfect the above-described security interest, and any party hereto may file a continuation statement as necessary under the Uniform Commercial Code, or other state laws.

4. This agreement shall be effective as of the date of the Operating Agreement as above recited. Upon termination of this agreement and the Operating Agreement and the satisfaction of all obligations thereunder, Operator is authorized to file of record in all necessary recording offices a notice of termination, and each party hereto agrees to execute such a notice of termination as to Operator's interest, upon the request of Operator, if Operator has complied with all of its financial obligations.
5. This agreement and the Operating Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors and assigns. No sale, encumbrance, transfer or other disposition shall be made by any party of any interest in the Leases or Interests subject hereto except as expressly permitted under the Operating Agreement and, if permitted, shall be made expressly subject to this agreement and the Operating Agreement and without prejudice to the rights of the other parties. If the transfer is permitted, the assignee of an ownership interest in any Oil and Gas Lease shall be deemed a party to this agreement and the Operating Agreement as to the interest assigned from and after the effective date of the transfer of ownership; provided, however, that the other parties shall not be required to recognize any such sale, encumbrance, transfer or other disposition for any purpose hereunder until thirty (30) days after they have received a copy of the instrument of transfer or other satisfactory evidence thereof in writing from the transferor or transferee. No assignment or other disposition of interest by a party shall relieve such party of obligations previously incurred by such party under this agreement or the Operating Agreement with respect to the interest transferred, including without limitation the obligation of a party to pay all costs attributable to an operation conducted under this agreement and the Operating Agreement in which such party has agreed to participate prior to making such assignment, and the lien and security interest granted by Article VII.B. of the Operating Agreement and hereby shall continue to burden the interest transferred to secure payment of any such obligations.
6. In the event of a conflict between the terms and provisions of this agreement and the terms and provisions of the Operating Agreement, then, as between the parties, the terms and provisions of the Operating Agreement shall control.
7. This agreement shall be binding upon each Non-Operator when this agreement or a counterpart thereof has been executed by such Non-Operator and Operator notwithstanding that this agreement is not then or thereafter executed by all of the parties to which it is tendered or which are listed on Exhibit "A" as owning an interest in the Contract Area or which own, in fact, an interest in the Contract Area. In the event that any provision herein is illegal or unenforceable, the remaining provisions shall not be affected, and shall be enforced as if the illegal or unenforceable provision did not appear herein.

~~8. Other provisions.~~

Apache Corporation, who has prepared and circulated this form for execution, represents and warrants that the form was printed from and, with the exception(s) listed below, is identical to the AAPL Form 610RS-1989 Model Form Recording Supplement to Operating Agreement and Financing Statement, as published in computerized form by Forms On-A-Disk, Inc. No changes, alterations, or modifications, other than those made by strikethrough and/or insertion and that are clearly recognizable as changes in Articles __, have been made to the form.

IN WITNESS WHEREOF, this agreement shall be effective as of (date) **October 1, 2017**
_____.

OPERATOR

ATTEST OR WITNESS

By: Apache Corporation
Amy D. Lindsey *ed*
Type or Print Name
Title: Attorney-in-Fact
Date: _____
Address: 303 Veterans Airpark Ln., Midland,
TX 79707

NON-OPERATORS

ATTEST OR WITNESS

By: Black Shale Minerals, LLC
Type or Print Name
Title: _____
Date: _____
Address: _____

ATTEST OR WITNESS

By: Oxy USA WTP, Limited Partnership
Type or Print Name
Title: _____
Date: _____
Address: _____

ATTEST OR WITNESS

By: _____
Type or Print Name
Title: _____
Date: _____
Address: _____

Apache Corporation, who has prepared and circulated this form for execution, represents and warrants that the form was printed from and, with the exception(s) listed below, is identical to the AAPL Form 610RS-1989 Model Form Recording Supplement to Operating Agreement and Financing Statement, as published in computerized form by Forms On-A-Disk, Inc. No changes, alterations, or modifications, other than those made by strikethrough and/or insertion and that are clearly recognizable as changes in Articles __, have been made to the form.

IN WITNESS WHEREOF, this agreement shall be effective as of (date) **October 1, 2017**
 _____.

OPERATOR

ATTEST OR WITNESS

 By: Apache Corporation

 Title: Amy D. Lindsey

 Date: _____

 Address: 303 Veterans Airpark Ln., Midland, TX 79707

NON-OPERATORS

ATTEST OR WITNESS

 By: Black Shale Minerals, LLC

 Title: MAN

 Date: 10/26/2017

 Address: P.O. Box 2243, Longview, TX 75606

ATTEST OR WITNESS

 By: Oxy USA WTP, LP

 Title: _____

 Date: _____

 Address: _____

ATTEST OR WITNESS

 By: _____

 Title: _____

 Date: _____

 Address: _____

Apache Corporation, who has prepared and circulated this form for execution, represents and warrants that the form was printed from and, with the exception(s) listed below, is identical to the AAPL Form 610RS-1989 Model Form Recording Supplement to Operating Agreement and Financing Statement, as published in computerized form by Forms On-A-Disk, Inc. No changes, alterations, or modifications, other than those made by strikethrough and/or insertion and that are clearly recognizable as changes in Articles __, have been made to the form.

IN WITNESS WHEREOF, this agreement shall be effective as of (date) **October 1, 2017**
_____.

OPERATOR

ATTEST OR WITNESS

By: Apache Corporation

By: Amy D. Lindsey

Type or Print Name
Title: Attorney-in-Fact

Date: _____

Address: 303 Veterans Airpark Ln., Midland,
TX 79707

NON-OPERATORS

ATTEST OR WITNESS

By: Black Shale Minerals, LLC

Type or Print Name
Title: _____

Date: _____

Address: _____

ATTEST OR WITNESS

By: Oxy USA WTP, Limited Partnership

By: Bradley S. Dusek

Type or Print Name
Title: Attorney-in-fact

Date: 11/15/17

Address: _____

ATTEST OR WITNESS

By: _____

Type or Print Name
Title: _____

Date: _____

Address: _____

ACKNOWLEDGMENTS

NOTE:

The following forms of acknowledgment are the short forms approved by the Uniform Law on Notarial Acts. The validity and effect of these forms in any state will depend upon the statutes of that state.

State of _____ §

_____ § ss.

County of _____ §

This instrument was acknowledged before me on _____

by _____

(Seal, if any) _____

_____ Title (and Rank) _____

_____ My commission expires: _____

State of Texas §

§ ss.

County of Midland §

This instrument was acknowledged before me on October 19, 2017

by Amy D. Lindsey as Attorney-in-Fact _____ of

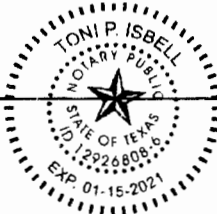
Apache Corporation

(Seal, if any)

[Signature]

_____ Title (and Rank) _____

_____ My commission expires: 01-15-2021

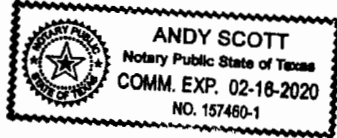


State of Texas §
§ ss.

County of Gregg §

This instrument was acknowledged before me on October 26, 2017
by Frank Butkin, III as Manager of
Black Shale Minerals, LLC

(Seal, if any)



[Signature]
Title (and Rank) _____

My commission expires: 2-16-2020

State of _____ §
§ ss.

County of _____ §

This instrument was acknowledged before me on _____
by _____ as _____ of
Oxy USA WTP, LP

(Seal, if any)

Title (and Rank) _____

My commission expires: _____

State of _____ §
§ ss.
County of _____ §

This instrument was acknowledged before me on _____

by _____ as _____ of

Black Shale Minerals, LLC

(Seal, if any)

Title (and Rank)

My commission expires: _____

State of Texas §
§ ss.
County of Harris §

This instrument was acknowledged before me on this the 15th day of November, 2017,

by Bradley S. Dusek as Attorney-in-Fact of

Occidental Permian Manager LLC, a Delaware limited liability company,
ON behalf of Oxy USA WTP Limited Partnership, a Delaware limited partnership,

[Signature]
Title (and Rank) Notary Public

My commission expires: 4/7/19

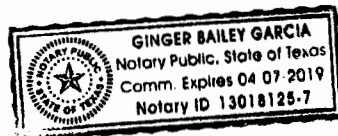


Exhibit "A"

Attached to and made a part of that certain State/Federal Resource Development Unit Operating Agreement for the Development and Operation of the Thunderbird Development Unit Area effective October 1, 2017, by and between Apache Corporation, as Operator, and Black Shale Minerals, LLC, et al, as Non-Operators.

I. Contract Area/Depth Restrictions

Township 16 South, Range 30 East, N.M.P.M.

Section 32: E/2 Section 35: All
Section 33: All Section 36: S/2
Section 34: All

Township 17 South, Range 30 East, N.M.P.M.

Section 4: All
Eddy County, New Mexico

All oil and gas from the stratigraphic equivalent of the top of the Yeso formation encountered at a measured depth of 4,233 feet down to the stratigraphic equivalent of the top of the Tubb formation at a measured depth of 5,554 feet as encountered in the Aspen Federal Com #1 well in Section 31, Township 16 South, Range 30 East, N.M.P.M. (API #30-015-31656), Eddy County, New Mexico, containing 3,198.44 acres, more or less.

II. Percentage of Interest of the Parties to the Agreement

Working Interest

Apache Corporation Attention: Region Land Manager 303 Veterans Airpark Lane Midland, Texas 79705 Phone: 432-818-1000 FAX: 432-818-1197 Email: laci.stretcher@apachecorp.com	86.718372%
Black Shale Minerals, LLC Attention: Andy Scott P.O. Box 2243 Longview, Texas 75606 Phone: 903-988-8199 FAX: 903-988-8608 Email: ascott@buffcoproduction.com	12.031025%
OXY USA WTP, Limited Partnership Attention: Permian Land Manager 5 Greenway Plaza Suite 110 Houston, Texas 77046 Phone: 713-215-7000 FAX: 713-985-8896 Email: india_isbell@oxy.com	1.250610%
Total Working Interest	100%

III. Oil and Gas Leases and Interests Subject to the Agreement

Serial Number: NMLC-060325
Lessor: The United States of America
Lessee: M.W. Evans
Date: December 31, 1938
Recorded: N/A
Description: Insofar and only insofar as the lease covers:
Township 16 South, Range 30 East
Section 33: NW/4, SE/4

Township 17 South, Range 30 East
Section 4: Lots 3, 4, S/2NW/4, SE/4
Royalty: 1/8

Exhibit "A"

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Serial Number:	NMNM-02425
Lessor:	The United States of America
Lessee:	M.W. Evans
Date:	December 1, 1938
Recorded:	N/A
Description:	Insofar and only insofar as the lease covers: <u>Township 16 South, Range 30 East</u> Section 33: NE/4, SW/4
Royalty:	<u>Township 17 South, Range 30 East</u> Section 4: Lots 1, 2, S/2NE/4, N/2SW/4, SE/4SW/4 1/8
Serial Number:	NMNM-02427
Lessor:	The United States of America
Lessee:	George Eitz
Date:	December 31, 1938
Recorded:	NA
Description:	Insofar and only insofar as the lease covers: <u>Township 16 South, Range 30 East</u> Section 34: All
Royalty:	1/8 – 8/25 (Sliding Scale)
Serial Number:	NMLC-063926
Lessor:	The United States of America
Lessee:	Ada Nye Eitz
Date:	January 1, 1940
Recorded:	NA
Description:	Insofar and only insofar as the lease covers: <u>Township 16 South, Range 30 East</u> Section 35: All
Royalty:	1/8 – 8/25 (Sliding Scale)
Serial Number:	ST NM B-2175-10
Lessor:	State of New Mexico
Lessee:	Harry Leonard
Date:	October 10, 1933
Recorded:	NA
Description:	Insofar and only insofar as the lease covers: <u>Township 16 South, Range 30 East</u> Section 32: E/2
Royalty:	1/8
Serial Number:	ST NM B-6672-06
Lessor:	State of New Mexico
Lessee:	Cary P. Butcher
Date:	September 10, 1936
Recorded:	NA
Description:	Insofar and only insofar as the lease covers: <u>Township 16 South, Range 30 East</u> Section 36: NW/4SW/4, W/2SE/4, SE/4SE/4
Royalty:	1/8
Serial Number:	ST NM B-3006-24
Lessor:	State of New Mexico
Lessee:	Mae B. Carlson-Johansen
Date:	June 11, 1934
Recorded:	NA
Description:	Insofar and only insofar as the lease covers: <u>Township 16 South, Range 30 East</u> Section 36: NE/4SW/4, NE/4SE/4

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Royalty: 1/8

Serial Number: ST NM V-733
Lessor: State of New Mexico
Lessee: J. Cleo Thompson & James Cleo Thompson, Jr.
Date: June 1, 1983
Recorded: NA
Description: Insofar and only insofar as the lease covers:
Township 16 South, Range 30 East
Section 36: SE/4SW/4

Royalty: 1/6

Serial Number: ST NM B-8569-12
Lessor: State of New Mexico
Lessee: Harry B. Tellyer
Date: March 11, 1940
Recorded: NA
Description: Insofar and only insofar as the lease covers:
Township 16 South, Range 30 East
Section 36: SW/4SW/4

Royalty: 1/8

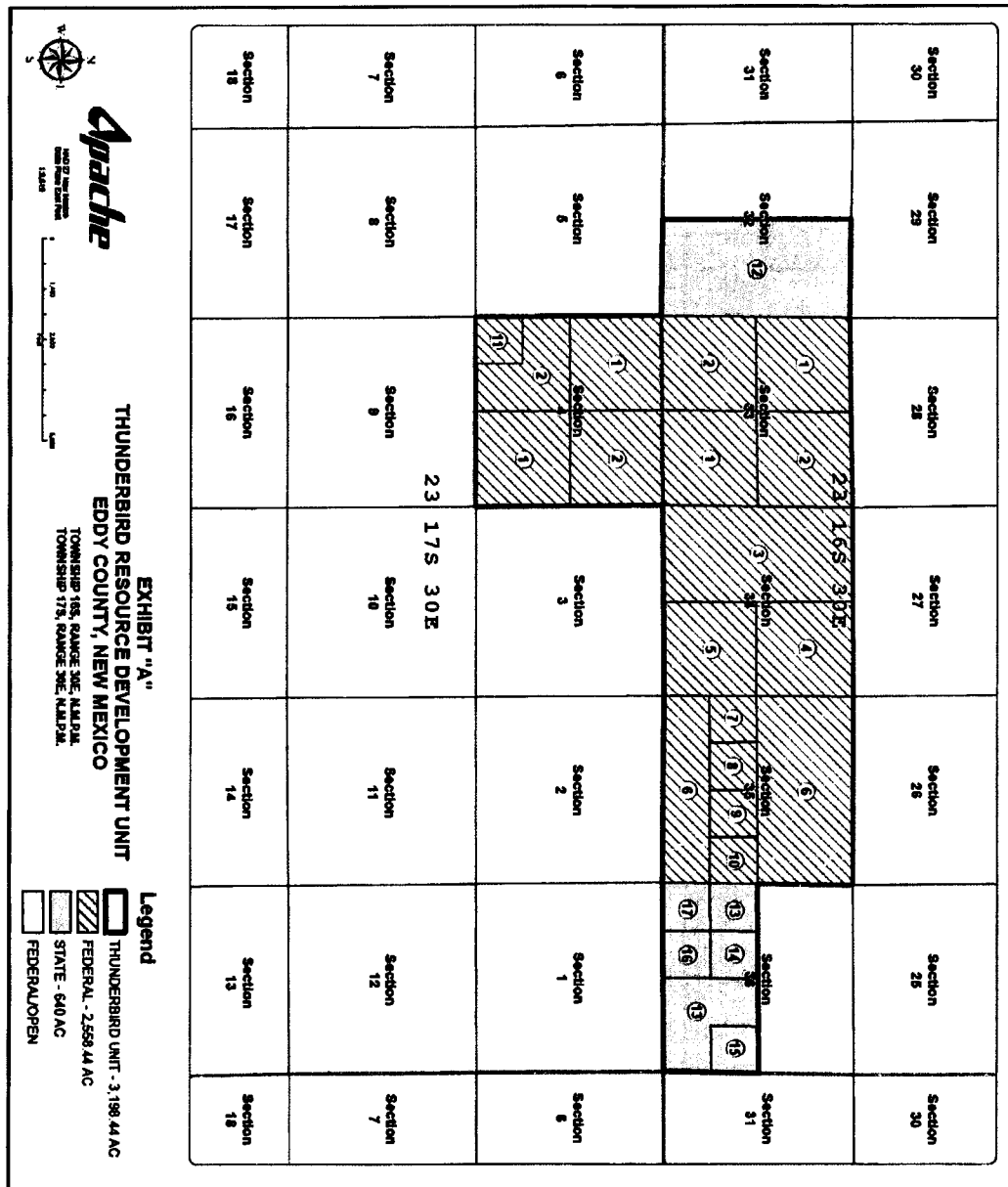
Serial Number: NM-137453
Lessor: The United States of America
Lessee: Apache Corporation
Date: Pending
Recorded: NA
Description: Insofar and only insofar as the lease covers:
Township 17 South, Range 30 East
Section 4: SW/4SW/4

Royalty: 1/8

- IV. **Burdens on Production**
Burdens of record as of the effective date of this Agreement
- V. **Map of Unit (see following page)**

Exhibit "A"

Attached to and made a part of that certain State/Federal Resource Development Unit Operating Agreement for the Development and Operation of the Thunderbird Development Unit Area effective October 1, 2017, by and between Apache Corporation, as Operator, and Black Shale Minerals, LLC, et al, as Non-Operators.



* End of Exhibit A *

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 13 day of April, 2017.

Albuquerque Lodge No. 461

By: Larry Johnston

Title: Exalted Ruler

STATE OF NEW MEXICO §

§

COUNTY OF BERNALILLO §

BEFORE ME, the undersigned authority, on this day personally appeared LARRY JOHNSTON, as EXALTED RULER for the Albuquerque Lodge No. 461, a NEW MEXICO (state) 501-C (type of organization), known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 13TH day of APRIL, 2017.

Vicki L. Hilliard
Notary Public, State of NEW MEXICO



OFFICIAL SEAL
VICKI L. HILLIARD
NOTARY PUBLIC - STATE OF NEW MEXICO
My commission expires: 7-18-17

VICKI L. HILLIARD
Notary's Name (Typed, Stamped or Printed)

Case No. 15874

Done

Exhibit 13


**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 17th day of January, ~~2016~~ ²⁰¹⁷



By: Ann R. Allen

STATE OF New Mexico §
§
COUNTY OF Chaves §

This instrument was acknowledged before me on January 17, 2017 by Ann R. Allen.

My Commission Expires:

08-24-2017


Notary Public in and for said
County and State

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 1st day of June, 2017.

Braille Institute of America, Inc.

By:

Title: Anthony J. Taketa
Corporate Secretary

STATE OF _____ §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, as _____ for Braille Institute of America, Inc., a _____ (state) corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ____ day of _____, 2017.

Notary Public, State of Texas

Notary's Name (Typed, Stamped or Printed)

7/ case see
attached
certifi conte.
Jm

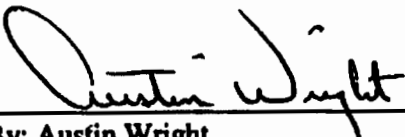
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OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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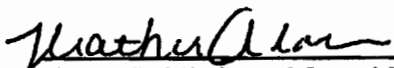
EXECUTED this 4 day of JAN., ~~2016~~ 2017. *AW*


By: Austin Wright

STATE OF Kentucky §
 §
COUNTY OF Christian §

This instrument was acknowledged before me on January 4, 2017 by Austin Wright.

My Commission Expires:


Notary Public in and for said
County and State

HEATHER ADAMS
Notary Public - State at Large
Kentucky
My Commission Expires Oct. 8, 2018
Notary ID 641288

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 11th day of January, 2017.

Black Shale Minerals, LLC

By: Jason Moore

Title: Manager

STATE OF Texas §
§
COUNTY OF Gregg §

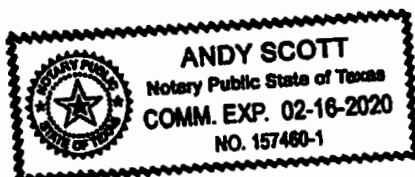
BEFORE ME, the undersigned authority, on this day personally appeared JASON MOORE, as Manager for Black Shale Minerals, LLC, a Tx (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 12th day of January 2017.

Notary Public, State of TEXAS

Andy Scott

Notary's Name (Typed, Stamped or Printed)



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 2 day of May, 2017.


By: Bradley Carson Miles

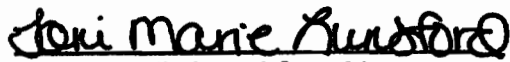
STATE OF Texas §
 §
COUNTY OF Tom Green §

This instrument was acknowledged before me on May 2, 2017 by Bradley Carson Miles.

My Commission Expires:

01-25-2018




Notary Public in and for said
County and State


**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 30 day of March, 2017.


By: Bradley Carson Miles

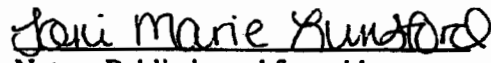
STATE OF Texas §
 §
COUNTY OF Tom Green §

This instrument was acknowledged before me on March 30, 2017 by Bradley Carson Miles.

My Commission Expires:

01-25-2018




Notary Public in and for said
County and State

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 19 day of April, 2017.

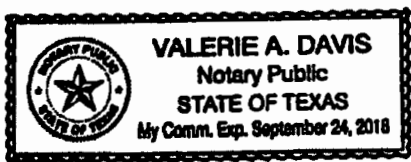
Carl A. Robinson Production, Ltd.

By: [Signature]
Title: President / Sec

STATE OF Texas §
COUNTY OF Dallas §

BEFORE ME, the undersigned authority, on this day personally appeared Junda Berry, as President/Secretary for Carl A. Robinson Production, Ltd. a _____ (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 19 day of April, 2017.



Valerie A. Darr
Notary Public, State of Texas

Valerie A. Davis
Notary's Name (Typed, Stamped or Printed)

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 19 day of MAY, 2017.

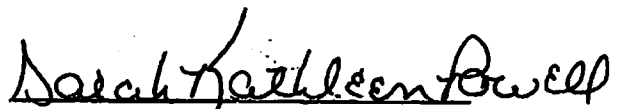

By: Charles Mulcock

STATE OF New Mexico §
§
COUNTY OF Otero §

This instrument was acknowledged before me on May 19, 2017 by Charles Mulcock.

My Commission Expires:

May 19, 2018


Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 28th day of March, 2017.

Chisos, Ltd.

By: Sue Ann Craddock

Title: _____

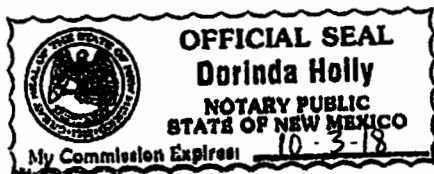
STATE OF New Mexico §

§

COUNTY OF Luna §

BEFORE ME, the undersigned authority, on this day personally appeared Sue Ann Craddock, as President for the Chisos, Ltd., Texas (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 28th day of March 2017.



Dorinda Holly
Notary Public, State of New Mexico

Dorinda Holly
Notary's Name (Typed, Stamped or Printed)

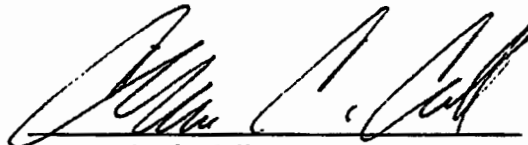
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 24th day of January, 2017.

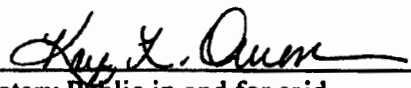


By: Clarke C. Coll

STATE OF NEW MEXICO §
 §
COUNTY OF CHAVES §

This instrument was acknowledged before me on January 24, 2017 by Clarke C. Coll.

My Commission Expires:
4/19/20



Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 17 day of January, ²⁰¹⁷~~2016~~.

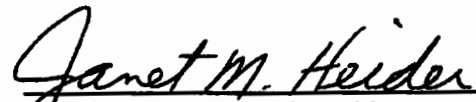

By: Danny H. Allen

STATE OF New Mexico §
§
COUNTY OF Chaves §

This instrument was acknowledged before me on January 17, 2017 by Danny H. Allen.

My Commission Expires:

08-24-2017


Notary Public in and for said
County and State

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 9th day of January, 2017.

By: David Ellis Martin

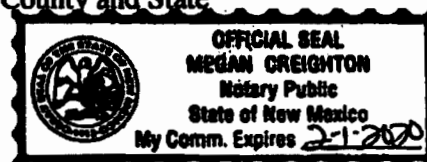
STATE OF New Mexico §
COUNTY OF Chaves §
§
§

This instrument was acknowledged before me on January 9, 2017 by David Ellis Martin.

My Commission Expires:

February 1, 2020

Notary Public in and for said
County and State.



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 24th day of January, 2017.

Diamond Lil Properties, LLC

By: Charles H. Coll

Title: Manager

STATE OF NEW MEXICO §

§

COUNTY OF CHAVES §

§

BEFORE ME, the undersigned authority, on this day personally appeared Charles H. Coll, as Manager for the Diamond Lil Properties, a New Mexico (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 24th day of January, 2017.

My Commission Expires: 4/19/20

Kay L. Owen
Notary Public, State of New Mexico

Kay L. Owen
Notary's Name (Typed, Stamped or Printed)

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

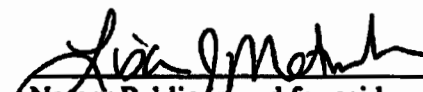
EXECUTED this 28 day of April, 2017.



By: Elizabeth Mulcock Cazel

STATE OF Arizona §
 §
COUNTY OF Maricopa §

This instrument was acknowledged before me on April 28, 2017 by Elizabeth Mulcock Cazel.

My Commission Expires:
6-23-2018


Notary Public, in and for said
County and State



LISA J MATUSAK
NOTARY PUBLIC, ARIZONA
MARICOPA COUNTY
My Commission Expires
June 23, 2018

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 24 day of January, 2017.



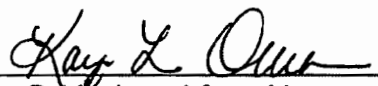
By: Eric J. Coll

STATE OF NEW MEXICO §
 §
COUNTY OF CHAVES §

This instrument was acknowledged before me on January 24, 2017 by Eric J. Coll.

My Commission Expires:

4/19/20



Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 13th day of February, 2017.

First Presbyterian Church of Emporia

By: Mitch Engle

Title: Mitchell Engle, With Power Sent as Agent.

STATE OF Colorado §

§

COUNTY OF Denver §

BEFORE ME, the undersigned authority, on this day personally appeared Mitch Engle, as agent for the First Presbyterian Church of Emporia, a Colorado (state) corporation (type of entity), known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 13th day of February, 2017.



Marie Bergan
Notary Public, State of Colorado

Marie Bergan
Notary's Name (Typed, Stamped or Printed)

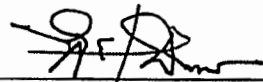
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 13 day of January, 2017.

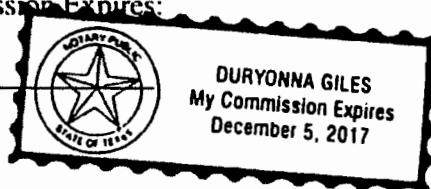


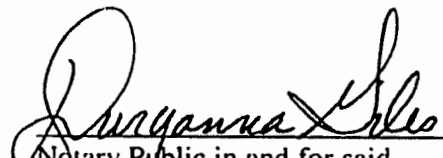
By: Floyd H. Davis

STATE OF Texas §
 §
COUNTY OF Travis §

This instrument was acknowledged before me on 1/13/2017 by Floyd H. Davis.

My Commission Expires:





Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 13th day of Feb, 2017.

Francis Mineral Partnership

By: [Signature]

Title: PARTNER

STATE OF Texas §

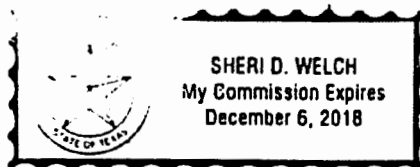
COUNTY OF Dallas §

BEFORE ME, the undersigned authority, on this day personally appeared James B. Francis, Jr. as Partner for the Francis Mineral Partnership, a TA (state) partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 13 day of February, 2017.

[Signature]
Notary Public, State of Texas

Sheri D. Welch
Notary's Name (Typed, Stamped or Printed)



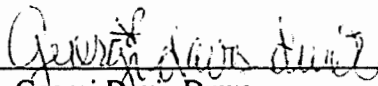
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 8 day of Dec., 2017.


By: Georgi Davis Duwe


STATE OF Texas §

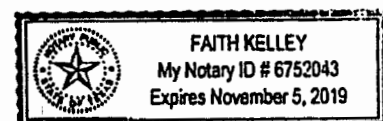
COUNTY OF Travis §

This instrument was acknowledged before me on Dec. 8, 2017 by Georgi Davis Duwe.

My Commission Expires:

11-5-19


Notary Public in and for said Travis
County and State of Texas



In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 9th day of May, 2017.

By: Georgie Lutz

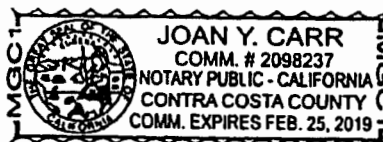
STATE OF CALIFORNIA §
§
COUNTY OF CONTRA COSTA §

This instrument was acknowledged before me on May 9, 2017 by Georgie Lutz.

My Commission Expires:

Feb 25, 2019

Notary Public in and for said
County and State



Robert Alan Robinson
Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 30 day of December, 2016.

Hope Royalties, LLC

By: _____

Title: Agent

STATE OF NM §

COUNTY OF Eddy §

BEFORE ME, the undersigned authority, on this day personally appeared Ross Duncan, as Agent for Hope Royalties, LLC, a New Mexico limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 30 day of December 2016.

Andrea Watts
Notary Public, State of ~~Texas~~ NM

my Commission expires: 6/25/17

Andrea Watts
Notary's Name (Typed, Stamped or Printed)

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 6 day of April, 2017.

James & Agnes Mulcock Revocable Trust – Trust B

By: George M. Lutz
Title: Trustee

STATE OF CALIFORNIA §
§
COUNTY OF Contra Costa §

BEFORE ME, the undersigned authority, on this day personally appeared Georgie M. Lutz, as Trustee for the James & Agnes Mulcock Revocable Trust - Trust B, a New Mexico (state) trust, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 17 day of August, 2017.

Notary Public, State of Texas

Notary's Name (Typed, Stamped or Printed)

See Attached.

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 19th day of January, 2017.

James Petroleum Trust DTD 2/2/1974, Farmers National Company, Agent
By: [Signature]
Title: AVP

STATE OF Oklahoma §
§
COUNTY OF Tulsa §

BEFORE ME, the undersigned authority, on this day personally appeared Donna J. Pringer, as AVP for the James Petroleum Trust DTD 2/2/1974, a _____ (state) _____ (type of entity), known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 19th day of January, 2017.

[Signature]
Notary Public, State of OK
Barbara L Gray
Notary's Name (Typed, Stamped or Printed) March 2017 Exp.

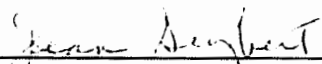
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

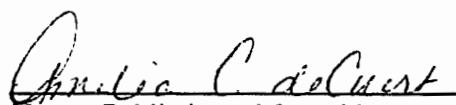
EXECUTED this 29 day of December, 2016.


By: Jean Seybert

STATE OF Maryland §
 §
COUNTY OF Montgomery §

This instrument was acknowledged before me on December 29, 2016 by Jean Seybert.

My Commission Expires:
7/11/17


Notary Public in and for said
County and State

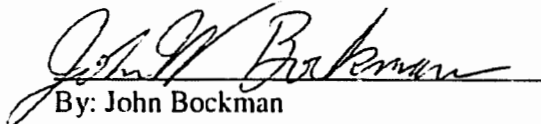
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 10 day of January, 2017.


By: John Bockman

STATE OF Texas §
COUNTY OF Comal §

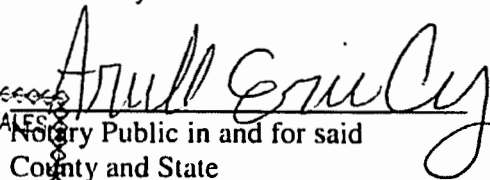
This instrument was acknowledged before me on January 19, 2017 by John Bockman.

My Commission Expires:

09-14-19



ARIELL ERMINE CARRIZALES
Notary Public
State of Texas
My Comm. Exp. 09-14-2019


Notary Public in and for said
County and State

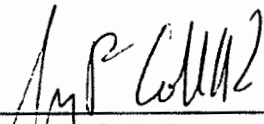
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 31 day of January, 2017.




By: Jon F. Coll, II

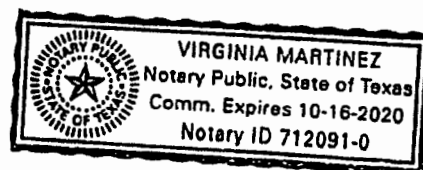
STATE OF Texas §
 §
COUNTY OF Brewer §

This instrument was acknowledged before me on January 31, 2017 by Jon F. Coll, II.

My Commission Expires:
10-16-2020



Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

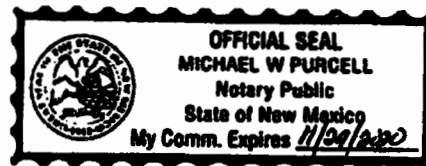
This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 8 day of FEBRUARY, 2017.


By: Joy English Fontello


STATE OF NEW MEXICO §
 §
COUNTY OF BERNILLO §



This instrument was acknowledged before me on FEBRUARY 8, 2017 by Joy English Fontello.

My Commission Expires:

11/29/2020


Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 19 day of January, 201⁷6.

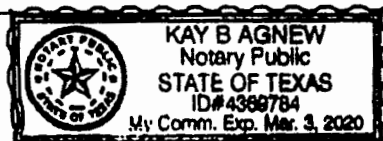
Julia May Lutz
By: Julia May Lutz

STATE OF Texas §
 §
COUNTY OF Lubbock §

This instrument was acknowledged before me on January 19, 2017 by Julia May Lutz.

My Commission Expires:

Kay B. Agnew
Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

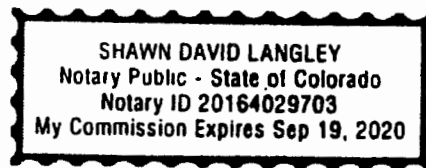
This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this ^{11 NGB}12 day of ^{NGB}January, ²⁰¹⁷2016.

Kathy Gail Brawley
By: Kathy Gail Brawley

STATE OF Colorado §
COUNTY OF Mesa §



This instrument was acknowledged before me on 1-11-17 by Kathy Gail Brawley.

My Commission Expires:
9-19-2020

Shawn Langley
Notary Public in and for said
County and State

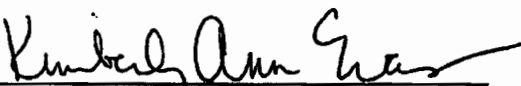
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

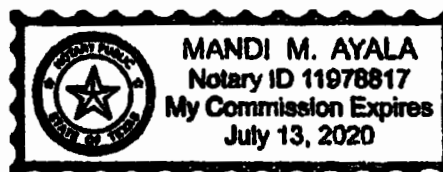
This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 8 day of December, 2017.


By: Kimberly Ann Evans

STATE OF Texas
COUNTY OF Tarrant

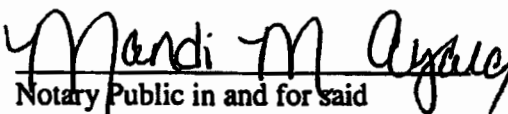
§
§
§



This instrument was acknowledged before me on December 8, 2017 by Kimberly Ann Evans.

My Commission Expires:

7/13/2020


Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 27 day of DECEMBER, 2016.

KRJ Oil and Gas LLC

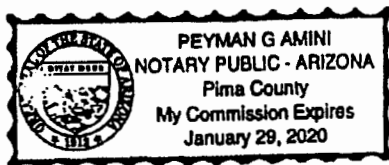
By: _____

Title: MANAGER

STATE OF AZ §
§
COUNTY OF PIMA §

BEFORE ME, the undersigned authority, on this day personally appeared Donald G. Jorgensen, as MANAGER for KRJ Oil and Gas LLC, a AZ (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 27 day of DEC., 2016.



Notary Public, State of ~~Texas~~ Arizona

PEYMAN G. AMINI
Notary's Name (Typed, Stamped or Printed)

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 5th day of APRIL, 2017.

Leonard Family Trust UTA 2/1/2006

By: Burt E. Leonard

Title: CO-TRUSTEE

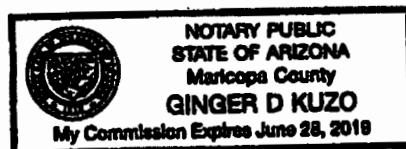
STATE OF ARIZONA §

§

COUNTY OF MARICOPA §

BEFORE ME, the undersigned authority, on this day personally appeared BURT E. LEONARD, as CO-TRUSTEE for the Leonard Family Trust UTA 2/1/2006, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 5th day of APRIL, 2017.



Ginger D. Kuzo
Notary Public, State of AZ

GINGER D. KUZO

Notary's Name (Typed, Stamped or Printed)

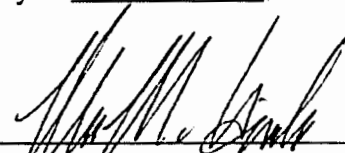
**RATIFICATION AND JOINDER
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In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 12 day of January, ~~2016~~ 2017.


By: Madison M. Hinkle

STATE OF NEW MEXICO §

§

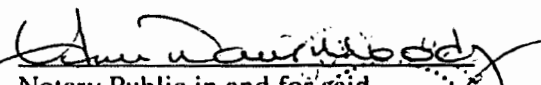
COUNTY OF CHAVES §

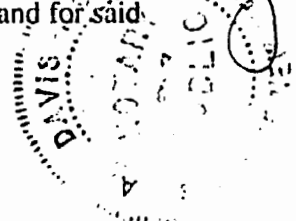
§

This instrument was acknowledged before me on January 12, 2017 by Madison M. Hinkle.

My Commission Expires:

May 15, 2020


Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 4th day of January, 2017.

Marshall and Winston

By: Tom M. Brandt

Title: Tom M. Brandt, President

STATE OF TEXAS §

§

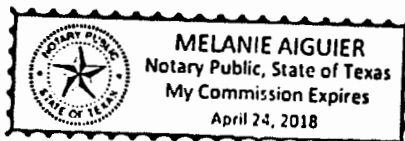
COUNTY OF MIDLAND §

§

BEFORE ME, the undersigned authority, on this day personally appeared Tom M. Brandt, as President for Marshall and Winston, a Nevada (state) corporation (type of entity), known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 4th day of January, 2017.

Melanie Aiguier
Notary Public, State of Texas



Notary's Name (Typed, Stamped or Printed)

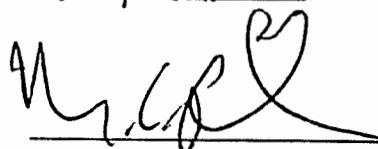
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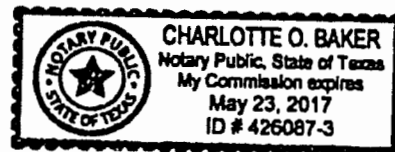
This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 14th day of March, 2017.


By: Matthew Carson Cottingham Miles

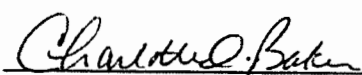
STATE OF TEXAS §
 §
COUNTY OF BEXAR §



This instrument was acknowledged before me on March 14, 2017 by Matthew Carson Cottingham Miles.

My Commission Expires:

5-23-17



Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 20th day of JANUARY, 2017.

Mavis P. Alexander Estate

By: [Signature]

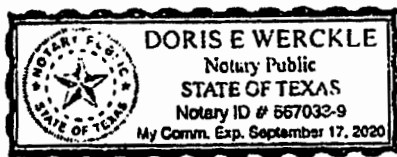
Title: EXECUTOR

STATE OF Texas §

COUNTY OF Brewster §

BEFORE ME, the undersigned authority, on this day personally appeared Gilbert E. Peterson, as Executor for the Mavis P. Alexander Estate, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 20th day of January 2017.



Doris E. Werckle
Notary Public, State of Texas

Doris E. Werckle
Notary's Name (Typed, Stamped or Printed)

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 27 day of June, 2017.

Max W. Coll, II Testamentary Trust

By: Catherine Joyce-Coll

Title: Trustee

STATE OF New Mexico §

COUNTY OF Santa Fe §

BEFORE ME, the undersigned authority, on this day personally appeared Catherine Joyce-Coll, as trustee for the Max W. Coll, II Testamentary Trust, a NM (state) trust, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 27 day of June, 2017.



OFFICIAL SEAL
DONNA M. SANCHEZ
NOTARY PUBLIC-State of New Mexico

My Commission Expires 11/12/19

Donna Sanchez
Notary Public, State of NM

Donna Sanchez
Notary's Name (Typed, Stamped or Printed)

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 24 day of Jan, 2017.

M. W. Coll III

By: Max W. Coll, III

STATE OF New Mexico §

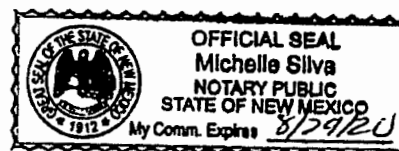
COUNTY OF Dona Ana §

This instrument was acknowledged before me on 1/20/17 by Max W. Coll, III.

My Commission Expires:

8/29/20

Michelle Silva
Notary Public in and for said
County and State



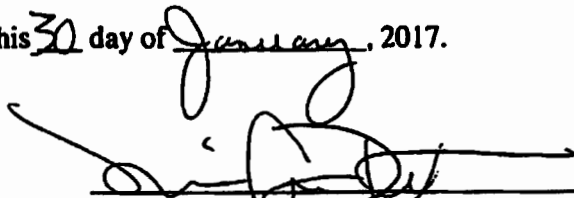
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 30 day of January, 2017.


By: Melanie Coll DeTemple

STATE OF California §
 §
COUNTY OF Los Angeles §

This instrument was acknowledged before me on 1/30/17 by Melanie Coll DeTemple.

My Commission Expires:

July 20, 2017

See attachment for Acknowledgement!
Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 4 day of April, 2017.

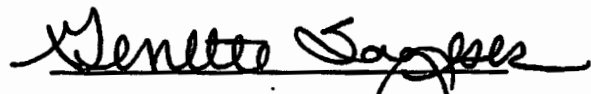

By: Melanie Marie Miles Hirschfeld

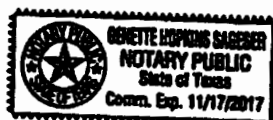
STATE OF Texas §
 §
COUNTY OF Travis §

This instrument was acknowledged before me on April 4, 2017 by Melanie Marie Miles Hirschfeld.

My Commission Expires:

11/17/2017


Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 4 day of April, 2017.

Mesa Croft, LLC

By: Ellen West (Noelwell)

Title: Manager

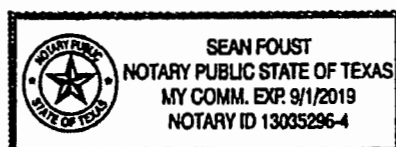
STATE OF Texas §

COUNTY OF Montgomery §

BEFORE ME, the undersigned authority, on this day personally appeared Ellen West (Noelwell), as Manager for the Mesa Croft, LLC, TX (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 4 day of April, 2017.

[Signature]
Notary Public, State of TX



Sean Foust
Notary's Name (Typed, Stamped or Printed)


**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 5 day of Sept., 2017.

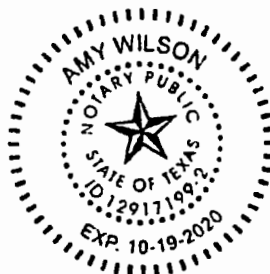

By: Norma P. Walker

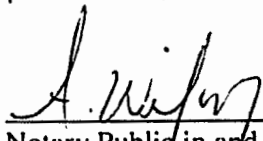
STATE OF Texas §
 §
COUNTY OF Dallas §

This instrument was acknowledged before me on September 5th, 2017 by Norma P. Walker.

My Commission Expires:

10-19-2020





Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 30 day of March 2017.


By: Norma P. Walker

STATE OF Texas §
 §
COUNTY OF Dallas §

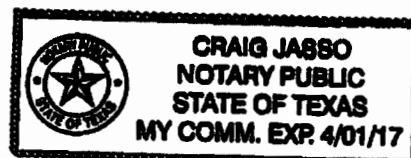
This instrument was acknowledged before me on March 30, 2017 by Norma P. Walker.

My Commission Expires:

04.01.2017



Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 24 day of January, 2017.

Patricia J. Allen
By: Patricia Allen

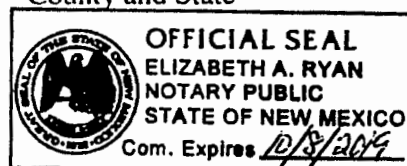
STATE OF New Mexico §
 §
COUNTY OF Chaves §

This instrument was acknowledged before me on 24th January 2017 by Patricia Allen.

My Commission Expires:

10/8/2019

Elizabeth A. Ryan
Notary Public In and for said
County and State



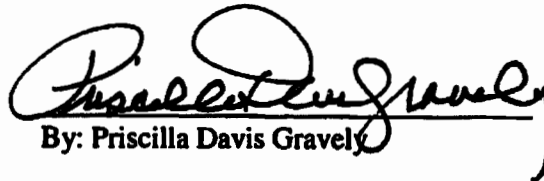
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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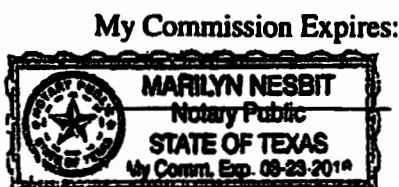
This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

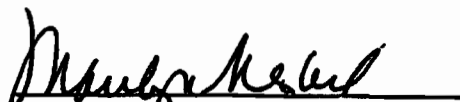
EXECUTED this 26 day of March, 2017.


By: Priscilla Davis Gravely

STATE OF Texas §
 §
COUNTY OF Dallas §

This instrument was acknowledged before me on March 26 2017 by Priscilla Davis Gravely.




Notary Public in and for said
County and State

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 29 day of November, 2017.

By: Ralph Chesser Sparkman

STATE OF Alaska §
COUNTY OF Washington §

This instrument was acknowledged before me on 11/29/2017 by Ralph Chesser Sparkman.

My Commission Expires:

03-20-2024

Dawnette E. Watts
Notary Public in and for said
County and State of **Arkansas**
DAWNETTE E. WATTS
Notary Public-Arkansas
Washington County
My Commission Expires 03-20-2024
Commission # 12398817

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 12 day of January, ~~2016~~, 2017.

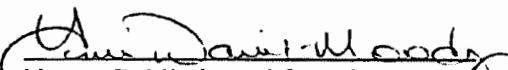


By: Rolla R. Hinkle, III

STATE OF NEW MEXICO §
 §
COUNTY OF CHAVES §

This instrument was acknowledged before me on January 12, 2017 by Rolla R. Hinkle, III.

My Commission Expires:
May 15, 2020



Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 20 day of Jan, 2017.

Russell J. Cox
By: Russell J. Cox

STATE OF Texas §
COUNTY OF Dallas §
§

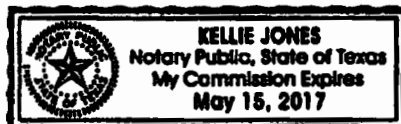
This instrument was acknowledged before me on 1-20-17 by Russell J. Cox.

My Commission Expires:

5-15-2017

Kellie Jones

Notary Public in and for said
County and State



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 28th day of March, 2017.

SAC Investments, I, L.P.

By: [Signature]

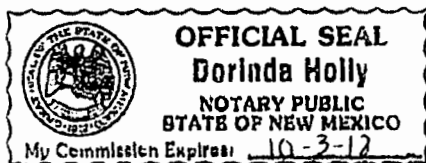
Title: _____

STATE OF New Mexico §
§
COUNTY OF Luna §

BEFORE ME, the undersigned authority, on this day personally appeared Sue Ann Craddock, as President for SAC Investments I, L.P. a Delaware (state) limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 28th day of March, 2017.

Dorinda Holly
Notary Public, State of New Mexico




Dorinda Holly
Notary's Name (Typed, Stamped or Printed)

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

Selma E. Andrews Trust, FBO Peggy Barrett, Bank of America, N.A.,
By: Brenda S. Olsen Trustee
Title: Brenda S. Olsen, Vice President

BEFORE ME, the undersigned authority, on this day personally appeared Brenda S. Olsen, as Vice President for the Selma E. Andrews Trust, FBO Peggy Barrett, a Texas (state) Trust (type of entity), known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that ^{she} ~~he~~ executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

 ADAM BINGER
Notary Public, State of Texas
My Commission Expires
May 28, 2018

Adam Binger
Notary's Name (Typed, Stamped or Printed)

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 8 day of Dec, 2017.

Sidney Davis Trust

By: George Duwe, Trustee

Title: _____

STATE OF Texas §

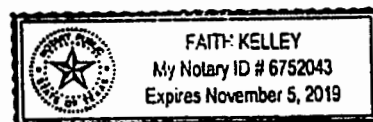
COUNTY OF Travis §

BEFORE ME, the undersigned authority, on this day personally appeared George Duwe, as Trustee for the Sidney Davis Trust, a Texas (state) trust, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 8 day of Dec, 2017.

Faith Kelley
Notary Public, State of Texas

Faith Kelley
Notary's Name (Typed, Stamped or Printed)



**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 24 day of January, 2017.

Spirit Trail, LLC

By: [Signature]

Title: Manager

STATE OF NEW MEXICO §

§

COUNTY OF CHAVES §

§

BEFORE ME, the undersigned authority, on this day personally appeared Jon F. Coll, as Manager for the Spirit Trail, LLC, a New Mexico (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 24th day of January, 2017.

My Commission Expires:
4/19/20

[Signature]
Notary Public, State of New Mexico

Kay L. Owen
Notary's Name (Typed, Stamped or Printed)

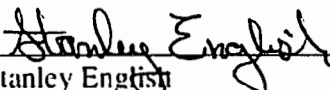
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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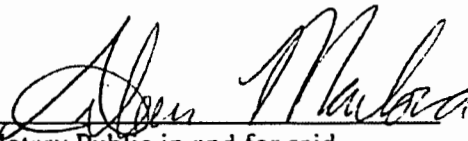
EXECUTED this 5 day of Dec., 2017.


By: Stanley English

STATE OF New Mexico §
 §
COUNTY OF San Juan §

This instrument was acknowledged before me on Dec. 5, 2017 by Stanley English.

My Commission Expires:
May 12, 2020


Notary Public in and for said
County and State



OFFICIAL SEAL
AILEEN MONCLOVA
NOTARY PUBLIC
STATE OF NEW MEXICO

My Commission Expires 5-12-20

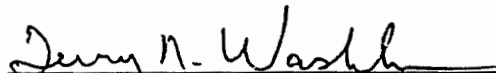
**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

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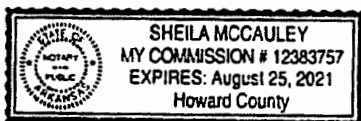
This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 13 day of April, 2017.


By: Terry N. Washburn

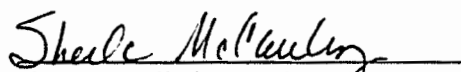
STATE OF Arkansas §
 §
COUNTY OF Howard §

This instrument was acknowledged before me on 4-13-2017 by Terry N. Washburn.



My Commission Expires:

8-25-2021


Notary Public in and for said
County and State

**RATIFICATION AND JOINDER
OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT**

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 5 day of JAN, 2017.

Wallingford Interests, LLC

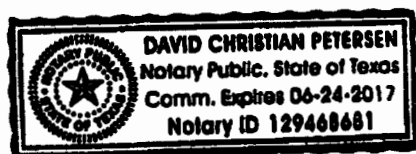
By: [Signature]

Title: SOLE MEMBER

STATE OF TEXAS §
§
COUNTY OF HARRIS §

BEFORE ME, the undersigned authority, on this day personally appeared RUFUS WALLINGFORD as SOLE MEMBER for Wallingford Interests, LLC, a TEXAS (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 5th day of JANUARY, 2016/17



[Signature]
Notary Public, State of Texas

DAVID PETERSEN
Notary's Name (Typed, Stamped or Printed)

RATIFICATION AND JOINDER OF FEDERAL RESOURCE DEVELOPMENT UNIT AGREEMENT

In consideration of the execution of the Federal Resource Development Unit Agreement for the Thunderbird Development Unit Area located in the County of Eddy, State of New Mexico, on behalf of the United States Department of the Interior, the undersigned (whether one or more) hereby expressly ratifies, approves, adopts, and confirms said Thunderbird Federal Resource Development Unit Agreement as fully as though the undersigned had executed the original agreement.

This Ratification and Joinder of the Thunderbird Federal Resource Development Unit Agreement shall be effective as to the undersigned's interests in any lands and leases, or interests therein, and royalties presently held or which may arise under existing option agreements or other interests in unitized substances, covering the lands within the Thunderbird Development Unit Area in which the undersigned may be found to have an oil and gas interest.

This Ratification and Joinder of Federal Resource Development Unit Agreement shall be binding upon the undersigned, his, her, or its heirs, devisees, executors, assigns, or successors in interest.

EXECUTED this 16th day of JANUARY, 2017.

Ward Investments, Limited Company

By: Sam J Kim
Title: MANAGING PARTNER

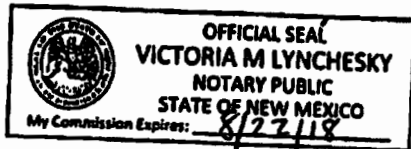
STATE OF NM §
COUNTY OF Eddy §

BEFORE ME, the undersigned authority, on this day personally appeared SARA SIMS, as MANAGING PARTNER for Ward Investments, Limited Company, a NM (state) limited liability company, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of said company, for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 16th day of January, 2017.

Victoria M. Hyslop
Notary Public, State of Texas

Victoria M. Lynchesky
Notary's Name (Typed, Stamped or Printed)



GEOLOGIC DESCRIPTION/DISCUSSION

- ▶ Proposing to create 1 unit in T16S R30E and T17S R30E

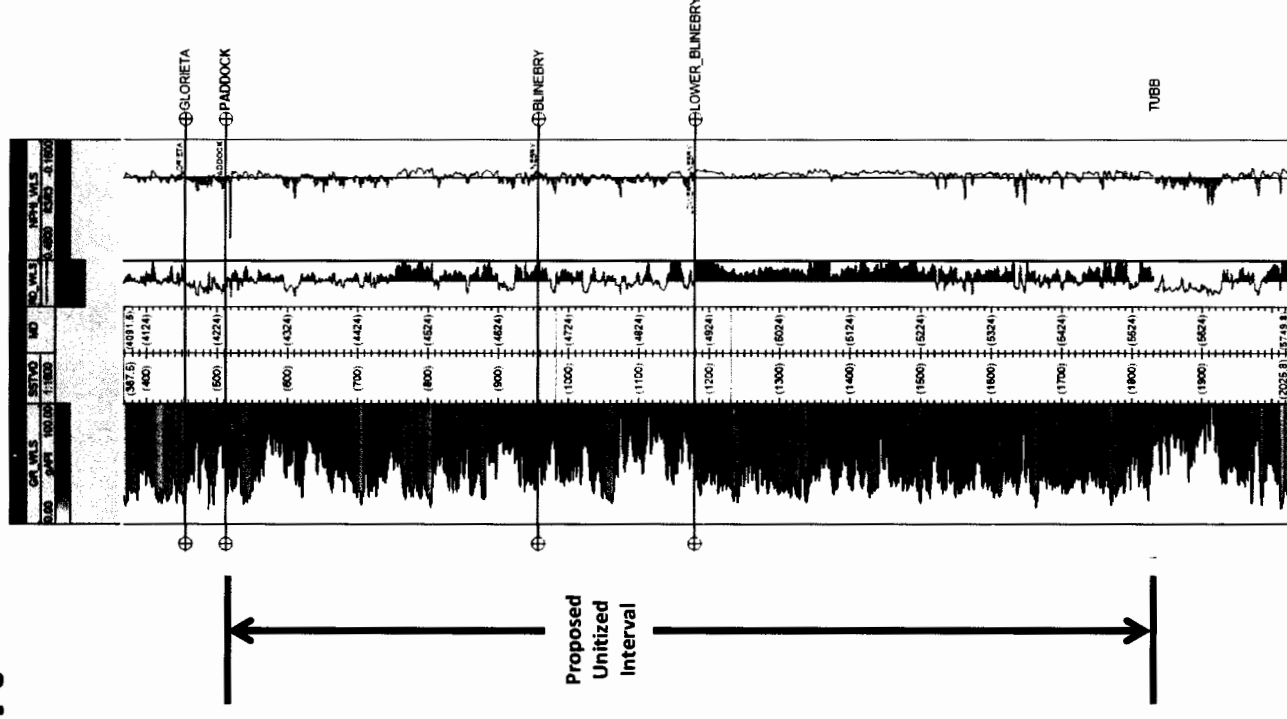
Unit will comprise the Paddock and Blinebry members of the Yeso (top of Paddock to the top of Tubb)

- ▶ 4234' to 5555' in Aspen Federal Com 1 well (API: 30-015-31656, log to the right)

The play concept is to complete horizontal wells in the Blinebry and Paddock

Based on cored wells, open hole logs, and nearby horizontal wells, economic oil reserves are believed to be present in this area

- ▶ The proposed unit is updip from Cedar Lake Yeso field with good oil storage (SoPhiH)



Case No. 15874

Aspen

Exhibit 15

**BLM
SOUTH TURKEY TRACK
GRAZING LEASE**

Key Livestock, LLC
1012 E. 34th
Roswell, New Mexico 88201
GR-2298

**32
STATE OF NM**

33

34

35

36

Thunderbird

STATE OF NM

Thunderbird

BLM

04

**BLM
LOCO HILLS
GRAZING LEASE**

STATE OF NM

DATE: 11/14/2017

PREPARED BY:

D. JARRETT



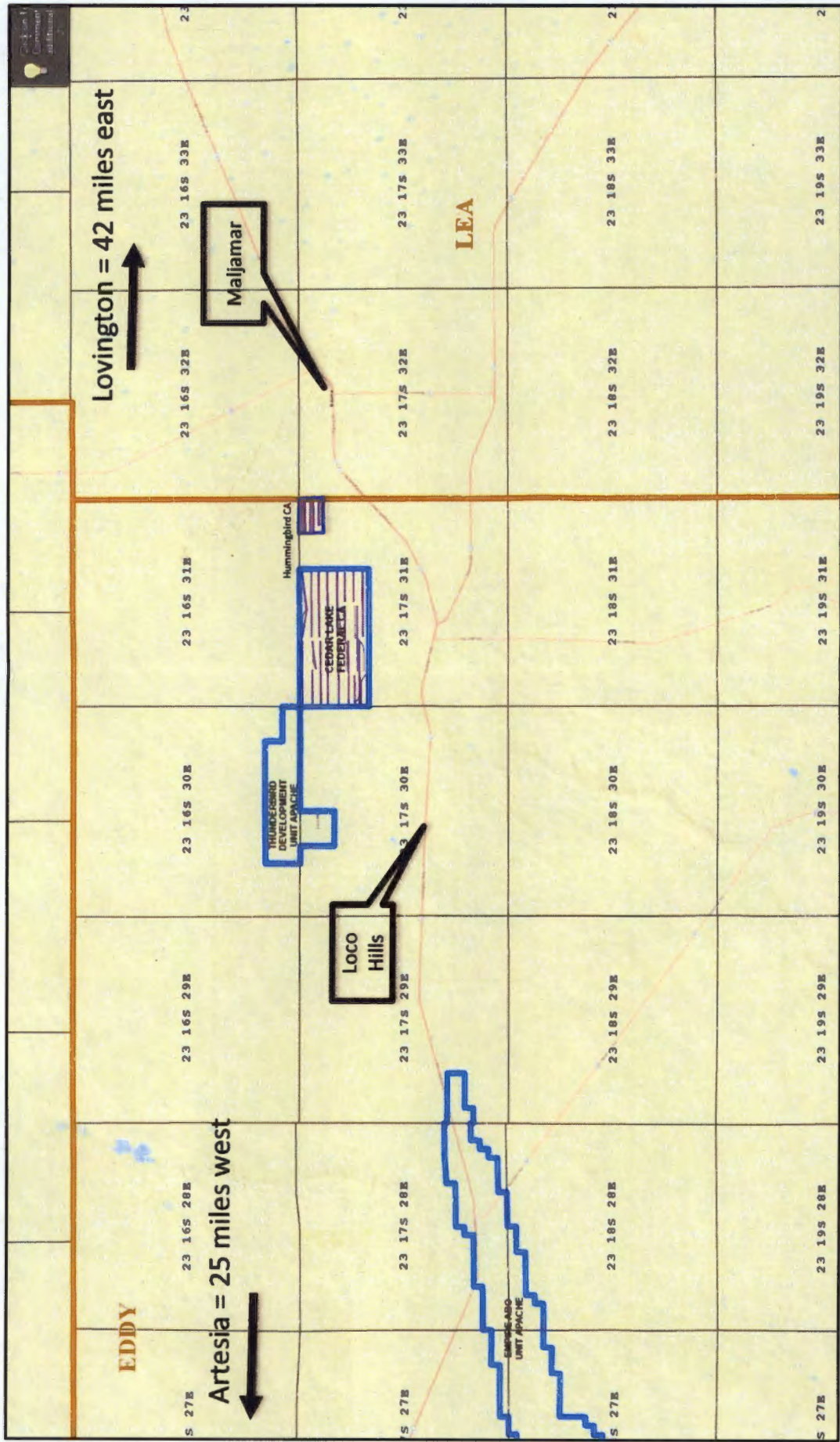
THIBIT
22

**SURFACE OWNERSHIP & GRAZING TENANT'S
THUNDERBIRD PROSPECT
TOWNSHIP 16 SOUTH – RANGE 30 EAST, NMPM
Eddy County, New Mexico**

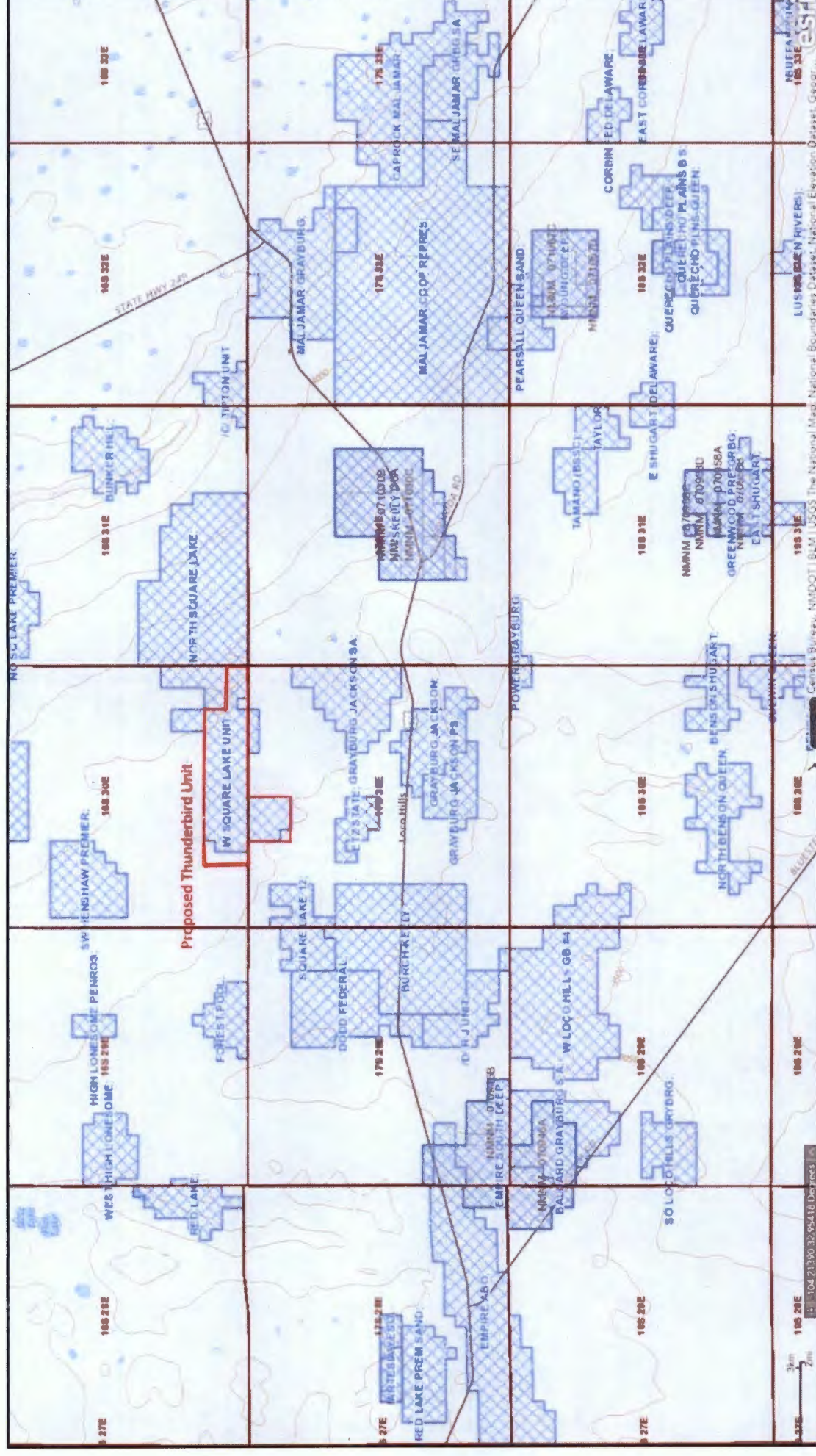
Apache

PERMIAN OFFICE
303 Veterans Airport Ln #1000
Midland, TX 79705
Phone: (432) 818-1000

LOCATOR MAP



NEARBY UNITS



Case No. 15874

Apache

Exhibit 11

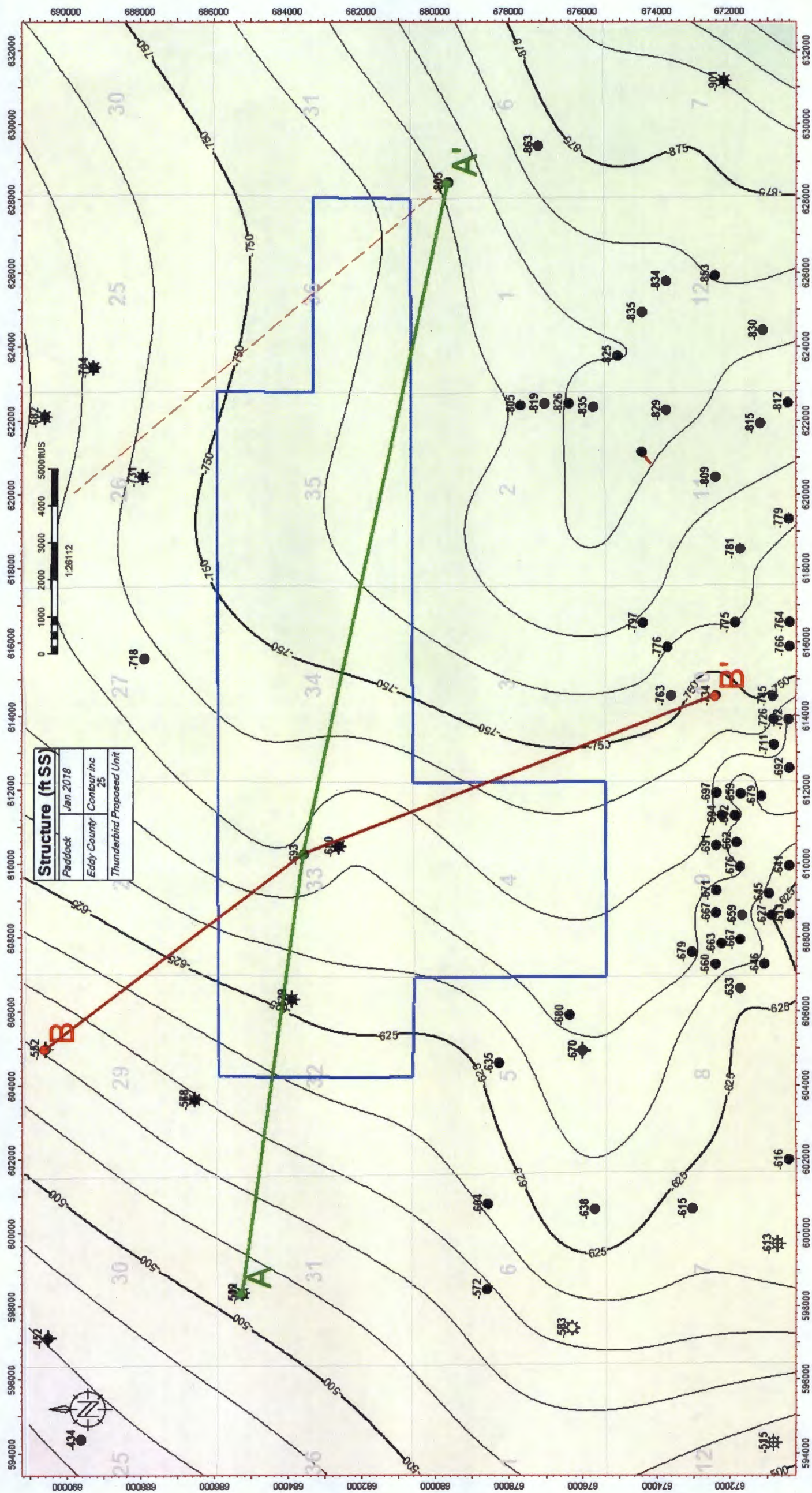
Apache

PADDOCK TOP STRUCTURE (FT SUBSEA)

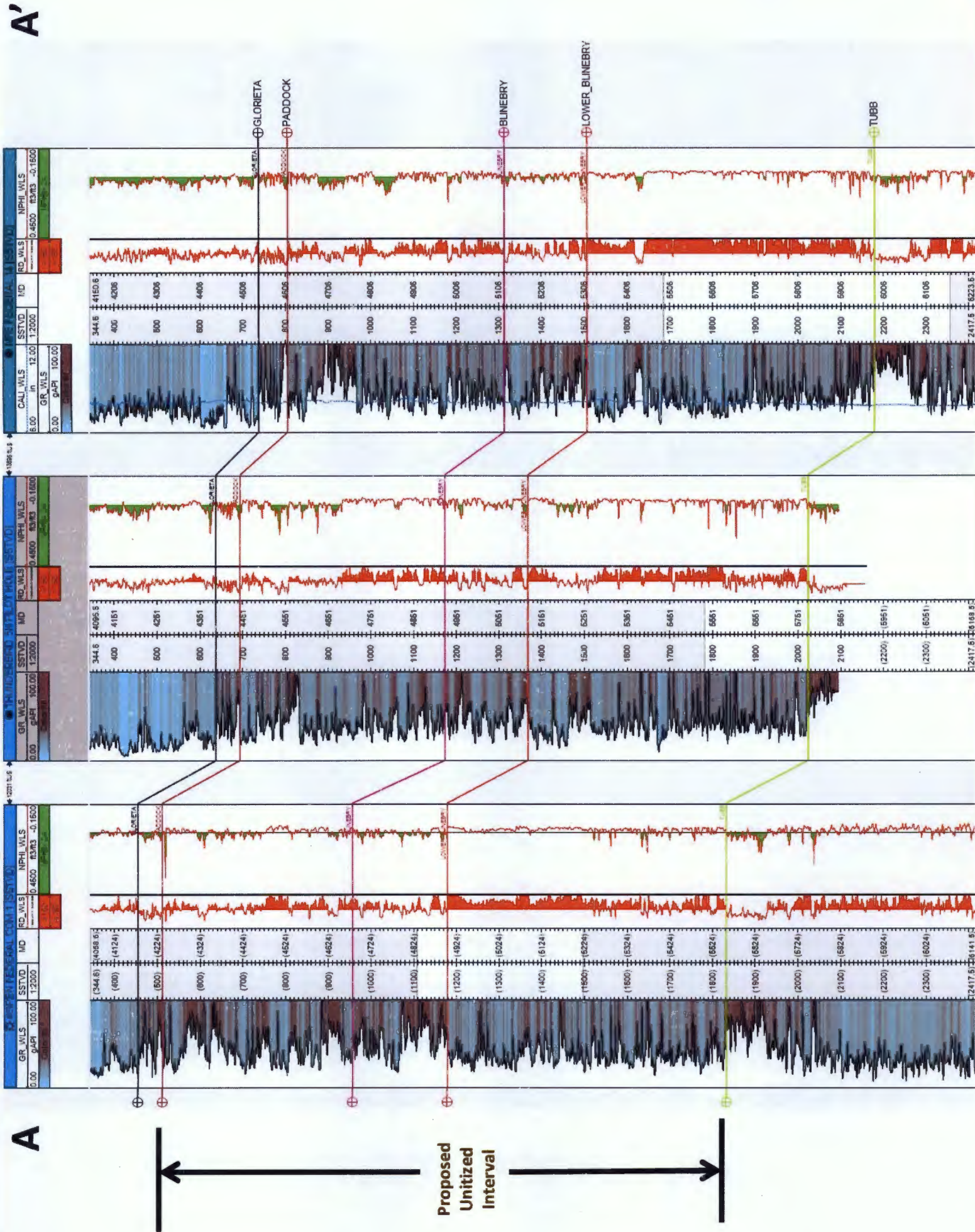
Case No. 15874



Exhibit 16



WEST – EAST CROSS SECTION



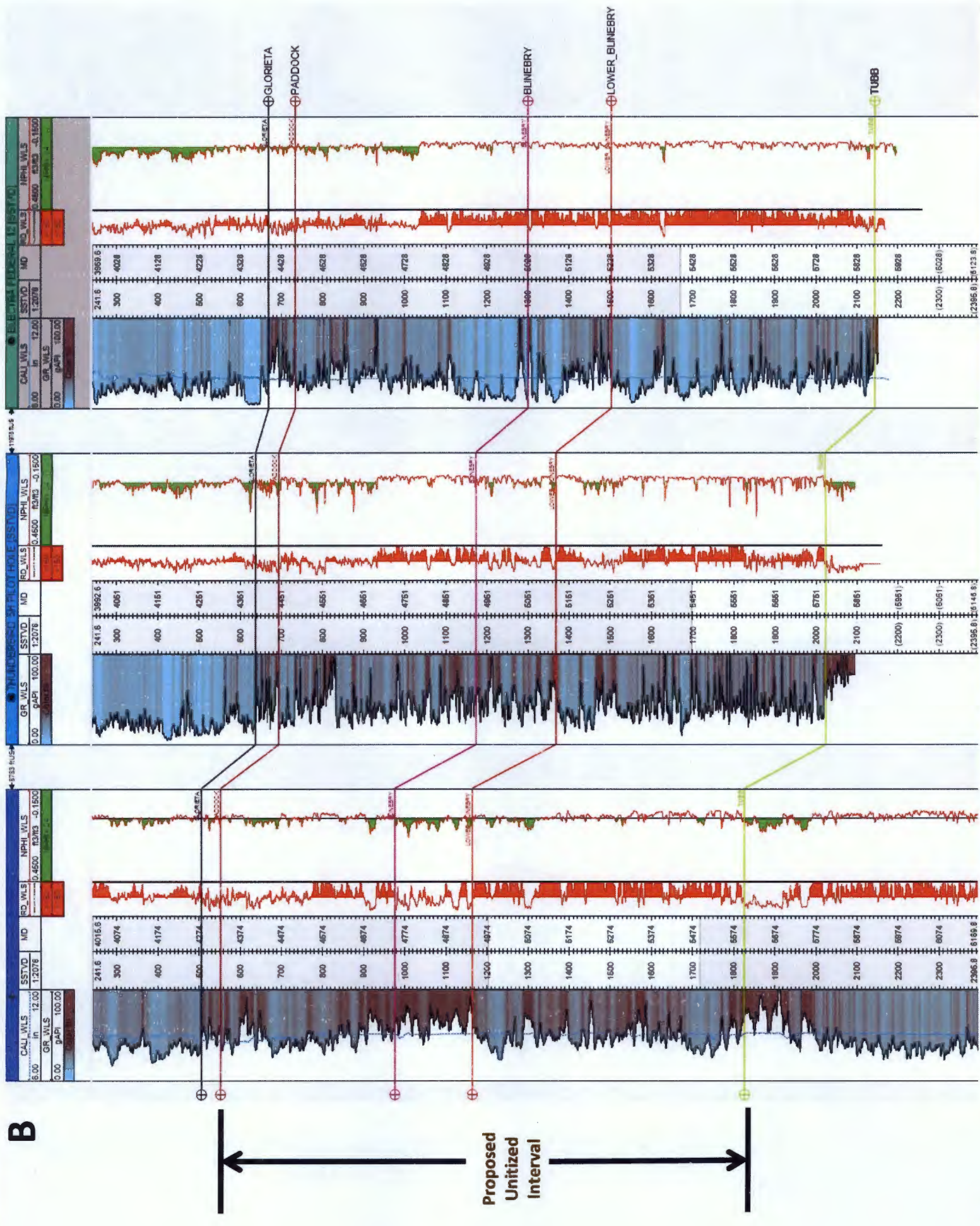
Case No. 15874

Apache

Exhibit 17

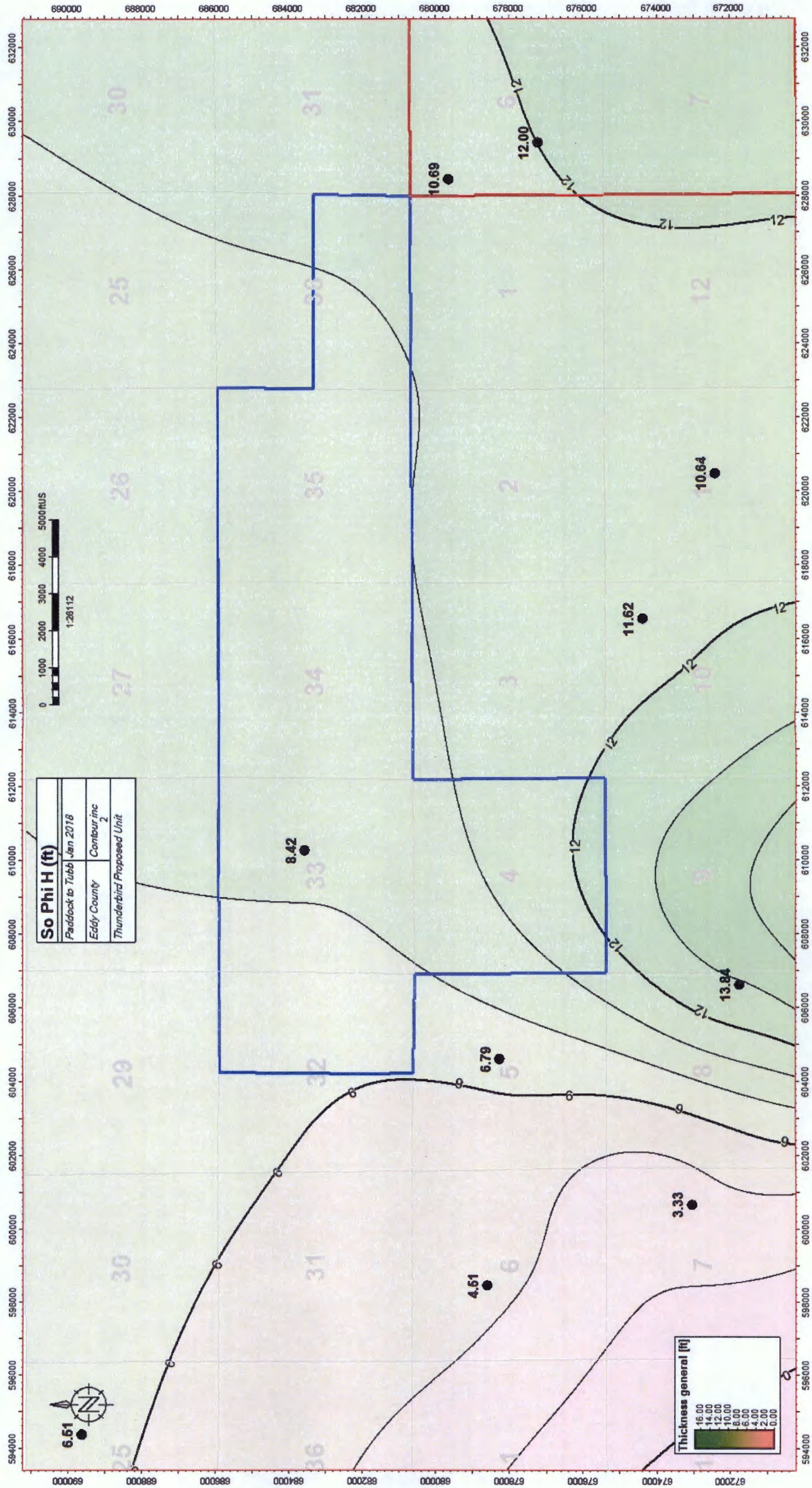
NORTH – SOUTH CROSS SECTION

B'



Case No. 15874
Apache
Exhibit 18

PAY SOPHIH (FT)



DEVELOPMENT PLAN A – THUNDERBIRD UNIT

- ▶ Two spacing scenarios under evaluation (4 wells per section or 6 wells per section per landing zone)
- ▶ Estimated facilities cost:
 - ▶ Central battery and production lines: **\$3,600,000**

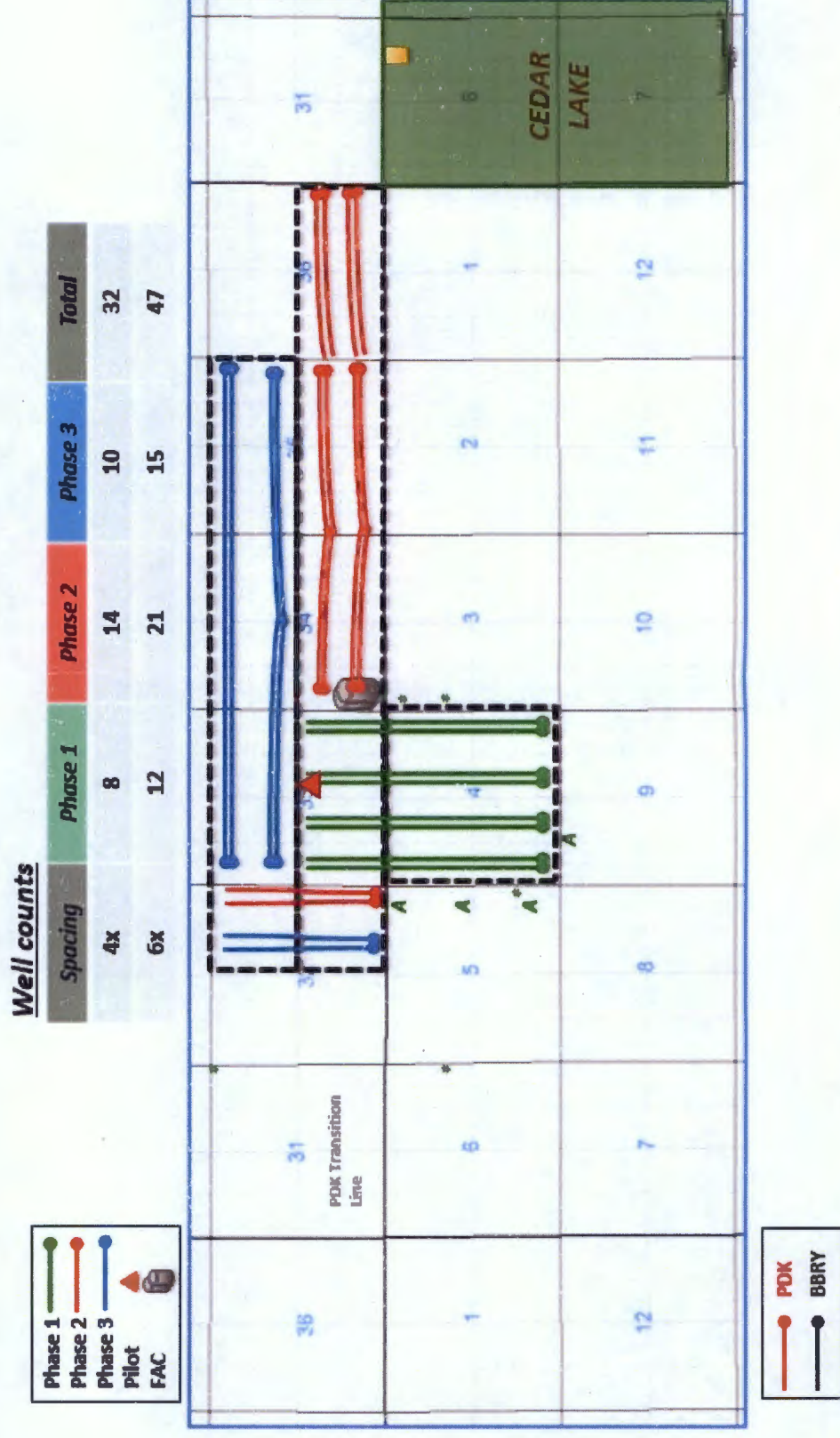
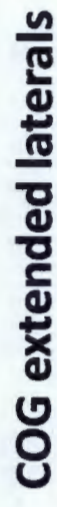
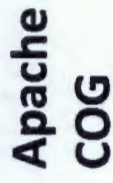
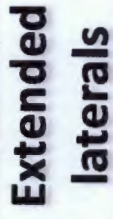


Exhibit 21



Avg. perf length: 5374' (1.14)

DEVELOPMENT PLAN B – WITHOUT UNITIZATION

- ▶ Two spacing scenarios under evaluation (4 wells per section or 6 wells per section per landing zone)
- ▶ Estimated facilities cost:
 - ▶ Central battery and production lines: **\$3,000,000**
 - ▶ Satellite batteries: **\$5,400,000**

