

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

**APPLICATION OF PARALLEL PETROLEUM CORPORATION FOR
APPROVAL OF A UNIT AGREEMENT, EDDY COUNTY, NEW MEXICO.**

CASE NO. 13895

AFFIDAVIT OF JERRY ELGER

STATE OF TEXAS)
) ss.
COUNTY OF MIDLAND)

I, Jerry Elger, being first duly sworn on oath, states as follows:

1. My name is Jerry Elger. I reside in Midland, Texas. I am the petroleum geologist employed by Parallel Petroleum Corporation ("Parallel") who is responsible for the formation of the proposed Paris Draw State Exploratory Unit ("the Unit") comprised of 6833.48 acres, more or less, of Federal and State of New Mexico lands situated in Eddy County, New Mexico. The horizontal limits of said Unit Area are described as follows:

Township 16 South, Range 23 East, N.M.P.M.

Section 13: E/2
Section 23: E/2
Section 24: E/2, SW/4
Sections 25 and 36: All

Township 16 South, Range 24 East, N.M.P.M.

Section 16: W/2
Section 17: All
Sections 19 and 20: All
Section 21: W/2 NE/4, SE/4 NE/4, W/2, SE/4
Section 28 : All
Section 29 : E/2
Section 30: All

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Case No. 13895 Exhibit No. 1
Submitted by:
PARALLEL PETROLEUM CORPORATION
Hearing Date: April 12, 2007

2. Parallel Petroleum Corporation, designated Unit Operator in the Paris Draw Exploratory Unit Agreement, proposes the formation of the Unit to test all formations from the surface to the base of the Wolfcamp formation.

3. The surface hole location for the initial unit well will be drilled at a standard well location 200 feet from the West line and 760 feet from the South line with a bottom hole location also at a standard well location of 660 feet from the East line and 760 from the South line of Section 21, Township 16 South, Range 24 East, NMPM, Eddy County, New Mexico to an approximate depth of 8800 feet to test all formations from the surface to the top of the Wolfcamp formation. The estimated costs for this well are approximately \$2.32 million. (The AFE is attached as Exhibit 2).

4. Attachment A to the Affidavit is a copy of the Unit Agreement for the proposed Paris Draw Exploratory Unit. This agreement is on the New Mexico State Land Office Federal/ State Unit Agreement form.

5. Attachment B to the Affidavit is the plat to the Unit Agreement that shows the boundaries of the Paris Draw Exploratory Unit.

6. Attachment C to this Affidavit is a copy of Schedule B to the Unit Agreement for the Paris Draw Exploratory Unit that identifies the working interest ownership in the unit area. 100% percent of the working interest in the Unit Area is committed to the Unit.

7. Attachment D is the AFE for the initial test well in the unit area.

8. The schedule under Attachment C to the Affidavit also identifies the royalty interest and overriding royalty interests in the Unit Area. 90.6343472 percent of the royalty interest is owned by the State of New Mexico. Attachment E to this Affidavit is a letter from the New Mexico Commissioner of Public Lands giving preliminary approval of the State Land Office to the proposed Paris Draw Exploratory Unit. 9.3656528 percent of the royalty interest is owned by the Federal government. Attachment F to this Affidavit is a letter from the Bureau of Land Management designating the proposed unit as a logical unit area.

9. Attachment G to this affidavit is a **Gross Isopach Map** of the Wolfcamp pay (porosity) "target zone". This is the interval that is targeted for horizontal drilling. It demonstrates the rather irregular nature (i.e.: thickness variability and distribution) of the targeted pay interval across the proposed unit area. Porosity within the target zone usually occurs as 2' to 10' thick "spiky" (5% to 14%) units separated by low porosity dolomites and limestones. Core analysis indicates the presence of intercrystalline porosity, probably related to diagenetic alteration of limestone to dolomite. This porosity was proven to be gas charged when production was established in *Cottonwood*

Creek; Cottonwood Creek, East; Cottonwood Creek, West; Eagle Creek; High Hope; High Hope, East; Collins Ranch; Collins Ranch, N.E.; Gopher; Antelope Sink; Antelope Sink, West; And Runyon Ranch fields. These fields were established when Pennsylvanian (Morrow) exploratory wells were plugged-back to the Wolfcamp reservoir, which was considered a salvage zone. Poor reservoir characteristics (porosity and permeability), which could not be improved by completion techniques such as acid or fracture treatments, resulted in recoveries hydrocarbons, which did not justify commercial development. Based on the distribution of these fields and the widespread occurrence of porosity (extending approximately 30 miles by 8 miles across portions of Eddy and Chaves Counties), a probable depositional setting for this reservoir is an open to restricted platform environment behind a Wolfcamp platform margin situated basinward (southeast) from the production. This platform would have formed as part of the Northwest Shelf (landward along the northwest margin of the Delaware Basin). Cores and open hole logs indicate that the porosity is typically overlain by an expansive area of anhydrite filled dolomitic carbonates. Well control located northwest of the play area suggest that the gas filled porosity becomes increasingly occluded by anhydrite in that direction (in response to the increasingly more saline conditions that were present during deposition). It seems probable that up-dip anhydrite filled porosity along the length of the trend is responsible for trapping the hydrocarbons contained within the target zone porosity.

10. Attachment H to this affidavit is a **Structure Map** of the top of the Wolfcamp shale. This shale represents a regionally deposited zone from which true structural dip across the proposed unit can be established. Dip determination is critical for the planning and design of each lateral to keep the well path within or at least proximal to the target porosity horizon.

11. Attachment I to this affidavit is a north – south oriented Stratigraphic **Cross-section (A-A')**, which incorporates porosity logs of the Wolfcamp pay (horizontal target zone) on two sides of the proposed unit. These well logs demonstrate gradual thinning of the pay (target zone) to the north and northwest.

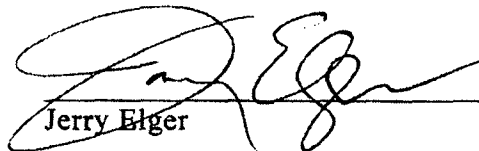
12. Attachment J to this affidavit is a southwest – northeast oriented Stratigraphic **Cross-section (B-B')**, which also incorporates porosity logs from former vertically productive wells, but also includes pilot hole logs for recent horizontally directed wellbores. Encountering fracture porosity within the target zone has been determined to be an enhancement to productivity and overall ultimate gas recoveries. Oriented core analysis, micro-seismic monitoring and FMI logs within the play, all suggest a roughly northeast-southwest natural fracture orientation. Most operators have re-designed well path orientation from north-south to east west in order to maximize potential fracture encounters in laterals. The importance of fracture encounters was recognized when well performance could not be predicted based on the overall thickness of and total matrix porosity as determined by logs within the target zone. On Cross-section A-A', the log porosity and zone thickness encountered in the LCX 1724 Kincaid 111 does not appear significantly different than that in the Perenco State 1624 #291 well or the EOG Colorado "B" 22 Federal #1H (on Cross-section B-B'), yet it's

productivity is magnitudes better than any of the wells included on both cross-sections.

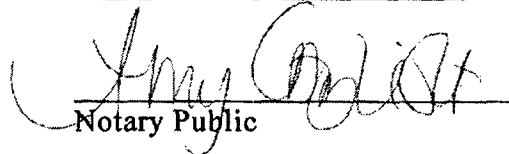
13. If the initial unit well is successful, additional wells will be drilled in the Unit Area. Accordingly, approval of the unit agreement will result in the efficient recovery of hydrocarbons.

14. Approval of the Paris Draw Exploratory Unit and the development of the Unit Area pursuant to a unit plan is in the best interest of conservation, the prevention of waste and the protection of correlative rights.

FURTHER AFFIANT SAYETH NOT.


Jerry Elger

SUBSCRIBED AND SWORN before me on this 20th day of March, 2007.


Notary Public

My Commission Expires:

4-28-2010

