

Patterson Petroleum, Inc.

410 N. Loraine, Suite B Midland Toyac 70701 (915) 685-1414 • Fax 685-1133

May 25, 1999

Donna Pitzer New Mexico Oil Conservation Division Oil Conservation Division - District 1 1625 N. French Drive Hobbs, New Mexico 88241

Re: Application for Administrative Approval of an Unorthodox Location for the Patterson Petroleum, Inc., Tomahawk St. 19 #1,to be Located 2,616' FNL & 1,148' FEL of Section 19, T-17-S, R-34-E, Lea County, New Mexico

Dear Mrs. Pitzer:

I have sent the captioned to Michael Stogner for his review and approval. Enclosed is a copy of your files. I am also submitting herewith six copies of our application for permit to drill the subject well.

Please let me know you decision concerning this matter. Should you have any question or need further information do not hesitate to call, my toll free phone number is 1-800-470-4200.

Sincerely,

Joe Fitzgerald Land Manager

Patterson Petroleum, Inc.

410 N. Loraine, Suite B Midland, Texas 79701 (915) 685-1414 • Fax 685-1133

May 25, 1999

Michael E. Stogner, Chief Examiner New Mexico Oil Conservation Division 2040 S. Pacheco Santa Fe, New Mexico 87505

Re: Request for Administrative Approval of an Unorthodox Location for the Patterson Petroleum, Inc., Arrowhead St. 15 #1,to be Located 1087' FNL & 1,235' FEL of Section 15, T-17-S, R-33-E, Lea County, New Mexico

Dear Mr. Stogner:

Patterson Petroleum, Inc., hereby requests administrative approval of the captioned. The subject location was derived by the use of extensive 3-D seismic data and analysis thereof. This location was determined, in the opinion of our geologic and geophysical staff and Phillips Petroleum's staff, to be the best location within the subject Section 15 to encounter economic recoverable reserves. We are drilling this well pursuant to a farmout agreement with Phillips. Enclosed for your review is our geologic write-up along with our Morrow and Cisco structure maps. The geologic information supplied herewith was prepared by our Geologist, Truitt Matthews. Truitt may be reached at (214) 369-2020 if you have any questions concerning same.

The subject location is unorthodox. However, Patterson/Phillips either own all of the offset pool units or we have obtained a waiver from the third party owning an interest in same. Submitted herewith is a land plat indicating the offset pool unit ownership. Please note Patterson (through our agreement with Phillips) has all of the offset units except for 80 acres in the North offset unit to our well, and 240 acres in the Northeast offset. The interest in both offset pool units is owned by Mack Energy Corp. Enclosed for your review is the waiver from Mack Energy Corp. The lease Patterson is to drill on, State of New Mexico Oil and Gas lease #B-2229, covers all of Section 15, T-17-S, R-33-E, plus most of the offset acreage. I would like to also point out all of the offsets To summarize, we either own or have are on State minerals. obtained a waiver from any effected party in the offsets and the only mineral owner involved is the State of New Mexico, which should benefit from the development of the subject mineral estate. Therefore, we request administrative approval of the subject well and location.

We have filed with the NMOCD's Hobbs office the enclosed C-101, C-102, BOP, drilling fluid, casing and cementing information. An original and one copy of the application package are enclosed for your review and file.

The subject well is to be drilled to a depth of 13,800' as a Wildcat Atoka/Morrow test. The Pool Rules for same require 320 acres, with wells located 1,650' from the short side and 660' from the long side. We are also permitting the subject well as a Cisco (Oil) test which would be in the Leamex Penn Pool; for which the rules call for 40 acres. We are designating the N/2 of Section 15 as our pool unit. Secondary possibilities from which we may encounter productive intervals are the Paddock (Leamex Paddock, 40 acre oil), Abo (Wildcat, 40 acre oil), Wolfcamp (Leamex Wolfcamp, 40 acre oil).

Please let me know your decision concerning this matter. Should you have any questions or need further information do not hesitate to call, my toll free phone number is 1-800-470-4200.

Sincerely,

Joe Fitzgerald Land Manager





May 24, 1999 DATE:

Michael Stogner, NMOCD TO:

Truitt Matthews, Petroleum Geologist FROM:

Location Exception RE: Patterson Petroleum, Inc. – Arrowhead St. "15" #1 PTD 13,800' 1087' FNL and 1235' FEL, Section 15, T17S-R33E Lea County, New Mexico

Please find enclosed the two structure maps, T/Morrow Lime and T/Cisco Leamex as supplemental to this brief geological discussion requesting a location exception for an Atoka/Morrow test (PTD 13,800') in Section 15, T17S-R33E (X=711130, Y=669570).

The Arrowhead Prospect is primarily a result of the interpretation of a 3-D seismic shoot conducted in 1994. This combination structural stratigraphic trap lies along a subtle NE-SW trending ridge as evidenced by 3-D seismic mapping on several deep horizons and subsurface mapping of the limited well control (Figs.). The primary objectives are the Atoka/Morrow clastics and the Pennsylvanian Cisco carbonates, with the Paddock, Abo, and Wolfcamp as good secondary targets.

The potential for production from the Atoka/Morrow section is noted from subsurface mapping showing the possible occurrence of sands overlying the NE-SW trending structure in a trapping position.

Production in the Cisco is from phylloid algal mounds and grainstone shoals. Seismic amplitude mapping of the Cisco horizon allowed for the definition of a highstand shelf margin. The Leamex (Cisco) field (1,356,901 BO + 2 BCFG) lies 1-1/2 miles south southeast of the proposed location. The structure exists due to mound growth and its position on the shelf.

It is felt that a legal location would result in a significant (20-30') loss in structure at the Cisco level and would take us out of the most favorable Atoka/Morrow trapping position, therefore resulting in the potential loss of reserves which could not be produced from any current orthodox location. Based upon the detailed interpretation of the 3-D seismic data volume and subsurface mapping by both geologic and geophysical personnel, it is believed that the best chance for recovering economic reserves on this prospect exists at the proposed unorthodox location. If I can be of further assistance, please feel free to call.





PATTERSON PETROLEUM INC. ARROWHEAD PROSPECT N/2 SECTION 15, T-17-S, R-34-E LEA COUNTY, NEW MEXICO

OWNERSHIP PLAT AS TO SECTION 19, T-17-S, R-34-E AND CONTIGUOUS SECTIONS (ONLY AS TO RIGHTS BELOW THE BASE OF THE SAN ANDRES)

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Patterson Petroleum, Inc.

410 N. Loraine, Suite B Midland, Texas 79701 (915) 695-1414 • Fax 685-1133



May 24, 1999

Mack Energy, Corp. P.O. Box 276 Artesia, NM 68210

Re: Application of Patterson Petroleum, Inc. for Administrative Approval of an Unorthodox Location for its Arrowhead St. 15 #1 Well, located 1,087' FNL and 1,235' FEL of Section 15, T-17-S, R-33-E, N.M.P.M., Lea County, New Mexico

Gentlemen:

Patterson Petroleum, Inc. has filed with the enclosed application with the New Mexico Oil Conservation Division seeking administrative approval of an unorthodox location for its Arrowhead St. 15 #1 Well. The subject well is a Wildcat Atoka/Morrow test, located at a point 1,087' FNL and 1,235' FEL of Section 15, T-17-S, R-33-E, N.M.P.M., Lea County, New Mexico.

Patterson requests you waive any objection to this location. If you are agreeable to doing so, please indicate your waiver by signing and dating this letter where indicated below, and return one original signed copy to me by fax and by mail to the number and address given in the letter head above.

If you have any question or need further information, do not hesitate to call.

Sinceraly Joe Brizgerald

Land Manager

AGREED TO AND ACCEPTED THIS 25th DAY OF MAY, 1999.

KACK ENERGY CORP. 50 BY:

Name: Robert C. Chase Title: Vice President Date: May 25, 1999 District I PO Box 1980, Hobbs, NM 88241-1980 District II PO Drawer DD, Artesia, NM 88211-0719 District III 1000 Rio Brazos Rd., Aztec, NM 87410 District IV PO Box 2088, Santa Fe, NM 87504-2088

05/21/99

State of New Mexico Energy, Minerais & Natural Resources Department

OIL CONSERVATION DIVISION PO Box 2088 Santa Fe, NM 87504-2088

Form C-101 Revised February 10, 1994 Instructions on back Submit to Appropriate District Office State Lease - 6 Copies Fee Lease - 5 Copies

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

				•	me and Address.					• oc 1419	RID Number
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¹⁴ Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive some and proposed new productive mass. Describe the blowest provention program, if any. Use additional shorts if accuracy. Drilling fluid synopsis attached BOP: Series 900 5000# WP - See Figure 2.5 attached Additional casing & cementing information attached											
²⁵ 1 hereby certin of my knowledg Signature:	•	-	rea above is	true and com	apicie to the best	OI Approved by:	IL C	CONSERVA	TION	I DIVIS	ION
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Title:				er		Approval Date:		T	Expiratio	on Dete:	#*****
Title:Petroleum EngineerApproval Data:Expiration Data:Date:Phone:Conditions of Approval :05/21/99915/573-1938Attached II											

Attached 🖸

DISTRICT I P.O. Box 1980, Hobbe, NM 88241-1980

1

DISTRICT II P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV P.O. BOX 2088, SANTA PE, N.M. 87504-2088 Energy, Minerals and Natural Resources Department

Form C-102 Revised February 10, 1994 Submit to Appropriate District Office State Lease - 4 Copies Fee Lease - 3 Copies

OIL CONSERVATION DIVISION P.O. Box 2088

Santa Fe, New Mexico 87504-2088

□ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API	Number		Pool Code Pool Name Wildcat - Atoka/Morrow					row	
Property C	Code	1	1		 operty Nam			Well Number	
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LOCATION VERIFICATION MAP



DOG LAKE, N.M.

VICINITY MAP



SCALE: 1'' = 2 MILES

SEC. <u>15</u> TWP. <u>17–S</u> RGE. <u>33–E</u> SURVEY <u>N.M.P.M.</u> COUNTY <u>LEA</u> DESCRIPTION <u>1087' FNL & 1235' FEL</u> ELEVATION <u>4157</u> OPERATOR <u>PATTERSON PETROLEUM, INC.</u> LEASE <u>ARROWHEAD STATE 15</u>

JOHN WEST SURVEYING HOBBS, NEW MEXICO (505) 393-3117



Patterson Petroleum, Inc.

P.O. Box 1416 Snyder, Texas 79550

DRILLING FLUID SYNOPSIS

PATTERSON PETROLEUM, INC. Arrowhead State 15 #1

Section 15 T-17-S R-33-E Lea County, New Mexico

CASING13-3/8" at400'8-5/8" at4,800'5-1/2" at13,800'

DEPTH	MUD	WEI	GHT	VISC	OSI	TY	FLU	ID LOSS	DRILL SOLIDS	COMMENTS
0'-400'	8.6	to	9.5	32	to	45	No	control	\$ 5¥	Spud mud, Paper
400'-4800'	10.0	to	10.1	28	to	29	No	control	< 1 %	Brine water Paper, caustic
4800'-12,500'	8.4	to	9.2	28	to	29	No	control	< 1% (Br	Fresh water, Caustic, Paper ine if needed)
12,500'-13,800'	9.0) TO	9.5	36	to	42.	٤	10cc	∢ 5¥	Xanthan Gum, White starch PAC, Caustic



Fig. 2.5. Class' 3 BOP and Choke Manifold.

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PROPOSED CASING & CEMENTING PROGRAM

ARROWHEAD STATE 15 WELL NO. 1

13 3/8", 48 lb/ft, H-40 Surface Casing Set at 400' - in a 17 1/2" Hole

Circulate to surface with 400 sacks of Class "C" + 2% CaCl2

Slurry Weight:	14.8 ppg
Slurry Yield:	1.32 cu.ft/sk
Water Requirement:	6.3 gal./sk

8 5/8", 32 lb/ft, J-55 & S-80 Intermediate Casing Set at 4800' - in a 11" Hole

Lead :		ss "C" + 5% salt + 6% gel + 1/4 lb/sk cellofiał
Lead :	1600 sx of 35:65 Poz C + 2/10 % antifoamer	ss "C" + 5% salt + 6% gel + 1/4 lb/sk cellofla

Desired TOC = Surface	
Slurry Weight:	12.4 ppg
Slurry Yield:	2.15 cu.ft/sk
Water Requirement:	11.99 gal/sk

Tail: 300 sx of Class "C" Neat

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Slurry Weight:	14.8 ppg
Slurry Yield:	1.32 cu.ft/sk
Water Requirement:	6.31 gal/sk

5 1/2", 17 & 20 lb/ft, N-80 Production Casing Set at 13,800' - in a 7 7/8" Hole

Set stage tool at approximately 10,500'

1 st Stage : Lead - 550 sx of 35:65 Poz Class "H" + 5% salt + 6 % gel + 3/10% ret. + 2/10% dispersant + 2/10% antifoamer

Slurry Weight:	13.5 ppg			
Slurry Yield:	1.68 cu.ft/sk			
Water Requirement:	8.76 gal/sk			

1 st Stage : Tail - 250 sx of Class "H" + 5% salt + 2% gel + 3/10 % retarder + 2/10% antifoamer

Slurry Weight:	16.4 ppg
Slurry Yield:	1.09 cu.ft/sk
Water Requirement:	5.49 gal/sk
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PROPOSED CASING & CEMENTING PROGRAM

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ARROWHEAD STATE 15 WELL NO. 1

2 nd Stage : Lead - 300 sx of 35:65 Poz Class "H" + 5% salt + 6% gel + 3/10 % retarder + 2/10% antifoamer Desired TOC = 4750'

Slurry Weight:	12.8 ppg
Slurry Yield:	1.95 cu.ft/sk
Water Requirement:	10.49 gal/sk
•	

2 nd Stage : Tail - 150 sx of 50:50 Poz Class "H" + 5% salt + 2% gel + 3/10% retarder + 2/10% dispersant & antifoamer

Slurry Weight:	14.6 ppg
Slurry Yield:	1.27 cu.ft/sk
Water Requirement:	5.67 gal/sk
Water Requirements	-

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