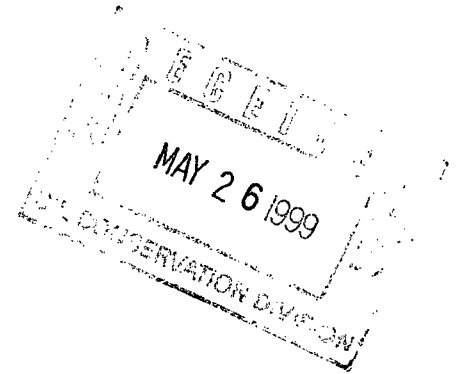


Patterson Petroleum, Inc.

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.

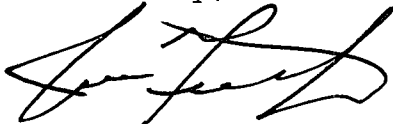
The subject location is unorthodox. However, Patterson/Phillips either own all of the offset pool units or we have obtained a waiver from the third party owning an interest in same. Submitted herewith is a land plat indicating the offset pool unit ownership. Please note Patterson (through our agreement 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 are on State minerals. To summarize, we either own or have 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,

A handwritten signature in black ink, appearing to read "Joe Fitzgerald", written in a cursive style.

Joe Fitzgerald
Land Manager



DATE: May 24, 1999

TO: Michael Stogner, NMOCD

FROM: Truitt Matthews, Petroleum Geologist

A handwritten signature in cursive script, appearing to read 'T. Matthews'.

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

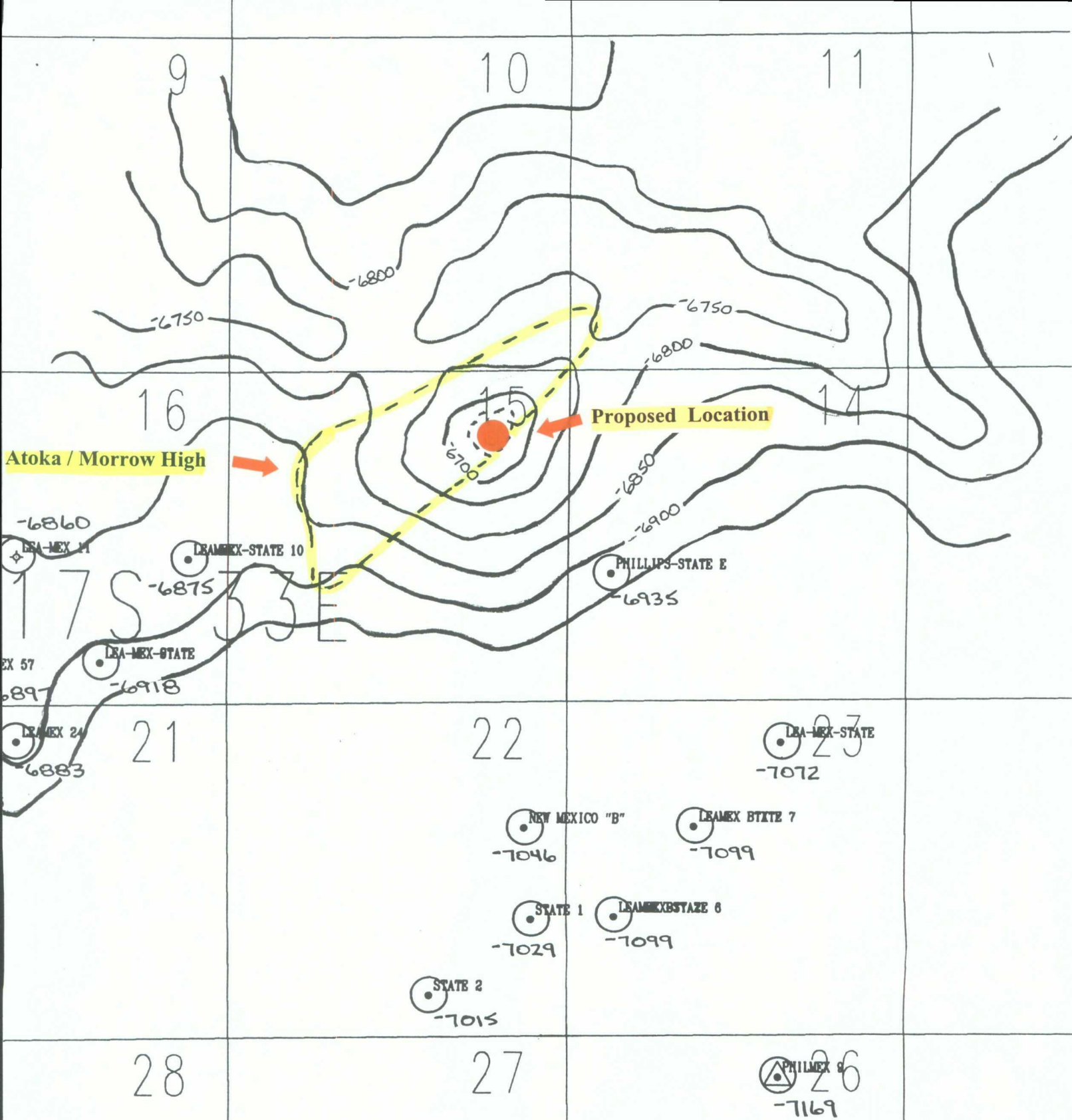
Please find enclosed the two structure maps, T/Morrow Lime and T/Cisco Leamex as supplemental to this brief geological discussion requesting a location exception for an Atoka/Morrow test (PTD 13,800') in Section 15, T17S-R33E (X=711130, Y=669570).

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.

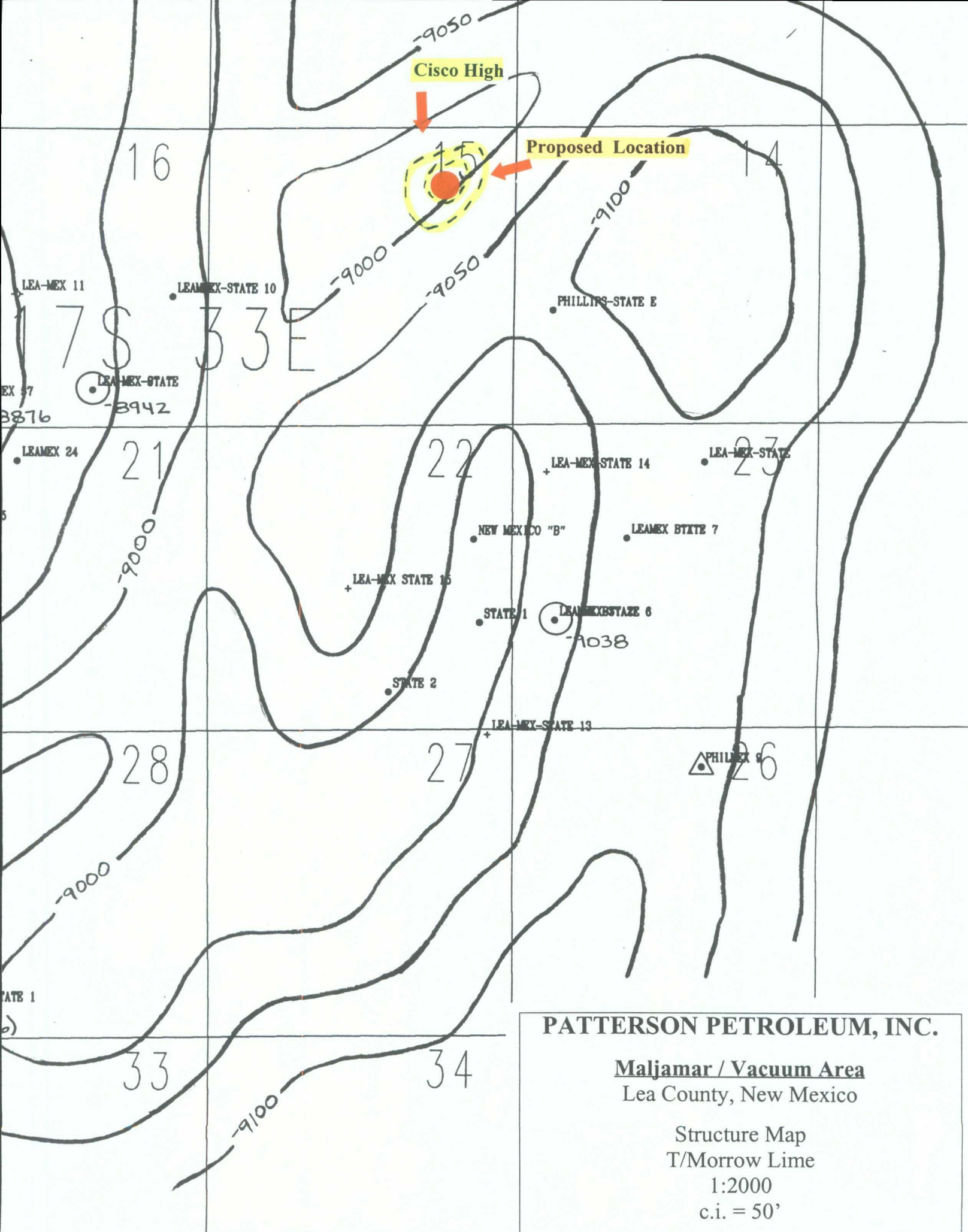


PATTERSON PETROLEUM, INC.

Maljamar / Vacuum Area
 Lea County, New Mexico

Structure Map
 T/Cisco Leamex Zone
 1:2000
 c.i. = 50'

STATE 1



PATTERSON PETROLEUM, INC.

Maljamar / Vacuum Area
 Lea County, New Mexico

Structure Map
 T/Morrow Lime
 1:2000
 c.i. = 50'

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)

<div style="display: flex; justify-content: space-between;"> 9 10 11 </div> <div style="display: flex; justify-content: space-between;"> Phillips Mack Energy Mack Energy </div> <div style="display: flex; justify-content: space-between;"> Patterson (Phillips) Patterson (Phillips) Patterson (Phillips) </div>	<div style="display: flex; justify-content: space-between;"> 16 15 14 </div> <div style="display: flex; justify-content: space-between;"> Phillips Patterson (Phillips) Patterson (Phillips) </div>	<div style="display: flex; justify-content: space-between;"> 21 22 23 </div> <div style="display: flex; justify-content: space-between;"> Patterson (Phillips) Patterson (Phillips) Patterson (Phillips) </div>
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*Patterson Petroleum, Inc.*

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

May 24, 1999

Mack Energy, Corp.
P.O. Box 276
Artesia, NM 88210

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.

Sincerely,

Joe Fitzgerald
Land Manager

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

MACK ENERGY CORP.

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

State of New Mexico
 Energy, Minerals & 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

¹ Operator Name and Address. PATTERSON PETROLEUM, INC. P.O. DRAWER 1416 SNYDER, TX 79550		¹ OGRID Number 141928
		¹ API Number 30 - 0
⁴ Property Code	³ Property Name Arrowhead State 15	⁴ Well No. 1

⁷ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	15	17S	33E		1087	North	1235	East	Lea

⁸ Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
⁹ Proposed Pool 1 Wildcat - Atoka/Morrow					¹⁰ Proposed Pool 2 Leamex - Penn.				


¹¹ Work Type Code N	¹² Well Type Code O & G	¹³ Cable/Rotary R	¹⁴ Lease Type Code S	¹⁵ Ground Level Elevation 4157'
¹⁶ Multiple No	¹⁷ Proposed Depth 13,800'	¹⁸ Formation Morrow	¹⁹ Contractor Patterson Drilling	²⁰ Spud Date Upon Approval

²¹ Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13-3/8"	48#	400'	400 sx	Surface
11"	8-5/8"	32#	4800'	1900 sx	Surface
7-7/8"	5-1/2"	17# & 20#	13,800'	1250 sx	8000'

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Drilling fluid synopsis attached
 BOP: Series 900 5000# WP - See Figure 2.5 attached
 Additional casing & cementing information attached

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief. Signature: 		OIL CONSERVATION DIVISION	
Printed name: Nolan von Roeder		Approved by:	
Title: Petroleum Engineer		Title:	
Date: 05/21/99		Approval Date:	Expiration Date:
Phone: 915/573-1938		Conditions of Approval: Attached <input type="checkbox"/>	

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

State of New Mexico

Form C-102

Energy, Minerals and Natural Resources Department

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

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

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

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		Wildcat - Atoka/Morrow
Property Code	Property Name	Well Number
	ARROWHEAD STATE 15	1
OGRID No.	Operator Name	Elevation
141928	PATTERSON PETROLEUM, INC	4157

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	15	17 S	33 E		1087	NORTH	1235	EAST	LEA

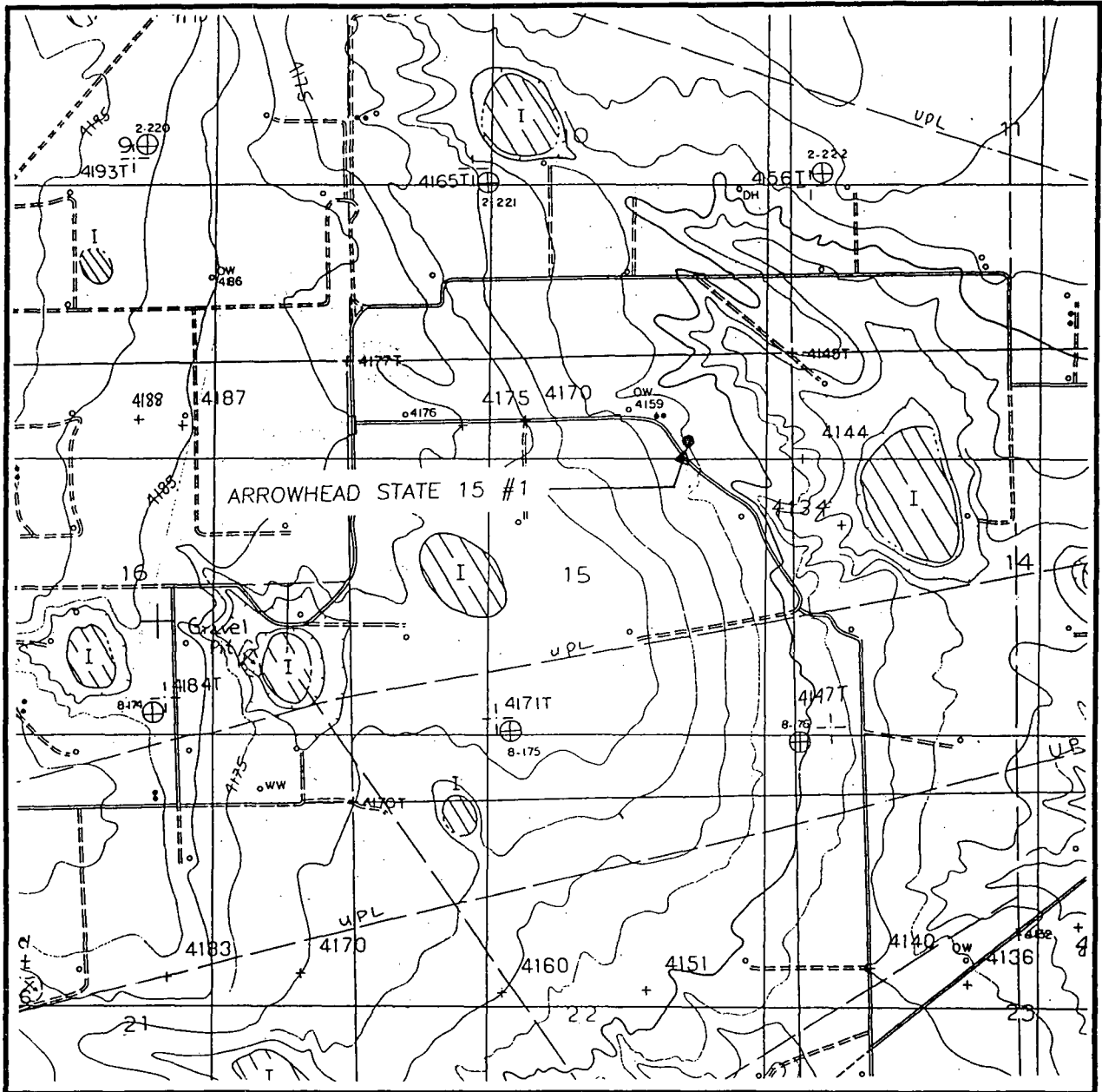
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres		Joint or Infill		Consolidation Code		Order No.			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>NAD 27 NME Y=669570 N X=711130 E</p>	<p>OPERATOR CERTIFICATION</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</i></p> <p>Signature _____ Joe Fitzgerald Printed Name Land Manager Title 5-24-99 Date</p>
	<p>SURVEYOR CERTIFICATION</p> <p><i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i></p> <p>MAY 18, 1999</p> <p>Date Surveyed _____ DMCC Signature & Seal _____ Professional Surveyor</p> <p><i>(Circular Seal: RONALD EIDSON, NEW MEXICO, 5-19-99, 30-1-0402)</i></p> <p>Plate No. RONALD EIDSON 3239 CARA EIDSON 12641 GAYNE McDONALD 12185</p>

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
DOG LAKE - 10'
WITH 5' SUPP.

SEC. 15 TWP. 17-S RGE. 33-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 1087' FNL & 1235' FEL

ELEVATION 4157

OPERATOR PATTERSON PETROLEUM, INC.

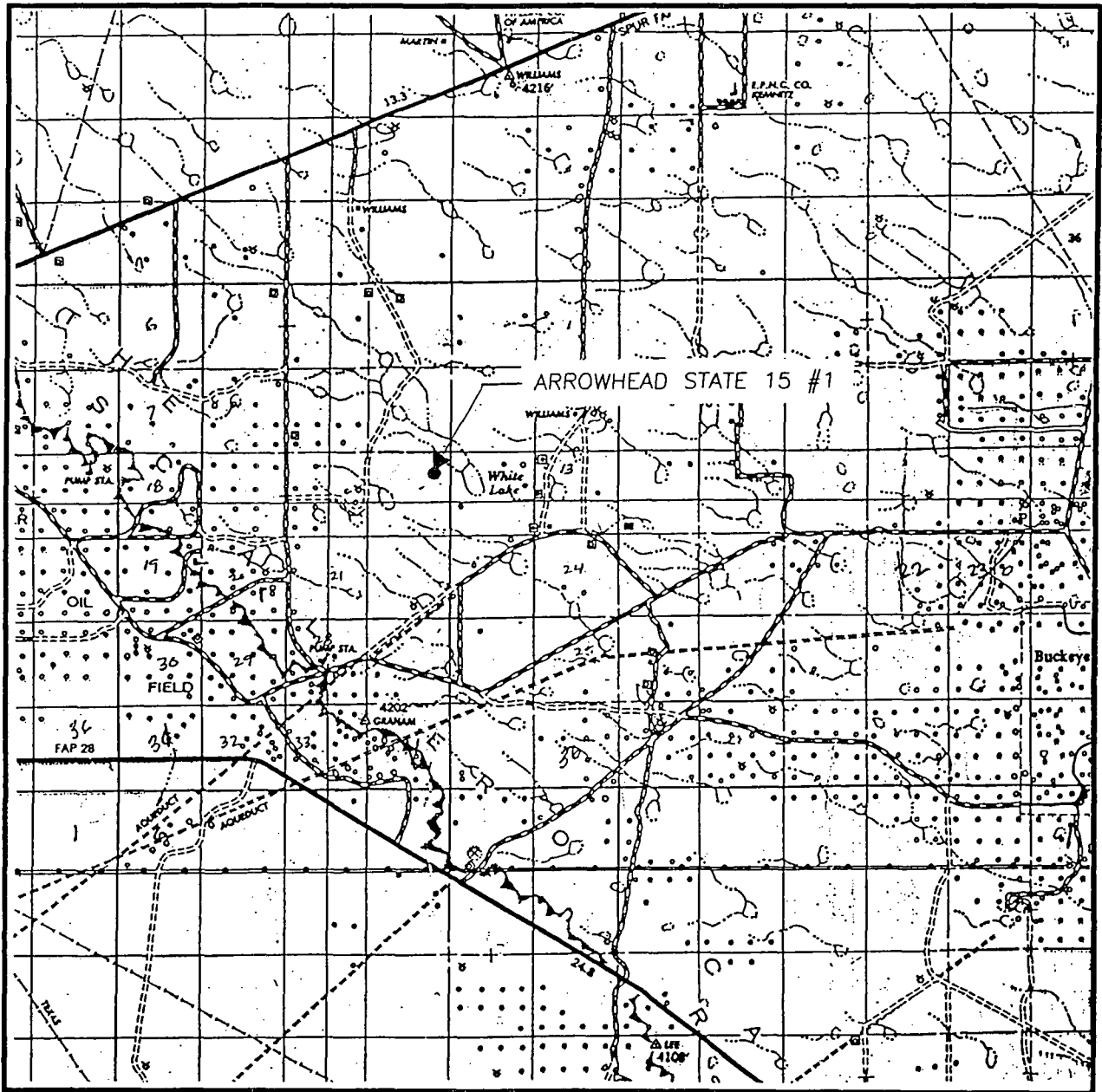
LEASE ARROWHEAD STATE 15

U.S.G.S. TOPOGRAPHIC MAP

DOG LAKE, N.M.

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

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 15 TWP. 17-S RGE. 33-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 1087' FNL & 1235' FEL

ELEVATION 4157

OPERATOR PATTERSON PETROLEUM, INC.

LEASE ARROWHEAD STATE 15

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



Patterson Petroleum, Inc.

P.O. Box 1416
Snyder, Texas 79550

DRILLING FLUID SYNOPSIS

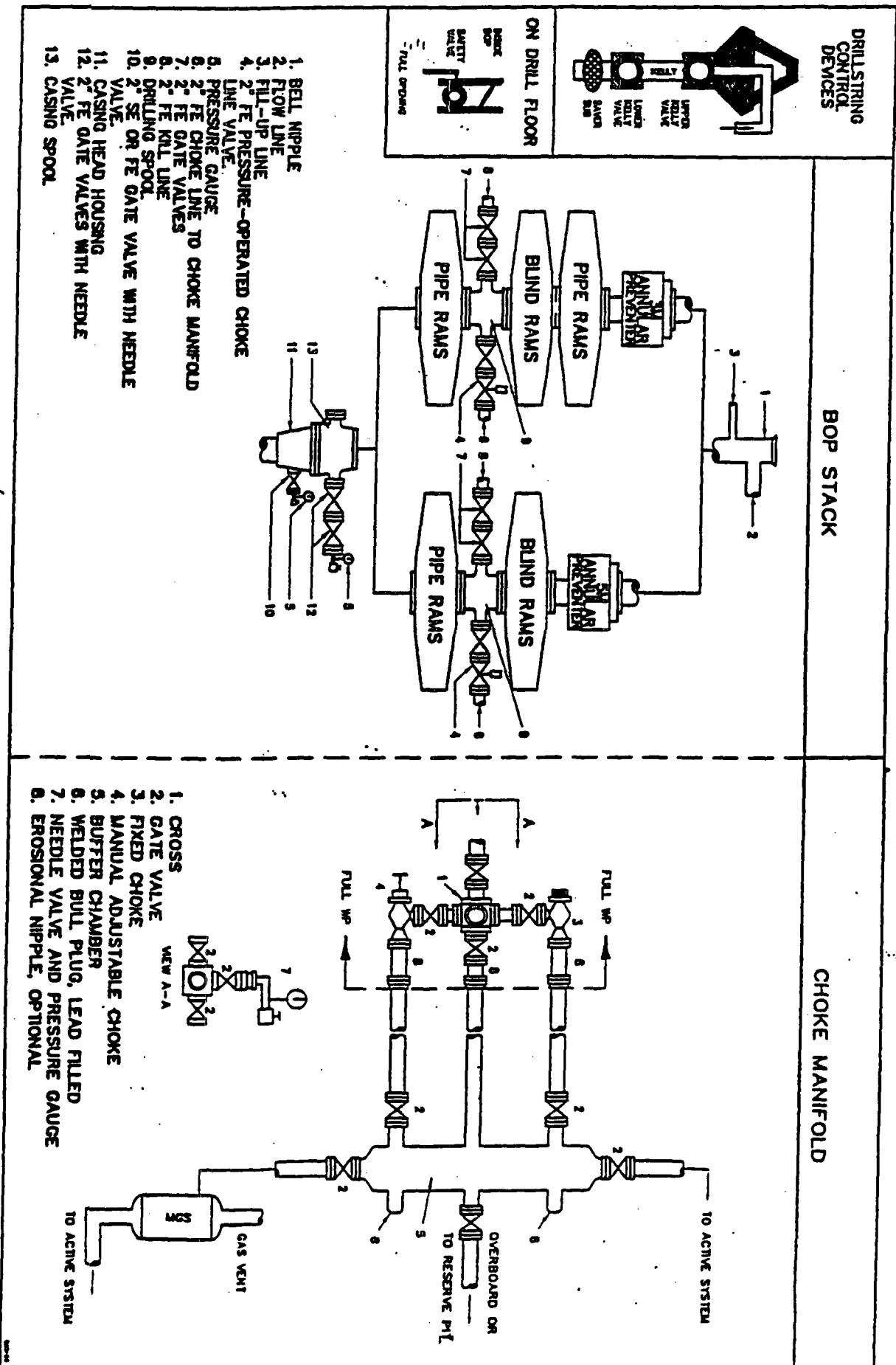
PATTERSON PETROLEUM, INC.
Arrowhead State 15 #1

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

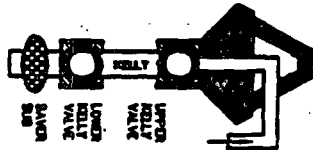
CASING

13-3/8" at 400'
8-5/8" at 4,800'
5-1/2" at 13,800'

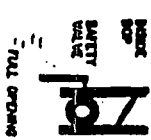
DEPTH	MUD WEIGHT	VISCOSITY	FLUID LOSS	DRILL SOLIDS	COMMENTS
0'-400'	8.6 to 9.5	32 to 45	No control	<5%	Spud mud, Paper
400'-4800'	10.0 to 10.1	28 to 29	No control	<1%	Brine water Paper, caustic
4800'-12,500'	8.4 to 9.2	28 to 29	No control	<1%	Fresh water, Caustic, Paper (Brine if needed)
12,500'-13,800'	9.0 TO 9.5	36 to 42	<10cc	<5%	Xanthan Gum, White starch PAC, Caustic



DRILLSTRING CONTROL DEVICES

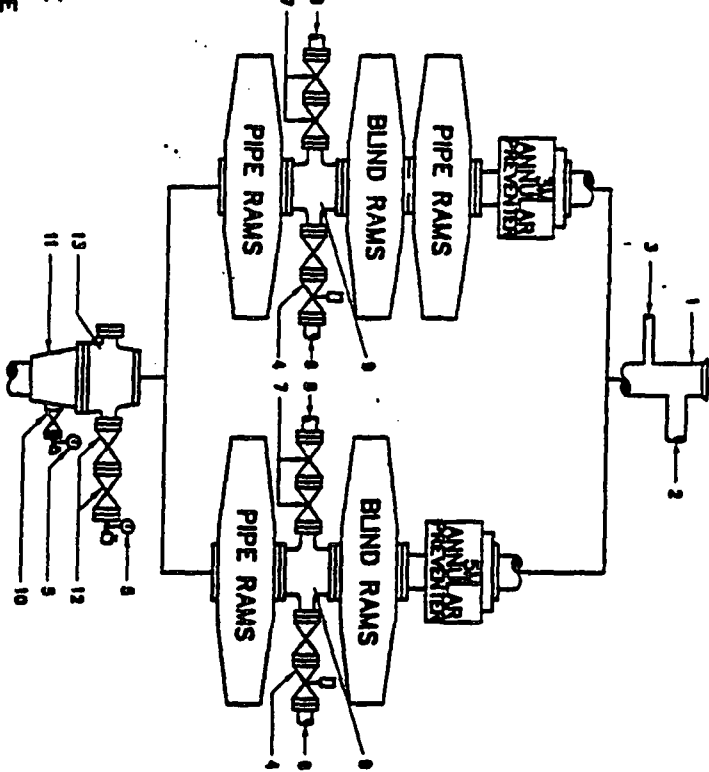


ON DRILL FLOOR

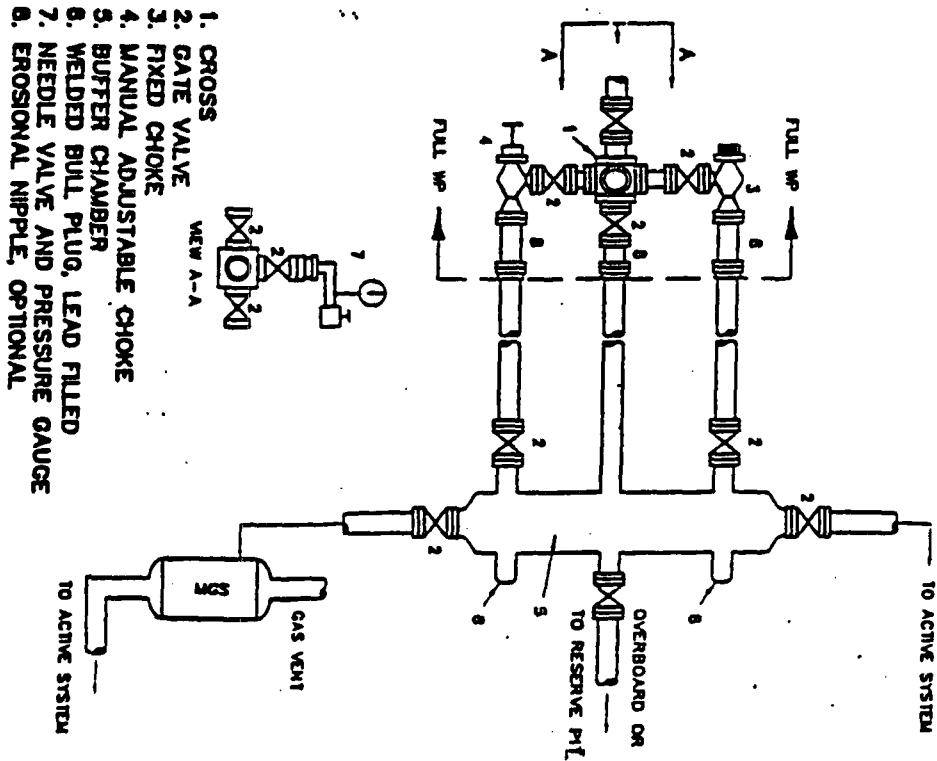


1. BELL NIPPLE
2. FLOW LINE
3. FILL-UP LINE
4. 2" FE PRESSURE-OPERATED CHOKE LINE VALVE
5. PRESSURE GAUGE
6. 2" FE CHOKER LINE TO CHOKER MANIFOLD
7. 2" FE GATE VALVES
8. 2" FE KILL LINE
9. DRILLING SPOOL
10. 2" SE OR FE GATE VALVE WITH NEEDLE VALVE
11. CASING HEAD HOUSING
12. 2" FE GATE VALVES WITH NEEDLE VALVE
13. CASING SPOOL

BOP STACK



CHOKE MANIFOLD



1. CROSS
2. GATE VALVE
3. FIXED CHOKE
4. MANUAL ADJUSTABLE CHOKE
5. BUTTER CHAMBER
6. WELDED BULL PLUG, LEAD FILLED
7. NEEDLE VALVE AND PRESSURE GAUGE
8. EROSIONAL NIPPLE, OPTIONAL

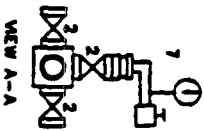


Fig. 2.5. Class 3 BOP and Choke Manifold.

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 : 1600 sx of 35:65 Poz Class "C" + 5% salt + 6% gel + 1/4 lb/sk celloflake
+ 2/10 % antifoamer

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

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

PROPOSED CASING & CEMENTING PROGRAM

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

PATTERSON PETROLEUM, INC.

410 N. Lorraine, SUITE B

Midland, Texas 79701

Work Phone: (915) 685-1414

Fax: (915) 685-1133

WE HAVE 17 PAGES TO SEND WHICH INCLUDES THIS PAGE. IF YOU NEED CONFIRMATION OR A RESEND OF ANY PAGE, PLEASE CALL (915) 685-1414 WITHIN 15 MINUTES. IF NO CALL IS RECEIVED, WE WILL ASSUME YOU HAVE RECEIVED THE PAGES SATISFACTORILY. THIS FACSIMILE IS CONFIDENTIAL AND IF THIS FAX IS SENT TO YOU BY MISTAKE, PLEASE DESTROY.

DELIVER TO: Michael Stogner, NMOCD

FROM: Joe Fitzgerald

DATE: 5-25-99

TIME: _____

RE: Request for Unorthodox Location

MESSAGE:

Enclosed please find our application and request for administrative approval of the unorthodox location for our Arrowhead St. 15 #1 Well, to be drilled in Section 15, T-17-S, R-33-E, Lea County, New Mexico. I am sending the original application by Federal Express, which you should have tomorrow morning. Should you have any question, comments or need further information please call. My toll free phone number is 1-800-470-4200.



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.

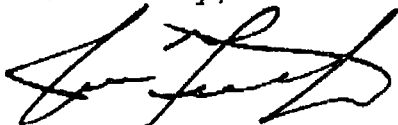
The subject location is unorthodox. However, Patterson/Phillips either own all of the offset pool units or we have obtained a waiver from the third party owning an interest in same. Submitted herewith is a land plat indicating the offset pool unit ownership. Please note Patterson (through our agreement 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 are on State minerals. To summarize, we either own or have 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.

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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

Ventana
EXPLORATION



DATE: May 24, 1999

TO: Michael Stogner, NMOCD

FROM: Truitt Matthews, Petroleum Geologist *tm*

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

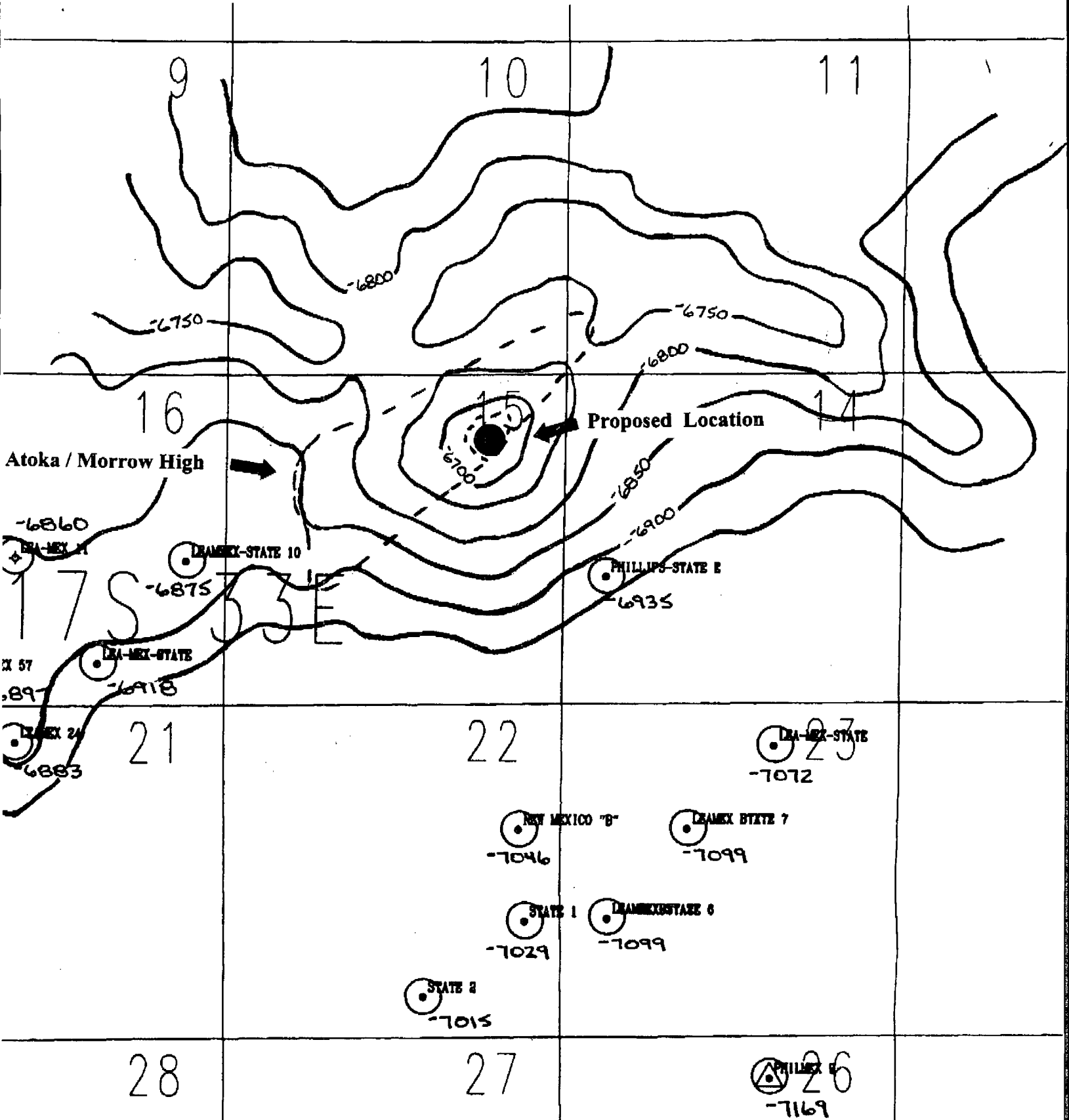
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The Arrowhead Prospect is primarily a result of the interpretation of a 3-D seismic shoot conducted in 1994. This combination structural stratigraphic trap lies along a subtle NE-SW trending ridge as evidenced by 3-D seismic mapping on several deep 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.

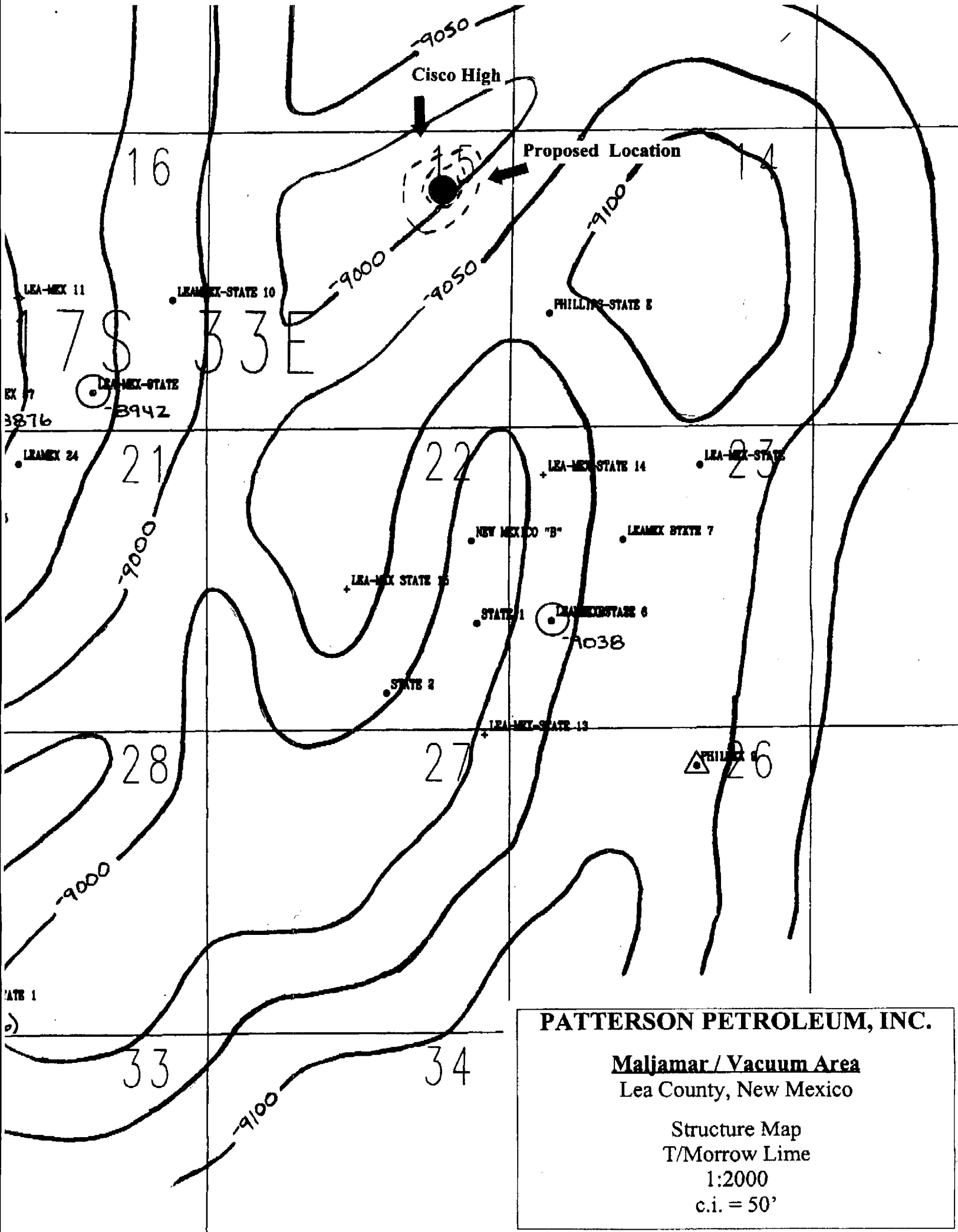


PATTERSON PETROLEUM, INC.

Maljamar / Vacuum Area
Lea County, New Mexico

Structure Map
T/Cisco Leamex Zone
1:2000
c.i. = 50'

ATE 1



PATTERSON PETROLEUM, INC.

Maljamar / Vacuum Area
 Lea County, New Mexico

Structure Map
 T/Morrow Lime
 1:2000
 c.i. = 50'

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)

9 Phillips Patterson (Phillips)	10 Mack Energy Patterson (Phillips)	11 Mack Energy Patterson (Phillips)
Patterson (Phillips) 16 Phillips	15 Patterson (Phillips)	14 Patterson (Phillips)
21 Patterson (Phillips)	22 Patterson (Phillips)	23 Patterson (Phillips)



Patterson Petroleum, Inc.

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

May 24, 1999

Mack Energy, Corp.
P.O. Box 276
Artesia, NM 88210

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.

Sincerely,

Joe Fitzgerald
Land Manager

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

MACK ENERGY CORP.

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

State of New Mexico
Energy, Minerals & 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

¹ Operator Name and Address. PATTERSON PETROLEUM, INC. P.O. DRAWER 1416 SNYDER, TX 79550		² OGRID Number 141928
		³ API Number 30 - 0
⁴ Property Code	⁵ Property Name Arrowhead State 15	⁶ Well No. 1

⁷ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	15	17S	33E		1087	North	1235	East	Lea

⁸ Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
⁹ Proposed Pool 1 Wildcat - Atoka/Morrow					¹⁰ Proposed Pool 2 Leamex - Penn.				


¹¹ Well Type Code N	¹² Well Type Code O & G	¹³ Cable/Rotary R	¹⁴ Lease Type Code S	¹⁵ Ground Level Elevation 4157'
¹⁶ Multiple No	¹⁷ Proposed Depth 13,800'	¹⁸ Formation Morrow	¹⁹ Contractor Patterson Drilling	²⁰ Spud Date Upon Approval

²¹ Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13-3/8"	48#	400'	400 sx	Surface
11"	8-5/8"	32#	4800'	1900 sx	Surface
7-7/8"	5-1/2"	17# & 20#	13,800'	1250 sx	8000'

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Drilling fluid synopsis attached
BOP: Series 900 5000# WP - See Figure 2.5 attached
Additional casing & cementing information attached

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief. Signature: 		OIL CONSERVATION DIVISION	
Printed name: Nolan von Roeder		Approved by:	
Title: Petroleum Engineer		Title:	
Date: 05/21/99		Approval Date:	Expiration Date:
Phone: 915/573-1938		Conditions of Approval: Attached <input type="checkbox"/>	

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

State of New Mexico
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

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

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

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		Wildcat - Atoka/Morrow
Property Code	Property Name	Well Number
	ARROWHEAD STATE 15	1
OGRID No.	Operator Name	Elevation
141928	PATTERSON PETROLEUM, INC	4157

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	15	17 S	33 E		1087	NORTH	1235	EAST	LEA

Bottom Hole Location If Different From Surface

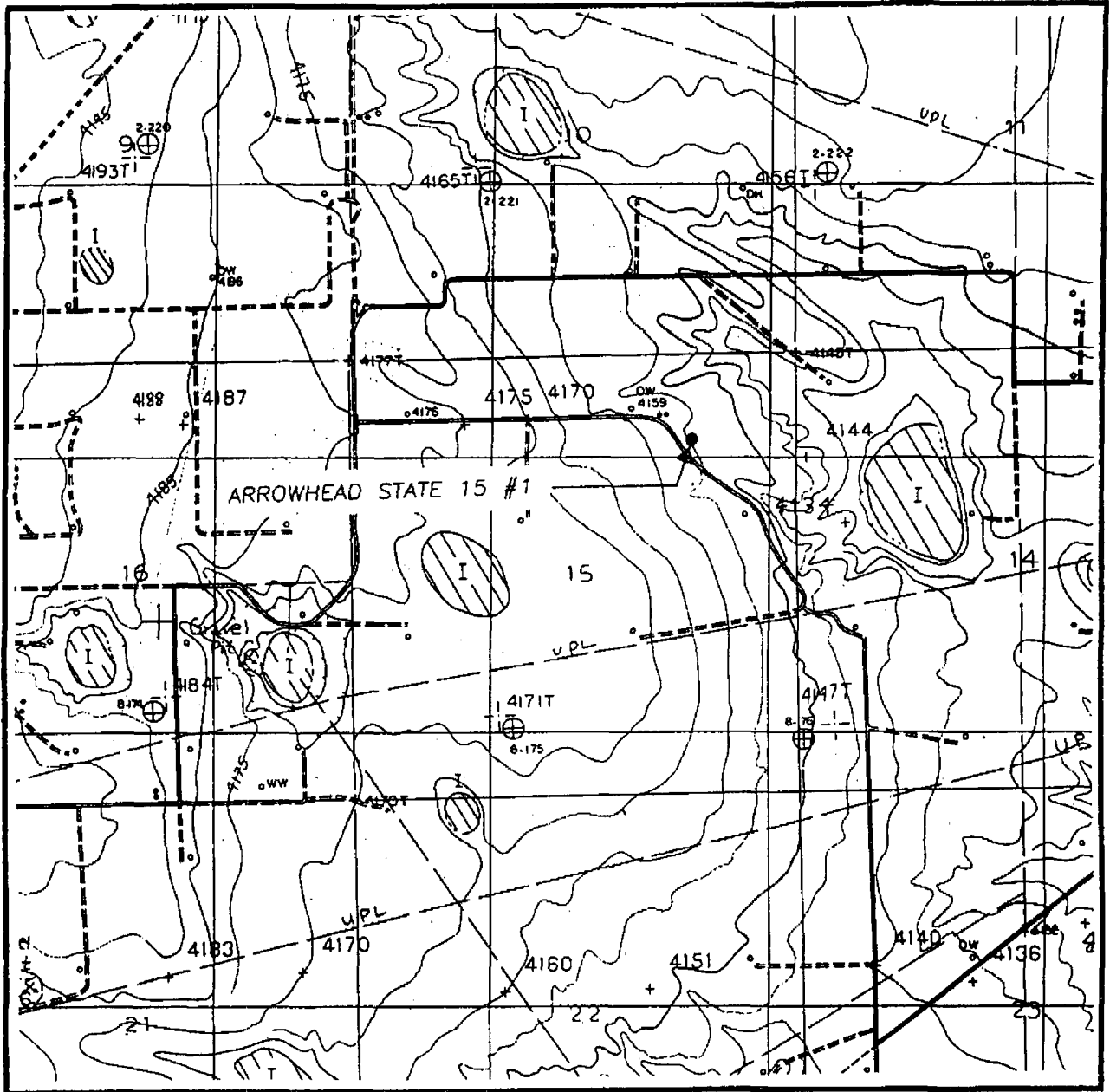
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>NAD 27 NME Y=669570 N X=711130 E</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p>Signature _____ Joe Fitzgerald Printed Name Land Manager Title Date 5-24-99</p>
	<p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>Date Surveyed MAY 18, 1999 DMCC</p> <p>Signature _____ Professional Surveyor Date 5-19-99</p> <p>Contract No. RONALD S. EIDSON 3239 GARY EIDSON 12841 McDONALD 12185</p>

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
DOG LAKE - 10'
WITH 5' SUPP.

SEC. 15 TWP. 17-S RGE. 33-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 1087' FNL & 1235' FEL

ELEVATION 4157

OPERATOR PATTERSON PETROLEUM, INC.

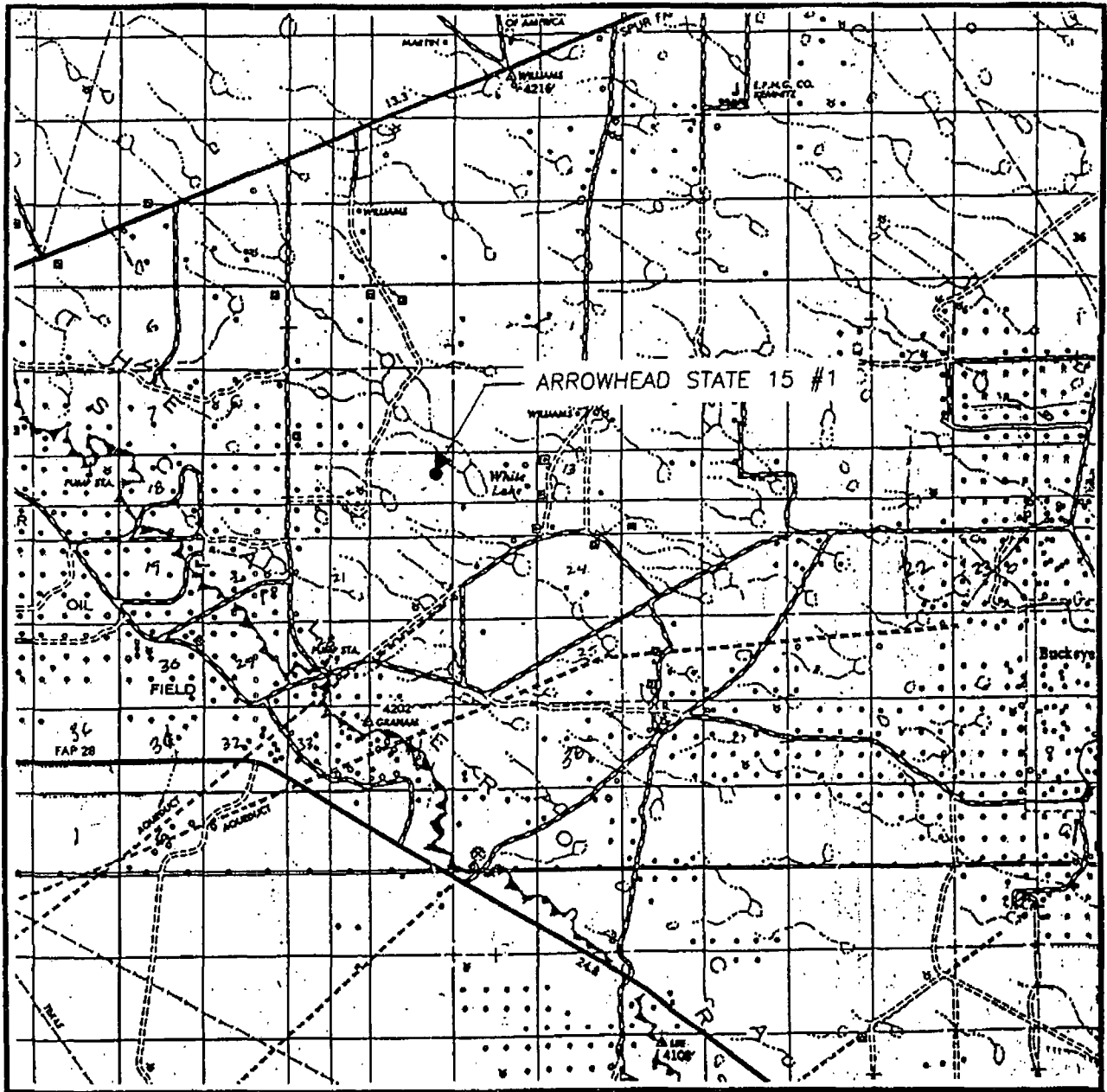
LEASE ARROWHEAD STATE 15

U.S.G.S. TOPOGRAPHIC MAP

DOG LAKE, N.M.

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

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 15 TWP. 17-S RGE. 33-E

SURVEY N.M.P.M.

COUNTY LEA

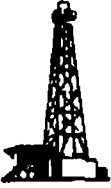
DESCRIPTION 1087' FNL & 1235' FEL

ELEVATION 4157

OPERATOR PATTERSON PETROLEUM, INC.

LEASE ARROWHEAD STATE 15

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

<u>CASING</u>		
13-3/8"	at	400'
8-5/8"	at	4,800'
5-1/2"	at	13,800'

DEPTH	MUD WEIGHT	VISCOSITY	FLUID 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%	Fresh water, Caustic, Paper (Brine if needed)
12,500'-13,800'	9.0 TO 9.5	36 to 42	<10cc	<5%	Xanthan Gum, White starch PAC, Caustic

Phone: (915) 573-1938
Fax: (915) 573-1939

2-25

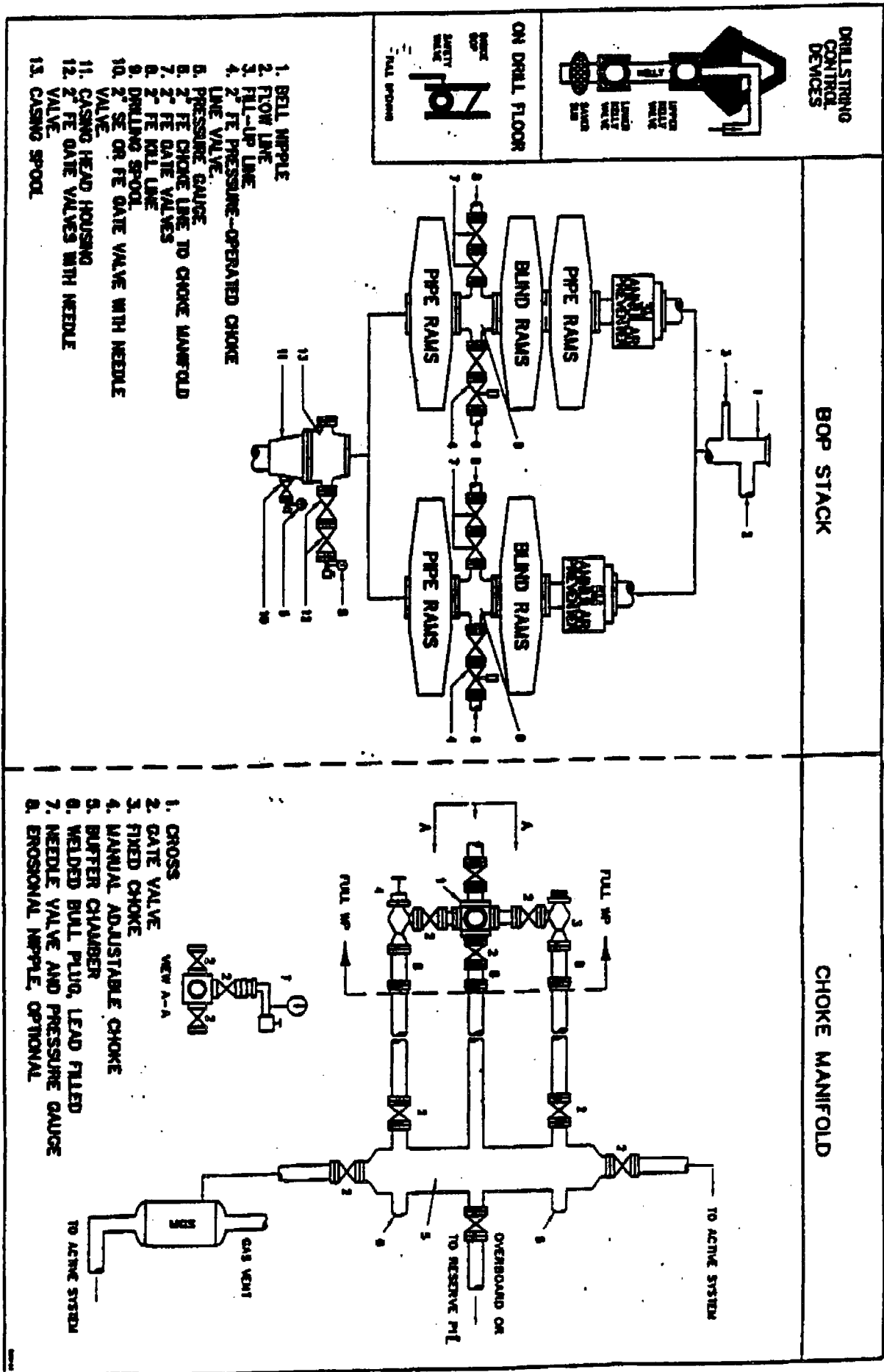


Fig. 2.5. Class 3 BOP and Choke Manifold.

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" HoleCirculate 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" HoleLead: 1600 sx of 35:65 Poz Class "C" + 5% salt + 6% gel + 1/4 lb/sk celloflake
+ 2/10 % antifoamer

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

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

PROPOSED CASING & CEMENTING PROGRAM

ARF WHEAD 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

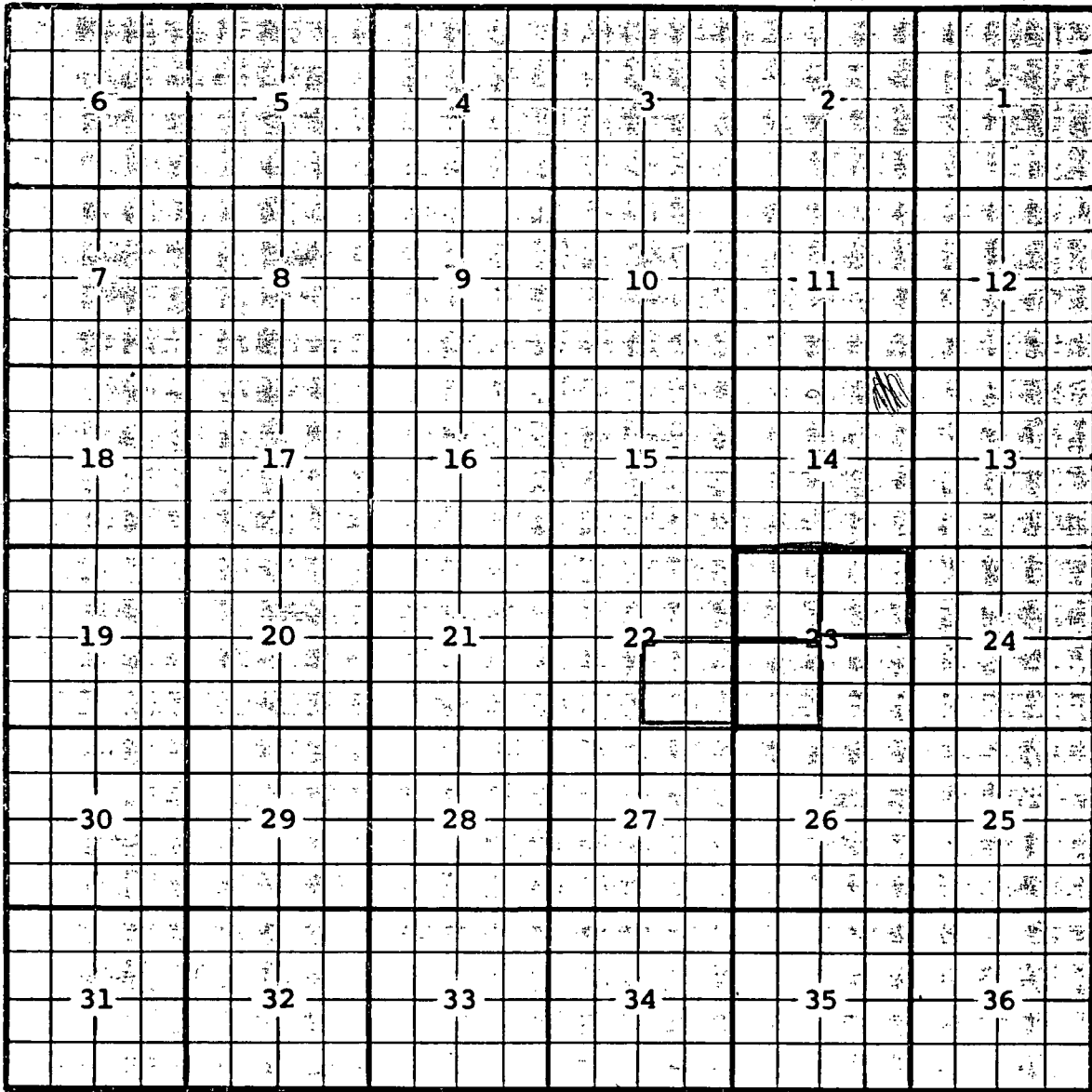
COUNTY *Lea*

POOL *Leamex - Pennsylvanian*

TOWNSHIP *17 South*

RANGE *33 East*

NMPM



Description: $\frac{SW}{4}$ Sec 23 (R-933, 12-28-56)

- $\frac{NW}{4}$ Sec 23 (R-1397, 6-1-59) - $\frac{NE}{4}$ Sec 23 (R-1652, 5-1-60)

Ext: $\frac{SE}{4}$ Sec 22 (R-4937, 2-1-75)

Blank lined area for additional notes or signatures.

CMD :
OG5SECT

ONGARD
INQUIRE LAND BY SECTION

05/25/99 15:27:46
OGOMES -TPZE
PAGE NO: 1

Sec : 15 Twp : 17S Rng : 33E Section Type : NORMAL

D 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A	C 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A	B 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A	A 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A
E 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU	F 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A	G 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU	H 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A

PF01 HELP PF02 PF03 EXIT PF04 GoTo PF05 PF06
PF07 BKWD PF08 FWD PF09 PRINT PF10 SDIV PF11 PF12

CMD :
OG5SECTONGARD
INQUIRE LAND BY SECTION05/25/99 15:27:54
OGOMES -TPZE
PAGE NO: 2

Sec : 15 Twp : 17S Rng : 33E Section Type : NORMAL

L 40.00 CS B02148 0003 09/43 PHILLIPS PETROLEU A	K 40.00 CS B02148 0003 09/43 PHILLIPS PETROLEU A	J 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A	I 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A
M 40.00 CS B02148 0003 09/43 PHILLIPS PETROLEU	N 40.00 CS B02148 0003 09/43 PHILLIPS PETROLEU A	O 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU	P 40.00 CS B02229 0001 11/43 PHILLIPS PETROLEU A

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PF07 BKWD PF08 FWD PF09 PRINT PF10 SDIV PF11 PF12