

Patterson Petroleum, Inc.

410 N. Loraine, Suite B

Midland, Texas 79701

(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

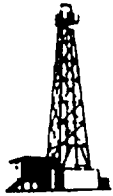
Dear Mrs. Pitzer:

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 your 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.

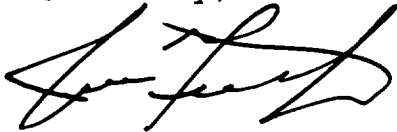
The subject location is unorthodox. However, Patterson/Phillips either own all of the offset pool units or we have obtained a waiver from the third party owning an interest in same. Submitted herewith is a land plat indicating the offset pool unit ownership. Please note Patterson (through our agreement 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 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", with a stylized flourish at the end.

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

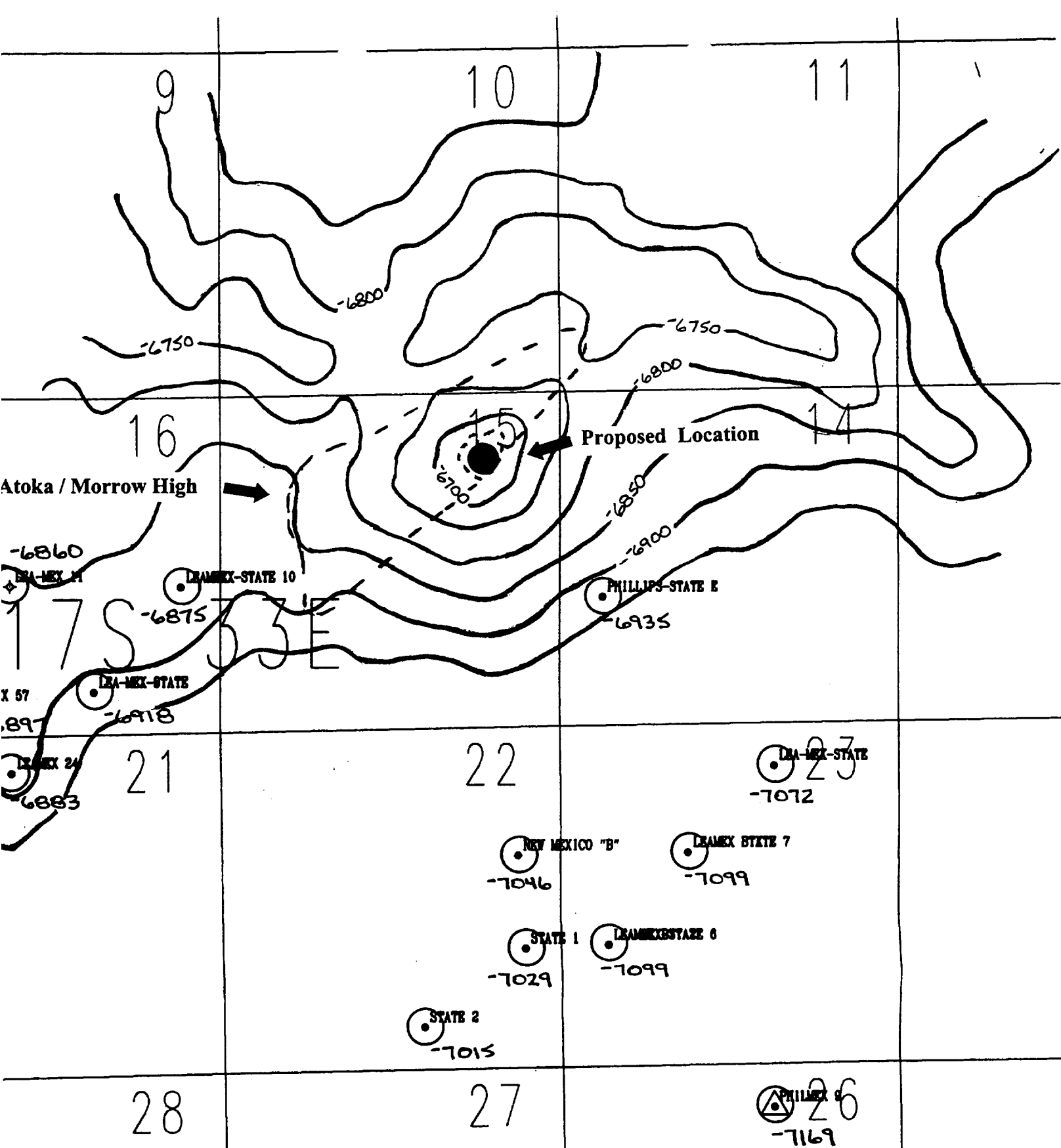
Please find enclosed the two structure maps, T/Morrow Lime and T/Cisco Leamex as supplemental to this brief geological discussion requesting a location exception for an Atoka/Morrow test (PTD 13,800') in Section 15, T17S-R33E (X=711130, Y=669570).

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.



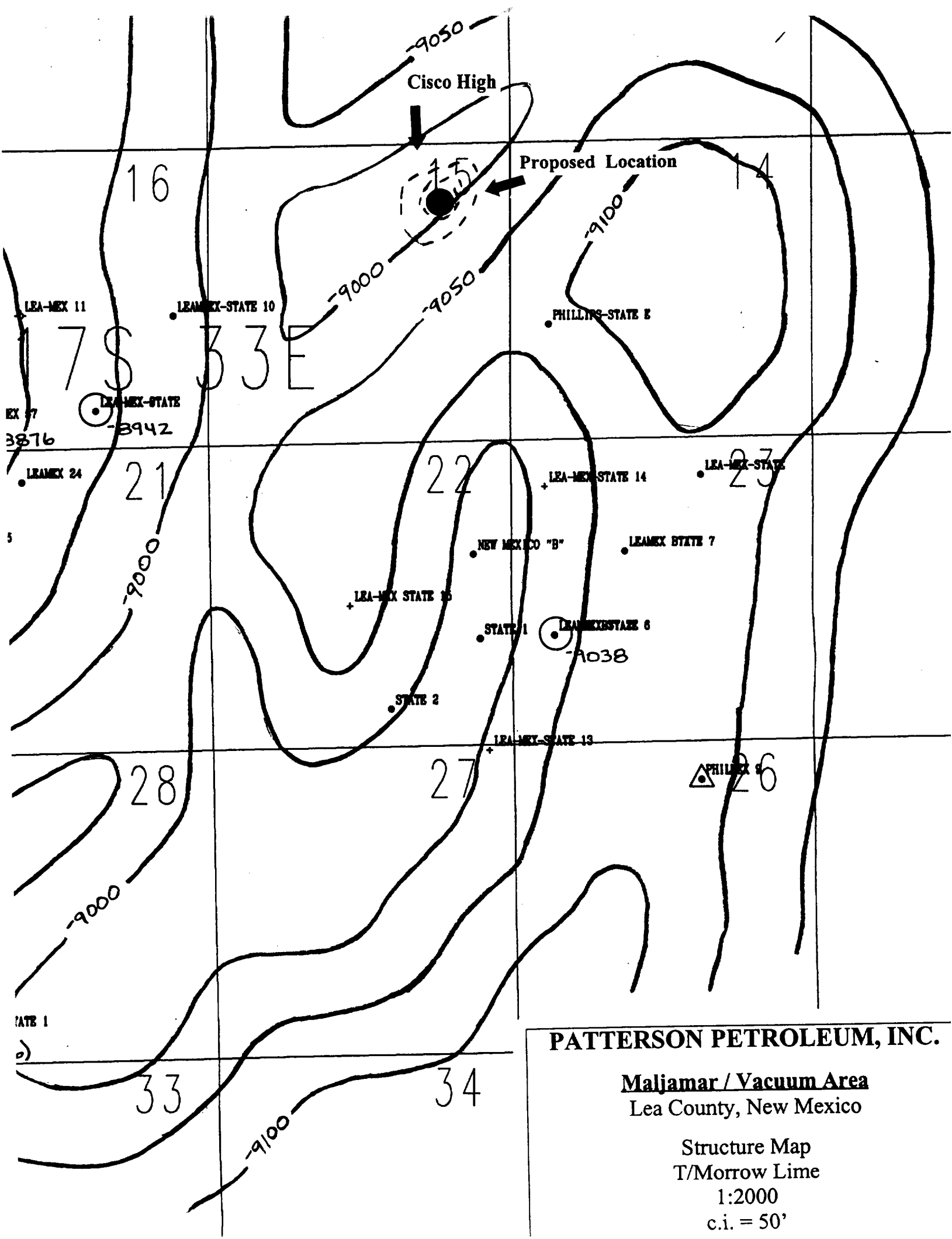
PATTERSON PETROLEUM, INC.

Maljamar / Vacuum Area
Lea County, New Mexico

Structure Map
T/Cisco Leamex Zone

1:2000

1" = 50'



PATTERSON PETROLEUM, INC.

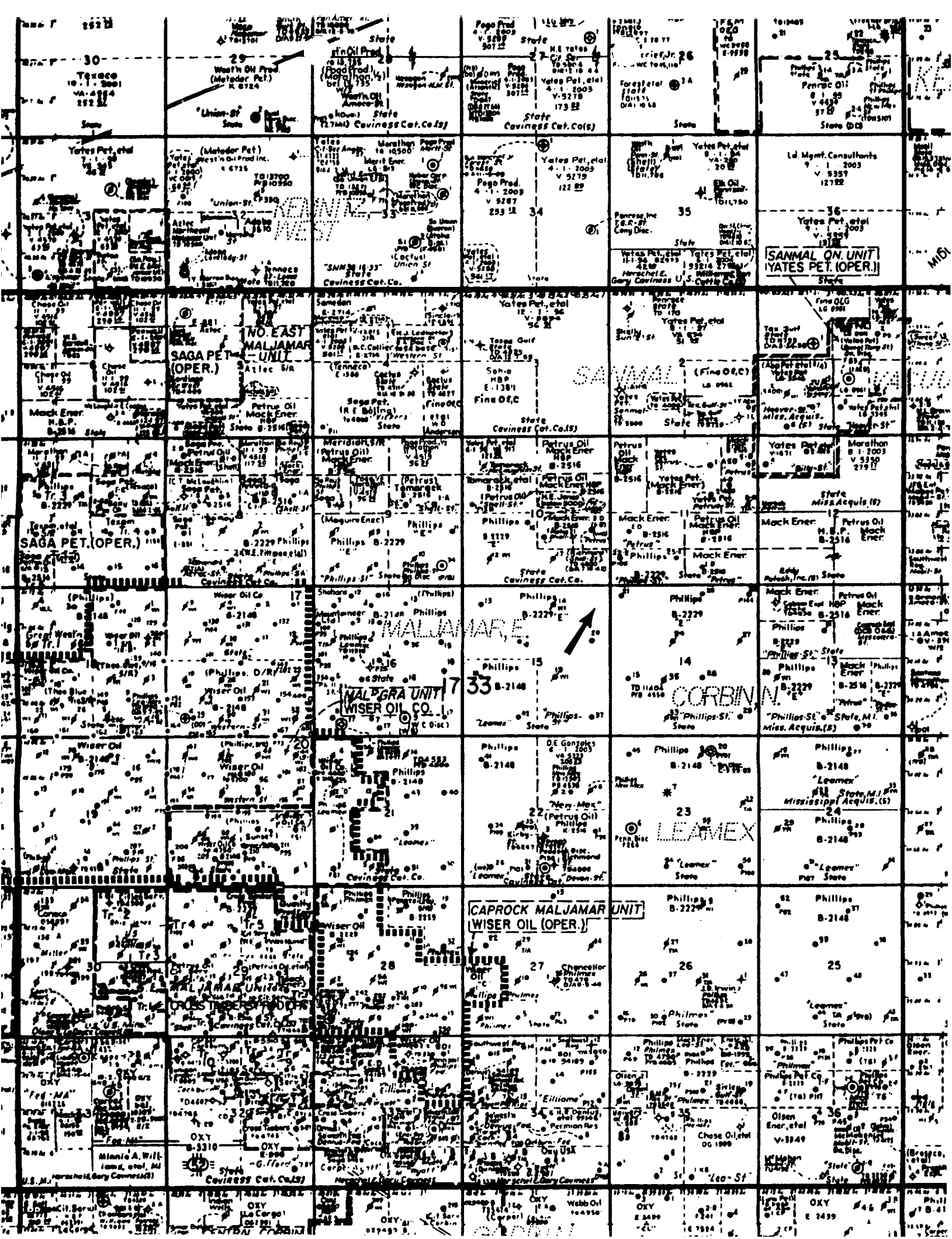
Maljamar / Vacuum Area
Lea County, New Mexico

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)

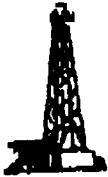
<div>9</div> <div>Phillips</div> <div>Patterson (Phillips)</div>	<div>10</div> <div>Mack Energy</div> <div>Patterson (Phillips)</div>	<div>11</div> <div>Mack Energy</div> <div>Patterson (Phillips)</div>
<div>Patterson (Phillips)</div> <div>16</div> <div>Phillips</div>	<div>15</div> <div>Patterson (Phillips)</div>	<div>14</div> <div>Patterson (Phillips)</div>
<div>21</div> <div>Patterson (Phillips)</div>	<div>22</div> <div>Patterson (Phillips)</div>	<div>23</div> <div>Patterson (Phillips)</div>



MAY-25-1999 08:09

PHILLIPS PETROLEUM CO

915 368 1633 P.02/02

*Patterson Petroleum, Inc.*

410 N. Lorraine, Suite B
Midland, Texas 79701
(915) 885-1414 • Fax 885-1133

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	⁴ Property Name Arrowhead State 15	⁴ Well No. 1

⁷ Surface Location

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

⁹ Proposed Pool 1 Wildcat - Atoka/Morrow	⁹ 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: 

Printed name: Nolan von Roeder
Title: Petroleum Engineer

Date: 05/21/99
Phone: 915/573-1938

OIL CONSERVATION DIVISION

Approved by:

Title:

Approval Date:

Expiration Date:

Conditions of Approval :
Attached ☐

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

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

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
Property Code	Property Name ARROWHEAD STATE 15	Well Number 1
OGRID No. 141928	Operator Name PATTERSON PETROLEUM, INC	Elevation 4157

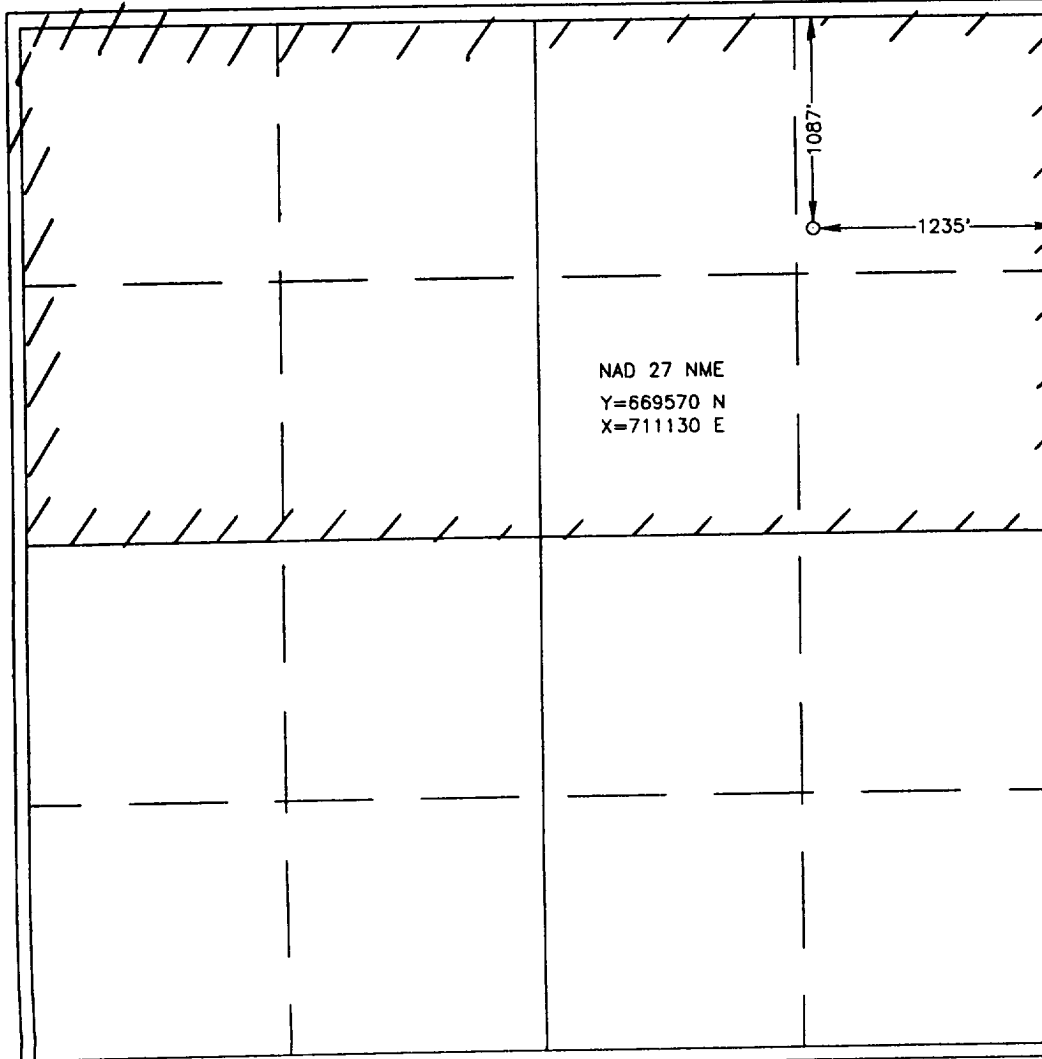
Surface Location

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

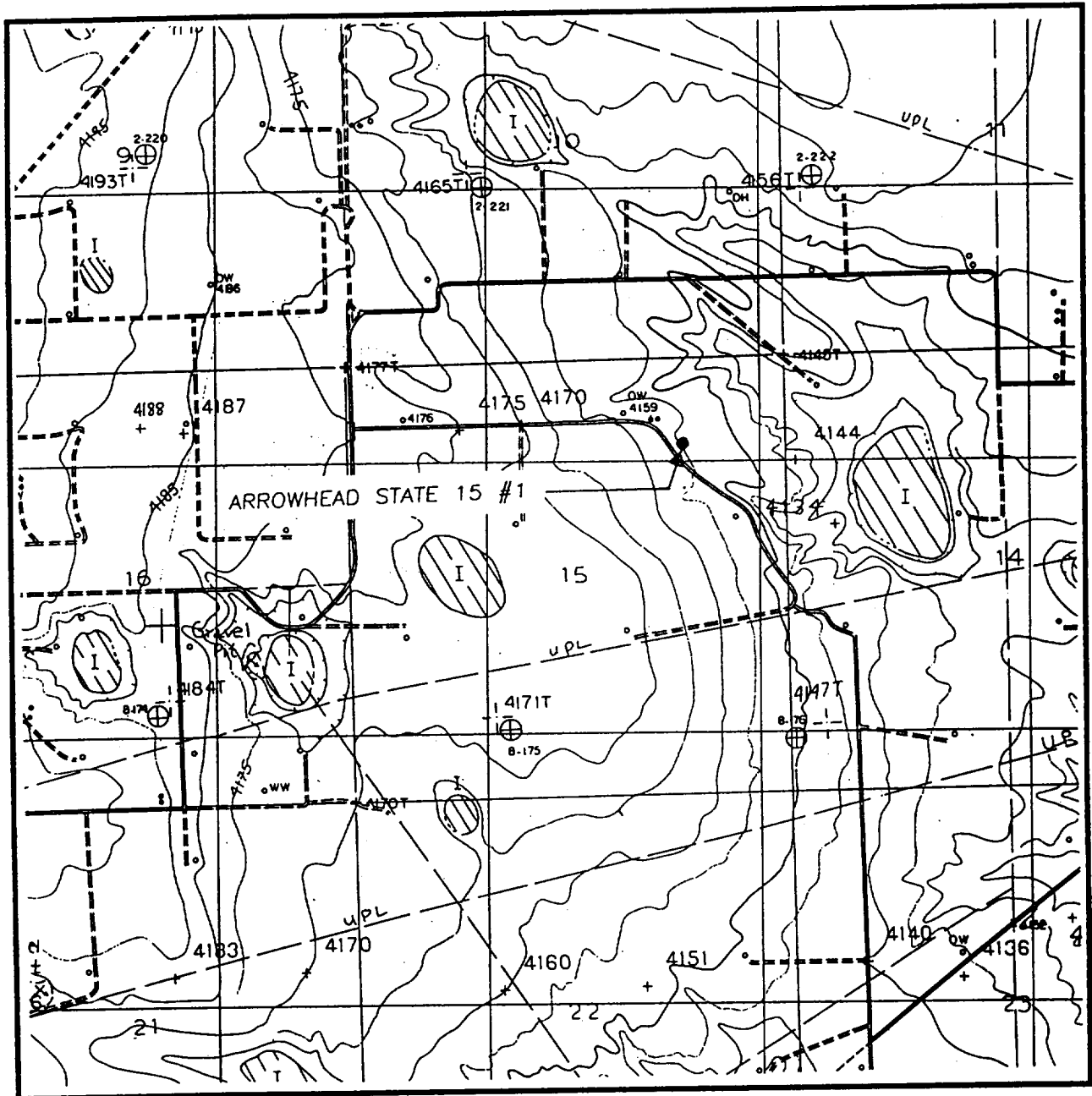
Bottom Hole Location If Different From Surface

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>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 <u>Joe Fitzgerald</u> Printed Name <u>Land Manager</u> Title <u>5-24-99</u> Date</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>MAY 18, 1999</p> <p>Date Surveyed Signature of Surveyor Professional Surveyor NEW MEXICO 5-19-99 5-11-0402</p> <p>Contract No. RONALD EIDSON 3239 CARM EIDSON 12641 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.

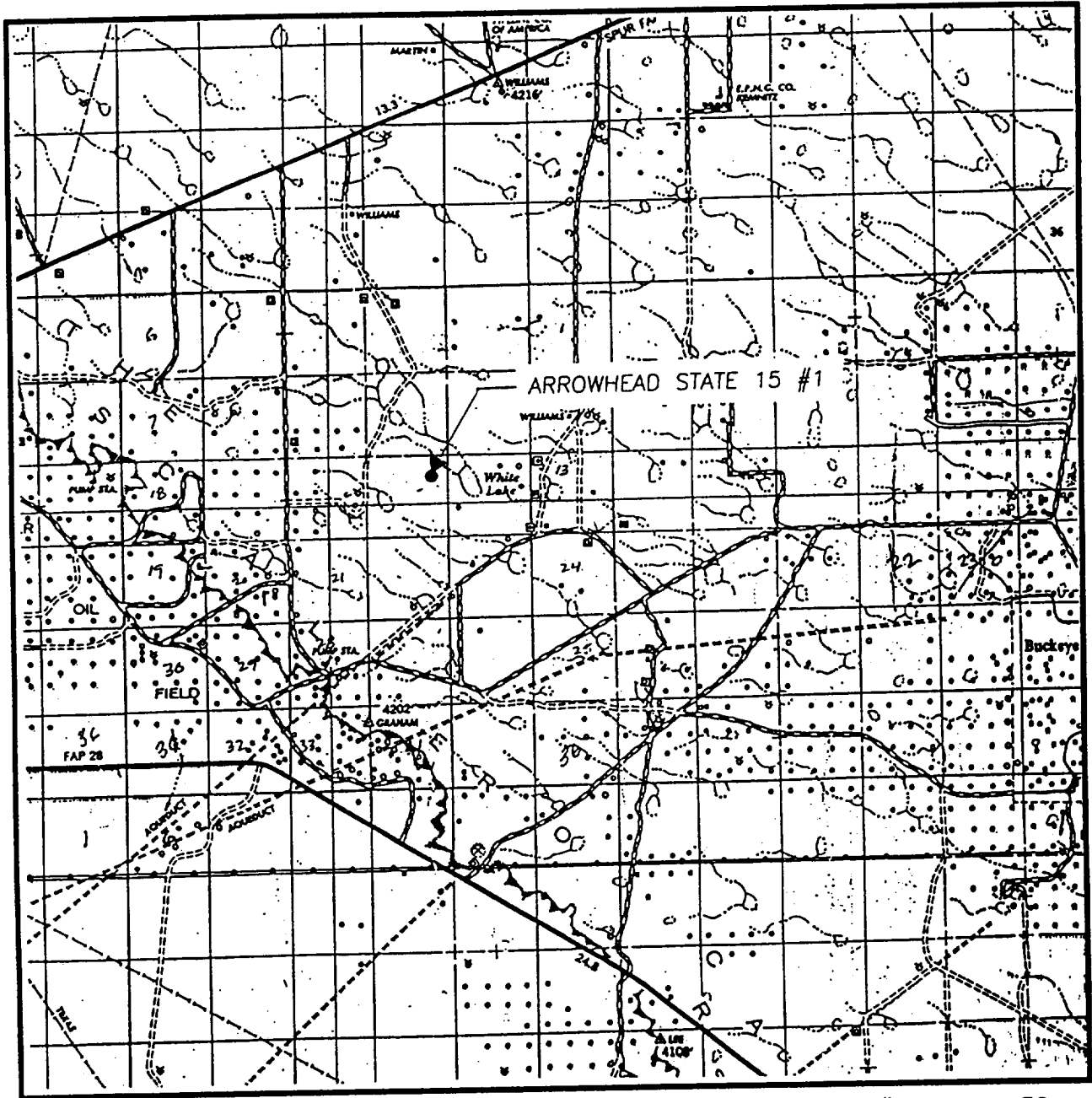
LEASE ARROWHEAD STATE 15

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

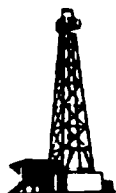
DESCRIPTION 1087' FNL & 1235' FEL

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	410cc	<5%	Xanthan Gum, White starch PAC, Caustic

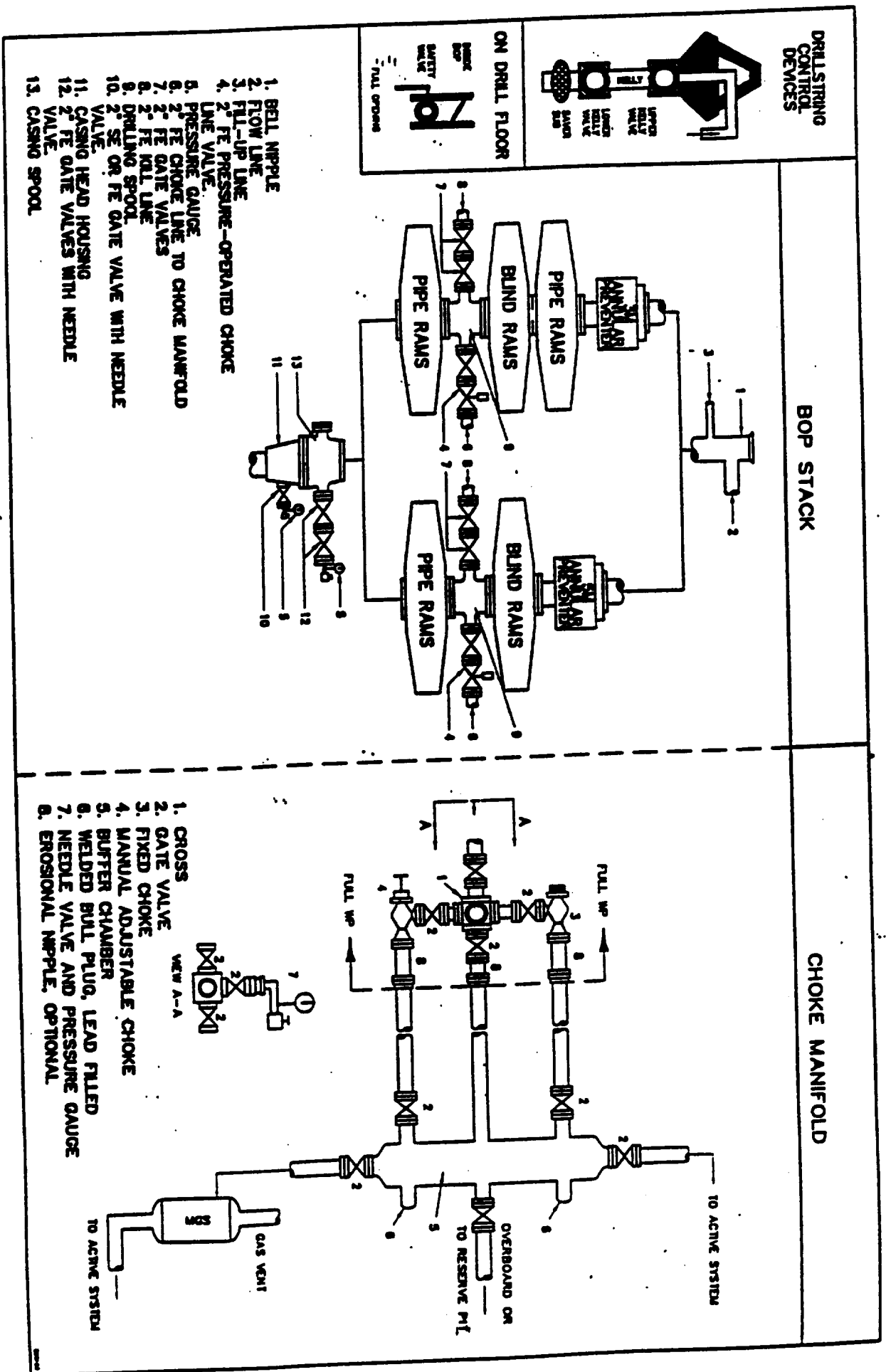


Fig. 2.5. Class 3 BOP and Choke Manifold.

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

ELF
ABOVE DATE DOES NOT
INDICATE WHEN
CONFIDENTIAL LOGS
WILL BE RELEASED