

DHC

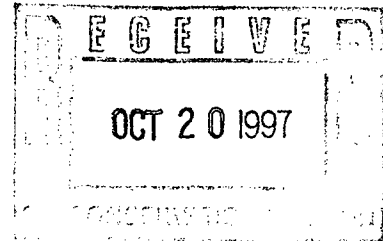
11/10/97

Mid-Continent Region
Production United States**Marathon
Oil Company**P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

1775

October 15, 1997

Mr. David Catanach
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501-2088



Re: Request for Exception to Rule 303-A
Downhole Commingling
Warn St. A/C 1 No. 7
UL "F", 2,036' FNL & 2,089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
Vacuum Field
Lea County, New Mexico

Dear Mr. Catanach:

Marathon Oil Company requests administrative approval for an exception to Rule 303-A to permit the downhole commingling of production in the above subject well from the Vacuum (Abo), Vacuum (Wolfcamp), and Vacuum (Penn) pools.

The Warn St. A/C 1 No. 7 was drilled as a twin replacement well for the Warn St. A/C 1 No. 3 due to the uneconomical downhole equipment failures being realized in the No. 3. The Abo, Wolfcamp, and Penn zones are currently downhole commingled (DHC-260) in the No. 3. Marathon is requesting to utilize identical production allocation percentages in the twin No. 7. Rod pumping equipment will be utilized to keep the PBHP as low as possible to prevent crossflow.

Enclosed is pertinent data supporting this application as outlined in Rule 303-A. If additional information is necessary, please advise.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Bryan L. Williams'.

Bryan L. Williams
Production Engineer

BLW//regltry/comming/dhc/coverpag/ws1#7
Enclosure

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240DISTRICT II
811 South First St., Artesia, NM 88210DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 S. Pacheco
Santa Fe, New Mexico 87505-8429Form C-107-A
New 3-12-96

APPROVAL PROCESS:

___ Administrative ___ Hearing

EXISTING WELLBORE

___ YES ___ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Operator Marathon Oil Company PO Box 2409 Hobbs, NM 88240
Well No. Warn State A/C 1 7 UL F, Sec. 31, T-17-S, R-35-E Lea
County
OGRID NO. 014021 Property Code 6483 API NO. 30-025-33951 Federal ___ State X (and/or) Fee ___

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zones	Lower Zone
1. Pool Name and Pool Code	Vacuum, Abo 61760	Vacuum, Wolfcamp 62320	Vacuum, Penn 62340
2. Top and Bottom of Pay Section (Perforations)	8438-9309	9466-10,055	10,092-10,559
3. Type of production (Oil or Gas)	Oil	Oil	Oil
4. Method of Production (Flowing or Artificial Lift)	Artificial Lift	Artificial Lift	Artificial Lift
5. Bottomhole Pressure Oil Zones - Artificial Lift: Gas & Oil - Flowing: All Gas Zones: Estimated Current Measured Current Estimated Or Measured Original	a. (Current) 100 PBHP 2000 SBHP b. (Original)	a. 100 PBHP 2150 SBHP b.	a. 100 PBHP 2000 SBHP b.
6. Oil Gravity ($^{\circ}$ API) or Gas BTU Content	41	41	41
7. Producing or Shut-In?			
Production Marginal? (yes or no)			
* If Shut-In, give date and oil/gas/water rates of last production Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data * If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: Rates:	Date: Rates:	Date: Rates:
8. Fixed Percentage Allocation Formula - % for each zone	Oil: 61 % Gas: 78 %	Oil: 9 % Gas: 12 %	Oil: 30 % Gas: 10 %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.

10. Are all working, overriding, and royalty interests identical in all commingled zones? ☒ Yes ___ No
If not, have all working, overriding, and royalty interests been notified by certified mail? ☒ Yes ___ No
Have all offset operators been given written notice of the proposed downhole commingling? ☒ Yes ___ No11. Will cross-flow occur? ___ Yes ☒ No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. ___ Yes ___ No (If No, attach explanation)12. Are all produced fluids from all commingled zones compatible with each other? ☒ Yes ___ No13. Will the value of production be decreased by commingling? ___ Yes ☒ No (If Yes, attach explanation)14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. ☒ Yes ___ No15. NMOCD Reference Cases for Rule 303(C) Exceptions: ORDER NO(S). DHC-260

16. ATTACHMENTS:

- * C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- * Production curve for each zone for at least one year. (If not available, attach explanation.)
- * For zones with no production history, estimated production rates and supporting data.
- * Data to support allocation method or formula.
- * Notification list of all offset operators.
- * Notification list of working, overriding, and royalty interests for uncommon interest cases.
- * Any additional statements, data, or documents required to support commingling.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bryan L. Williams TITLE Production Engineer DATE October 15, 1997TYPE OR PRINT NAME Bryan L. Williams TELEPHONE NO. (505) 393-7106



P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

October 15, 1997

Mr. Pete Martinez
Commissioner of Public Lands
State Land Office Building
P.O. Box 1148
Santa Fe, NM 87504-1148

Re: Request for Exception to Rule 303-A
Downhole Commingling
Warn St. A/C 1 No. 7
UL "F", 2,036' FNL & 2,089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
Vacuum Field
Lea County, New Mexico

Dear Mr. Martinez:

Marathon Oil Company requests administrative approval for an exception to Rule 303-A to permit the downhole commingling of production in the above subject well from the Vacuum (Abo), Vacuum (Wolfcamp), and Vacuum (Penn) pools.

The Warn St. A/C 1 No. 7 was drilled as a twin replacement well for the Warn St. A/C 1 No. 3 due to the uneconomical downhole equipment failures being realized in the No. 3. The Abo, Wolfcamp, and Penn zones are currently downhole commingled (DHC-260) in the No. 3. Marathon is requesting to utilize identical production allocation percentages in the twin No. 7. Rod pumping equipment will be utilized to keep the PBHP as low as possible to prevent crossflow.

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Bryan L. Williams
Production Engineer

BLW//reglatory/commingling/dhc/coverpag/ws1#7
Enclosure

Mid-Continent Region
Production United States



P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

October 15, 1997

Phillips Petroleum Company
4001 Penbrook
Odessa, TX 79762

Re: Request for Exception to Rule 303-A
Downhole Commingling
Warn St. A/C 1 No. 7
UL "F", 2036' FNL & 2089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
Vacuum Field
Lea County, New Mexico

Ladies and/or Gentlemen:

Marathon Oil Company has filed an application with the New Mexico Oil Conservation Division to downhole commingle the above referenced well. Please find enclosed a copy of the application as outlined in Rule 303-A.

If you are in agreement and waive all objections to the downhole commingling, please sign below and mail the original to the NMOCD in the enclosed addressed envelope. Also, please return one copy to Marathon at the letterhead address.

Sincerely,

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Bryan L. Williams
Production Engineer

BLW//reglatory/commingling/dhc/wio/ws1#7
Enclosure

Agreed and accepted this _____ day of _____ 1997

by _____, as representative of

Mid-Continent Region
Production United States



**Marathon
Oil Company**

P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

October 15, 1997

Texaco Exploration and Producing Inc.
Heritage Center
PO Box 3109
Midland, TX 79702-3109

Re: Request for Exception to Rule 303-A
Downhole Commingling
Warn St. A/C 1 No. 7
UL "F", 2036' FNL & 2089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
Vacuum Field
Lea County, New Mexico

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Sincerely,

Bryan L. Williams
Production Engineer

BLW//regltry/comming/dhc/wio/ws1#7
Enclosure

Agreed and accepted this _____ day of _____ 1997

by _____, as representative of

_____.

Mid-Continent Region
Production United States



P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

October 15, 1997

Altura Energy Ltd.
Fasken Center, Tower 1
500 W. Texas
Suite 1225
Midland, TX 79701

Re: Request for Exception to Rule 303-A
Downhole Commingling
Warn St. A/C 1 No. 7
UL "F", 2036' FNL & 2089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
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Sincerely,

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Bryan L. Williams
Production Engineer

BLW//reglatory/commingling/dhc/wio/ws1#7
Enclosure

Agreed and accepted this _____ day of _____ 1997

by _____, as representative of

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised October 18, 1994

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
811 S. 1st Street, Artesia, NM 88210-2834
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-33951		² Pool Code 61760		³ Pool Name Vacuum, Abo	
⁴ Property Code 6483		⁵ Property Name Warn St. A/C 1			⁶ Well Number 7
⁷ OGRID No. 014021		⁸ Operator Name Marathon Oil Company			⁹ Elevation 3975

¹⁰ Surface Location									
UL or lot no.	Section	Township	Range	Lot. Idn	Feet from the	North/South Line	Feet from the	East/West line	County
F	31	17S	35E		2036	North	2089	West	Lea

¹¹ 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

¹² Dedicated Acres 80	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ 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

	¹⁷ OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</i> Signature Bryan L. Williams Printed Name Production Engineer Title October 15, 1997 Date
	¹⁸ SURVEYOR CERTIFICATION <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> SEE ORIGINAL C-102 4/22/97 Date of Survey Signature and Seal of Professional Surveyer:
	Certificate Number

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
811 S. 1st Street, Artesia, NM 88210-2834
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-33951		² Pool Code 62320		³ Pool Name Vacuum, Wolfcamp	
⁴ Property Code 6483		⁵ Property Name Warn St. A/C 1			⁶ Well Number 7
⁷ OGRID No. 014021		⁸ Operator Name Marathon Oil Company			⁹ Elevation 3975

¹⁰ Surface Location									
UL or lot no. F	Section 31	Township 17S	Range 35E	Lot. Idn	Feet from the 2036	North/South Line North	Feet from the 2089	East/West line West	County Lea

¹¹ 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
¹² Dedicated Acres 80 ¹³ Joint or Infill ¹⁴ Consolidation Code ¹⁵ Order No.									

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	Signature 	
	Printed Name Bryan L. Williams	
	Title Production Engineer	
Date October 15, 1997		¹⁸ SURVEYOR CERTIFICATION 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.
Date of Survey SEE ORIGINAL C-102 4/22/97		
Signature and Seal of Professional Surveyor:		
Certificate Number		

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102

Revised October 18, 1994

Instructions on back

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
811 S. 1st Street, Artesia, NM 88210-2834
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-33951		² Pool Code 62340		³ Pool Name Vacuum, Penn	
⁴ Property Code 6483		⁵ Property Name Warn St. A/C 1			⁶ Well Number 7
⁷ OGRID No. 014021		⁸ Operator Name Marathon Oil Company			⁹ Elevation 3975

¹⁰ Surface Location									
UL or lot no.	Section	Township	Range	Lot. Idn	Feet from the	North/South Line	Feet from the	East/West line	County
F	31	17S	35E		2036	North	2089	West	Lea

¹¹ 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

¹² Dedicated Acres 80	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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	<p>¹⁸ 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></p> <p>SEE ORIGINAL C-102 4/22/97 Date of Survey</p> <p>Signature and Seal of Professional Surveyer:</p>
	<p>Certificate Number</p>

REQUEST FOR EXCEPTION TO RULE 303-A
Warn St. A/C 1 No. 7
Vacuum Field

A: Operator

Marathon Oil Company
P.O. Box 2409
Hobbs, NM 88241-2409

B: Lease Name and Well Number

Warn St. A/C 1 No. 7
UL "F" 2036' FNL & 2089' FWL
Sec. 31, T-17-S, R-35-E
Lea Co., New Mexico
Vacuum: Abo, Wolfcamp, Penn Pools

C: Plats and Offset Operators

Attached

D: Form C-116

Attached

E: Production Decline Curves

Not available. The Warn St. A/C 1 No. 7 is a new drill twin replacement well for the Warn St. A/C 1 No. 3.

F: Estimated Bottomhole Pressures

Vacuum (Abo) - 2000 psi
Vacuum (Wolfcamp) - 2150 psi
Vacuum (Penn) - 2000 psi

G: Fluid Characteristics

Marathon currently has downhole commingled the Abo, Wolfcamp, and Penn in the twin Warn St. A/C 1 No. 3 (DHC-260) without a fluid capability problem. The No. 7 was drilled as a twin replacement well for the No. 3.

H: Value

Marathon receives the same price for the products from each zone and value will not be adversely affected.

Request for Exception to Rule 303-A
Warn St. A/C 1 No. 7
Page 2

I: Production Allocation

<u>Allocated Percentages</u>	<u>Oil %</u>	<u>Gas %</u>	<u>Water %</u>
Warn St. A/C 1 No. 3 - Administrative Order No. DHC-260			
Vacuum (Abo)	61	78	12
Vacuum (Wolfcamp)	9	12	74
Vacuum (Penn)	30	10	14
Warn St. A/C 1 No. 7 Utilizing Warn St. A/C 1 No. 3 Allocation Percentages			
Vacuum (Abo)	61	78	12
Vacuum (Wolfcamp)	9	12	74
Vacuum (Penn)	<u>30</u>	<u>10</u>	<u>14</u>
Total	100	100	100

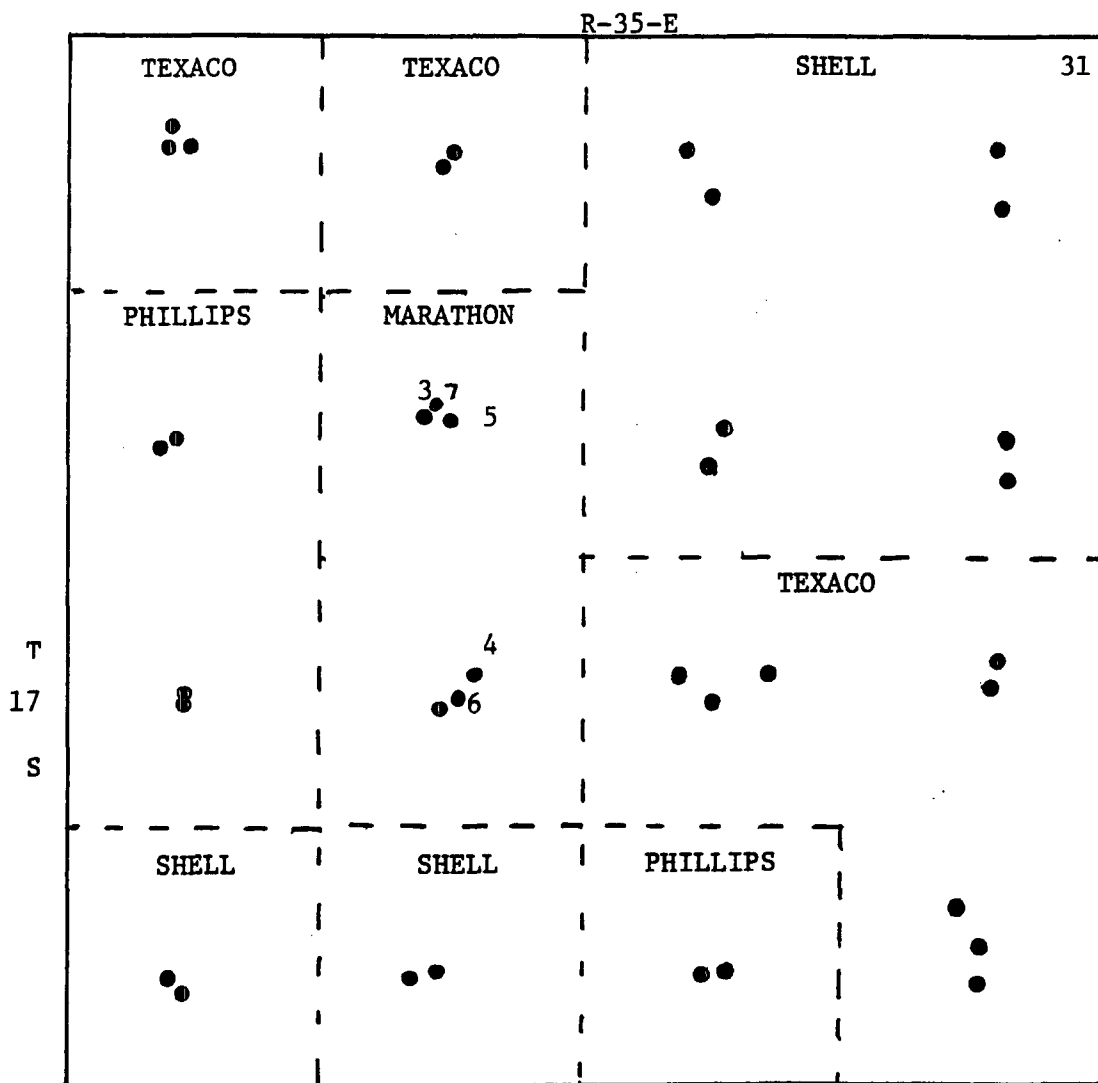
The Warn St. A/C 1 No. 7 was drilled as a twin replacement well for the Warn St. A/C 1 No. 3. For this reason, Marathon proposes to transfer the allocation percentages on the No. 3 (DHC-260) to the No. 7.

J: Ownership

Ownership of all zones is common and correlative rights will not be violated.

K: Offset Operator Notification

By copy of this letter we are notifying all offset operators (attached) of the proposed commingling, by certified mail.



LAND PLAT
VACUUM AREA
LEA COUNTY, NEW MEXICO

1" = 1000'

**Marathon Oil Company
Warn St. A/C 1 No. 7
UL "F", 2036' FNL & 2089' FWL
Section 31, T-17-S, R-35-E
Lea County, New Mexico
Vacuum Field**

Offset Operators and Addresses

Altura Energy Ltd.
Fasken Center, Tower 1
500 W. Texas
Suite 1225
Midland, TX 79701

Phillips Petroleum Company
4001 Penbrook
Odessa, TX 79762

Texaco Exploration and Producing Inc.
Heritage Center, Midland, TX 79701
P.O. Box 3109, Midland, TX 79702-3109

P.O. Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION

DISTRICT II
811 S. 1st Street, Artesia, NM 88210-2834

2040 Pacheco St.
Santa Fe, NM 87505

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

GAS - OIL RATIO TEST

Operator Marathon Oil Company		Pool Vacuum; Wolfcamp		County Lea											
Address P.O. Box 2409, Hobbs, NM 88240		TYPE OF TEST - (X)		Completion <input type="checkbox"/> Special <input checked="" type="checkbox"/>											
LEASE NAME		WELL NO.	LOCATION				DATE OF TEST	STATS	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS-OIL RATIO CUFT/BBL
			U	S	T	R						WATER BBL.S.	GRAV. OIL	OIL BBL.S.	
WARN STATE A/C 1		3	F	31	17	35		P		#17					
DHC No. 260	011% GasX														
Abo, N.	61 78														
Wolfcamp	9 12														
Upper Penn	30 10														
WELL IS CURRENTLY SHUT-IN															
WARN STATE A/C 1		7	F	31	17	35									
DHC Application	011% GasX														
Abo, N.	61 78														
Wolfcamp	9 12														
Upper Penn	30 10														
FOR INFORMATION ONLY															

Instructions:

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Division.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60 °F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

Signature _____

Bryan L. Williams

Prod. Engineer

Printed name and title

October 15, 1997 393-7106

Date _____

(See Rule 301, Rule 1116 & appropriate pool rules.)

Telephone No.

Wellfile



**Marathon
Oil Company**

P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

*Return copy to
Bryan Williams
this should be
sent to Santa
Fe.
Chris.*

October 15, 1997

Altura Energy Ltd.
Fasken Center, Tower 1
500 W. Texas
Suite 1225
Midland, TX 79701

Re: Request for Exception to Rule 303-A
Downhole Commingling
Warn St. A/C 1 No. 7
UL "F", 2036' FNL & 2089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
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Sincerely,

Bryan L. Williams

Bryan L. Williams
Production Engineer

BLW/rcgltory/comming/dhc/wic/ws1#7
Enclosure

Agreed and accepted this 28th day of October 1997
by James H. Collins, Jr., as representative of
Altura Energy, Ltd.

*11-1
NO OTHER MATERIAL
ATTACHED.
L.*



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

November 25, 1997

Marathon Oil Company
P.O. Box 2409
Hobbs, New Mexico 88241-2409

Attention: Mr. Bryan L. Williams

Re: Downhole Commingle Application
Warn State A/C 1 No. 7

Dear Mr. Williams:

Pursuant to Item No. 7 of Form C-107-A, please provide production estimates and supporting data for all three zones to be commingled in the subject well.

Your application will be processed upon receipt of the requested data. If you have any questions, please contact me at (505) 827-8184.

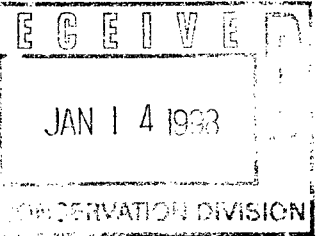
Sincerely,

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David Catanach
Engineer



Mid-Continent Region
Production United States



P.O. Box 2409
Hobbs, NM 88241-2409
Telephone 505/393-7106

Mr. David Catanach
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501-2088

January 12, 1997

Re: Reply to Correspondence Dated November 25, 1997
Downhole Commingling Application
Warn St. A/C 1 No. 7
UL "F", 2,036' FNL & 2,089' FWL
Sec. 31, T-17-S, R-35-E
Abo, Wolfcamp, and Penn Pools
Vacuum Field
Lea County, New Mexico

Dear Mr. Catanach:

Pursuant to your letter dated November 25, 1997, provided below is the production estimates and supporting data for the Vacuum (Abo), Vacuum (Wolfcamp), and Vacuum (Penn) zones to be commingled in the subject well.

The well is currently producing 50 BOPD, 163 MCFD, and 21 BWPD. See Fig. 1. The Abo, Wolfcamp, and Penn production is estimated at 31 BOPD/128 MCFD, 5 BOPD/19 MCFD, and 14 BOPD/16 MCFD respectively. The percentage allocations are determined utilizing DHC-260 in the twin No. 3. The support to transfer the allocation percentages from the No. 3 to the twin No. 7 entails first an understanding of the improved operating efficiency in the No. 7 and its effect on production and secondly a comparison of No. 3 pre-shutin production and No. 7 current production rates.

Prior to 1994, a stable production decline was established in the No. 3 which utilized two artificial lift systems to produce the Abo and Wolfcamp/Penn. Utilizing the pre-1994 established decline, current production is estimated at +35 BOPD. See Fig. 2. However, due to frequent system failures realized in 1993 and early 1994, the Abo, Wolfcamp, and Penn were downhole commingled in an attempt to reduce system failures. However, the single lift system, which inherently had a limited artificial lift design and subsequent production capacity due to a 2.875" production casing design, produced the well in an inefficient manner. The No. 3 rod design produced all three zones from a pump depth of 9370' with an average producing net fluid level 7965' from surface. See Fig. 3.

The No. 7 rod design produces all three zones from a pump depth of 10,600' with a "pumped off" condition. See Fig. 4. The "pumped off" condition has allowed for an increase in formation drawdown and subsequently production. Comparing the No. 3 & No. 7 production, one will note the slightly improved production on the No. 7 realized from the improved operating conditions.

If additional information is necessary, please advise.

Sincerely,

Bryan L. Williams
Production Engineer

BLW//reglatory/commingling/dhc/coverpag/ws1#7_d
Enclosures

A subsidiary of USX Corporation

FIGURE 1

Midland Operations

VACUUM WARM STATE A/C 1-NO. 7

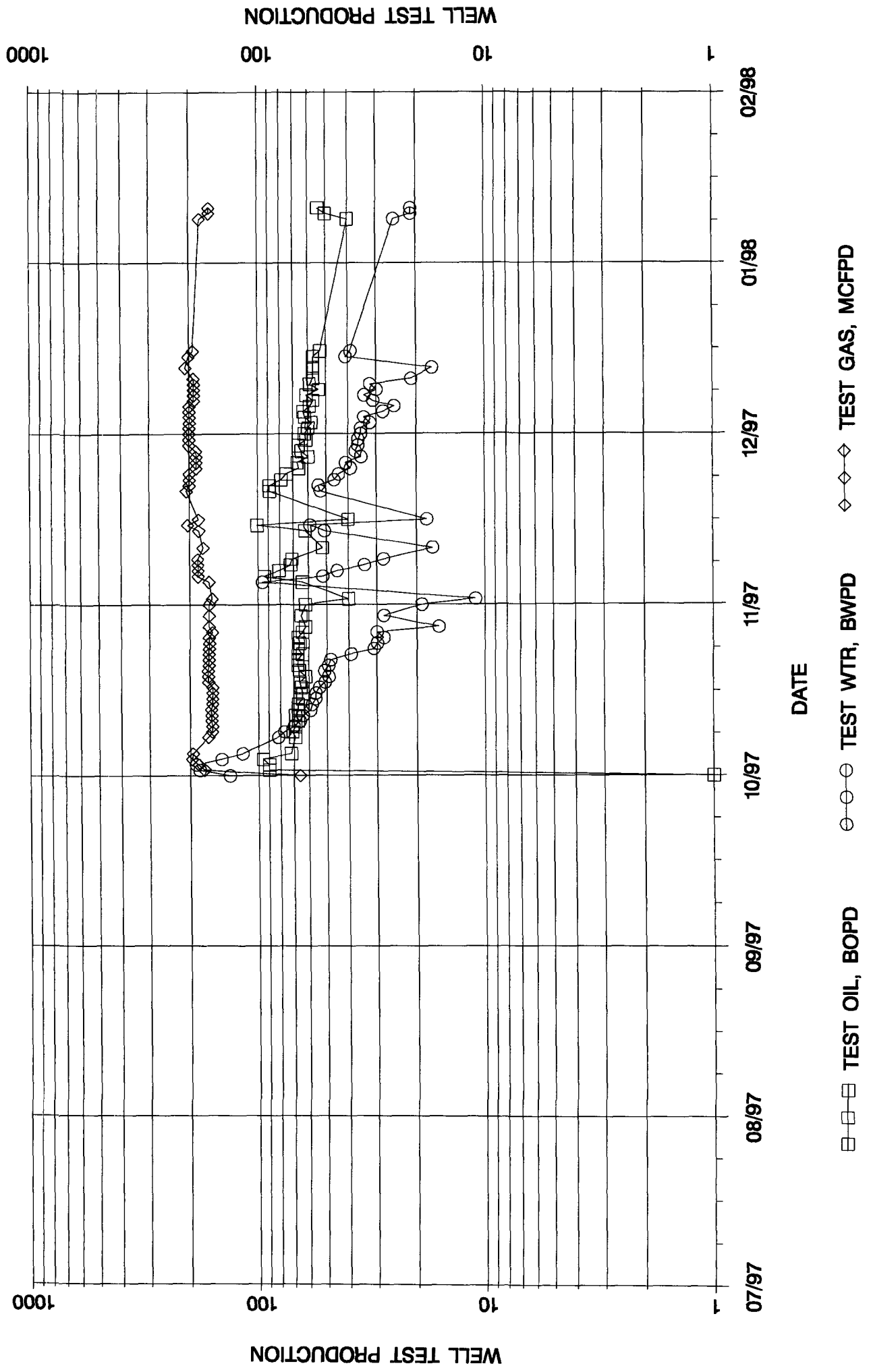


FIGURE 2

Midland Operations

Allocated Production Data (all available)

WARN ST. A/C 1 NO. 3

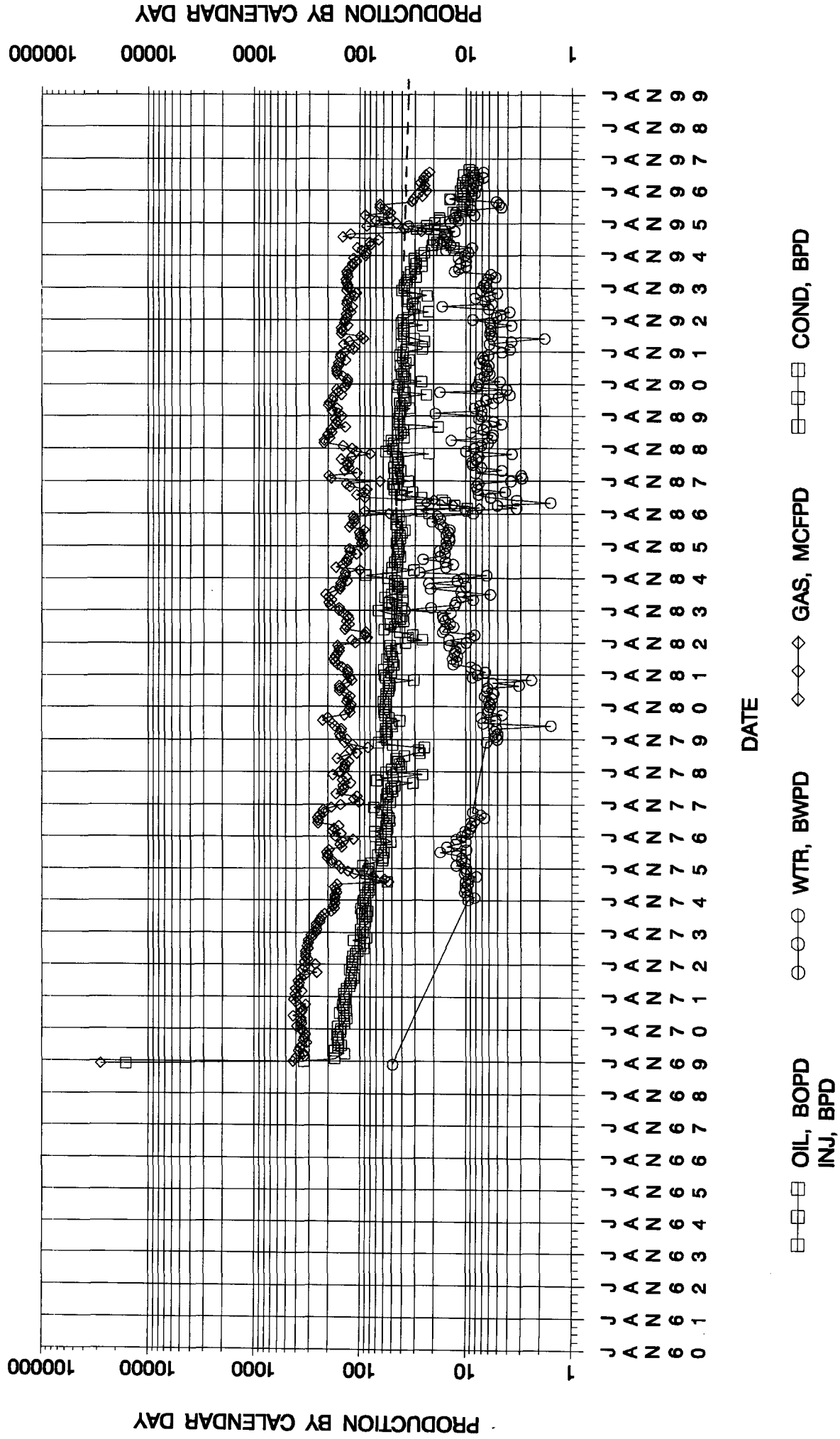


FIGURE 3

MARATHON OIL COMPANY HOBBS, NEW MEXICO OPERATIONS PUMPING SONIC FLUID LEVEL REPORT

Date: 11-11-94

Field: Vac/WC-Penn-Abo

Well: Warn State A/C1 # 3

Fluid Level Data

Fluid Above Pump:	2895 Ft.	Casing Pressure:	37 PSIG
% Liq. in Column.:	49 %	delta P:	2 PSIG
NET Fld. Abv. Pmp:	<u>1405 Ft.</u>	delta T:	10 MIN.

Net Fluid Level Depth:	7965 Ft.	Gross Fluid Level Depth:	208 Jts.
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Well Test Data

Date: 11-11-94

Produced:	18 bo	+	28 bw	=	46 bbls. total
Gas Vol.:	28 mcf/gpd			=	1556 GOR (Cu.Ft./Bbl.)

Oper. @	7.19	SPM	100 " surface stroke	=	With an:	1.063 " Pump
Avail. gross pump displ.						95 Bbls. per day
Run time req. to prod. test volume (% or hrs):					49%	12 hrs/day
Actual unit run time (% or hrs.):					100%	24 hrs/day

Tubing Record Data

Date: 10-25-94

Size:	1.9"	Ave. Joint Length:	31.13 Ft.
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Pump Depth:	9370 Ft.	Pump Depth:	301 Jts.
Tubing Anchor Depth:	9408 Ft.	TAC Depth:	302 Jts.
Perf. Depth Interval:	9478 ' - 10146 '		

Resultant Data

Producing Efficiency:	55 %	Entered SBHP:	1000 PSIA
Max. Oil Rate:	33 Bbls/day	@ Mid-point of Perfs.	9812 Ft.
Max. Water Rate:	51 Bbls/day	Calculated PBHP:	634 PSIA
Calculated PIP:	556 PSIA		

Tested By: Skinner

Remarks: Previous fluid above pump: 2071 ' on 10-31-94.

Figure 4

Warn1#7	WELL NAME	ANALYZING WELL PERFORMANCE(1.2)	
1/2/98	DATE	ACOUSTIC BHP SOFTWARE BY ECHOMETER	
9499	FORMATION DEPTH(FT)		
10602	PUMP DEPTH(FT)		
30.91	JOINT LENGTH(FT)		
.8	GAS GRAVITY(SG)		
	N2%		
	C02	PRODUCING BHP	
	H2S%	-----	
39	OIL GRAVITY(API)	PBHP= 80 (PSIA)	Gross FAP= 1174'
1.05	WATER GRAVITY(SG)	24% LIQUID IN COLUMN	
70	SURFACE TEMP(F)	LIQUID AT 9428 (FT)	NET FAP= 282'
125	BOTTOMHOLE TEMP(F)		
57	BOPD	STATIC BHP	
41	BWPD	-----	
---PRODUCING	CONDITION---	ENTERED SBHP= 2000 (PSIA)	
54	CASING (PSIG)		
305	# JOINTS		
10	dP		
9	dT	VOGEL'S IPR CURVE	
---	STATIC CONDITION---	-----	
	CASING (PSIG)	99% EFFICIENCY	
	# JOINTS	57.5 MAX OIL RATE	
		98.9 MAX LIQ RATE	