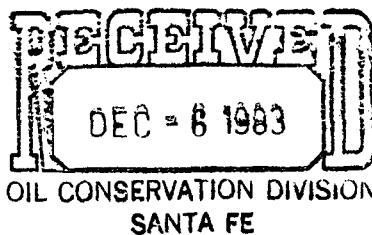


AMERADA HESS CORPORATION

November 28, 1983



P. O. DRAWER "D"  
MONUMENT, NEW MEXICO 88265

Joe Ramey  
State of New Mexico  
Energy and Minerals Department  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: E. W. Walden #7  
Request to Downhole Commingle the  
Blinebry and Drinkard Gas Zones

Dear Mr. Ramey:

Amerada Hess Corporation is requesting approval for an exception to Rule 303-C to permit downhole commingling of the Blinebry and Drinkard gas-gas zones in the wellbore of the E. W. Walden #7. Administrative order DC-56 gave Amerada Hess the permission to dual complete this well.

These gas zones have experienced wellbore condensate precipitating against the sand faces and with declining bottom hole pressures have been unable to unload themselves of this fluid. Repeated swabs have proven uneconomical to perform due to fluid encroachment returning quickly to the sand faces and placing the well back on marginal production status. If this application is approved, both gas zones will be turned together and placed on sucker rod pump so as to apply a continuous swabbing action in the wellbore and permit the flow of natural gas into the wellbore at a much more economical rate.

In the wellbore, the Blinebry zone is perforated from 5465'-5675' and the Drinkard zone is perforated from 6282'-6470'. Both zones will require artificial lift which in the past has been impractical due to the dual completion. The conclusion to place the well on beam pump was arrived at after pressure surveys were taken from November 9-10 of 1983 and from the past swabbing inefficiencies of each zone. The Blinebry bottom hole pressure was calculated with the method documented

in the following attachments while the Drinkard bottom hole pressure was measured with an Amerada RPG-4 pressure bomb. The results of these test were as follows:

Blinebry - 592.7 psia @ 5,570', T/A since November 1979

Drinkard - 502.1 psia @ 6376', 24 hour shut-in

Adjusted to a common datum, the results were as follows:

Blinebry - 599.1 psia @ 6376'

Drinkard - 502.1 psia @ 6376'

If these zones are placed on pump we estimate the producing bottom hole pressure will be 445 psia for the Blinebry and 377 psia for the Drinkard assuming a 75% drawdown on each zone.

Fluid samples were not available since line pressures are high enough to bar the flow of any fluid from the wellbore. We foresee no formation precipitates which might damage the formation. This assumption is based on a recent Blinebry Drinkard DHC near the Walden #7 (Eugene Wood #10, Unit H, 1880' FNL, 860' FEL, Sec. 22, T-22S, R-37E, Lea County, New Mexico).

Assuming 100 mcf/day total production, 7 mcf/day allocated to the Drinkard and 93 mcf/day to the Blinebry, the combined stream value of the zones would be \$78.90 while the sum of the individual streams would total \$78.90. Therefore combination of these two zones will not reduce the gas value of the well. Detailed calculations used to arrive at this conclusion are included at the end of this letter.

At present the well is not involved in a secondary recovery project. If a future recovery project were to be considered we foresee no problems with this commingling prospect jeopardizing the efficiency of a secondary recovery operation.

If commingling is approved, Amerada Hess Corporation, Drawer "D", Monument, New Mexico 88265, will be the operator of the said well located on Unit N, 754' FSL, 1957' FWL, Sec. 15, T-22S, R-37E, Lea County, New Mexico, Blinebry Oil & Gas Pool and Drinkard Pool. Amerada Hess has common ownership of both zones with a working interest of 100%, 1/8 royalty and no overriding royalty.

A plat of the area, with the proposed well to be commingled marked in yellow, is attached at the end of this letter. Two Division Form C-116's are included which show the production of each zone as follows:

Zone	Oil	Gas	Water	Date
Blinebry	0	3 mcf/day	0	2-28-79 (T/A)
Drinkard	0	13 mcf/day	0	11-9-83

Production decline curves have been supplied for both producing formations. These indicate the following gas nominal decline rates.

Zone	Decline Rate
Blinebry	0.036575756/yr.
Drinkard	0.035863710/yr.

Using these rates, a combined rate was calculated as 0.036528578/yr. With this rate, a gas allocation of 93% to the Blinebry and 7% to the Drinkard was calculated. Detailed procedures arriving at these figures follow later.

Oil allocation percentages were arrived at from previous swab test on each zone. From these results an oil allocation of 35% is to be dedicated to the Blinebry zone while 65% is to be assigned to the Drinkard zone. Documentation of these results is enclosed.

All offset operators have been notified of the proposed commingling by a copy of this memo sent by registered mail. A copy of the letter numbers have been attached. If you have any questions regarding this proposed action, please feel free to contact me.

Sincerely,

*Randall L. Howell*

Randall L. Howell  
Assoc. Petroleum Engineer

RLH/dg

Enclosures

xc: Division Director (2)  
Hobbs District Office  
Offset Operators  
File

E. W. WALDEN LEASE OFFSET OPERATORS

1. Anadarko Production Company  
Box 2497  
Midland, Texas 79702
2. Conoco, Inc.  
Box 460  
Hobbs, New Mexico 88240
3. Carter Foundation Production Company  
Box 1036  
Fort Worth, Texas 76101
4. Gulf Oil Corporation  
Box 670  
Hobbs, New Mexico 88240
5. Marathon Oil Company  
Box 2409  
Hobbs, New Mexico 88240
6. Sohio Natural Resources Company  
Midland Building  
Cleveland, Ohio 44115
7. Texas Pacific Oil Company, Inc.  
Box 4067  
Midland, Texas 79701

BLINEBRY SBHP

Blinebry Perfs - 5465' to 5675' Avg. Depth - 5570'

Blinebry  $\gamma_g$  - 0.700

Assume  $P_{atm}$  - 13.2 psia

Assume Temp. Grad. -  $0.4^{\circ}\text{F}/100'$

Assume Avg. Surface Temp. -  $74^{\circ}\text{F}$

$$BGT = 74^{\circ}\text{F} + 5570' \times \frac{0.4^{\circ}\text{F}}{100'} = 96^{\circ}\text{F}$$

$$P_{whs} = 513.2 \text{ psia}$$

$$P_{sfs} = P_{whs} \times \frac{C}{Z} \quad \text{Where: } C = (\gamma_g) (TVD)$$
$$\qquad\qquad\qquad \frac{53.34}{53.34} \bar{T}$$

$$\bar{T} = \frac{74^{\circ}\text{F} + 96^{\circ}\text{F}}{2} + 460^{\circ}\text{R} = 545^{\circ}\text{R}$$

$$C = \frac{(0.700)(5570')}{(53.34)(545^{\circ}\text{R})} = 0.131$$

$$\text{Assume } P_{sfs} = 616 \text{ psia} \quad \bar{P} = \frac{616 \text{ psia} + 513.2 \text{ psia}}{2} = 564.6 \text{ psia}$$

$$\bar{Z} = 0.91$$

$$P_{sfs} = (513.2 \text{ psia}) e^{\frac{0.131}{0.91}} = 592.7 \text{ psia}$$

$$\text{Assume } \bar{P} = \frac{592.7 \text{ psia} + 513.2 \text{ psia}}{2} = 553 \text{ psia}$$

$$\bar{Z} = 0.91$$

$$P_{sfs} = (513.2 \text{ psia}) e^{\frac{0.131}{0.91}} = 592.7 \text{ psia}$$

$$P_{sfs} = 592.7 \text{ psia} @ 5,570'$$

Common datum assumed to be @ 6376'. ∴ Blinebry zone SBHP needs to be adjusted 806'.

$$\text{BHT} @ 6376' = 74^\circ\text{F} + 6376' \frac{0.4^\circ\text{F}}{100'} = 100^\circ\text{F}$$

$$\bar{T} = \frac{96^\circ\text{F} + 100^\circ\text{F}}{2} + 460^\circ\text{R} = 558^\circ\text{F}$$

$$C = \frac{(0.700)(806')}{(53.34)(558 \text{ R})} = 0.019$$

$$\text{Assume } P @ 6376' = 650 \text{ psia} \quad \bar{P} = \frac{650 \text{ psia} + 592.7 \text{ psia}}{2} = 621.4 \text{ psia}$$

$$\bar{z} = 0.890$$

$$P @ 6376' = (592.7 \text{ psia}) e^{\frac{0.019}{0.890}} = 605.5 \text{ psia}$$

$$\bar{P} = \frac{605.5 \text{ psia} + 592.7 \text{ psia}}{2} = 599.1 \text{ psia}$$

$$\bar{z} = 0.890$$

$$P @ 6376' = (592.7 \text{ psia}) e^{\frac{0.019}{0.890}} = 599.1 \text{ psia}$$

$$P @ 6376' = 599.1 \text{ psia} \text{ adjusted to common datum of 6268'}$$

Drinkard Zone SBHP = 502.1 psia @ 6376'  
Blinebry Zone SBHP = 599.1 psia @ 6376'

50% of high press. zone (Blinebry) = 299.6 psia

Since low press. zone (502.1 psia) is greater than 50% of high press. zone (599.1 psia) no cross flow problem should exist.

E. W. WALDEN #7 GAS STREAM VALUES

NGPA Gas Price as of 4/82:

Drinkard - \$0.7890/mcf

Blinebry - \$0.7890/mcf

Assuming 100 mcf/day total production:

Drinkard Production - 7 mcf/day

Blinebry Production - 93 mcf/day

Drinkard Production Value -  $(7\text{ mcf/day})(\$0.7890/\text{mcf}) = \$ 5.52/\text{day}$

Blinebry Production Value -  $(93 \text{ mcf/day})(\$0.7890/\text{mcf}) = \$73.38/\text{day}$

Total                   \$78.90/day

Combined Stream Value -  $(100 \text{ mcf/day})(\$0.7890/\text{mcf}) = \$78.90/\text{day}$

Commingled value will not be less than the sum of the value of the individual streams.

## OIL CONSERVATION DIVISION

P. O. BOX 1016

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT

SANTA FE, NEW MEXICO 87501

Form C-116  
Revised 10-1-78

## GAS-OIL RATIO TESTS

Operator Amerada Hess Corporation  
Address Drawer D, Monument, New Mexico 88265

Pool Blinney Gas  
County Lea

Compliance   
Scheduled

Special

LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	STATUS	CHOKE TBG.	DAILY ALLOWABLE	TEST - (X)	TEST - (X)	SCHEDULED	COMPLIANCE			
		U	S	T	R											
E. W. Walden	7	N	15	22S	37E	2-28-79		2"	40	-	24	0	-	0	3	-

Note: Well was T/A November of 1979.

No well will be assigned an allowable greater than the amount of oil produced on the official test.  
During gas-oil ratio test, each well shall be produced at a rate not exceeding the top until allowable for the pool in which wells is increased 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.

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

Well original and one copy of this report to the district office of the New Mexico Oil Conservation Division in accordance with Rule 301 and appropriate pool rules.

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

*Ronald D. Howard*

(Signature)

Assoc. Petroleum Engineer

November 28, 1983

Date

## OIL CONSERVATION DIVISION

Form C-116  
P. O. Box 3088  
SANTA FE, NEW MEXICO 87501  
Revised 10-1-78STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT

## GAS-OIL RATIO TESTS

**Operator** Amerada Hess Corporation  
**Address**

Drawer D, Monument, New Mexico 88265  
**Pool** Drinkard Gas

**County** County Lea

<b>LEASE NAME</b>	<b>WELL NO.</b>	<b>LOCATION</b>				<b>DATE OF TEST</b>	<b>STATUS</b>	<b>CHOKE</b>	<b>TBG.</b>	<b>DAILY ALLOWABLE</b>	<b>PROD. DURING TEST</b>			<b>GAS - OIL RATIO CU.FT./BBL</b>	<b>Completion <input type="checkbox"/></b>	<b>SPECIAL <input checked="" type="checkbox"/></b>	
		U	S	T	R						<b>SIZE</b>	<b>PRESS.</b>	<b>WATER</b> <b>GRAV.</b>	<b>OIL</b> <b>BBLS.</b>	<b>GAS</b> <b>W.C.F.</b>		
E. W. Malden	7	N	15	22S	37E	11-20-83	2"	40	-	24	0	-	0	13	-		

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-well static test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which wells 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 allowable when authorized by the Division.

Gas volumes must be reported in MCP measured at a pressure base of 15.023 psia and a temperature of 60° F. Specific gravity base will be 0.60.

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

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Division in accordance with Rule 201 and appropriate pool rules.

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

*Brenda D. However*  
*(Signature)*  
Assoc. Petroleum Engineer

November 28, 1983

100-61

### E. W. WALDEN #7 DECLINE RATES

(Blinebry)

$$\begin{aligned} q_i &= 8,200 \text{ mcf/mo. @ 1/1/75} \\ q &= 5,900 \text{ mcf/mo. @ 1/1/84} \\ t &= 9 \text{ yrs.} \end{aligned}$$

$$a = \frac{\ln \frac{8,200 \text{ mcf/mo.}}{5,900 \text{ mcf/mo.}}}{30 \text{ yrs.}}$$

$$a = 0.036575756/\text{yr.}$$

(Drinkard)

$$\begin{aligned} q_i &= 580 \text{ mcf/mo. @ 1/1/75} \\ q &= 420 \text{ mcf/mo. @ 1/1/84} \\ t &= 9 \text{ yrs.} \end{aligned}$$

$$a = \frac{\ln \frac{580 \text{ mcf/mo.}}{420 \text{ mcf/mo.}}}{9 \text{ yrs.}}$$

$$a = 0.035863710/\text{yr.}$$

(Combined)

$$\begin{aligned} q_i &= 8,780 \text{ mcf/mo. @ 1/1/75} \\ q &= 6,320 \text{ mcf/mo. @ 1/1/84} \\ t &= 9 \text{ yrs.} \end{aligned}$$

$$a = \frac{\ln \frac{8,780 \text{ mcf/mo.}}{6,320 \text{ mcf/mo.}}}{9 \text{ yrs.}}$$

$$A = 0.036528578/\text{yr.}$$

X = Blinebry Allocation

1-X = Drinkard Allocation

$$0.036528578 = (X) 0.036575756 + (1-X) 0.035863710$$

$$0.036528578 = 0.036575756(X) + 0.035863710 - 0.035863710(X)$$

$$0.036528578 - 0.035863710 = 0.036575756(X) - 0.035863710(X)$$

$$0.000664868 = 0.000712046(X)$$

$$X = \frac{0.000664868}{0.000712046}$$

$$X = 0.933743045$$
$$(1-X) = 0.066256955$$

Blinebry Allocation: 93%

Drinkard Allocation: 7%

E. W. WALDEN #7 OIL ALLOCATION

<u>SWAB DATE</u>	<u>DRINKARD OIL SWABBED (BBLS)</u>	<u>BLINEBRY OIL SWABBED (BBLS)</u>
4-1-75	3	-
4-10-75	23	-
9-8-77	-	0
9-9-77	-	5
9-12-77	60	-
9-13-77	21	-
9-14-77	22	-
9-15-77	6	-
9-19-77	5	-
9-20-77	4	-
9-22-77	2	-
9-23-77	-	1
9-26-77	3	-
11-28-77	3	20
1-18-78	3	-
1-19-78	2	-
1-20-78	5	-
1-10-78	-	0
1-13-78	-	4
1-17-78	-	2
1-21-78	-	24
1-22-78	-	4
11-21-78	8	-
11-22-78	3	-
11-24-78	27	-
1-28-81	15	-
1-29-81	33	-
2-10-81	5	-
2-6-81	4	-
2-5-81	7	-
2-4-81	6	-
2-3-81	26	-
4-29-81	10	-
Total	328	60
No. of Swabs	26	9

Drinkard Avg. Oil - 13 Bbls.  
Blinebry Avg. Oil - 7 Bbls.

Total      20 Bbls.

Drinkard Allocation - 65%  
Blinebry Allocation - 35%

DATA CODES

OIL	= O
GAS	= X
WTR	= *

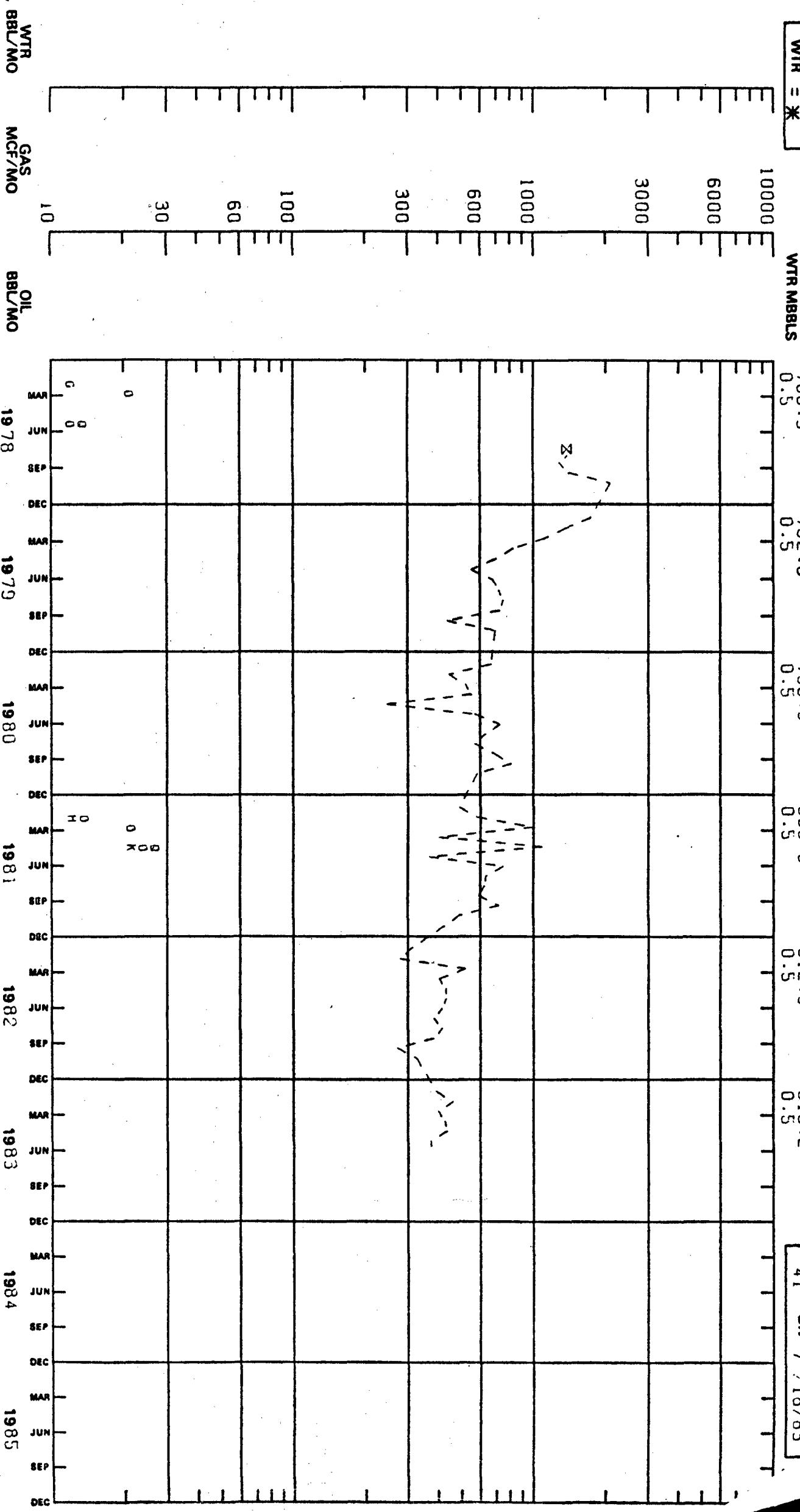
CUMULATIVES:

OIL MBBLS	101.0	OIL MBBLS	101.0
GAS MMCF	780.3	GAS MMCF	799.9
WTR MBBLS	0.5	WTR MBBLS	0.5

## PRODUCTION PLOT

STATUS:

41	ON	7 / 18 / 83
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LEASE: 02645 WALDEN, EW

REGION: SOUTHWEST REGION

FIELD: EUNICE FIELD

WELL: 71

**DATA CODES**

OIL = O  
GAS = X  
WTR = \*

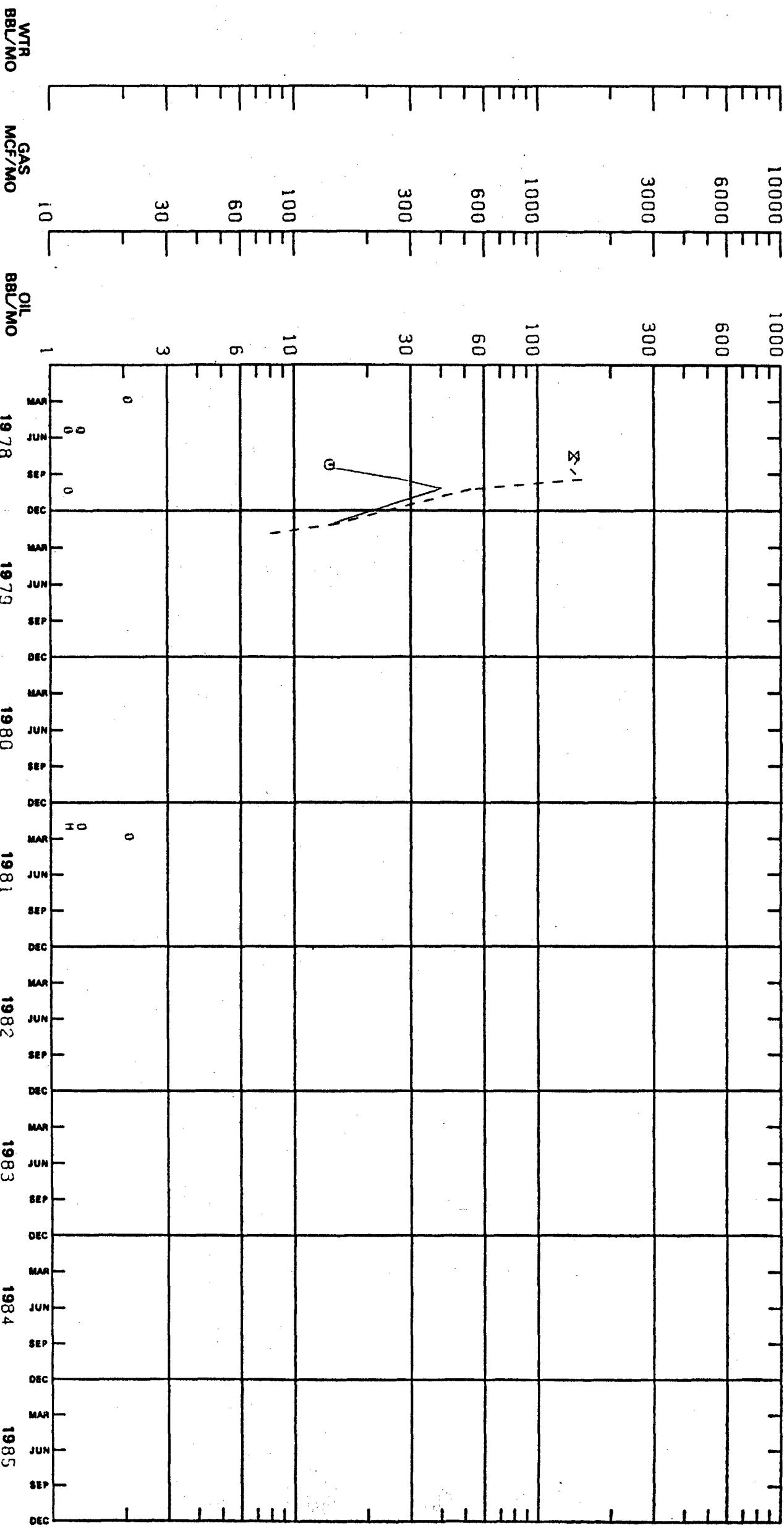
**CUMULATIVES:**

OIL MBBL'S	20.9	21.0	21.0	21.0
GAS MMCF	2441.0	2441.8	2441.8	2441.8
WTR MBBL'S				

## PRODUCTION PLOT

**STATUS:**

4T	ON	11/1 /79
1238		





P 335 760 019  
CERTIFIED

POSTAGE		\$ .71	
CERTIFIED FEE		\$ .74	
P.O. STATE AND ZIP CODE Midland Building Cleveland, OH 44115		STREET AND NO. Soilto Natural Resources Co.	
NOT FOR INTERNATIONAL MAIL		NOT FOR INTERNATIONAL MAIL	
NO INSURANCE COVERAGE PROVIDED— See Reverse)		NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL	
RECEIPT FOR CERTIFIED MAIL			

P 335 760 019  
CERTIFIED FOR CERTIFIED MAIL

POSTAGE		\$ .71	
CERTIFIED FEE		\$ .74	
P.O. STATE AND ZIP CODE Fort Worth, Texas 76101		STREET AND NO. Carter Foundation Prod. Co.	
NOT FOR INTERNATIONAL MAIL (See Reverse)		NOT FOR INTERNATIONAL MAIL	
NO INSURANCE COVERAGE PROVIDED— (See Reverse)		NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL	
RECEIPT FOR CERTIFIED MAIL			

POSTAGE		\$ .71	
CERTIFIED FEE		\$ .74	
P.O. STATE AND ZIP CODE Hobbs, New Mexico 88240		STREET AND NO. Marathon Oil Company	
NOT FOR INTERNATIONAL MAIL (See Reverse)		NOT FOR INTERNATIONAL MAIL	
NO INSURANCE COVERAGE PROVIDED— (See Reverse)		NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL	
RECEIPT FOR CERTIFIED MAIL			

POSTAGE		\$ .71	
CERTIFIED FEE		\$ .74	
P.O. STATE AND ZIP CODE Midland, Texas 79702		STREET AND NO. Texas Pacific Oil Co. Inc.	
NOT FOR INTERNATIONAL MAIL (See Reverse)		NOT FOR INTERNATIONAL MAIL	
NO INSURANCE COVERAGE PROVIDED— (See Reverse)		NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL	
RECEIPT FOR CERTIFIED MAIL			

POSTAGE		\$ .71	
CERTIFIED FEE		\$ .74	
P.O. STATE AND ZIP CODE Midland, Texas 79702		STREET AND NO. Anadarko Production Co.	
NOT FOR INTERNATIONAL MAIL (See Reverse)		NOT FOR INTERNATIONAL MAIL	
NO INSURANCE COVERAGE PROVIDED— (See Reverse)		NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL	
RECEIPT FOR CERTIFIED MAIL			

CERTIFIED  
P 335 760 014

CERTIFIED  
P 335 760 015

CERTIFIED  
P 335 760 018

POSTAGE		\$ 1.46	
TOTAL POSTAGE AND FEES		\$ 1.46	
POSTMARK OR DATE		POSTMARK OR DATE	
PS Form 3800, Apr. 1976			

POSTAGE		\$ 1.46	
TOTAL POSTAGE AND FEES		\$ 1.46	
POSTMARK OR DATE		POSTMARK OR DATE	
PS Form 3800, Apr. 1976			

PS Form 3800, Apr. 1976

CERTIFIED  
P 335 760 017

**P 335 760 004**

**RECEIPT FOR CERTIFIED MAIL**

NO INSURANCE COVERAGE PROVIDED--

NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO New Mex. Oil Consv. Div. Street and No. Box 1980	POSTAGE \$.71
P.O. STATE AND ZIP CODE Robbs, NM 88240	

CERTIFIED FEE \$.71	OPTIONAL SERVICES SPECIAL DELIVERY RESTRICTED DELIVERY SHOW TO WHOM AND DATE DELIVERED AND ADDRESS OF DELIVERY SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY
TOTAL POSTAGE AND FEES \$ 1.46	POSTMARK OR DATE

PS Form 3800, Apr. 1976

**P 335 760 005**

**RECEIPT FOR CERTIFIED MAIL**

NO INSURANCE COVERAGE PROVIDED--

NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO New Mex. Oil Consv. Div. Street and No. Box 1980	POSTAGE \$.71
P.O. STATE AND ZIP CODE Robbs, NM 88240	

CERTIFIED FEE \$.71	OPTIONAL SERVICES SPECIAL DELIVERY RESTRICTED DELIVERY SHOW TO WHOM AND DATE DELIVERED AND ADDRESS OF DELIVERY SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY
TOTAL POSTAGE AND FEES \$ 1.46	POSTMARK OR DATE

PS Form 3800, Apr. 1976

**P 335 760 020**

**RECEIPT FOR CERTIFIED MAIL**

NO INSURANCE COVERAGE PROVIDED--

NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO Gulf Oil Corp. Street and No. P.O. Box 670	POSTAGE \$.71
P.O. STATE AND ZIP CODE Hobbs, NM 88240	

PS Form 3800, Apr. 1976

**CERTIFIED**

**P 335 760 020**

**CERTIFIED**

**P 335 760 005**

OIL CONSERVATION DIVISION  
DISTRICT 1

OIL CONSERVATION DIVISION  
P. O. BOX 2088  
SANTA FE, NEW MEXICO 87501

DATE September 8, 1983

RE: Proposed MC \_\_\_\_\_  
Proposed DHC X  
Proposed NSL \_\_\_\_\_  
Proposed NSP \_\_\_\_\_  
Proposed SWD \_\_\_\_\_  
Proposed WFX \_\_\_\_\_  
Proposed PMX \_\_\_\_\_

Gentlemen:

I have examined the application for the:

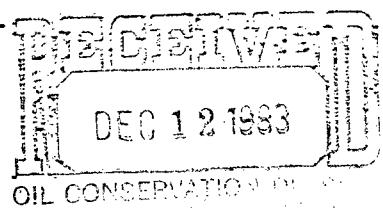
Amerada Hess Corp. E. W. Walden #7-N 15-22-37  
Operator Lease and Well No. Unit, S - T - R

and my recommendations are as follows:

Requires Hearing---J.S.

Yours very truly,

Jerry Denton  
me  
/mc



Recommended for hearing because of  
the gas-oil commingling situation  
worked out by Dick, Joe, and myself  
JSP