

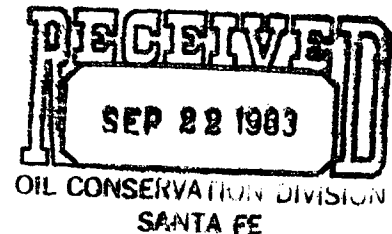


**Amoco Production Company (USA)**

Post Office Box 68  
Hobbs, New Mexico 88240

S. J. Okerson  
District Superintendent

September 19, 1983



File: SJ0-1846-WF

Re: Application to Downhole Commingle  
State "C" Tract 12 No. 4  
Drinkard and Tubb Oil Pools  
Lea County, New Mexico

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

Attention: Mr. Joe D. Ramey

Gentlemen:

Approval is hereby requested to downhole commingle the State "C" Tract 12 No. 4 in accordance with NMOCD Rule 303-C.

The well is located 1980' FNL x 3300' FEL, Section 16, T-21-S, R-37-E, Lea County, New Mexico and is dually completed in the Tubb (oil) and Drinkard (oil) Pools. It was originally completed as a Drinkard oil well November 15, 1947. Approval to dual complete the Drinkard with the Blinebry was granted April 2, 1954, by Order No. DC-97. The dual completion was completed April 7, 1954 resulting in a Blinebry gas well and a Drinkard oil well. In December 1981, the Drinkard and Blinebry perfs were squeezed off in an attempt to recomplete to the Fusselman Formation. The Fusselman was found non-productive and plugged. Subsequently, the Drinkard was reperforated and production reestablished February 16, 1982. On March 4, 1983, we received regulatory approval to test the Tubb Formation and dual complete with the Drinkard. The Tubb attempt was completed August 10, 1983 as a pumping oil well. Commingling of these two oil zones will enhance the economic operation of the well.

In support of our request, we submit the following facts:

1. The latest productivity tests are as follows:

	<u>Date</u>	<u>BOPD</u>	<u>BWPD</u>	<u>MCFD</u>	<u>Perforations</u>
Tubb	8-30-83	10	4	50	6044'-6326'
Drinkard	1-29-83*	3	2	55	6432'-6608'

\*Latest productivity test on the Drinkard. Currently shut-in by a retrievable bridge plug.

Copies of C-116's are attached.

2. Neither zone produces more water than the combined oil limit as determined in Rule 303, Paragraph C.
3. The produced fluids should be compatible and commingling these fluids should not result in precipitates which might damage the reservoirs.
4. The value of the commingled stream will not be diminished from the value of separate stream sales.

Gravities are: Drinkard 37° and Tubb 34.2°

Individual Streams

Drinkard	5 BOPD	x	\$31.94	=	\$159.70
Tubb	9 BOPD	x	\$31.88	=	\$286.92
					<u>\$446.62</u>

Commingled Streams

Drinkard	5 BOPD	x	\$31.91	=	\$159.55
Tubb	9 BOPD	x	\$31.91	=	\$287.19
					<u>\$446.74</u>

5. Expected daily production from the commingled zones are as follows:

	<u>Tubb</u>	<u>Drinkard</u>	<u>Commingled</u>
BOPD	9	5	14
BWPD	3	4	7
MCFD	45	100	145

6. Estimated bottomhole pressures are as follows:

Tubb

SICP: 800 psi

Specific Gravity Gas: 0.65

Surface Temperature: 85° F

Reservoir Temperature: 100° F

Oil Gravity: 34.2° API = 0.85 S.G.

Oil Gradient: (0.84 S.G.) (.433 PSI/FT) = .368 PSI/FT Gradient

Mid-Perfs: 6185'

Sonolog (8/2/83): Fluid level at 402' above seating nipple at 6332' (Well shut-in 2 days)

*Pressure confirmed by telephone  
11/4/83 (Steve White) JPP*

$$P_{oil} = (255') (.368) = 94 \text{ PSI}$$

$$P_{gas} = P_{wh} \left( \exp \left[ \frac{0.01875 (S.G.) (D)}{Z_{avg.} T_{avg.}} \right] \right)$$

$$= 800 \left( \exp \left[ \frac{0.01875 (0.65) (5930')}{(560) (0.85)} \right] \right) = 930 \text{ PSI}$$

Where:  $Z = 0.85$  from Gas Compressibility Chart  
 $T = 560^\circ \text{ R}$

$$\text{BHP(Tubb)} = 1024 \text{ PSI}$$

$$\text{Total Gradient: } 1024 \text{ PSI} \div 6185' = 0.1656 \text{ PSI/FT}$$

Corrected BHP to Common Datum

$$\text{Mid-Perf of Drinkard: } (0.1656)(6520) = \underline{\underline{1080 \text{ PSI}}}$$

Drinkard

SICP: 30 PSI

Specific Gravity Gas: 0.65

Surface Temperature:  $85^\circ \text{ F}$

Reservoir Temperature:  $115^\circ \text{ F}$

Oil Gravity:  $37^\circ \text{ API} = 0.84 \text{ S.G.}$

Oil Gradient:  $(.84 \text{ S.G.})(.433 \text{ PSI/FT Water Gradient}) = .364 \text{ PSI/FT}$

Mid-Perfs: 6520'

Sonolog (4/11/83): Fluid level at 1678' above seating nipple at 6643' (well shut-in 49 days)

$$P_{oil} = (1556')(0.364 \text{ PSI/FT}) = 566 \text{ PSI}$$

$$\text{Gas Gradient: } P_{ws} = P_{wh} \left( \exp \left[ \frac{0.01875 (S.G.) (D)}{Z_{avg.} T_{avg.}} \right] \right)$$

$$P_{ws} = 30 \left( \exp \left[ \frac{0.01875 (0.65) (4965')}{(0.92) (560^\circ \text{ R})} \right] \right)$$

$$P_{sw} = 34 \text{ PSI}$$

Where:  $Z = 0.92$  from Standing & Katz Compressibility Chart  
 $T = 560^\circ \text{ R}$

$$\text{BHP (Drinkard)} = 566 \text{ PSI} + 34 \text{ PSI} = \underline{\underline{600 \text{ PSI}}}$$

7. Recommended oil and gas allotments are as follows:

	Oil	Gas
Tubb	64%	31%
Drinkard	36%	69%

These allocations are based upon analysis of production decline curves.

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File: SJO-1846-WF  
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8. Both zones to be commingled have common ownership.
9. All offset operators have been notified by certified mail. Copy of receipts are attached.
10. Other attachments: C-116's for each formation, production decline curves, list of offset operators, and a copy of an ownership map showing the wells location.

If additional information is required, contact Charles Herring at (505) 393-1781.

Yours very truly,

*D. J. O'Henson* *HL*

Attachments

cc: State of New Mexico  
Energy and Minerals Department  
Oil Conservation Division  
P. O. Box 1980  
Hobbs, NM 88240

OFFSET OPERATORS


Gulf Oil Exploration and Production Company  
P. O. Box 670  
Hobbs, NM 88240

Amerada Hess Corporation  
Drawer D  
Monument, NM 88265

P 267 164 394

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)


SENT TO		<i>Gulf Oil Exp. and Prod. Co.</i>	
STREET AND NO.		<i>P.O. Box 670</i>	
P.O., STATE AND ZIP CODE		<i>Hobbs, NM 88240</i>	
POSTAGE		\$ <i>54</i>	
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	75 ¢	
	SPECIAL DELIVERY	¢	
	RESTRICTED DELIVERY	¢	
	OPTIONAL SERVICES		
	RETURN RECEIPT SERVICE		
	SHOW TO WHOM AND DATE DELIVERED	<i>60</i> ¢	
	SHOW TO WHOM, DATE, AND ADDRESS OF 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		\$ <i>1.89</i>	
POSTMARK OR DATE			
			

PS Form 3800, Apr. 1976

P 267 164 395

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

SENT TO		<i>Amerada Hess Corp.</i>	
STREET AND NO.		<i>P.O. Drawer D</i>	
P.O., STATE AND ZIP CODE		<i>Monument, NM 88265</i>	
POSTAGE		\$ <i>54</i>	
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	75 ¢	
	SPECIAL DELIVERY	¢	
	RESTRICTED DELIVERY	¢	
	OPTIONAL SERVICES		
	RETURN RECEIPT SERVICE		
	SHOW TO WHOM AND DATE DELIVERED	<i>60</i> ¢	
	SHOW TO WHOM, DATE, AND ADDRESS OF 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		\$ <i>1.89</i>	
POSTMARK OR DATE			
			

PS Form 3800, Apr. 1976



GAS-OIL RATIO TESTS

Operator		Pool		County									
AMOCO Production Co.		DRINKARD		LEA									
Address		P.O. Box 68, Hobbs New Mexico 88240		Completion <input type="checkbox"/> Special <input type="checkbox"/>									
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	CHOKE SIZE	TES. PRESS.	DAILY ALLOW. ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO CU.FT/BSL
		U	S	T						R	WATER BGLS.	OIL BULS.	
STATE C TRACT 12	4	F	16	21	37	1-29-83	F	16	24	3	3	55	18,333

RECEIVED  
SEP 22 1983  
OIL CONSERVATION DIVISION  
SANTA FE

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 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.  
Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Division in accordance with Rule 331 and appropriate pool rules.

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

Ruth Brunson  
(Signature)  
Administrative Analyst  
(Title)



GAS-OIL RATIO TESTS

Operator		County		Lea									
AMOCO Production Co.		TUBB											
Address		TYPE OF TEST - (X)		Completion <input checked="" type="checkbox"/> Special <input type="checkbox"/>									
P.O. Box 68, Hobbs New Mexico 88240		Scheduled <input type="checkbox"/>											
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	CHOKE SIZE	TES. PRESS.	DAILY ALLOW. ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO CU.FT/BBL
		U	S	T						R	WATER GELS.	OIL BULS.	
State C Tract 12	4	F	16	21	37	8-30-83	P	4	24	4	10	50	5000

RECEIVED  
HOBBS  
SEP 14 1983

IDS	
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RECEIVED  
SEP 22 1983  
OIL CONSERVATION DIVISION  
SANTA FE

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

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Gas volumes must be reported in MCF measured at a pressure base of 15.026 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.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Division in accordance with Rule 331 and appropriate pool rules.

*Ruth Brunson*  
(Signature)

Administrative Analyst

(Title)

# INDUSTRY PRODUCTION DATA RATE-TIME PLOTS

OIL

WELL: STATE C TR 12

000004

API NO: 300250682688

FIELD: DRINKARD

DR

PERFS:

OPERATOR: AMOCO PRODUCTION CO

019922

COMP DATE:

STATE NM 30

COUNTY: LEA

025 GENID: 4W020269

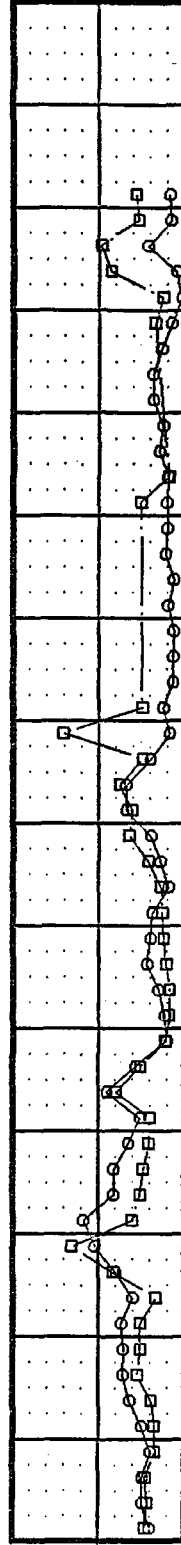
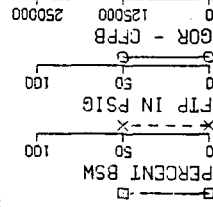
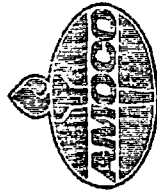
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RESERVOIR: DR

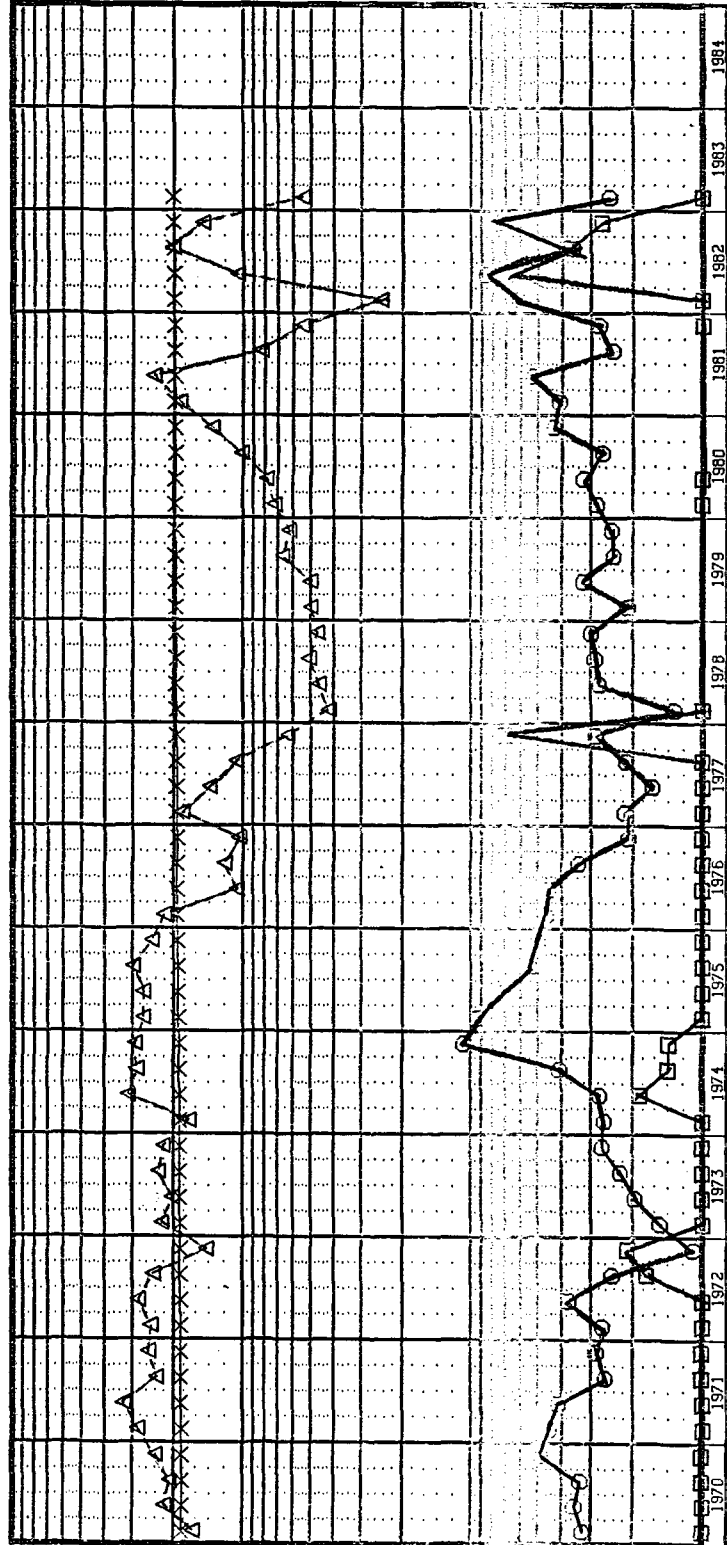
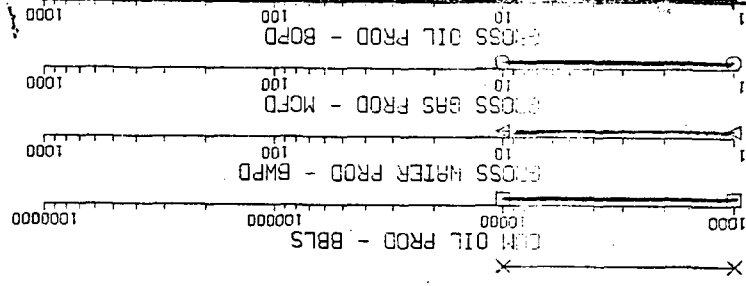
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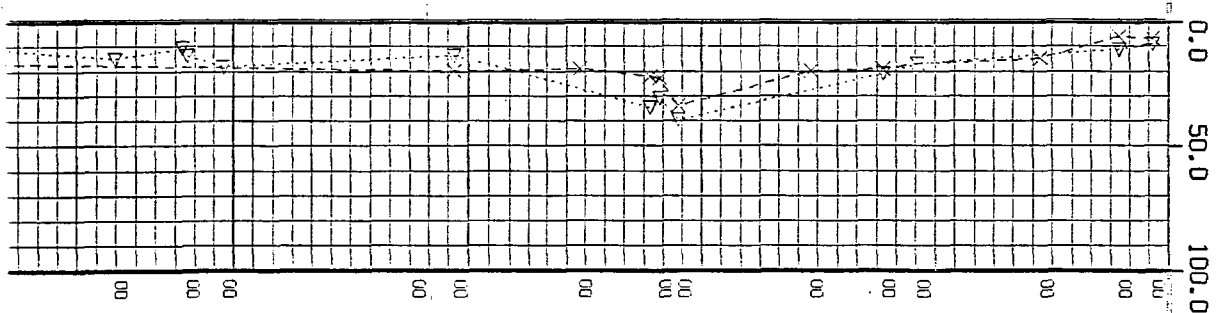
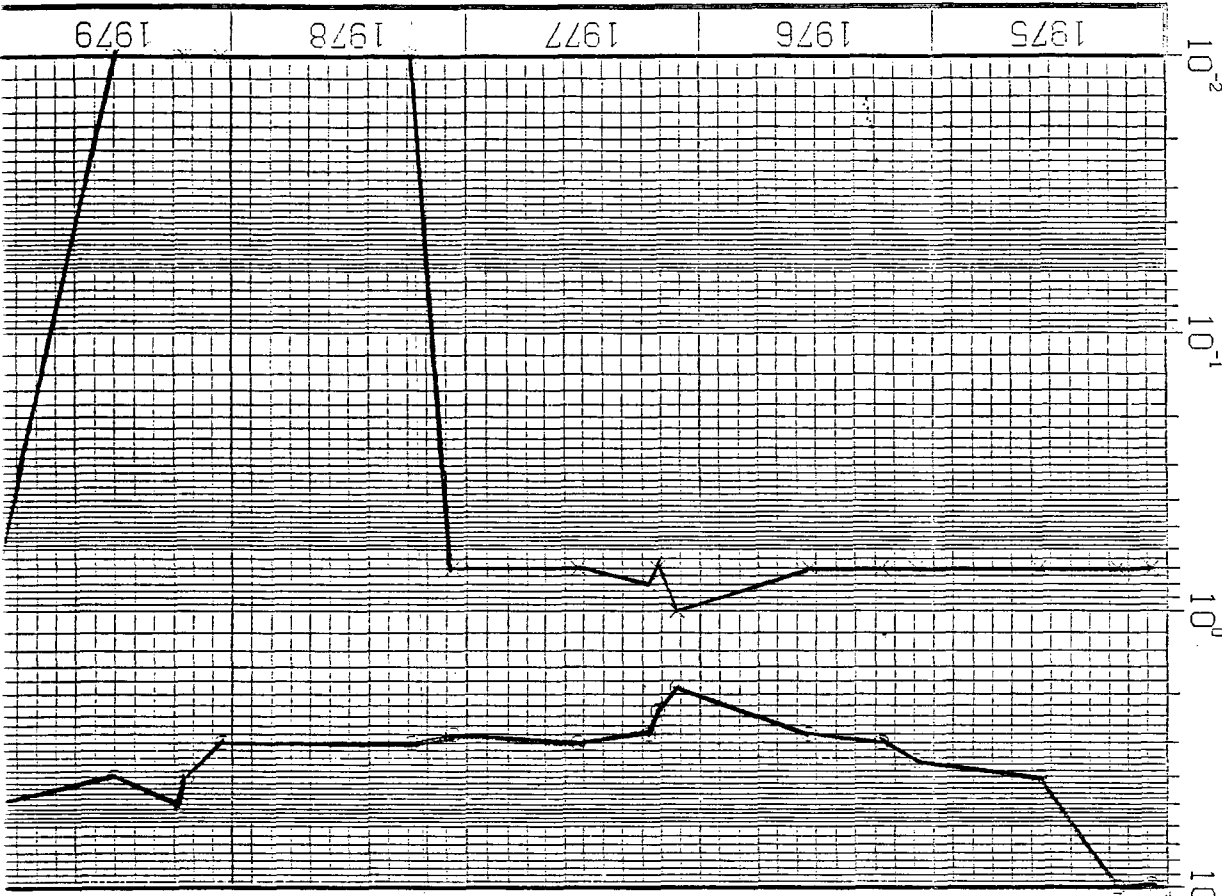


MAJOR PRODUCT



COMPLETION ZONE NAME - DRIN  
 STATE-REG FIELD/POOL - 30  
 FLAG(L/U) - 390832  
 NAME - 5 BATES

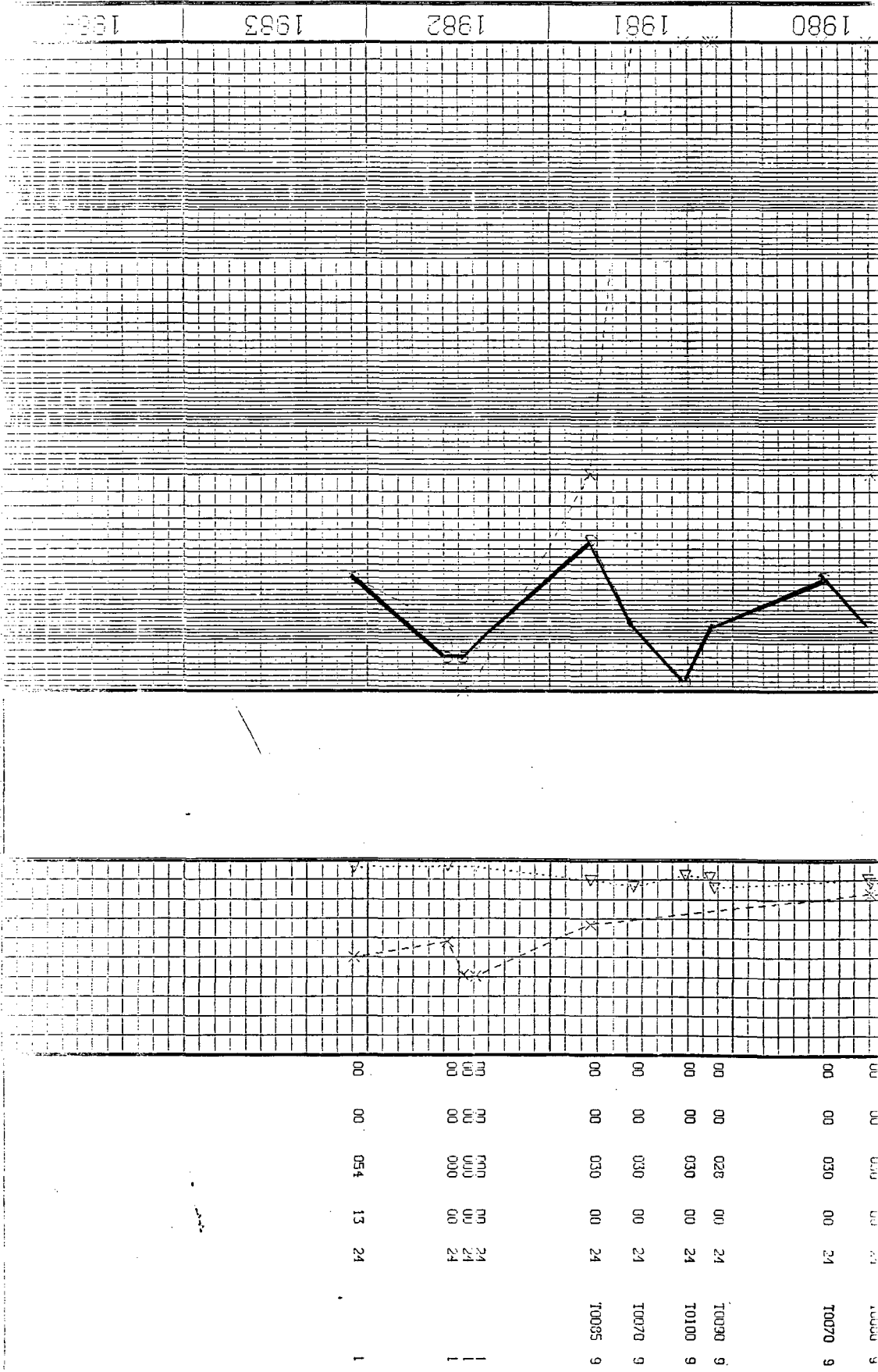
DIVISION NO - 8  
 OPER AREA - 63  
 OPERATOR = AMOCO PRODUCTION CO (USA)  
 MAIL TO LOC. NO. - 63A



STATUS CONDITION	FTP (T) OR	PMP. COG. PRES (P) OR	IFCP (C)	PROD. HOURS	PER DAY	SPM	TBG. CH. OR	STROKE LEN.	DIA. PUMP 16THS	VOL. EFF.
10110 9	10110	9	00	24	00	034	00	034	00	00
10115 9	10115	9	00	24	00	034	00	034	00	00
10105 9	10105	9	00	24	00	032	00	032	00	00
10060 9	10060	9	00	24	00	034	00	034	00	00
10030 9	10030	9	00	24	00	030	00	030	00	00
10075 9	10075	9	00	24	00	030	00	030	00	00
10085 9	10085	9	00	24	00	028	00	028	00	00
10090 9	10090	9	00	24	00	026	00	026	00	00
10080 9	10080	9	00	24	00	028	00	028	00	00
10090 9	10090	9	00	24	00	028	00	028	00	00

WELL TEST D

MAIL CODE/ROOM - ROOM-3  
 TRACT 12  
 DRINKARD  
 FLAC(WELL)-HOK - 824173-0  
 COMPLETION DATE - 11-02-82  
 LEASE WELL NO - 004718  
 JOB REQUEST - 001-01



05/88L.)

State "C" Tract 12 No. 4  
(Formerly State "C" Tract 12 No. 2)  
Well History

CEMENTING RECORD

09-18-47: 13-3/8" 54.5# J-55 x 48# H-40 CSA 316' in 17-1/2" hole. Cmt w/325 sx x circ cmt.

09-28-47: 9-5/8" 36# H-40 x 40# J-55 CSA 2900' in 12-1/4" hole. Cmt w/1500 sx. TCMT at 1325' by temp sur.

10-29-47: 7" 23# N-80, 20# J-55 x 23# J-55 CSA 6656' in 8-3/4" hole. Cmt w/700 sx x TCMT at 2800 by temp sur.

Note: Depths prior to January, 1982, are given w/respect to original Schlumberger Resistivity Log (10-28-47), measured from drill floor. Correlation shows these depths are 12' deep w/respect to Schlumberger CNL-FDC (1-5-82), measured from bradenhead.

Original TD: 6660' (DF); deepened to 7502' (BH)  
Current PBD: 6655' (BH)

Drill Stem Tests: 6370'-6477' x 6470'-6570' (DF)

Initial Completion - Lower Drinkard

11-07-47: Perf 6650-80' w/6 SPF. Acd w/500 gal mud acid. Well swabbed dry after acidizing.

11-09-47: Acd w/2000 gal 15% LT acid. Treated 6550'-6580'. Well flowed 265 BO on 24/64" choke in 24 hrs w/GOR 528.

11-15-47: Well completed in Drinkard Pay.

11-17-47: Perf 6620-56 w/6 SPF. Acd new perfs w/500 gal mud acid.

11-20-47: Acd perfs 6620-56 w/2000 gal 15% LT acid. Well flowed 271 BO on 16/64" choke in 24 hrs w/GOR 717.

WORKOVERS

Dual Completion in Blinebry and Lower Drinkard

04-07-54: Well dually completed as a gas-oil well in the Blinebry-Gas and in the Drinkard-Oil. Blinebry shot @ 5650'-5690' x 5710'-5720' x 5730'-5740' x 5770'-5815' x 5885'-5905' x 5925'-5940' x 5975'-6010' w/2 spf. Installed dual completion equipment w/PSA 6394'. Acd w/10,000 gal 15% reg acid. Blinebry gas produced through annulus while Drinkard oil produced through tubing. Blinebry flowed at a rate of 1187 MCFGPD against a CPF of 1730 psig. Drinkard flowed 69 BO and no water in 24 hours on 18/64" choke w/GOR 3886.

State "C" Tract 12 No. 4  
Well History - page 2

05-04-54: BHP at a datum (of-2352') was 1250 psig. STP was 1025 psig and SCP was 1889 psig.

07-27-72: Dedicated acreage changed from 160 acres to 120 acres.

Perforate Upper Drinkard; Frac Drinkard and Blinebry separately.

04-26-74: Drinkard shot 6458'-6468' x 6489'-6492' x 6502'-6506' x 6515'-6535' w/2 spf. Acd w/2000 gal 15%. Frac w/24,000 gal gel brine x w/36,000 lb sand over Drinkard zone 6458'-6660'.  
PPWO: FLW 2 BO x 2 BW x 200 MCFG  
PAWO: FLW 13 BO x 28 BW x 820 MCFG  
Blinebry frac w/36,000 gal gel brine x w/54,000 lb sand in 3 equal stages. Production packer set at 6100' w/Blinebry tbg to 5998' x Drinkard tbg to 6597'. Production tests of the Blinebry are as follows:  
PPWO: FLW 1 BO x 0 BW x 189 MCFG  
PAWO: FLW 42 BO x 36 BLW x 1610 MCFG

Squeeze Blinebry and Drinkard Perfs; Deepen to Fusselman

12-04-81: Sq Blinebry perfs w/700 sx Class C cmt x reverse out 17 sx. Max prs 2500 psi, AIR 5 BPM at 200 psi. DO cmt. Prs tst to 1000 psi x OK.

12-14-81: Squeeze Drinkard perfs w/650 sx Class C with additives. Max pressure 2250 psi. Reverse out 15 sx. Drill out cement, test to 1000 psi. Bled to 200 psi in 10 min. Test lower perfs to 1000 psi. Bled to 200 psi in 10 min.  
Spot 150 gallons 15% HCl across lower perfs. Squeeze perfs with 250 sx Class C. Max pressure 2800 psi. Reverse out 17 sx. DO x Pressure test to 1000 psi x OK.

12-28-81: RIH with 6-1/8" bit, drill from 6660'-7502'. Run DLL-MSFL from 6644'-7485'. Run CNL-FDC from 7'-7484'. Fusselman not productive. Plug back to 6639 w/Class H.

Recomplete back to Drinkard.

01-19-82: Perforate Drinkard intervals 6432-36', 6446-56', 6461-68', 6477-80', 6490-94', 6502-22', 6530-72', 6584-90' x 6604-08' w/4 DPJSPF. Treat with 4000 gallons 28% SGA x N<sub>2</sub> x 75 quality foam x 900 lbs rock salt. Flush to perfs w/48 BBLS 2% KCl. Max pressure 6600 psi. AIR 12 BPM. Swab back load. RTG, Rods x pump.

WO electrification 6 days.

01-30-82: Att pmp tst x pmp stuck w/emulsion. Pu rods x pmp. Att swb x swb stuck x PO rope socket. PTG x CO to 6655' w/sn pmp.

State "C" Tract 12 No. 4  
Well History - page 3

02-04-82: Run 2-3/8" tbg w/seating nipple to 6644'. Tbg anchor at 6395'.  
Pmp 70 BW w/5 gal. surfactant down tbg. Swb.

02-08-82: RRXP. Pmp tst 8 days.

02-16-82: Final rate on pmp: 9 BOPD x 22 BWPD x 160 MCFD.

- Test the Tubb

06-27-83: Set RBP at 6378'. Pressure test to 1000 psi OK. Perf 6044'-60',  
6078'-96', 6108'-16' w/2 SPF. Acd w/2100 gal 15% NEFE HCl.  
Capped RBP w/10' sand. Perf 6150'-82', 6196'-6232', 6262'-78',  
6300'-04', 6311'-17', 6322'-26' w/1 SPF. Acd w/6000 gals 15% NEFE  
HCl w/186 Ball Sealers. Max pressure 3060 psi and AIR 3 BPM.  
Swab back load. Run 2-3/8" tbg w/SN on bottom to 6320'. Tbg  
anchor at 6021'.

07-07-83: RRxP. Pmp tst.

07-31-83: SI 48 hrs to obtain sonolog for BHP information.

08-08-83: Final rate on pmp: 11 BOPD x 3 BWPD x 42 MCFD.

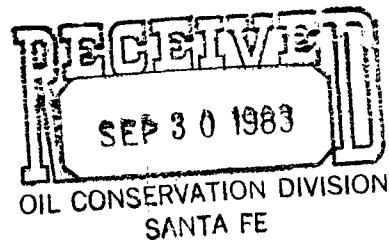
FILE DHC-434



**Amoco Production Company (USA)**

Post Office Box 68  
Hobbs, New Mexico 88240

S. J. Okerson  
District Superintendent



File: SJ0-1843-WF

Re: Downhole Commingling of the  
State "C" Tract 12 No. 4  
Tubb and Drinkard Oil Pools  
1980' FNL x 3300' FEL  
Sec. 16, T-21-S, R-37-E  
Lea County, New Mexico

Amerada Hess Corporation  
P. O. Drawer "D"  
Monument, NM 88265

Gentlemen:

As operator of the State "C" Tract 12 No. 4, Amoco Production Company hereby notifies you that we have applied to the NMOCD for Administrative Approval to downhole commingle the subject well. Commingling will enhance the economic operation of this well.

If you have no objections to the commingling, sign below and forward one copy to the NMOCD in Santa Fe, one copy to the NMOCD in Hobbs, one copy to this office, and retain one copy for your records. Addressed, stamped envelopes have been provided for your convenience.

Yours very truly,

*S. J. Okerson*

APPROVAL

Company: *Amerada Hess Corp*

By: *W. Baum*

Date: *9-27-83*

Attachments

SEP 31 1983

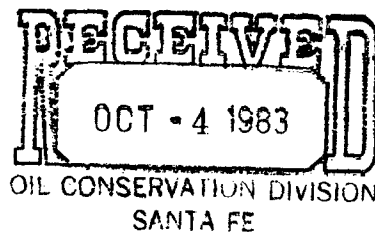




**Amoco Production Company (USA)**

Post Office Box 68  
Hobbs, New Mexico 88240

S. J. Okerson  
District Superintendent



File: SJO-1843-WF

Re: Downhole Commingling of the  
State "C" Tract 12 No. 4  
Tubb and Drinkard Oil Pools  
1980' FNL x 3300' FEL  
Sec. 16, T-21-S, R-37-E  
Lea County, New Mexico

Gulf Oil Exploration and Production Company  
P. O. Box 670  
Hobbs, NM 88240

Gentlemen:

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Yours very truly,

APPROVAL

*S. J. Okerson*

Company: Gulf Oil Corporation

By: *J. R. Frank* J. R. Frank

Date: September 30, 1983

Attachments

Waiver

Railroad Commission of Texas  
Oil and Gas Division  
P. O. Drawer 12967  
Capitol Station  
Austin, Texas 78711

Attention: Legal Section

Gentlemen:

This is to advise that the undersigned has been given due notice that Amoco Production Company has made application for an exception to Statewide Rule 37 and a permit to drill the State "FU" Lease, Well No. 1 in the Bone Springs and Wolfcamp Oil Pools.

We hereby waive any objection to the granting of this application for Well No. 1. This well is to be located 1980' FSL & 1980' FWL, of Section 25, T-18-S, R-34-E, Lea County, New Mexico.

Executed this 30th day of September, 1983.

Yours very truly,

Gulf Oil Corporation  
Name of Company

By: J. R. Frank J. R. Frank

Title: Chief Proration Engineer