AMERADA HESS CORPORATION

Drawer 'D'
Monument, New Mexico 88265

JANUARY 29,1990

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

RE: STATE DA #3
REQUEST TO DOWNHOLE COMMINGLE
THE TUBB AND DRINKARD GAS
ZONES

DEAR SIR;

AMERADA HESS CORPORATION IS REQUESTING APPROVAL FOR AN EXCEPTION TO RULE 303-C TO PERMIT DOWNHOLE COMMINGLING OF THE TUBB AND DRINKARD GAS ZONES IN THE WELLBORE OF THE STATE DA #3. PRESENTLY THE TUBB ZONE IS PRODUCING 35 MCFPD AND THE DRINKARD ZONE IS PRODUCING 10 MCFPD. IF THIS APPLICATION IS APPROVED, BOTH GAS ZONES WILL BE TURNED TOGETHER.

IN THE WELLBORE, THE TUBB ZONE IS PERFORATED FROM 6180'- 6290' AND THE DRINKARD ZONE IS PERFORATED FROM 6391'-6479'. BOTTOM HOLE PRESSURES WERE CALCULATED WITH THE METHOD DOCUMENTED IN THE FOLLOWING ATTACHMENTS. THE RESULTS OF THESE CALCULATIONS WERE:

TUBB	:	344 PSIA @ 6235', 24 HOUR SHUT IN
DRINKARD	:	443 PSIA @ 6435', 24 HOUR SHUT IN
		ADJUSTED TO A COMMON DATUM
TUBB	:	362 PSIA @ 6435'
DRINKARD	:	443 PSIA @ 6435'

NO FORMATION PRECIPITATION WHICH MIGHT DAMAGE THE FORMATION IS ANTICIPATED BASED ON PREVIOUS EXPERIENCE. ASSUMING 150 MCFPD TOTAL PRODUCTION WITH 34 MCFPD ALLOCATED TO THE DRINKARD AND 110 MCFPD TO THE TUBB, THE COMBINED STREAM VALUE OF $205.50/DAY WOULD BE EQUAL TO THE TWO INDIVIDUAL STREAMS.

NO SECONDARY RECOVERY PROJECT INVOLVING THIS WELLBORE IS UNDER CONSIDERATION AT THIS TIME. IF FUTURE RECOVERY PROJECTS WERE TO BE CONSIDERED, NO PROBLEMS WITH THIS COMMINGLING PROSPECT JEOPARDIZING THE EFFICIENCY OF A SECONDARY RECOVERY OPERATION IS ANTICIPATED.

AMERADA HESS CORPORATION WILL BE THE OPERATOR OF THE SAID WELL ON UNIT J, 1980' FSL, 1980' FEL, SEC. 16, T-21S, R-37E, LEA COUNTY, NEW MEXICO. AMERADA HESS CORPORATION HAS COMMON OWNERSHIP OF BOTH ZONES WITH A WORKING INTEREST OF 100%, 1/8 ROYALTY AND NO OVERRIDING ROYALTY.

A PLAT OF THE AREA IS ATTACHED AT THE END OF THIS LETTER. DIVISION C116 FORMS WHICH SHOWS THE PRODUCTION FROM THE TUBB AND DRINKARD ZONES ARE INCLUDED.

PRODUCTION DECLINE CURVES HAVE BEEN SUPPLIED FOR BOTH PRODUCING FORMATIONS. USING THESE RATES, A COMBINED RATE WAS CALCULATED AS 6.86 %/YR.

OFFSET OPERATORS HAVE BEEN NOTIFIED OF THIS PROPOSAL BY A COPY OF THIS LETTER.

IF THERE ARE ANY QUESTIONS REGARDING THIS PROPOSAL, PLEASE CONTACT ME AT (505) 393-0087.

SINCERLY,

Denise Ward-Wann

DENISE WARD-WANN
SENIOR PETROLEUM ENGINEER

OFFSET OPERATORS

ORYX	P.O. BOX 2339	HOBBS, NM 88240
AMOCO	P.O. BOX 68	HOBBS, NM 88241
CHEVRON	P.O. BOX 688	EUNICE, NM 88231
TEXACO	P.O. BOX 7030	HOBBS, NM 88240
CONOCO	P.O. BOX 460	HOBBS, NM 88241
SHELL	P.O. BOX 1950	HOBBS, NM 88240

STATE DA # 3

Tubb Perfs - 6180'-6290' avg. depth ($\bar{L}$) = 6235'

Drinkard Perfs - 6391'-6479' avg. depth ($\bar{L}$) = 6435'

γ_g Tubb = .704

γ_g Drinkard = .719

Assume Patm = 13.2 psia
Assume temp. grad. = 0.4 F/100'
Assume avg. surface temp. = 74 degrees F

BHT (Tubb) = 74 F + 6235' (.4/100') = 99°F

BHT (Drinkard) = 74 F + 6435' (.4/100') = 100°F

Pswh (Tubb) = 280 + 13.2 = 293.2 psia

Pswh (Drinkard) = 360 + 13.2 = 373.2 psia

TUBB ZONE

SBHP

Formula: $P_{sfs} = P_{whs}\, e^{c/z}$

$$\bar{T} = \frac{74\text{ F} + 99\text{ F}}{2} + 460\text{ R} = 546\text{ R}$$

$$C = \frac{\gamma_g \bar{L}}{53.34\,\bar{T}} = \frac{(.704)(6235)}{53.34\,(546)} = 0.151$$

Fig. 16-6

Ppc = 666 psia

Tpc = 390 °R

$$Tr = \frac{\bar{T}}{\overline{Tpc}} = 546/390 = 1.40$$

TRIAL & ERROR METHOD

Assume: Psfs = 344 psia $\quad \overline{P} = \frac{344 + 293.2}{2} = 319$ psia

$$Pr = \frac{\bar{P}}{\overline{Ppc}}$$

Pr = 319 psia/666 psia = 0.478

Tr = 1.40

FIG. 16-4

Z = .948

$$Psfs = Pwhs\ e^{c/z}$$

$$Psfs = 293.2\ e^{.151/.948}$$

Psfs = 344 psia

DRINKARD ZONE

$$\bar{T} = \frac{74 + 100}{2} + 460 = 547^{\circ}R$$

$$C = \frac{(.719)(6435)}{53.34\ (547)} = .159$$

FIG. 16-6

Ppc = 665 psia

Tpc = 393 ° R

$$Tr = \frac{\bar{T}}{Tpc} = 547/393 = 1.39$$

TRIAL & ERROR METHOD

Assume: Psfs = 443 psia

$$P = \frac{443 + 373.2}{2} = 408 \text{ psia}$$

$$Pr = \frac{\bar{P}}{Ppc} = 408/665 = .614$$

Tr = 1.39

Fig. 16-4

Z = .930

$$Psfs = Pwhs\ e^{c/z}$$

$$Psfs = 373.2\ e^{.159/.930}$$

Psfs = 443 psia

TUBB SBHP @ 6235' = 344 psia
DRINKARD SBHP @ 6435' = 443 psia

Adjusted to a common datum @ 6435'
.: Tubb zone SBHP needs to be adjusted 200'

$$\bar{T} = \frac{99 + 100}{2} + 460 = 559.5\ ^\circ R$$

Ppc = 666 psia

Tpc = 390 ° R

$$Tr = \frac{559.5}{390} = 1.43$$

$$C = \frac{(.704)(200)}{(53.34)(559.2)} = .0047$$

TRIAL & ERROR METHOD

Assume: Psfs = 362 psia $\quad \bar{P} = \frac{362 + 344}{2} = 353$

$$Pr = \frac{\bar{P}}{Ppc} = 353\ psia/666\ psia = 0.53$$

Tr = 1.43

Fig. 16-4

$$Z = .944$$

$$Psfs = 360\ e^{.0047/.944}$$

Psfs = 362 psia

.: Psfs = 362 psia Tubb adjusted to common datum of 6435'

TUBB ZONE SBHP = 362 psia
DRINKARD ZONE SBHP = 443 psia

50% of high pressure zone (Drinkard) = 222 psia.

Since low pressure zone Tubb @ 362 psia is greater than 50% of high pressure zone Drinkard @ 222 psia, no cross flow problems should exist.

TUBB DECLINE RATE

---

qi = 2000 MCFPM
q = 1250 MCFPM
t = 6 yr

$$a = \frac{\ln \frac{2000}{1250}}{6}$$

a = .078
a = 7.8%

DRINDARD DECLINE RATE

---

qi = 550 MCFPM
q = 440 MCFPM
t = 6 yr

$$a = \frac{\ln \frac{550}{440}}{6}$$

a = .037
a = 3.7%

COMBINED DECLINE RATE

---

qi = 2550 MCFPM
q = 1690 MCFPM
t = 6 yr

$$a = \frac{\ln \frac{2550}{1690}}{6}$$

a = .0686
a = 6.86%

ALLOCATION BASED ON DECLINE RATES

If: x = Tubb
1-x = Drinkard

$a_c = x(a_{Tubb}) + (1-x)(a_{Drinkard})$

$.0686 = x(.078) + 1-x\ (.037)$

$.0686 = .078x + .037 - .037x$

$.0686 - .037 = .078x - .037x$

$.0316 = .041x$

$x = .0316/.041$

$x = .771$

$1 - x = .229$

Tubb allocation = 77.1
Drinkard allocation = 22.9

STATE DA #3

GAS STREAM VALUES

Gas Price as of NOVEMBER 1989

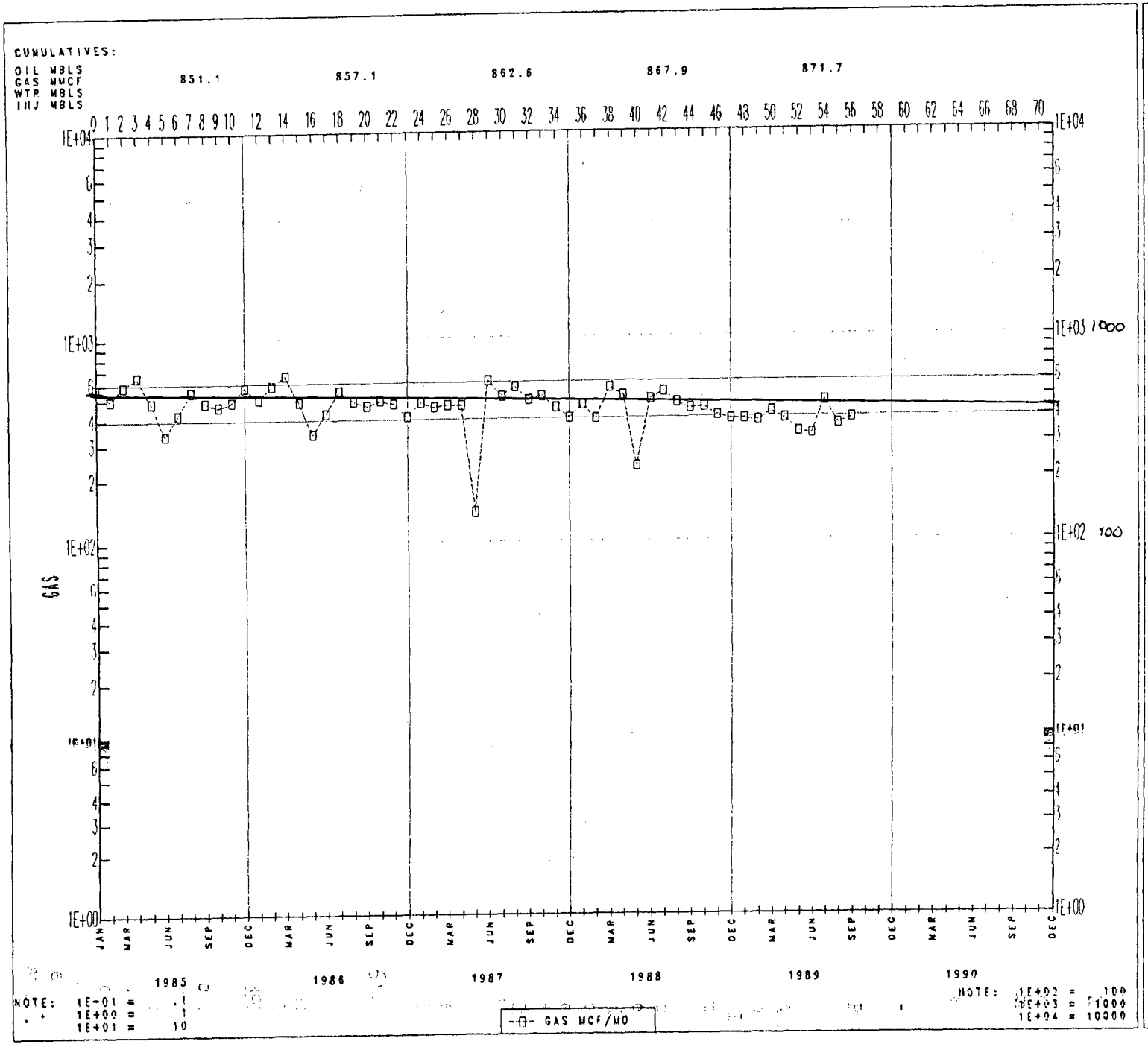
Drinkard - $1.37 /mcf
Tubb - $1.37 /mcf

Assuming 150 mcfpd total production:

Drinkard production	-	(34 mcfpd)($1.37 mcf)	= $ 46.58
Tubb production	-	(116 mcfpd)($1.37 mcf)	= $158.92
			$205.50 /day

Combined stream value = (150 mcfpd)($1.37 /mcf) = $205.50 /day

Values are equal.



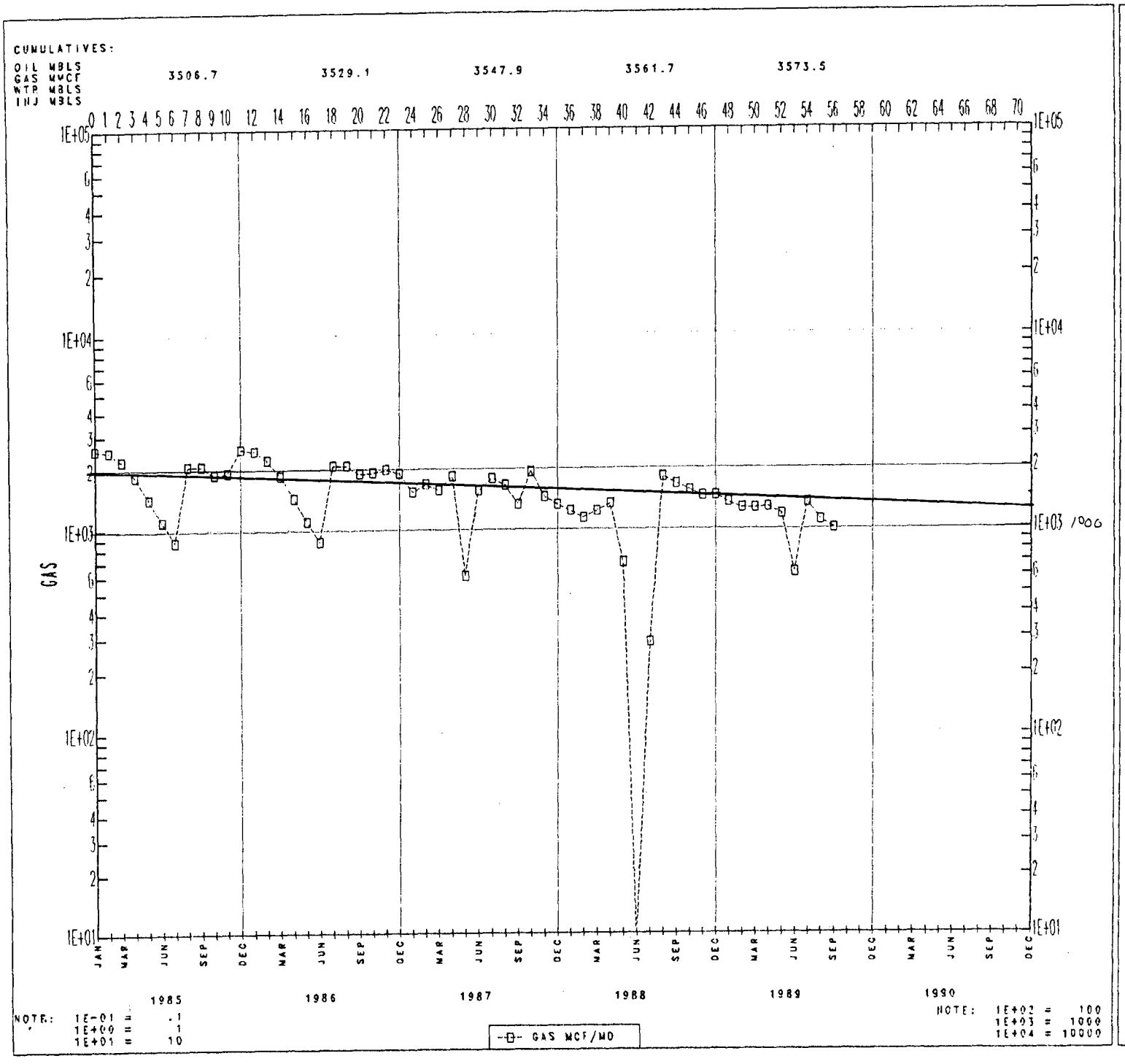
PLOT DATE: 11/17/93
PLOT NO.: 1436

REGION: SOUTHWEST REGION PRD
FIELD: EUNICE FIELD
POOL: /BLINEBRY/
LEASE: 02261 STATE D A
WELL: 31
STATE CODE: 30 NEW MEXICO
RRD CODE: 623

STATUS:
41 CM 6/23/89

GAS
FLOWING

$$\frac{\ln \frac{550}{440}}{6\text{ yrs}} = 3.7\%/\text{yr}.$$



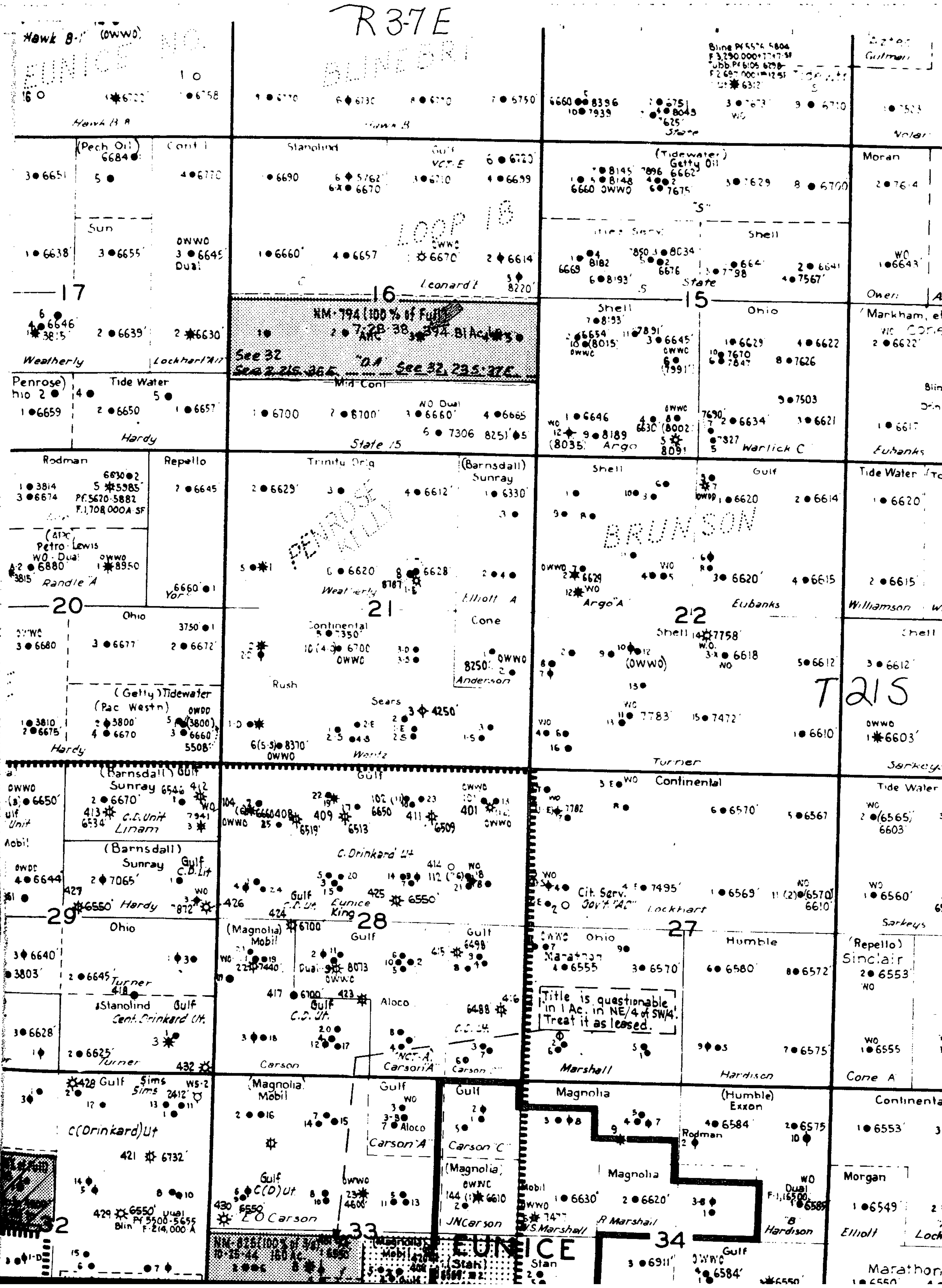
PLOT DATE: 11/17/89
PLOT NO.: 1435

REGION: SOUTHWEST REGION PRO
FIELD: EUNICE FIELD
POOL: /TUBB GAS/
LEASE: 02251 STATE B A
WELL: 32
STATE CODE: 35 NEW MEXICO
RRC CODE: 523

STATUS:
41 GM 6/29/89

GAS
FLOWING

$$\frac{\ln \frac{2000}{1250}}{6\ \text{yrs}} = 7.8\%/\text{yr.}$$



R37E
T21S
EUNICE NO.
BLINEBRY
LOOP 18
PENROSE KELLY
BRUNSON
EUNICE
17
16
15
20
21
22
29
28
27
32
33
34
Hawk B-1 (OWWO)
Hawk B B
Hawk B
State
Moran
Pech Oil
Cont'l
Stanolind
Gulf
(Tidewater) Getty Oil
Sun
Shell
Leonard'E
Ohio
Weatherly
Lockhart 'A'
NM-794 (100% of Full) 7-28-38 ARC 394 Bl Acres
See 32
Sec 2-21S-36E "DA" See 32, 23S-37E
Mid-Cont
Penrose
Tide Water
Hardy
State 15
Argo
Warlick C
Eubanks
Rodman
Repello
Trinity Orig
(Barnsdall) Sunray
Petro-Lewis
Randle 'A'
Weatherly
Elliott A
Cone
Argo 'A'
Eubanks
Williamson
Continental
(Getty) Tidewater
(Pac Westn)
Rush
Sears
Anderson
Wertz
Turner
Sarkeys
(Barnsdall) Gulf Sunray
C.D. Unit
Linam
C. Drinkard Ut
Cit. Serv. Gov't "AC"
Lockhart
(Magnolia) Mobil
Humble
(Repello) Sinclair
Turner
Stanolind
Cent. Drinkard Ut.
Aloco
Marathon
Title is questionable in 1 Ac. in NE/4 of SW/4. Treat it as leased.
Carson
"NCT-A" Carson 'A'
Marshall
Hardison
Cone A
Sims
C(Drinkard)Ut
Carson 'A'
Carson 'C'
Magnolia
(Humble) Exxon
Rodman
Morgan
Elliott
E O Carson
JN Carson
V.S. Marshall
R Marshall
"B" Hardison
NM-826 (100% of 3/4) 10-25-44 160 Ac.
Stan

Submit 2 copies to Appropriate District Office.
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-116
Revised 1/1/89

GAS - OIL RATIO TEST

Operator	Pool	County
AMERADA HESS CORPORATION	Drinkard	Lea

Address: P.O. Drawer D Monument, NM 88265

TYPE OF TEST - (X): Scheduled [ ] Completion [ ] Special [X]

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL.
State D "A"	3	J	16	21S	37E	12/31/89	F	2"	57#		24	0	0	0	10	

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.

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

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

Denise Wann
Signature

Denise Wann - Sr. Petroleum Engineer
Printed name and title

January 31, 1990 (505) 393-2144
Date Telephone No.

Submit 2 copies to Appropriate District Office.
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

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Form C-116
Revised 1/1/89

GAS - OIL RATIO TEST

Operator	Pool	County
AMERADA HESS CORPORATION	Tubb	Lea

Address	TYPE OF TEST - (X)			
P.O. Drawer D, Monument, NM 88265	Scheduled [ ]	Completion [ ]	Special [X]	

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL.
State D "A"	3	J	16	21S	37E	12/29/89	F	2"	50#		24	0	0	0	35	

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.

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

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

Denise Wann
Signature

Denise Wann - Sr. Petroleum Engineer
Printed name and title

January 31, 1990 (505) 393-2144
Date Telephone No.

SOUTHEAST NEW MEXICO PACKER LEAKAGE TEST

Operator		Lease		Well No.
Amerada Hess Corp.		State D.A.		3
Location of Well	**Unit**	**Sec**	**Twp**	**Rge**	**County**
	J	16	21	37	Lea

	Name of Reservoir or Pool	Type of Prod (Oil or Gas)	Method of Prod Flow, Art Lift	Prod. Medium (Tbg or Csg)	Choke Si
Upper Compl	Tubb	Gas	Flow	Csg.	2"
Lower Compl	Drinkard	Gas	Flow	Tbg.	2"

FLOW TEST NO. 1

Both zones shut-in at (hour, date): 9:00 A.M. 3-13-89

Well opened at (hour, date): 9:00 A.M. 3-14-89

	Upper Completion	Lower Complet
Indicate by (X) the zone producing		X
Pressure at beginning of test	280	355
Stabilized? (Yes or No)	YES	YES
Maximum pressure during test	280	355
Minimum pressure during test	280	50
Pressure at conclusion of test	280	50
Pressure change during test (Maximum minus Minimum)	--	305
Was pressure change an increase or a decrease?	--	decreas

Well closed at (hour, date): 9:00 A.M. 3-15-89 Total Time On Production 24 hrs.

Oil Production During Test: 0 bbls; Grav. -- ; Gas Production During Test 31 MCF; GOR --

Remarks

FLOW TEST NO. 2

	Upper Completion	Lower Complet
Well opened at (hour, date): 9:00 A.M. 3-16-89		
Indicate by (X) the zone producing	X	
Pressure at beginning of test	280	360
Stabilized? (Yes or No)	YES	YES
Maximum pressure during test	280	360
Minimum pressure during test	120	360
Pressure at conclusion of test	120	360
Pressure change during test (Maximum minus Minimum)	160	--
Was pressure change an increase or a decrease?	decrease	--

Well closed at (hour, date) 9:00 A.M. 3-17-89 Total time on Production 24 hrs.

Oil Production During Test: 0 bbls; Grav. -- ; Gas Production During Test 47 MCF; GOR --

Remarks

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

Approved APR 10 1989 19

New Mexico Oil Conservation Commission

ORIGINAL SIGNED BY JERRY SEXTON
DISTRICT I SUPERVISOR

By

Title

Operator Amerada Hess Corp.

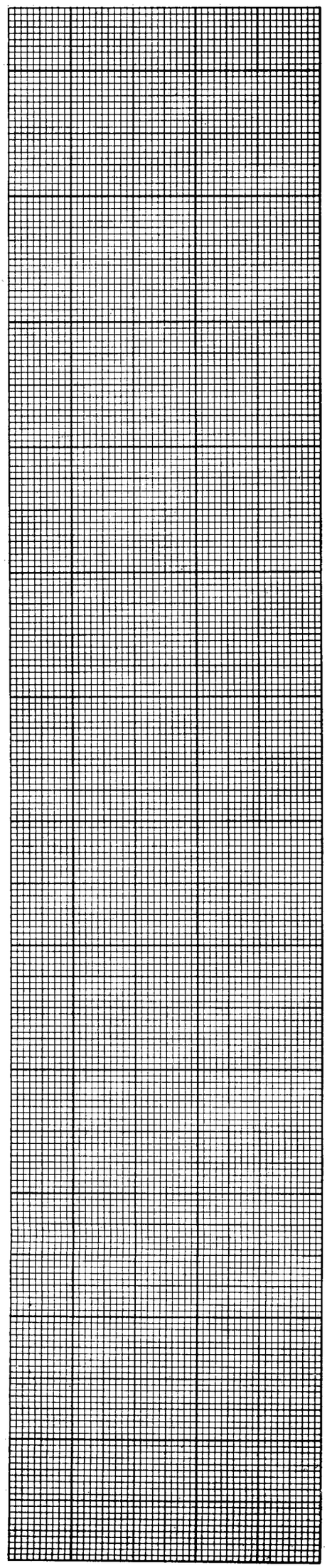
By Linda Johnson

Title Production Technician

Date 4-4-89

AUTHORIZATION FOR EXPENDITURE—WORKOVER

COMPLETION - SCHEMATIC



LEASE NAME: STATE D "A"

WELL NO.: 3

TYPE COMPLETION: ☐ SINGLE ☒ DUAL ☐ OTHER

LOCATION: 1980' FSL, 1980' FEL Sec. 16, T-21S-R-37E

DEPTH: TD 6630' PBD 6629' COD DOD

ELEVS: KB DF 3469' GL 3459'

NO. PROD. WELLS ON LSE.	FLOWING	PUMPING	GL

ZONE TO BE WORKED ON	CURRENT COMPLETION ZONE
Tubb/Drinkard	

CSG. PERFS. OR OH INTERVAL: Tubb - 6180'-6290' Drinkard - 6391'-6479'

CURRENT TEST (SHOW DATE)

31 MCFPD Drinkard 40%

41 MCFPD Tubb 60%

PRESENT ALLOW.	TOP FIELD ALLOW.

GOR LIMIT	SPACING

	SIZE	DEPTH	TOP CEMENT
CASING: SURFACE	13-3/8" 36#	213'	200 sks. CIRC.
CASING: INTERMEDIATE	8-5/8" 32# 36#	2,807'	1550 sks. 580'
CASING: PRODUCTION	5-1/2" 15.5#	6,630'	500 sks. 2845'

SUMMARY OF PREVIOUS WORKOVERS

7/47 Spudded
DST 6524'-88'

8/47 Perf. 6524'-6629' w/4 20 holes, acid w/500 gals. acid w/ 3000 gals. 15%.

1/54 Set magnesium retainer at 6475' & topped w/cmt. to 6467'. Perf. 6180'-6290' (440 holes). Acid. w/500 gals. Drilled out plug & junk to 6629'.

5/75 Set CIBP at 6500' & topped w/cmt. to 6490'. Perf. 6391'-6479' (40 holes). Acid. 6391'-6479' w/2900 gals. 15%. Frac. w/30,000 gals. gel & 34,500# sand. Set Model D at 6340'.

RECOMMENDATION AND JUSTIFICATION

SUBMITTED BY: D. WANN

AUTHORIZATION FOR EXPENDITURE — WORKOVER

AHEP-2028-F

☐ ORIGINAL ☐ SUPPLEMENTAL

AFE NO.			
LEASE NAME	WELL NO.	PREPARATION DATE	
COUNTY OR PARISH	STATE	POOL	BUDGETED ☐ YES ☐ NO
REGION	AREA / DISTRICT	AHC WI	

WORK TO BE PERFORMED

INTANGIBLES

CODE		ESTIMATED COST
400	WORKOVER EXPENSES - OTHER	
401	PULLING UNIT/CREW	
402	ACIDIZING	
403	FRACTURING	
404	PERFORATING	
405	LOGGING	
406	RENTAL EQUIPMENT AND TOOLS	
407	CEMENT AND CEMENTING SERVICES	
408	TRACER, INJECTION AND FLUID ENTRY SURVEYS	
	TOTAL INTANGIBLE WORKOVER COST	

TANGIBLES

QUANTITY	DESCRIPTION OF MATERIAL	NEW	S.H.	
	TOTAL TANGIBLE WORKOVER COST			
	TOTAL CASH OUTLAY FOR WORKOVER			
	LESS TOTAL ESTIMATED SALVAGE VALUE			
	NET COST OF WORKOVER			

BEFORE WORKOVER		AFTER WORKOVER		CHANGE
BOPD		BOPD		
MCFPD		MCFPD		
LIFTING COST ($ PER MONTH)		LIFTING COST ($ PER MONTH)		
AHC INCOME INTEREST	%	PAYOUT OF TOTAL CASH OUTLAY		MO.
AHC WORKING INTEREST	%	AHC NET TOTAL CASH OUTLAY		

APPROVED (OTHER WI OWNERS)

COMPANY

BY

DATE

APPROVED: ☐ AMERADA HESS CORPORATION
☐ AMERADA MINERALS CORPORATION OF CANADA LTD.

	REGION	TULSA
ENGINEERING		
GEOLOGICAL		
PRODUCTION		

AUTHORIZED

DRLG. SER. MGR. — DATE	VICE PRESIDENT — DATE	SR. VICE PRESIDENT — DATE

PRINTED IN U.S.A.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

OIL CONSERVATION DIVISION
RECEIVED
'90 FEB 5 AM 8 36

2-2-90

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

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

RE: Proposed:
MC_____
DHC X
NSL_____
NSP_____
SWD_____
WFX_____
PMX_____

Gentlemen:

I have examined the application for the:

Amerada Hess Corp. State DA #3-J 16-21-37
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton
Supervisor, District 1

/ed