

LAW OFFICES

LOSEE, CARSON & DICKERSON, P. A.

300 AMERICAN HOME BUILDING  
P. O. DRAWER 239  
ARTESIA, NEW MEXICO 88211-0239

AREA CODE 505  
746-3508

A. J. LOSEE  
JOEL M. CARSON  
CHAD DICKERSON  
DAVID R. VANDIVER  
ELIZABETH LOSEE  
REBECCA DICKERSON

August 31, 1984

OIL CONSERVATION DIVISION

1001

RECEIVED

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

Re: Yates Petroleum Corporation  
Case No. 8324  
9/5/84 Examiner Hearing

Gentlemen:

Please continue the hearing on the captioned Application of Yates Petroleum Corporation for a carbon dioxide injection project, which is currently set for the Examiner Hearing of September 5, 1984, until the Examiner Hearing of September 19, 1984.

Thank you.

Sincerely yours,

LOSEE, CARSON & DICKERSON, P.A.



Chad Dickerson

CD:pvm

cc: Mr. Bob Tisdale

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300 AMERICAN HOME BUILDING  
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ARTESIA, NEW MEXICO 88211-0239

AREA CODE 505  
746-3508

September 21, 1984

Mr. Michael E. Stogner, Examiner  
Energy and Minerals Department  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Case No. 8324  
Examiner Hearing of 9/19/84  
Yates Petroleum Corporation

Dear Mr. Stogner:

As requested, enclosed please find two copies each of treatment reports for West Loco Hills Unit Wells 1-3 and 13A-4, supplementing Applicant's Exhibit No. 1.

Thank you.

Sincerely yours,

LOSEE, CARSON & DICKERSON, P.A.



Chad Dickerson

CD:pvm  
Enclosures

# THE WESTERN COMPANY

"Engineered Well Services"



Form PS-8. (Rev. 11/66)

GENERAL OFFICES — FORT WORTH, TEXAS

## TREATMENT REPORT

DATE: 2-13-68  
 Western District Dallas Field Receipt No. 13420 Stage No. 1  
 Operator NEWMONT OIL COMPANY Lease WLND Well No. 1-3  
 Field West Loco Hills Location \_\_\_\_\_ County Gray State New Mexico

**WELL DATA:**  
 New Well \_\_\_\_\_ Old Well  Depth TD/RB 2835 Formation LEWISTON  
 Size Tubing None Tubing Perf. \_\_\_\_\_ Type Packer \_\_\_\_\_ Set At \_\_\_\_\_  
 Size Casing 5 1/2 Wt. 14.7 Set From 550.00 To 2705  
 Size Liner None Wt. \_\_\_\_\_ Set From \_\_\_\_\_ To \_\_\_\_\_  
 Open Hole: Size 5 From 2705 To 2835  
 Casing Perfs: Size \_\_\_\_\_ No. Per Ft. \_\_\_\_\_ Intervals None in New Mexico @ 2820-2850  
 Previous Treatment None Prior Production 22

**TREATMENT DATA:**  
 Hole Loaded With Water  
 Treating Fluid 15000 Gallons Formulated Water  
 Propping Agent 15000 Pounds 20/60 SAND  
 Auxilliary Materials 250 Pounds P-3  
 Ball Sealers: None in \_\_\_\_\_ Stages of \_\_\_\_\_  
 HHP Used 1 ERDMASTER 1010  
 Procedure DRIFT OPEN HOLE VIA CASING AS FOLLOWS: LOGGERS OPEN 5000 GAL @ 1 1/2" - FLUSH WITH WATER @ 1 1/2" 5000 GAL @ 1" WITH 200# P-3 - 5000 GAL @ 1 1/2" - FLUSH WITH WATER

**CAPACITIES & FLUID PUMPED:**  
 Tubing Cap. \_\_\_\_\_  
 Casing Cap. 66.00  
 Annular Cap. \_\_\_\_\_  
 Open Hole Cap. 3.40-4.10  
 Fluid to Load \_\_\_\_\_  
 Pad Volume 20  
 Treating Fluid 150  
 Flush 80  
 Overflush \_\_\_\_\_  
 Total to Recover 150

Time AM/PM	Treating Pressure-Psi		Bbl Fluid Pumped	Inj. Rate BPM	REMARKS-
	Tubing	Casing			
3:10		400	—	—	START WATER TO BREAK
3:11		1900	30	21	START P-3 @ 1 1/2"
3:14		1800	120	24	STOP ON FORMATION
3:16		1800	140	26	INCREASE TO 1 1/2" START P-3
3:19		1700	250	26	7 1/2" ON FORMATION
3:20		1700	310	26	INCREASE TO 1 1/2"
3:23		1700	340	26	1 1/2" ON FORMATION
3:26		1700	370	26	ALL P-3 START FLUSH
3:29		1750	460	20	ALL FLUSH SAND DOWN
					5 minute SAUT IN 1400#
					10 minute SAUT IN 1350
					15 minute SAUT IN 1300

Treating Pressure: Min. 1700 . Max. 1900 . Avg 1800  
 Inj. Rate On Treating Fluid 26.3  
 Inj. Rate On Flush 24.2  
 Avg. Inj. Rate 26.3  
 I.S.D.P. 1500# Type Fluid BEINE  
 Final Shut-in Pressure 1300 in 16 min.  
 Operator Maximum Pressure 3000#

Customer Representative Delmer Kelly  
 Western Representative SID LEE  
 Distribution \_\_\_\_\_

# THE WESTERN COMPANY



Form PS-8 (Rev. 11/66)

"Engineered Well Services"

GENERAL OFFICES - FORT WORTH, TEXAS

## TREATMENT REPORT

DATE: Sept 18, 1971  
 Western District Hobbs, New Mexico Field Receipt No. 49642 Stage No. \_\_\_\_\_  
 Operator Newmont Oil Company Lease WILM 1 Well No. 3  
 Field West Loco Hills Location \_\_\_\_\_ County Eddy State New Mexico

**WELL DATA:**  
 New Well \_\_\_\_\_ Old Well  Depth TD/PB 2836 Formation \_\_\_\_\_  
 Size Tubing None Tubing Perf. - Type Packer None Set At \_\_\_\_\_  
 Size Casing 5.50 Wt. 17" Set From Surface To 2705  
 Size Liner \_\_\_\_\_ Wt. \_\_\_\_\_ Set From \_\_\_\_\_ To \_\_\_\_\_  
 Open Hole: Size Shot Hole From 2705 To 2836  
 Casing Perfs: Size (60 grs) No. Per Ft. \_\_\_\_\_ Intervals 2819-2835  
 Previous Treatment N/A Prior Production N/A

**TREATMENT DATA:**  
 Hole Loaded With OIL  
 Treating Fluid 750 gallons 15% Reg. Acid - 15,000 Gallons Lensecure  
 Propping Agent 22,500 POUNDS OF 20-40 Mesh Bulk Sand  
 Auxilliary Materials 375 POUNDS OF ADDUMITE MARK II - 1200 POUNDS OF ROCK SALT  
 Ball Sealers: None in \_\_\_\_\_ Stages of \_\_\_\_\_  
 HHP Used 701 hhp  
 Procedure Pad - 750 gallons acid - 2 drums chemical in 20 bbls of water - 7,500 gallons lease oil @ 1 1/2" 20-40 - 1200# Rock Salt - 14,500 gallons L.O. - 7,000 gallons L.O. @ 1 1/2" 20-40 - Flush

**CAPACITIES & FLUID PUMPED:**  
 Tubing Cap. \_\_\_\_\_  
 Casing Cap. \_\_\_\_\_  
 Annular Cap. \_\_\_\_\_  
 Open Hole Cap. \_\_\_\_\_  
 Fluid to Load \_\_\_\_\_  
 Pad Volume \_\_\_\_\_  
 Treating Fluid \_\_\_\_\_  
 Flush \_\_\_\_\_  
 Overflush \_\_\_\_\_  
 Total to Recover \_\_\_\_\_

Time AM/PM	Treating Pressure - Psi		Bbl Fluid Pumped	Inj. Rate BPM	REMARKS -
	Tubing	Casing			
					<u>TEST LINES</u>
<u>9:45</u>					<u>START WATER</u>
<u>9:47</u>		<u>1500</u>	<u>20</u>		<u>START ACID</u>
<u>9:48</u>		<u>1600</u>	<u>38</u>		<u>ALL ACID START CHEMICAL IN WATER</u>
<u>9:49</u>		<u>1750</u>	<u>64</u>	<u>190</u>	<u>ALL CHEMICAL START LEASE OIL</u>
<u>9:55</u>		<u>1850</u>			<u>ACID ON FORMATION 1850" TO 1900"</u>
<u>9:59</u>		<u>1900</u>	<u>248.0</u>		<u>1900" ROCK SALT</u>
<u>10:00</u>					<u>ALL ROCK SALT REMAINS 20-40</u>
<u>10:04</u>		<u>1800</u>			<u>ROCK SALT ON FORMATION - SLOW</u>
<u>10:05</u>		<u>2500</u>			<u>STOP - SURGE - REMAINS</u>
<u>10:15</u>		<u>1900</u>	<u>483</u>	<u>20.0</u>	<u>START FLUSH</u>
<u>10:20</u>		<u>1950</u>			<u>A SLOW</u>
<u>10:22</u>		<u>1450</u>	<u>593</u>	<u>4.0</u>	<u>ALL FLUSH - 1500 1400"</u>

Treating Pressure: Min. 1600 . Max. 2500 . Avg. 1900  
 Inj. Rate On Treating Fluid 18.5  
 Inj. Rate On Flush 18.4  
 Avg. Inj. Rate 19.0  
 I.S.D.P. 1400" Type Fluid FORMATION WATER  
 Final Shut-in Pressure 1325 in 15 min.  
 Operator Maximum Pressure 2500

Customer Representative FRANK WOOD  
 Western Representative HARRIS  
 Distribution \_\_\_\_\_

# THE WESTERN COMPANY

"Engineered Well Services"



Form PS-8 (Rev. 11/66)

GENERAL OFFICES — FORT WORTH, TEXAS  
TREATMENT REPORT

DATE: 3-4-68  
Western District HOBBS Field Receipt No. 13424 Stage No. 1

Operator NEWMONT OIL CO. Lease WLHU Well No. 134  
Field WEST LOCO HILLS Location \_\_\_\_\_ County EDDY State NEW MEXICO

WELL DATA:  
New Well \_\_\_\_\_ Old Well  Depth TD/PS 2805 Formation LOCO HILLS  
Size Tubing NONE Tubing Perf. \_\_\_\_\_ Type Packer NONE Set At \_\_\_\_\_  
Size Casing 7" Wt. 20# Set From SURFACE To 2680  
Size Liner \_\_\_\_\_ Wt. \_\_\_\_\_ Set From \_\_\_\_\_ To \_\_\_\_\_  
Open Hole: Size 6 7/8 From 2680 To TD  
Casing Perfs: Size \_\_\_\_\_ No. Per Ft. \_\_\_\_\_ Intervals MECHANICAL NORM @ 2774-2805

Previous Treatment NONE Prior Production \_\_\_\_\_

**TREATMENT DATA:**

Hole Loaded With OIL & WATER  
Treating Fluid 10000 GALLONS LEASE OIL  
Propping Agent 10000 # 20/40  
Auxilliary Materials 200 # P-3  
Ball Sealers: NONE in \_\_\_\_\_ Stages of \_\_\_\_\_  
HHP Used LFM 1010  
Procedure TREAT OPEN HOLE VIA CASING AS FOLLOWS: LOAD & BREAK 110 GALLONS FRAC @ 1/2 # ARGONIAN 130 BBL @ 1# FLUSH WITH 115 BBL

**CAPACITIES & FLUID PUMPED:**

Tubing Cap. \_\_\_\_\_  
Casing Cap. 230/1340  
Annular Cap. \_\_\_\_\_  
Open Hole Cap. \_\_\_\_\_  
Fluid to Load \_\_\_\_\_  
Pad Volume 40  
Treating Fluid 240  
Flush 115  
Overflush \_\_\_\_\_  
Total to Recover 395

Time AM/PM	Treating Pressure - Psi		Bbl Fluid Pumped	Inj. Rate BPM	REMARKS -
	Tubing	Casing			
101			10	--	START BREAKDOWN
103		1800	40	24	START FRAC @ 5# START 200# P-3
107		1700	155	22	INCREASE SAND TO 1# SAND ON FORMATION
114		1900	280	21	ALL FRAC START FLUSH
119		2000	395	20	ALL FLUSH SHUT DOWN
					5 MIN SIP 1500
					10 MIN SIP 1450
					15 MIN SIP 1400

Treating Pressure: Min. 1600 Max. 2000 Avg 1800  
Inj. Rate On Treating Fluid 22.8  
Inj. Rate On Flush 20.8  
Avg. Inj. Rate 21.8  
I.S.D.P. 1700 Type Fluid Lease Oil  
Final Shut-in Pressure \_\_\_\_\_ in \_\_\_\_\_ min.  
Operator Maximum Pressure 2500

Customer Representative Delmer Berry  
Western Representative Sid Lee  
Distribution \_\_\_\_\_

**STIMULATION TREATMENT REPORT**



DWL-494-J PRINTED IN U.S.A.

DOWELL DIVISION OF THE DOW CHEMICAL COMPANY

DATE 10-4-72

WELL NAME AND NUMBER  
**TRACT 13 'A #4**

POOL  
**GRAYBURG JACKSON**

COUNTY  
**EDDY**

TYPE OF SERVICE  
**FRACTURING**

LOCATION  
**LOSO HILLS**

FORMATION  
**LOSO HILLS**

STATE  
**NEW MEXICO**

CUSTOMER REPRESENTATIVE  
**FRANK ROYCE**

TREATMENT NUMBER  
**05-13-5632**

JOB DONE DOWN  
TUBING A  CASING B  ANNULUS C

ALLOWABLE PRESSURE  
TBG: **3200** CSG: **-**

TYPE OF WELL  
OIL A  GAS B  WATER C  INJ. D

CUST. NAME  
**NEWMONT OIL COMPANY**

ADDRESS  
**FIRST NATIONAL BANK BLDG.**

CITY, STATE & ZIP CODE  
**ARTESIA, NEW MEXICO 88210**

AGE OF WELL  
NEW WELL A  REWORK B

TOTAL DEPTH  
**2805**

CIRC. BHT.  
**-**

CASING SIZE  
**7"**

CASING DEPTH  
**2600**

TUBING SIZE  
**3"**

TUBING DEPTH  
**2585**

LINER SIZE  
**-**

LINER DEPTH  
**-**

PACKER TYPE  
**GUIBERSON**

PACKER DEPTH  
**2585**

OPEN HOLE  
**73 BBL**

CSG. OR ANRL. VOL.  
**22.5**

TBG VOLUME  
**22.5**

STATIC BHT.  
**-**

REMARKS:  
**FRAC: USING 18,000 GAL K-1 SUPER-FRAC; 1000 GAL XE63 ACID; 45,000# 20-40 SAND**

PERFORATED INTERVALS

DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES
2774					
2805					

FOR CONVERSION PURPOSES 24 BBL EQUALS 1000 GALLONS

ARRIVED ON LOCATION: **9:00 A.M.**

TIME	INJECTION		PRESSURE		SERVICE LOG
	RATE	BBL IN	CSG.	TBG.	
9:30					LAY LINES - MIX GELLED K-1 - SAFETY MEETING - RUN TBG
12:38					TEST LINES - O.K. (4300 PSI)
12:39					START XFLYI ACID
12:41	6	12	1450		ACID PUMPED - PUMP 20 BBL L.O. CONTAINING 2 BBL TRETOLITE
12:42	18	32	2500		START SUPERFRAC K-1 PAD
12:44	17.5	68	2850		START 20-40 SAND 2#/GAL
12:46 1/2	18	128	2800		INCREASE SAND CONCENTRATION TO 3#/GAL
12:49	18+	188	2800		" " " " 4#/GAL
12:52	18+	240	2800		STOP SAND - DROP 1400# ROCK SALT
12:53	18+	280	2800		SALT DUMPED - START ACID (SLOW RATE)
12:54 1/2	10	272	1700		START K-1 SUPERFRAC PAD (INCREASE RATE)
12:57	18-	308	2900		BEGIN 20-40 SAND 2#/GAL
1:00 1/2	18+	368	2850		INCREASE SAND CONG. TO 3#/GAL
1:05	18+	428	2850		" " " " 4#/GAL
1:09	18.5	488	2850		ALL SAND IN - START L.O. FLUSH
1:11	18.5	516	2850		FLUSH COMPLETE

< ISIP = 1650 PSI  
15 MIN = 1550 PSI >

TIME LEFT LOCATION	AVG. LIQUID INJ. RATE	ADJ. INJ. RATE (SOLIDS INC.)	TOTAL FLUID PUMPED		SUPERFRAC K-1 FRAC 18,000 GAL		
3:00 PM	17.8	18.2	K-1 432	WATER 48	PROPS AND LIQUIDS INJECTED		
MAX. PRESSURE	AVG. PRESSURE	FINAL PUMP IN PRESSURE	SHUT IN PRESSURE		TYPE	SIZE OR PURPOSE	AMOUNT
2950	2800	2800	IMMEDIATE 1650	15 MINUTES 1550	ACID	15%	1000 GAL
DOWELL LOCATION					SAND	20-40	45,000 #
DOWELL ENGINEER					SALT	TEMP PLUG	1400 #
ARTESIA N.M.					L.O.	FLUSH	20 BBL

CALL BACK DATE: \_\_\_\_\_ CUSTOMER REP. CONTACTED: **J. A. Conroy**

CUSTOMER CONSIDERED SERVICE:  SATISFACTORY  UNSATISFACTORY  UNKNOWN

PROD. BEFORE TREATMENT TEST:  ALLOWABLE  TEST

PROD. AFTER TREATMENT TEST:  ALLOWABLE  TEST

RECORDED SERVICE

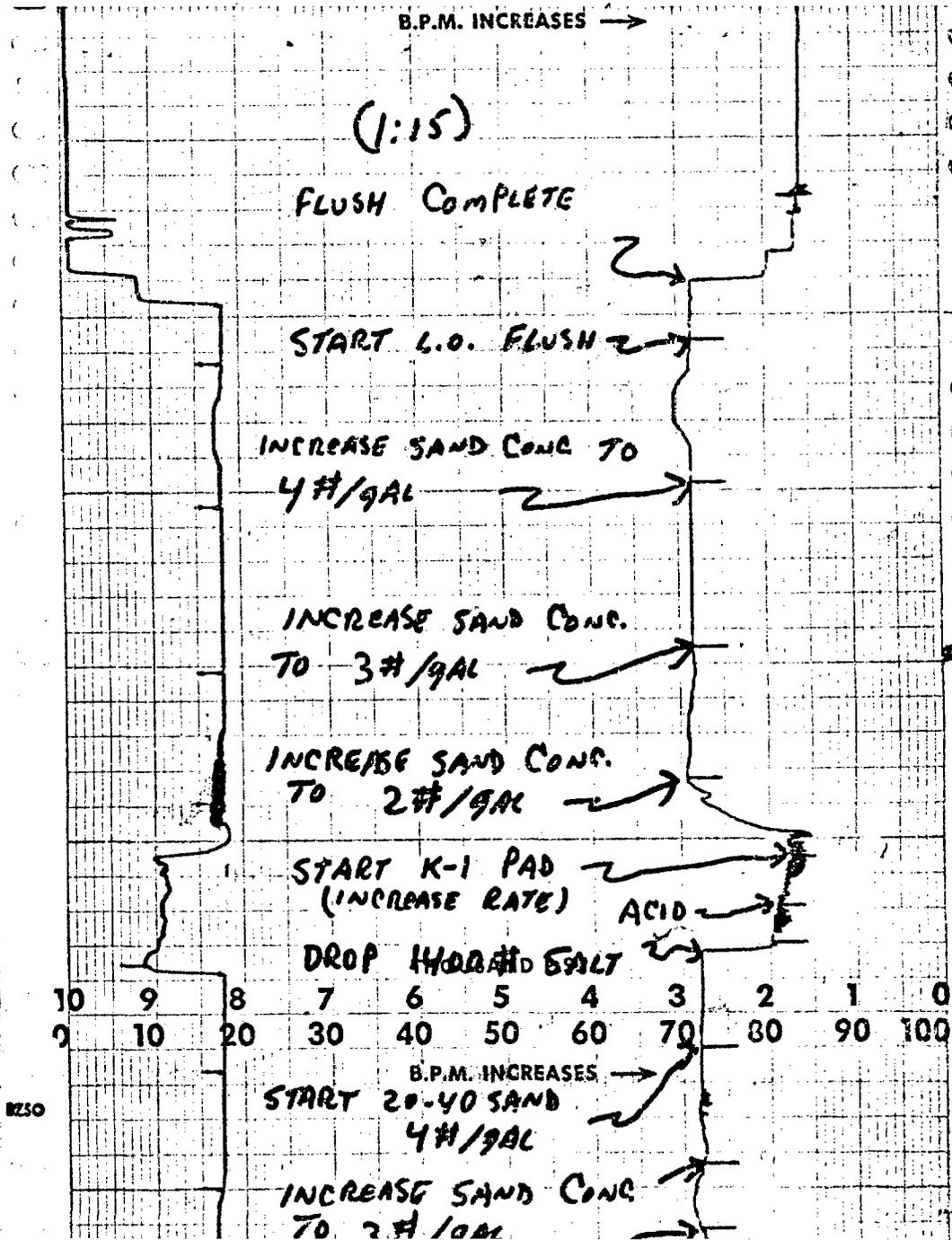
TREATMENT NO. 05-13-5632

TYPE OF SERVICE K-1 SUPERFRAC

DATE 10-4-72

OWNER NEWMONT OIL CO.	WELL NAME AND NUMBER TRACT 13 "A" # 4
OWNER'S REPRESENTATIVE FRANK BOYCE	SERVICE ENGINEER J.A. CORSORO

REMARKS: FRACTURE: USING 18,000 GAL K-1 SUPERFRAC;  
 + 45,000 # 20-40 SAND + 1000 GAL XFUMI ACID +  
 1400 # ROCK SALT



10 3 1/2 GAL

START 20-40 2 1/2 GAL

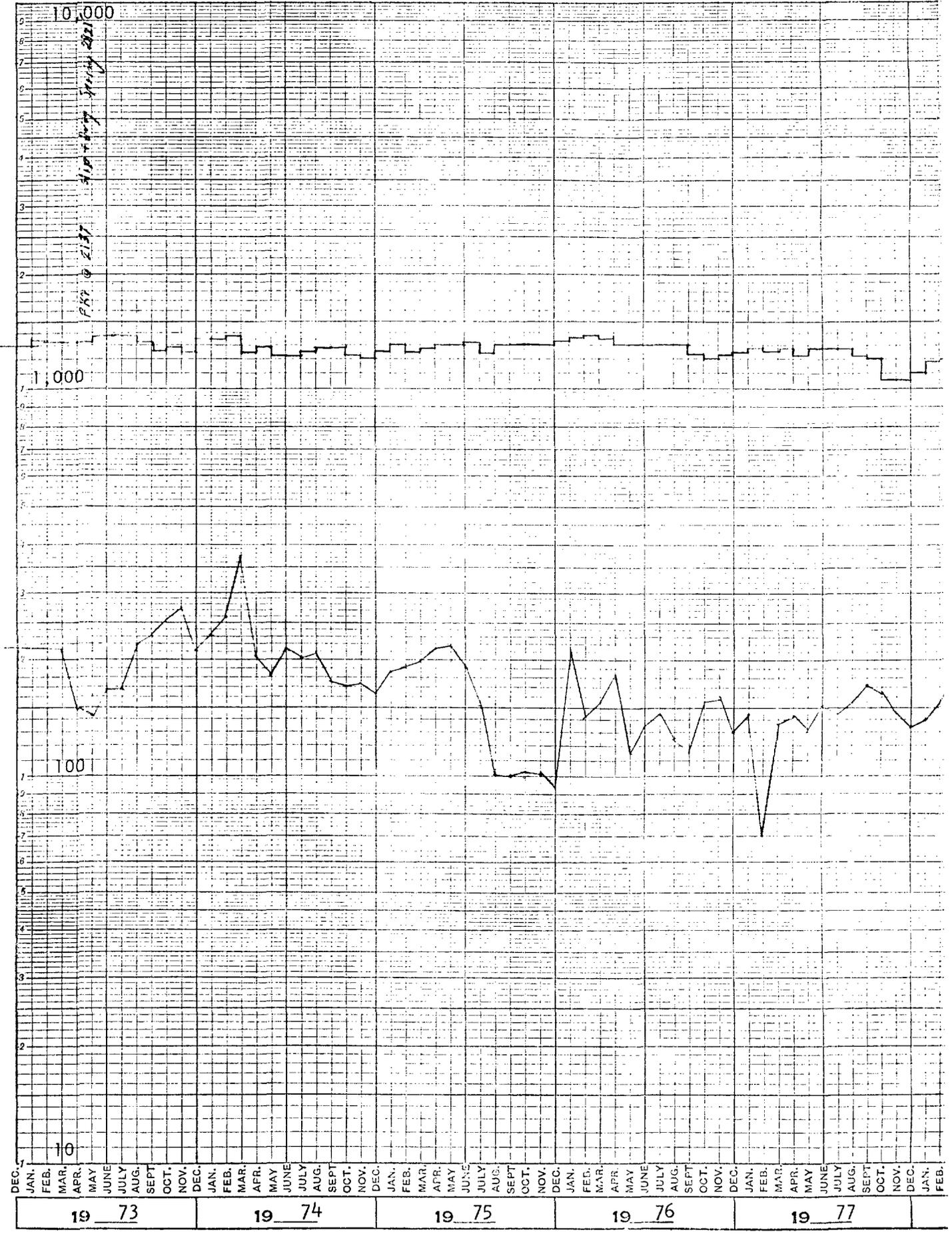
2 BBL TRETOLITE CHEM. IN 20 BBL L.O.  
ACID

TEST LINES

(12:35)

THOUSAND 200

TRACT 1 WELL NO. 8



TRACT NO. 1 WELL NO. 8



LAW OFFICES

**LOSEE, CARSON & DICKERSON, P. A.**

300 AMERICAN HOME BUILDING

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A. J. LOSEE  
JOEL M. CARSON  
CHAD DICKERSON  
DAVID R. VANDIVER  
ELIZABETH LOSEE  
REBECCA DICKERSON

October 15, 1984

RECEIVED  
OCT 17 1984  
OIL CONSERVATION DIVISION

Mr. Michael E. Stogner, Examiner  
Energy and Minerals Department  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Case No. 8324  
Examiner Hearing of 9/19/84  
Yates Petroleum Corporation

Dear Mr. Stogner:

Enclosed, if it may be of any assistance in this matter, please find a proposed Order for entry in the captioned case.

Thank you.

Sincerely yours,

LOSEE, CARSON & DICKERSON, P.A.



Chad Dickerson

CD:pvm  
Enclosure

cc: Mr. Bob Tisdale

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 8324  
Order No. R- \_\_\_\_\_

APPLICATION OF YATES PETROLEUM  
CORPORATION FOR A CARBON DIOXIDE  
INJECTION PILOT PROJECT, EDDY  
COUNTY, NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8 a.m. on September 19, 1984, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this \_\_\_\_\_ day of \_\_\_\_\_, 1984, the Division Director, having considered the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks authority to initiate a pilot carbon dioxide injection project in the Grayburg formation in the E/2 Section 12, Township 18 South, Range 29 East, N.M.P.M., and W/2 Section 7, Township 18 South, Range 30 East, N.M.P.M., Loco Hills Queen-Grayburg-San Andres Pool, Eddy County, New Mexico, for tertiary recovery purposes.

(3) That said pilot project is in an area wherein primary recovery and secondary recovery operations have been conducted.

(4) That the proposed pilot project is of an experimental nature to evaluate the effectiveness of carbon dioxide injection into the subject reservoir, and as such, will require the drilling

of a number of wells at close proximity to each other for purposes of injection and production, and to provide a study of zone isolation, vertical heterogeneity, reservoir directional variation, and the carbon dioxide displacement process.

(5) That in the event the pilot project is successful and indicates the desirability and economic feasibility of the process, the pilot project would be expanded to include additional lands and wells, and would result in the production of otherwise unrecoverable oil thereby preventing waste.

(6) That the pilot project is to be conducted well within the boundaries of the West Loco Hills Unit Area, a unitized area, and will therefore not impair correlative rights.

(7) That the proposed pilot project should be approved, as well as certain non-standard locations and provisions for additional injection and production wells at orthodox and unorthodox locations, and expansion of the pilot.

IT IS THEREFORE ORDERED:

(1) That the applicant, Yates Petroleum Corporation, is hereby authorized to initiate and conduct a pilot carbon dioxide/water injection project in the West Loco Hills Unit, Loco Hills Queen-Grayburg-San Andres Pool, Eddy County, New Mexico.

(2) That the applicant is hereby authorized to drill its West Loco Hills Unit G4S Well Tract 13-12 at a point 1,980 feet from the north line and 10 feet from the east line of Section 12, Township 18 South, Range 29 East, N.M.P.M., and Tract 6-5 at a point 2,475 feet from the south line and 10 feet from the east line of Section 12, Township 18 South, Range 29 East, N.M.P.M., and to place said wells on temporary production.

(3) That upon completion of testing and evaluation of the wells and the reservoir in the pilot area, applicant is authorized to convert aforesaid West Loco Hills Unit G4S Wells Tract 13-12 and Tract 6-5 to selective water/carbon dioxide injection into the Grayburg Fourth Zone.

(4) That the injection wells or injection system shall be equipped with a pressure regulator or other acceptable device which will limit the wellhead pressure on the injection wells to no more than 1,500 psi.

(5) That the operator shall notify the Supervisor of the Artesia district office of the Division when the injection system installation has been completed so that an inspection of the same may be made prior to its operation.

(6) That the operator shall immediately notify the Supervisor of the Artesia district office of the Division of the failure of the tubing, casing, packer, or cement in any well in the project area, or of the leakage of water or oil from or around any of said wells, and shall take such timely steps as may be necessary to correct such failure or leakage.

(7) That the operator shall have the flexibility to drill its production and injection wells at a location other than those described above, dependent upon analysis of reservoir and fluid characteristics, provided however, that it shall notify the Santa Fe office of the Division of any such location change and provided further than none of the unauthorized injection/production wells shall be located outside the project area as defined below.

(8) That the subject project shall be known as the Yates Petroleum Loco Hills CO<sub>2</sub> Injection Project, and the project area shall comprise the following described lands.

TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.

Section 12: E/2

TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.

Section 7: W/2

(9) That said project area may be expanded and additional wells drilled and placed on production and/or water/carbon dioxide injection at orthodox and unorthodox locations upon filing written request therefor with the Division Director, with copies of such request being furnished to the operator of any directly or diagonally offsetting 40-acre proration unit not committed to and participating in the West Loco Hills Unit G4S. The Division Director may approve the request if, after a period of 20 days, no such offset operator has objected thereto.

(10) That the Yates Petroleum Loco Hills CO<sub>2</sub> Injection Project shall be governed by this order and the rules<sup>2</sup> contained herein and by the provisions of Rules 701, 702 and 703 of the Division Rules which are not in conflict herewith.

(11) That monthly project reports of the project herein authorized shall be submitted to the Division in accordance with Rule 704 of the Division Rules, provided however, that a separate supplemental report on Form C-115 shall also be filed each month reporting volumes of water and carbon dioxide injected.

(12) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

-4-

Case No. 8324

Order No. \_\_\_\_\_

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

JOE D. RAMEY  
Director

S E A L

LAW OFFICES

LOSEE, CARSON & DICKERSON, P. A.

300 AMERICAN HOME BUILDING  
P. O. DRAWER 239  
ARTESIA, NEW MEXICO 88211-0239

AREA CODE 505  
746-3508

A. J. LOSEE  
JOEL M. CARSON  
CHAD DICKERSON  
DAVID R. VANDIVER  
ELIZABETH LOSEE  
REBECCA DICKERSON

January 8, 1985

Mr. Michael E. Stogner, Examiner  
Energy and Minerals Department  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Case No. 8324  
Yates Petroleum Corporation  
Application for Carbon Dioxide Injection  
Pilot Project and Unorthodox Locations  
West Loco Hills Unit  
Township 18 South, Range 29 East, N.M.P.M.  
Section 12: E/2  
Township 18 South, Range 30 East, N.M.P.M.  
Section 7: W/2  
Eddy County, New Mexico

Dear Mr. Stogner:

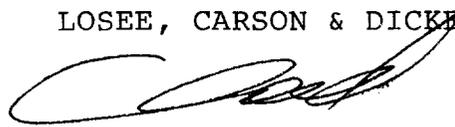
Hearing on the captioned case was held September 19, 1984. However, we have not received the Order of the Division concerning the same.

Please advise if there is some problem in connection with the Division's approval of the captioned application, or if you need anything further concerning this matter, as our client is in need of the Order.

Thank you.

Sincerely yours,

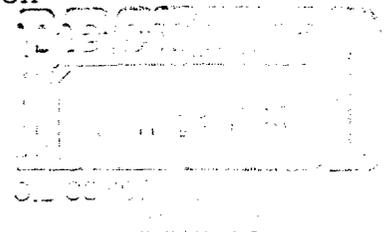
LOSEE, CARSON & DICKERSON, P.A.



Chad Dickerson

CD:pvm

cc: Mr. Bob Tisdale







207 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210

TELEPHONE (505) 748-1331

S. P. YATES  
PRESIDENT  
MARTIN YATES, III  
VICE PRESIDENT  
JOHN A. YATES  
VICE PRESIDENT  
B. W. HARPER  
SEC.-TREAS.

February 28, 1985

R.L. Stamets - Director  
State of New Mexico  
Energy and Minerals Department  
Oil Conservation Division  
Post Office Box 2088  
Santa Fe, New Mexico, 87501

Dear Sirs:

I have discovered what I believe to be typographical errors in Order No. R-7821 issued on February 21, 1985. I suggest that the order be amended so that there can be no confusion about what is meant.

Line 4, paragraph 5, page 2 reads:

possible unorthodox location in the S~~1~~/4 NE/4 (Unit H) of said

It should read:

possible unorthodox location in the S~~1~~/4 NE/4 (Unit H) of said

Lines 7 and 8, paragraph 5, page 2 read:

West Loco Hills G4S Unit Tract 13 Well No. ~~11~~ located  
~~2310~~ feet from the North line and ~~1175~~ feet from the

They should read:

West Loco Hills G4S Unit Tract 13 Well No. ~~11~~ located  
~~1650~~ feet from the North line and ~~330~~ feet from the

Lines 4 and 5, paragraph 7, page 6 read:

West Loco Hills G4S Unit Tract 13 Well No. ~~11~~ located  
~~2310~~ feet from the North line and ~~1175~~ feet from the

They should read:

West Loco Hills G4S Unit Tract 13 Well No. ~~4~~ located  
~~1650~~ feet from the North line and ~~330~~ feet from the

Page -2-  
February 28, 1985  
R.L. Stamets - Director

Please find the enclosed map. It shows a 10-acre inverted 5 spot adjacent to a 22 ½-acre inverted 5 spot. The Pilot Project pattern includes Well No. 4 and not Well No. 11 in Tract 13. An additional producing well will be drilled at or near a location 2310 feet from the North line and 330 feet from the East line (SE/4 NE/4 - Unit H) of Section 12, Township 18 South, Range 29 East.

Please feel free to contact me about this or any other matter at anytime.

Phone: 748-1331 Ext 162

Sincerely,

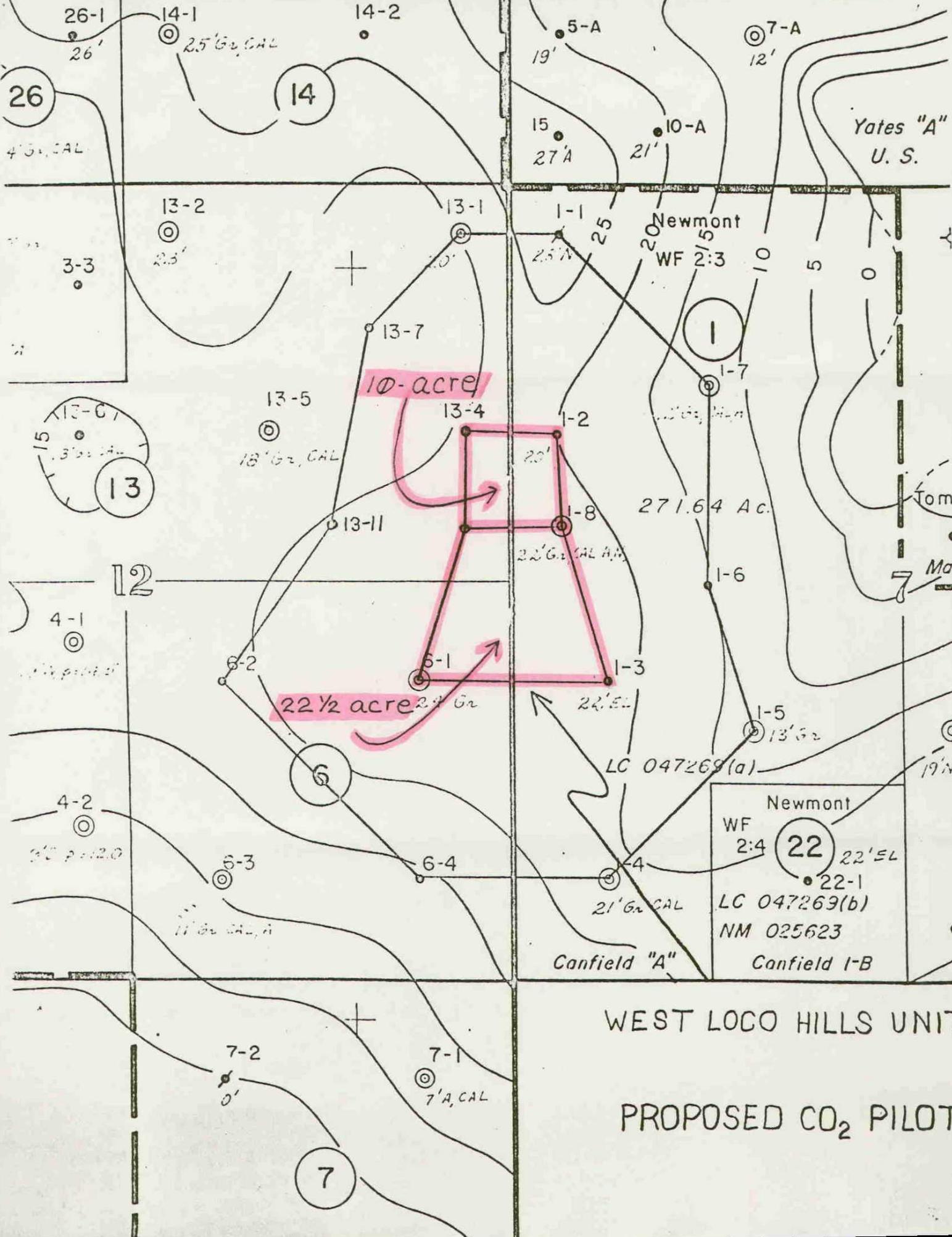


E. Robert Tisdale - Engineer  
Yates Petroleum Corporation  
207 South Fourth Street  
Artesia, New Mexico, 88210

ERT/gb

Ballard 'A'

M. Yates III



Yates "A" U.S.

Newmont WF 2:3

271.64 A.c.

LC 047269(a)

Newmont  
 WF 2:4  
 22  
 22-1  
 LC 047269(b)  
 NM 025623  
 Canfield I-B

Canfield "A"

WEST LOCO HILLS UNIT

PROPOSED CO<sub>2</sub> PILOT



MARTIN YATES, III  
1912 - 1985  
FRANK W. YATES  
1936 - 1986



105 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210  
TELEPHONE (505) 748-1471

S. P. YATES  
CHAIRMAN OF THE BOARD  
JOHN A. YATES  
PRESIDENT  
PEYTON YATES  
EXECUTIVE VICE PRESIDENT  
RANDY G. PATTERSON  
SECRETARY  
DENNIS G. KINSEY  
TREASURER

September 25, 1991

New Mexico Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87503

Attention: Mr. William J. LeMay

Re: CO<sub>2</sub> Pilot Flood Project  
West Loco Hills Unit  
Eddy County, New Mexico

Dear Mr. LeMay:

By order No. R-7821, Case No. 8324, dated February 21, 1985, the NMOCD gave approval for injection of carbon dioxide into the Pilot Project on the West Loco Hills Unit in Eddy County, New Mexico. Shortly thereafter oil prices rapidly declined making CO<sub>2</sub> flooding uneconomic. Yates Petroleum Corporation is now ready to go forward with the West Loco Hills Unit Pilot CO<sub>2</sub> Flood Project. A copy of our Plan of Development written by Dr. David Boneau is enclosed for your reference. We respectfully request that NMOCD confirm that Order No. R-7821 is still in force and effect so that we may proceed with this Pilot Flood.

Thank you for your attention.

Very truly yours,

YATES PETROLEUM CORPORATION

Randy G. Patterson  
Land Manager

RGP/mw

Enclosure

MARTIN YATES, III  
1912 - 1985  
FRANK W. YATES  
1936 - 1986



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SECRETARY  
DENNIS G. KINSEY  
TREASURER

October 7, 1991

Working Interest Owners  
West Loco Hills Unit

SUBJECT: Pilot CO<sub>2</sub>-Flood

Dear Sir:

This letter asks that you ballot to approve an expenditure of \$5,648,100 by the West Loco Hills Unit in order to conduct a pilot CO<sub>2</sub>-flood on 32.5 acres in the southeastern portion of the unit. Pilot costs will be spread over four years as follows:

Aug-Dec 1991	\$1,171,200
1992	3,241,800
1993	954,300
1994	<u>280,800</u>
	\$5,648,100

A breakdown by cost category shows:

Drill 3 wells	\$ 665,200
Facilities	587,500
Well Repair and TA	745,000
CO <sub>2</sub> Pipeline	2,285,000
Carbon Dioxide	550,000
Operating Costs	<u>815,400</u>
	\$5,648,100

Earlier this year, the owners approved repairing wells WLHU 1-8 and 13-4 at an estimated cost of \$155,000. Well 1-8 was repaired in March and Well 13-4 was repaired in July. The work at these two wells is considered part of the 1991-1994 pilot CO<sub>2</sub>-flood.

The pilot carbon-dioxide project includes some expenditures outside the West Loco Hills Unit. The off-unit expense that could be major is the construction of a 15-mile pipeline to deliver carbon dioxide from Maljamar to West Loco Hills. The Conoco MCA Unit at Maljamar now receives carbon dioxide from a pipeline operated by Big Three Industries. Big Three estimates it will cost \$2.285 million to extend an 8-inch line to the West Loco Hills Unit. Yates and Big Three are negotiating terms for construction and use of a pipeline extension.

Working Interest Owners  
October 7, 1991  
-2-

The ballot covers the worst case where the WLHU owners pay to build the pipeline and pay \$20 per ton or \$1.16 per Mcf for CO<sub>2</sub> from the pipeline. The other off-unit expense is \$55,000 to temporarily abandon two wells on the adjacent Yates A lease that lie within 0.5 mile of a pilot CO<sub>2</sub>-injection well.

Total estimated cost of the pilot project at WLHU is:

1. Repair 1-8 and 13-4	\$ 155,000
2. WLHU costs balloted here	<u>5,648,100</u>
	\$5,803,100

The pilot CO<sub>2</sub> flood proposed here is similar in outline to the plan approved by the owners in 1985. As you recall, work had barely begun on the CO<sub>2</sub> pilot when oil prices dropped sharply in January of 1986 and pilot work was suspended. The map in Attachment 1 shows the pilot area. CO<sub>2</sub>-injection wells will be drilled at locations 1980 FNL and 10 FWL (Well 1-9) and 2475 FSL and 10 FWL (Well 1-10) of Section 7-18S-30E. Well 1-9 lies near the center of a 10-acre pattern bounded by Wells 1-2, 1-8, 13-4 and the 13-12 location. Likewise, Well 1-10 is centered within a 22.5-acre pattern formed by Wells 1-3, 1-8, 6-1 and the 13-12 location. The current plan is to drill Well 13-12 as a production well after the existing producers respond to CO<sub>2</sub> injection. About 11,000 tons of CO<sub>2</sub> will be injected at Well 1-9 and 16,500 tons at Well 1-10 for a total of 27,500 tons or 470 MMcf of CO<sub>2</sub>. Expected oil recovery from the pilot is about 65 MBO.

BLM and NMOCD rules require that two classes of wells have enough casing integrity to prevent migration of fluids. First, nine Yates-operated wells that were identified as faulty under the Federal UIC (Underground Injection Control) program remain in need of work. Second, the NMOCD has a longstanding rule that all wells within 1/2 mile of a new injection well must exhibit casing integrity. The map in Attachment 1 shows that 13 unrepaired wells (including WLHU 1-8 and 13-4) lie within 1/2 mile of the CO<sub>2</sub> injectors, Wells 1-9 and 1-10. Two of the wells within 1/2 mile are also UIC wells and two others lie outside the West Loco Hills Unit.

Attachment 2 lists the 20 (9 UIC + 13 1/2 mile - 2 Duplicates) problem wells, their locations, the proposed work program and the month when the well work will be done. The wells in West Loco Hills Unit will be either repaired or temporarily abandoned and monitored. The wells used directly in the pilot CO<sub>2</sub>-flood will be repaired. This means that cement will be squeezed behind the old casing before new 4 1/2-inch casing is run and cemented inside the original casing. The repair procedure is estimated to cost \$77,500 per well as shown in Attachment 3. A cheaper procedure will be used to temporarily abandon

Working Interest Owners

October 7, 1991

-3-

and monitor (TAM) the other problem wells. The TAM procedure involves setting a cement plug across the top of the open hole plus squeezing cement across the Queen and/or the base of the salt section. The surface pressure on the well is then monitored. Estimated cost is about \$27,500 per well as shown in Attachment 4. The idea behind the TAM procedure is that it is the common first step toward plugging or repairing a well. The wells will be repaired if the owners decide to expand CO<sub>2</sub> injection after the pilot is complete or the wells will be plugged if CO<sub>2</sub> fails. In either case, the two-step job of repairing or plugging costs about the same as a one-step job performed after the pilot is finished. Thus, money spent on TAM jobs will not be wasted regardless of the outcome of the CO<sub>2</sub> pilot. It will cost about \$357,500 to TAM 13 wells in West Loco Hills Unit. This is about \$0.6 million less than the cost to repair the same 13 wells.

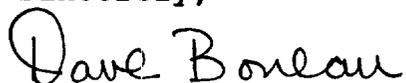
Attachment 5 is a month-by-month listing of the expenditures planned for the pilot CO<sub>2</sub>-flood. Attachment 6 is a detailed breakdown of the West Loco Hills Unit pilot costs. Attachments 7 to 13 detail the costs listed in Attachment 6. Attachment 7 shows that it costs \$207,600 to drill one of the pilot injection wells. Well 13-12 will cost more than is shown in Attachment 7 because the well will be cored. Attachment 8 is an AFE to install pumping equipment on eight wells at a cost of \$20,000 per well. Attachment 9 lists \$107,500 for a production battery at the pilot site. Attachment 10 covers the carbon dioxide injection equipment at a cost of \$125,000, while Attachment 11 includes water injection facilities plus injection lines costing \$120,000. The confining injection wells (1-4, 1-7 and 4-1) will be equipped at a cost of \$25,000 each for stimulation and installation of coated tubing and wellhead equipment. The well repair and TAM procedures outlined in Attachments 3 and 4 appear in AFE form in Attachments 12 and 13. The CO<sub>2</sub> pipeline would have to be built to specifications set by Big Three Industries, who estimates the cost as \$2,285,000. The carbon dioxide itself is priced at \$20 per ton out of the pipeline, while the operating costs are explained in Attachment 6.

On July 23, 1991, representatives of the BLM and the NMOCD told Yates that the two regulatory agencies could approve the pilot carbon dioxide project as outlined here.

Working Interest Owners  
October 7, 1991

I ask that you vote on the expenditure of \$5,648,100 for the pilot CO<sub>2</sub>-flood at West Loco Hills Unit. Please call me at 505-748-1471 if you have questions on the project.

Sincerely,

A handwritten signature in cursive script that reads "Dave Boneau". The signature is written in dark ink and is positioned below the word "Sincerely,".

DAVID F. BONEAU  
Reservoir Engineering Supervisor

DFB/cvg

Enclosures

Ballot  
West Loco Hills Unit

Yates Petroleum proposes the expenditure of \$3,164,200 by the West Loco Hills Unit to conduct a pilot CO<sub>2</sub>-flood

\_\_\_\_\_ Approve  
\_\_\_\_\_ Do Not Approve

Working Interest Owner \_\_\_\_\_  
Person signing ballot \_\_\_\_\_  
Signature of signee \_\_\_\_\_  
Date \_\_\_\_\_

Please remit to: Yates Petroleum Corporation  
105 South 4th Street  
Artesia, New Mexico 88210  
ATTN: Cy Cowan

BLM-NMOC D PROBLEM WELLS -- WEST LOCO HILLS AREA

A. WELLS TO BE REPAIRED OR PLUGGED & ABANDONED -- UIC PROGRAM

W LOCO HILLS UNIT TR 1 #5	K	7-18-30	WILL TA MONITOR	MAR 92	ALSO WITHIN 1/2 MILE
W LOCO HILLS UNIT TR 1 #7	C	7-18-30	WILL REPAIR	MAY 92	ALSO WITHIN 1/2 MILE
W LOCO HILLS UNIT TR 2A #5	J	7-18-30	WILL TA MONITOR	DEC 92	
W LOCO HILLS UNIT TR 3 #2	D	12-18-29	WILL TA MONITOR	JAN 93	
W LOCO HILLS UNIT TR 4 #1	K	12-18-29	WILL REPAIR	JUN 92	
W LOCO HILLS UNIT TR 13 #2	B	12-18-29	WILL TA MONITOR	APR 92	
W LOCO HILLS UNIT TR 24 #2	M	36-17-29	WILL TA MONITOR	OCT 93	
W LOCO HILLS UNIT TR 35 #2	H	11-18-29	WILL TA MONITOR	NOV 93	
W LOCO HILLS UNIT TR 38 #1	G	2-18-29	WILL TA MONITOR	SEP 93	

B. WELLS WITHIN HALF MILE OF CO2 INJECTOR

W LOCO HILLS UNIT TR 1 #1	D	7-18-30	WILL TA MONITOR	FEB 93	
W LOCO HILLS UNIT TR 1 #3	L	7-18-30	WILL REPAIR	AUG 91	
W LOCO HILLS UNIT TR 1 #5	K	7-18-30	WILL TA MONITOR	MAR 92	ALSO in GROUP A
W LOCO HILLS UNIT TR 1 #6	F	7-18-30	WILL REPAIR	OCT 91	
W LOCO HILLS UNIT TR 1 #7	C	7-18-30	WILL REPAIR	MAY 92	ALSO in GROUP A
W LOCO HILLS UNIT TR 1 #8	E	7-18-30	REPAIRED MAR 91		
W LOCO HILLS UNIT TR 6 #2	J	12-18-29	WILL TA MONITOR	SEP 92	
W LOCO HILLS UNIT TR 6 #4	P	12-18-29	WILL TA MONITOR	OCT 92	
W LOCO HILLS UNIT TR 13 #4	H	12-18-29	REPAIRING NOW	JUL 91	
W LOCO HILLS UNIT TR 13 #7	A	12-18-29	WILL TA MONITOR	NOV 92	
W LOCO HILLS UNIT TR 13 #11	H	12-18-29	WILL REPAIR	SEP 91	
YATES A #10	M	6-18-30	WILL TA MONITOR	MAY 93	
YATES A #15	M	6-18-30	WILL TA MONITOR	MAR 93	

C. SUMMARY

7 REPAIR + 13 TAM = 20 WELLS

WEST LOCO HILLS UNIT

METHOD to REPAIR EXISTING WELLBORE for PILOT USE  
-----

1. Clean out casing to shoe.
2. Spot cement plug across open hole.
3. Squeeze Queen under a cement retainer  
or
- 3a. Perf Queen & base of salt and circulate cement through  
perfs using one retainer above Queen perfs.
4. Perf and squeeze top of salt and circulate cement to  
surface.
5. Drill out and run 4 1/2" casing to shoe.
6. Cement casing to surface.
7. Drill out new casing and clean out open hole.

ESTIMATED COSTS  
-----

1. Rig time - 10 days @ \$1200/day	\$12,000
2. Bits, tools, supplies	10,000
3. Water	3,000
4. Mud & additives	3,000
5. Cement, tools & services	15,000
6. Logs, testing & perforating	2,000
7. Rentals, welding & trucking	5,000
8. Stimulation	8,000
9. Miscellaneous services	5,000
10. Casing - 4 1/2", 9.5#	11,000
11. Contingency	3,500
	-----
	\$77,500

Attachment 4

West Loco Hills Unit

Proposed Method to Repair Existing Wellbore to "T A M Status"

1. Assume 2 days cleaning out & fishing on tubing & packer
2. Spot cement plug across open hole - 25 sx
3. Squeeze Queen w/50 sx under a cement retainer

or

- 3A. Perf Queen & base of salt & circulate cement thru perfs using 1 retainer above Queen perfs
4. Monitor casing pressure

Estimated Costs:

1. Rig Time 4 days - \$1500/day	\$ 6,000
2. Cement, tools & service 100 sx	10,000
3. Perf & Logging	4,000
4. Misc Services	5,000
5. Contingency 10%	<u>2,500</u>
TOTAL	\$27,500

After repairing wellbore to this status the well would be:

1. Repaired by drilling out & running casing or
2. Plugged & abandoned

Attachment 5

WLHUONLY.WK3

WEST LOCO HILLS UNIT  
PILOT CO2 FLOOD

SCHEDULE + ESTIMATED COSTS

OCT 3, 1991

MONTH	ACTIVITY	DRILLING COST	FACILITIES COST	WELL REPAIR	CO2 COSTS	OPERATING COSTS
MAR 91	REPAIR WELL 1-8			\$77,500		
JUL 91	REPAIR WELL 13-4			\$77,500		
AUG 91	REPAIR WELL 1-3			\$77,500		
SEP 91	REPAIR WELL 13-11			\$77,500		
OCT 91	REPAIR WELL 4-1 PROJECT AFE to PARTNERS WIO MEETING			\$77,500		
NOV 91	TAM WELL 6-4 PUMP WELLS 1-2,3,8;6-1;13-4,11 BUILD BATTERY 3 EQUIP 1-4 + 4-1 for WATER INJ OPERATE PUMPING WELLS		\$120,000 \$107,500 \$50,000	\$27,500		\$6,000
DEC 91	REPAIR WELL 1-7 DRILL INJECTOR 1-9 DRILL INJECTOR 1-10 H2O STATION + INJ LINES START H2O INJECTION	\$207,600 \$207,600	\$120,000	\$77,500		\$15,000
		\$415,200	\$397,500	\$492,500	\$0	\$21,000
	TOTAL 1991 COSTS =			\$1,326,200		

WLHJONLY.WK3

WEST LOCO HILLS UNIT  
PILOT CO2 FLOOD

SCHEDULE + ESTIMATED COSTS

OCT 3, 1991

MONTH	ACTIVITY	DRILLING COST	FACILITIES COST	WELL REPAIR	CO2 COSTS	OPERATING COSTS
JAN 92	REPAIR WELL 1-6 EQUIP 1-7 for WATER INJECTION WATERFLOOD OPERATIONS		\$25,000	\$77,500		\$15,000
FEB 92	PUMP WELL 1-6 WATERFLOOD OPERATIONS		\$20,000			\$18,000
MAR 92	WATERFLOOD OPERATIONS					\$18,000
APR 92	COMPLETE CO2 PIPELINE INSTALL CO2 INJECTION EQUIP		\$2,285,000 \$125,000			\$18,000
MAY 92	INJECT CO2 in 1-9 - 45 TONS/D INJECT CO2 in 1-10 - 45 TONS/D				\$27,500 \$27,500	\$21,600
JUN 92	TAM WELL 1-5 CO2 INJECTION at 1-9 + 1-10 CO2 OPERATIONS			\$27,500	\$55,000	\$21,600
JUL 92	CO2 INJECTION at 1-10 INJECT WAG WATER at 1-9 CO2 OPERATIONS				\$27,500	\$21,600
AUG 92	CO2 INJECTION at 1-9 INJECT WAG WATER at 1-10 CO2 OPERATIONS				\$27,500	\$21,600
SEP 92	TAM WELL 6-2 CO2 INJECTION at 1-9 CO2 OPERATIONS			\$27,500	\$27,500	\$21,600
OCT 92	TAM WELL 13-2 CO2 INJECTION at 1-10 CO2 OPERATIONS			\$27,500	\$27,500	\$21,600
NOV 92	TAM WELL 13-7 CO2 INJECTION at 1-9 + 1-10 CO2 OPERATIONS			\$27,500	\$55,000	\$21,600
DEC 92	TAM WELL 2A-5 CO2 INJECTION at 1-9 + 1-10 CO2 OPERATIONS			\$27,500	\$55,000	\$21,600
		\$0	\$2,455,000	\$215,000	\$330,000	\$241,800
	TOTAL 1992 COSTS =			\$3,241,800		

WLHUONLY.WK3

WEST LOCO HILLS UNIT  
PILOT CO2 FLOOD

SCHEDULE + ESTIMATED COSTS

OCT 3, 1991

MONTH	ACTIVITY	DRILLING COST	FACILITIES COST	WELL REPAIR	CO2 COSTS	OPERATING COSTS
JAN 93	TAM WELL 3-2 H2O INJECTION at 1-9 + 1-10			\$27,500		\$21,600
FEB 93	TAM WELL 1-1 CO2 INJECTION at 1-9 H2O INJECTION at 1-10			\$27,500	\$27,500	\$21,600
MAR 93	TAM WELL YATES A 15 CO2 INJECTION at 1-9 + 1-10 CO2 OPERATIONS			\$27,500	\$55,000	\$21,600
APR 93	CO2 INJECTION at 1-10 CO2 OPERATIONS				\$27,500	\$21,600
MAY 93	TAM WELL YATES A 10 DRILL WELL 13-12 CO2 INJECTION at 1-10 CO2 OPERATIONS	\$250,000		\$27,500	\$27,500	\$21,600
JUN 93	H2O INJECTION at 1-9 + 1-10 PUMP WELL 13-12		\$20,000			\$23,400
JUL 93	H2O INJECTION at 1-9 + 1-10					\$23,400
AUG 93	CO2 INJECTION at 1-10 CO2 OPERATIONS				\$27,500	\$23,400
SEP 93	TAM WELL 38-1 CO2 INJECTION at 1-10 CO2 OPERATIONS			\$27,500	\$27,500	\$23,400
OCT 93	TAM WELL 24-2 CO2 INJECTION at 1-10 CO2 OPERATIONS			\$27,500	\$27,500	\$23,400
NOV 93	TAM WELL 35-2 H2O INJECTION at 1-9 + 1-10			\$27,500		\$23,400
DEC 93	H2O INJECTION at 1-9 + 1-10					\$23,400
		\$250,000	\$20,000	\$192,500	\$220,000	\$271,800
	TOTAL 1993 COSTS =			\$954,300		
1994	H2O INJECTION at 1-9 + 1-10					\$280,800
	TOTAL 1994 COSTS =			\$280,800		
	TOTAL 1991-1994 COSTS =			\$5,803,100		

Attachment 6

West Loco Hills Unit Expenditures - CO<sub>2</sub> Pilot

<u>A</u>	Drilling Cost		
	Well 1-9	\$207,600	
	Well 1-10	207,600	
	Well 13-12	<u>250,000</u>	\$ 665,200
<u>B</u>	Facilities		
	Pumping Equip (\$20,000/well)	\$160,000	
	Battery	107,500	
	CO <sub>2</sub> Injection Equipment	125,000	
	Water Station + Inj Lines	120,000	
	Confining Inj Wells (3)	<u>75,000</u>	\$ 587,500
<u>C</u>	Well Repair		
	Repair 5 wells (omit 1-8 + 13-4)	\$387,500	
	TAM 13 Wells (\$27,500/well)	<u>357,500</u>	\$ 745,000
<u>D</u>	CO <sub>2</sub> Pipeline		\$2,285,000
<u>E</u>	CO <sub>2</sub> Costs		
	Well 1-9 (11000 Tons)	\$220,000	
	Well 1-10 (16500 Tons)	<u>330,000</u>	\$ 550,000
<u>E</u>	Operating Costs		
	\$1000/Well/Month before inj	\$ 6,000	
	\$1500/Well/Month before CO <sub>2</sub>	84,000	
	\$1800/Well/Month during pilot	<u>725,400</u>	\$ 815,500
			<u>\$5,648,100</u>

056770-006  
Attachment 7



AUTHORITY FOR EXPENDITURE  
FOR WATERFLOOD INJECTION WELLS

APE NUMBER 91-145-0  
APE DATE 7-1-91  
APE STATUS:  
 Original  
 Revised  
 Final 7-29-91

LEASE NAME West Loco Hills Unit 1-2 Pilot  
COUNTY Eddy  
HORIZON EST. T.D. 2800'  
DRILLING CONTRACTOR

LOCATION Sec. 7-18S-30E  
STATE NM  
EST. SPUD DATE  
EST. COMPL'N DATE

INTANGIBLE DRILLING COSTS:

	COMPLETION
920-100 Staking, Permit & Legal Fees	1500
920-110 Location, Right-of-Way	10000
920-120 Drilling, Footage 2800' @ \$12/Ft	33600
920-130 Drilling, Daywork 1 day @ \$4500/day	4500
920-140 Drilling Water, Fastline Rental	6000
920-150 Drilling Mud & Additives	4000
920-160 Mud Logging Unit, Sample Bags	1500
920-170 Cementing - Surface Casing	6000
920-180 Drill Stem Testing, OHT	-
920-190 Electric Logs & Tape Copies	6000
920-200 Tools & Equip. Hndl., Trkg. & Welding	3000
920-210 Supervision & Overhead	3000
920-220 Contingency	-
920-230 Coring, Tools & Service	-
920-240 Bits, Tool & Supplies Purchase	-
920-350 Cementing - Production Casing	20000
920-410 Completion Unit - Swabbing	5500
920-420 Water for Completion	1000
920-430 Mud & Additives for Completion	1500
920-440 Cementing - Completion	2000
920-450 Elec. Logs, Testing, Etc. - Completion	6000
920-460 Tools & Equip. Rental, Etc. - Completion	3000
920-470 Stimulation for Completion	15000
920-480 Supervision & O/H - Completion	2000
920-490 Additional LOC Charges - Completion	1000
920-510 Bits, Tools & Supplies - Completion	500
920-500 Contingency for Completion	-

cc: 7/30/91  
RB  
RS

TOTAL INTANGIBLE DRILLING COSTS 136600

WELL EQUIPMENT COSTS:

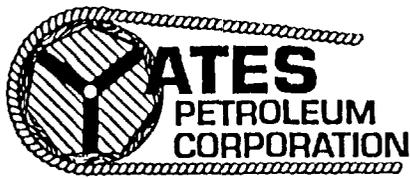
930-010 Christmas Tree & Wellhead	12000
930-020 Casing 9-5/8" @ 425'	6000
7" @ 2800'	35000
930-030 Tubing 3" @ 2600'	11000
930-040 Packer & Special Equipment	5000
930-050 Contingency	-

TOTAL WELL EQUIPMENT COSTS 71000

TOTALS \$207600

APPROVAL OF THIS APE CONSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

OWNER	DATE	INTER CO. NUMBER	SHARE
BY <i>[Signature]</i>			
BY			
BY			
BY			



Yates Building - 105 South Fourth Street  
Artesia, New Mexico 88210

Attachment 8  
**AUTHORITY FOR EXPENDITURE**  
FOR WORKOVERS

AFE NUMBER 91-233-0

AFE DATE 10-2

AFE STATUS:

Original  
 Revised  
 Final

LEASE NAME W.L.H.U. Pumping Unit Installation LOCATION West Loco Hills  
COUNTY Eddy STATE N.M.  
FIELD WLHU EST. T.D. - EST. BEG DATE -

DIVISION CODE 100 DIVISION NAME Oil & Gas Division

PROGNOSIS: Propose to install pumping units on 8 wells on :  
Tract 1-2, 1-3, 1-6, 1-8, 6-1, 13-4, 13-11, & 13-12. Pumping units will be  
228's with 40 HP electric motors. Costs are to purchase, recondition,  
transport, install & install electricity.

**WELL WORKOVER EXPENSES:**

510-100	Rig Expense	_____ Days	@ _____	Per Day	_____
510-150	Water				_____
510-200	Mud & Additives				_____
510-250	Cementing				_____
510-300	Electrical Logging & Tests				_____
510-350	Tool & Equipment Rental				_____
510-400	Contract Labor & Services				_____
510-450	Stimulation				_____
510-500	Supervision & Administrative				_____
510-550	Dirtwork & Surface Damages				_____
510-600	Tools & Services				_____
510-650	Fishing Services				_____
510-900	Other Well Workover Costs				_____

TOTAL WORKOVER EXPENSES \_\_\_\_\_

**WELL EQUIPMENT COSTS:**

930-010	Christmas Tree & Wellhead	_____	_____	_____
930-020	Casing	_____	_____	_____
930-030	Tubing	_____	_____	_____
930-040	Packer & Special Equipment	_____	_____	_____
930-500	Contingency	_____	_____	_____

TOTAL WELL EQUIPMENT COSTS \_\_\_\_\_

**LEASE & BATTERY EQUIPMENT COSTS:**

940-010	Pumping Equipment	\$ 10,000 each	_____	80,000
940-020	Storage Facilities	_____	_____	_____
940-030	Separation Equip., Flowlines, Misc.	_____	_____	_____
940-040	Trucking & Construction Costs	\$ 10,000 each	_____	80,000

TOTAL LEASE & BATTERY EQUIPMENT COSTS \_\_\_\_\_

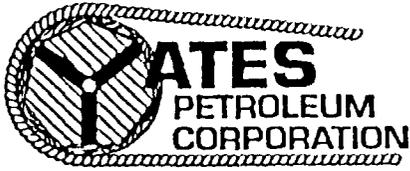
TOTALS \_\_\_\_\_

160,000

APPROVAL OF THIS AFE COSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

Prepared By	_____
Operations Approval	_____

	OWNER	DATE	INTER CO. NUMBER	SHARE
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____



Yates Building - 105 South Fourth Street  
Artesia, New Mexico 88210

Attachment 9  
56770-007  
AUTHORITY FOR EXPENDITURE  
FOR WORKOVERS

A/E NUMBER 91-226-0

A/E DATE 9-27-91

A/E STATUS:

Original  
 Revised  
 Final

LEASE NAME W. L. H. U. Pilot Battery LOCATION Sec 7-18S-R30E  
COUNTY Eddy STATE New Mexico  
FIELD WLHU EST. T.D. \_\_\_\_\_ EST. BEG DATE \_\_\_\_\_

DIVISION CODE 100 DIVISION NAME Oil & Gas Division

PROGNOSIS: Propose to build a pilot battery to accurately measure pilot flood response to the producing wells. Battery will include a central oil storage and water storage and 2 separate well testing units. Tanks will be 100% coated, a 6 x 20 heater treater installed, 1 500 bbl fiberglass tank, 2 210 bbl fiberglass tank, 2 210 bbl 100% coated oil test tanks and 3 transfer pumps installed.

WELL WORKOVER EXPENSES:

	Days	@	Per Day	
510-100	Rig Expense			
510-150	Water			
510-200	Mud & Additives			
510-250	Cementing			
510-300	Electrical Logging & Tests			
510-350	Tool & Equipment Rental			
510-400	Contract Labor & Services			
510-450	Stimulation			
510-500	Supervision & Administrative			
510-550	Dirtwork & Surface Damages			\$15,000
510-600	Tools & Services			
510-650	Fishing Services			
510-900	Other Well Workover Costs			
TOTAL WORKOVER EXPENSES				\$15,000

WELL EQUIPMENT COSTS:

930-010	Christmas Tree & Wellhead			
930-020	Casing			
930-030	Tubing			
930-040	Packer & Special Equipment			
930-500	Contingency			
TOTAL WELL EQUIPMENT COSTS				

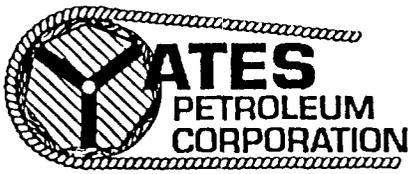
LEASE & BATTERY EQUIPMENT COSTS:

940-020	Pumping Equipment	Oil	25,000	
940-020	Storage Facilities	Water	12,500	
940-030	Separation Equip., Flowlines, Misc.		40,000	
940-040	Trucking & Construction Costs		15,000	
TOTAL LEASE & BATTERY EQUIPMENT COSTS				92,500
TOTALS				\$107,500

APPROVAL OF THIS A/E COSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

Prepared By Paul Fitzgerald  
Operations Approval

	OWNER	DATE	INTER CO. NUMBER	SHARE
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____



Yates Building - 105 South Fourth Street  
 Artesia, New Mexico 88210

Attachment 10  
 AUTHORITY FOR EXPENDITURE  
 FOR WORKOVERS  
 Facility

AFE NUMBER 91-231-0  
 AFE DATE 10-2  
 AFE STATUS:  
 Original  
 Revised  
 Final

LEASE NAME W.L.H.U. CO<sub>2</sub> Injection System LOCATION West Loco Hills  
 COUNTY Eddy STATE N.M.  
 FIELD WLHU EST. T.D. - EST. BEG DATE -

DIVISION CODE 100 DIVISION NAME Oil & Gas Division

PROGNOSIS: Propose to install & construct the CO<sub>2</sub> injection system for the Pilot flood consisting of a CO<sub>2</sub> Centrifugal Pump, injection lines to each pilot injecting automated measuring stations, a CO<sub>2</sub> storage tank and electrical costs to install electricity to the injection station.

WELL WORKOVER EXPENSES:

510-100	Rig Expense	_____ Days	@ _____	Per Day	_____
510-150	Water				_____
510-200	Mud & Additives				_____
510-250	Cementing				_____
510-300	Electrical Logging & Tests				_____
510-350	Tool & Equipment Rental				_____
510-400	Contract Labor & Services				_____
510-450	Stimulation				_____
510-500	Supervision & Administrative				_____
510-550	Dirtwork & Surface Damages				_____
510-600	Tools & Services				_____
510-650	Fishing Services				_____
510-900	Other Well Workover Costs				_____

TOTAL WORKOVER EXPENSES \_\_\_\_\_

WELL EQUIPMENT COSTS:

930-010	Christmas Tree & Wellhead	_____	_____	_____
930-020	Casing	_____	_____	_____
930-030	Tubing	_____	_____	_____
930-040	Packer & Special Equipment	_____	_____	_____
930-500	Contingency	_____	_____	_____

TOTAL WELL EQUIPMENT COSTS \_\_\_\_\_

LEASE & BATTERY EQUIPMENT COSTS:

940-010	Pumping Equipment			50,000
940-020	Storage Facilities	<u>Pressurized 500 bbl</u>		25,000
940-030	Separation Equip., Flowlines, Misc.			25,000
940-040	Trucking & Construction Costs			25,000

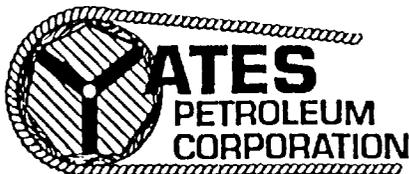
TOTAL LEASE & BATTERY EQUIPMENT COSTS \$ 125,000

TOTALS 125,000

APPROVAL OF THIS AFE COSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

Prepared By	_____
Operations Approval	_____

	OWNER	DATE	INTER CO. NUMBER	SHARE
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____



Yates Building - 105 South Fourth Street  
Artesia, New Mexico 88210

Attachment 11  
AUTHORITY FOR EXPENDITURE  
FOR WORKOVERS

Facility

AFE NUMBER 91-232-0

AFE DATE 10-2

AFE STATUS:

Original  
 Revised  
 Final

LEASE NAME W.L.H.U. Water Injection System LOCATION West Loco Hills  
COUNTY Eddy STATE NM  
FIELD WLHU EST. T.D. - EST. BEG DATE -

DIVISION CODE 100 DIVISION NAME Oil & Gas Division

PROGNOSIS: Propose to install and Construct a Water Station to inject water into the two Pilot injectors, water injection lines to the two injectors and 3 confinement wells and a fresh water line to the plant. Also, installation of electricity into the water station is shown.

WELL WORKOVER EXPENSES:

		Days	@	Per Day	
510-100	Rig Expense				
510-150	Water				
510-200	Mud & Additives				
510-250	Cementing				
510-300	Electrical Logging & Tests				
510-350	Tool & Equipment Rental				
510-400	Contract Labor & Services				
510-450	Stimulation				
510-500	Supervision & Administrative				
510-550	Dirtwork & Surface Damages				
510-600	Tools & Services				
510-650	Fishing Services				
510-900	Other Well Workover Costs				

TOTAL WORKOVER EXPENSES

WELL EQUIPMENT COSTS:

930-010	Christmas Tree & Wellhead			
930-020	Casing			
930-030	Tubing			
930-040	Packer & Special Equipment			
930-500	Contingency			

TOTAL WELL EQUIPMENT COSTS

LEASE & BATTERY EQUIPMENT COSTS:

940-010	Pumping Equipment			25,000
940-020	Storage Facilities	1 500 bbl tank		10,000
940-030	Separation Equip., Flowlines, Misc.			50,000
940-040	Trucking & Construction Costs			35,000

TOTAL LEASE & BATTERY EQUIPMENT COSTS

\$ 120,000

TOTALS

120,000

APPROVAL OF THIS AFE COSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

Prepared By	
Operations Approval	

	OWNER	DATE	INTER CO. NUMBER	SHARE
BY				

056790-002



Attachment 12
AUTHORITY FOR EXPENDITURE
FOR WORKOVERS

AFE NUMBER 90-161-0
AFE DATE 10-29-90
AFE STATUS: Original, Revised, Final 7-31-91

LEASE NAME West Loco Hills Unit 1-8
COUNTY Eddy
FIELD Loco Hills EST. T.D. 2800
LOCATION E, Sec 7-183-30E
STATE NM
EST. BEG DATE

PROGNOSIS: Pull packer and tubing. Clean out 7" casing to shoe at 2774.
Run 4 1/2" casing from surface to shoe. Circulate cement to surface
with 800 sx cement. Drill out 4 1/2" casing shoe and clean out
open hole from 2774 to 2814. Acidize open hole with decentralized
hydrajet tool. Run pump and rods. Return to production for CO2 pilot.

WELL WORKOVER EXPENSES:

Table with 4 columns: Expense Code, Description, Rate/Unit, and Amount. Includes items like Rig Expense, Water, Mud & Additives, Cementing, etc. Total Workover Expenses: 66,000.

Handwritten note: 00: 8-1-91 RB RS

WELL EQUIPMENT COSTS:

Table with 4 columns: Equipment Code, Description, Rate/Unit, and Amount. Includes items like Christmas Tree & Wallowhead, Casing, Tubing, etc. Total Well Equipment Costs: 11,500.

LEASE & BATTERY EQUIPMENT COSTS:

Table with 4 columns: Equipment Code, Description, Rate/Unit, and Amount. Includes items like Pumping Equipment, Storage Facilities, etc. Total Lease & Battery Equipment Costs: 0. Totals: 77,500.

APPROVAL OF THIS AFE CONSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

Approval signature lines: BY [Signature] OWNER, INTER CO. NUMBER, SHARE, DATE.



Yates Building - 105 South Fourth Street  
 Artesia, New Mexico 88210

Attachment 13  
**AUTHORITY FOR EXPENDITURE**  
 FOR WORKOVERS

AFE NUMBER 91-235-0  
 AFE DATE 10-2-91

AFE STATUS:

Original  
 Revised  
 Final

LEASE NAME Tract 6 #4 LOCATION 660 FSL & 660 FEL  
 COUNTY Eddy STATE NM  
 FIELD West Loco Hills Unit EST. T.D. 2800' EST. BEG DATE Nov 1, 1991  
 DIVISION CODE 100 DIVISION NAME Oil & Gas Division

PROGNOSIS: Propose to repair existing wellbore to temporarily abandoned status that is acceptable to the NMOCD and then monitored for leaks. The well can then be returned to production or abandoned at a later date. The procedure is to spot a cement plug across the open hole, squeeze the Queen and Monitor casing pressure

WELL WORKOVER EXPENSES:

510-100	Rig Expense	<u>4</u> Days	@ <u>1500</u> Per Day	\$ <u>6,000</u>
510-150	Water			<u>1,500</u>
510-200	Mud & Additives			
510-250	Cementing			<u>10,000</u>
510-300	Electrical Logging & Tests			<u>4,000</u>
510-350	Tool & Equipment Rental			
510-400	Contract Labor & Services			
510-450	Stimulation			
510-500	Supervision & Administrative			<u>1,000</u>
510-550	Dirtwork & Surface Damages			
510-600	Tools & Services			
510-650	Fishing Services			<u>5,000</u>
510-900	Other Well Workover Costs			
TOTAL WORKOVER EXPENSES				<u>27,500</u>

WELL EQUIPMENT COSTS:

930-010	Christmas Tree & Wellhead			
930-020	Casing			
930-030	Tubing			
930-040	Packer & Special Equipment			
930-500	Contingency			
TOTAL WELL EQUIPMENT COSTS				

LEASE & BATTERY EQUIPMENT COSTS:

940-010	Pumping Equipment			
940-020	Storage Facilities			
940-030	Separation Equip., Flowlines, Misc.			
940-040	Trucking & Construction Costs			
TOTAL LEASE & BATTERY EQUIPMENT COSTS				

TOTALS

APPROVAL OF THIS AFE COSTITUTES APPROVAL OF THE OPERATOR'S OPTION TO CHARGE THE JOINT ACCOUNT WITH TUBULAR GOODS FROM THE OPERATOR'S WAREHOUSE STOCK AT THE RATES STATED ABOVE.

Prepared By	
Operations Approval	

	OWNER	DATE	INTER CO. NUMBER	SHARE
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____
BY	_____	_____	_____	_____



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

November 22, 1991

Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, New Mexico 88210

Attention: Mr. Randy G. Patterson

Dear Mr. Patterson:

Reference is made to your letter dated September 25, 1991, whereby you requested that the Division confirm that Order No. R-7821, dated February 21, 1985, which order authorized Yates to conduct a pilot carbon dioxide injection project within its West Loco Hills Unit, is still in force and effect. It is our understanding that the pilot project has not been commenced to date due to poor economics. Please be advised that after review of your plan of development and consultation with Mr. Dave Boneau, the Division finds that Order No. R-7821 should be confirmed and Yates should be allowed to proceed with the pilot project.

Upon review of your plan of development, it was discovered that the locations for the two proposed injection wells do not correctly reflect the locations approved by Order No. R-7821. Due to the changes in the well locations, Order No. R-7821 will have to be amended after notice and hearing.

If you should have any questions, please contact Mr. David Catanach at (505) 827-5800.

Sincerely,

A handwritten signature in cursive script, appearing to read "William J. Lemay".

William J. Lemay  
Director

xc: OCD-Artesia  
Case File-8324 ✓