David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

September 29, 1989

Mr. William LeMay
State of New Mexico
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 97504-2088

Dear Mr. LeMay:

Request for Authorization to
Inject in the Langlie Lynn No. 1,
Section 22, T23S, R36E

Conoco Inc. requests administrative approval to inject water into the Langlie Lynn #1, which is within an existing waterflood project (R-4417). Conoco is requesting administrative approval for this conversion to injection of an additional well based on Rule 701-F(4), since the well is necessary to maintain thorough and efficient waterflood injection.

Enclosed is the information required for this Application for Authorization to Inject with the exception of the proof of notice, which will be forwarded to your office as soon as possible. Should you have any questions regarding this matter, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

KLL:ks:929

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [x] Secondary Recovery [ ] Pressure Maintenance [ ] Disposal [ ] Storage
Application qualifies for administrative approval? [ ] yes [ ] no

II. Operator: Conoco Inc.

Address: P.O. Box 460 - Hobbs, NM 88240

Contact party: Kandy Lawson Phone: (505) 397-5826

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? [x] yes [ ] no
If yes, give the Division order number authorizing the project R-4417.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: David L. Wacker Title Division Manager

Signature: David L. Wacker Date: October 5, 1989

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. Well logs were submitted upon completion.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

LANGLIE LYNN UNIT NO. 1

Proposed Convert to Injection

Proposed average and maximum daily rate: 400 BWPD/700 BWPD

System is closed

Proposed average and maximum injection pressure: 400 psi/650 psi

Geological data is as follows: The lithology consists of dolomite, sandstone, and anhydrite. No known sources of underground drinking water are present in the area of review.

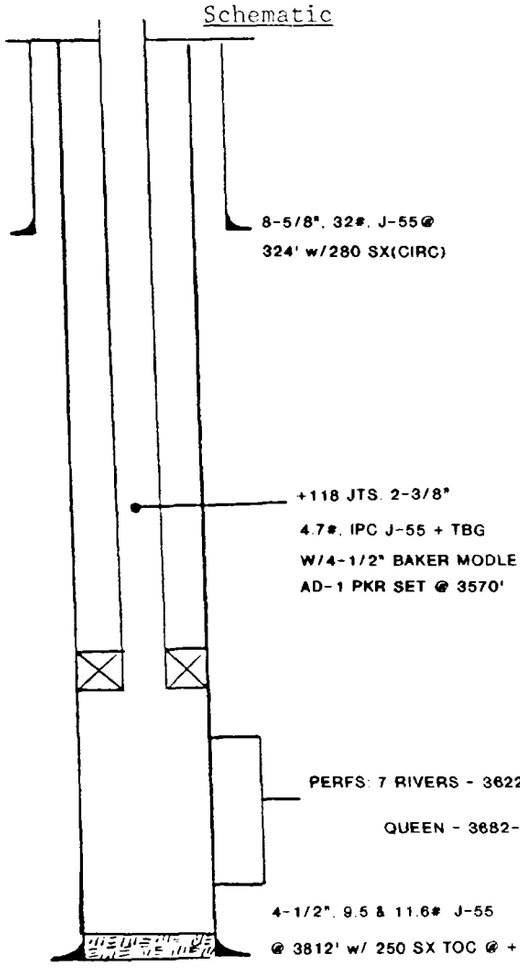
Proposed Stimulation Program: Add perforations in the 7R-1 and 7R-2. Re-perforate existing perforated intervals and stimulate with 15% HCL as necessary.

MB:jd
LANGLN1.DOC

INJECTION WELL DATA SHEET

Conoco		Langlie Lynn Unit		
OPERATOR		LEASE		
1	1980' FSL & FEL	22	23S	36E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic



Tubular Data

Surface Casing

Size 8-5/8" Cemented with 280 sx.

TOC surface feet determined by circ

Hole size 11"

Intermediate Casing N/A

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long String

Size 4-1/2" Cemented with 250 sx.

TOC ±1422 feet determined by calc.

Hole size 6-3/4"

Total depth 3812'

Injection interval

3622 feet to 3740' feet

(perforated or open-hole, indicate which)

Tubing size 2-3/8" lined with plastic coating set in a
(material)

Baker AD-1 packer at 3570 feet
(brand and model)

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation 7-Rivers and Queen
2. Name of Field or Pool (if applicable) Langlie Mattix 7-Rivers Queen
3. Is this a new well drilled for injection? ☐ Yes ☐ No

   If no, for what purpose was the well originally drilled? _____

   Langlie Mattix 7-Rivers Queen oil production
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used? No
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Jalmat Yates Gas zone top at 3040'

MB:jd

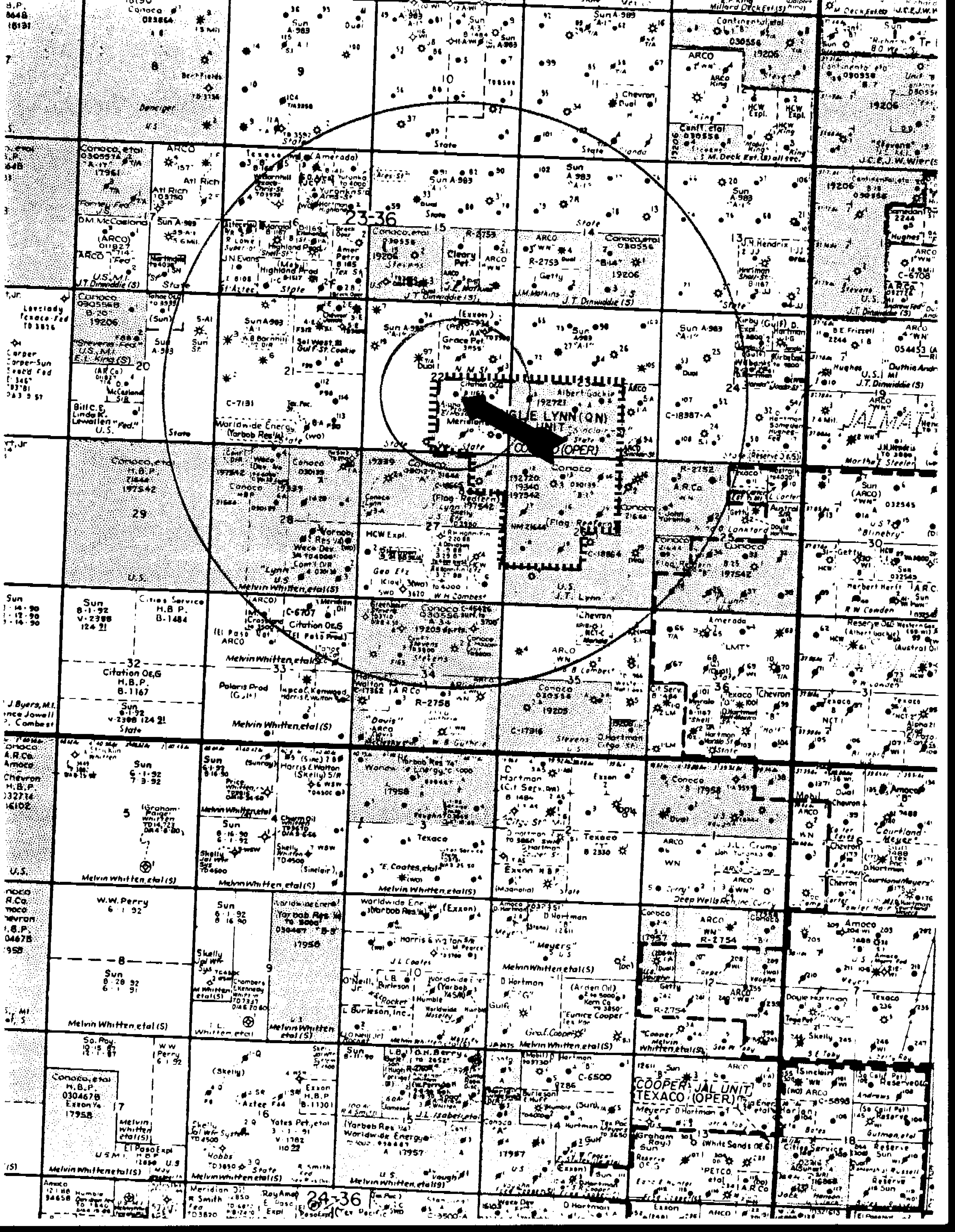
INJDATA

WELLS WITHIN 1/2 MILE WHICH PENETRATE ZONE OF INTEREST

OPERATOR, WELL, LOCATION	TYPE	INTERVAL-FT.	CASING SIZE-"	CASING DEPTH-FT.	CASING NO. SX	CASING TOC-FT	SPUD DATE	COMPL. DATE	TD/PBD-FT
Conoco									
Langlie Lynn Queen No. 1	Oil	3623-3740	8-5/8	324	280	Surface	8-28-60	9-22-60	3812/3782
1980' FSL & EL			4-1/2	3812	250	1459-Calc			
J-22-23S-36E									
Lanexco Inc.									
El Paso State No. 1	Gas	3045-3538	8-5/8	381	200	Surface	6-9-79	6-30-79	3610/3577
1880' FSL & 1650' FEL			5-1/2	3610	750	Surface			
J-22-23S-36E									
Hal J Rasmussen Oper.									
State A AC-1 No. 1	Gas	3155-3560	12-1/2	314	313	Surface	1-8-29	6-5-29	5095/3668
330' FSL & 2310' FWL			8-5/8	2961	525	N.A.			
N-22-23S-36E			7	4234	450	N.A.			
				PB 3668-5095	200				
					+ 200 sx mud				
Conoco									
Langlie Lynn Queen No. 10		3623-3739	7-5/8	307	225	Surface	6-3-63	6-24-63	3800/3799
640' FSL & 1650' FEL		Squeezed:	4-1/2	3800	200	2400			
O-22-23S-36E		3770-93			90				
	P&A	0-650			300				
		1140-1302			50				
		2805-3095			20				
		3310-3600			20				
		CIBP at 3600							
Langlie Lynn Queen No. 9	Oil	3588-3714	7-5/8	305	275	Surface	4-6-63	4-21-63	3800/3773
660' FSL & 330' FEL			4-1/2	3800	200	1888			
P-22-23S-36E									
Langlie Lynn Queen No. 3	Inj	3536-3672	8-5/8	241	200	Surface	9-30-60	10-25-60	3790/3760
1980' FSL & 660' FWL			4-1/2	3790	1100	Surface			
L-23-23S-36E									

OPERATOR, WELL, LOCATION	TYPE	INTERVAL-FT.	CASING SIZE-"	CASING DEPTH-FT.	CASING NO. SX	CASING TOC-FT	SPUD DATE
Grace Petroleum							
New Mexico State AA No. 4	Gas	3314-3528	7	339	175	Surface	6-12-60
660' FNL & 1855' FEL		BP at 3550	2-7/8	3748	200	2820	
B-22-23S-36E							
	Oil-TA	3668-98					
Hal J. Rasmussen Operating							
State A AC-1 No. 97	Gas	3086-3228	9-5/8	333	300	Surface	10-22-60
1980' FNL & FWL		CIBP at 3310'	7	3645	250	2290	
F-22-23S-36E	Oil-TA	3568-94					
Grace Petroleum							
New Mexico State AA No. 5		3713-35	8-5/8	336	200	Surface	7-3-60
1980' FNL & FEL			2-7/8	3773	200	2500-Calc	
G-22-23S-36E							
	P&A	Surface			15		
		0-170			35		
		170-336			25		
		336-2500			mud		
		2500-2600			50		
		3650			4		
		BP at 3650					
Grace Petroleum							
New Mexico State No. 3		3613-21	7-5/8	328	175	Surface	12-16-59
2310' FNL & 330' FEL			2-7/8	3629	200	2355-Calc	
22-23S-36E							
	P&A	0-220			15		
		220-328			60		
		328-1500			mud		
		1500-1600			30		
		CIBP at 2890			4		
		3530-3630			100-ft		
Conoco							
Langlie Lynn Queen Unit No. 2	Oil	3590-3732	8-5/8	330	275	Surface	2-20-60
1980' FSL & 660' FEL			5-1/2	3761	200	2242	
I-22-23S-36E							

JS:mjm
HALFMILE.DOC


23-36
24-36
COOPER JAL UNIT
TEXACO (OPER)
Melvin Whitten, etal (S)
Worldwide Energy
Conoco
ARCO
Sun A-983
State
U.S.

Insert

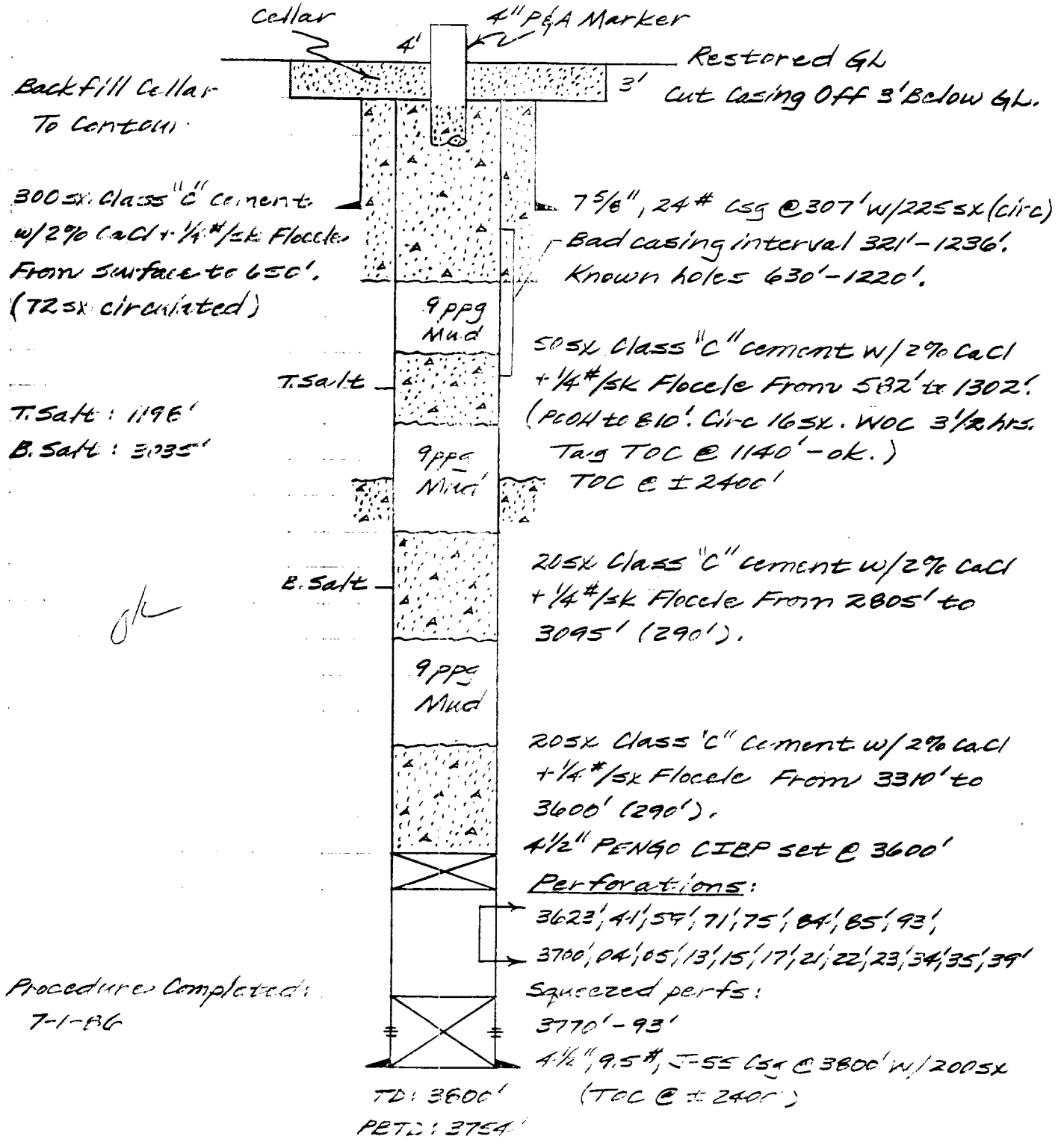
Color Page/Photo

Here

LANGLIE LYNN UNIT No.10

640' FSL & 1650' FEL
UNIT O, SEC 22, T-23S, R-36E

ELEVATION: 3400' DF
3391' GL



Procedures Completed:
7-1-86

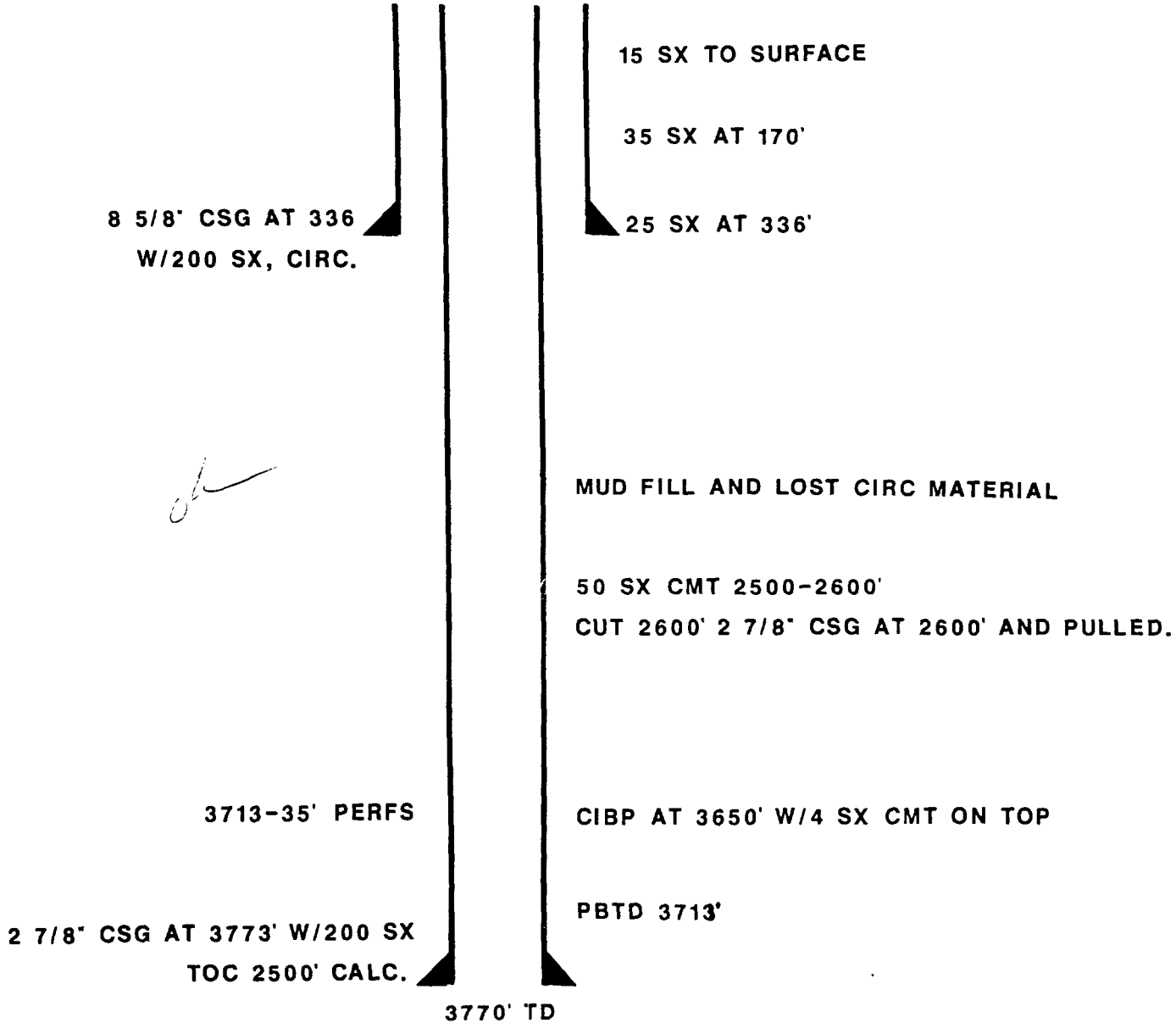
Made By TCA
Checked By
Date 9-25-87
Page 1 / 1

Conoco Inc.
Calculation Sheet

Title P&A Completion

Job No.

Field NMFU
State Lea County, NM.

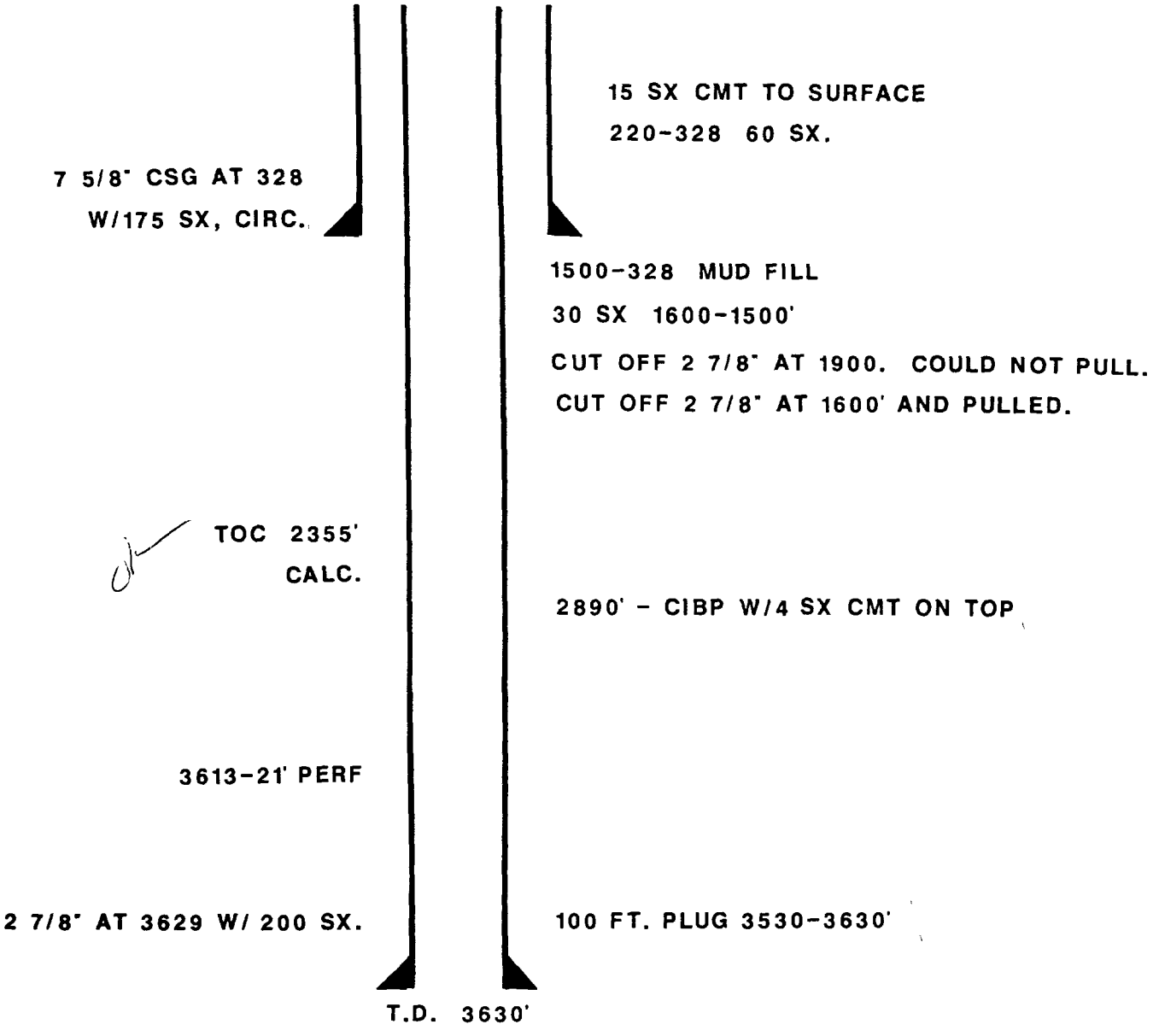


GRACE PETROLEUM CORP.

NEW MEXICO STATE 'AA' NO. 5

1980' FNL & EL

22-23S-36E



GRACE PETROLEUM CORP.

NEW MEXICO STATE "AA" NO. 3

2310' FNL 330' FEL

22-23S-36E

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
Date : 03-10-1989
Sample 1: Langlie Lynn & Texaco Jal Water System (on 3-10-89)
Sample 2: (on)
Sample 3: (on)

	Sample 1	Sample 2	Sample 3
Specific Gravity:	1.008	1.009	1.011
Total Dissolved Solids:	11135	13194	15253
pH:	6.71	6.77	6.82
IONIC STRENGTH:	0.242	0.269	0.296

CATIONS:		me/liter	mg/liter	me/liter	mg/liter	me/liter	mg/liter
Calcium	(Ca^{+2})	27.9	558	25.4	508	22.9	458
Magnesium	(Mg^{+2})	52.8	642	46.4	564	40.0	486
Sodium	(Na^{+1})	108	2490	152	3490	195	4480
Iron (total)	(Fe^{+2})	0.076	2.13	0.063	1.75	0.049	1.3
Barium	(Ba^{+2})	0.022	1.52	0.037	2.55	0.052	3.5
ANIONS:							
Bicarbonate	(HCO_3^{-1})	17.1	1040	18.6	1130	20.1	1230
Carbonate	(CO_3^{-2})	0	0	0	0	0	0
Hydroxide	(OH^{-1})	0	0	0	0	0	0
Sulfate	(SO_4^{-2})	23.9	1150	18.7	900	13.5	650
Chloride	(Cl^{-1})	148	5250	186	6600	224	7950
DISSOLVED GASES							
Carbon Dioxide	(CO_2)		225		200		175
Hydrogen Sulfide	(H_2S)		230		204		179
Oxygen	(O_2)		0		0		0

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate	Calcium Carbonate	Calcium Sulfate	Calcium Carbonate	Calcium Sulfate
36°F	30°C	0.26	-29	0.26	-26	0.26	-32

Compatibility Results
Sample 1 = Langlie Lynn = 25% / Jal Water System = 75%
Sample 2 = Langlie Lynn = 50% / Jal Water System = 50%
Sample 3 = Langlie Lynn = 75% / Jal Water System = 25%

Visual mix - 50.50 - No ppt.

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
Date : 03-10-1989
Location: Texaco Jal Water System (on 3-10-89)

	Sample 1
Specific Gravity:	1.006
Total Dissolved Solids:	9077
pH:	6.65
IONIC STRENGTH:	0.214

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	30.4	608
Magnesium	(Mg^{+2})	59.2	719
Sodium	(Na^{+1})	65.2	1500
Iron (total)	(Fe^{+2})	0.090	2.50
Barium	(Ba^{+2})	0.007	0.500
ANIONS:			
Bicarbonate	(HCO_3^{-1})	15.6	952
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	29.1	1400
Chloride	(Cl^{-1})	110	3900
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		250
Hydrogen Sulfide	(H_2S)		255

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.25	-13

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
Date : 03-10-1989
Location: Langlie Lynn ~~Well # 1~~ WF Inj IPD (on 3-10-89)

	Sample 1
Specific Gravity:	1.012
Total Dissolved Solids:	17311
pH:	6.88
IONIC STRENGTH:	0.324

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	20.4	408
Magnesium	(Mg^{+2})	33.6	408
Sodium	(Na^{+1})	238	5480
Iron (total)	(Fe^{+2})	0.036	1.00
Barium	(Ba^{+2})	0.067	4.60
ANIONS:			
Bicarbonate	(HCO_3^{-1})	21.6	1320
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	8.33	400
Chloride	(Cl^{-1})	262	9300
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		150
Hydrogen Sulfide	(H_2S)		153

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.25	-38

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

September 29, 1989

Mr. William LeMay
State of New Mexico
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 97504-2088

Dear Mr. LeMay:

Request for Authorization to
Inject in the Langlie Lynn No. 1,
Section 22, T23S, R36E

Conoco Inc. requests administrative approval to inject water into the Langlie Lynn #1, which is within an existing waterflood project (R-4417). Conoco is requesting administrative approval for this conversion to injection of an additional well based on Rule 701-F(4), since the well is necessary to maintain thorough and efficient waterflood injection.

Enclosed is the information required for this Application for Authorization to Inject with the exception of the proof of notice, which will be forwarded to your office as soon as possible. Should you have any questions regarding this matter, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

KLL:ks:929

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [x] Secondary Recovery [ ] Pressure Maintenance [ ] Disposal [ ] Storage
Application qualifies for administrative approval? [ ] yes [ ] no

II. Operator: Conoco Inc.

Address: P.O. Box 460 - Hobbs, NM 88240

Contact party: Kandy Lawson Phone: (505) 397-5826

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? [x] yes [ ] no
If yes, give the Division order number authorizing the project R-4417.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: David L. Wacker Title Division Manager

Signature: David L. Wacker Date: October 5, 1989

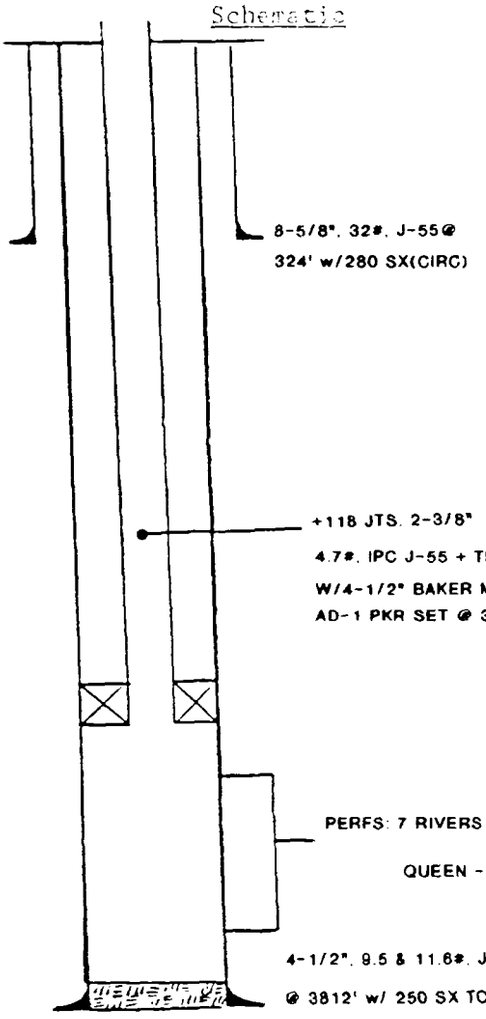
* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. Well logs were submitted upon completion.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office

INJECTION WELL DATA SHEET

Conoco		Langlie Lynn Unit		
OPERATOR		LEASE		
1	1980' FSL & FEL	22	23S	36E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic



Tubular Data

Surface Casing

Size 8-5/8" Cemented with 280 sx.

TOC surface feet determined by circ

Hole size 11"

Intermediate Casing N/A

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long String

Size 4-1/2" Cemented with 250 sx.

TOC ±1422 feet determined by calc.

Hole size 6-3/4"

Total depth 3812'

Injection interval

3622 feet to 3740' feet

(perforated or open-hole, indicate which)

Tubing size 2-3/8" lined with plastic coating set in a
(material)

Baker AD-1 packer at 3570 feet
(brand and model)

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation 7-Rivers and Queen

2. Name of Field or Pool (if applicable) Langlie Mattix 7-Rivers Queen

3. Is this a new well drilled for injection? ☐ Yes ☐ No

   If no, for what purpose was the well originally drilled? _____

   Langlie Mattix 7-Rivers Queen oil production

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used? No

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Jalmat Yates Gas zone top at 3040'

LANGLIE LYNN UNIT NO. 1

Proposed Convert to Injection

Proposed average and maximum daily rate: 400 BWPD/700 BWPD

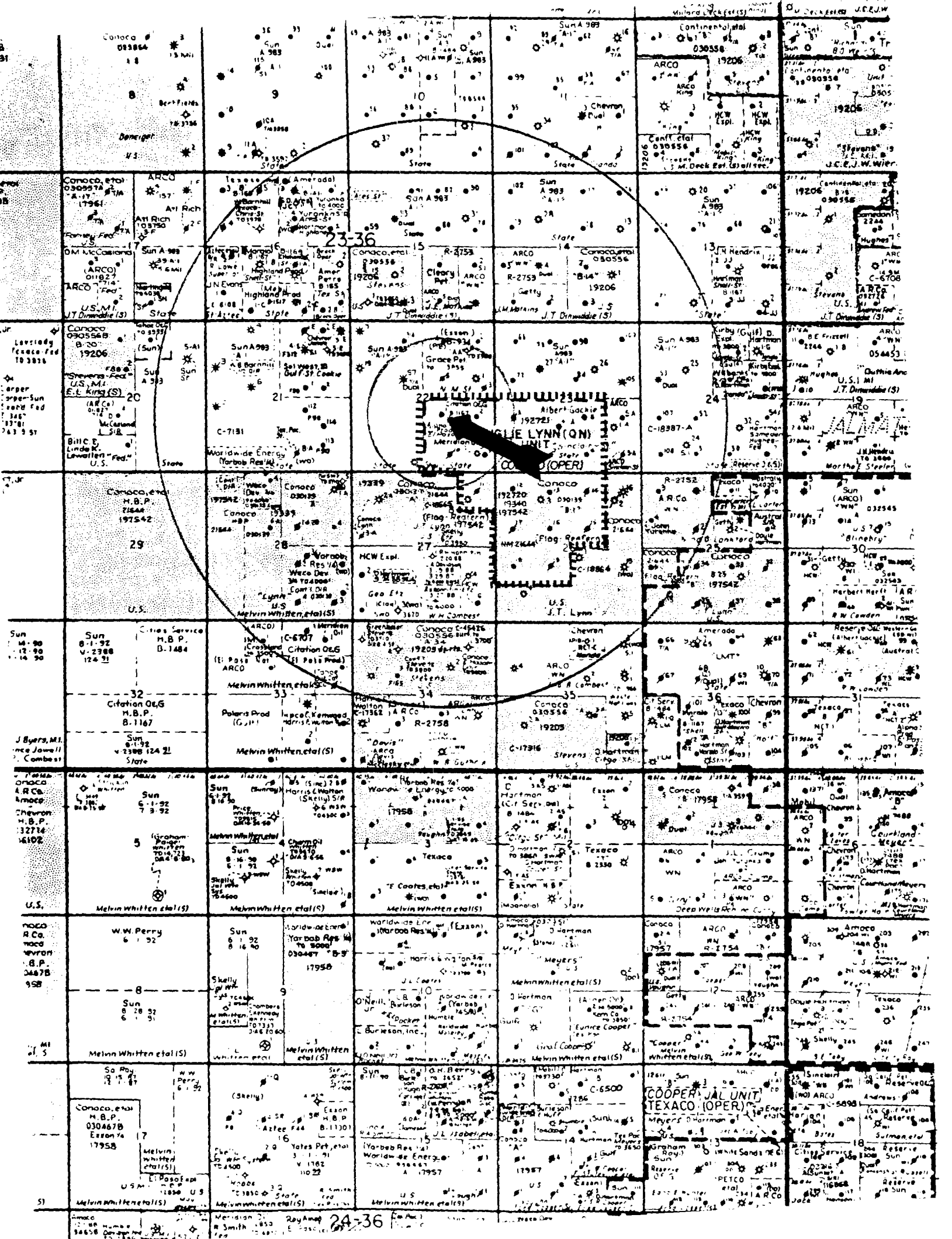
System is closed

Proposed average and maximum injection pressure: 400 psi/650 psi

Geological data is as follows: The lithology consists of dolomite, sandstone, and anhydrite. No known sources of underground drinking water are present in the area of review.

Proposed Stimulation Program: Add perforations in the 7R-1 and 7R-2. Re-perforate existing perforated intervals and stimulate with 15% HCL as necessary.

MB:jd
LANGLN1.DOC


23-36
24-36
JALMAT
COOPER JAL UNIT
TEXACO (OPER)
LYNN (QN)
UNIT
(OPER)

WELLS WITHIN 1/2 MILE WHICH PENETRATE ZONE OF INTEREST

OPERATOR, WELL, LOCATION	TYPE	INTERVAL-FT.	CASING SIZE-"	CASING DEPTH-FT.	CASING NO. SX	CASING TOC-FT	SPUD DATE	COMPL. DATE	TD/PBD-FT
Conoco Langlie Lynn Queen No. 1 1980' FSL & EL J-22-23S-36E	Oil	3623-3740	8-5/8 4-1/2	324 3812	280 250	Surface 1459-Calc	8-28-60	9-22-60	3812/3782
Lanexco Inc. El Paso State No. 1 1880' FSL & 1650' FEL J-22-23S-36E	Gas	3045-3538	8-5/8 5-1/2	381 3610	200 750	Surface Surface	6-9-79	6-30-79	3610/3577
Hal J Rasmussen Oper. State A AC-1 No. 1 330' FSL & 2310' FWL N-22-23S-36E	Gas	3155-3560	12-1/2 8-5/8 7	314 2961 4234 PB 3668-5095	313 525 450 200 + 200 sx mud	Surface N.A. N.A.	1-8-29	6-5-29	5095/3668
Conoco Langlie Lynn Queen No. 10 640' FSL & 1650' FEL O-22-23S-36E		3623-3739 Squeezed: 3770-93	7-5/8 4-1/2	307 3800	225 200 90	Surface 2400	6-3-63	6-24-63	3800/3799
	P&A	0-650 1140-1302 2805-3095 3310-3600 CIBP at 3600			300 50 20 20				
Langlie Lynn Queen No. 9 660' FSL & 330' FEL P-22-23S-36E	Oil	3588-3714	7-5/8 4-1/2	305 3800	275 200	Surface 1888	4-6-63	4-21-63	3800/3773
Langlie Lynn Queen No. 3 1980' FSL & 660' FWL L-23-23S-36E	Inj	3536-3672	8-5/8 4-1/2	241 3790	200 1100	Surface Surface	9-30-60	10-25-60	3790/3760

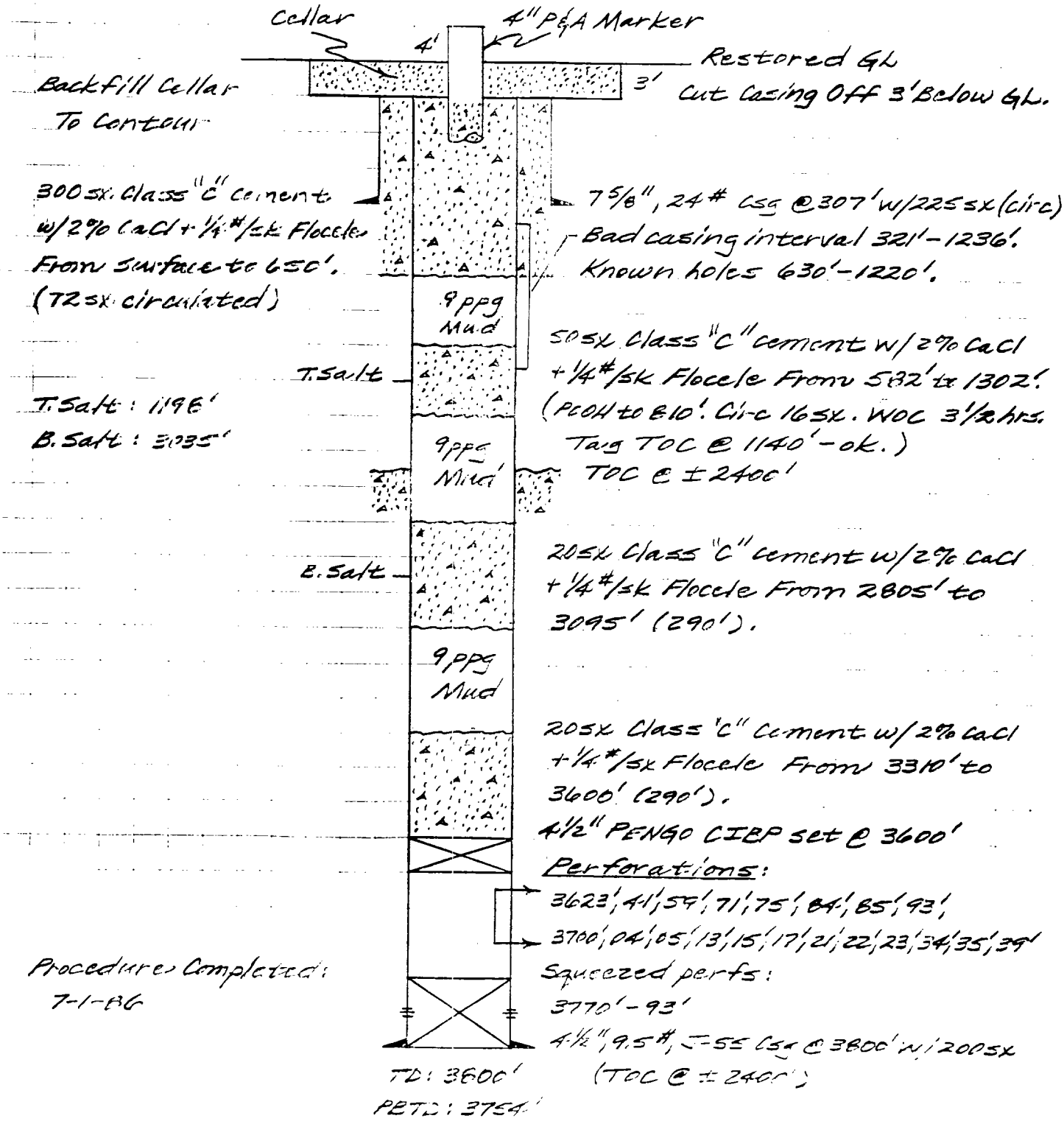
OPERATOR, WELL, LOCATION	TYPE	INTERVAL-FT.	CASING SIZE-"	CASING DEPTH-FT.	CASING NO. SX	CASING TOC-FT	SPUD DATE
Grace Petroleum							
New Mexico State AA No. 4	Gas	3314-3528	7	339	175	Surface	6-12-60
660' FNL & 1855' FEL		BP at 3550	2-7/8	3748	200	2820	
B-22-23S-36E							
	Oil-TA	3668-98					
Hal J. Rasmussen Operating							
State A AC-1 No. 97	Gas	3086-3228	9-5/8	333	300	Surface	10-22-60
1980' FNL & FWL		CIBP at 3310'	7	3645	250	2290	
F-22-23S-36E	Oil-TA	3568-94					
Grace Petroleum							
New Mexico State AA No. 5		3713-35	8-5/8	336	200	Surface	7-3-60
1980' FNL & FEL			2-7/8	3773	200	2500-Calc	
G-22-23S-36E							
	P&A	Surface			15		
		0-170			35		
		170-336			25		
		336-2500			mud		
		2500-2600			50		
		3650			4		
		BP at 3650					
Grace Petroleum							
New Mexico State No. 3		3613-21	7-5/8	328	175	Surface	12-16-59
2310' FNL & 330' FEL			2-7/8	3629	200	2355-Calc	
22-23S-36E							
	P&A	0-220			15		
		220-328			60		
		328-1500			mud		
		1500-1600			30		
		CIBP at 2890			4		
		3530-3630			100-ft		
Conoco							
Langlie Lynn Queen Unit No. 2	Oil	3590-3732	8-5/8	330	275	Surface	2-20-60
1980' FSL & 660' FEL			5-1/2	3761	200	2242	
I-22-23S-36E							

JS:mjm
HALFMILE.DOC

LANGLIE LYNN UNIT No.10

640' FSL & 1650' FEL
UNIT O, SEC 22, T-23S, R-36E

ELEVATION: 3400' DF
3391' GL



Procedure Completed:
7-1-86

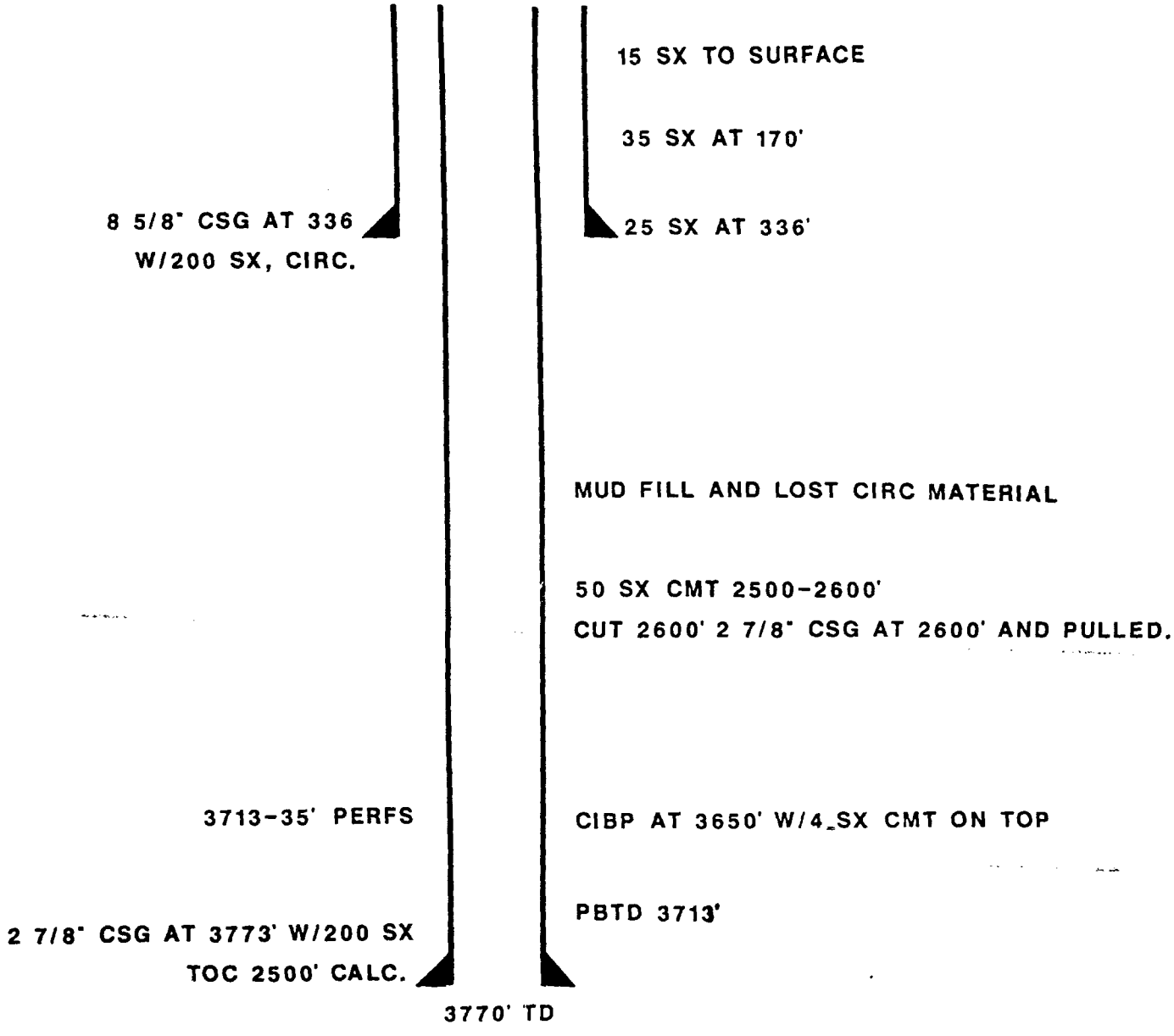
Made By TCA
Checked By
Date 9-25-89
Page 1 / 1

Conoco Inc.
Calculation Sheet

Title P&A Completion

Job No.

Field NMFU
State Lea County, NM.

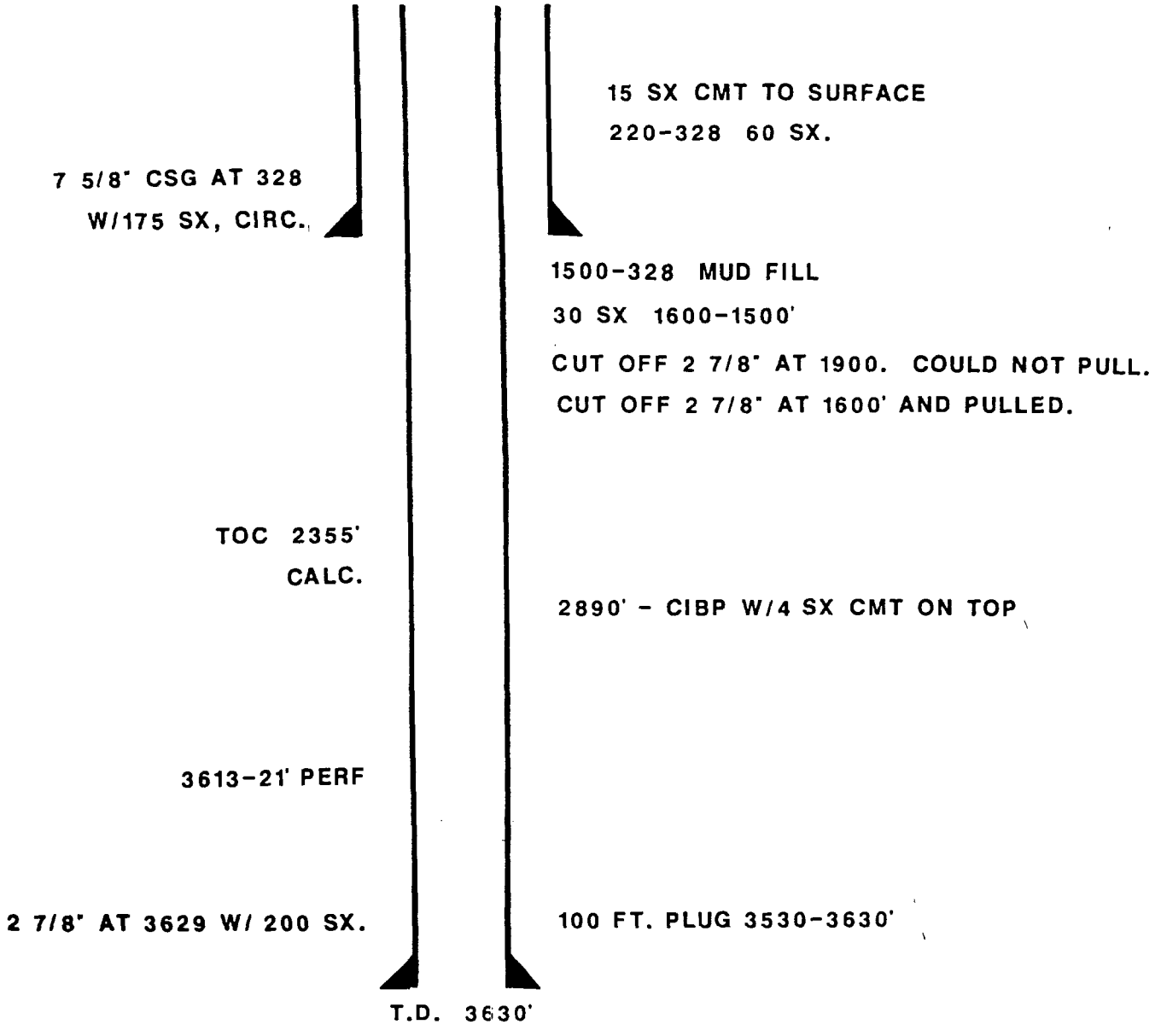


GRACE PETROLEUM CORP.

NEW MEXICO STATE 'AA' NO. 5

1980' FNL & EL

22--23S-36E



GRACE PETROLEUM CORP.

NEW MEXICO STATE "AA" NO. 3

2310' FNL 330' FEL

22-23S-36E

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
Date : 03-10-1989
Sample 1: Langlie Lynn & Texaco Jal Water System (on 3-10-89)
Sample 2: (on)
Sample 3: (on)

	Sample 1	Sample 2	Sample 3
Specific Gravity:	1.008	1.009	1.011
Total Dissolved Solids:	11135	13194	15253
pH:	6.71	6.77	6.82
IONIC STRENGTH:	0.242	0.269	0.296

CATIONS:		me/liter	mg/liter	me/liter	mg/liter	me/liter	mg/lite
Calcium	(Ca^{+2})	27.9	558	25.4	508	22.9	458
Magnesium	(Mg^{+2})	52.8	642	46.4	564	40.0	486
Sodium	(Na^{+1})	108	2490	152	3490	195	4480
Iron (total)	(Fe^{+2})	0.076	2.13	0.063	1.75	0.049	1.
Barium	(Ba^{+2})	0.022	1.52	0.037	2.55	0.052	3.
ANIONS:							
Bicarbonate	(HCO_3^{-1})	17.1	1040	18.6	1130	20.1	1230
Carbonate	(CO_3^{-2})	0	0	0	0	0	0
Hydroxide	(OH^{-1})	0	0	0	0	0	0
Sulfate	(SO_4^{-2})	23.9	1150	18.7	900	13.5	650
Chloride	(Cl^{-1})	148	5250	186	6600	224	7950
DISSOLVED GASES							
Carbon Dioxide	(CO_2)		225		200		175
Hydrogen Sulfide	(H_2S)		230		204		179
Oxygen	(O_2)		0		0		0

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate	Calcium Carbonate	Calcium Sulfate	Calcium Carbonate	Calciu Sulfate
36°F	30°C	0.26	-30	0.26	-26	0.26	-32

Compatibility Results
Sample 1 = Langlie Lynn = 25% / Jal Water System = 75%
Sample 2 = Langlie Lynn = 50% / Jal Water System = 50%
Sample 3 = Langlie Lynn = 75% / Jal Water System = 25%

Visual mix - 50.50 - No ppt.

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
Date : 03-10-1989
Location: Texaco Jal Water System (on 3-10-89)

	Sample 1
Specific Gravity:	1.006
Total Dissolved Solids:	9077
pH:	6.65
IONIC STRENGTH:	0.214

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	30.4	608
Magnesium	(Mg^{+2})	59.2	719
Sodium	(Na^{+1})	65.2	1500
Iron (total)	(Fe^{+2})	0.090	2.50
Barium	(Ba^{+2})	0.007	0.500
ANIONS:			
Bicarbonate	(HCO_3^{-1})	15.6	952
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	29.1	1400
Chloride	(Cl^{-1})	110	3900
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		250
Hydrogen Sulfide	(H_2S)		255

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.25	-13

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
Date : 03-10-1989
Location: Langlie Lynn ~~Well # 1~~ WF Inj IPD (on 3-10-89)

	Sample 1
Specific Gravity:	1.012
Total Dissolved Solids:	17311
pH:	6.88
IONIC STRENGTH:	0.324

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	20.4	408
Magnesium	(Mg^{+2})	33.6	408
Sodium	(Na^{+1})	238	5480
Iron (total)	(Fe^{+2})	0.036	1.00
Barium	(Ba^{+2})	0.067	4.60
ANIONS:			
Bicarbonate	(HCO_3^{-1})	21.6	1320
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	8.33	400
Chloride	(Cl^{-1})	262	9300
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		150
Hydrogen Sulfide	(H_2S)		153

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.25	-.33

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

OIL CONSERVATION DIVISION
RECEIVED
'89 NOV 15 AM 9 04

November 9, 1989

Mr. William LeMay
State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Mr. LeMay:

Request for Authorization to Inject in the Langlie Lynn No. 1, Section 22, T23S, R36E

Attached are copies of the proof of notice for the subject application which was submitted to your office on September 29, 1989.

If you have any questions regarding this application, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

Enc.
KLL:jc

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, George W. Moore

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of

One weeks.
Beginning with the issue dated

October 8, 19 89
and ending with the issue dated

October 8, 19 89

George W. Moore
Publisher.

Sworn and subscribed to before me this 17 day of October, 1989

Pamela A. Cole
Notary Public.

My Commission expires

July 12, 19 93
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

37 **LEGAL NOTICE**
October 8, 1989
Convert Well to Water Injection

Conoco Inc., 726 E. Michigan, P.O. Box 460, Hobbs, New Mexico, Phone: (505) 397-5800, Mr. D. L. Wacker, Division Manager of Production, intends for the purpose of secondary recovery, to convert the following well in Lea County to a water injection well.

Well Name
Langlie Lynn No. 1
Location
1980' FSL & FEL
Total Depth
3812'
Formation
7-Rivers & Queen

Operator plans to inject produced water at a rate of approximately 400 barrels per day with an approximate surface pressure of 650 psi. Any objections to this intent or request for hearing must be filed with the New Mexico Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501 within 15 days from the date of this publication.

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

October 19, 1989

Mr. Hal J. Rasmussen
P.O. Box 10317
Midland, TX 79702

Dear Mr. Rasmussen:

In accordance with New Mexico Oil Conservation Division regulations, you, as an offset operator, are hereby notified of Conoco's application to convert the Langlie Lynn No. 1 to a water injection well. This well is located 1980' FSL & FEL of Section 22, T23S, R36E, Lea County, New Mexico.

If you have no objections, please execute one copy of this letter and return it in the enclosed self-addressed stamped envelope to the attention of Ms. Kandy Lawson. The second copy may be retained for your files.

Thank you for your cooperation in this matter. If you have any questions, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

KLL:tm

Executed the _____ day of _____, 1989.

By_____
Mr. Hal J. Rasmussen

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Mr. Hal J. Rasmussen
P.O. Box 10317
Midland, TX 79702

4. Article Number
P 175 167 908

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X

7. Date of Delivery
OCT 24 1989

8. Addressee's Address *(ONLY if requested and fee paid)*

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

October 19, 1989

Lanexco Inc.
P.O. Box 1206
Jal, NM 88252

Gentlemen:

In accordance with New Mexico Oil Conservation Division regulations, you, as an offset operator, are hereby notified of Conoco's application to convert the Langlie Lynn No. 1 to a water injection well. This well is located 1980' FSL & FEL of Section 22, T23S, R36E, Lea County, New Mexico.

If you have no objections, please execute one copy of this letter and return it in the enclosed self-addressed stamped envelope to the attention of Ms. Kandy Lawson. The second copy may be retained for your files.

Thank you for your cooperation in this matter. If you have any questions, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

KLL:tm

Executed the _____ day of _____, 1989.

By_____
Lanexco Inc.

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:	4. Article Number
Lanexco Inc. P.O. Box 1206 Jal, NM 88252	P 175 167 907 Type of Service: ☐ Registered ☐ Insured ☑ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
5. Signature – Address X	Always obtain signature of addressee or agent and DATE DELIVERED. 8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature – Agent X	
7. Date of Delivery 10-23-89	

CONOCO

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

October 19, 1989

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

Dear Commissioner:

In accordance with New Mexico Oil Conservation Division regulations, you, as the surface owner, are hereby notified of Conoco's application to convert the Langlie Lynn No. 1 to a water injection well. This well is located 1980' FSL & FEL of Section 22, T23S, R36E, Lea County, New Mexico.

If you have no objections, please execute one copy of this letter and return it in the enclosed self-addressed stamped envelope to the attention of Ms. Kandy Lawson. The second copy may be retained for your files.

Thank you for your cooperation in this matter. If you have any questions, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

KLL:tm

Executed the _____ day of _____, 1989.

By_____
Commissioner of Public Lands

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:	4. Article Number
Commissioner of Public Land State Land Office P.O. Box 1148 Santa Fe, NM 87504-1148	P 175 167 906 Type of Service: ☐ Registered ☐ Insured ☑ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
5. Signature — Address X Mike	Always obtain signature of addressee or agent and DATE DELIVERED. 8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery	

OCT 1989 USPO

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

October 19, 1989

Grace Petroleum Corp.
Drawer 2358
Midland, TX 79702

Gentlemen:

In accordance with New Mexico Oil Conservation Division regulations, you, as an offset operator, are hereby notified of Conoco's application to convert the Langlie Lynn No. 1 to a water injection well. This well is located 1980' FSL & FEL of Section 22, T23S, R36E, Lea County, New Mexico.

If you have no objections, please execute one copy of this letter and return it in the enclosed self-addressed stamped envelope to the attention of Ms. Kandy Lawson. The second copy may be retained for your files.

Thank you for your cooperation in this matter. If you have any questions, please contact Ms. Kandy Lawson at (505) 397-5826.

Yours very truly,

David L. Wacker
Division Manager

KLL:tm

Executed the _____ day of _____, 1989.

By_____
Grace Petroleum Corp.

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Grace Petroleum
Tower Park North, Suite 620
10700 N. Freeway
Houston TX 77037

4. Article Number
P 175 167 911

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Address
X

6. Signature – Agent
X Pat Ward

7. Date of Delivery

8. Addressee's Address *(ONLY if requested and fee paid)*