



NMOC P
Hobbs

David L. Wacker
Division Manager
Production Department
Hobbs Division
North American Production

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

April 25, 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. 5,
Section 23, T23S, R36E

Conoco Inc. requests administrative approval to inject water into the Langlie Lynn No. 5, 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. Ceal Yarbrough at (505) 397-5825.

Yours very truly,

David L. Wacker
Division Manager

COY:jd

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☒ 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: Ceal Yarbrough Phone: (505) 397-5825
- 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? ☒ 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: 4/25/89
- * 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.

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 2083, Santa Fe, New Mexico 87501 within 15 days.

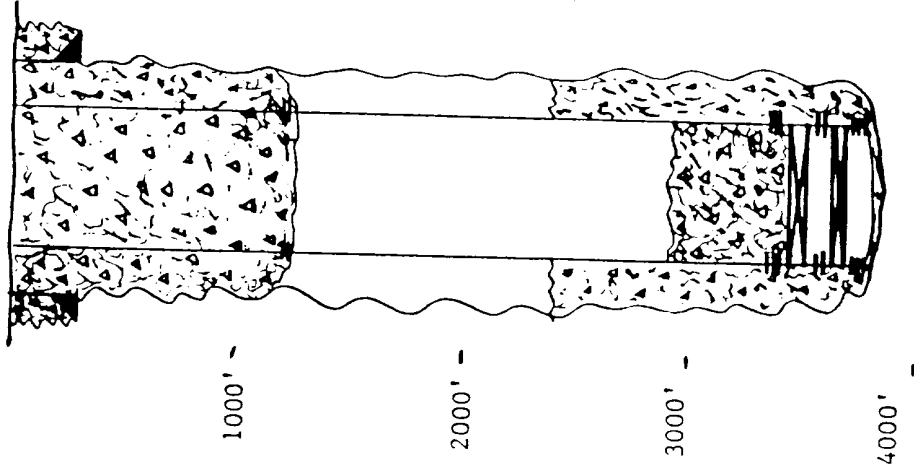
NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

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.

File Proposed Plugging Program

By J.D. Swanson Date 4-8-87

Location: 660' FSL & 660' FEL, Section 23-T23S-R36E
Lea County, New Mexico



8-5/8" Surface Casing at 278'

±550 sxs Class "H" w/2% CaCl₂ in 4-1/2" csg and in
7-7/8" x 4-1/2" annulus

Perforations 1200-1201' @ 4 SPF

Plug #1 - 2800-3460' - ±75 sxs Class "H" cmt
Top of Yates @ 2895'
Top of Langlie Pool @ 3362'
Top of Queen @ 3462'
Seven Rivers Queen Perforations - 3385-3419' (10 shots)
CIBP @ 3460'
Queen Perforations 3591-3637' (9 shots)
CIBP @ 3642'
Perforations 3646-3668'
PSTD - 3725'
4-1/2" Production casing @ 3797'

RECEIVED

MAY 1 1999

OCD
HOBBS OFFICE

LANGLIE LYNN UNIT NO. 5

Proposed Convert to Injection

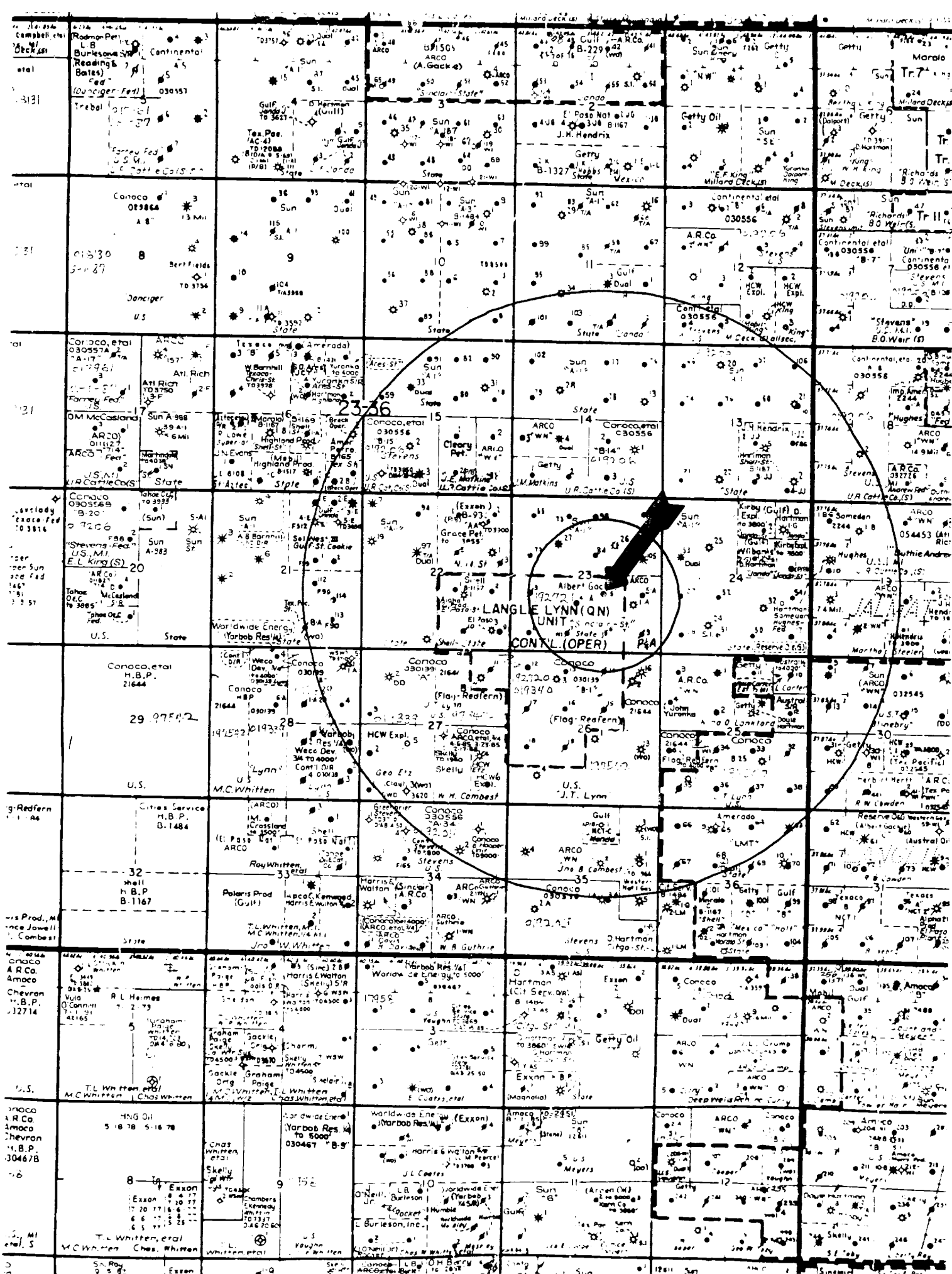
Proposed average and maximum daily rate: 400 BWPD/600 BWPD

System is closed

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

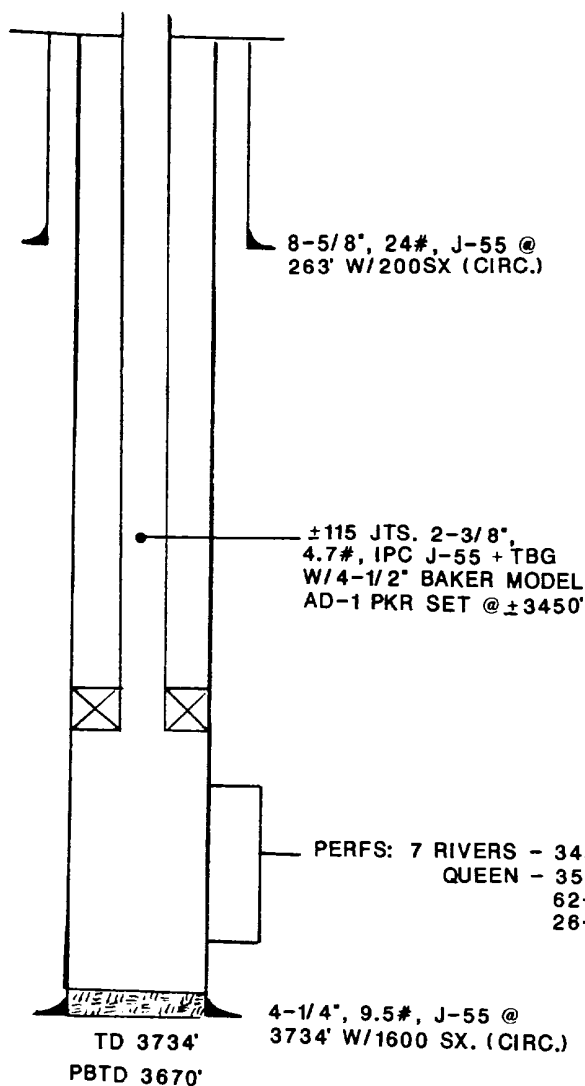
Geological data is as follows: The lithology consists of dolomite, sandstone, and anhydrite. No known sources of underground drinking water are present in the area of review.

Proposed Stimulation Program: Add perforations in the 7R-1 and 7R-2 if gas cap does not exist. Re-perforate existing perforated intervals and stimulate with 15% HCl as necessary.



INJECTION WELL DATA SHEET

Conoco		Langlie Lynn Unit		
OPERATOR		LEASE		
5	1980' FSL & FEL	23	23S	36E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

SchematicTubular DataSurface Casing

Size 8-5/8" Cemented with 200 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 1600 sx.
TOC Surface feet determined by circ.
Hole size 6-3/4"
Total depth 3734'

Injection interval

3450 feet to 3600 feet
(perforated or open-hole, indicate which)

PERFS: 7 RIVERS - 3450-3504
QUEEN - 3518-47,55-59,
62-88, 3609-22,
26-31

4-1/4", 9.5#, J-55 @
3734' W/1600 SX. (CIRC.)

Tubing size 2-3/8" lined with plastic coating set in a
(material)
Baker AD-1 packer at 3410'
(brand and model)
(or describe any other casing-tubing seal).

Other Data

- Name of the injection formation 7-Rivers and Queen
- Name of Field or Pool (if applicable) Langlie Mattix 7-Rivers Queen
- 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.
- 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.
- 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 2918'.

WELLS WITHIN 1/2 MILE WHICH PENETRATE ZONE OF INTEREST

<u>WELL AND LOCATION</u>	<u>TYPE</u>	<u>INTERVAL</u>	<u>CASING</u>			<u>SPUD DATE</u>	<u>COMPL. DATE</u>	<u>TD/PBD</u>
			<u>SIZE-"</u>	<u>DEPTH</u>	<u>NO. SX</u>			
Langlie Lynn Queen #3 1980' FSL, 660' FWL 23-T23S-R36E	Inj	3536-3672'	8-5/8 4-1/2	241' 3790'	200 1100	9-30-60	10-25-60	3790/3760'
Langlie Lynn Queen #4 2310' FWL, 1650' FSL 23-T23S-R36E	Oil	3542-3628'	10-3/4 7-5/8 5-1/2 4-1/2	225' 1235' 2795' 3750'	500 500 600 115	8-18-49	9-16-49	3750'
Langlie Lynn Queen #7 660' FSL, 1980' FWL 23-T23S-R36E	Inj	3608-3652'	8-5/8 4-1/2	271' 3800'	150 1778	11-14-62	11-25-62	3800/3773'
Langlie Lynn Queen #6 660' FSL, 1980' FEL 23-T23S-R36E	Oil	3550-3611'	8-5/8 4-1/2	269' 3727'	150 1150	12-11-62	1-9-63	3728/3704'
Langlie Lynn Queen #14 660' FNL, 1980' FEL 26-T23S-R36E	Inj	3474-3655'	7-5/8 4-1/2	302' 3720'	200 250	8-4-63	10-7-63	3720'
Hal J. Rasmussen State A Ac. 1 #98 660' FNL, 2310' FEL 23-T23S-R36E	Oil	3428-3531'	8-5/8 5-1/2	323' 3580'	300 250	11-19-60	12-10-60	3595/3558'
State A Ac. 1 #84 1980' FNL, 2310' FEL 23-T23S-R36E	Oil	3529-85'	9-5/8 7	334' 3529'	300 250	2-29-60	3-17-60	3585'
State A Ac. 1 #27 1650' FNL, 1650' FWL 23-T23S-R36E	Gas Oil	3002-3186' 3502-3550'	12-1/2 8-5/8 7	276' 2880' 3663'	350 600 140	12-22-48	3-31-49	3670'

<u>WELL AND LOCATION</u>	<u>TYPE</u>	<u>INTERVAL</u>	<u>CASING</u>				<u>SPUD DATE</u>	<u>COMPL. DATE</u>	<u>TD/PBD</u>
			<u>SIZE-"</u>	<u>DEPTH</u>	<u>NO.</u>	<u>SX</u>			
State A Ac. 1 #105 2080' FNL, 660' FEL 23-T23S-R36E	Gas Oil-TA	2862-3282'	7-5/8	323'	250		6-28-64	7-13-64	3669/3350'
		3363-76'	4-1/2	3669'	250				
		3547-3555' 3646-50'							
State A Ac. 1 #107 1980' FSL, 660' FWL 24-T23S-R36E	Oil	3515-3644'	7-5/8	325'	325		7-17-64	8-4-64	3664/3654'
			4-1/2	3664'	250				
<u>Arco</u> Sinclair A State #5 1980' FSL, 660' FEL 23-T23S-R36E	Oil	3381-3520'	8-5/8	290'	200		1-16-62	2-1-62	3753/3530'
			4-1/2	3752'	1290				
Sinclair A State #9 660' FSL, 660' FEL 23-T23S-R36E		3480-3546'	8-5/8	277'	150		12-18-63	3-6-64	3750/3580'
		Squeezed	4-1/2	3750'	250				
		P&A:							
		0-550'			200				
		590-700'			150				
		2900-3340'			50				
		BP at 3580'			50				

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : Conoco
 Date : 03-10-1989
 Sample 1: Langlie Lynn & ^{Texas} 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 ⁺)	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:		me/liter	mg/liter	me/liter	mg/liter	me/liter	mg/liter
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)	143	5250	186	6600	224	7950

DISSOLVED GASES		me/liter	mg/liter	me/liter	mg/liter	me/liter	mg/liter
Carbon Dioxide	(CO ₂)		225		200		175
Hydrogen Sulfide	(H ₂ S)		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	-20	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)

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

<u>CATIONS:</u>		<u>me/liter</u>	<u>mg/liter</u>
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

<u>ANIONS:</u>			
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

<u>DISSOLVED GASES</u>		
Carbon Dioxide	(CO ₂)	250
Hydrogen Sulfide	(H ₂ S)	255

SCALING INDEX (positive value indicates scale)

Temperature
36°F 30°C

Calcium	Calcium
Carbonate	Sulfate
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)

Specific Gravity:

Total Dissolved Solids:

pH:

IONIC STRENGTH:

Sample 1

1.012

17311

6.88

0.324

CATIONS:

		<u>me/liter</u>	<u>mg/liter</u>
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 ₂ S)	153

SCALING INDEX (positive value indicates scale)

Temperature
36°F 30°C

Calcium	Calcium
Carbonate	Sulfate
0.25	-33