CONFIDENTIAL

Schlumberger

LITHODENSITY/COMPENSATED NEUTRON/G

CSU Field Log

COMPANY: BTA OIL PRODUCERS

WELL: 8601 JV-P BUCKEYE B #2

FIELD: DOUBLE A (ABO)
COUNTY: LEA
STATE: NEW MEXICO
NATION: USA
LOCATION: 1980' FNL & 1980' FEL

SEC: 36 TWP: 17-S RGE: 35-E

PERMANENT DATUM: GL ELEVATIONS-
ELEV. OF PERM. DATUM: 3889.7 F KB: 3905.2 F
LOG MEASURED FROM: KB DF: 3904.7 F
15.5 F ABOVE PERM. DATUM GL: 3890.7 F
DRLG. MEASURED FROM: KB

DATE: 2 JAN 87
RUN NO: REENTRY O.W.D.D.

DRIG. Amoco #1-SA Sec

DEPTH-DRILLER: 9580.0 F
DEPTH-LOGGER: 9565.0 F
BTM. LOG INTERVAL: 9562.0 F
TOP LOG INTERVAL: 7600.0 F

CASING-DRILLER: 9300.0 F
CASING-LOGGER: 9289.0 F
CASING: 5 1/2"
WEIGHT: 17.0000 LB/F
BIT SIZE: 4 3/4"
DEPTH: 9565.0 F

CONFIDENTIAL

CONFIDENTIAL

Schlumberger

DUAL LATEROLOG/GR

CSU Field Log

COMPANY: BTA OIL PRODUCERS

WELL: 8601 JV-P BUCKEYE B #2

FIELD: DOUBLE A (ABO)
COUNTY: LEA
STATE: NEW MEXICO
NATION: USA
LOCATION: 1980' FNL & 1980' FEL

SEC: 36 TWP: 17-S RGE: 35-E

PERMANENT DATUM: GL
ELEV. OF PERM. DATUM: 3889.7 F
LOG MEASURED FROM: KB
15.5 F ABOVE PERM. DATUM
DRLG. MEASURED FROM: KB

ELEVATIONS-
KB: 3905.2 F
DF: 3904.7 F
GL: 3890.7 F

DATE: 2 JAN 87
RUN NO: REENTRY

O. W. D. D.

DEPTH-DRILLER: 9580.0 F
DEPTH-LOGGER: 9565.0 F
BTM. LOG INTERVAL: 9550.0 F
TOP LOG INTERVAL: 9289.0 F

DRIG. Amoco #1-SA State

CASING-DRILLER: 9300.0 F
CASING-LOGGER: 9289.0 F
CASING: 5 1/2"
WEIGHT: 17.0000 LB/F
BIT SIZE: 4 3/4"
DEPTH: 9565.0 F

CONFIDENTIAL

ENERGY AND MINERALS DEPARTMENT

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

Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no

II. Operator: BTA Oil Producers

Address: 104 South Pecos; Midland, TX 79701

Contact party: Dorothy Houghton Phone: 915/682-3753

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 _____.

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

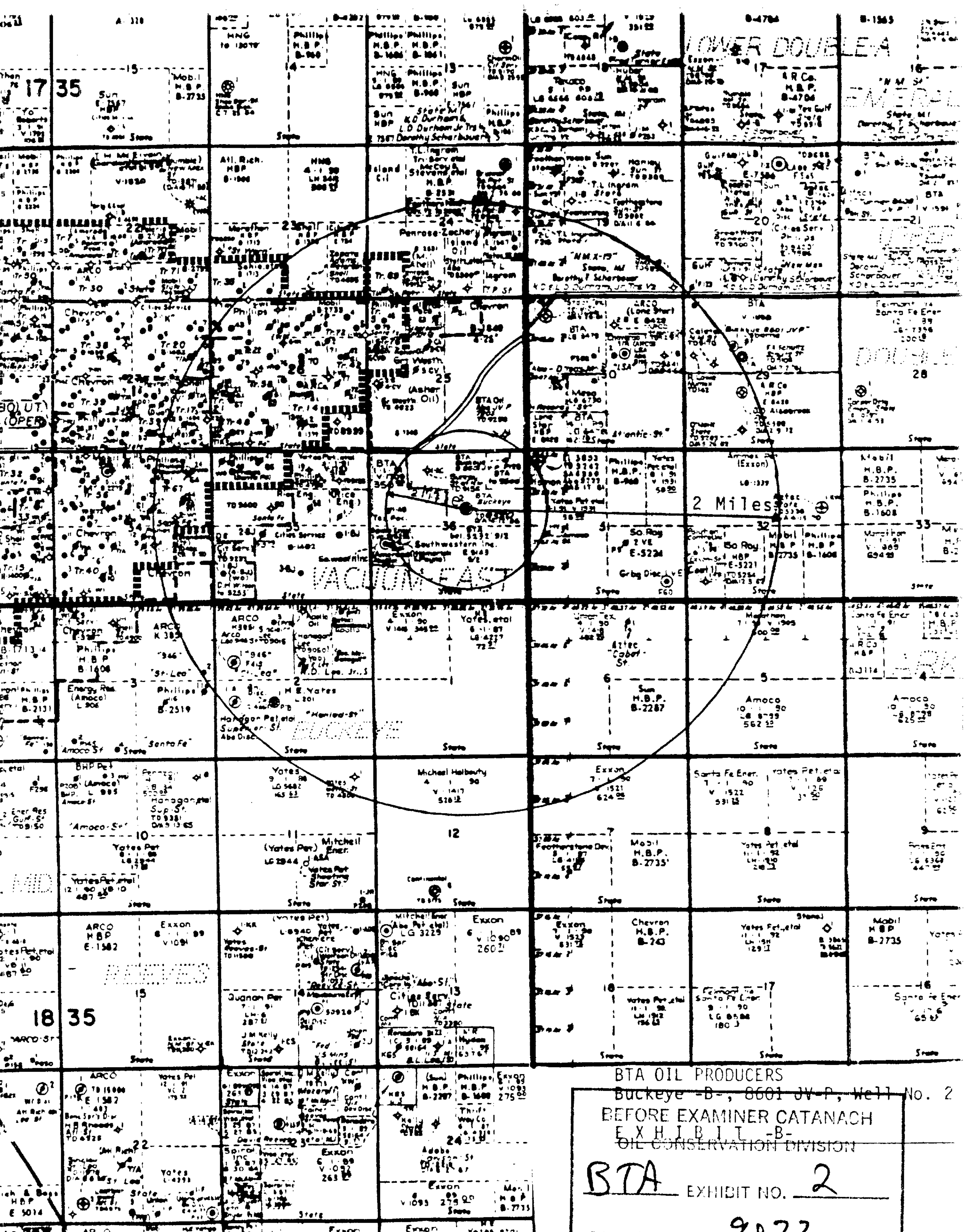
I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Dorothy Houghton Title Regulatory Supervisor

Signature: Dorothy Houghton Date: 1-15-87

* 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. _____

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

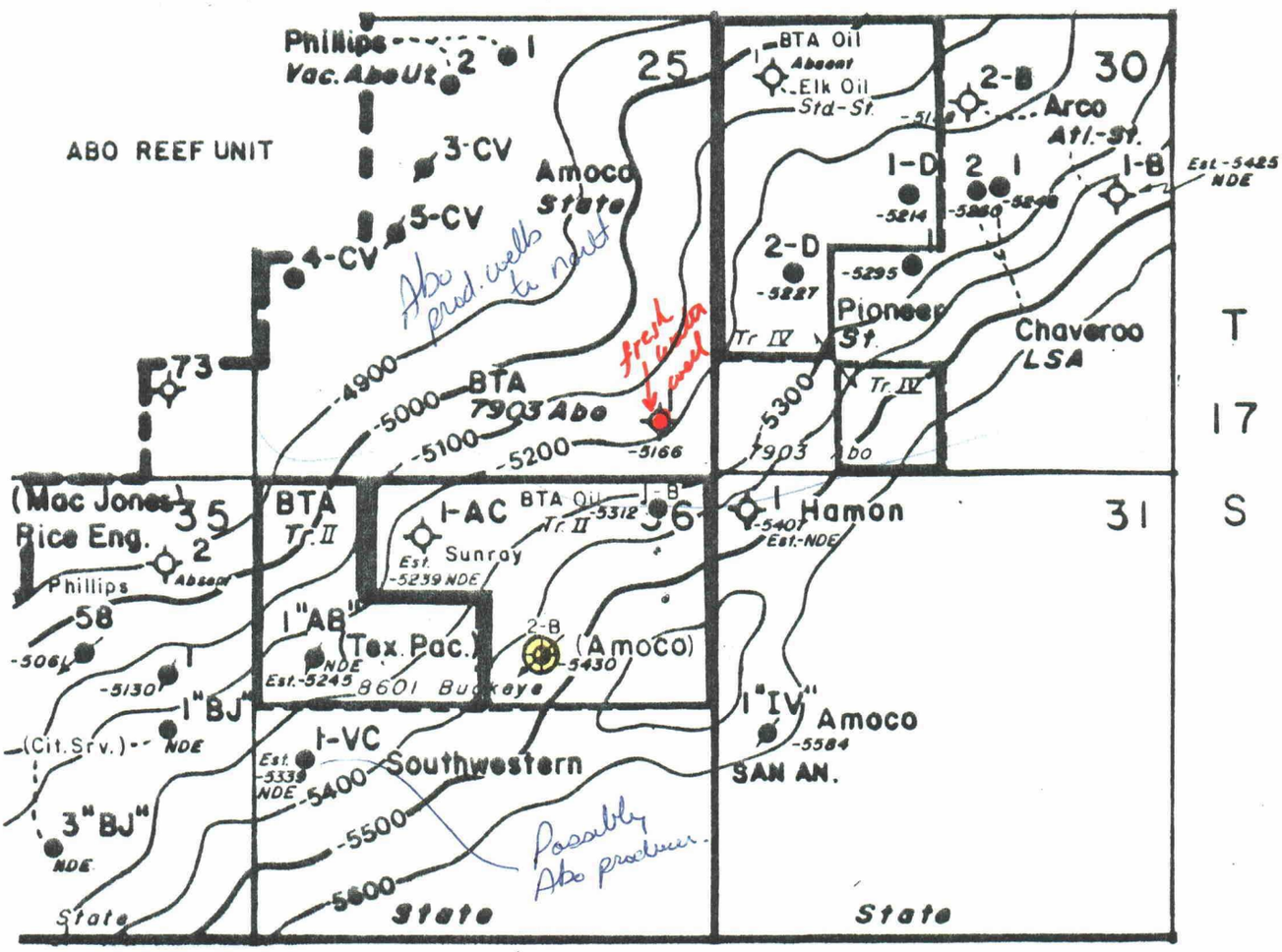


BTA OIL PRODUCERS
Buckeye -B-, 8601 JV-P, Well No. 2

BEFORE EXAMINER CATANACH
EXHIBIT -B-
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 2
CASE NO. 9077

LEA COUNTY, NEW MEXICO

R-35-E R-36-E



Only those wells deep enough to penetrate the Abo are shown on this map.

BTA OIL PRODUCERS

8601 JV-P BUCKEYE "B" 2 - SWD

NMOCC Case No. 9077
Exhibit No. ____
Date : 2-18-87

STRUCTURE MAP- TOP ABO DETRITAL

LEGEND

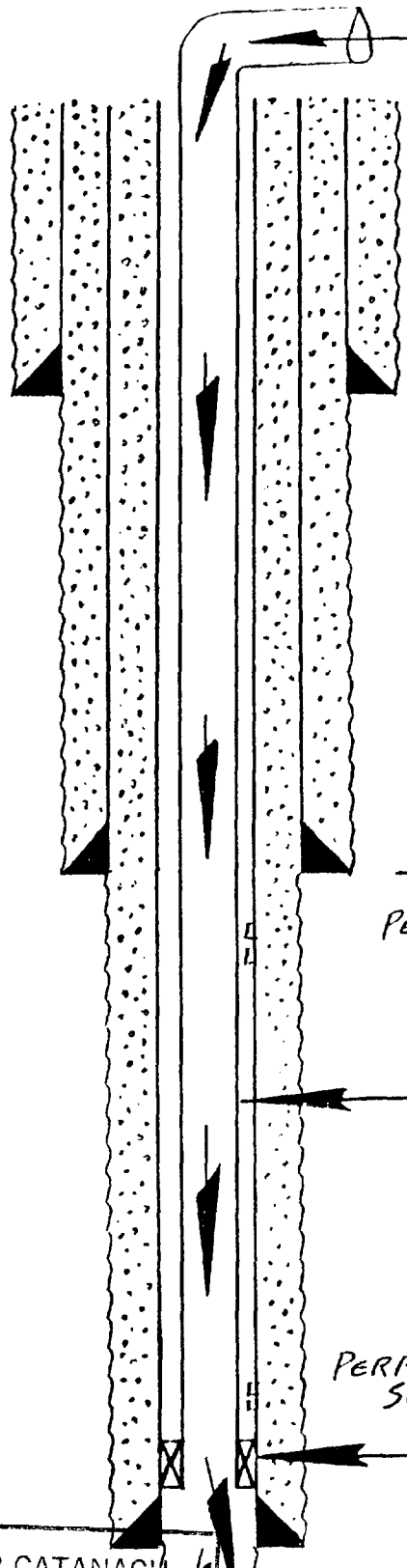
- Producing Oil Well
- Former Producer
- Proposed SWD Well
- Dry Hole
- NDE Not Deep Enough

C.I.: 100'
BY: C.A.P.
SCALE : 1"=2000'
DATE: 1/29/87
DRAWN BY E.M.W.

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 3
CASE NO. 9077

EXHIBIT A-2

BTA Oil Producers
Buckeye "B", 8601 JV-P #2
1980' FN&EL
Sec. 36, T-17-S, R-35-E
Lea County, New Mexico



13-3/8" @ 425' w/450 sx (circ) - 17-1/2" Hole

8-5/8" @ 3500' w/1400 sx (circ) - 11" Hole

PERF. SAN ANDRES 4974-98 5075-84
SQUEEZED W/ 200 SXS.

2-7/8" N-80, 6.5#, 8RD Tbg, Plastic Coated

PERF ABO 9080-94 9120-57
SQUEEZED W/ 100 SXS.

Baker Loc-Set Pkr @ 9200'

5-1/2" @ 9300' w/2200 sx (circ) - 7-7/8" Hole

4-3/4" Open Hole 9300-9580'

Total Depth 9580'

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 4
CASE NO. 9077

EXHIBIT A-1

BTA OIL PRODUCERS
Buckeye -B-, 8601 JV-P
Well No. 2
1,980' FNL and 1,980' FEL
Unit Ltr. G, Sec. 36, T17S, R35E
Lea County, New Mexico

Present production from field?
How many wells have & are producing
5 producing wells, some have produced around 500,000 bbls when drilled
Contour Map

Injection Well Data Sheet

Surface Casing: 13-3/8" @ 425' Cemented w/450 sx
Circulated to surface
Hole size 17-1/2"

Intermediate Casing: 8-5/8" @ 3,500' Cemented w/1400 sx
Circulated to surface
Hole size 11"

Long String: 5-1/2" @ 9,300' Cemented w/2200 sx
Circulated to surface
Hole size 7-7/8"

Total Depth: 9,580'

Injection interval: Open hole from 9,300' to 9,580'

Tubing: 2-7/8" N-80 6.5# 8RD plastic coated tbg
Baker Lok-set pkr @ 9,200'

OTHER DATA:

Name of Injection formation: Abo

Field Name: Double -A- Abo, South

Purpose of well: The well was drilled by Amoco Prod. Co. as "State SA" #1 for a producing well

Perforated Intervals:
9080'-9049'; 9120'-9157'; 4974'-4998'; 5075'-5084'
Sqzd perfs 4974'-5084' w/200 sx Cl -C-
sqzd to 2500 psi and rev. out 4 bbls.
Sqzd perfs 9080'-9157 w/100 sx Cl -H-
sqzd to 5000 psi and rev. out 70 sx
(30 sx in formation)

Depth and name of overlying and/or underlying oil or gas zones in this area:

NAME	DEPTH
Abo Shale	8,207'
Abo Detrital	9,068'

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 5
CASE NO. 9077

BTA OIL PRODUCERS

Buckeye -B-, 8601 JV-P
Well No. 2-SWD
Form C-108 Attachment Data Sheet
-G-, Sec. 36, T-17-S, R-35-E
Lea County, New Mexico

III. Well Data: See Attached Data Sheet, Exhibit A-1, and Schematic, Exhibit A-2

V. The attached map identifies all wells and leases within two miles of our proposed injection well. See Exhibit B

VI. Well Data in Area of Review:

BTA - Buckeye -B-, 8601 JV-P, Well No. 1
Type: Abo - oil producer
Construction:
13-3/8" 54.5# J-55 casing @ 400' w/450 sx circulated to surface.
8-5/8" 24 & 32# K-55 casing @ 4400' w/1800 sx circulated to surface.
5-1/2" 17# N-80 and K-55 casing @ 9987' w/1500 sx TOC @ 1300'.
Spud Date: 7-9-86
Completion Date: 9-2-86
Location: 330' FNL and 660' FEL, Sec. 36, T-17-S, R-35-E
Depth: 9,987'
Record of Completion: Perf'd 9,326-9,351' (Abo) 26 holes
A/w 11,000 gal + ball sealers

Sunray - N.M. State "AC", Well No. 1
Type: Dry Hole
Construction:
13-3/8" 48# casing @ 358' w/375 sx circulated to surface
8-5/8" 24 & 32# J-55 and H-40 casing @ 3706' w/2140 sx. Circulated to surface.
Spud Date: 7-6-61
Completion Date: 9-26-61 (P&A)
Location: -C-, Sec. 36, T-17-S, R-35-E
Depth: 9,156'
Plugging Record:
1. Spotted 40 sx plug 8588-8723'
2. Spotted 40 sx plug 5415-5580'
3. Spotted 40 sx plug 4605-4770'
4. Spotted 70 sx plug 3517-3720'
5. Spotted 10 sx plug @ surface
See Attached Schematic - Exhibit C-1

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 6
CASE NO. 9077

Texas Pacific - State "AB", Well No. 1
Type: Abandoned oil well
Construction:
13-3/8" 48# casing @ 333' w/350 sx circulated to surface
8-5/8" 32# casing @ 4531' w/2100 sx circulated to surface
5-1/2" 17# casing @ 9040' w/300 sx
Spud Date: 2-26-61
Completion Date: 4-20-61
Location: 1980' FNL and 660' FWL, Sec. 36, T-17-S, R-35-E
Depth: 9,040'
Record of Completion: Perf'd 8,871'-8,916' A/w 11,500 gals acid. Prod. 38 B/O, 251 B/W
Plugging Record:
1. Spotted 50 sx plug 8334-8709'
2. Shot off 5-1/2" csg @ 7036'
3. Spotted 25 sx plug @ 7036'
4. Spotted 25 sx plug @ 6630'
5. Spotted 25 sx plug @ 4531'
6. Spotted 10 sx plug @ surface
P&A 7-29-68
See Attached Schematic - Exhibit C-2

VII. 1. Estimated average maximum daily rate will be 1,000 bbls per day.
2. The system will be closed.
3. The proposed average maximum injection pressure will be 750 psi.
4. The source of produced water will be the Abo.
5. Exhibit D-1, Water analysis of produced water from Abo formation. Exhibit D-2, Water analysis from proposed injection well.

VIII. Geological Data on the Injection Zones:
Geological Name: Abo
Lithological Detail: Porous dolomite
Thickness: 250'
Depth: 9,300' to 9,580'

Geological Data of Drinking Water Zone:
The underground source of drinking water overlying the zone of disposal is the Ogallala, which occurs from 50 to 250 feet and is approximately 200 feet thick.

IX. Proposed Stimulation program:
Acidize with 5,000 gal. 15% HCl.

X. Logs on our proposed injection well are enclosed with test detail and formation tops marked.

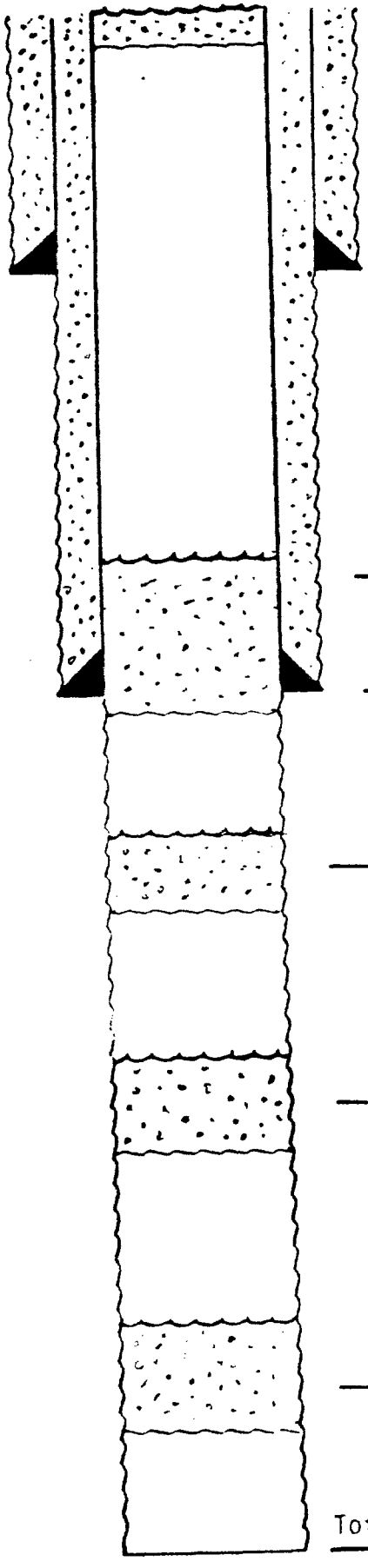
XI. Attached Exhibit -E- is a water analysis of the closest fresh water well located 1/2 mile Northeast of our proposed injection well.

XII. After examining all available geological and engineering data, we find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. A copy of our application has been furnished by certified mail to the surface owners, State of New Mexico, Commissioner of Public Lands and to each leasehold operator within one-half mile of our proposed injection well. See listing on Exhibit -F-.

EXHIBIT C-1

Sunray Mid-Continent Oil Company
NM State "AC"
UL "C" Sec. 36, T-17-S, R-35-E
Lea County, New Mexico
P&A 9-26-61



10 sx Plug @ Surface

13-3/8" @ 358' w/375 sx (circ) - 17-1/2" Hole

70 sx Plug 3517-3720'

8-5/8" @ 3706' w/2140 sx (circ) - 11" Hole

40 sx Plug 4605-4770'

40 sx Plug 5415-5580'

ok does not penetrate injection zone.

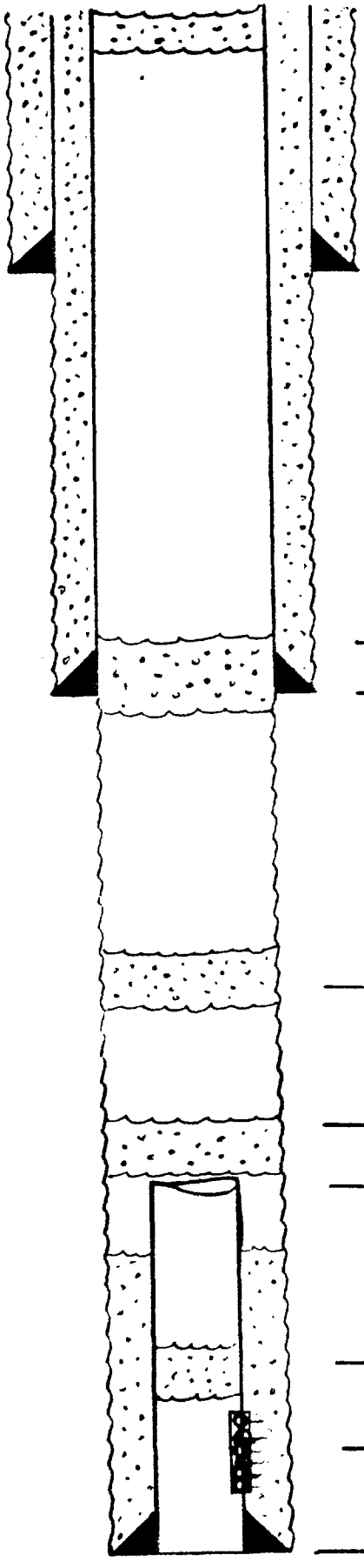
40 sx Plug 8588-8728'

Total Depth 9156' - 7-7/8" Hole

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 7
CASE NO. 9077

EXHIBIT C-2

Texas Pacific Oil Company
State "AB" #1
UL "E" Sec. 36, T-17-S, R-35-E
Lea County, New Mexico



10 sx @ Surface

13-3/8" @ 333' w/350 sx (circ) 17-1/4" Hole

producing oil well from Abo.

25 sx @ 4531'

8-5/8" @ 4531' w/2100 sx (circ) 12-1/4" Hole

ok does not penetrate injection zone.

25 sx @ 6630'

25 sx @ 7036'

Shot 5-1/2" Csg @ 7036'

50 sx 8334-8709'

Perfs 8871-8916'

TD 9040' 5-1/2" @ 9040' w/300 sx 7-7/8" Hole

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 8
CASE NO: 9077

Exhibit D-1

Martin Water Laboratories, Inc.

P O BOX 1468
MONAHANS, TEXAS 79756
PH 943-3234 OR 563-1040

709 W INDIANA
MIDLAND TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 98659

TO: Mr. Steve Salmon
104 South Pecos, Midland, Texas

SAMPLE RECEIVED 9-9-86

RESULTS REPORTED 9-11-86

COMPANY BTA Oil Producers LEASE 8601 JV-P Buckeye "B" #1

FIELD OR POOL Double A (Abo)

SECTION 36 BLOCK T17S SURVEY R35E COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Produced water - taken from Buckeye "B" #1.

NO. 2

NO. 3

NO. 4

REMARKS: Abo Water

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.1490			
pH When Sampled				
pH When Received	6.40			
Bicarbonate as HCO_3	952			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	66,000			
Calcium as Ca	18,400			
Magnesium as Mg	4,860			
Sodium and/or Potassium	61,494			
Sulfate as SO_4	607			
Chloride as Cl	140,618			
Iron as Fe	23.0			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	226,931			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	0.052			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks We do not have Atoka recorded in this field, but we do have records in the immediate surrounding area. In studying these records, we note that the Abo in the area does vary significantly. However, we further note that this water correlates well with one of our records of Abo in the Buckeye field. We consider this at least a strong implication that this is natural Abo water.

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 9
CASE NO. 9077

Form No. 3

By _____
Waylan C. Martin, M. A.

EXHIBIT D-2

Martin Water Laboratories, Inc.

P. O. BOX 1468
MONAHANS, TEXAS 79756
PH 943-3234 OR 563-1040

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 1286195
SAMPLE RECEIVED 12-19-86
RESULTS REPORTED 12-22-86

TO: Mr. O.Y. Strange
104 South Pecos, Midland, Texas

COMPANY BTA Oil Producers LEASE 8601 JV-P Buckeye
FIELD OR POOL Double A, South (Abo)
SECTION 36 BLOCK T17S SURVEY R35E COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Produced water - taken from Buckeye "B" #2. 12-18-86
NO. 2
NO. 3 Abo Water
NO. 4
REMARKS: Abo - 9,300' - 9,470'

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0844			
pH When Sampled				
pH When Received	6.19			
Bicarbonate as HCO_3	265			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	32,500			
Calcium as Ca	10,400			
Magnesium as Mg	1,580			
Sodium and/or Potassium	33,573			
Sulfate as SO_4	1,128			
Chloride as Cl	73,860			
Iron as Fe	164			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	120,745			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	0.082			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: The above results show characteristics that do not correlate with our Abo records in this area. However, based on a comparison with these records, we can see the possibility that this could be partially Abo water.

Form No. 3

By Waylan C. Martin, M.A.

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 10
CASE NO. 9077

EXHIBIT -E-

Martin Water Laboratories, Inc.

P O BOX 1468
MONAHANS TEXAS 79756
PH 943-3234 OR 563-1040

709 W INDIANA
MIDLAND TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 18798

TO: Mr. Royce Boyce
104 South Pecos, Midland, Texas

SAMPLE RECEIVED 1-13-87

RESULTS REPORTED 1-14-87

COMPANY BTA Oil Producers LEASE 7903 JV-P Abo #1

FIELD OR POOL 660' FSL & 660' FEL Double A (Abo)

SECTION 25 BLOCK ____ SURVEY T-17S &R-35E COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Raw water - taken from water well.

NO. 2

NO. 3 Ogallala - base at approx 200 feet.

NO. 4

REMARKS: Drilled 8-30-79

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0023			
pH When Sampled				
pH When Received	6.91			
Bicarbonate as HCO_3	203			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	216			
Calcium as Ca	74			
Magnesium as Mg	7			
Sodium and/or Potassium	47			
Sulfate as SO_4	66			
Chloride as Cl	60			
Iron as Fe	2.0			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	457			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	17.50			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Form No. 3

By W. Reagan White, B.S.

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 11
CASE NO. 9077

EXHIBIT -F-

List of Offset Operators
and Surface Owners

BTA Oil Producers
Buckeye -B-, 8601 JV-P
Well No. 2
Lea County, New Mexico

Great Western Drilling Co.
P. O. Box 1659
Midland, Texas 79702

Chevron U.S.A., Inc.
P. O. Box 1150
Midland, Texas 79702

Yates Petroleum
105 South Fourth Street
Artesia, New Mexico 88210

Surface Owners:
R. D. Lee, Jr.
Bill Lee
P. O. Box 363
Lovington, New Mexico 88260

State of New Mexico
Commissioner of Public Lands
P. O. Box 1148
Santa Fe, New Mexico 87501-1148

I hereby certify the above were mailed copies of our application on January 15, 1987.

Dorothy Houghton

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 12
CASE NO. 9077