

105 SOUTH FOURTH STREET ARTESIA, NEW MEXICO 88210 TELEPHONE (505) 748-1471 S. P. YATES
PRESIDENT

JOHN A. YATES
VICE PRESIDENT

B. W. HARPER

SEC. - TREAS.

June 18, 1987

To: Offset Operators

Re: Brown "AEI" No. 1

1910' FNL & 527' FEL Sec. 26,T.16S.,R.37E. Lea County, New Mexico

#### Gentlemen:

Yates Petroleum Corporation is proposing to convert the referenced well from a producer to a water disposal well. Details of the proposed conversion are contained in the accompanying application.

The surface landowner and all offset leasehold operators within one-half mile of the well are being provided a copy of the application.

If you have any comments or questions, please feel free to contact me at (505) 748-1471.

Sincerely,

Albert R. Stall

Cellet P. Stall

Engineer

ARS/lab

cc: N.M.O.C.D., Santa Fe

N.M.O.C.D., Hobbs



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SEC. - TREAS.

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

June 18, 1987

Kathleen Cone P.O. Drawer 1509 Lovingtor, NM 88260

> Re: Brown "AEI" No. 1 1910' FNL & 527' FEL Sec. 26,T.16S.,R.37E. Lea County, New Mexico

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Albert R. Stall

Engineer

ARS/lab

cc: N.M.O.C.D., Santa Fe N.M.O.C.D., Hobbs

albert F. Stall

PPLICA	ATION FOR AUTHORIZATION TO INJECT Brown "AEI" No. 1
I.	Purpose: Secondary Recovery Pressure Maintenance X Disposal Storage Application qualifies for administrative approval? X yes no
11.	Operator: Yates Petroleum Corporation
	Address: 105 S. 4th Street, Artesia, NM 88210
	Contact party: Albert R. Stall Phone: (505)748-1471
111.	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
٧.	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:
	<ol> <li>Proposed average and maximum daily rate and volume of fluids to be injected;</li> <li>Whether the system is open or closed;</li> <li>Proposed average and maximum injection pressure;</li> <li>Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and</li> <li>If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed wall, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).</li> </ol>
111.	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.	Descrate the proposed stimulation program, if any.
х.	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.
<b>III.</b>	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: Albert R. Stall Title Engineer
	Signature: Closet K Stoll Date: 6-15-87
submi	ne information required under Sections VI, VIII, X, and XI above has been previously litted, it need not be duplicated and resubmitted. Please show the date and circumstance ne earlier submittal.  Subject well logs were submitted to NMOCD District Office in
НоЪЪ	
	RIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division rict office.

#### 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 faotage location within the section.
  - (2) Each casing string used with its size, setting depth, sacks of cement use!, 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 well: 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 zine 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 sirgle 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 hεaring 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.

#### FORM C-108 Supplement

#### Brown "AEI" #1

I. Purpose:

To drill out  $5\ 1/2$ " casing shoe and cement plug below casing, clean out to plug at 11068', and convert to salt water disposal status. Planned injection interval is from perforations at 10366' to bottom of plugged back open hole interval at 11068'.

II. The operator is Yates Petroleum Corporation 105 South 4th Street Artesia, New Mexico 88210

Attn: Albert R. Stall

III. Well Data:

See the attached injection well data sheet and schematic diagram.

- IV. This is a new project.
- V. A lease ownership map is attached (Midland Map Co.). Well and lease information is posted through 6/3/87. The map has a two-mile radius circle and a one-half mile radius circle around the subject well.
- VI. There are no wells of public record within the area of review which penetrate the proposed injection zone other than the subject well.
- VII. Data on proposed operations:
  - (1). The proposed average rate of injection is 2000 barrels per day, and the maximum is 5000 barrels per day. The estimated total volume of fluid to be injected is  $15 \times 10^6$  barrels.
  - (2). The system will be closed.
  - (3). The average injection pressure will be between 500 2000 PSIG. Maximum injection pressure will be 2073 PSIG.
  - (4). The source of injection fluid will be produced water from the following wells:
    - a. Shipp "ZI" #1
      660' FNL & 2310' FWL
      Sec. 27,T.16S.,R.37E.
      Cisco Canyon Formation--10975-11028'
      Well produces too little water to obtain a sample.
    - b. Shipp "ZI" #2
      660' FNL & 1100' FWL
      Sec. 27,T.16S.,R.37E.
      Strawn Formation--11461-11475'
      See attached analysis.

Form C-108 Supplement Brown "AEI" #1 Page -2-

- c. Shipp "ZI" #3
  1470' FNL & 660' FWL
  Sec. 27,T.16S.,R.37E.
  Strawn Formation--11422-11466'
  See attached analysis.
- d. Hummingbird "ADM" St. #1
  2006' FNL & 554' FEL
  Sec. 8,T.16S.,R.37E.
  Strawn Formation--11524-11566'
  See attached analysis.
- e. Kochia "AAM" St. #1
  990' FSL & 2310' FEL
  Sec. 35,T.15S.,R.36E.
  Devonian Formation--13672-13676'
  See attached analysis.
- (5). Chlorides from water produced by the above-mentioned wells ranges from 21421 to 74000 parts per million. Water produced from the subject well from perforations at 10366' has 34285 parts per million chlorides. Water obtained on DST from the subject well in the interval 10334-10409' had chlorides of 43000 parts per million. Waters are expected to be compatible.

The proposed injection zone is not included within the vertical limits of any established pool.

#### VIII. Geological Data:

Injection zone: 10366-11068'

Wolfcamp (Permian) 10366-11018'

60-100% Dolomite, white to brown, very fine to coarse crystalline, abundant porosity

0-40% Shale, gray to brown, silty, very finely laminated, calcareous and with traces of pyrite in places (cavings?)

0-10% Chert, cloudy brown to translucent

Wolfcamp (Permian) 11018-11068'

20-40% Limestone, white to dark brown, mottled, dense, very fine crystalline, argillaceous, chalky in places

30-60% Dolomites, buff gray to buff, abuse, very fine crystalline to microcrystalline

10-30% Chert, dark brown to brown, mottled, slightly translucent, opaque, argillaceous

The underground source of drinking water in this area is Ogallala formation of Tertiary age, the base of which is estimated at 470' at the location of the proposed disposal well. The Santa Rosa formation is also a possible fresh water aquifer with a base of approximately 1250'.

IX. The planned completion program is to use existing perforations at 10366' and open hole interval from 10525-11068'. Some acid stimulation may be done if required to improve injectivity.

Form C-108 Supplement Brown "AEI" #1 Page -3-

- X. CNL, FDC, DLL logs have been submitted to the NMOCD, Hobbs District Office.
- XI. Attached are water analyses from two fresh water wells within one-mile of the Brown "AEI" No. 1.
- XII. Available geological and engineering data have been examined and no evidence of open faults or any other hydrologic connections between the disposal zone and any underground fresh water aquifers have been found.
- XIII. The offset operators listed on the attached page have been furnished a copy of this application by certified mail.

The surface owner listed below has been furnished a copy of this application by certified mail.

Kathleen Cone P.O. Drawer 1509 Lovington, NM 88260

# BROWN "AEI" #1 OFFSET OPERATORS TOWNSHIP 16 SOUTH, RANGE 37 EAST LEA COUNTY, NEW MEXICO

Inexco (il Company 2950 N. Loop West Suite 1200 Houston, TX 77092

H.L. Brcwn, Jr. P.O. Box 2237 Midland, TX 79702

Belnorth Petro. Corp.
One Petroleum Center
Bldg. 6, 3300 North "A", Suite 201
Midland, TX 79705

Mobil Prod. TX & NM, Inc. P.O. Box 633 Midland, TX 79702

Mesa Petroleum Corp.
One Mesa Square
P.O. Box 2009
Amarillo, TX 79189-2009

Pennzoil Company
P.O. Box 2967
Houston, TX 77252-2967

Sequoia Associates, Limited P.O. Box 2166 Houston, TX 77252-2166

#### INJECTION WILL DATA SHEET

Yates Per	troleum Corporation	Brown "AEI"		
#1 WELL NO.	1910' FNL & 527' FEI FOUTAGE LUCATION	Sec. 26 SCCTION	T.16S.	R.37E. RANGE
Set	nemutic	<u>1</u> 1	obulor Data	
See attach	ed schematic.	Surface Casing		
		Size 13 3/8	" Cemented wi	th 475 sx.
		TOC Surface		y circulation
		Hole size 17 1/	2"	
		Intermediate Casing		
		Size <u>8 5/8</u>	" Cemented wi	th 1900 sx
		TOC <u>Surface</u>	feet determined by	y <u>circulation</u>
		Hole size 11"		
		Long string		
		Size5 1/2	" Cemented wi	th 450 sx
		TOC 8710	feet determined by	y bond log
		Hole size 7 7/8	11	
		Total depth 12196	, 1	
		Injection interval		
		10366 feet		
		(perforated or open-he perforated and open	·	h)
			·	
			•	
Tubing si	ze 2 7/8" lin	-	astic erial)	set in a
Guibe	<u>rson Uni-VI (nickel-pla</u> brand and model)	•		feet
	orand and model; ibe any other casing-tubi			
Other Dat				
	- of the injection formatio	n Wolfcamp		
2. Name	of Field or Pool (if appl	icable) None		
3. Is th	is a new well drilled for	injection? / Yes	<u> </u>	
If nọ	, for what purpose was th	ne well originally drille	d? <u>Oil test</u>	
and g	he well ever been performive plugging detail (sack 10386'. Perforations a	is of cement or bridge pl	ug(s) used) Perfo	orated at 10366'
5. Give	the depth to and name of area. There is no produ	ony overlying and/or und	derlyimy oil or gas of review. Close	zones (pools) in st production fro
near	by pools is from Casey	Strawn and West Knowles	s Drinkard, both	approximately 1 1
$mil\epsilon$	es southwest of the subj	ect well. Casey Straw	n production is f	rom a depth of

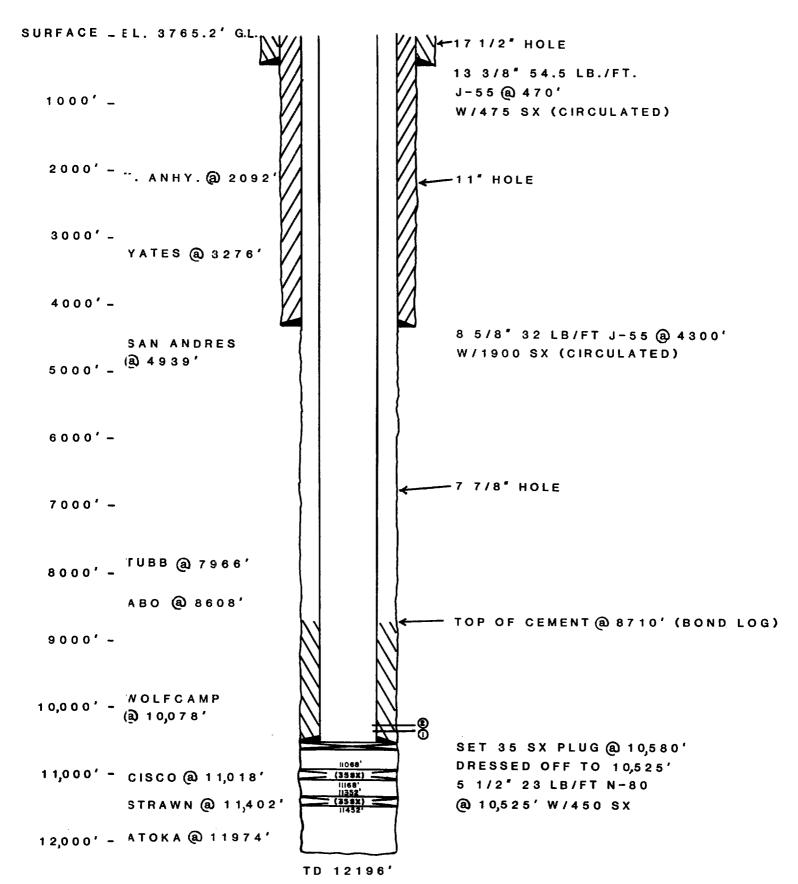
Injection Well Data Sheet Page -2-

approximately 11400 feet, and West Knowles Drinkard production is from a depth of approximately 8330 feet.

#### PRESENT WELL CONDITION

#### YATES PETROLEUM

BROWN AEI NO. 1
SEC. 26, T16S - R37E
1910' FNL & 527' FEL
LEA COUNTY, NEW MEXICO
SPUD DATE: 1-29-87



13000' -

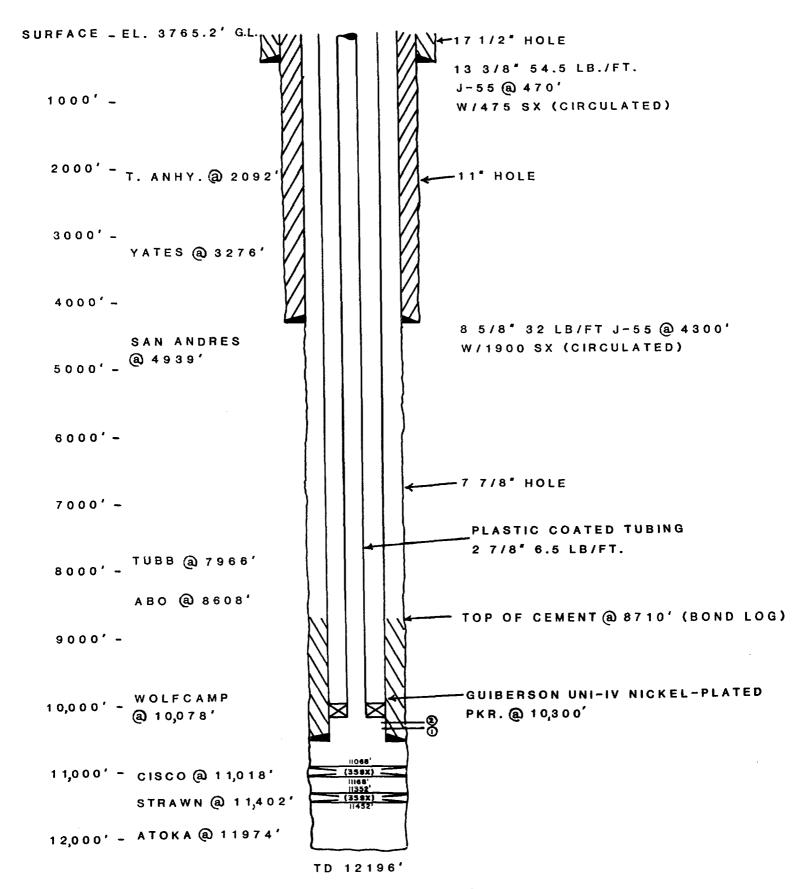
- ① SAND CUT PERFORATE @ 10,386'.
  ACIDIZED W/500 GAL 15% NEFE
  CEMENT SQUEEZED TO 3000 PSI
  W/65 SX
- ② SAND CUT PERFORATE @ 10366'.
  ACIDIZED W/1000 GAL 15% NEFE

#### PROPOSED WELL DIAGRAM

13000' -

YATES PETROLEUM

BROWN AEI NO. 1
SEC. 26, T16S - R37E
1910' FNL & 527' FEL
LEA COUNTY, NEW MEXICO
SPUD DATE: 1-29-87



- ① SAND CUT PERFORATE @ 10,386'.
  ACIDIZED W/500 GAL 15% NEFE
  CEMENT SQUEEZED TO 3000 PSI
  W/65 SX
- ② SAND CUT PERFORATE @ 10366'.
  ACIDIZED W/1000 GAL 15% NFFF

			-
VOUR	EXT	. NO.	

#### WATER ANALYSIS

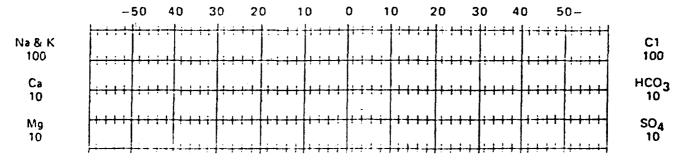
ANAL	VEIR	NO
	, v 3·3	70.
ſ		

GENERA	L INFORMATION	
OPERATOR	DATE SAMPLED	3/14/87
WELL Brown AEI #	DATE RECEIVED	1.19
FIELD	SUBMITTED BY	
FORMATICN	WORKED BY	
COUNTY -	SAMPLE DESCRIPTION	N:
STATE		
DEPTH 10386		of the Parkers

PHYSICAL AND CHEMIC	CAL DETERMINATIONS	
SPECIFIC GRAVITY 1.05 AT 72 F	TOTAL DISSOLVED SOLIDS	PPM
рН 8	RESISTIVITY ,13 @ 72	PPM
IRON Ferrous Faint Good Strong The	SULFATE (S) 2095	PPM
HYDROGEN SULFIDE Yes No	BICARBONATE (B) //34	PPM
HARDNESS 857/	CHLORIDE (C) 34, 286	PPM
CALCIUM (CA) 952	SODIUM CHLORIDE	PPM
MAGNESIUVI (M) 1504 PPM	SODIUM	PPM
SODIUM & POTASSIUM 19718 PPM	POTASSIUM	PPM
PHOSPHATI:		

REMARKS: CA. .0499 S. .0208 M. .0822 B. .0164 C. .0282

for Stiff type plot (in mea./1.)



ANALYST\_\_

REPORT NO. 16304F DST 2 ( WELL PERFORMANCE ( TESTING TH REPORT

Schlumberger

FLOPETROL JOHNSTON

PAGE NO. 1

TEST DATE: 17-FEB-1987 A Production System Analysis (NODALT ) Based On Model Verified™ Interpretation

			· · · · · · · · · · · · · · · · · · ·		<del></del>
Company:	YATES PETRO	LEUM CORPORATION	Well: BROW	Y "AEI" #1	
TEST IDENTIFICATION			WELL LOCAT	ION	
		MFE OH DST			Casey, Strawn
	• • • • • • • • • • • • • • •		County		
	• • • • • • • • • • • • • • • • • • • •				New Mexico
		10334 to 10409	•		26/ 16s/ 37e
I		Kelly Bushing	Elevation (ft		
HOLE COND			MUD PROPER		
	(PD/TUD) (ft	) 10409			Cut Brine
	in:		Mud Height (1		
	r I.D. Cini				0.12 at 50 F
Perf'd Inter	rval/Net Pay (	++) × 21	Filtrate Resi		
	y∕D±ameter (ir		Filtrate Chlo		
INITIAL T	EST CONDITI	DNS	TEST STRING	CONFIGURA	TION
Initial Hydr	rostatic (psi)	) <del></del>	Pipe Length (	ft)/I.D. (in)	9799 / 3.83
Gas Cushion	Type	None	Collar Length	(ft)/I.D. (ii	n) 478 / 2.25
	ssure (psi)				10328, 10334
	ion Type		Bottomhole Ch		
Cushion Leng	gth (ft)		Gauge Depth (	ft)/Type	10403 / J-200
NET PIPE	RECOVERY		NET SAMPLE	CHAMBER RE	COUERY
Uolume	Fluid Type	Properties	Volume	Fluid Type	Properties
735 feet	Oil	35 API at 60 F	0.3 scf	Gas	
2165 feet	Water, top	sample 55,000 PPM	500 cc	Oil	35 API at 60 F
	Mid. sample	54,000 PPM	1450 cc	Water	Rw 0.18 at 50 F
	Bot. sample	43,000 PPM			43,000 PPM
			Pressure: 500	GOR: 80	GLR: 23
INTERPRET	ATION RESUL	TS	ROCK/FLUID/	MELLENDE D	PUDEDITES
	av or		Oil Density (		
	sed for Analy		Basic Solids		
	essure (psi)		Gas Gravity .		
	lity (md.ft/c				71 (sampler)
	rmeability (m		Viscosity (cp		
Skin Factor/Damage Ratio		Total Compressibility (1/psi).			
Storativity Ratio		Porosity (%)			
Interporosity Flow Coeff			Reservoir Temperature (F) 152		
	an Anomaly (f		Form. Uol. Facto	r (bbl/STB).	
Radius of In	vestigation (	Ft)			
Potentiometr	ic Surface (f	r)			
<del></del>		·			

#### PRODUCTION RATE DURING TEST: --

#### COMMENTS:

This test was mechanically unsuccessful due to failure of the clock mechanisms in both pressure instruments, no reliable pressure data was obtained.

The average rate during the test (based on the total fluid recovered in the drill string) was 735 BLPD. this value suggests that the zone has good effective permeability and "good" reservoir pressure.

LOCATION	
VOLUE EXT. NO	

#### WATER ANALYSIS

		_
ANALYSIS NO	0.	

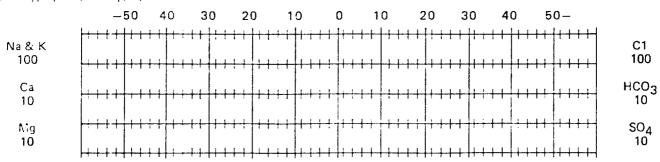
GENER	AL INFORMATION
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 4/1/87
WELL Brown #1	DATE RECEIVED 4/1/87
FIELD	SUBMITTED BY
FORMATION Wolfcamp 10346	WORKED BY Dan Johnson
COUNTY	SAMPLE DESCRIPTION:
STATE New Mexico	
DEPTH	

PHYSICAL AND CHEMIC	CAL DETERMINATIONS
SPECIFIC GRAVITY 1.050 AT 75 °F	TOTAL DISSOLVED SOLIDS PPM
pH 8.6	RESISTIVITY 0.12 at 60°F PPM
IRON none	SULFATE 2620 PPM
HYDROGEN SULFIDE strong trace	BICARBONATE 1185 PPM
HARDNESS 13050	CHLORIDE 34285 PPM
CALCIUM 4350	SODIUM CHLORIDE PPM
MAGNESIUM 530 PPM	SODIUM PPM
SODIUM & POTASSIUM 17950 PPM	POTASSIUM PPM
PHOSPHATE	

REMARKS:

0il Cravity: 37° API at 60°F

for Shiff type plot (in meq./1.)



VI.'...'--

LOCATION	
YOUR EXT. NO.	

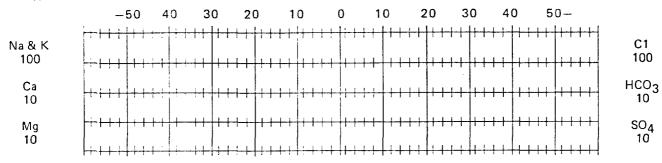
WA	TER	ANAL	YSIS

ANALYSIS NO.	

GENERAL INFORMATION		
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 6/10/87	
WELL Fresh water well at farm house 1 mile	DATE RECEIVED	
FIELD east of Brown "AEI" #1	SUBMITTED BY	
FORMATION	WORKED BY H. Lopez	
COUNTY	SAMPLE DESCRIPTION: 1 mile from Brown #1	
STATE	farmhouse 1 mile east	
DEPTH		

PHYSICAL AND CHEMI	CAL DETERMINATIONS
SPECIFIC GRAVITY 1.000 AT 72 °F	TOTAL DISSOLVED SOLIDS PPM
pH 7.5	RESISTIVITY PPM
IRON no trace	SULFATE 155 PPM
HYDROGEN SULFIDE no trace	BICARBONATE 329 PPM
HARDNESS	CHLORIDE 160 PPM
CALCIUM 128	SODIUM CHLORIDE PPM
MAGNESIUM 97 PPM	SODIUM PPM
SODIUM & POTASSIUM neg. PPM	POTASSIUM PPM
PHOSPHATE	





LOCATION	
YOUR EXT. NO.	-

#### **WATER ANALYSIS**

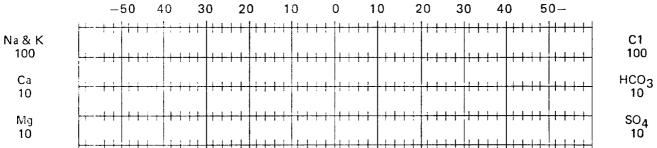
ANALYSIS NO.	

GENERAL INFORMATION		
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 6/10/87	
WELL Windmill 2/10 mile north and a little	DATE RECEIVED	
FIELD west of Brown "AEI" #1	SUBMITTED BY	
FORMATION	WORKED BY H. Lopez	
COUNTY	SAMPLE DESCRIPTION: windmill 2/10 mile	
STATE	north and little west from Brown well	
DEPTH		

	PHYSICAL	AND CHEMIC	CAL DETERMINATIONS	
SPECIFIC GRAVITY 1	.000 AT	72 °F	TOTAL DISSOLVED SOLIDS	PPM
pH 7.5			RESISTIVITY	PPM
IRON n	o trace		SULFATE 170	PPM
HYDROGEN SULFIDE	no trace		BICARBONATE 256	PPM
HARDNESS			CHLORIDE 160	PPM
CALCIUM 80			SODIUM CHLORIDE	PPM
MAGNESIUM 126		PPM	SODIUM	PPM
SODIUM & POT ASSIUM	neg	PPM	POTASSIUM	PPM
PHOSPHATE				



for Stiff type plot (in meq./1.)



ANALYST\_\_\_\_\_

LOCATION	
YOUR EXT. NO.	

ANA	_YS	151	VO.
-----	-----	-----	-----

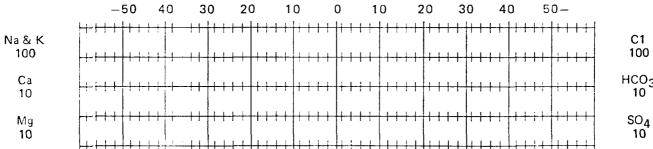
#### **WATER ANALYSIS**

GENERAL INFORMATION		
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 6/10/87	
WELL Kochia #1	DATE RECEIVED	
FIELD	SUBMITTED BY	
FORMATION	WORKED BY H. Lopez	
COUNTY	SAMPLE DESCRIPTION:	
STATE		
DEPTH		

PHYSICAL AND CHEMICAL DETERMINATIONS		
SPECIFIC GRAVITY 1.027 AT °	TOTAL DISSOLVED SOLIDS PPM	
pH 7.2	RESISTIVITY 0.18 PPM	
IRON no trace	SULFATE 1169 PPM	
HYDROGEN SULFIDE good trace	BICARBONATE 475 PPM	
HARDNESS	CHLORIDE 21,421 PPM	
CALCIUM 2142	SODIUM CHLORIDE PPM	
MAGNESIUM 166 PP	1 SODIUM PPM	
SODIUM & POTASSIUM 11,860 PP	POTASSIUM PPM	
PHOSPHATE		



for Stiff type plot (in meq./1.)



100 HCO<sub>3</sub>

ANALYST\_\_\_\_

LOCATION	
YOUR EXT. NO.	

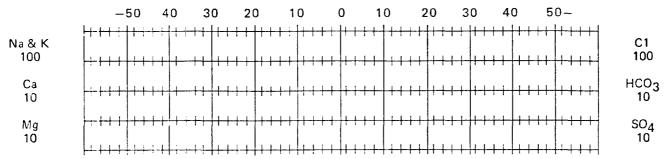
ANALYSIS NO	).

#### WATER ANALYSIS

GENERAL INFORMATION				
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 6/10/87			
WELL Shipp lease	DATE RECEIVED			
FIELD	SUBMITTED BY			
FORMATION	WORKED BY H. Lopez			
COUNTY	SAMPLE DESCRIPTION:			
STATE				
DEPTH				

PHYSICAL AND CHEMICAL DETERMINATIONS				
SPECIFIC GRAVITY	1.085 AT	°F	TOTAL DISSOLVED SOLIDS	PPM
pH 7.0			RESISTIVITY 0.088	PPM
IRON 25			SULFATE 1475	РРМ
HYDROGEN SULFIDE	no trace		BICARBONATE 618	PPM
HARDNESS	•		CHLORIDE 57,143	PPM
CALCIUM	3687		SODIUM CHLORIDE	PPM
MAGNESIUM	1187	PPM	SODIUM	PPM
SODIUM & POTASSIU	M 31,524	PPM	POTASSIUM	PPM
PHOSPHATE				





LOCATION	
YOUR EXT. N	0.

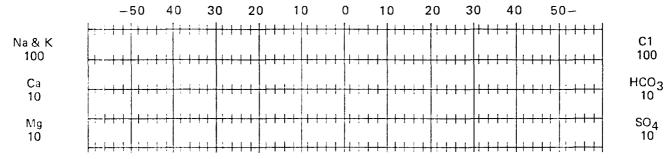
WAT	ER	ANAL	YSIS
		WIAU F	1 010

ANALYSIS NO.	
ANAL 1313 110.	

GENERAL INFORMATION		
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 6/10/87	
WELL Fiber glass tank at Brown "AEI" #1	DATE RECEIVED	
FIELD battery	SUBMITTED BY	
FORMATION	WORKED BY H. Lopez	
COUNTY	SAMPLE DESCRIPTION: fiber glass tank at	
STATE	Brown battery	
DEPTH		

PHYSICAL AND CHEMICAL DETERMINATIONS				
SPECIFIC GRAVITY 1.052 AT	°F	TOTAL DISSOLVED SOLIDS	РРМ	
pH 8.5		RESISTIVITY 0.21	PPM	
IRON none		SULFATE 3422	PPM	
HYDROGEN SLLFIDE strong trace		BICARBONATE 1125	PPM	
HARDNESS		CHLORIDE 31,179	РРМ	
CALCIUM 1711		SODIUM CHLORIDE	PPM	
MAGNESIUM 624	PPM	SODIUM	PPM	
SODIUM & POTASSIUM 19,140	PPM	POTASSIUM	PPM	
PHOSPHATE				





LOCATION	
YOUR EXT. NO.	

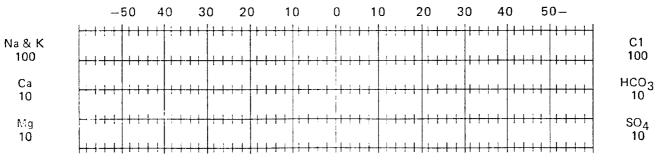
WAT	ER	ANA	LYSIS

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ANALYSIS NO.	
, ((1), (E 1 3) 3 1 1 0 .	

GENERAL INFORMATION				
OPERATOR Yates Petroleum Corp.	DATE SAMPLED 6/10/87			
WELL Hummingbird	DATE RECEIVED			
FIELD	SUBMITTED BY			
FORMATION	WORKED BY H. Lopez			
COUNTY	SAMPLE DESCRIPTION:			
STATE				
DEPTH				

	PHYSICAL AN	D CHEMIC	AL DETERMINATIONS	
SPECIFIC GRAVIT	Y 1,050 AT	°F	TOTAL DISSOLVED SOLIDS	PPM
рН	7		RESISTIVITY ,14	PPM
IRON	10 ppm		SULFATE 952	PPM
HYDROGEN SU_FI	DE no trace		BICARBONATE 709	PPM
HARDNESS			CHLORIDE 30,095	PPM
CALCIUM	1372		SODIUM CHLORIDE	PPM
MAGNESIUM	602	PPM	SODIUM	PPM
SODIUM & POTASS	SIUM 17,530	PPM	POTASSIUM	PPM
PHOSPHATE				

REMARKS:



LOCATION	
YOUR EXT. NO.	
YOUR EXT. NO.	

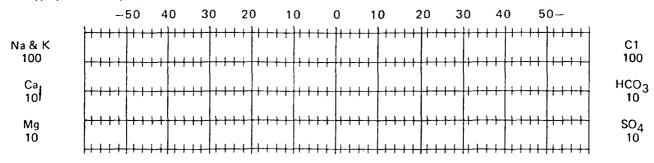
#### WATER ANALYSIS

ANAL	/SIS NO.	

AND THE TANK	GENERAL IN	IFORMATION AND AND AND AND AND AND AND AND AND AN
OPERATOF:	Yates Petroleum Corporation	DATE SAMPLED 3/31/86
WELL	Freeman "ACF" #1	DATE RECEIVED 3/31/86
FIELD	NE Lovington Penn	SUBMITTED BY Ray Stall
FORMATION	Cisco Canyon	WORKED BY Lloy Bloomer
COUNTY	Lea	SAMPLE DESCRIPTION:
STATE	New Mexico	7
DEPTH	10973-11687'	

PHYSICAL AND CHE	MIC	AL DETERMINATI	ons 🔭		14. 14. 14. 14. 14. 14. 14. 14. 14. 14.	*
SPECIFIC GRAVITY 1.070 AT 72	°F	TOTAL DISSOLV	ED SOLIDS			PPM
pH 6.5		RESISTIVITY	.1	2 at 79		PPM
IRON Ferric strong/Ferrous strong		SULFATE		1200		PPM
HYDROGEN SULFIDE None		BICARBONATE	10cc 1.0	610		PPM
HARDNESS ·1cc 7.8 78,000		CHLORIDE	1cc 2.7	54,000		PPM
CALCIUM .1cc 5.0 20,000		SODIUM CHLORI	DE	88,830		PPM
MAGNESIUM · 1cc 2.8 6,804 PR	РМ	SODIUM		l	`	PPM
SODIUM & POTASSIUM PR	РМ	POTASSIUM				PPM
PHOSPHATE:				0% I	CL	

REMARKS:



LUCATION	
YOUR EXT. NO.	

#### WATER ANALYSIS

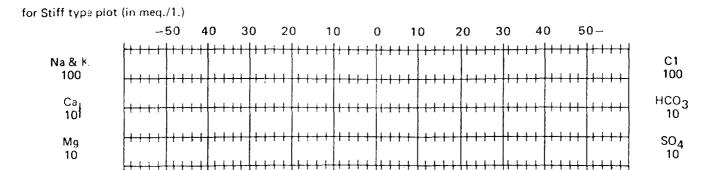
ANALYSIS	NO.

	GENERAL IN	FORMATION
OPERATOR	Yates Petroleum Corporation	DATE SAMPLED 3/31/86
WELL	Shipp "ZI" #2	DATE RECEIVED 3/31/86
FIELD	NE Lovington Penn	SUBMITTED BY Ray Stall
FORMA.TION	Strawn	WORKED BY Llocal Bloomer
COUNTY	Lea	SAMPLE DESCRIPTION:
STATE	New Mexico	*
DEPTH	11461-11475'	

HAN HALLOND	PHYSICAL A	ND CHEMIC	AL DETERMINATIONS		
00501510.00041/471/	<sub>080</sub> AT	<sub>74</sub> °F	TOTAL DISSOLVED SO		PPM
pH 7.	0		RESISTIVITY	.10 at 74°!	PPM
IRON Ferric good/Fe	rrous strong		SULFATE	2,000	PPM
HYDRCGEN SULFIDE	None		BICARBONATE 10cc	1.1 671	PPM
HARDNESS .1cc 2.3	23,000		CHLORIDE 1cc	3.3 66,000	PPM
CALCIUM ·1cc 1.9	7,600		SODIUM CHLORIDE	108,570	PPM
MAGNESIUM·1cc .4	972	PPM	SODIUM	l	PPM
SODIUM & POTASSIUM		РРМ	POTASSIUM		PPM
PHOSPHATE				0%	KCL



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YOUR EXT. NO.	

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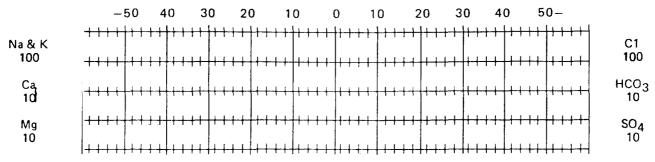
ANALYSIS NO.	
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CAN AND COM	GENERAL IN	FORMATION
OPERATOR	Yates Petroleum Corporation	DATE SAMPLED 3/31/86
WELL	Shipp "ZI" #3	DATE RECEIVED 3/31/86
FIELD	NE Lovington Penn	SUBMITTED BY Ray Stall
FORMATION	Strawn	WORKED BY Llos Bloomer
COUNTY	Lea	SAMPLE DESCRIPTION:
STATE	New Mexico	
DEPTH	1143911444'	

PHYSICAL AND CHEM	CAL DETERMINATIONS
SPECIFIC GFAVITY 1.095 AT 74 °F	TOTAL DISSOLVED SOLIDS PPM
pH 7.0	RESISTIVITY .09 at 74°F PPM
IRON Ferric faint/Ferrous good	SULFATE 2,000 PPM
HYDROGEN SULFIDE None	BICARBONATE 10cc 1.2 732 PPM
HARDNESS .1cc 2.4 24,000	CHLORIDE 3.7 74,000 PPM
CALCIUM .1cc 1.2 4,800	SODIUM CHLORIDE 121,730 PPM
MAGNESIUM·1cc 1.2 2,916 PPM	SODIUM   PPM
SODIUM & POTASSIUM PPM	POTASSIUM PPM
PHOSPHATE	0% KCL



for Stiff type plot (in meq./1.)



ANALVOT

LOCATION	
YOUR EXT. NO.	

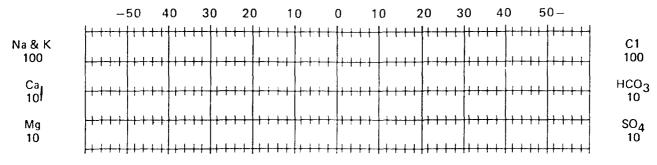
#### **WATER ANALYSIS**

ANAL	YSIS I	NO.	
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ı			
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CHAIN NO.	GENERAL IN	FORMATION
OPERATOR	Yates Petroleum Corporation	DATE SAMPLED 3/31/86
WELL	Hummingbird "ADM" #1	DATE RECEIVED 3/31/86
FIELD	NE Lovington Penn	SUBMITTED BY Ray Stall
FORMATICN	Strawn	WORKED BY Lower Bloomer
COUNTY	Lea	SAMPLE DESCRIPTION:
STATE	New Mexico	
DEPTH	11524-11566'	

Company Company	PHYSICAL	AND CHEMIC	CAL DETERMINATIONS		
SPECIFIC GRAVITY	1.050 AT	74 °F	TOTAL DISSOLVED SOLIDS		PPM
pH	7.0		RESISTIVITY	.17 at 79°F	PPM
IRON Fearic faint/	Ferrous faint		SULFATE	1,500	PPM
HYDROGEN SULFIDE	None		BICARBONATE 10cc 1.2	732	PPM
HARDNESS .1cc 1.7	17,000		CHLORIDE 1.9	38,000	PPM
CALCIUM ·1cc ·5	2,000		SODIUM CHLORIDE	62,510	PPM
MAGNESIUM·lcc 1.2	2,916	PPM	SODIUM		PPM
SODIUM & POTASSIUM		PPM	POTASSIUM		PPM
PHOSPHATIE				0%	KCL





LOCATION	
<u> </u>	
YOUR EXT. NO.	

WATER	<b>ANAL</b>	YSIS
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ANA	LYSIS	NO.	

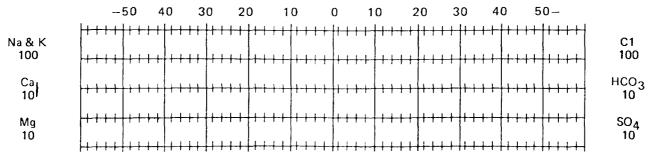
45	GENERAL IN	FORMATION
OPERATOR	Yates Petroleum Corporation	DATE SAMPLED 3/31/86
WELL	Kochia "AAM" #1	DATE RECEIVED 3/31/86
FIELD	Dean Devonian	SUBMITTED BY Ray Stall
FORMATION	Devonian	WORKED BY Lloy Bloomer
COUNTY	Lea	SAMPLE DESCRIPTION:
STATE	New Mexico	
DEPTH	13672-13676'	

CONTRACTOR SCI	PHYSICAL A	AND CHEMIC	CAL DETERMINAT	rions 🚁		
SPECIFIC GRAVITY	1.030 AT	74 °F	TOTAL DISSOL	VED SOLIDS		PPM
рН	7.0		RESISTIVITY		.20 at 74°F	PPM
IRON Ferric no trad	ce/Ferrous no	trace	SULFATE		2,000	PPM
HYDROGEN SULFIDE	Good trace		BICARBONATE	10cc 1.2	732	PPM
HARDNESS .1cc 1.4	14,000		CHLORIDE	lcc 1.3	26,000	PPM
CALCIUM .1cc 1.0	4,000		SODIUM CHLOF	RIDE	42,770	PPM
MAGNESIUM .1cc .4	972	PPM	SODIUM		·	PPM
SODIUM & FOTASSIUM		РРМ	POTASSIUM			PPM
PHOSPHATE					0% K	CL

REMARKS:

F0011 253 1331 1 1 1 1

for Stiff type plot (in meq./1.)

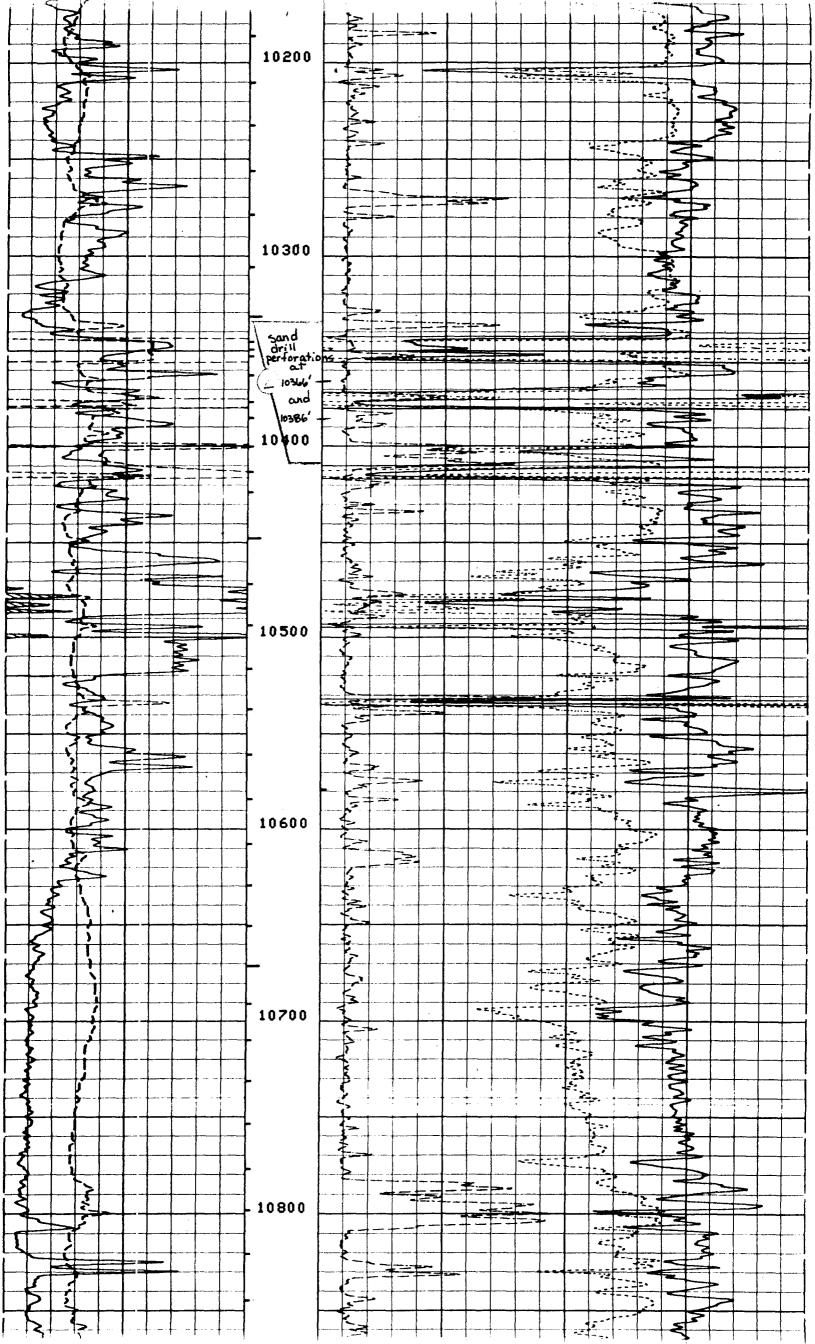


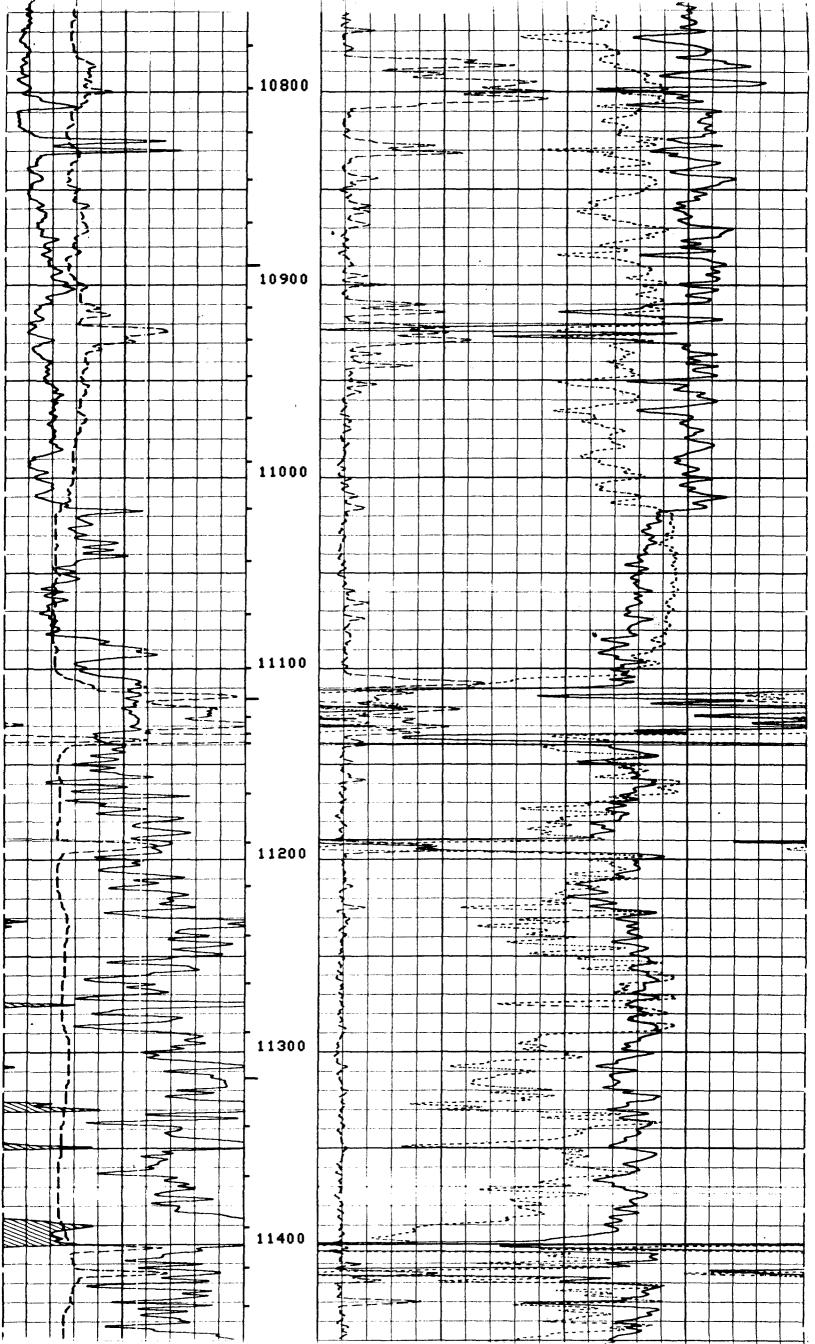
ANALVET



# SIMULTANEOUS PENATED NEUTRON LUIU DENSILY

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	k ∰ i s <sub>ee</sub> t i Hely See		155 to 189 to 1996 to 1996
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Per line 1997 - Mozes Den Line	<b>8.</b> (α)	1 15 - 15 - 4 1項 9 54 n <b>inations</b> Sentational Temperature Temperature 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
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20. 19.4 31. 19.4	्र ? 3.7 इ.फ	公司 衛門 排煙(2-1) 門間(4-2-1)	
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YF	/ 8. - 요구 : N도 / Pos 8 - 그 : 1		
pt to the solution of the solu	. Mr. 4 Telé . 3 - 6 Felé . 7 2		A
R + ACC Str S - R + Bh	Ž		
Concrete Con	15+ 1, 25 +2, 273		
Equip (Labor) Reconstable NYThermodia	3 - 5 W		
<b>建筑建设</b> 。	《 多· <b>佛教传</b> 》(3)( <b>教教以</b> 者等地議論論())()()	マールジー ナーモル 小針に 開発機 素化機料機能機能機能機能を発売を示した。 新	

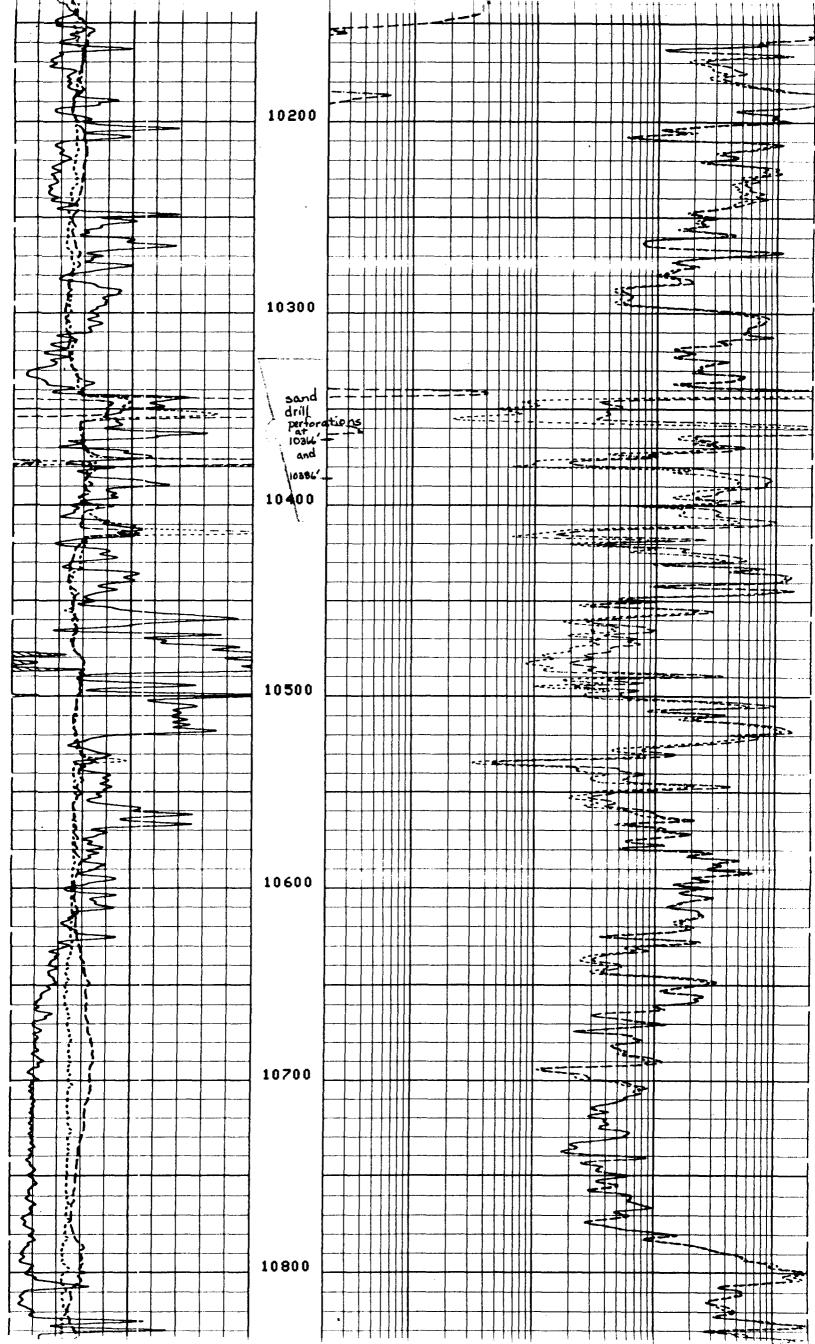


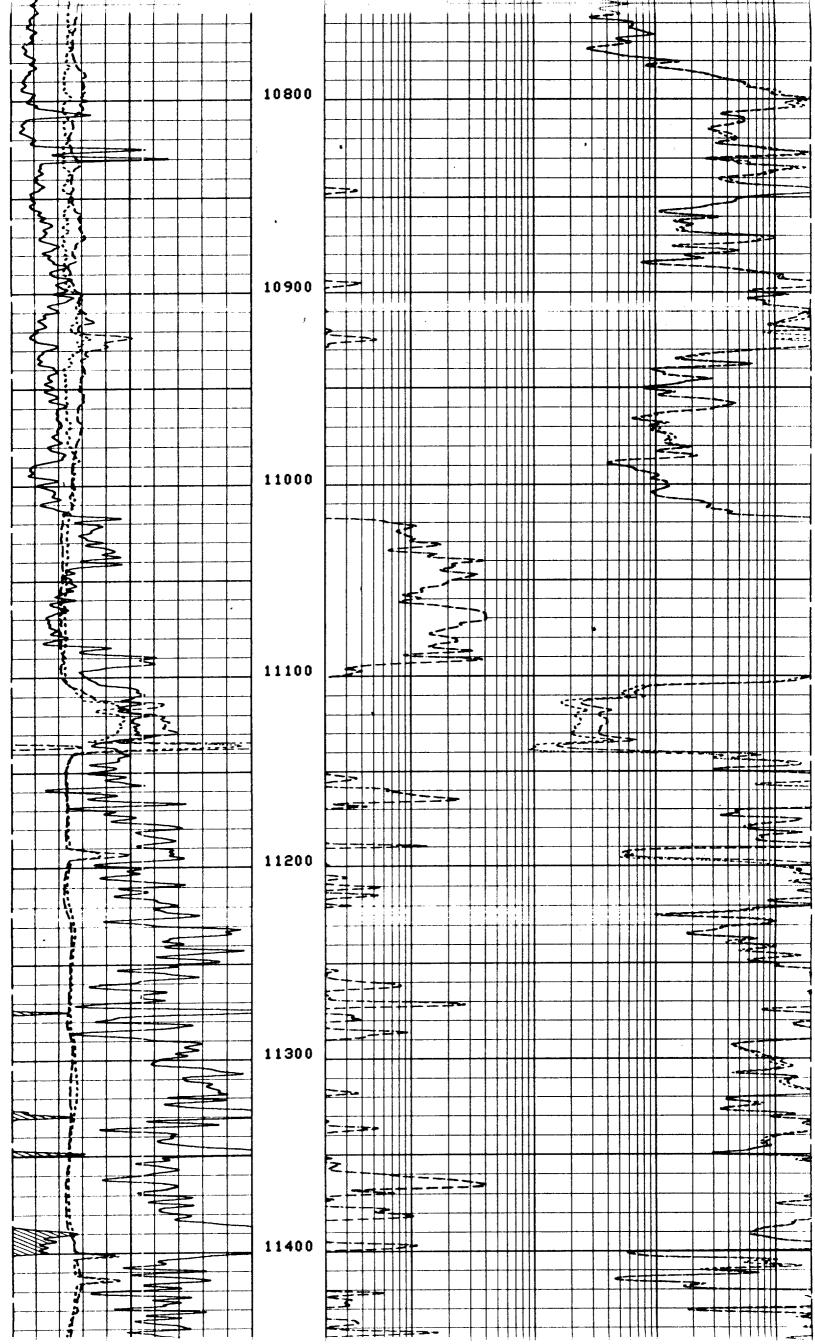


Schlumberger

## DUAL LATEROLOG MICRO-SFL

	COMPANY	YATES PETROLE	EUM CORPOI	RATION
COUNTY LEA N.M.  FIELD LOVINGTON NE  LOCATION BROWN "AE1"  WELL BROWN "AE1"  COMPANY YATES PETR, CORP	FIELD L	SROWN "AE1" NOVINGTON NE  EA S  E 527' FEL  TWP  16-S		MEXICO Other Services: CNL/LDT BHC
Permanent Datum: G.L.; Elev.: 3770 Log Measured From K.B. 20Ft. Above Perm. Datum Drilling Measured From K.B.  G.L. 3770  Elev.: K.B. 3790 D.F. 3789 G.L. 3770				
Date	3-1-87	•		
Run No.	ONE			
Depth-Driller	12192			<b>u</b>
Depth—Logger (Schl.)	12187			
Btm. Log Interval	12165	ŊΑ	LOSICAL DE	
Top Log Interval	4302	***	LOGICAL (a)	9/
Casing—Driller	8 5/8@ 4300	@	@'-	@
Casing—Logger	4302			
Bit Size	7 7/8			
Type Fluid in Hole	CUT BRINE/PO	LYMER/LCM		
Dens. Visc.	8 . 8 38		THE R	, »
pH Fluid Loss	9.5 NC ml	ml <sub>o</sub>	iden	ml ml
Source of Sample	CIRCULATED		Ж	
Rm @ Meas. Temp.	.298 @ 64 °F	(O) TIF	@	°F @ °F
Rmf @ Meas. Temp	.275 @ 72 °F	°F	@	°F @ °F
Rmc @ Meas. Temp. @ °F		@ °F	<u>@</u>	°F @ °F
Source: Rmf   Rmc   MFAS   Rm @ BHT   1 % 1 @154 °F		@ °F		°F @ °F
HCirculation Stanna	.131 @154 °F	@ °F	@	°F @ °F
E Logger on Bottom	1045 2-28			
Circulation Stopped 2030 2-28   Logger on Bottom   1245 3-1   Max. Rec. Temp.   154   °F		°F		°F °F
<u> </u>		· · · · · · · · · · · · · · · · · · ·	<del></del>	<del>-                                     </del>
Equip.   Location   8502   RSWL   Recorded By   MILLER				
Witnessed By REMPE				
	112111	<u> </u>	· · · · · · · · · · · · · · · · · · ·	





#### LEGAL NOTICE

Yates Petroleum Corporation proposes to convert the Brown "AEI" No. 1 to a salt water disposal well. This well is located 1910 feet FNL and 527 feet FEL, Sec.26,T.16S.,R.37E., N.M.P.M., Lea County, New Mexico. The purpose of the well will be to dispose of produced water from nearby wells. This water will consist of Strawn and Devonian water and will be disposed of into the Wolfcamp interval 10366 feet to 11068 feet. Maximum injection rate will be 5000 BPD, and maximum pressure will be 2073 pounds per square inch.

Interested parties may contact:

Yates Petroleum Corporation 105 South 4th Street Artesia, New Mexico 88210 Attention: Albert R. Stall (505)748-1471

Objections or requests for hearing with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 must be filed within 15 days of this notice.

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PS Form 3811, July 1983	SENDER: Complete items 1, 2, 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 service(s) requested.  1. A Show to whom, date and address of delivery.  2. Restricted Delivery.		
	3. Article Addressed to: Kathleen Cone P.O. Drawer 1509 Lovington, NM 8	8260	
	4. Type of Service:	Article Number	
	Registered ☐ Insured     Certified ☐ COD     Express Mail	P241348613	
	Always obtain signature of ac DATE DELIVERED.	dressee <u>or</u> agent and	
00	5. Signature - Addressee X		
MES	6. Signature – Agent		
TIC	X		
RETL	7. Date of Delivery		
DOMESTIC RETURN RECEIP	8. Addressee's Address (ONL Brown AEI #1 SWD		

PS Form 3811, July 1983	SENDER: Complete items 1, 2, 3 and 4.  Put your address in the "RETURN TO" space on the reverse side. Fa lure 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. Constit postmaster for fees and check box(es) for service(s) requested.  1. Show to whom, date and address of delivery.  2. Restricted Delivery.		
ı	3. Article Addressed to:		
	Belnorth Petro.	Corp.	
ı	One Petroleum Ce		
i		rth "A", Suite 201	
	Midland, TX 797	05	
	4. Type of Service:	Article Number	
		P241348616	
	Always obtain signature of ac DATE DELIVERED.	idressee <u>or</u> agent and	
힑	5. Signature - Addressee	-	
DOMESTIC	X		
Ϋ́	6. Signature – Agent		
	X	·	
RETURN	7. Date of Delivery		
퀽	8. Addressee's Address (ONL	Y if requested and fee paid)	
RECEIPT	Brown AE[ #1 SWD		

PS Form 3811, July 1983	SENDER: Complete items 1, 2, 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 service(s) requested.  1. A Show to whom, date and address of delivery.  2. Restricted Delivery.		
	3. Article Addressed to:  Mobil Prod. TX & NM, Inc. P.O. Box 633		
	Midland, TX 79702  4. Type of Service: Article Number  Régistered Insured P241348617  Certified COD		
D	Always obtain signature of addressee or agent and DATE DELIVERED.  5. Signature — Addressee		
MESTIC RE	X  6. Signature Agent X  7. Date of Delivery		
DOMESTIC RETURN RECEIP	8. Addressee's Address (ONLY if requested and fee paid)  Brown AEI #1 SWD		

SENDER: Complete items 1, 2, 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. <u>The return receipt fee will provide</u> geting and 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 service(s) requested.	dry.	Jr. 7 79702	Article Number sured P241348615	e of addressee <u>or</u> agent and		Addressee's Address (ONLY if requested and fee paid)  rown AEI #1 SWD
SENDER: Complete items 1, 2, 3 and 4. Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from the reverse side. Failure to do this will prevent the card from the reme of the person delivered to and the date delivery. For additional fees the following services are available. Consult postmaster for fees and check box (e.g. service(s) requested.		H.L. Brown, Jr. P.O. Box 2237 Midland, TX 7970	4. Type of Service:	Always obtain signature of addressee or agent and DATE DELIVERED.  5. Signature – Addressee	6. Signature – Agent X 7. Date of Delivery	8. Addressee's Address (ONLY Brown AEI #1 SWD

PS Form 3811, July 1983	SENDER: Complete items 1, 2, 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 service(s) requested.  1. X Show to whom, date and address of delivery.  2. Restricted Delivery.		
,	3. Article Addressed to:		
	Pennzoil Company P.O. Box 2967 Houston, TX 77252-2967		
	4. Type of Service:	Article Number	
	Ñ Áegistered ☐ Insured     ☐ Certified ☐ COD     ☐ Express Mail	P241348619	
	Always obtain signature of ac DATE DELIVERED.	dressee <u>or</u> agent and	
DO	5. Signature – Addressee		
Ž	X Asset		
STIC	6. Signature – Agent X		
RETU	7. Date of Delivery		
X Z	8. Addressee's Address (ONLY if requested and fee paid)		
DOMESTIC RETURN RECEIPT	Brown AEI #1 SWD		

PS Form 3811, July 1983

DOMESTIC RETURN RECEIPT

PS	SENDER: Complete items 1, 2, 3 and 4.				
PS Form 3811, July 1983	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 service(s) requested.				
1983	XXShow to whom, date and address of delivery.				
	2. Restricted Delivery.				
	3. Article Addressed to:				
i	New Mexico Oil C P.O. Drawer 1980 Hobbs, NM 88240	onservation Divisi	on		
	4. Type of Service:	Article Number			
	☐ Registered ☐ Insured☐ Certified☐ COD☐ Express Mail	P241348622			
	Always obtain signature of ac DATE DELIVERED.	dressee <u>or</u> agent and			
D	5. Signature - Addressee				
ME:	X 6. Signature - Agent				
STIC	X X				
RETU	7. Date of Delivery				
DOMESTIC RETURN RECEIP	8. Addressee's Address (ONLY if requested and fee paid)				
CEIPT	Brown AEI #1 SWD				

**H**HHHHHH



#### STATE OF NEW MEXICO

#### ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION HOBBS DISTRICT OFFICE

GARREY CARRUTHERS
SOVERNOR

/ed

6-23-81

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

OIL CONSERVATION DIVISION P. O. BOX 2088 SANTA FE, NEW MEXICO 87501	
RE: Proposed:  MC DHC NSL NSP SWD WFX PMX	
Gentlemen:	
I have examined the applica yates let. Corp.  Operator	tion for the:  Brown (IEI #1-H 26-16-37  Lease & Well No. Unit S-T-R
and my recommendations are $OK \int \int$ .	as follows:
Yours very truly,  Jerry Sexton Supervisor, District 1	

# LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE