STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 SOUTH PACHECO
SANTA FE, NEW MEXICO 87505

FORM C- 108
Revised 4-1-98

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance X Disposal _____Storage
Application qualifies for administrative approval? X Yes _____No

II. OPERATOR: **Mack Energy Corporation**

ADDRESS: **P.O. Box 960, Artesia, NM 88211-0960**

CONTACTPARTY: **Jerry W. Sherrell** PHONE: **(505)748-1288**

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 X 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 geologic data on the injection zone including appropriate lithologic detail, geologic 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 sources 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 freshwater from two or more freshwater 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 sources 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: **Mack C. Chase** TITLE: **President**

SIGNATURE: Mack C. Chase DATE: **1/26/2004**

If the information required under Sections VI, VIII, X, and XI above has been prev
Please show the date and circumstances of the earlier submittal: _____

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

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Case No. 13220 Exhibit No. 6
Submitted by:
MACK ENERGY CORPORATION
Hearing Date: February 19, 2004

1.

WELL DATA

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.

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 the 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, 2040 South Pacheco, Santa Fe, New Mexico 87505, 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.

Side I

INJECTION WELL DATA SHEET

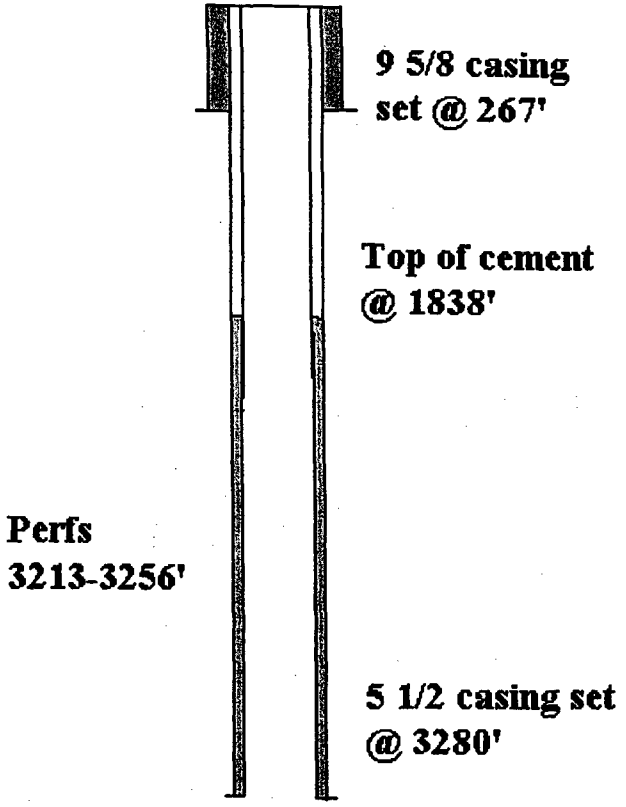
OPERATOR: **Mack Energy Corporation**

WELL NAME & NUMBER: **Federal 18 #2**

WELL LOCATION: **1980 FNL & 2039 FWL** | **F** | **18** | **19S** | **33E**

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: **N/A** Casing Size: **9 5/8**

Cemented with: **250** sx. or _____ ft

Top of Cement: **Surface** Method Determined: **Circulated**

Intermediate Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. or _____ ft

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: **7 7/8** Casing Size: **5 1/2**

Cemented with: **400** sx. or _____ ft

Top of Cement: **1838'** Method Determined: **CBL**

Total Depth: **3266**

Injection Interval

3213 feet to **3256' Perforated**

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: 2 7/8" Lining Material: Plastic Coated

Type of Packer: Halliburton Trump Packer

Packer Setting Depth: 3113'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

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

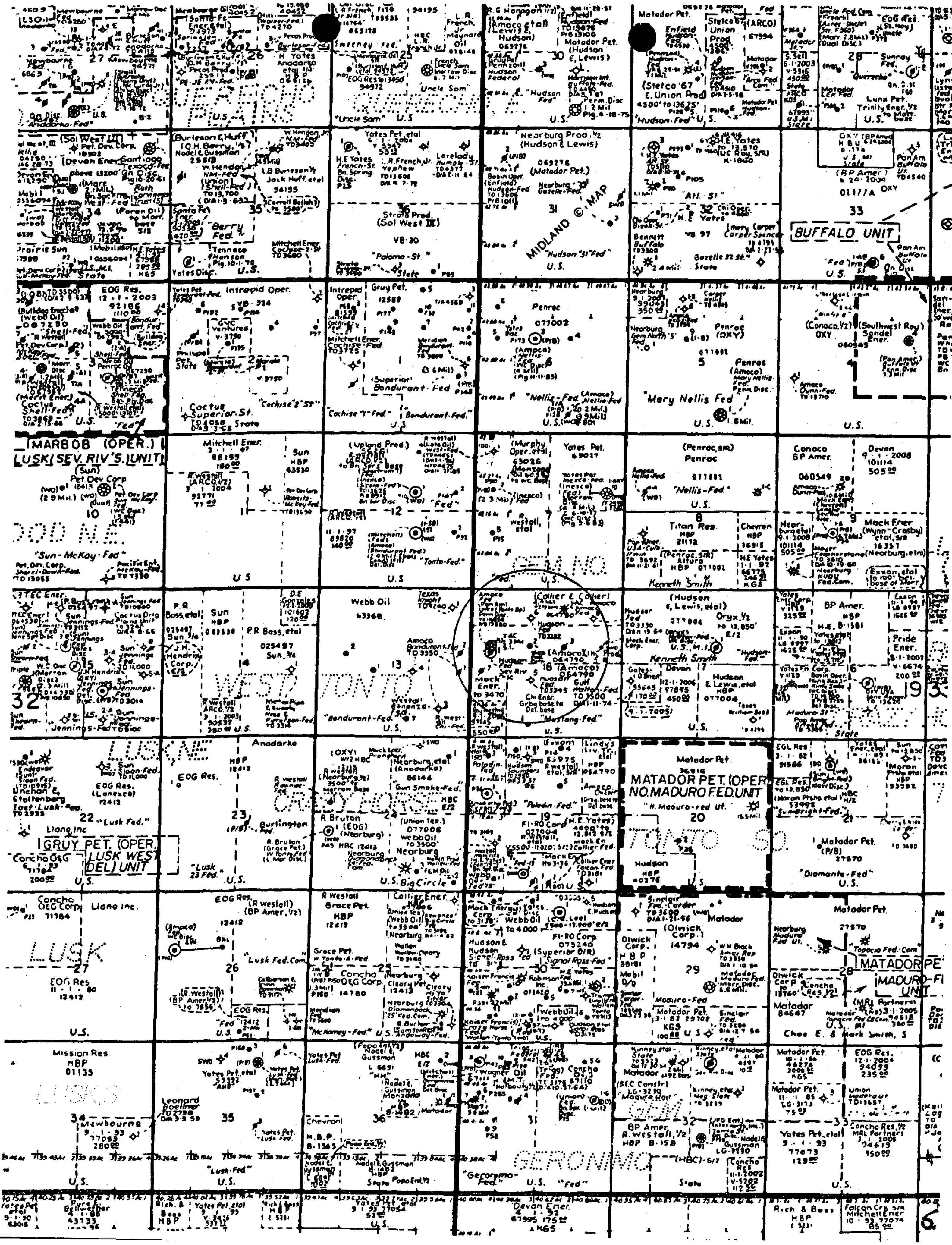
   If no, for what purpose was the well originally drilled? Yates and Seven Rivers Test

2. Name of the Injection Formation: Yates/Seven Rivers

3. Name of Field or Pool (if applicable): Tonto Yates Seven Rivers West

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. 3213-3214', 3231-3233', 3247-3256'

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: underlying Queen, overlying Tansil


MARBOB (OPER.)
LUSK (SEV. RIV'S.) UNIT
BUFFALO UNIT
MIDLAND MAP
MATADOR PET. (OPER.)
NO. MADURO FED. UNIT
GRUY PET. (OPER.)
LUSK WEST (DEL) UNIT
MATADOR PE
MADURO-FI UNIT
Intrepid Oper.
Mitchell Ener.
Penroc
Mary Nellis Fed
Webb Oil
Matador Pet.
Mission Res.
Mewbourne
Devon Ener.
"Uncle Sam"
"Hudson-Fed"
"Nellis-Fed."
"Sun-McKay-Fed"
"Bondurant-Fed."
"Mustang-Fed."
"Lusk Fed."
"Paloma-St."
"Diamante-Fed"
"McKamey-Fed."
"Geronimo-Fed."
Kenneth Smith
Chas. E. & Mark Smith
U.S.
State

VI. TABULATION OF DATA OF AREA OF REVIEW

See Attached

AREA OF REVIEW WELL DATA

LEASE/API	WELL#	LOCATION	TD (PBTD)	TYPE & DATE DRILLED	HOLE SIZE	CASING SIZE & WEIGHT	SETTING DEPTH	SX CMT	TOC	PERFS
Federal 18 30-025-01669	2	1980' FNL 2039' FWL 18-19S-33E	3280' 3277'	Oil 5/28/1960		9 5/8 5 1/2	267' 3280'	250 400	circ 1838'	3213-3256
Federal 18 30-025-01671	4	1980'FNL 660'FEL 18-19S-33E	3450'	Oil 6/23/1960		8 5/8 5 1/2	267' 3349'	150 40	19' 3130'	3282-3310
Bondurant Federal 30-025-00895	1	2310' FSL 330' FEL 13-19S-33E	3272' 0'	Oil 8/31/1960		8 5/8 4 1/2	315' 3272'	175 700	circ N/A	Plugged
Bondurant Federal 30-025-00894	2	2310' FNL 330' FEL 13-19S-33E	3305' 0'	Oil 12/24/1960		8 5/8 4 1/2	290' 3305'	200 850		Plugged
Mustang Federal 30-025-33289	1	467' FSL 1980' FWL 18-19S-33E	7775' 0'	Oil 2/24/96	17 1/2 11 7 7/8	13 3/8, 48# 8 5/8, 24 & 32# 4 1/2, 11.6#	508' 3065' 7775'		circ circ 4400'	Plugged
Federal 18 30-025-01673	6	990' FNL 2045' FWL 18-19S-33E	3332' 0'	Oil 7/14/1960		8 5/8	255	150		Plugged
Federal 18 30-025-01674	7	2310' FSL 330' FWL 18-19S-33E	3290'	Oil 10/7/1960		8 5/8 5 1/2	266' 3290'	150 400		Plugged
Federal 18 30-025-20699	8	990' FNL 990' FEL 18-19S-33E	3330'	Dry 11/11/1964		8 5/8, 24#	273'	200		Plugged
Federal AC 30-025-01675	2	1980' FNL 690' FWL 18-19S-33E	14945' 0'	Gas 10/13/1959		13 3/8 9 5/8 7	330' 4904' 14625'	circ 300 800		Plugged
Federal 18 30-025-01668	1	2180' FNL 690' FWL 18-19S-33E	3280' 0'	Oil 4/13/1960		8 5/8 5 1/2	1078' 3280'	50 100		Plugged
Federal 18 30-025-01670	3	1980' FNL 1980' FEL 18-19S-33E	3282' 0'	Oil 6/12/1960		8 5/8 5 1/2	257' 3283'	250 400		Plugged
Federal 18 30-025-01672	5	1980' FSL 2039' FWL 18-19S-33E	3345'	Oil 7/4/1960		8 5/8	250'	150		Plugged
Federal AC 30-025-26469	1	660' FNL 1980' FEL 18-19S-33E	13670' 0'	Gas 9/23/1979	17 1/2 12 1/4 8 3/4	13 3/8 9 5/8 5 1/2	455' 5002' 13670'	450 2550 2625	circ circ 280'	Plugged

VII. DATA SHEET: PROPOSED OPERATIONS

1. Proposed average and maximum daily rate and volume of fluids to be injected;
   Respectively, 2000 BWPD and 4000 BWPD

2. The system is closed or open;
   Closed

3. Proposed average and maximum injection pressure;
   Vaccum-100#

3. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than re-injected produced water;
   We will be re-injecting produced water

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;
   N/A

VIII. GEOLOGICAL DATA

Lithologic Detail
Dolomite

Geological Name
Yates, Seven Rivers

Thickness
44'

Depth
3213-3256'

IX. PROPOSED STIMULATION PROGRAM

To be treated with 1000 gallons 15% acid

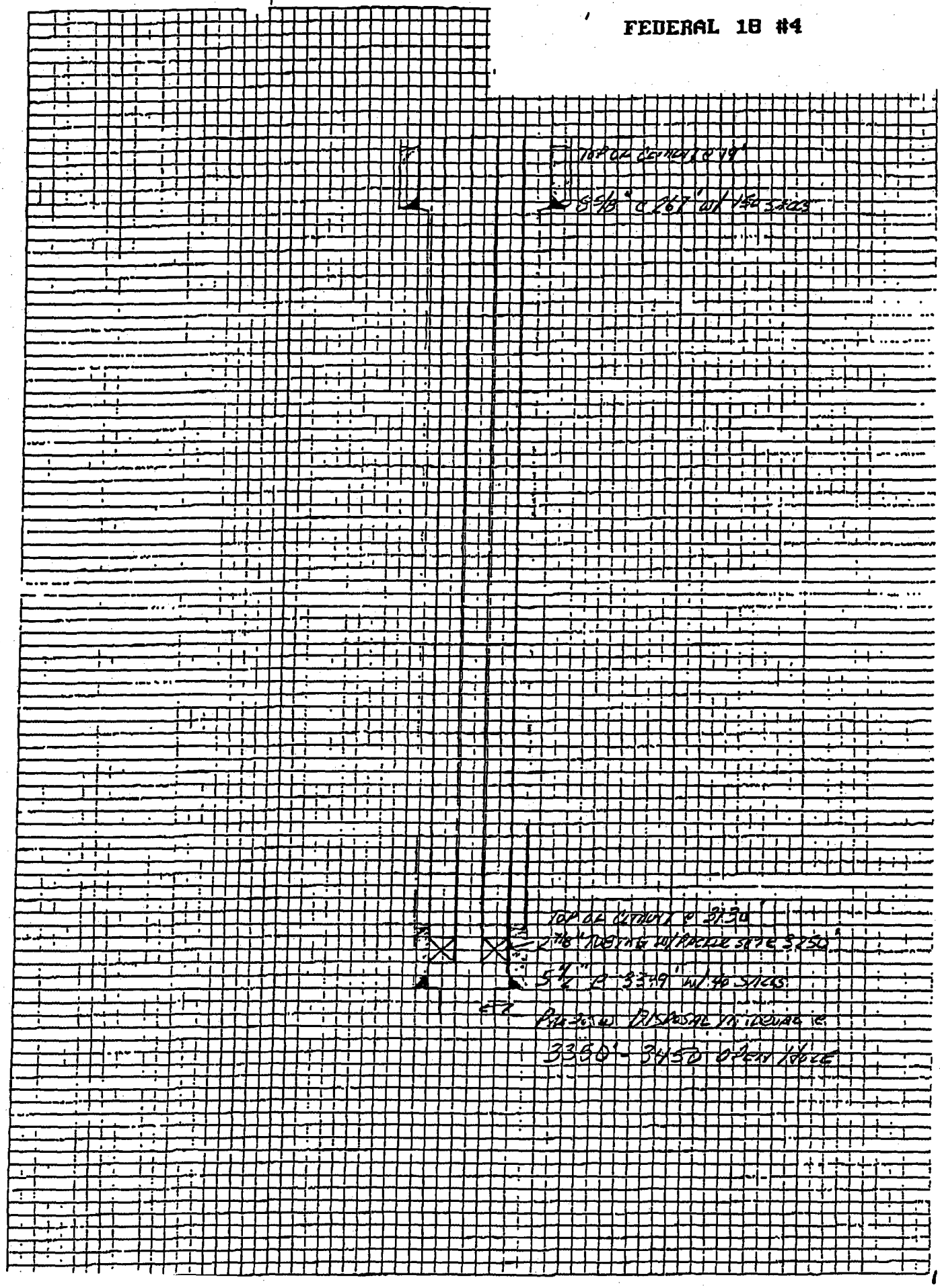
X. LOGS AND TEST DATA

Well data has been filed with the OCD

XI. ANALYSIS OF FRESHWATER WELLS

Analysis attached

FEDERAL 18 #4



46 0700

KE 10 X 10 TO THE INCH

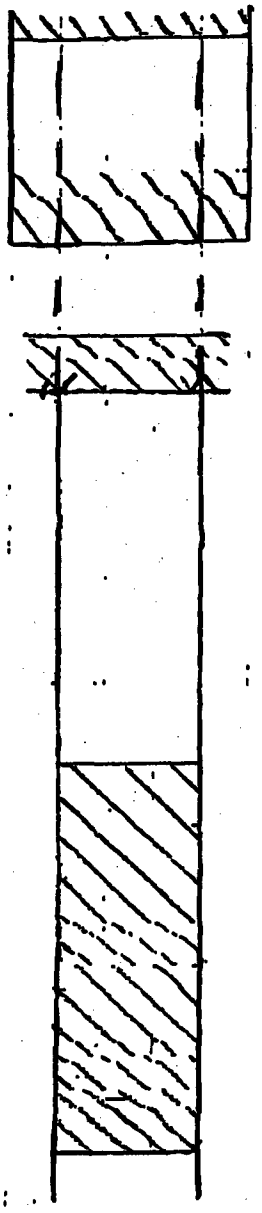
13.

Bonduarant Federal #1

10 sx Surface plug

25 sx plug @ 315'

25 sx plug @ 710'



8 5/8" Casing set @ 315'

Full 710' 4½" Casing

75 sx plug from 3248-2158'

Perfs from 3256-3270

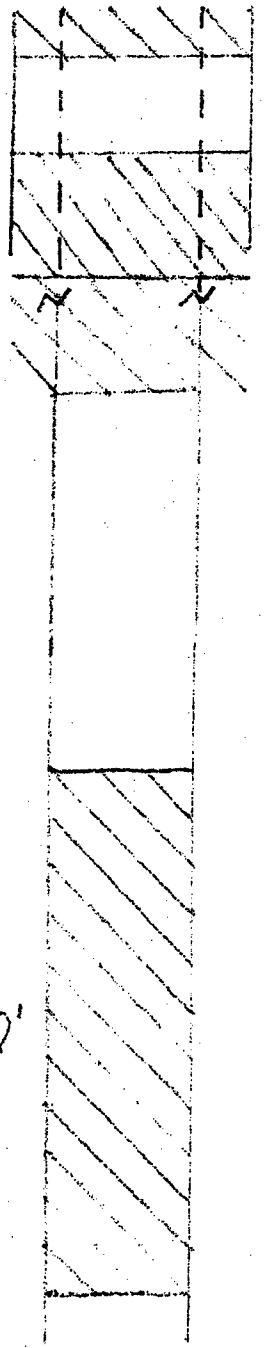
4½" Casing set @ 3272'

Bondurant Federal #2

10 sx surface plug

25 sx plug @ 290

25 sx plug @ 345'



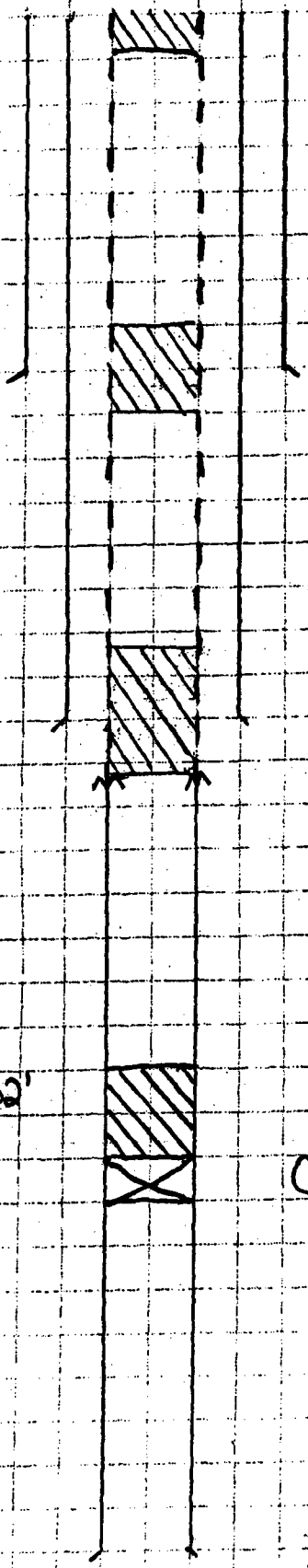
8 5/8" Casing set @ 290'

Pull 345' 4½" Casing

50 sx plug from 3266-2542'

4½" Casing set @ 3305'

Mustang Federal #1



10 sx 30-0'

40 sx 564-410'

120 sx 3195-2913'

15 sx cement 5824-5602'

13 3/8 casing set @ 508'
Top of cement @ surface

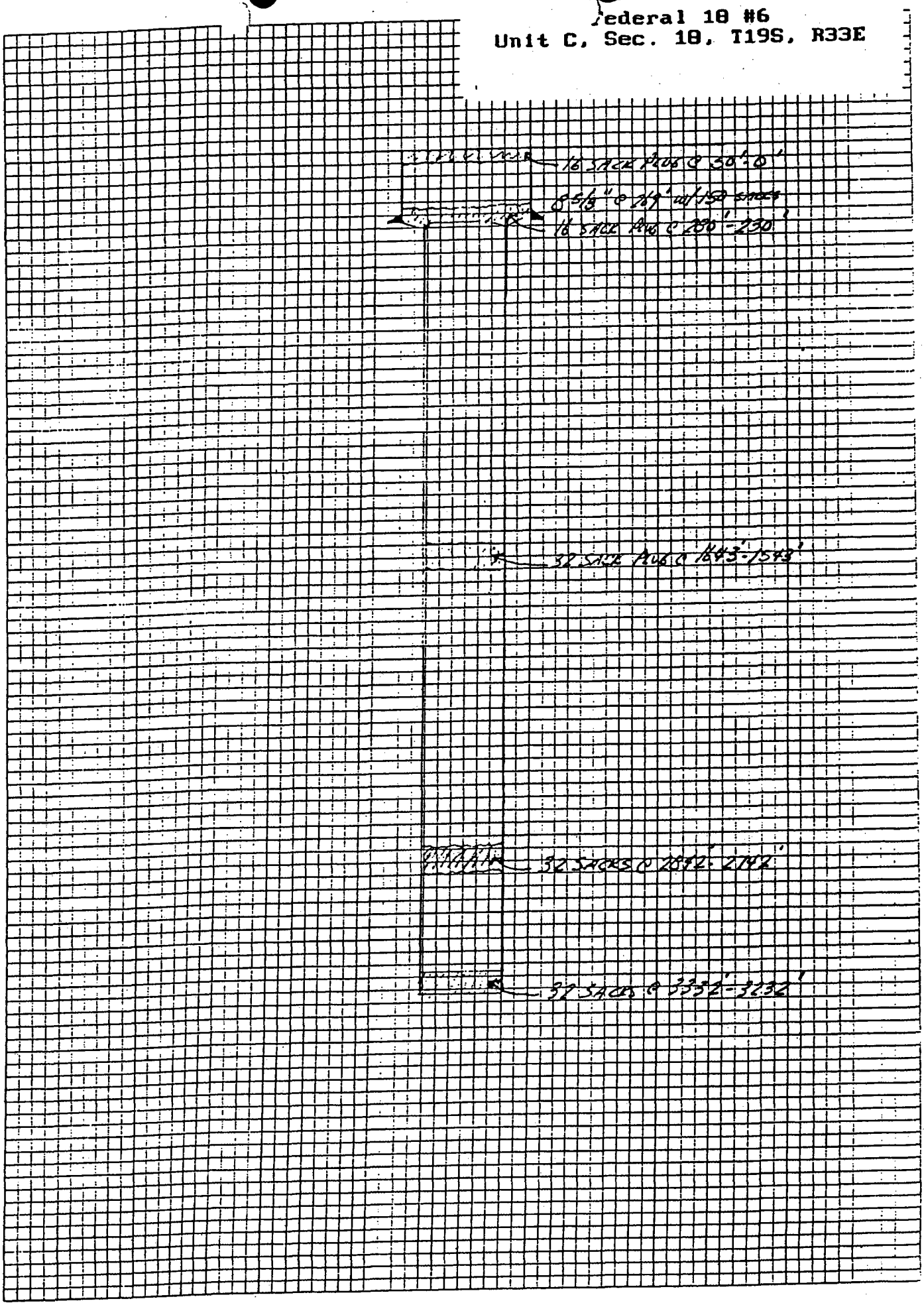
Pulled 3132' 4½ casing

8 5/8 casing set @ 3065'
Top of cement @ surface

CIBP @ 5824'

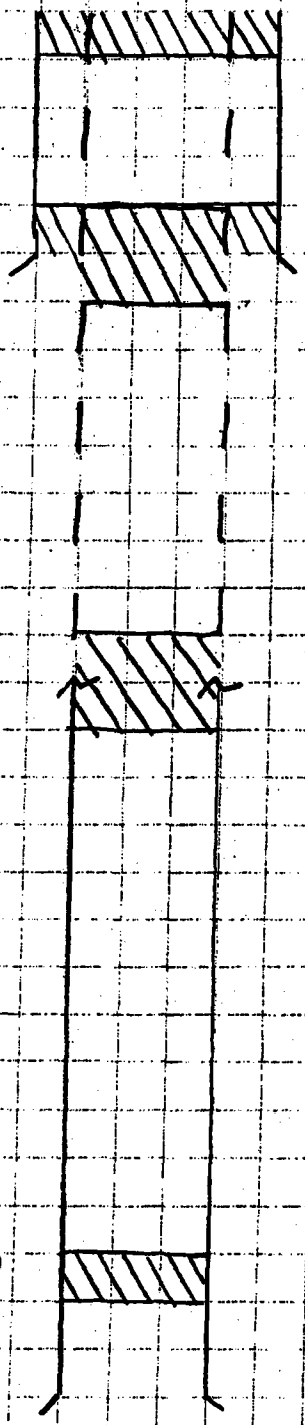
4½ casing set @ 7775'
Top of cement @ 4400'

Federal 18 #6
Unit C, Sec. 18, T19S, R33E



Federal 18 # 7

10sx from 15-0'



8 5/8 casing set @ 266'

35sx from 316-216'

Pulled 1407' 5½ casing

35sx cement from 1464-1364'

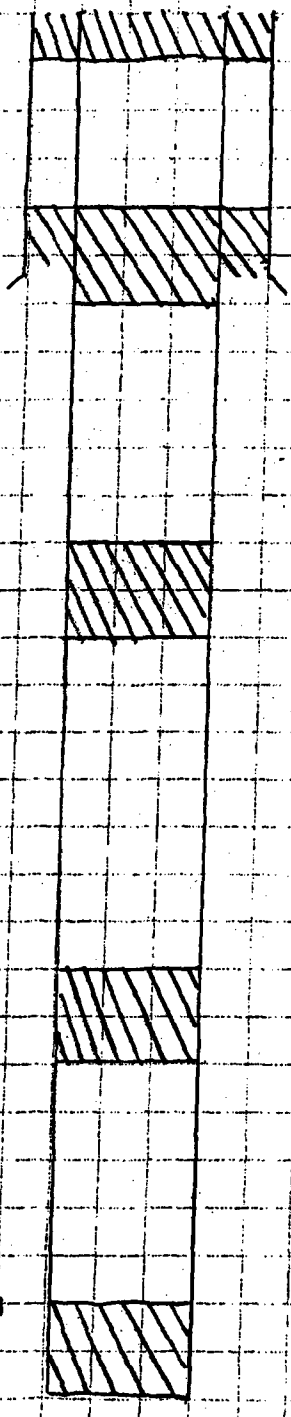
3 sx cement from 3110-3085'

5½ casing set @ 3290'

Federal 18 #8

10' surface plug

30 sx from 323-223'



8 5/8 casing set @ 273'

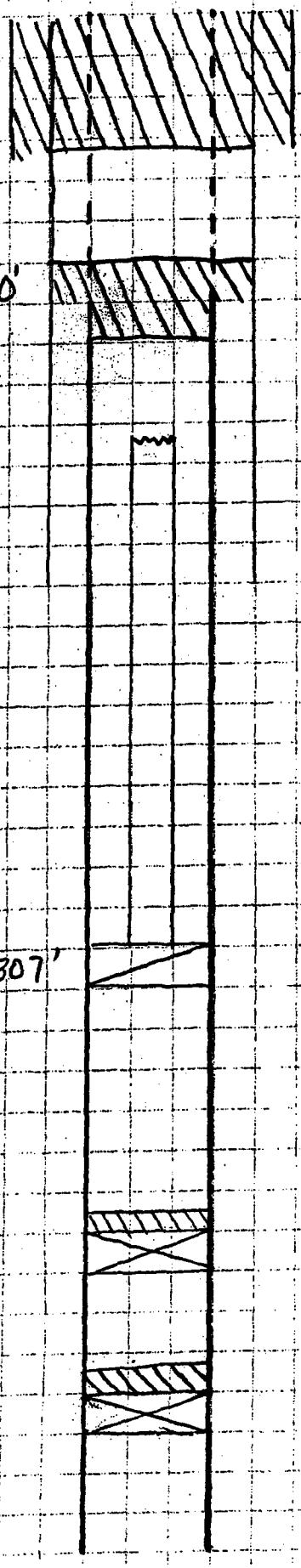
30 sx from 1530-1430'

30 sx from 2947-2847'

30 sx from 3330-3230'

Drilled to 3330' and P+A

Federal AC #2



Perforated 9 5/8 casing @ 330' pumped 225 sx to surface

Spot 100sx from 2290-2030'

Cement retainer set @ 10,307' pumped 850 sx cement

CIBP @ 12,015' w/30' cement cap

CIBP @ 12,889' w/30' cement cap

13 3/8 casing set @ 330'

Cut 7" casing @ 2250'

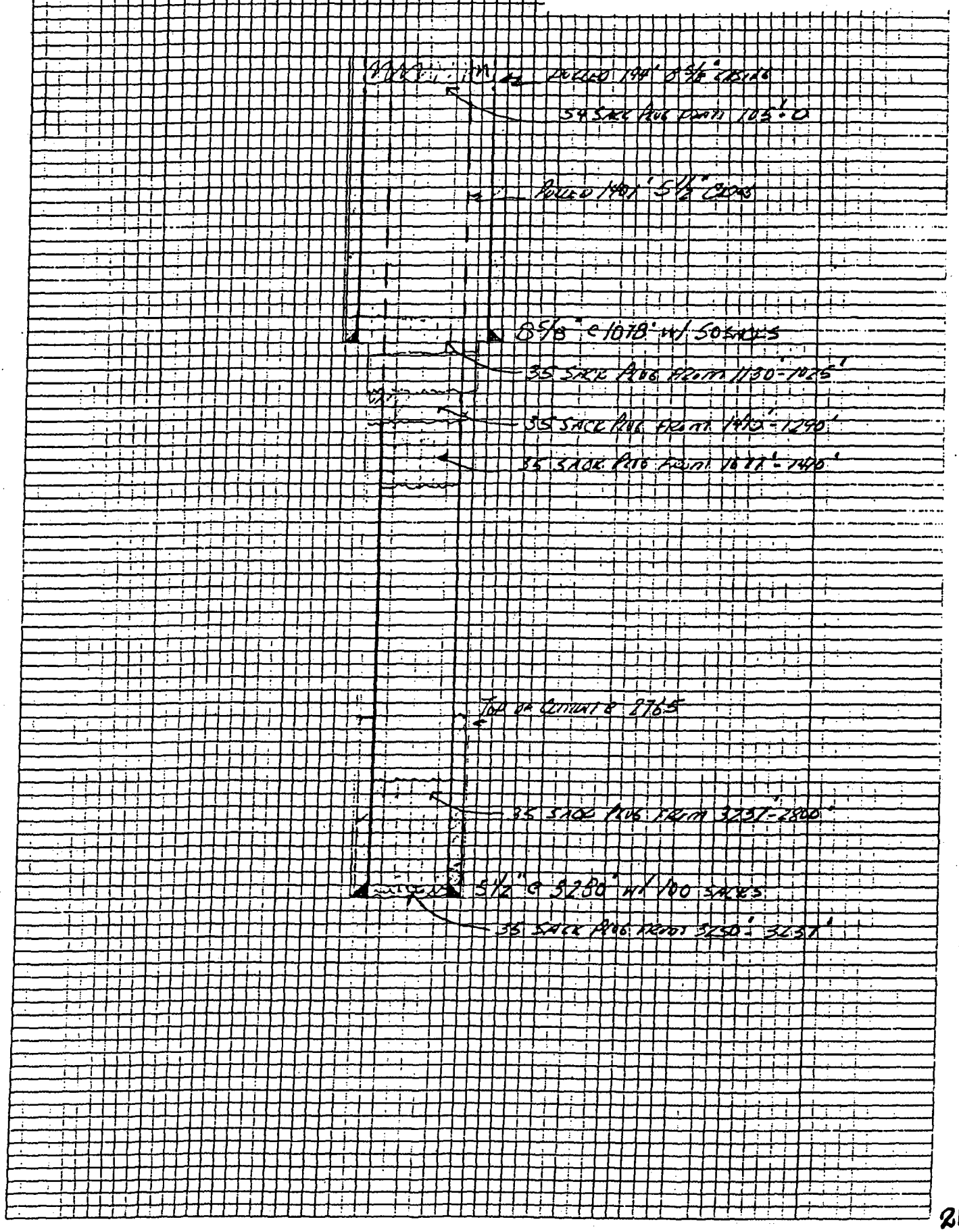
Cut 2 3/8 tubing @ 3866'

9 5/8 casing set @ 4904'

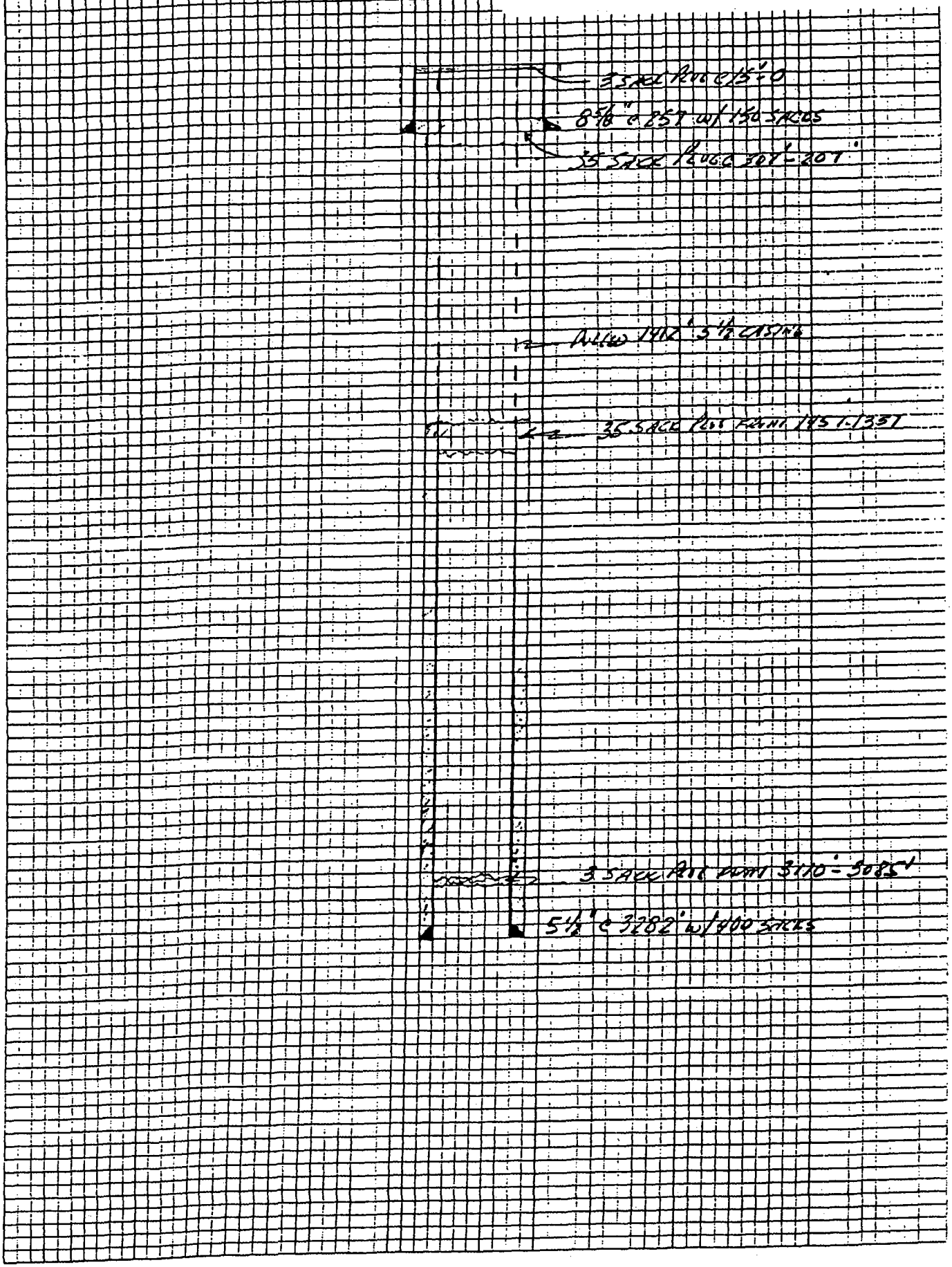
2 3/8 tubing stuck in retainer @ 10,307'

7" casing set @ 14,625'
TD @ 14,945'

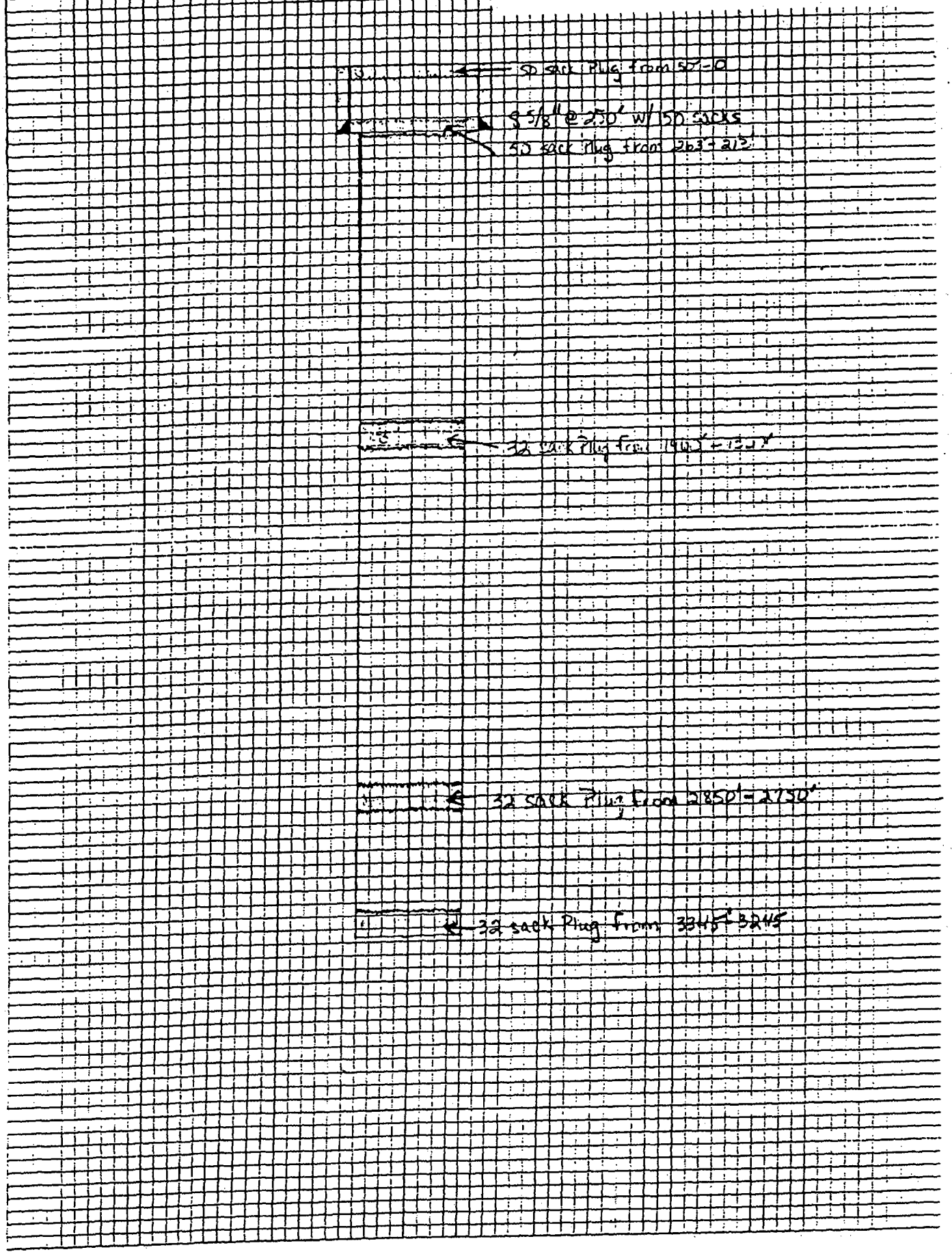
Federal 18 #1-AC
Unit E, Sec. 18, T19S, R33E



Federal 18 #3
Unit G, Sec. 18, T19S, R33E



Federal 18 #5
Unit K, Sec. 18, T19S, R33E



Federal AC #1

25 sx from 60-0'

25 sx plug from 555-355'

25 sx plug from 1500-1300'

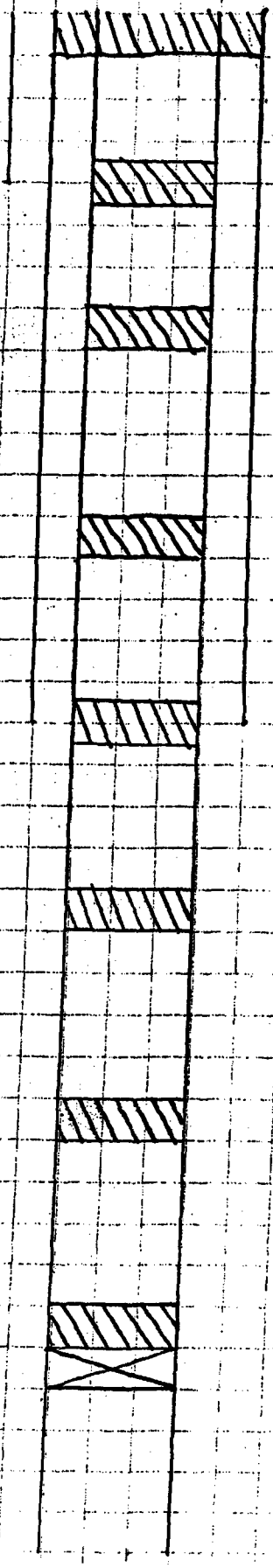
25 sx plug from 3000-2800'

25 sx plug from 5125-4925'

25 sx plug from 7100-6900'

25 sx plug from 9600-9400'

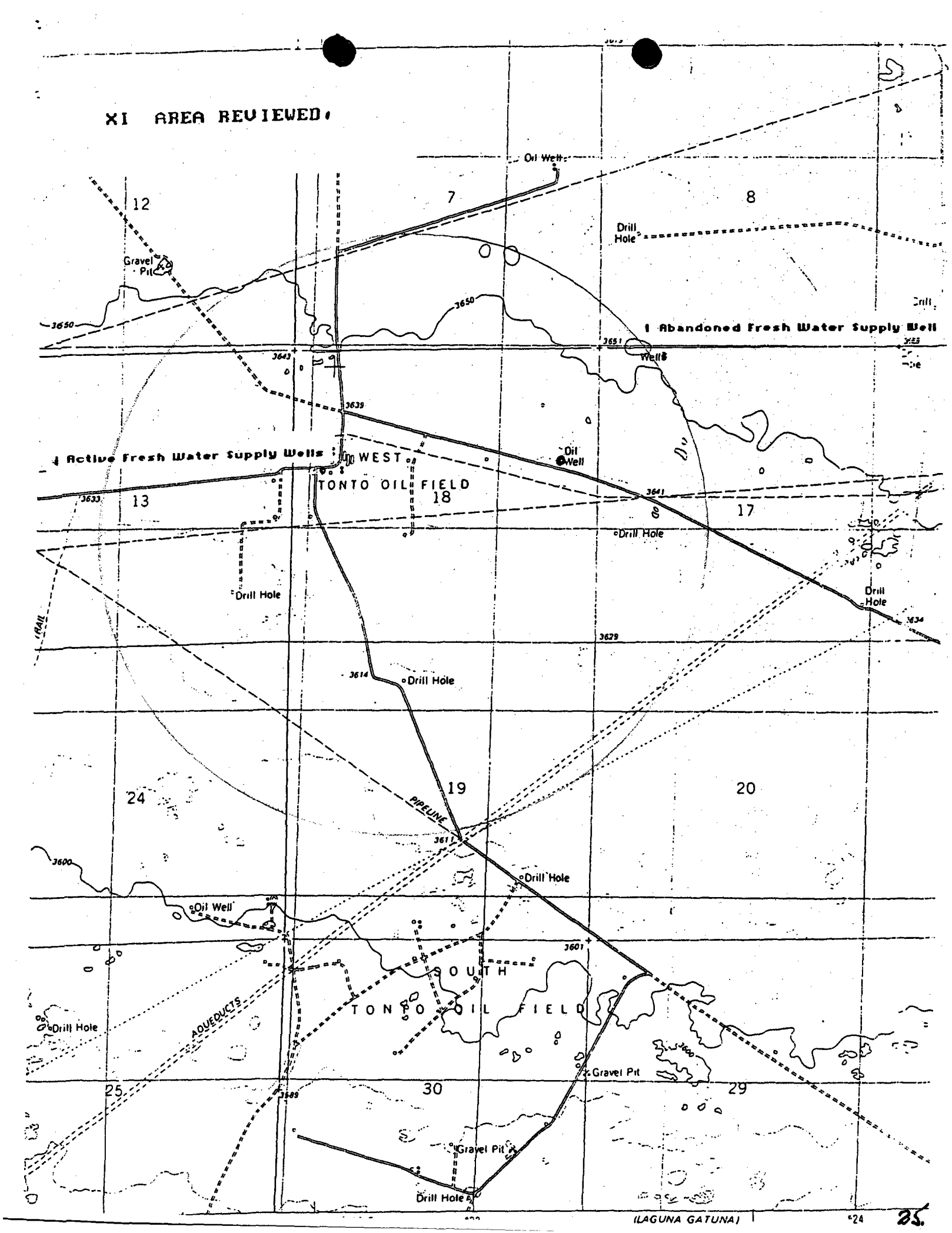
25 sx plug from 12,210-12,010'



13 3/8 casing set @ 455'

9 5/8 casing set @ 5002'

5 1/2 casing set @ 13,670'


XI AREA REVIEWED
Oil Well
12
7
8
Drill Hole
Gravel Pit
3650
1 Abandoned Fresh Water Supply Well
Well
3639
4 Active Fresh Water Supply Wells
WEST
TONTO OIL FIELD
Oil Well
13
18
17
3633
3641
Drill Hole
Drill Hole
Drill Hole
3629
3614
Drill Hole
24
19
20
PIPELINE
3617
Drill Hole
3600
Oil Well
3601
SOUTH
TONTO OIL FIELD
Drill Hole
AQUEDUCTS
Gravel Pit
25
30
29
3589
Gravel Pit
Drill Hole
LAGUNA GATUNA

XII. AFFIRMATIVE STATEMENT

RE: Federal 18 #2

We have examined the available geologic and engineering data and find no evidence of open faults or any other hydraulic connection between the disposal zone and any underground source of drinking water.

Mack Energy Corporation

Date: 1/23/04

Mack C. Chase

Mack C Chase, President

BAKER HUGHES
Baker Petrolite

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(915) 495-7240

Water Analysis Report by Baker Petrolite

Company:	MACK ENERGY INCORPORATED	Sales RDT:	33512
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (505) 910-9389
Area:	ARTESIA, NM	Sample #:	31320
Lease/Platform:	SMITH RANCH	Analysis ID #:	35850
Entity (or well #):	FRESH WATER WELL (WEST)	Analysis Cost:	$7.00
Formation:	UNKNOWN		
Sample Point:	WATER TANK		

Summary	
Sampling Date:	7/1/03
Analysis Date:	7/7/03
Analyst:	WAYNE PETERSON
TDS (mg/l or g/m3):	2480.6
Density (g/cm3, tonne/m3):	1
Anion/Cation Ratio:	1.0000004
Carbon Dioxide:	5 PPM
Oxygen:	
Comments:	

Analysis of Sample 31320 @ 75 °F

Anions	mg/l	meq/l	Cations	mg/l	meq/l
Chloride:	1043.7	29.44	Sodium:	616.4	26.81
Bicarbonate:	207.4	3.4	Magnesium:	116.0	9.46
Carbonate:	0.0	0.	Calcium:	98.0	4.89
Sulfate:	400.0	8.33	Strontium:		
Phosphate:			Barium:		
Borate:			Iron:	0.1	0.
Silicate:			Potassium:		
			Aluminum:		
Hydrogen Sulfide:		0 PPM	Chromium:		
pH at time of sampling:		7	Copper:		
pH at time of analysis:			Lead:		
pH used in Calculation:		7	Manganese:		
			Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite $CaCO_3$		Gypsum $CaSO_4 * 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		CO_2 Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	-0.43	0.00	-1.23	0.00	-1.30	0.00	0.00	0.00	0.00	0.00	0.27
100	0	-0.30	0.00	-1.23	0.00	-1.23	0.00	0.00	0.00	0.00	0.00	0.35
120	0	-0.15	0.00	-1.22	0.00	-1.14	0.00	0.00	0.00	0.00	0.00	0.44
140	0	0.00	0.00	-1.20	0.00	-1.03	0.00	0.00	0.00	0.00	0.00	0.54

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

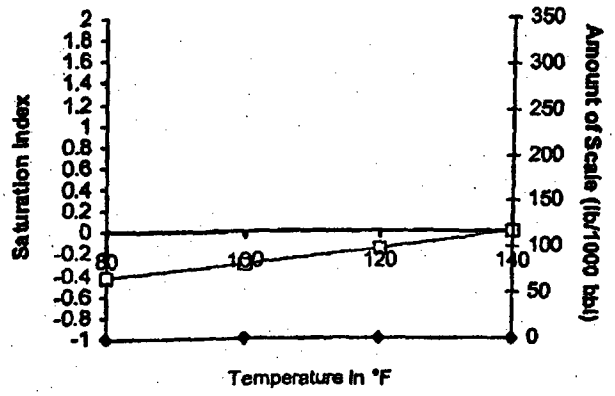
Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

BAKER HUGHES
Baker Petrolite

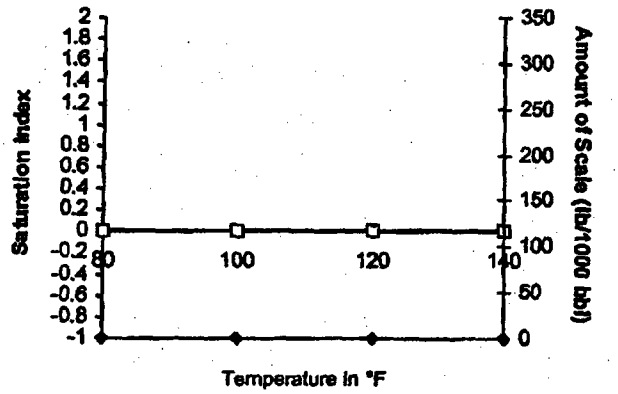
Scale Predictions from Baker Petrolite

Analysis of Sample 31320 @ 75 °F for MACK ENERGY INCORPORATED, 7/7/03

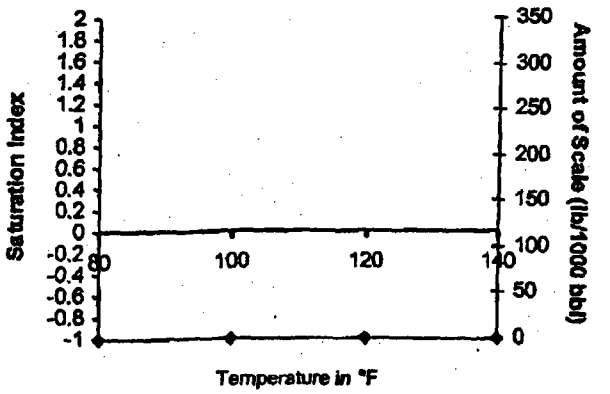
Calcite - CaCO3



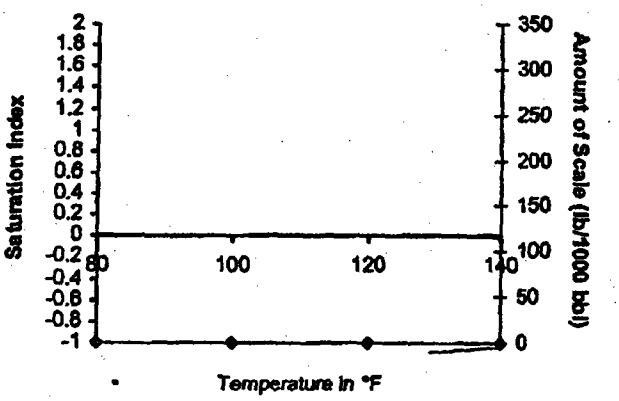
Barite - BaSO4



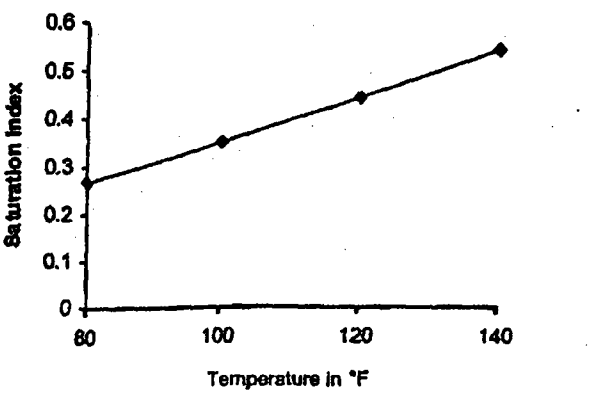
Gypsum - CaSO4*2H20



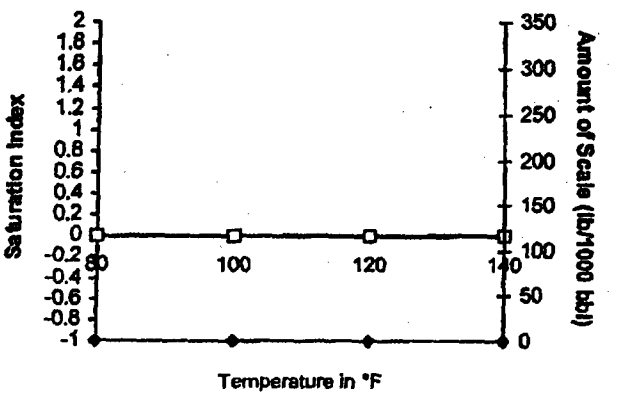
Anhydrite - CaSO4



Carbon Dioxide Partial Pressure



Celestite - SrSO4



FEDERAL 18 #2
Sec. 18, T19S, R33E
Lea County, New Mexico

Surface:

BLM

Lessee:

Kenny Smith
Kenny Smith Inc.
267 Smith Ranch Road
Hobbs, NM 88240