

## APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: X Secondary Recovery \_\_\_\_\_ Pressure Maintenance \_\_\_\_\_ Disposal \_\_\_\_\_ Storage \_\_\_\_\_  
Application qualifies for administrative approval? \_\_\_\_\_ Yes \_\_\_\_\_ X No
- II. OPERATOR: Saga Petroleum LLC
- ADDRESS: 415 W. Wall, #835, Midland, TX 79701
- CONTACT PARTY: Joe Clement PHONE: 915-684-4293
- 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 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 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: Joe N. Clement TITLE: New Mexico Engineer
- SIGNATURE: [Signature] DATE: 5/1/00
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

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

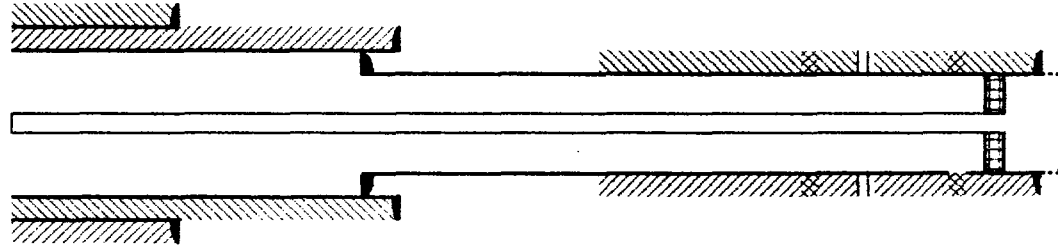
- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates 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.

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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.

## INJECTION WELL DATA SHEET

OPERATOR: Saga Petroleum LLCWELL NAME & NUMBER: U.D. Sawyer #4WELL LOCATION: 660' FNL & 660' FEL  
FOOTAGE LOCATIONUNIT LETTER ASECTION 27TOWNSHIP 9SRANGE 36EWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingHole Size: 17 1/4" Casing Size: 13 3/8" @ 259'Cemented with: 300 sx. or            ft<sup>3</sup>Top of Cement: surface Method Determined: circulationIntermediate CasingHole Size: 12 1/4" Casing Size: 9 5/8" @ 4668'Cemented with: 2400 sx. or            ft<sup>3</sup>Top of Cement: surface Method Determined: circulationProduction CasingHole Size: 7 7/8" Casing Size: 5 1/2" @ 4544'-12188'Cemented with: 1175 sx. or            ft<sup>3</sup>Top of Cement: 6020' Method Determined: temp. surveyTotal Depth: 12132'Injection IntervalPerfs 12085 feet to 12100'

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEETTubing Size: 2 3/8" EUE Lining Material: PlasticType of Packer: Baker Lok-SetPacker Setting Depth: 12035'

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

Additional Data

1. Is this a new well drilled for injection? \_\_\_\_\_ Yes X No

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

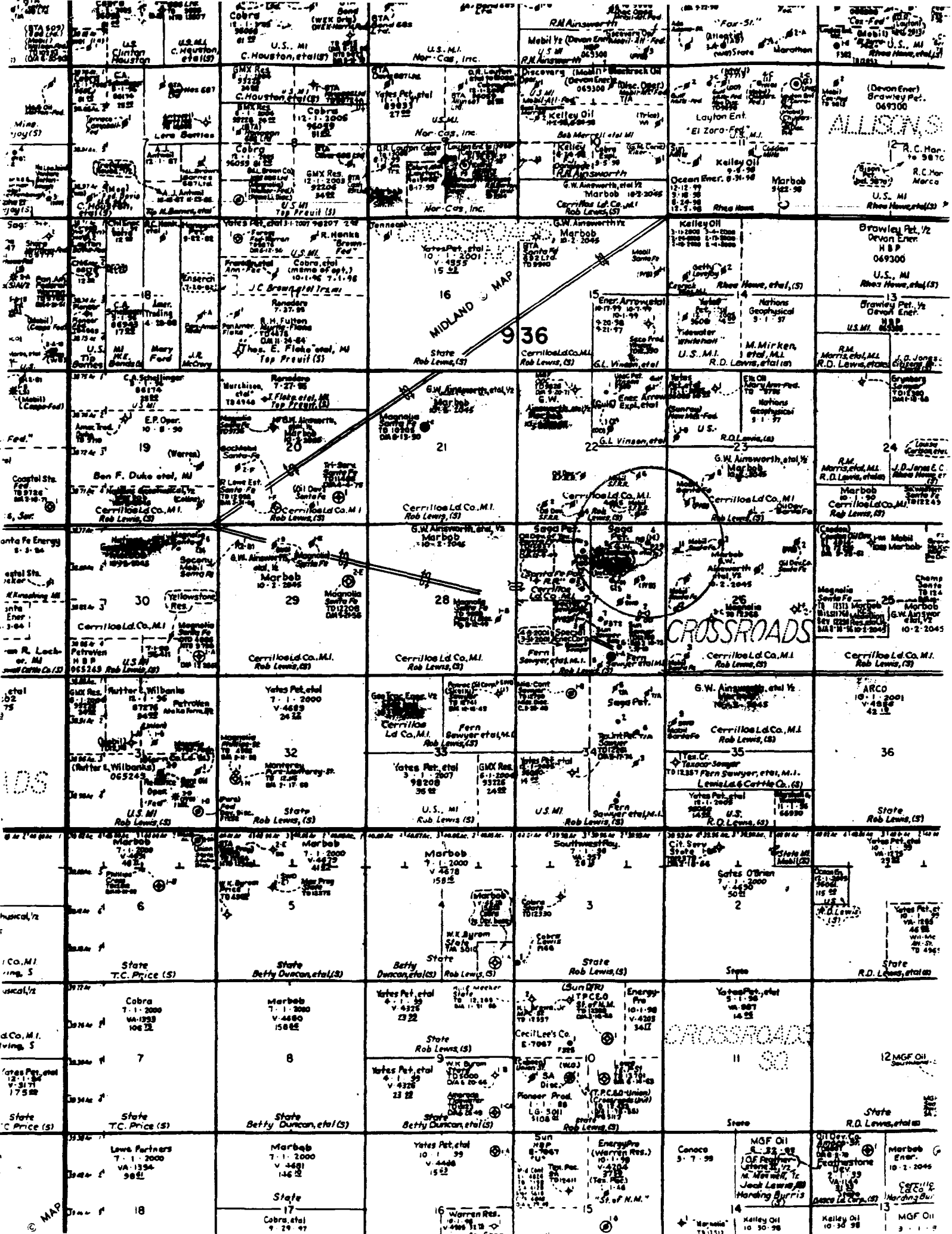
2. Name of the Injection Formation: Devonian

3. Name of Field or Pool (if applicable): Crossroads Siluro Devonian

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. Penn 11400-450',

Devonian 12085-95', Devonian 12085-100 squeezed w/ 435 sx, 12188-132' squeezed w/ 290 sx

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: San Andres 4800-4850', no zones underlying



**Offset wells to the  
U.D. Sawyer #4**

Well	Location	Surface Casing	Inter. Casing	Prod. Casing	TD	Completions	P&A
U.D. Sawyer #2 Spud 6/25/50	Sec. 27-T9S-R36E Unit I 1980' FSL & 990' FEL	13 3/8" @ 240' Cmt. w/ 300 sx TOC @ surf by circ.	9 5/8" @ 4614' Cmt w/ 3500 sx TOC @ surf by circ.	5 1/2" @ 12097' Cmt w/ 1178 sx TOC @ 6320' by TS	12100	12040-092' Open hole 12097'-102' 12010-016'	
U.D. Sawyer #3 Spud 2/25/49	Sec. 27-T9S-R36E Unit G 1980' FNL & 1980' FWL	13 3/8" @ 258' Cmt. w/ 300 sx TOC @ surf by circ.	9 5/8" @ 4651' Cmt w/ 2125 sx TOC @ 648' by calc.	5 1/2" @ 12147' Cmt w/ 1090 sx TOC @ 6550' by TS	12147	12000-050'	
U.D. Sawyer #4 Spud 12/19/51	Sec. 27-T9S-R36E Unit A 660' FNL & 660' FEL	13 3/8" @ 259' Cmt. w/ 300 sx TOC @ surf by circ.	9 5/8" @ 4668' Cmt w/ 2400 sx TOC @ surf by circ.	5 1/2" @ 4544-12147' Cmt w/ 1175 sx TOC @ 6020' by TS	12132	11400-450' 12085-100' sqz w/ 290sx 12118-32' sqz w/ 290sx	
U.D. Sawyer #8 Spud 7/11/72	Sec. 27-T9S-R36E Unit B 990' FNL & 2310' FEL	13 3/8" @ 266' Cmt. w/ 275 sx TOC @ surf by circ.	9 5/8" @ 4294' Cmt w/ 1440 sx TOC @ 1100' by TS	7" @ 12057' Cmt w/ 250 sx TOC @ 10140' by TS	12057	12029-051'	P/A'd Schematic Attached
U.D. Sawyer #9 Spud 9/10/72	Sec. 27-T9S-R36E Unit H 1980' FNL & 990' FEL	13 3/8" @ 273' Cmt. w/ 275 sx TOC @ surf by circ.	9 5/8" @ 4240' Cmt w/ 1440 sx TOC @ 1520' by TS	7" @ 12049' Cmt w/ 250 sx TOC @ 9400' by TS	12068	12020-48' sqz w/ 250sx Open hole 12049-068' 11358-368'	P/A'd Schematic Attached
U.D. Sawyer #11 Spud 10/4/84	Sec. 27-T9S-R36E Unit J 2561' FSL & 1610' FEL	13 3/8" @ 356' Cmt. w/ 350 sx TOC @ surf by circ.	9 5/8" @ 4500' Cmt w/ 2000 sx TOC @ surf by circ.	5 1/2" @ 12890' Cmt w/ 1650 sx TOC @ 1550' by TS	12890'	12120-54' sqz w/ 60 sx 12074-84' sqz w/ 100 sx 12007-017'	
Santa Fe Pacific #1 Spud 4/25/51	Sec. 26-T9S-R36E Unit E 1980' FNL & 660' FWL	13 3/8" @ 393' Cmt. w/ 400 sx TOC @ surf by circ.	9 5/8" @ 4273' Cmt w/ 2300 sx TOC @ surf by circ.	7" @ 12130' Cmt w/ 2310 sx TOC @ surf by circ.	12137	Open hole 12130-137'	P/A'd Schematic Attached
Santa Fe Pacific #2 Spud 11/6/63	Sec. 26-T9S-R36E Unit C 660' FNL & 1980' FWL	13 3/8" @ 472' Cmt. w/ 500 sx TOC @ surf by circ.	9 5/8" @ 4765' Cmt w/ 2615 sx TOC @ surf by calc.	5 1/2" @ 4557-12174' Cmt w/ 850 sx TOC @ 4557' by sqz.	12183'	Open hole 12174-183' 12140-160' 11999-12026', 109-129'	P/A'd Schematic Attached
Santa Fe Pacific "D" #1 (#4 on map) Spud 1/19/50	Sec. 22-T9S-R36E Unit O 660' FSL & 1980' FEL	13 3/8" @ 335' Cmt. w/ 350 sx TOC @ surf by circ.	8 5/8" @ 4555' Cmt w/ 2450 sx TOC @ surf by circ.	7" @ 9650' Cmt w/ 2167 sx TOC @ 3840' by TS	9670'	Open hole 9650-670'	P/A'd Schematic Attached
Santa Fe Pacific #5 Spud 3/26/53	Sec. 22-T9S-R36E Unit O 660' FSL & 1880' FEL	13 3/8" @ 441' Cmt. w/ 500 sx TOC @ surf by circ.	8 5/8" @ 4805' Cmt w/ 3497 sx TOC @ surf by calc.	5 1/2" @ 4595-12136' Cmt w/ 990 sx TOC @ 4595' by sqz.	12150'	Open hole 12136-150' 12096-110'	P/A'd Schematic Attached
Santa Fe Pacific #6 Spud 3/11/74	Sec. 22-T9S-R36E Unit I 1651.8' FSL & 990' FEL	13 3/8" @ 426' Cmt. w/ 425 sx TOC @ surf by circ.	8 5/8" @ 4950' Cmt w/ 3250 sx TOC @ surf by calc.	5 1/2" @ 4586'-12153' Cmt w/ 1400 sx TOC @ 5729' by calc.	12190'	Open hole 12153-190'	P/A'd Schematic Attached

**Offset wells to the  
U.D. Sawyer #4**

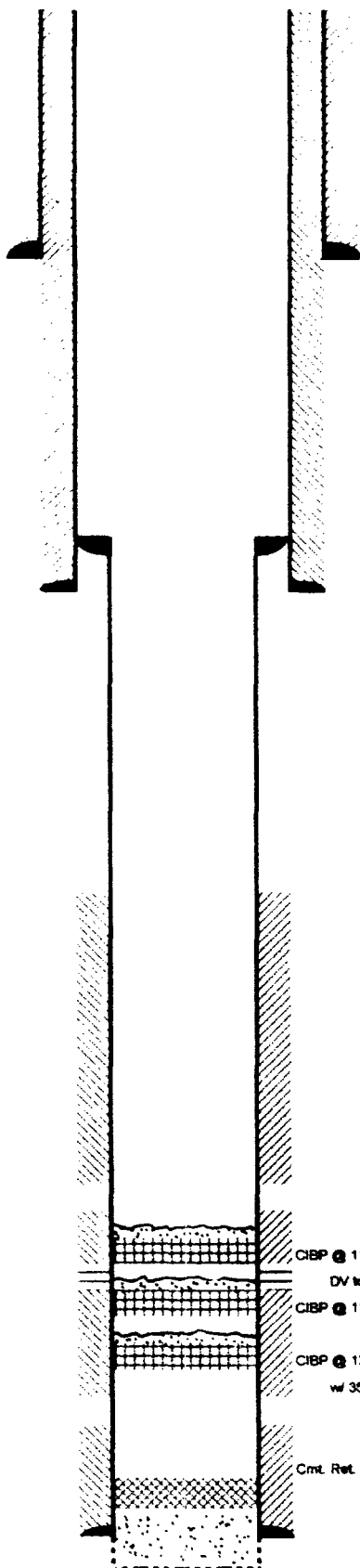
<b>Santa Fe Pacific #7</b> 1/6/53	Sec. 23-T9S-R36E Unit M 660' FSL & 660' FWL	13 3/8" @ 380' Cmt. w/ 375 sx TOC @ surf by circ.	8 5/8" @ 4895' Cmt w/ 2500 sx TOC @ surf by calc.	5 1/2" @ 4645-12191' Cmt w/ 2075 sx TOC @ 2669' by calc.	12212'	12191-212' sqz w/ CIBP 11367-378'sqz w/ CIBP 9652-660' sqz w/ CIBP 4818-899'	P/A'd Schematic Attached
<b>Santa Fe Pacific #10</b> Spud 9/24/72	Sec. 22-T9S-R36E Unit P 330' FSL & 990' FEL	13 3/8" @ 360' Cmt. w/ 400 sx TOC @ surf by circ.	9 5/8" @ 5000' Cmt w/ 2600 sx TOC @ surf by circ.	7" @ 4800 - 12108' Cmt w/ 1800 sx TOC @ 4800' by sqz	12126'	Open hole 12108-126'	P/A'd Schematic Attached
<b>Santa Fe Pacific #11</b> Spud 7/31/72	Sec. 26-T9S-R36E Unit D 990' FNL & 380' FWL	13 3/8" @ 380' Cmt. w/ 400 sx TOC @ surf by circ.	9 5/8" @ 5000' Cmt w/ 2000 sx TOC @ 1535' by TS	7" @ 4785 - 12096' Cmt w/ 1800 sx TOC @ 4785' by sqz.	12117	Open hole 12096-117'	P/A'd Schematic Attached
<b>Santa Fe Pacific #12</b> Spud 11/27/72	Sec. 26-T9S-R36E Unit L 2310' FSL & 330' FWL	13 3/8" @ 360' Cmt. w/ 400 sx TOC @ surf by circ.	9 5/8" @ 5000' Cmt w/ 2600 sx TOC @ surf by circ.	7" @ 4810 - 12119' Cmt w/ 2050 sx TOC @ 4810' by calc.	12120	12076-102'	P/A'd Schematic Attached
<b>Santa Fe Pacific #27-3</b> Spud 6/7/72	Sec. 27-T9S-R36E Unit C 2310' FNL & 2310' FWL	13 3/8" @ 315' Cmt. w/ 300 sx TOC @ surf by circ.	8 5/8" @ 5000' Cmt w/ 400 sx TOC @ 4200' by calc.	5 1/2" @ 4873-11987' Cmt w/ 350 sx TOC @ 10026' by CBL	12018	11277-88' sqz 11930-940' sqz 11972-85', 987-12018'	
<b>SFPRR "27" #4</b> Spud 1/18/73	Sec. 22-T9S-R36E Unit N 330' FSL & 2310' FWL	13 3/8" @ 309' Cmt. w/ 300 sx TOC @ surf by circ.	9 5/8" @ 4200' Cmt w/ 625 sx TOC @ 2006 by calc	7" @ 12170' Cmt w/ 200 sx TOC @ 11112' by calc.	12170'	12128-160' sqz w/ 50 sx 12020-174' sqz w/ 50 sx 12128-144'	P/A'd Schematic Attached

OPERATOR: Saga Petroleum

LOCATION: Sec. 27, T9S, R36E, Lea County, NM

LEASE: U.D. Sawyer #4

Unit A, 660' FNL & 660' FEL



13 3/8 " casing set at 259 ' with 300 sx of cement.

Hole Size: 17 1/2 ". TOC @ Surface by circ.

5 1/2" cut and pulled from 4566', ran 5 1/2" casing patch and hanger.  
5 1/2" casing hung @ 4544'.

9 5/8 " casing set at 4668 ' with 2400 sx of cement.

Hole Size: 12 1/4 ". TOC @ Surface by Circ.

Perts - 11400-413, 442-450'

CIBP @ 11490' w/ 35' cmt.

DV tool @ 11638'

CIBP @ 11850' w/ 45' cmt.

CIBP @ 12010'

w/ 35' cmt.

Cmt. Ret. @ 12108'

Perts - 12089-95'

Perts - 12085-100' squeezed

Open hole - 12118-32' squeezed

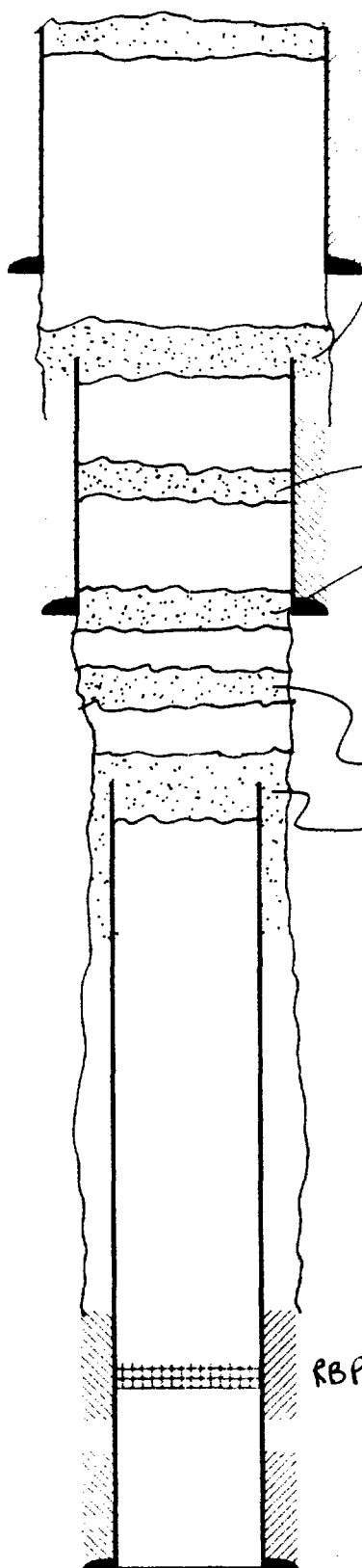
5 1/2 " casing set at 12118 ' with 1175 sx of cement

Hole Size: 7 7/8 ". TOC @ 6020' by TS



OPERATOR: Saga Petroleum LLC  
LEASE: U.D. Sawyer #8

LOCATION: Sec. 27, T9S, R36E, Lea County, NM  
Unit B, 990' FNL & 2310' FEL



105X surface

505X 775'-875'

13 3/8" casing set at 266' with 275 sx of cement.

Hole Size: 17 1/2". TOC @ Surface by circ.

9 5/8" cut and pulled from 824'.

505X 1900'-2100'

505X 4295'-4344'

9 5/8" casing set at 4294' with 1440 sx of cement.

Hole Size: 12 1/4". TOC @ 1100' by calc.

7" cut and pulled from 7063'.

505X 5530'-5680'

505X 6835'-7198'  
Squeezed 7170-92' w/ 200 sx

RBP @ 10795' w/ 45X

Perfs - 12029-12051'

7" casing set at 12057' with 250 sx of cement.

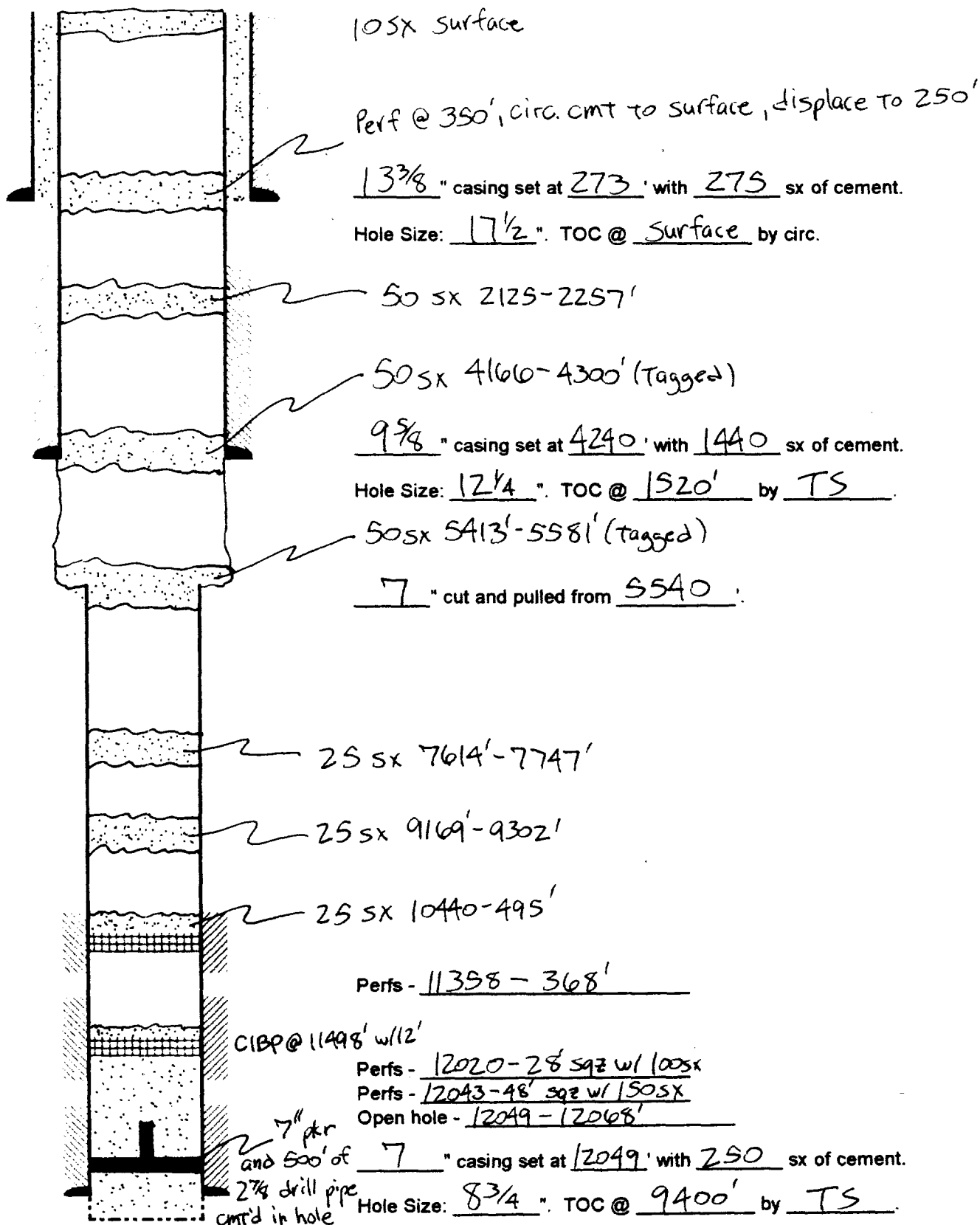
Hole Size: 8 3/4". TOC @ 10140 by calc.

OPERATOR: Saga Petroleum LLC

LOCATION: Sec. 27, T9S, R36E, Lea County, NM

LEASE: U.D. Sawyer #9

Unit H, 1980' FNL & 990' FEL



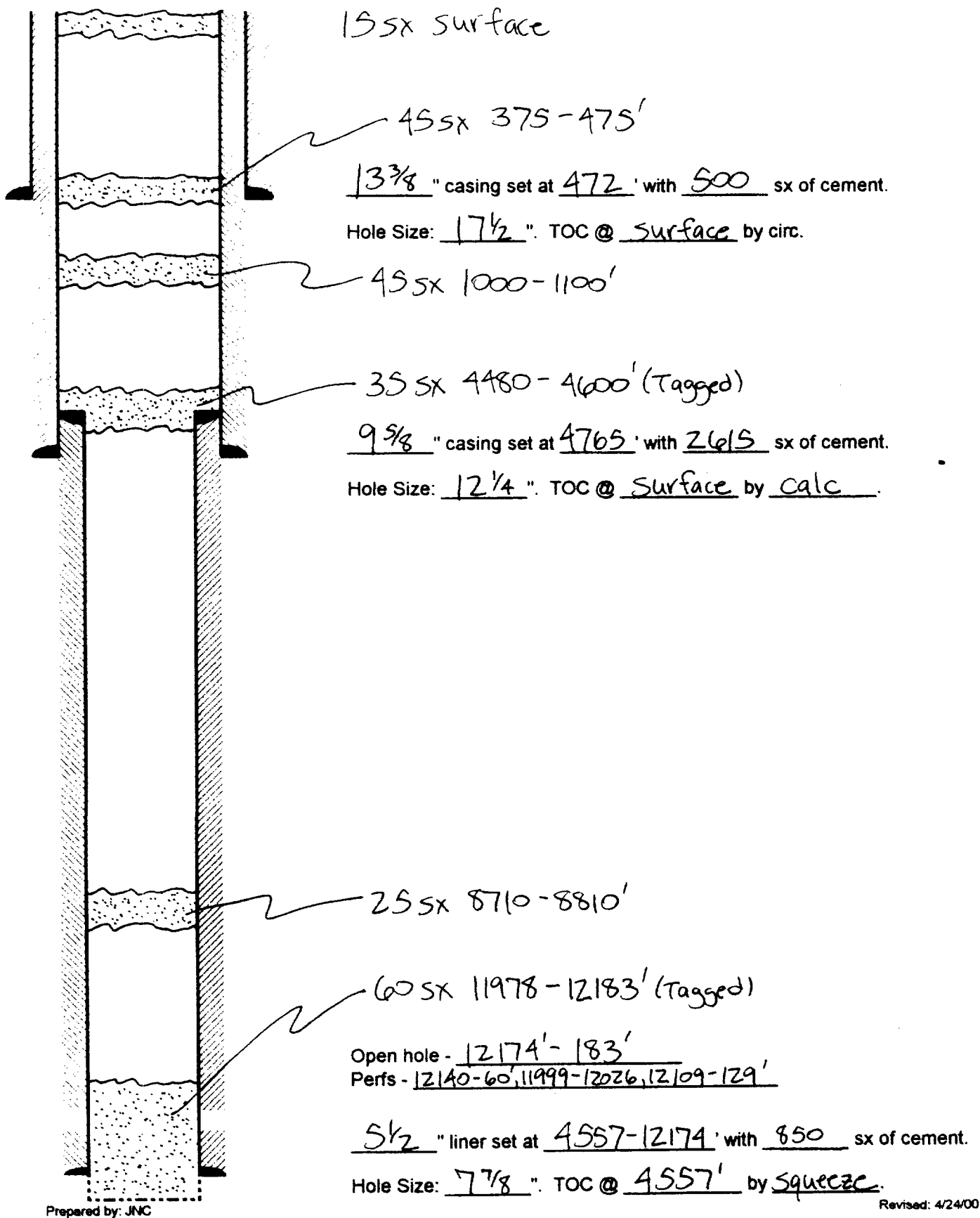


OPERATOR: Meteor Developments

LOCATION: Sec. 26, T9S, R36E, Lea County, NM

LEASE: Santa Fe Pacific #2

Unit C, 660' FNL & 1980' FWL



OPERATOR: Socony Mobil Oil Co.

LOCATION: Sec. 22, T9S, R36E, Lea County, NM

LEASE: Santa Fe Pacific "D" #1

Unit O, 660' FSL & 1980' FEL

10 sx surface

13 $\frac{3}{8}$  " casing set at 335 ' with 350 sx of cement.

Hole Size: 17 $\frac{1}{2}$  ". TOC @ surface by circ.

Cut 7" @ 3500' & 2008', could not pull

25 sx 1900-2057'

8 $\frac{5}{8}$  " casing set at 4555 ' with 2450 sx of cement.

Hole Size: 12 $\frac{1}{4}$  ". TOC @ surface by circ.

80 sx 9460'-9670'

Open hole - 9650-70'

7 " casing set at 9650 ' with 2167 sx of cement.

Hole Size: 8 $\frac{3}{4}$  ". TOC @ 3840' by TS

PREPARED BY: JNC

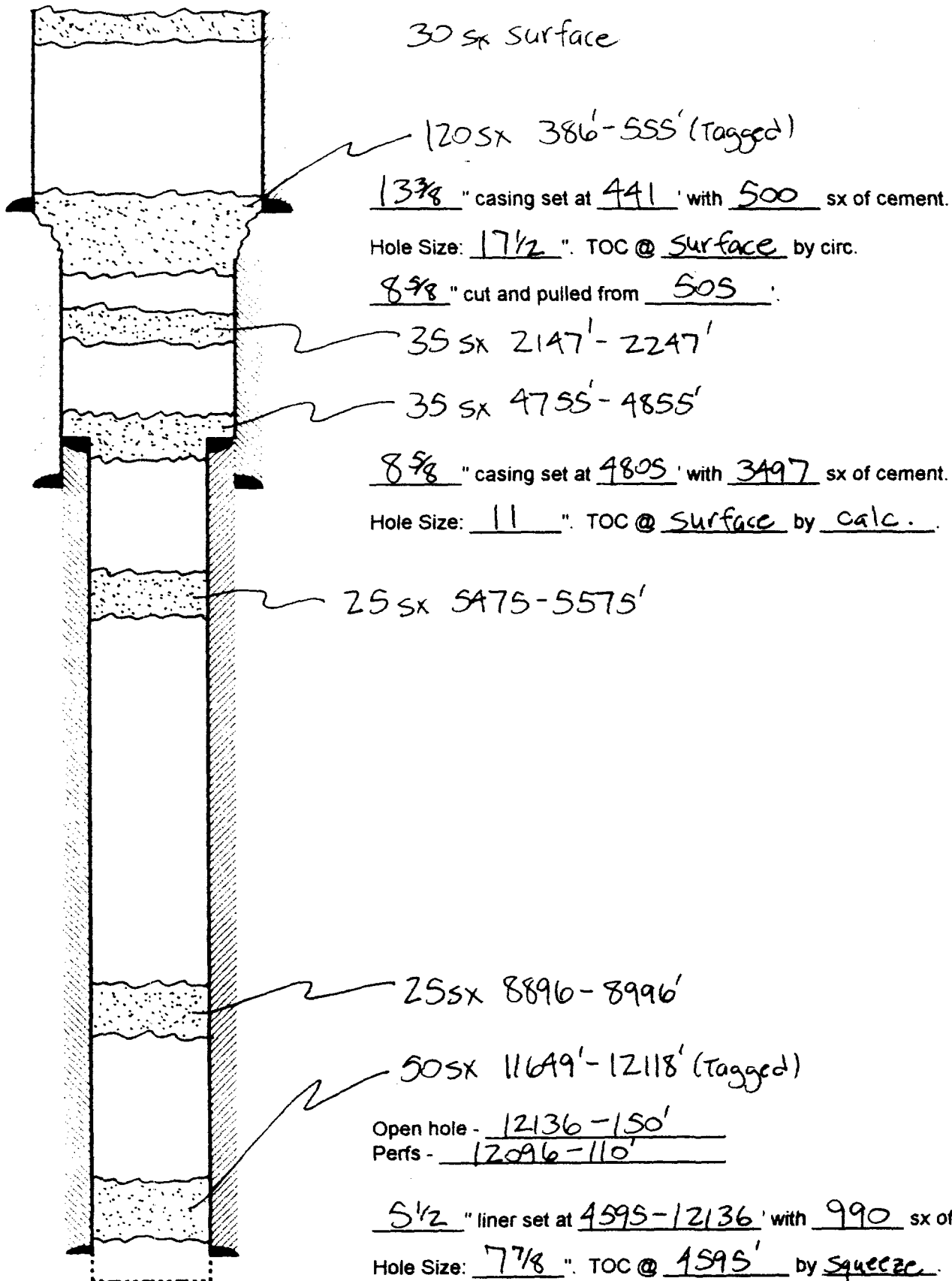
Revised: 4/24/00

OPERATOR: Meteor Developments

LOCATION: Sec. 22, T9S, R36E, Lea County, NM

LEASE: Santa Fe Pacific #5

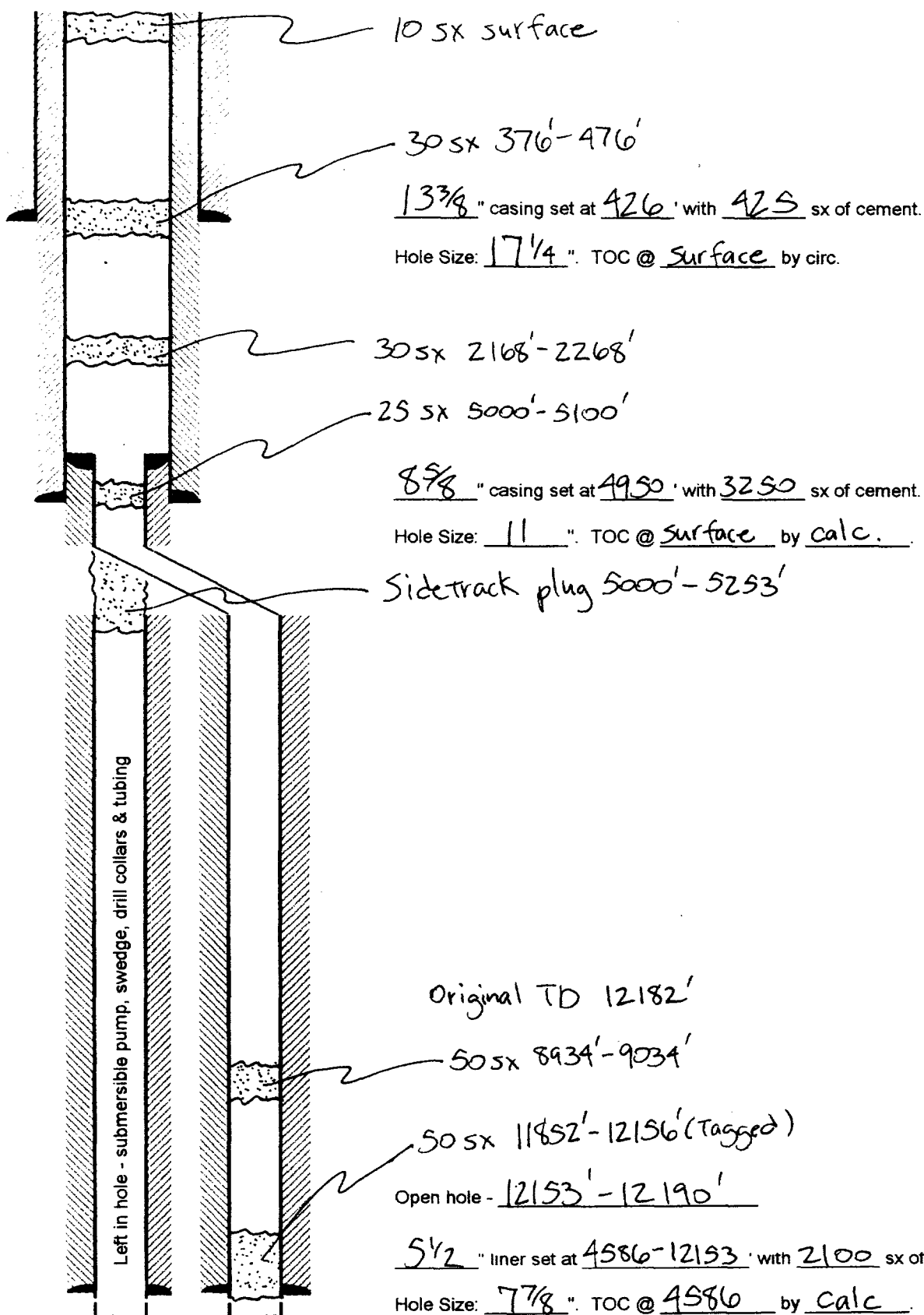
Unit P, 660' FSL & 1880' FEL



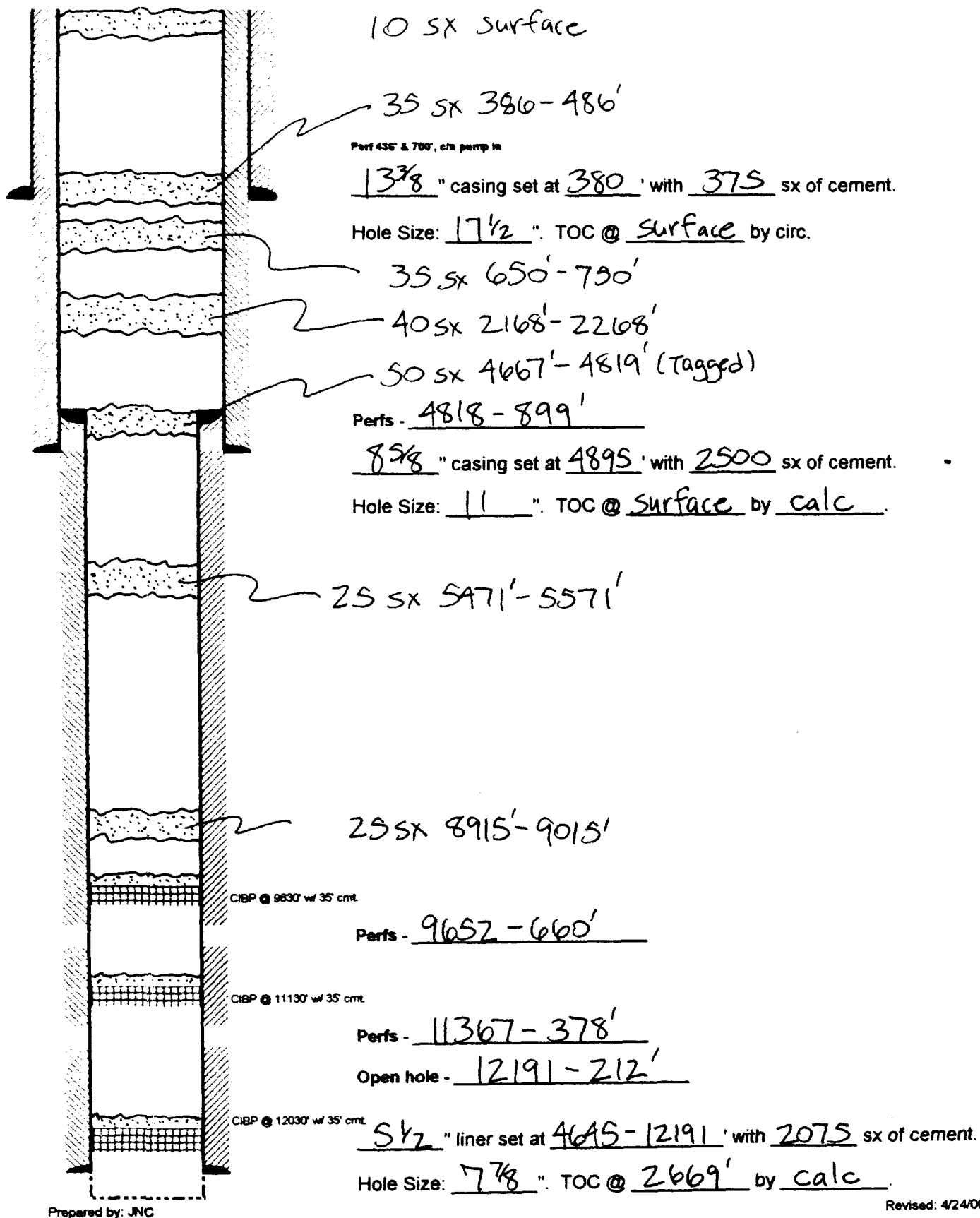
Prepared by: JNC

Revised: 4/24/00

OPERATOR: Meteor Developments	LOCATION: Sec. 22, T9S, R36E, Lea County, NM
LEASE: Santa Fe Pacific #6	Unit I, 1651.8' FSL & 990' FEL



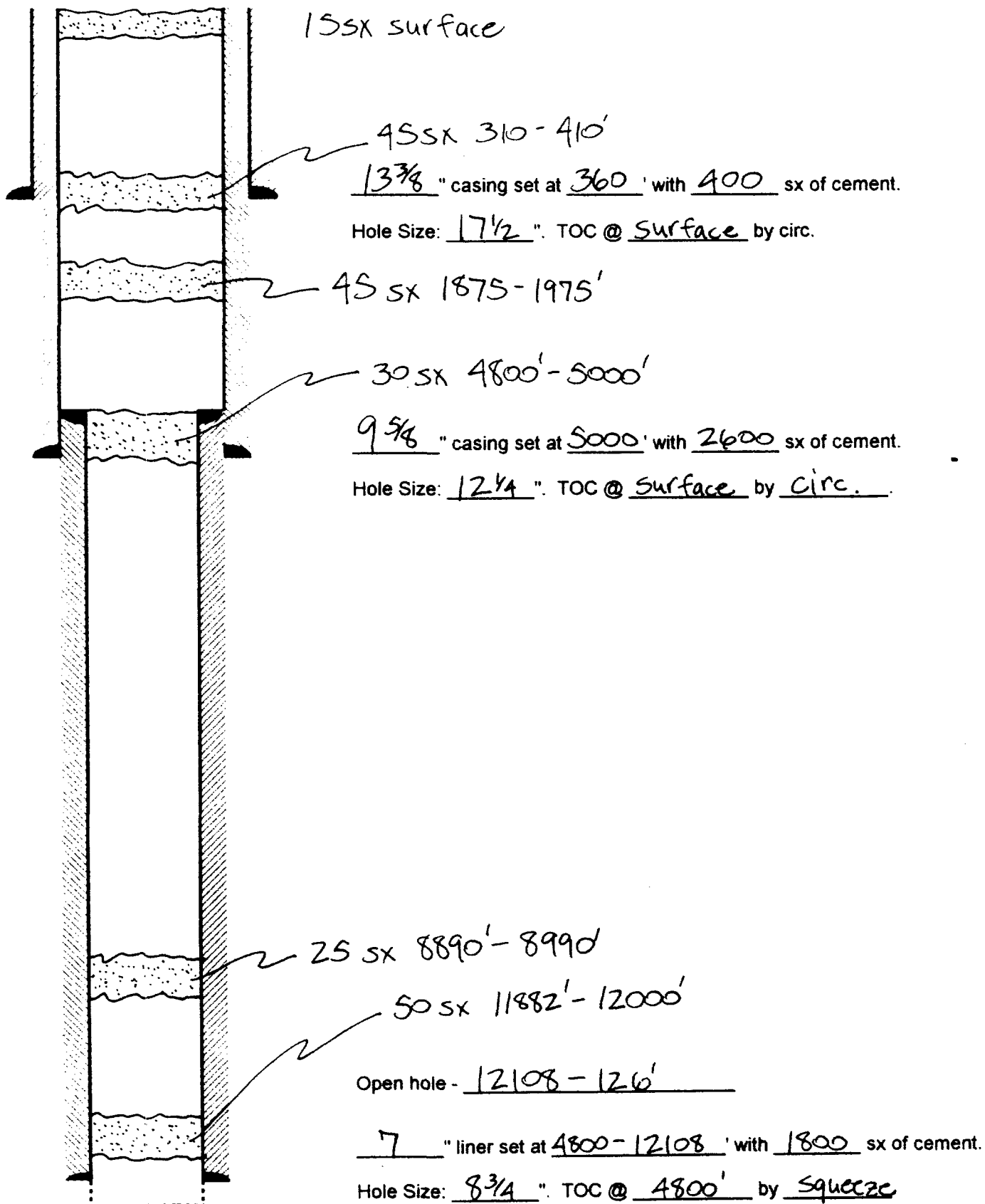
OPERATOR: Meteor Developments	LOCATION: Sec. 23, T9S, R36E, Lea County, NM
LEASE: Santa Fe Pacific #7	Unit M, 660' FSL & 660' FWL





OPERATOR: Meteor Developments  
LEASE: Santa Fe Pacific #10

LOCATION: Sec. 22, T9S, R36E, Lea County, NM  
Unit P, 330' FSL & 290' FEL

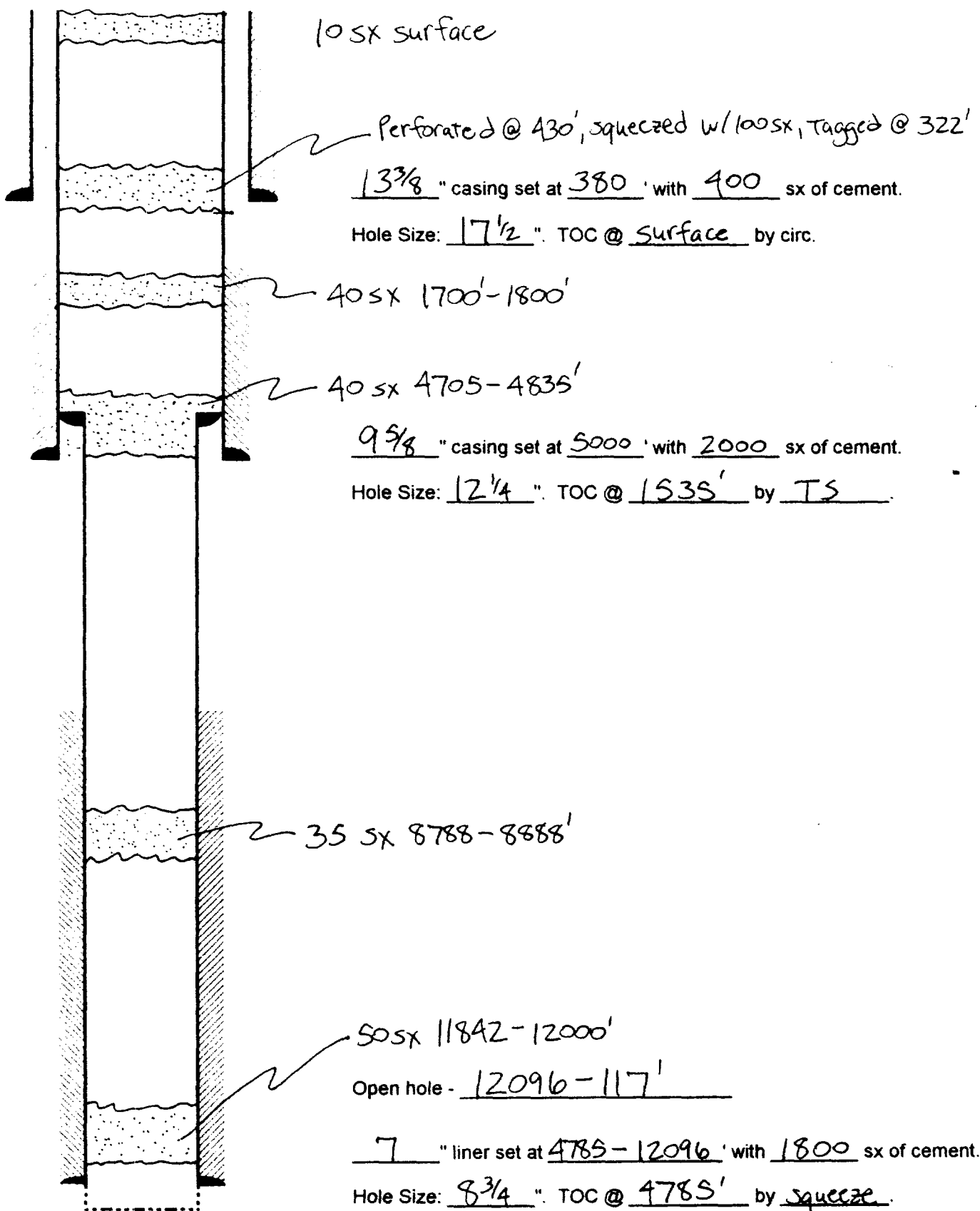


OPERATOR: Meteor Developments

LOCATION: Sec. 26, T9S, R36E, Lea County, NM

LEASE: Santa Fe Pacific #11

Unit D, 990' FNL & 380' FWL

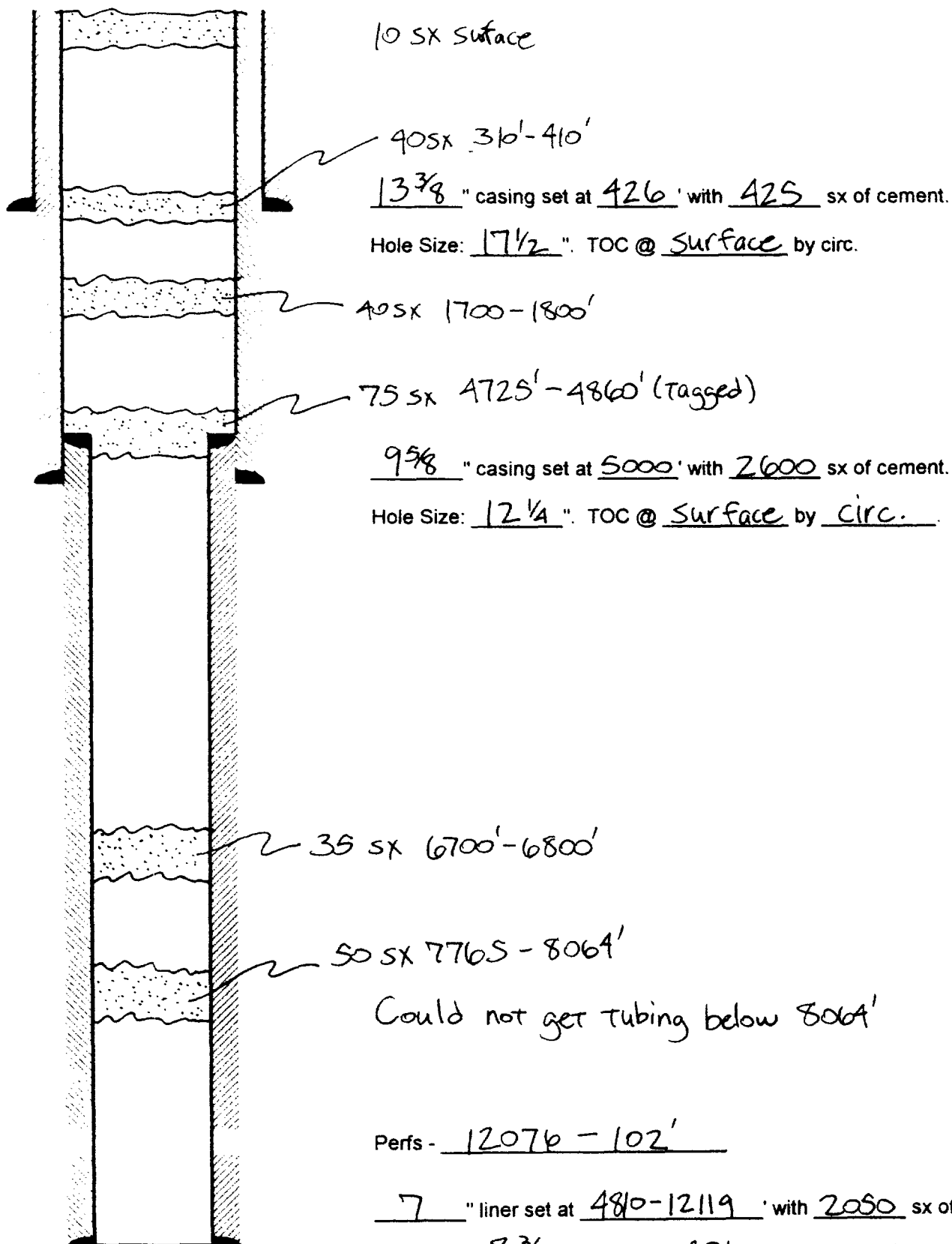


OPERATOR: Meteor Developments

LOCATION: Sec. 26, T9S, R36E, Lea County, NM

LEASE: Santa Fe Pacific #12

Unit L, 2310' FSL & 330' FWL

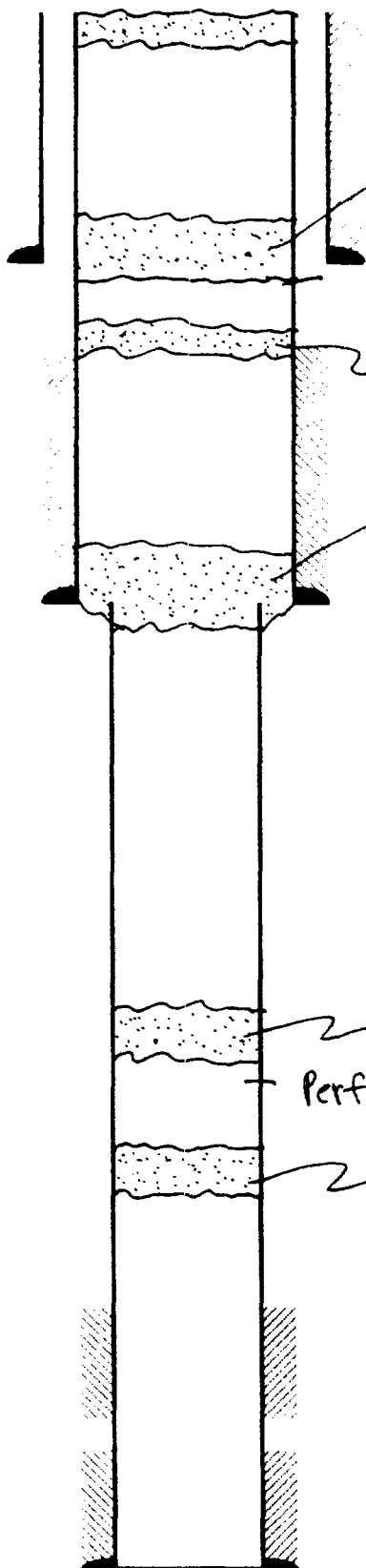


OPERATOR: Meteor Developments

LOCATION: Sec. 22, T9S, R36E, Lea County, NM

LEASE: Santa Fe Pacific 27 #4

Unit N, 330' FSL & 2310' FWL



15 sx surface

Perf 359', squeeze w/ 75 sx, Tagged @ 248'

13<sup>3</sup>/<sub>8</sub>" casing set at 309' with 300 sx of cement.

Hole Size: 17<sup>1</sup>/<sub>2</sub>" . TOC @ Surface by circ.

50 sx 2225'-2325'

80 sx 4142'-4250' (Tagged)

9<sup>5</sup>/<sub>8</sub>" casing set at 4200' with 625 sx of cement.

Hole Size: 12<sup>1</sup>/<sub>4</sub>" . TOC @ 2006' by calc.

7" cut and pulled from 4200' .

25 sx 5514'-5614'

Perf 5564', c/n pump in

50 sx 7050-6922' (Tagged)

Could not drill below 7050'

Perfs - 12128-160 sqz w/ 50sx

Perfs - 12020-174 sqz w/ 50sx

Perfs - 12128-144'

7" casing set at 12170' with 200 sx of cement.

Hole Size: 8<sup>3</sup>/<sub>4</sub>" . TOC @ 11112' by calc.

## Application for Authorization to Inject

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- VI. Attached is a tabulation of all wells of public record that fall within the ½ mile radius of the proposed injection well, the U.D. Sawyer #4. This investigation has further shown that all these wells have a good cement seal around their casing shoe and will therefore prevent the upward migration of the disposed water into any potable water zone. The U.D. Sawyer #4 was abandoned as a Devonian producer in 1978, and recompleted in the Penn (11400-450'). The Penn zone would be cement squeezed. Geologic data and producing volumes would indicate the Devonian in the #4 is currently below the oil-water contact, and on the flank of the structure.
- VII. The proposed average daily injection rate for the subject well is 1,000 BWPD; the maximum daily injection rate would be 1,500 BWPD. This will be a closed system with an average pressure of zero and a maximum pressure of 1000 psi. Only produced Devonian water will be injected in the proposed well, so incompatibility will not be a problem.
- VIII. The injection zone is a dolomite known as the Devonian. The top of the Devonian in this well is at 12,070', and is approximately 300' thick. The zone will be selectively perforated from 12,085' - 12,100', correlative to the Upper producing zone in the offset wells. The main source of drinking water in this area comes from the Cretaceous formation, the base of which is at 180'. The Ogallala overlies the Cretaceous, but pinches out in certain areas around the zone of interest. There are no known sources of drinking water underlying the injection interval.
- IX. After perforation, the well will be stimulated with 3000 gallons of 15% NEFE HCl and ball sealers.
- X. Log and test data is on file with the Division.
- XI. Attached is an analysis of the water from a water well approximately ½ mile northwest of the proposed disposal. This is the only well which could be located.
- XII. Saga Petroleum LLC has examined the available geologic and engineering data and can find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. The required "Proof of Notice" is attached.
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U.D. Sawyer #4  
660' FNL & 660' FEL  
Unit A, Sec. 27-T9S-R36E  
Lea County, New Mexico

## Offset Operators

G.W. Ainsworth  
PO Box 7  
Milnesand, NM 88215

Yates Petroleum  
105 S. 4<sup>th</sup>  
Artesia, NM 88210

Marbob Energy  
PO Box 227  
Artesia, NM 88211-0227

Southwest Royalty  
Drawer 11390  
Midland, TX 79702

C.L. House  
401 W. Texas  
Midland, TX 79701

Gates-O'Brian  
550 W. Texas #1140  
Midland, TX 79701

Meteor Development  
216 16<sup>th</sup> Street, Suite 730  
Denver, CO 80202

Special Energy Corp.  
PO Box 369  
Stillwater, OK 74076-0369

Kelly H. Baxter  
PO Box 11193  
Midland, TX 79702

## Surface Owner

Williams Ranch  
Crossroads, NM 88114

HALLIBURTON ENERGY SERVICES  
WATER ANALYSIS REPORT  
HOBBS NEW MEXICO

COMPANY Saga Petroleum  
Fax: 915-684-0829

REPORT 97-152  
DATE 5/2/97  
DISTRICT Hobbs

SUBMITTED BY \_\_\_\_\_

WELL Off set water well DEPTH \_\_\_\_\_ FORMATION \_\_\_\_\_  
COUNTY \_\_\_\_\_ FIELD \_\_\_\_\_ SOURCE \_\_\_\_\_

SAMPLE	<u>See below</u>		
RESISTIVITY	<u>11.0988 @ 72 °F</u>	<u>@ °F</u>	<u>@ °F</u>
SPECIFIC GR.	<u>0.988</u>		
pH	<u>7.46</u>		
CALCIUM	<u>150</u> mpl	<u>mpl</u>	<u>mpl</u>
MAGNESIUM	<u>75</u> mpl	<u>mpl</u>	<u>mpl</u>
CHLORIDE	<u>270</u> mpl	<u>mpl</u>	<u>mpl</u>
SULFATES	<u>100</u> mpl	<u>mpl</u>	<u>mpl</u>
BICARBONATES	<u>195</u> mpl	<u>mpl</u>	<u>mpl</u>
SOLUBLE IRON	<u>0</u> mpl	<u>mpl</u>	<u>mpl</u>
OIL GRAVITY	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>

REMARKS Water well located approximately 1 mile north west of disposal

ANALYST: JLEWANE

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Co.

Resistivity measured in: Ohm/m2/m

## EXHIBIT B

Crossroads Siluro-Devonian Unit  
Unit Agreement  
Lea County, New Mexico

Tract 1 - Texaco U.D. Sawyer

Legal Description:

320 Acres, more or less, comprising the E/2 Sec. 34, T-9S, R36E

Royalty Ownership - Fee

Owner	WORKING INTEREST	TRACT %	UNIT TRACT PART. %
Saga Petroleum LLC	0.02000000	37.702768	0.00754055
Forcenergy, Inc.	0.75000000	37.702768	0.28277076
Saga Petroleum Corp.	0.23000000	37.702768	0.08671637
TOTAL	1.00000000		0.37702768

Owner	REVENUE INTEREST	TRACT %	UNIT TRACT PART. %
Saga Petroleum LLC	0.01640630	37.702768	0.00618563
Forcenergy, Inc.	0.61523430	37.702768	0.23196036
Saga Petroleum Corp.	0.18867190	37.702768	0.07113453
Sandra Good RA Mey Trust	0.01074200	37.702768	0.00405003
Price Y-CIA	0.00244150	37.702768	0.00092051
Myrl Sawyer Good	0.02506500	37.702768	0.00945020
Susie L. Wadley First Trust	0.00203470	37.702768	0.00076714
Susie L. Wadley First Trust	0.00203460	37.702768	0.00076710
Sinclair Trust	0.00195310	37.702768	0.00073637
Fernald Point Prod. Trust	0.00195310	37.702768	0.00073637
Candace Good Jacobson	0.03938800	37.702768	0.01485037
Thomas Jefferson Good	0.03938800	37.702768	0.01485037
Sandra Good RA Mey Trust (OR)	0.00512700	37.702768	0.00193302
Myrl Sawyer Good (OR)	0.01196290	37.702768	0.00451034
Candace Good Jacobson (OR)	0.01879880	37.702768	0.00708767
Thomas Jefferson Good (OR)	0.01879880	37.702768	0.00708767
TOTAL	1.00000000		0.37702768



## EXHIBIT B

Crossroads Siluro-Devonian Unit  
Unit Agreement  
Lea County, New Mexico

Tract 2 - Santa Fe Pacific

Legal Description:

160 Acres, more or less, comprising the NW/4 Sec. 27, T-9S, R36E

Royalty Ownership - Fee

Owner	WORKING INTEREST	TRACT %	UNIT TRACT PART. %
Saga Petroleum LLC	0.01820000	51.410973	0.00935680
Forcenergy, Inc.	0.68250000	51.410973	0.35087989
Saga Petroleum Corp.	0.20930000	51.410973	0.10760317
Yellow Queen Uranium Co.	0.03000000	51.410973	0.01542329
Alfa Resources, Inc.	0.06000000	51.410973	0.03084658
TOTAL	1.00000000		0.51410973

Owner	REVENUE INTEREST	TRACT %	UNIT TRACT PART. %
Saga Petroleum LLC	0.01448500	51.410973	0.00744688
Yellow Queen Uranium Co.	0.02625000	51.410973	0.01349538
Alfa Resources, Inc.	0.05250000	51.410973	0.02699076
Forcenergy, Inc.	0.54318750	51.410973	0.27925798
Saga Petroleum Corp.	0.16657750	51.410973	0.08563911
Allan Capital Corp.	0.00714280	51.410973	0.00367218
Floos, Inc.	0.12500000	51.410973	0.06426372
H. Wayne Hoover	0.00714280	51.410973	0.00367218
C. Thomas Houseman	0.00357140	51.410973	0.00183609
Mystique Resources Co.	0.00714280	51.410973	0.00367218
Edward J. Names	0.00714280	51.410973	0.00367218
C. L. Nordstrom	0.00714280	51.410973	0.00367218
Bruce M. Patterson	0.00714280	51.410973	0.00367218
Floos, Inc. (OR)	0.02557180	51.410973	0.01314671
TOTAL	1.00000000		0.51410973

## EXHIBIT B

### Crossroads Siluro-Devonian Unit

Unit Agreement  
Lea County, New Mexico

Tract 3 - U.D. Sawyer

Legal Description:

320 Acres, more or less, comprising the E/2 Sec. 27, T-9S, R36E

Royalty Ownership - Fee

Owner	WORKING INTEREST	TRACT %	UNIT TRACT PART. %
Saga Petroleum LLC	0.01916880	10.886259	0.00208677
Forcenergy, Inc.	0.71882810	10.886259	0.07825349
Saga Petroleum Corp.	0.22044060	10.886259	0.02399773
Saga Petroleum LLC FAO-TMN	0.03187500	10.886259	0.00347000
Marius Jensen Nygaard, Jr.	0.00062500	10.886259	0.00006804
Gerald D. Mills	0.00593750	10.886259	0.00064637
Yuma E & P	0.00281250	10.886259	0.00030618
Perry & Patricia Shaw Trust	0.00031250	10.886259	0.00003402
TOTAL	1.00000000		0.10886259

Owner	REVENUE INTEREST	TRACT %	UNIT TRACT 4.00000000
Saga Petroleum LLC	0.01592884	10.886259	0.00173405
Gerald D. Mills	0.00519533	10.886259	0.00056558
Yuma E & P	0.00246096	10.886259	0.00026791
Perry & Patricia Shaw Trust	0.00027344	10.886259	0.00002977
Forcenergy, Inc.	0.59733405	10.886259	0.06502733
Saga Petroleum Corp.	0.18318248	10.886259	0.01994172
Saga Petroleum LLC FAO-TMN	0.02789060	10.886259	0.00303624
Marius Jensen Nygaard, Jr.	0.00054680	10.886259	0.00005953
Susie L. Wadley First Trust	0.00203453	10.886259	0.00022148
Fernald Point Prod. Trust	0.00195310	10.886259	0.00021262
Susie Wadley Trust #10-05527	0.00203457	10.886259	0.00022149
Sinclair Rev. Trust #0108952	0.00195310	10.886259	0.00021262
William Marsh Rice Univ.	0.05729170	10.886259	0.00623692
Candace G. Jacobson	0.02208116	10.886259	0.00240381
Thomas J. Good III	0.02208106	10.886259	0.00240380
Price & Cia, Inc.	0.00244140	10.886259	0.00026578
Myrl Sawyer Good	0.00537109	10.886259	0.00058471
Beja Embry	0.00537109	10.886259	0.00058471
Myrl Good Suc. Trustee	0.00238720	10.886259	0.00025988
Floos, Inc. (OR)	0.04218750	10.886259	0.00459264
TOTAL	1.00000000		0.10886259

**Exhibit C**  
**Schedule of Tract Particiaption**  
**Crossroads Siluro-Devonian Unit**  
**Unit Agreement**  
**Lea County, New Mexico**

Tract	Description of Lands	Current Operator	Allocated W.I.
1	E/2 Sec. 34, T 9 S, R 36 E	Saga Petroleum, LLC	37.702768%
2	NW/4 Sec. 27, T 9 S, R 36 E	Saga Petroleum, LLC	51.410973%
3	E/2 Sec. 27, T 9 S, R 36 E	Saga Petroleum, LLC	10.886259%
			100.000000%