Amoco Production Company
Post Office Box 68
Hobbs, New Mexico 88240

J.L. Krupka
District Manager

December 1, 1986

File: SGH-1669-LF

Re: Application for Authority to Inject
South Hobbs (GSA) Unit
Hobbs Grayburg - San Andres Pool
Lea County, New Mexico

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87501

Amoco Production Company hereby requests administrative approval to convert three South Hobbs (GSA) Unit wells to water injection. Form C-108 and the necessary documentation is attached.

The three wells to be converted are:

South Hobbs (GSA) Unit No. 120, Unit C, Sec. 5, T-19-S, R-38-E, Lea County, New Mexico
South Hobbs (GSA) Unit No. 121, Unit E, Sec. 4, T-19-S, R-38-E, Lea County, New Mexico
South Hobbs (GSA) Unit No. 176, (SL/BHL) Unit, A/D, Sec. 6/5, T-19-S, R-38-E, Lea Cty, NM

As required, a copy of this application complete with all attachments has been served by certified mail to each of the parties shown on the attached service list.

If you have any questions concerning this application, please contact Steve Brownlee at (505) 393-1781, Extension 2250.

J. L. Krupka

SBB/tjt
APRD01-UUU

Attachments

cc: State of New Mexico
Oil Conservation Division
P. O.Box 1980
Hobbs, NM 88240

State of New Mexico
Oil Conservation Division
P. O. Box 1148
Santa Fe, NM 87501

Service List
South Hobbs (GSA) Unit
Conversion to Water Injection Well
South Hobbs Unit Nos. 120, 121, and 176

Surface Owners

State of New Mexico
Commissioner of Public Lands
P. O. Box 1148
Santa Fe, NM 87504

Offset Owners

Shell Western E&P, Inc.
P. O. Box 991
Houston, TX 77001

Chevron, U.S.A.
Attention: J. C. Prindle
P. O. Box 670
Hobbs, NM 88240

Conoco, Inc.
P. O. Box 460
Hobbs, NM 88240

Marathon Oil Company
P. O. Box 552
Midland, TX 79702

SBB/tjt
APRD01-UUU(3)

Form C-108 Required Information
South Hobbs (GSA) Unit
Nos. 120, 121, and 176 Conversion to Injector

Item No. 0

III. Well Data
See attached data sheets for each proposed injection well.

V. See attached map for each proposed injection well.

VI. The data within Item VI has already been submitted. Please reference approved orders:

Order No.	Date
R-4934	12/03/74
R-4934-A	08/04/83
R-4934-C	09/30/83
PMX-81	04/15/80
PMX-130	10/17/84
PMX-132	10/31/84
PMX-134	02/05/85
PMX-142	09/03/86

VII. Proposed operation date:

	(a) Average Injection Rate:	(b) Maximum Injection Rate:	(c) Average Injection Pressure:	(d) Maximum Injection Pressure:
SHU No. 120	1500 BWPD	2500 BWPD	300#	In accordance with Rule 11 of Order No. R-4934-E
SHU No. 121	1700 BWPD	2500 BWPD	300#	
SHU No. 176	1000 BWPD	2000 BWPD	300#	

This sytem is closed and injecting mainly South Hobbs Unit produced water and some City of Hobbs makeup water.

Water injected is compatible with the receiving formation. Water analysis sheets for the South Hobbs Unit produced water and the City of Hobbs makeup water are attached.

VIII. Previously submitted by earlier referenced orders.

IX. There is no stimulation program planned for these conversions. If stimulation is required after conversion, C-103 will be filed to notify the NMOCD of our intention.

X. Previously submitted by earlier referenced orders.

XI. Previously submitted by earlier referenced orders (PMX-142).

XII. All available geologic and engineering data have been examined and there is no evidence of open faults or any other hydrolic connection between the injection zone and any underground source of drinking water.

XIII. Copy of this application and attachments has been mailed, as required by "Proof of Notice" section, to all parties on the attached service list.

SBB/tjt
APRD01-UUU(5)

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Amoco Production Company

Address: P. O. Box 68, Hobbs, NM 88240

Contact party: Mr. John M. Breeden Phone: (505) 393-1781

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☒ yes ☐ no
If yes, give the Division order number authorizing the project R-4934.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

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

Name: Steve Brownlee Title Administrative Analyst

Signature: Steve Brownlee Date: December 2, 1986

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. See attached information sheet.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division 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 name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 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.

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, Robert L. Summers

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of One weeks.

Beginning with the issue dated November 13, 1986

and ending with the issue dated November 13, 1986

Robert L. Summers
Publisher.

Sworn and subscribed to before me this 1 day of December, 1986

Vera Murphey
Notary Public.

My Commission expires Nov. 14, 1988
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

LEGAL NOTICE
NOVEMBER 13, 1986

Amoco Production Company will on or before ~~November 14, 1986~~ apply for administrative approval to convert three producing South Hobbs (GSA) Unit Wells to water injection wells. The well names, numbers, and locations are as follows:

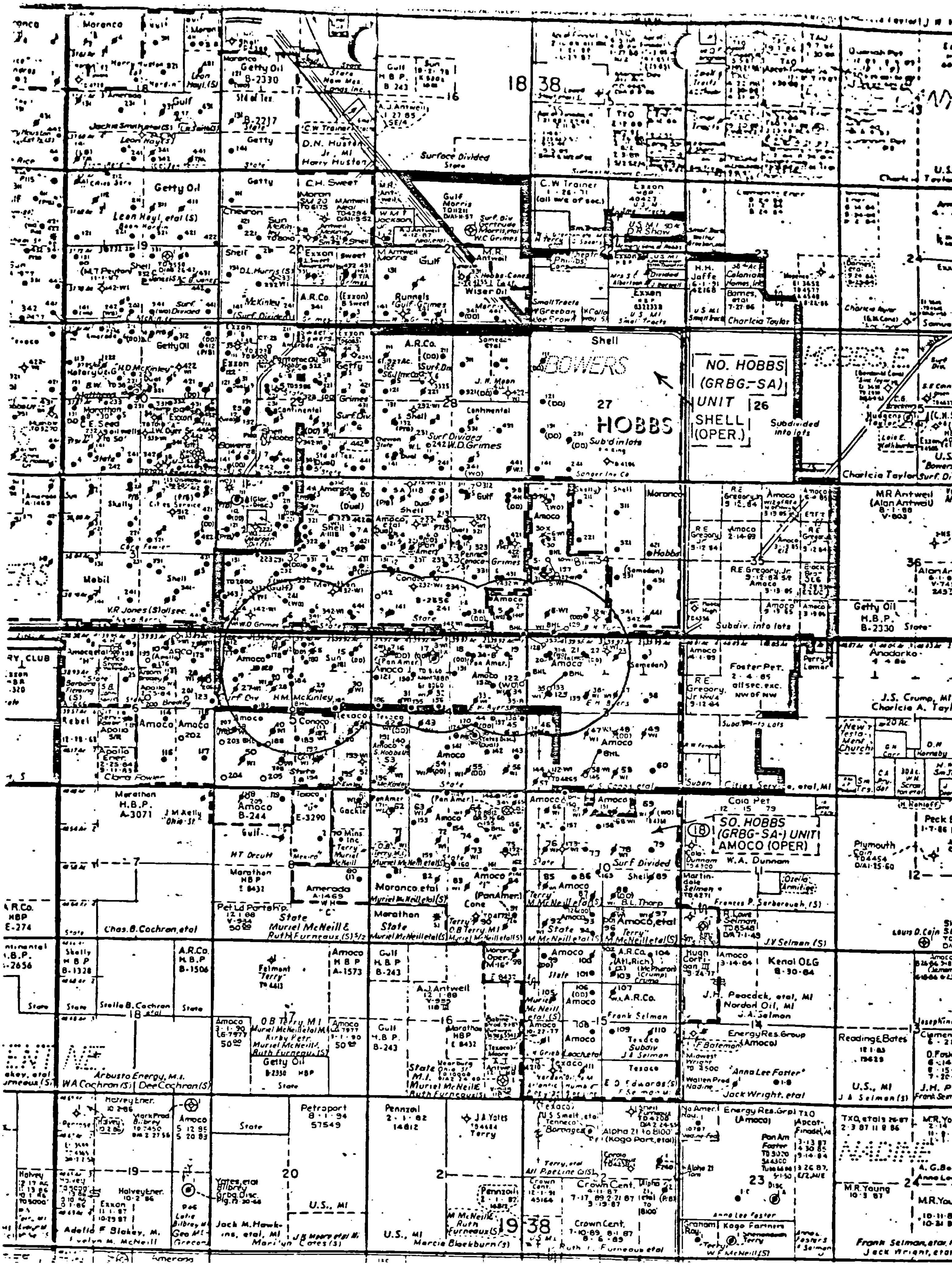
WELL NAME AND NUMBER	LOCATION
South Hobbs (GSA) Unit No. 120	Unit C, Sec. 5, T-19-S, R-38-E
South Hobbs (GSA) Unit No. 121	Unit E, Sec. 4, T-19-S, R-38-E
South Hobbs (GSA) Unit No. 176 (SL/BHL)	Unit A/D, Sec. 6/5, T-19-S, R-38-E

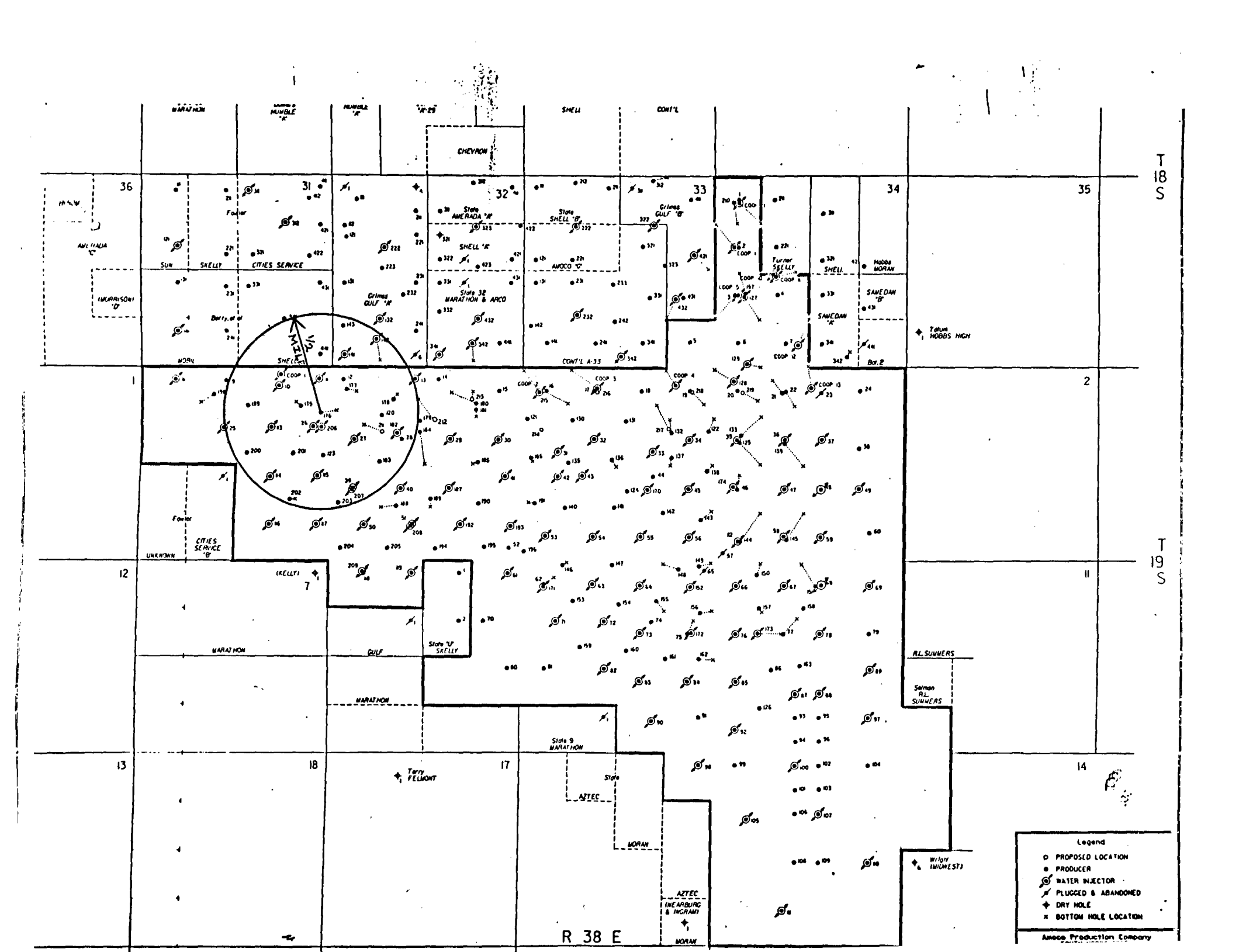
The purpose of this work is to expand the South Hobbs (GSA) Unit Pressure Maintenance Project. Water will be injected into the Grayburg-San Andres Formation at an average rate of 1000 BWIPD with an average injection pressure of 100 psi. Any questions concerning this project may be directed to:

Amoco Production Company
P.O. Box 68
Hobbs, New Mexico 88240
Attention: Mr. John M. Breedon
District Foreman
Phone: (505) 393-1781

Interested parties must file objectives or request for hearing with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

J.L. Krupka, District Manager
Amoco Production Company
P. O. Box 68
Hobbs, NM 88240


Getty Oil
B-2330
Surface Divided
State
C.W. Trainer
Exxon
Leon Hoyt, etal (S)
Gulf
Shell
A.R.Co.
Wiser Oil
Runnels
McKinley
Charlcia Taylor
BOWERS
27
HOBBS
Sub'd in lots
NO. HOBBS
(GRBG.-SA)
UNIT
SHELL
(OPER.)
Subdivided into lots
Continental
J. H. Moon
Surf. Divided W.D. Grimes
Mobil
Amoco
Marathon
Conoco
Texaco
State
Subdiv. into lots
Getty Oil
H.B.P.
B-2330
Foster Pet.
Anadarko
J.S. Crump, MI
Charlcia A. Taylor
Rebel
Apollo
Clara Fowler
SO. HOBBS
(GRBG-SA-) UNIT
AMOCO (OPER)
W.A. Dunnam
Cola Pet
Plymouth
H.T. Orcutt
Chas. B. Cochran, etal
Muriel McNeill &
Ruth Furneaux (S)
Moranco, etal
Surf. Divided
B.L. Thorp
Frances P. Serborough, (S)
J.V. Selman (S)
Kenal O&G
J.H. Peacock, etal, MI
Nordon Oil, MI
J.A. Selman
Energy Res. Group
(Amoco)
Frank Selman
Anna Lee Foster
Jack Wright, etal
Arbusto Energy, M.I.
WA Cochran (S)
Dee Cochran (S)
Stella B. Cochran
Petroport
8-1-94
57549
Pennzoil
2-1-82
14812
J.A. Yates
U.S., MI
Jack M. Hawkins, etal, MI
Marcie Blackburn (S)
Ruth Furneaux etal
Crown Cent.
Alpha 21 to 8100'
Kogo Farmers
M.R. Young
Adelia F. Blakey, M.
Frank Selman, etal
Jack Wright, etal
18 38
19 38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CONT'L
CHEVRON
SUN
SKELLY
CITIES SERVICE
Foster
Grimes GULF "A"
State AMERADA "A"
SHELL "A"
State 32 MARATHON & ARCO
State SHELL "B"
AMOCO "C"
Grimes GULF "B"
Turner SKELLY
SHELL
Hobbs MORAN
SAWDAN "B"
SAWDAN "A"
Tatum HOBBS HIGH
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Foster
CITIES SERVICE "B"
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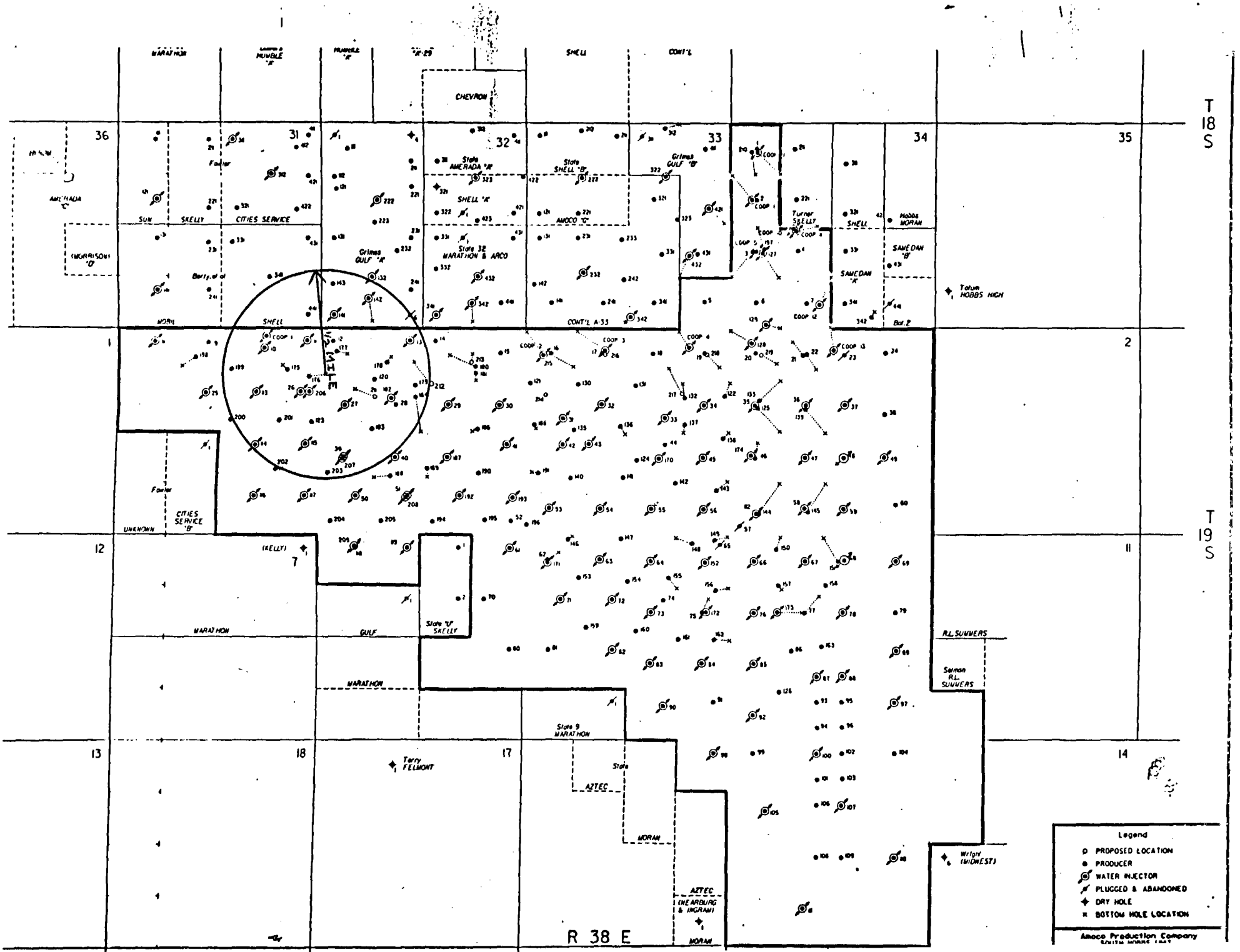
GULF
State "A" SKELLY
MARATHON
R.L. SUMMERS
Salmon R.L. SUMMERS
State 9 MARATHON
Terry FELMONT
State
AZTEC
MORAN
AZTEC (NEARBURG & INGRAM)
MORAN
Wiley (MIDWEST)
Legend
PROPOSED LOCATION
PRODUCER
WATER INJECTOR
PLUGGED & ABANDONED
DRY HOLE
BOTTOM HOLE LOCATION
Amoco Production Company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Berry et al
Grimes GULF "A"
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SHELL "A"
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AMOCO "C"
Grimes GULF "B"
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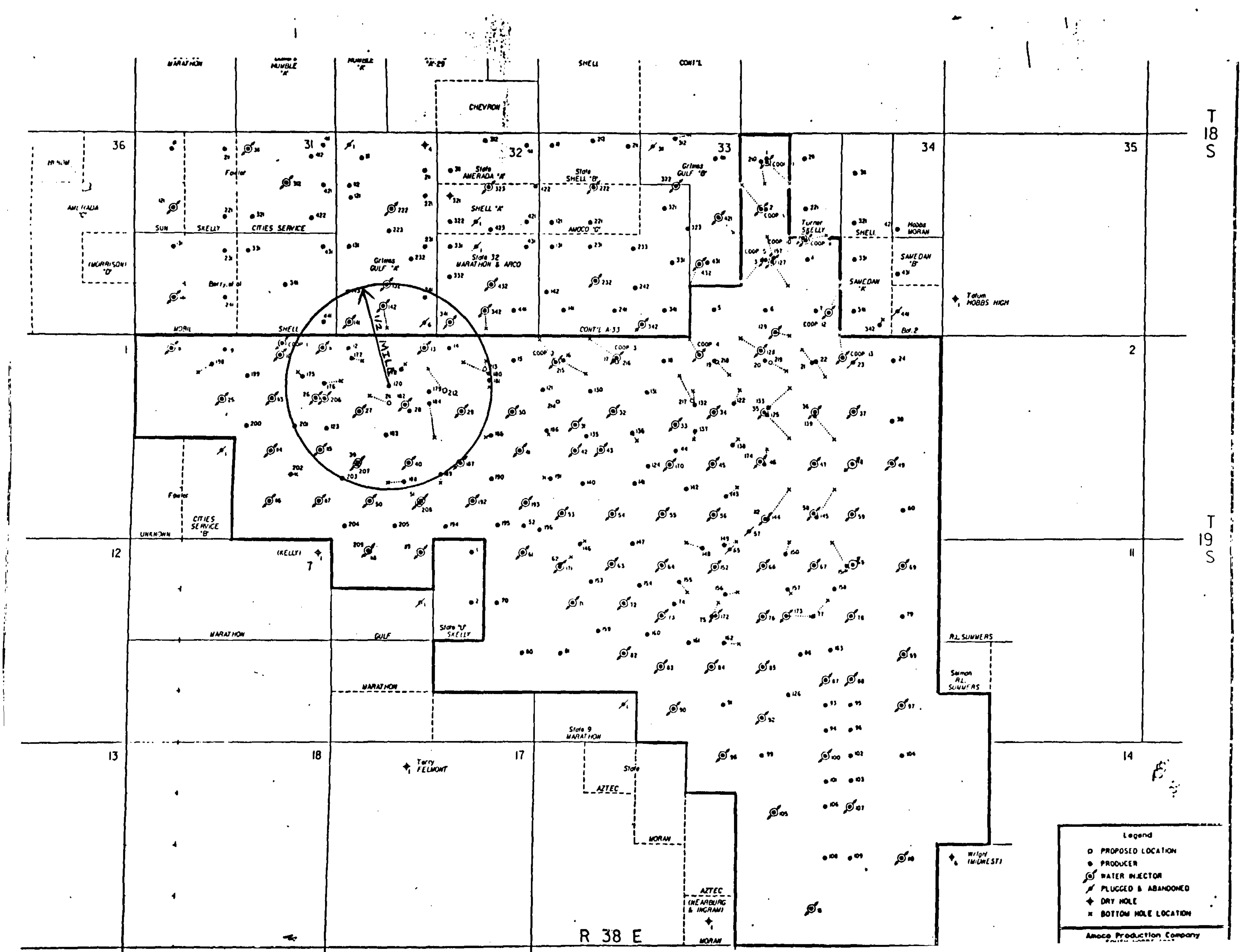
MARATHON
R.L. SUMMERS
Sarson R.L. SUMMERS
State 9 MARATHON
Terry FELMONT
State
AZTEC
MORAN
AZTEC (NEARBURG & INGRAM)
MORAN
Wright (MIDWEST)
Legend
PROPOSED LOCATION
PRODUCER
WATER INJECTOR
PLUGGED & ABANDONED
DRY HOLE
BOTTOM HOLE LOCATION
Amoco Production Company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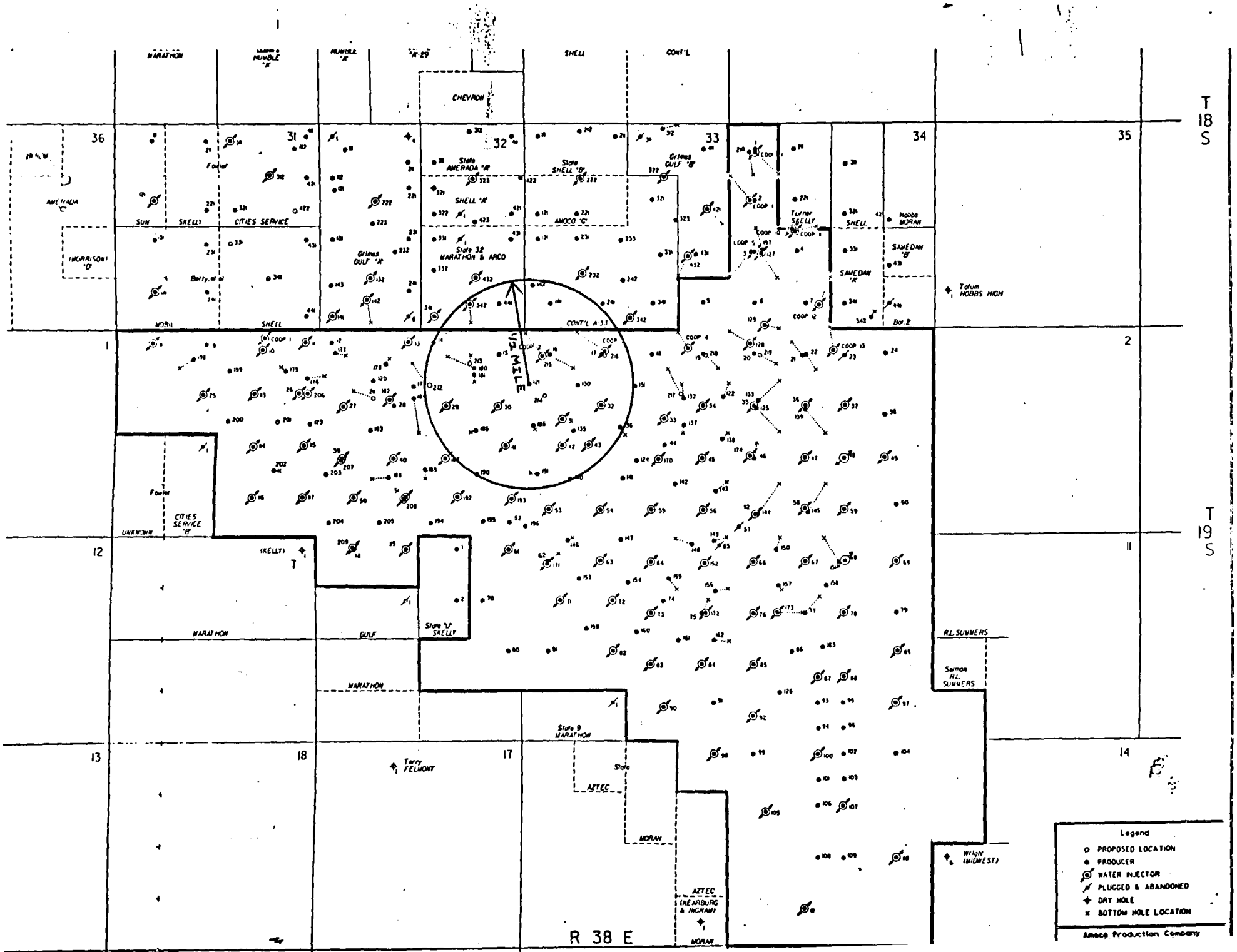
WATER INJECTOR
PLUGGED & ABANDONED
DRY HOLE
BOTTOM HOLE LOCATION
Amoco Production Company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MARATHON
HUMBLE "A"
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SHELL "A"
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Hobbs MORAN
SAMEDAN "B"
SAMEDAN "A"
Tatum HOBBS HIGH
Fowler
SUN
SKELLY
CITIES SERVICE
Grimes GULF "A"
State 32 MARATHON & ARCO
Berry, et al
MORRISON "D"
AMERADA "C"
MOBIL
CONT'L A-33
Bar. B
UNKNOWN
CITIES SERVICE "B"
(KELLY)
GULF
State "A" SKELLY
R.L. SUMNERS
Salmon R.L. SUMNERS
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MORAN
AZTEC (NEARBURG & INGRAM)
Wright (MIDWEST)
Legend
PROPOSED LOCATION
PRODUCER
WATER INJECTOR
PLUGGED & ABANDONED
DRY HOLE
BOTTOM HOLE LOCATION
Amoco Production Company

WELCHEM, INC.
706 North Main
P.O. Box 5
Seminole, Texas 79360
915-758-5867

Date Received: 8-20-
By: PL

WATER ANALYSIS REPORT

Company: AMOCO PRODUCTION CO.
County: Lea
State: New Mexico
Lease: S.H.U.
Lab No.: 10251

Date Typed: 8-27-85

Date Sampled: 8-19-85
Sampled By: H. Smith
Sample Source: 5000 Inlet (SHU Produced WTR.)

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na(calc.)	2,609	113
Calcium, Ca	419	21
Magnesium, Mg	111	10
Potassium, K	102	3
Iron, Soluble	0.40	0.02
Iron, Insoluble	0.13	< 0.01
Iron, Total	0.53	0.02
Manganese, Mn	0.00	0.00
Barium, Ba		
Strontium, Sr		
ANIONS		
Chloride, Cl	3,720	105
Sulfate, SO_4	640	15
Carbonate, CO_3	0	0
Bicarbonate, HCO_3	1,702	27

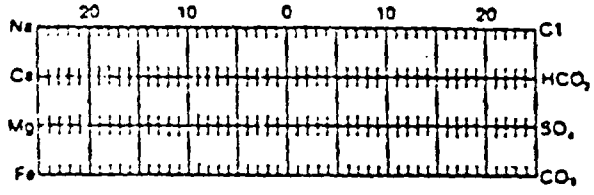
Total Dissolved Solids (calc.) 9,305

OTHER PROPERTIES

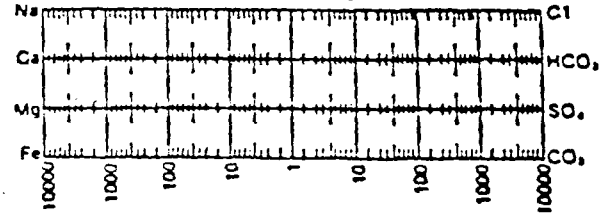
pH	7.6
Specific Gravity, 60/60 F.	1.006
Nonograph Sp. Gr.	1.004 - 1.008
Specific Gravity, Uncorrected	1.003
Temperature, (oF)	74.8
Resistivity, OHMS-CM	90 @ 74.8

WATER PATTERNS — me/l

STANDARD



LOGARITHMIC



STIFF & DAVIS STABILITY INDEX:

CO_3=	60°	100°	120°	180°
	+ 1.39	+ 1.87	+ 2.05	+ 2.82
SO_4=	55°	95°	122°	176°
	-25.35	-26.48	-26.66	-23.95

Remarks & Recommendations:

WELCHEM Representative Pat Hayton

WELCHEM, INC.
706 North Main
P.O. Box 5
Seminole, Texas 79360
915-758-5867

Date Received: 8-20-
By: P.

WATER ANALYSIS REPORT

Company: AMOCO PRODUCTION CO.
County: Lea
State: New Mexico
Lease: S.H.U.
Lab No.: 10253

Date Typed: 8-27-85

Date Sampled: 8-19-85
Sampled By: H. Smith
Sample Source: City Water Supply

DISSOLVED SOLIDS

CATIONS

	mg/l	me/l
Sodium, Na(calc.)	242	10
Calcium, Ca	91	4
Magnesium, Mg	16	1
Potassium, K	9	0.2
Iron, Soluble	0.31	0.01
Iron, Insoluble	0.41	0.01
Iron, Total	0.70	0.02
Manganese, Mn	0.00	0.00
Barium, Ba		
Strontium, Sr		

ANIONS

Chloride, Cl	360	10
Sulfate, SO_4	118	2
Carbonate, CO_3	0	0
Bicarbonate, HCO_3	250	4

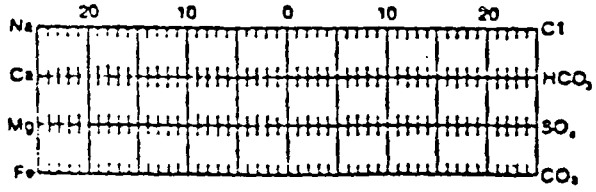
Total Dissolved Solids (calc.) 1,086

OTHER PROPERTIES

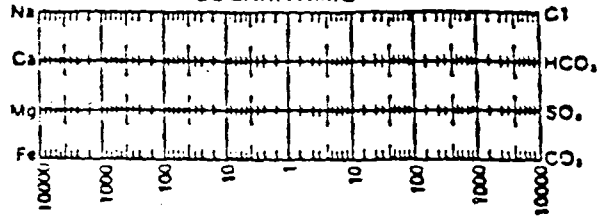
pH	7.8
Specific Gravity, 60/60 F.	1.001
Nonograph Sp. Gr.	0.998 - 1.002
Specific Gravity, Uncorrected	0.998
Temperature, (oF)	75.0
Resistivity, OHMS-CM	850 @ 75.0

WATER PATTERNS — *me/l*

STANDARD



LOGARITHMIC



STIFF & DAVIS STABILITY INDEX.

CO_3=	60°	100°	120°	180°
	+ 0.59	+ 0.96	+ 1.13	+ 1.67
SO_4=	55°	95°	122°	176°
	-20.81	-22.82	-22.74	-19.60

Remarks & Recommendations:

WELCHEM Representative Pat Taylor

INJECTION WELL DATA SHEET

Amoco Production Company (OPERATOR) South Hobbs Unit (LEASE)

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
176	(SL) 1200 FNL x 213 FEL	6	19-S	38-E
	(BHL) 1150 FNL x 125 FWL	5	19-S	38-E

Schematic

See attached well diagram and history.

Tabular Data

Surface Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Total depth _____

Injection interval

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

Tubing size 2 3/8 lined with Plastic Coated (material) set in a Guiberson Uni VI (brand and model) packer at 4065' feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg San Andres
2. Name of Field or Pool (if applicable) Hobbs Grayburg San Andres
3. Is this a new well drilled for injection? ☐ Yes ☑ No

   If no, for what purpose was the well originally drilled? Producing
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

   See attached history
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Paddock - Lower, Bowers - Upper

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE 8-5-85

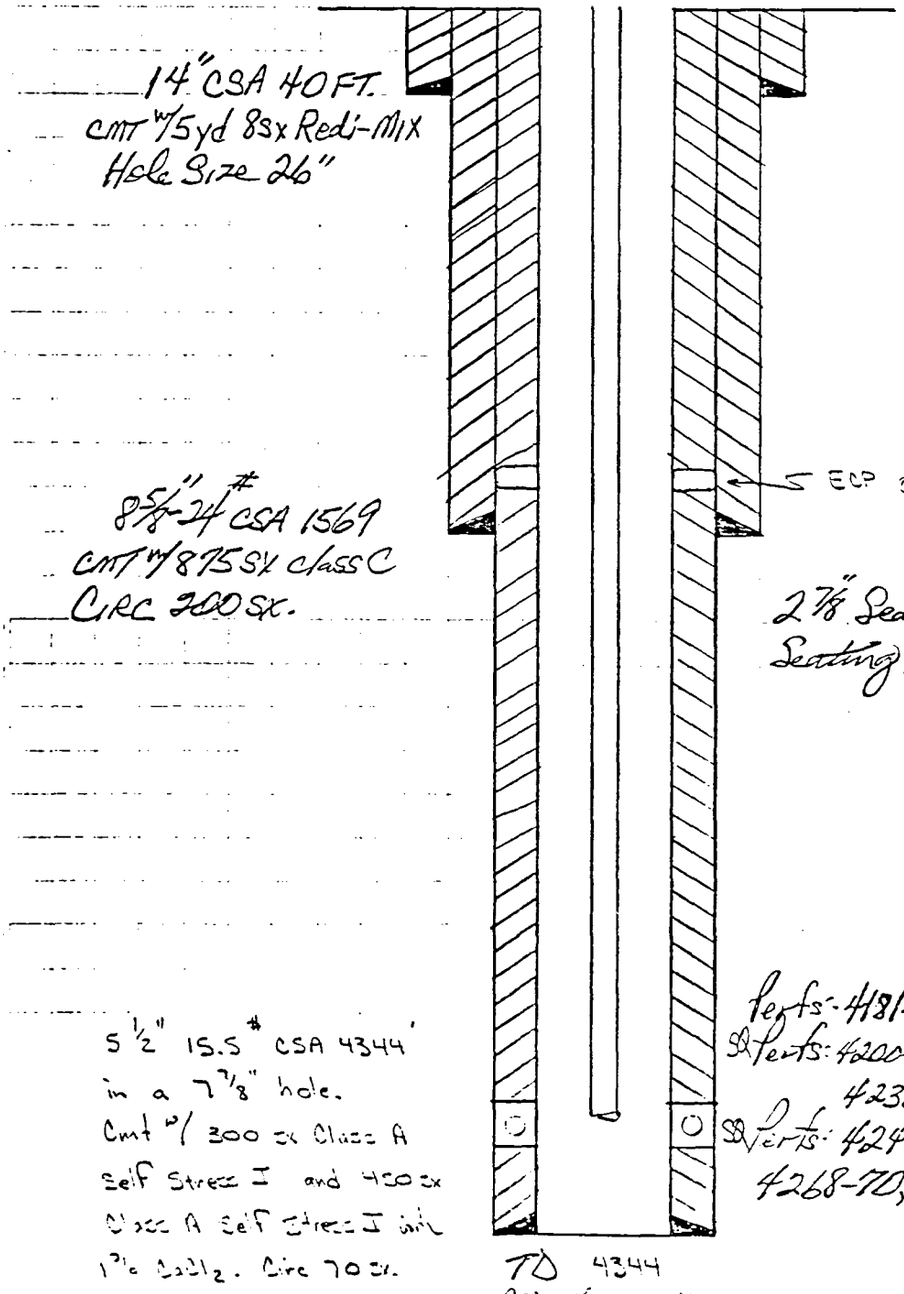
BY JAC

SUBJECT SOUTH HOBBS UNIT NO. 176

HOBBS GRAYBURG-SAN ANDRES

(SL) 1200 FNL x 213 FEL, Sec. 6, T-19-S, R-38-E
(BHL) 1150 FNL x 125 FWL Sec. 5, T-19-S, R-38-E
LEA COUNTY, New Mexico

3636' KB
3622' GL
3620.5' @ Bradenhead Outlet



South Hobbs Unit No. 176
(SL) 1200 FNL x 213 FEL Sec. 6, T-19-S, R-38-E
Lea County, New Mexico
Well History

Cementing Record

12-3-84: Spud. Set 40 Ft. of 14" conductor pipe in a 26" Hole. Cemented with 5 yd. 8 SX Redi-Mix.

12-11-84 Ran 8-5/8"-24# K-55 ST&C casing x set at 1569 in a 12-1/4 Hole. Cemented with 875 SX Class C 1% $CACL_2$. CIRC 200 SX to PIT.

12-18-84 Ran 5-1/2"-15.5# K-55 8 T&C casing x set at 4344 in a 7-7/8" Hole. Cemented with .300 SX Class A self stress I and 450 SX Class A self stress I with 1% $CACL_2$. CIRC. 70 SX.

Initial Completion

12-27-84: Perf. 4248-~~SG~~ 56 x 4259-61 x 4263-66 x 4268-70 x 4272-76 x 4280-86 x Acd perfs 4286-4248 x 50 Gal 15% NE HCL Acd per ft. Max TRTP 2700 psi. Avg. TRTP 1000 psi. AIR IBPM. Flush x 25 BW. ISITP Vac. R 2-7/8 Seating Nipple x 2-7/8 TBG. Seating Nipple LA 4285.

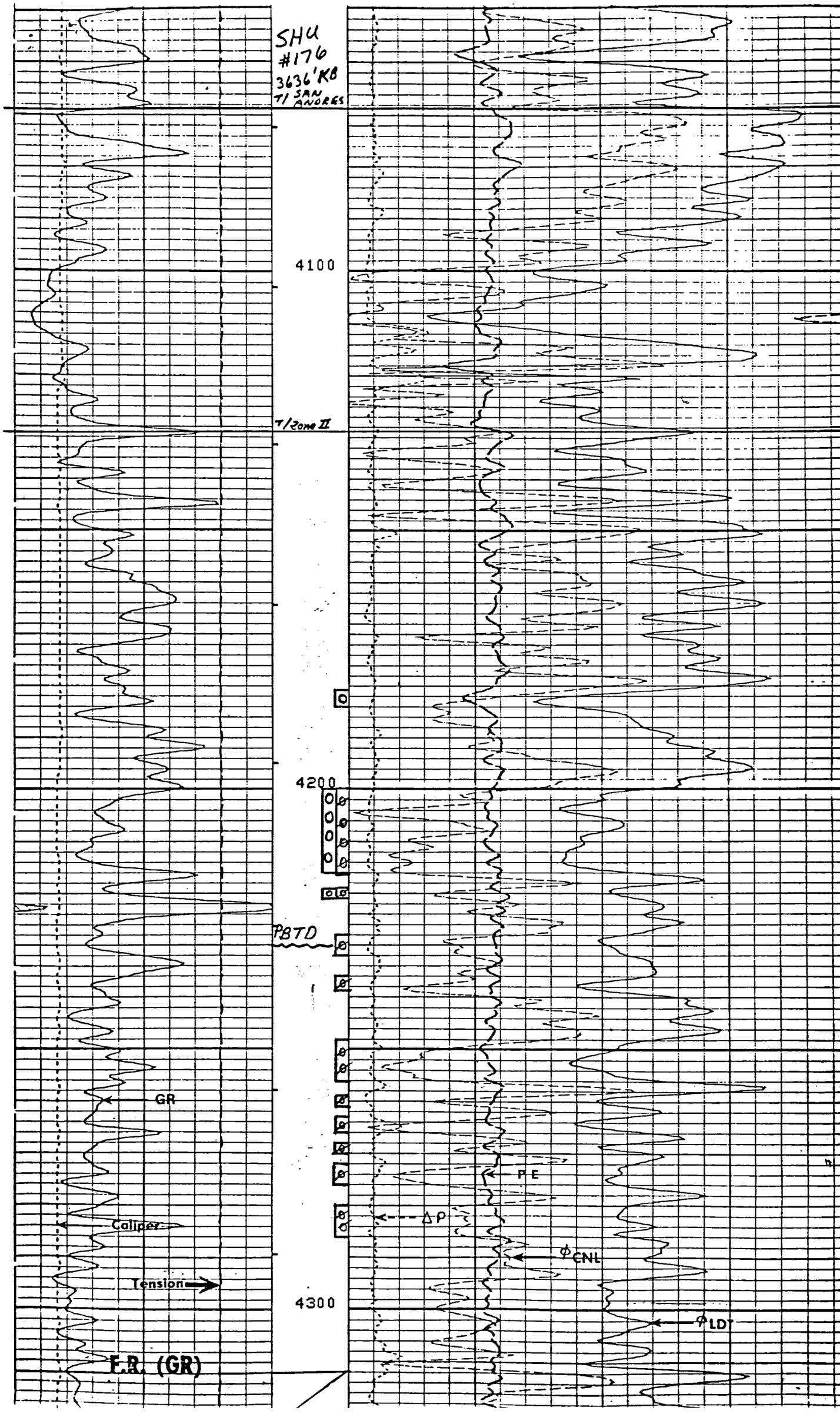
1-16-85: Perf. San Andres intervals 4200-16 x 4219-21 x 4228-32 x 4236-39 x 4 SPF. R Howco PPIP PKR x 4150 Ft. x TST x OK. Acd. perf 4236-39 x 4228-32 x 4219-21 x 4205-4216 x 50 Gal/Ft 15% NE HCL Acd x Additives. Max. prs. 4000 psi x min. prs. 2200 psi. AIR 1.2 BPM.

1-17-85: Acd. 2500 Gal 15% HCL Acd. x Max. Prs. 0 x Min. Prs. Vac x AIR 2 BPM x ISIP VAC PTG x RTG x 2-7/8 x TLA 4291 x INPE x PRS TST insert rod PMP 500 psi x OK. MOSU 1-16-85.

1-25-85: IP: 15 BOPD x 452 BWPD x 0 MCFD.

7-29-85: Purpose: R a production log x cmt sq x perf x acd to increase oil production x decrease water production. MISU 6-26-85. Pu 2-7/8" tbg. R 2-3/8" tbg. MOSU 6-27-85. R prod log. MISU 7-23-85. Cmt ret SA 4106. Pmp 50 sxs Class C Neat x 50 sxs Class C x 4# per sx Tuffplug x 25 sxs Class C Neat. Max 1700 psi x rev 43 sxs cmt. DO to 4230. Perf 4181-84 x 4200-16 x 50 gals 15% NE HCl per 1-ft setting. RR x P x 2-7/8" tbg x SN landed at 4217. MOSU 7-29-85. x 4219'
PPWO: 29 BOPD x 523 BWPD.
PAWO: 47 BOPD x 540 BWPD.

WH013-SS
JAC/sh


SHU
#176
3636'KB
T/ SAN ANDRES
4100
T/Zone II
4200
PBTD
GR
Caliper
Tension
4300
F.R. (GR)
PE
ΔP
ϕ_{CNL}
ϕ_{LDT}

INJECTION WELL DATA SHEET

Amoco Production Company (OPERATOR) South Hobbs Unit (LEASE)

121 (WELL NO.) 1450' FNL x 150 FWL (FOOTAGE LOCATION) 4 (SECTION) 19-S (TOWNSHIP) 38-E (RANGE)

Schematic

See attached well diagram and history

Tabular Data

Surface Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Total depth _____

Injection interval

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

Tubing size 2 3/8 lined with Plastic Coated (material) set in a

Guiberson Uni VI (brand and model) packer at 3820' feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg San Andres

2. Name of Field or Pool (if applicable) Hobbs Grayburg San Andres

3. Is this a new well drilled for injection? ☑ Yes ☐ No

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

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

See attached history

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Paddock - Lower, Bowers - Upper

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE 1-31-86

BY JAC

SUBJECT South Hobbs Unit Well No. 121

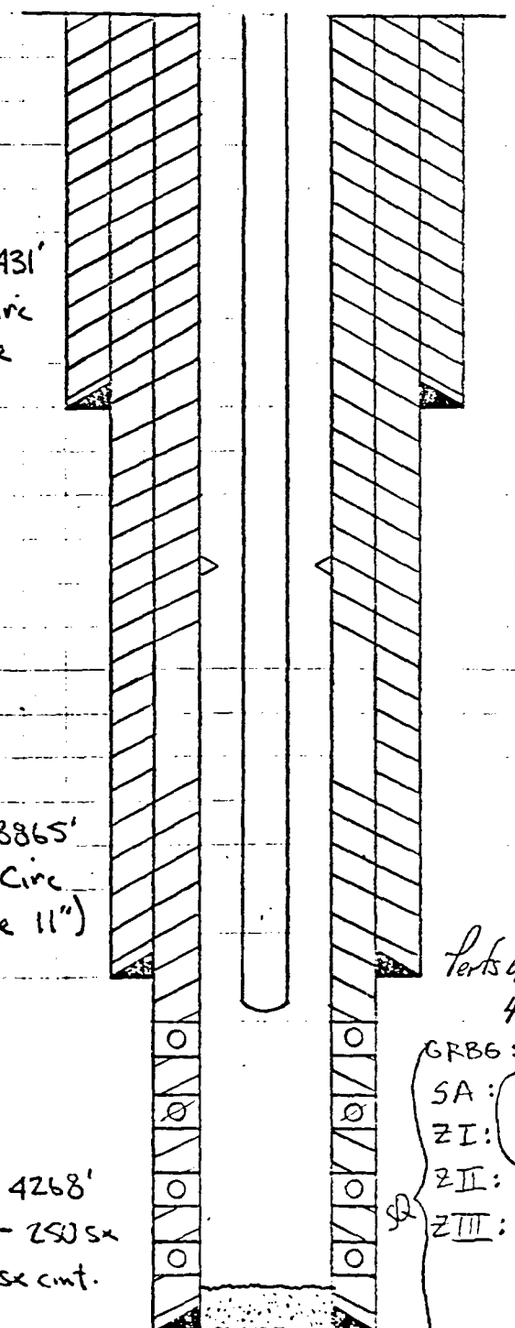
Hobbs G-SA

1450' FNL X 150 FWL, Section 4, T-19-S, R-38-E

Lea County, New Mexico

Elevation: 3625' KB

3614' GL



11¾"-42# CSA 1431' w/ 850 sx cmt. Circ 150 sx. (Hole size 15")

2⅜ TBG x SN LA 4173.

DV tool SA 2700'.

8⅝"-24# CSA 3865' w/ 1350 sx cmt. Circ 75 sx. (Hole size 11")

Perfs open- 4056-86, 4099-4146, 4154-63, 4167-71, 4176-80, 4186-92 74 JSPF.

GRBG: 3925'-50' x 3972'-88'

SA: 3998'-4008'

ZI: 4018'-30' (SQUEEZED)

ZII: 4050'-80' x 4082'-86'

ZIII: 4099'-4112', 14'-17', 20'-34', 37'-40', 42'-46', 54'-60', 63', 67', 71', 76'-80', 86'-92', 4194' 4200', 04'-40'.

5½"-15.5# CSA 4268' w/ DV tool. Stg 1- 250 sx cmt. Stg 2- 450 sx cmt. Circ 10 sx.

TD 4268'

PBD 4210'

South Hobbs Unit Well No. 121
1450' FNL x 150' FWL, Section 4, T-19-S, R-38-E

Completion and Workover History

11-11-78: Well spudded.

11-14-78: 11-3/4" - 42# CSA 1431' w/750 sx Class C cmt w/3% Lodense 6# st x 100 sx Class C cmt w/2% CaCl. Circ 150 sx cmt. (hole size 15")

11-18-78: R CCL log.

11-23-78: Csg parted. DO junk in hole to approximately 2850'.

11-27-78: 8-5/8" -24# CSA 3865' w/1250 sx Class C cmt w/3% Econolite x 6# st x 1/4 FS/sx x 100 sx Class C cmt w/9-1/2# st. Circ 75 sx cmt. TD 3865'. (hole size 11")

12-20-78: Core from 3880'-4265'.

12-21-78: R Relog from 3865'-4264'.

07-17-79: Install ESP.
IP: 90 BO x 2141 BW in 24 hrs. GOR 1333

11-11-79: R production log.

03-20-81: Csg collapsed at 1976'. Cut csg at 1920' x 2055'. TBG ? R CCl x caliper log. Perf at 1967' w/4 DPJS. Cmt retainer SA 1860'. Cmt w/300 sx Class C cmt w/additives. Rev out 2 sx. Max P 1250. DO to 2106'. PSA 1883'. Unable to establish inj rate. Spot 250 gals acd x establish inj rate. Cmt retainer SA 1824'. Cmt w/200 sx class C cmt x 15% st. Rev out 4 sx cmt. DO cmt retainer, collapsed csg, fill x CIBP to 4265'.

R 5-1/2" - 15.5# CSA 4268' w/DV tool. First stg cmted w/250 sx class C cmt. Second stg cmted w/450 sx class C cmt. Circ 10 sx. Tcmt 2620'. DO DV tool x float collar to 4261'.

R correlation log x perf from 3925'-50', 3972'-88', 3998'-4008', 4018'-30', 4050'-80', 4101'-05', -11', -16', -22', -28', -32' -38', -43', -55', -59', -63', -67', -71', -77', -87', -91', -95', -98', 4205'-09', -13', -19', 4222'-25', -31', -37', -40' w/2 SPF.

PSA 3880'. RBPSA 4257'. Pmp 1500 gals ASOL mix x flush w/9# brine. R GR/temp log. Pmp 250# graded rk st x 250# 100 mesh st in 12 bbls 30#-gelled brine. Pmp 1500 gals ASOL mix x flush w/9# brine. R GR/temp log. PSA 4032'. RBPSA 4089'. Pmp 1000 gals ASOL mix x flush w/9# brine. R GR/temp log from 4000'-4090'. PSA 3880'. RBPSA 3049'. Pmp 1000 gals ASOL mix x flush w/9# brine.

R GR/temp log from 3850'-4040'. Pmp 150# graded rk st in 7 bbls 30# gelled brine. Pmp 1000 gals ASOL mix x flush w/9# brine. R GR/temp log from 3850'-4040'.

R ESP.
PPWO: 43 BO x 2170 BW in 24 hrs. GOR 10279
PAWO: 222 BO x 2006 BW in 24 hrs. GOR 3297

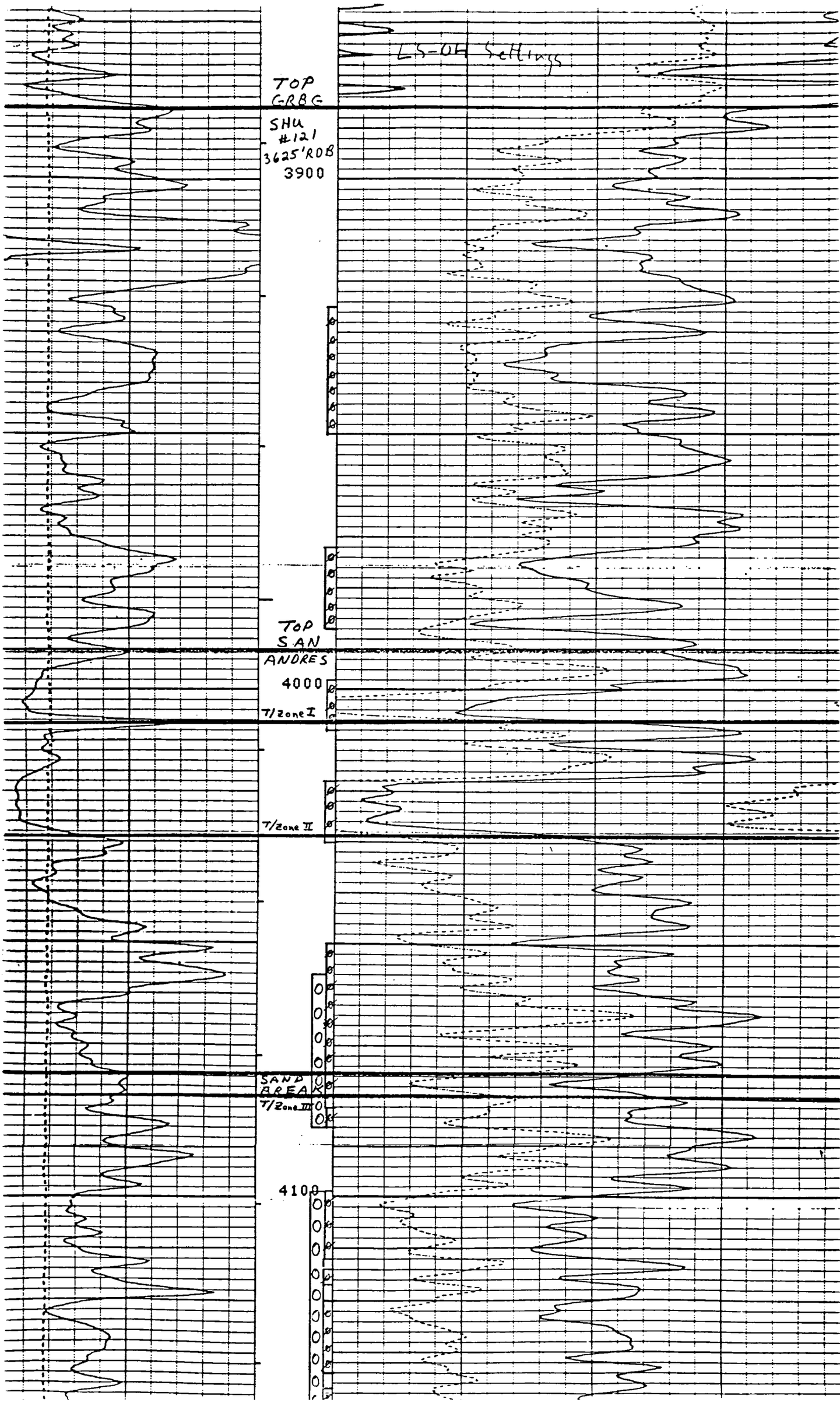
01-14-83: TD 4268 PBTD 4261
WO to selectively tst Grayburg x cmt sq Zone I perfs. RBP SA 3962. Acd perfs 3925-50 x 1500 gal 15% NE-HCL acd. Max 2400 psi x Min 1900. Air 2.5 BPM x ISIP 1600 psi. Pmp tst for 5 weeks. Final tst: Flw 0 BO x 7 BW x 702 MCF in 24 hr. Retr RBP at 3962 x plug back x SN 4261-4047. Cap x 10 ft Calseal. GIH x cmt Ret SA 4013. Cmt sq Zone I perfs 4018-30 x 50 sx Class C neat cmt x 4-1/2 sx into FM. Dumped 42 sx on top of ret. Final sq prs 3000 psi x air 2 BPM. Spot LCM pill x CO to 4261. Perf Zone III 4082-86 x 99-4112 x 14-17 x 20-34 x 37-40 x 42-46 x 54-60 x 76-80 x 86-92 x 94-4200 x 4204-40 x 2 SPF. Acd below PSA 4041 x 8000 gal 15% HCL in 4 equal stages. Max 900 psi x Min 0 psi. Air 3 BPM x ISIP Vac. GIH x 2400 BFPD. ESP pmp x variable speed drive. SA 3984.
PPWO: 40 BOPD x 1700 BWPD x 400 MCFD
PAWO: 10 BOPD x 874 BWPD x 410 MCFD

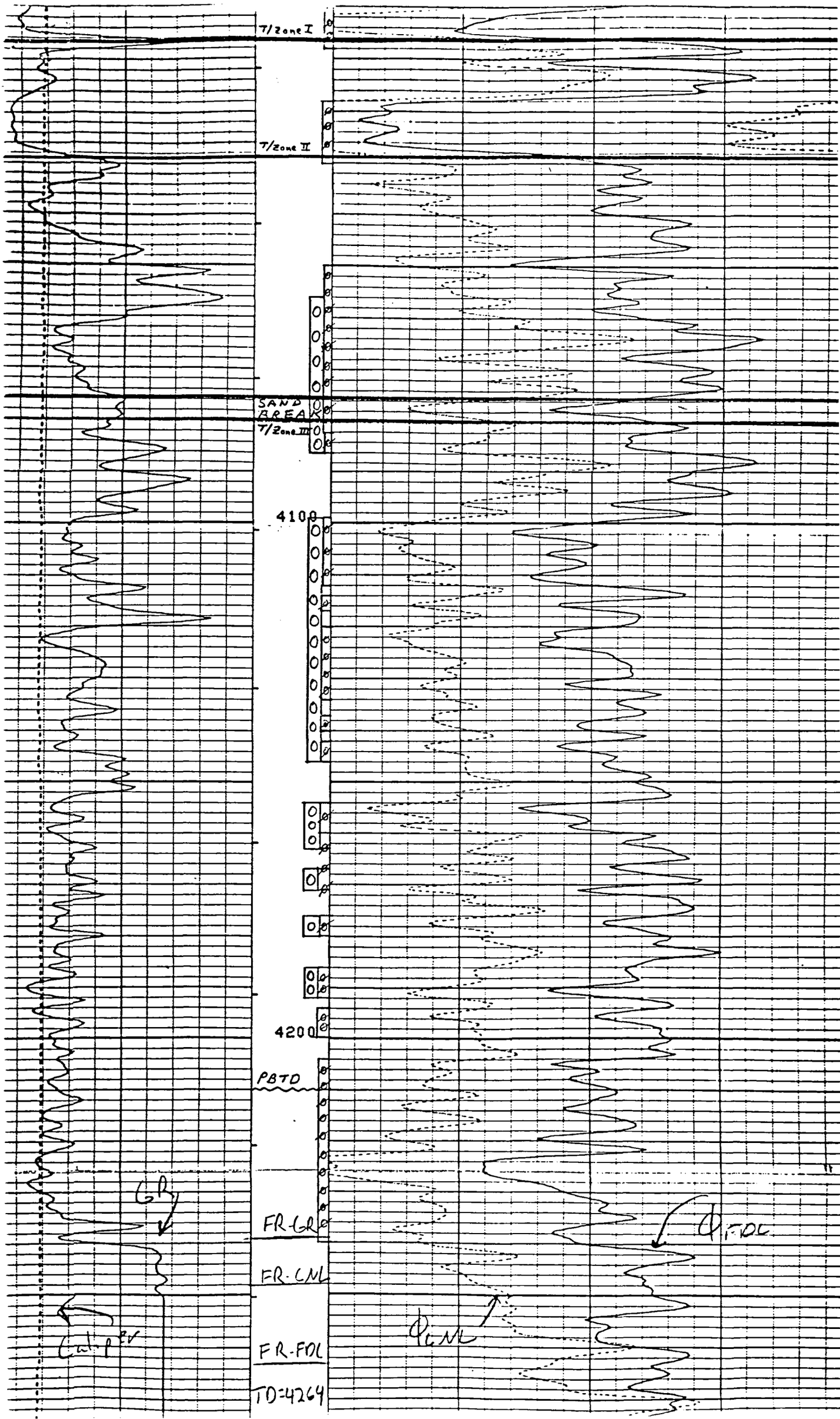
08-03-83: Successful WO to cmt sq San Andres Zone I. PB to 4040 x sn x Cal Seal. Cmt ret SA 3966 x pmp 50 sx Class C cmt x 100 sx Thix-set cmt x rev out 57 sx. Drl out to 4040 x prs tst sq to 800 psi x ok x CO to 4261.
PPWO: 9 BOPD x 821 BWPD
PAWO: 16 BOPD x 383 BWPD x 34 MCF

01-23-85: Purpose: Acd. to increase prod. MISU 1-5-85. R. Halliburton's PPI PKR x acd in four-ft. intervals the perfs 4100-12 x 4114-17 x 4120-34 x 4137-40 x 4142-46 x 4154-60 x 4176-80 x 4186-92 x 4194-4200 x 4204-25 x 200 gals 15% NE HCL per four ft. PSA 4095 - Acd 5000 gal 15% NE HCL gelled Acd x 165 Gal Visco 3VS-952 x AIR 2 BPM x 0 psi x ISIP Voc. RR x P x 2-3/8 TBG x SN LA 4173. MOSU 1-9-85
PPWO: 54 BOPD x 181 BWPD x 21 MCFD
PAWO: 64 BOPD x 170 BWPD x 20 MCFD

01-31-86: MISU 1-22-86. Cmt ret SA 3825. Pmp 100 sxs Class C Neat x 100 sxs Class C x 4#/sx Tuffplug x 50 sxs Thick-Set x 100 sxs Class C Neat. 1750 psi sq x rev 77 sxs. DO to 4210. Perf 4056-4086 x 4099-4146 x 4154-4163 x 4167-4171 x 4176-4180 x 4186-4192 x 4 JSPF. R PPI PKR x acd 4060-4086 x 4100-4146 x 4154-4163 x 4167-4171 x 100 gals 15% NEFE HCl per 4-ft. setting. PSA 4039. Pmp 1500 gals 15% NEFE HCl x 55 gals Nalco Visco 3VS-952. RR x P x 2-7/8" tbg x SN LA 4183. MOSU 1-31-86.
PPWO: 15 BOPD x 673 BWPD
PAWO: 28 BOPD x 649 BWPD x 2 MCFD.

~~US WELL 5436~~ 6-17-86
RAN PROD LOG X IDENTIFIED WATER ENTRY THRU THIN ZONE
WITHIN ZONE III. NO SQ CMT WORK WAS PERFORMED.
MODIFIED TO INC LIFT CAPACITY IN ATT TO PMP OFF WELL.
PPWO: 16 80PD X 640 BWPD X 1 MCFD.
PAWO: 22 90PD X 706 BWPD X 9 MCFD.


LS-OH Settings
TOP
GRBG
SHU
#121
3625'ROB
3900
TOP
SAN
ANDRES
4000
T/Zone I
T/Zone II
SAND
BREAK
T/Zone III
4100


T/Zone I
T/Zone II
SAND BREAK
T/Zone III
4100
4200
PBTD
GR
FR-GR
FR-CNL
FR-FDL
TD=4264

INJECTION WELL DATA SHEET

Amoco Production Co. (OPERATOR) South Hobbs Unit (LEASE)

120 (WELL NO.) 1272'FNL x 1420'FWL (FOOTAGE LOCATION) 5 (SECTION) 19-S (TOWNSHIP) 38-E (RANGE)

Schematic

See attached well diagram and history

Tabular Data

Surface Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Total depth _____

Injection interval

_____ feet to _____ feet

(perforated or open-hole, indicate which)

Tubing size 2 3/8" lined with Plastic Coated (material) set in a Guiberson Uni VI (brand and model) packer at 3905' feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg San Andres

2. Name of Field or Pool (if applicable) Hobbs Grayburg San Andres

3. Is this a new well drilled for injection? ☑ Yes ☐ No

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

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) See attached history

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Paddock-Lower, Bowers-Upper

SHEET NO. OF

FILE

APPN

DATE 10-21-82

BY LAH

Amoco Production Company

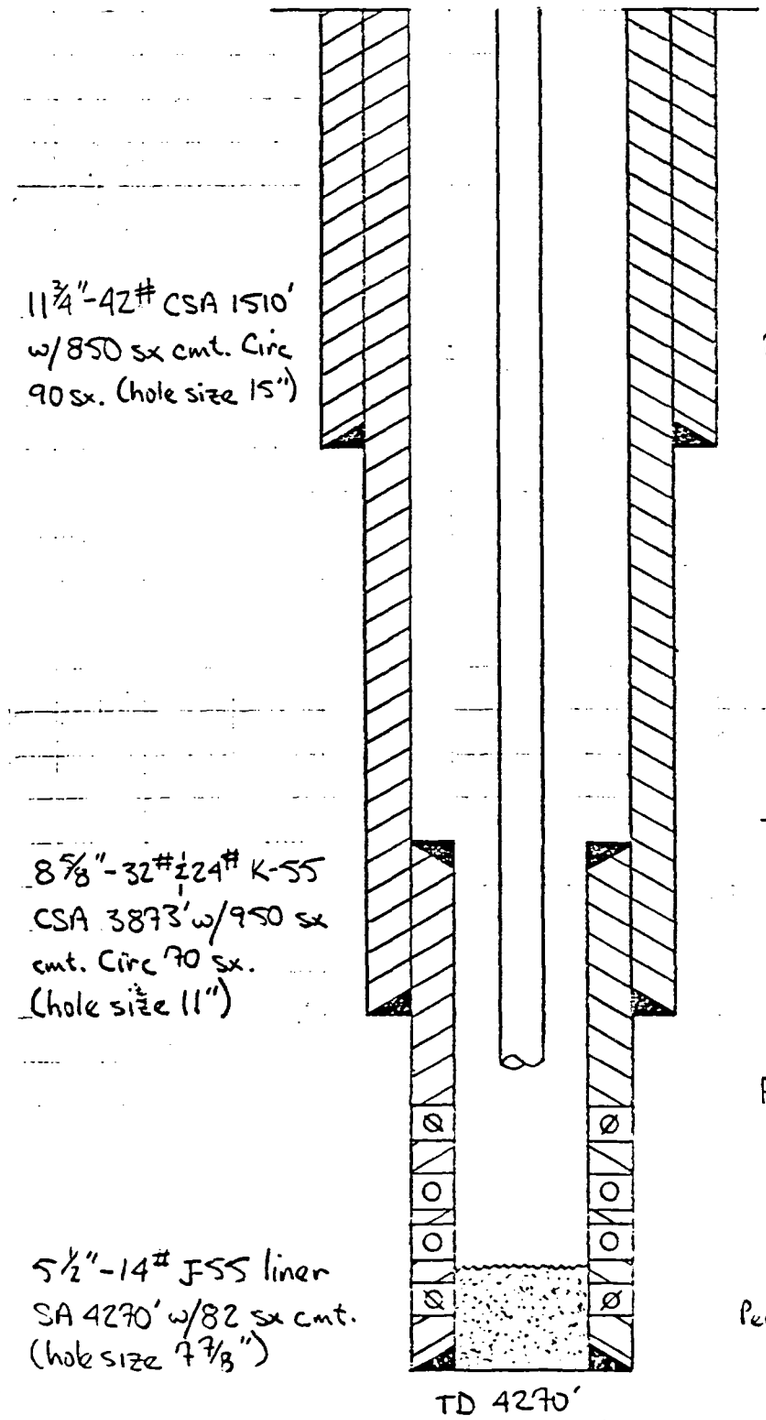
ENGINEERING CHART

SUBJECT South Hobbs Unit Well No. 120

Hobbs G-SA

1272' FNL x 1420' FWL, Section 5, T-19-S, R-38-E
Lea County, New Mexico

Elevation: 3632' RDB
3620' ℄ Bradenhead Outlet



$11\frac{3}{4}$"-42# CSA 1510' w/850 sx cmt. Circ 90 sx. (hole size 15")

$8\frac{5}{8}$"-32#&24# K-55 CSA 3873' w/950 sx cmt. Circ 70 sx. (hole size 11")

$5\frac{1}{2}$"-14# J-55 liner SA 4270' w/82 sx cmt. (hole size $7\frac{7}{8}$")

TD 4270'
PBD 4204'

$2\frac{7}{8}$"-6.5# J-55. SN LA 4180'.

Top of liner 3684'.

Perfs: (Squeezed) 4063'-67', 71'-73', 78'-82', 84'-8
89'-90', 93'-95', 4104'-07' 10'-1
18'-22', 26'-39', 44'-54' w/2 JSP
4163'-74', 76'-83', 84'-88', 89'-
92'-97' w/4 JSPF.

Perfs sq: 4022'-36', 44'-54', 4210'-40'.

South Hobbs Unit Well No. 120
1272' FNL x 1420' FWL, Section 5, T-19-S, R-38-E

Completion and Workover History

12-10-78: Well spudded.

12-13-78: R 11-3/4"-42# CSA 1510' w/750 sx lite cmt plus additives x 100 sx Class C cmt x 2% CaCl. Circ 90 sx cmt. (hole size 15")

12-20-78: R 8-5/8" - 32# x 24# K-55 ST&C CSA 3873' w/800 sx lite cmt plus additives x 150 sx Class C cmt. Circ 70 sx cmt. (hole size 11")

01-21-79: Cored non-continuously from 3896'-4270'. R CNL/FDC x DLL-SFL from 4262'-3800'. TD 4270'.

05-12-79: Dump 68 sx pea gravel x cap w/3 sx sn. Cmt retainer SA 3859'. Ret fell to btm at 4066'. Cmt retainer SA 3842'. Sq w/395 sx cmt w/loss circ additives. Would not sq. Cmt w/200 sx cmt w/loss circ additives. Max sq P 900. Rev out 2 bbls cmt. DO retainer x cmt to 4060' x lost cmt retainer x pea gravel to 4270' w/7-3/4" bit.

05-13-79: R 586' of 5-1/2"-14# J-55 lnr SA 4270'. Top lnr at 3684'. Cmt w/90 sx Class C cmt x 1/4# Flocele/sx. Rev out 8 sx cmt. DO cmt to 4260' w/4-3/4" bit.

05-16-79: R CBL from 3600'-4248' x GR/CCL log from 4100'-4256'. Perf from 4210'-4240' w/4 DPJSPF X tracer charges. R GR from 4150'-4260'. Spot 52 gals 15% LSTNE HCl. Acd w/250 gals 15% HCl. Max TP 600. Min TP 0. ISIP 0. AIR 1 BPM. R GR from 4150'-4260'.

08-07-79: Cmt retainer SA 4204'. Pmp 10 sx Class C cmt. Rev out 0.5 bbls cmt.

Perf from 4163'-74', 4176'-83', 4184'-88', 4189'-91', 4192'-97' w/4 JSPF.

PSA 4135'. Acd w/500 gals 15% LSTNE HCl. Max P 1000. Min P 0. ISIP vac. AIR 1 BPM.
IP: 1 BO x 43 BW in 24 hours. GOR 20000

01-18-80: CIBP SA 4090'. Perf 5-1/2" lnr from 4022'-36', 4044'-54' w/2 JSPF.
✓ PPWO: 0 BO x 36 BW in 24 hrs.
✓ PAWO: 0 BO x 253 BW in 24 hrs.

06-24-80: Cmt retainer SA 3980'. Sq perfs from 4022'-4054' w/150 sx Incor cmt. Max sq P 2500. Rev out 115 sx cmt. DO cmt retainer x prs tst csg to 800#. OK. DO cmt x CIBP at 4090' to 4204'.

South Hobbs Unit Well No. 120

Perf 4063'-67', 4071'-73', 4078'-82', 4084'-87', 4089'-90', 4093'-95', 4109'-07', 4110'-14', 4118'-22', 4126'-39', 4144'-54' w/2 JSPF. Spot 200 gals 15% NE HCl at 4169'. PSA 3804' x tailpipe at 4014'. Acd w/4800 gals 15% NE HCl in stgs w/300# mothballs x 600 gals 30# gel between stgs. Flush w/27 BO. Max P 1000. Min P 0. ISIP vac. AIR 2.8 BPM. R temp survey.
PPWO: 0 BO x 253 BW in 24 hrs. GOR 0
PAWO: 0 BO x 613 BW in 24 hrs. GOR 0

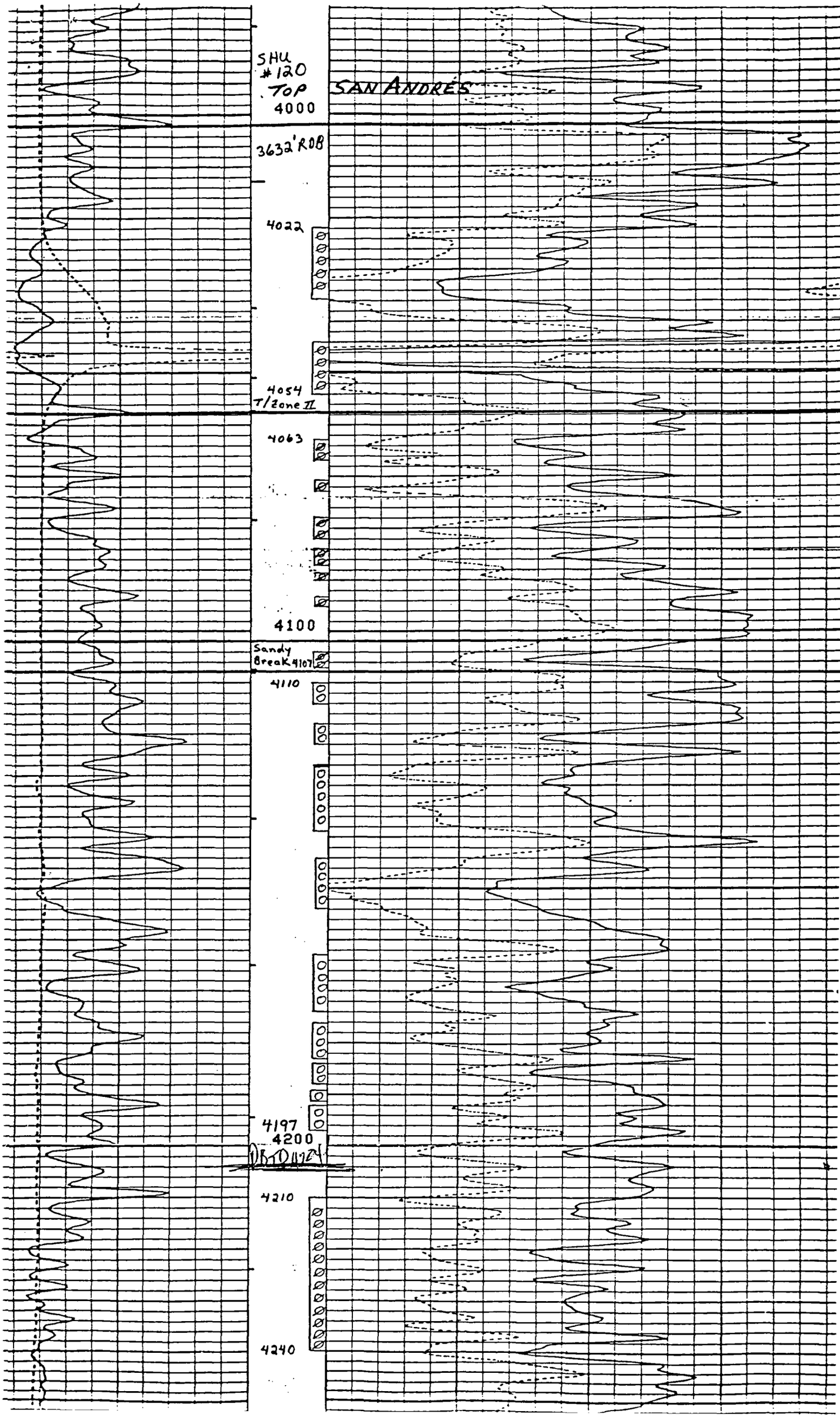
08-08-80: Plug back to 4058' w/sn. Cmt retainer SA 3921'. Sq perfs from 4022'-54' w/50 bbls brine pad x 300 gals Flocele x 50 sx class H cmt. Max sq P 1500. Rev out 15 sx cmt. DO cmt retainer x cmt x sn to 4143'.

PSA 4000'. Tailpipe at 4063'. Acd w/4500 gals 15% NE HCl x 300# rk st x 300# paraformaldehyde x 1000 gals gelled brine x 30 BFW in 3 equal stages.
PPWO: 0 BO x 613 BW in 24 hrs.
PAWO: 2 BO x 636 BW in 24 hrs. GOR 7000

10-12-83: Successful WO. Cmt sq San Andres Zone I x acd Zone III. Pmp 160 sx cmt x 1500 psi. DO cmt x cmt ret to 3997'. Tst csg. 1500 psi x OK. DO to 4208'. RTG x PSA 4100'. Acd 4000 gal 15% NE HCl acd x 4 equal stages separated by 900 gal GB x 900 lb rk st x 300 lb 100 mesh st. AIR 2.2 BPM x Max Prs 1000 psi x ISIP vac. RTG x SN LA 4180'.
PPWO: 0 BOPD x 1210 BWPD
PAWO: 18 BOPD x 31 BWPD x 3 MCF

1-16-85: WO to acd to increase prod. MISU 1-7-85. R PPI PKR x Acd perfs x 4197-4126 x 2 ft. intervals x 100 gal/interval 15% NE HCL x additives x max prs. 2200 psi x min prs. 1200 psi x AIR 0.9 BPM. PSA 4100 x Acd below PKR x 4000 gal 15% NE gelled acd x additives x max prs. 0 psi x AIR 2 BPM. INPE x SN LA 4180. MOSU 1-9-85.
PPWO: 12 BOPD x 107 BWPD
PAWO: 46 BOPD x 440 BWPD

JAC/eoa
WH006-LL


SHU
#120
TOP
4000
SAN ANDRES
3632' ROB
4022
4054
T/Zone II
4063
4100
Sandy
Break 4107
4110
4197
4200
4210
4240

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

TONEY ANAYA
GOVERNOR

December 5, 1986

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88240
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

PMX 143

RE: Proposed:
MC_____
DHC_____
NSL_____
NSP_____
SWD X
WFX_____
PMX_____

Gentlemen:

I have examined the application for the:

Amoco Production Company	South Hobbs GSA Unit #120-C 5-19-38, #121-E 4-19-38			
Operator	Lease & Well No.	Unit	S-T-R	#176-A/D 6/5-19-38

and my recommendations are as follows:

OK -- Jerry Sexton

Yours very truly,

Jerry Sexton
Supervisor, District 1

/mc