ITEM III

WELL DATA

SOUTH HOBBS UNIT

NORTHERN LEASELINE INFILL DRILLING

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: Charles M. Herring Title Administrative Analyst (SG)

Signature: Charles M. Herring Date: August 4, 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. R-4934, 12-3-84; R-4934-A, 8-4-83; R-4934-C, 9-30-83; PMX-81, 4-15-80; PMX-130, 10-17-74; PMX-132, 10-31-84; PMX-134, 2-5-85

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.

INJECTION WELL DATA SHEET

Amoco (OPERATOR) — South Hobbs Unit (LEASE)

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
212	1478 FNL x 2589 FWL	5	19-S	38-E

Schematic

See Attached sketch

Tabular Data

Surface Casing

Size 8 5/8" Cemented with _____ sx.

TOC CIRC feet determined by _____

Hole size 12 1/4

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 5 1/2" Cemented with _____ sx.

TOC CIRC feet determined by _____

Hole size 7 7/8

Total depth 4300

Injection interval

4026 feet to 4230 feet, Perfs
(perforated or open-hole, indicate which)

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

Baker lok-set (brand and model) packer at ± 3980 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

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

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

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

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) NONE

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Bowers ± 3150, Paddock ± 5500, Blinebry ± 5700, Drinkard ± 6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

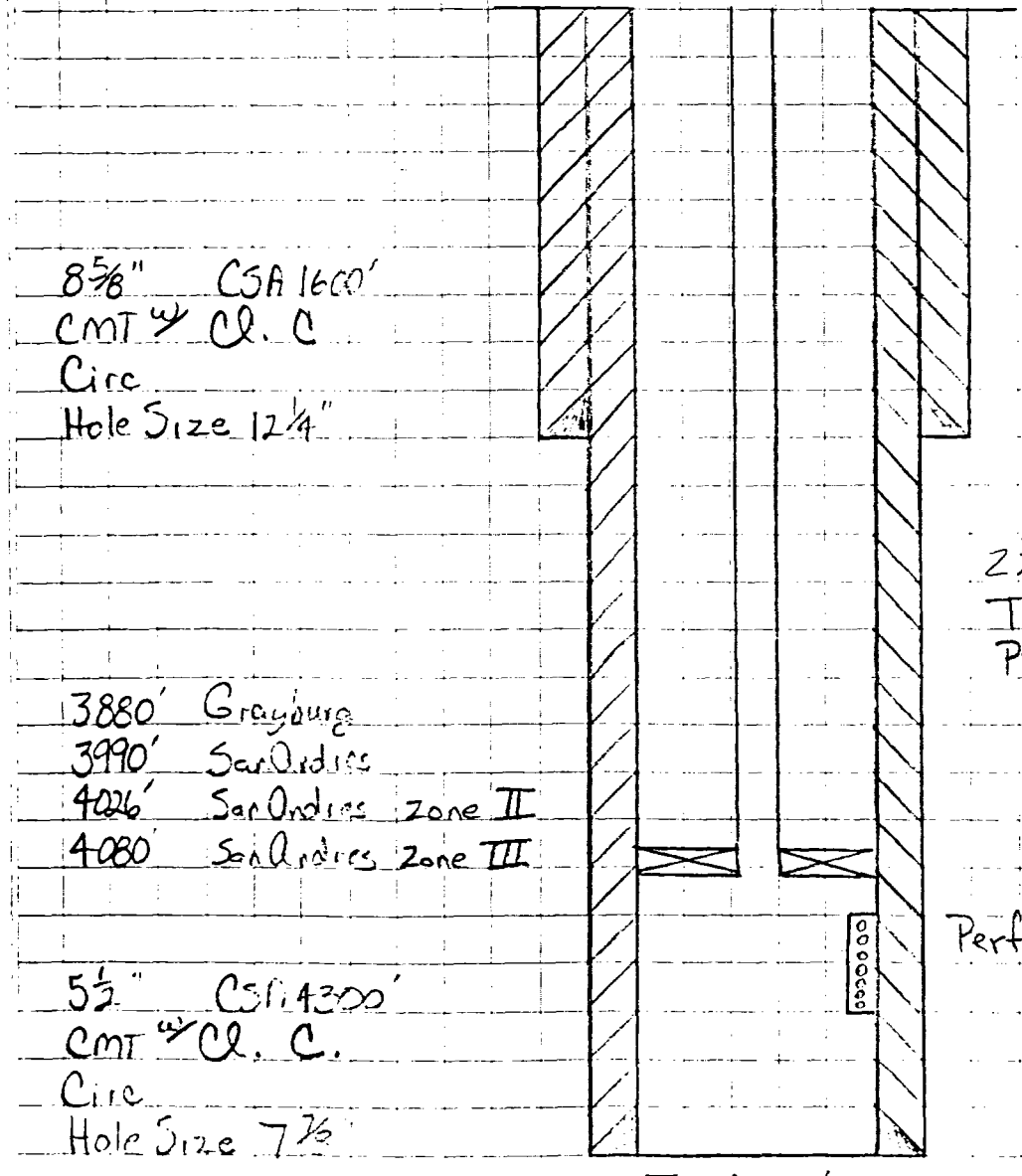
DATE

BY

SUBJECT South Hobbs Unit No. 212

(SL) 1478' FNL x 2589' FWL, Sec. 5, T-19-S, R-38-E
(BHL) 900' FNL x 2450' FWL, Sec. 5, T-19-S, R-38-E

Elev: 3622 GL.



INJECTION WELL DATA SHEET

Amoco (OPERATOR) South Hobbs Unit (LEASE)

213 (WELL NO.) 890 FNL X 1275 FEL (FOOTAGE LOCATION) 5 (SECTION) 19-S (TOWNSHIP) 38-E (RANGE)

Schematic

See attached sketch

Tabular Data

Surface Casing

Size 8 5/8" Cemented with _____ sx.

TOC Circ feet determined by _____

Hole size 12 1/4

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 5 1/2" Cemented with _____ sx.

TOC Circ feet determined by _____

Hole size 7 7/8

Total depth 4300

Injection interval

4010 feet to 4227 feet perfs

(perforated or open-hole, indicate which)

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

Baker Lok-Set (brand and model) packer at 3950 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

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

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

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

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) None

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Rowers ± 3150, Paddock ± 5500, Blinebry ± 5700, Drinkard ± 6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

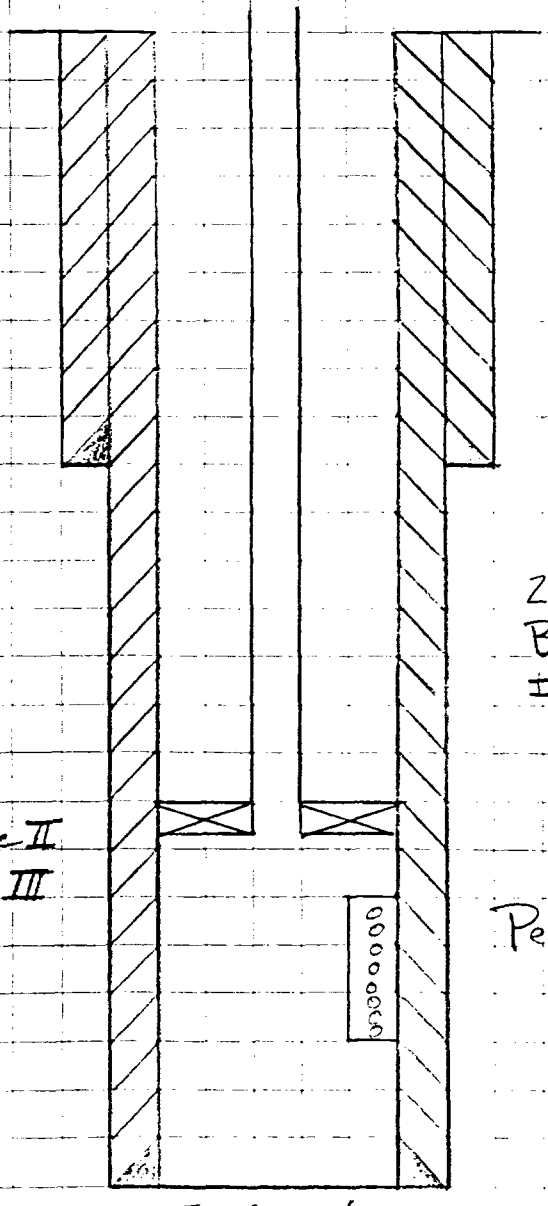
DATE

BY

SUBJECT South Hobbs Unit Wn. 213

(SL) 890' FNL x 1275' FEL, Sec. 5, T-19-S, R-38-E
(BHL) 680' FNL x 1375' FEL, Sec. 5, T-19-S, R-38-E

Elev: 3623' G.L.



8 5/8" CSA 1600'
CMT w/ Cl. C
Circ.
Hole Size 12 1/4"

2 3/8" Plastic Coated Tbg X
Baker Lok-set PSA
± 3950' TVD

3879' Grayburg
3970' San Andres
4010' San Andres Zone II
4074' San Andres Zone III

Perfs: 4010 - 4227' TVD
Approximately Gross Interval

5 1/2" CSA 4300'
CMT w/ Cl. C.
Circ
Hole Size 7 7/8

TD. 4300'

INJECTION WELL DATA SHEET

Amoco — OPERATOR | South Hobbs Unit — LEASE

215	1398 FNL X 1227 FWL	4	19-S	38-E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic

See attached sketch

Tabular Data

Surface Casing

Size 8 5/8" Cemented with _____ sx.

TOC CIRC feet determined by _____

Hole size 12 1/4

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 5 1/2" Cemented with _____ sx.

TOC CIRC feet determined by _____

Hole size 7 7/8

Total depth 4300

Injection interval

4075 feet to 4228 feet Perfs
(perforated or open-hole, indicate which)

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

Baker lok-set (brand and model) packer at 4025 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

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

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

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

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) NONE

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Bowers ±3150, Paddock ±5500, Blinebry ±5700, Drinkard ±6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

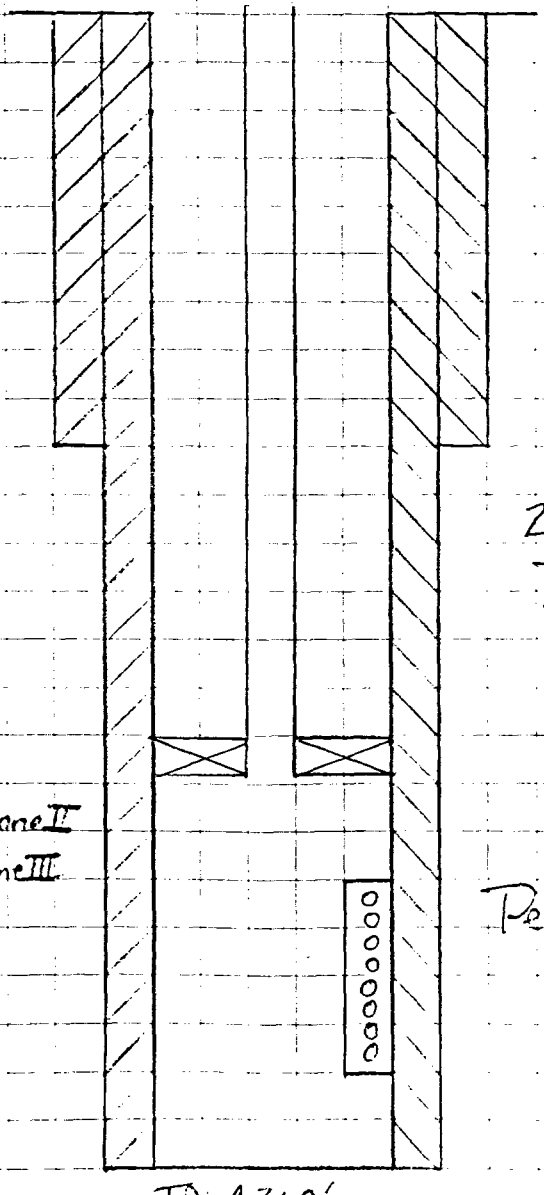
DATE

BY

SUBJECT South Hobbs Unit No 215

(SL) 1398' FNL x 1227' F WL, Sec. 4, T-19-S, R-38-E
(BHL) 1000' FNL x 1250' FWL, Sec 4, T-19-S, R-38-E

Elev: 3607' G.L.



8 5/8" CSA 1600'
Cmt w/ cl. C.
Circ
Hole Size 12 1/4

2 3/8 Plastic Coated
TBG x Baker Lok-set
PSA ± 4025' TVD

3899' Grayburg
3990' San Andres
4075' San Andres Zone II
4125 San Andres Zone III

Perfs: 4075-4228' TVD
Approximately Gross interval

5 1/2" CSA 4300'
Cmt w/ cl. C.
Circ
Hole Size 7 7/8"

TD 4300'

INJECTION WELL DATA SHEET

Amoco (OPERATOR) South Hobbs Unit (LEASE)

216 (WELL NO.) 1166 FNL X 2411 FWL (FOOTAGE LOCATION) 4 (SECTION) 19-S (TOWNSHIP) 38-E (RANGE)

Schematic

See attached sketch

Tabular Data

Surface Casing

Size 8 5/8" Cemented with _____ sx.

TOC Circ feet determined by _____

Hole size 12 1/4

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 5 1/2" Cemented with _____ sx.

TOC Circ feet determined by _____

Hole size 7 7/8

Total depth 4300

Injection interval

4026 feet to 4231 feet Perfs
(perforated or open-hole, indicate which)

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

Baker lok-set (brand and model) packer at 3980 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

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

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

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

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) NONE

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Bowers ±3150, Paddock ±5500, Blinebry ±5700, Drinkard ±6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

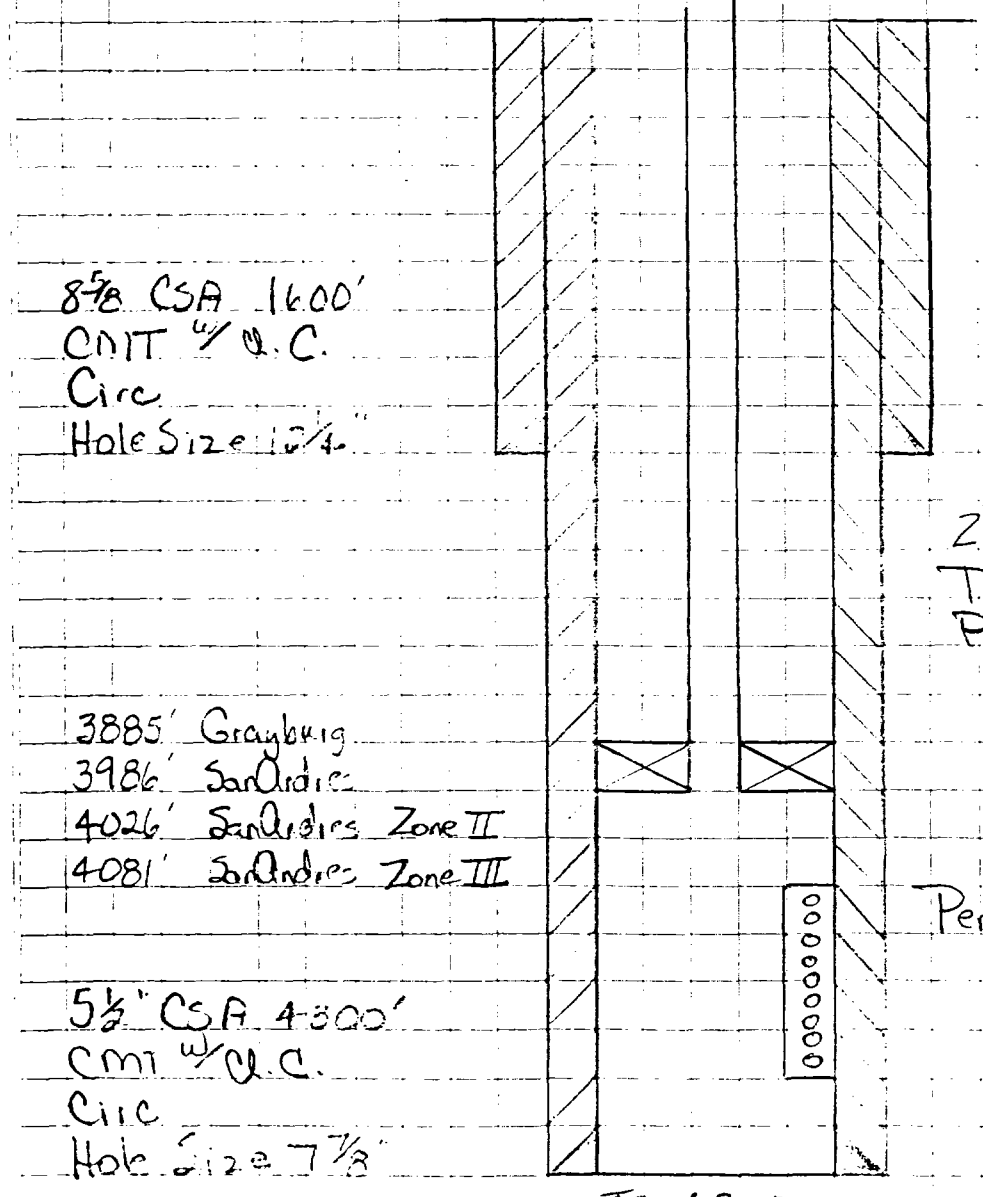
DATE

BY

SUBJECT South Hobbs Unit No. 216

(SL) 1166' FNL x 2411' FWL, Sec. 4, T-19-S, R-38-E
(BHL) 1030' FNL x 2475' FWL, Sec. 4, T-19-S, R-38-E

Elev: 3610' G.L.



INJECTION WELL DATA SHEET

Amoco (OPERATOR) South Hobbs Unit (LEASE)

217 (WELL NO.) 1407 FNL x 2203 FEL (FOOTAGE LOCATION) 4 (SECTION) 19-S (TOWNSHIP) 38-E (RANGE)

Schematic

See attached sketch

Tabular Data

Surface Casing

Size 8 5/8" Cemented with _____ sx.

TOC CIRC feet determined by _____

Hole size 12 1/4

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 5 1/2" Cemented with _____ sx.

TOC CIRC feet determined by _____

Hole size 7 7/8

Total depth 4300

Injection interval

4037 feet to 4231 feet Perfs
(perforated or open-hole, indicate which)

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

Baker lok-set (brand and model) packer at 3990 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

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

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

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

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) NONE

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Bowers ±3150, Paddock ±5500, Blinebry ±5700, Drinkard ±6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

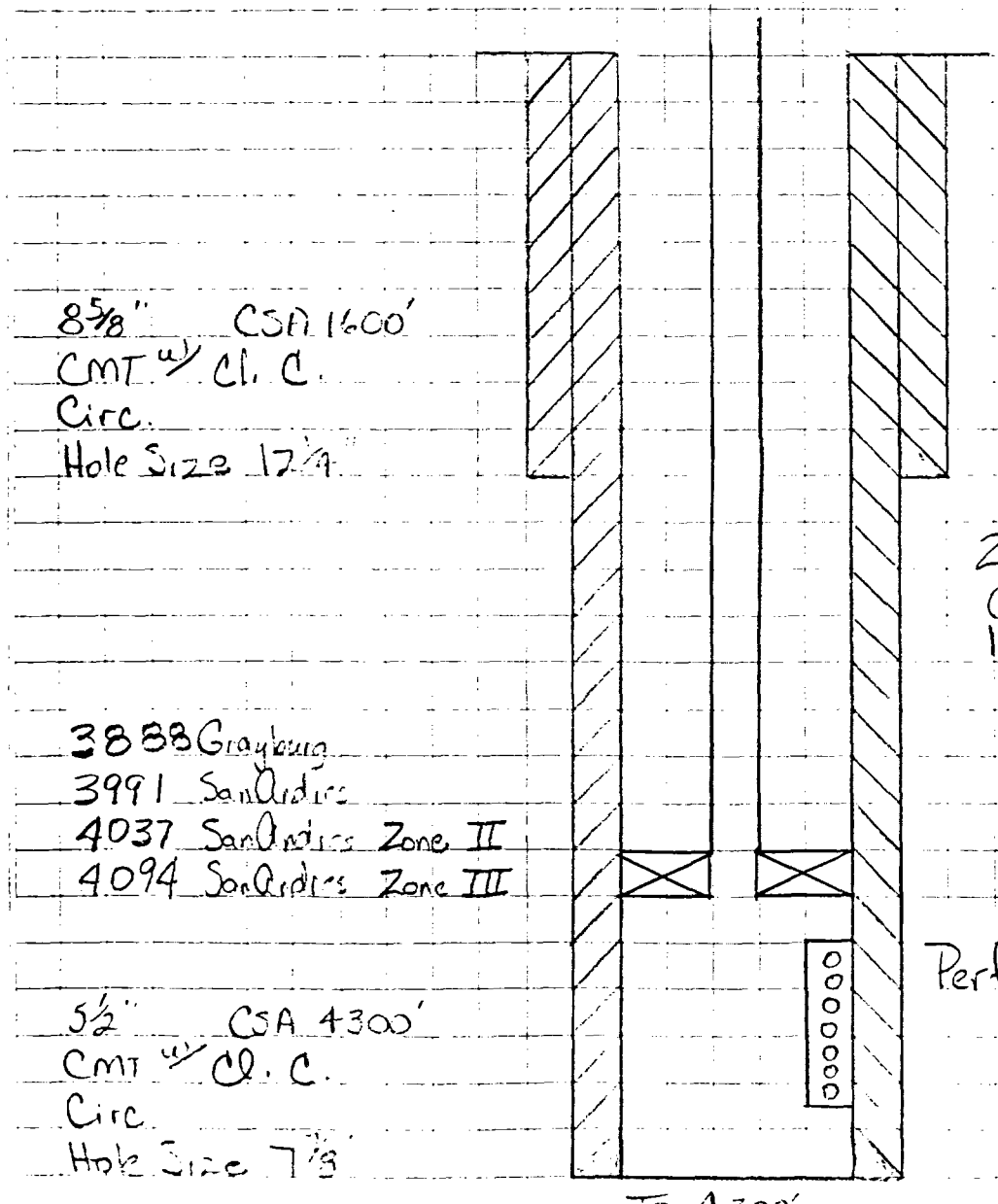
DATE

BY

SUBJECT South Hobbs Unit No 217

(SL) 1407 FNL x 2203 FEL, Sec 4, T-19-S, R-38-E
(BHL) 1030 FNL x 1575 FEL, Sec. 4, T-19-S, R-38-E

Elev: 3616 G.L.



INJECTION WELL DATA SHEET

Amoco	South Hobbs Unit			
OPERATOR	LEASE			
218	652 FNL x 563 FEL	4	19-S	38-E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic

See attached sketch

Tabular Data

Surface Casing

Size 8 5/8" Cemented with _____ sx.

TOC Circ feet determined by _____

Hole size 12 1/4

Intermediate Casing

Size _____" Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 5 1/2" Cemented with _____ sx.

TOC Circ feet determined by _____

Hole size 7 7/8

Total depth 4300

Injection interval

4042 feet to 4224 feet Perfs
(perforated or open-hole, indicate which)

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

Baker lok-set (brand and model) packer at 3990 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

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

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

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

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) NONE

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Bowers ±3150, Paddock ±5500, Blinebry ±5700, Drinkard ±6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

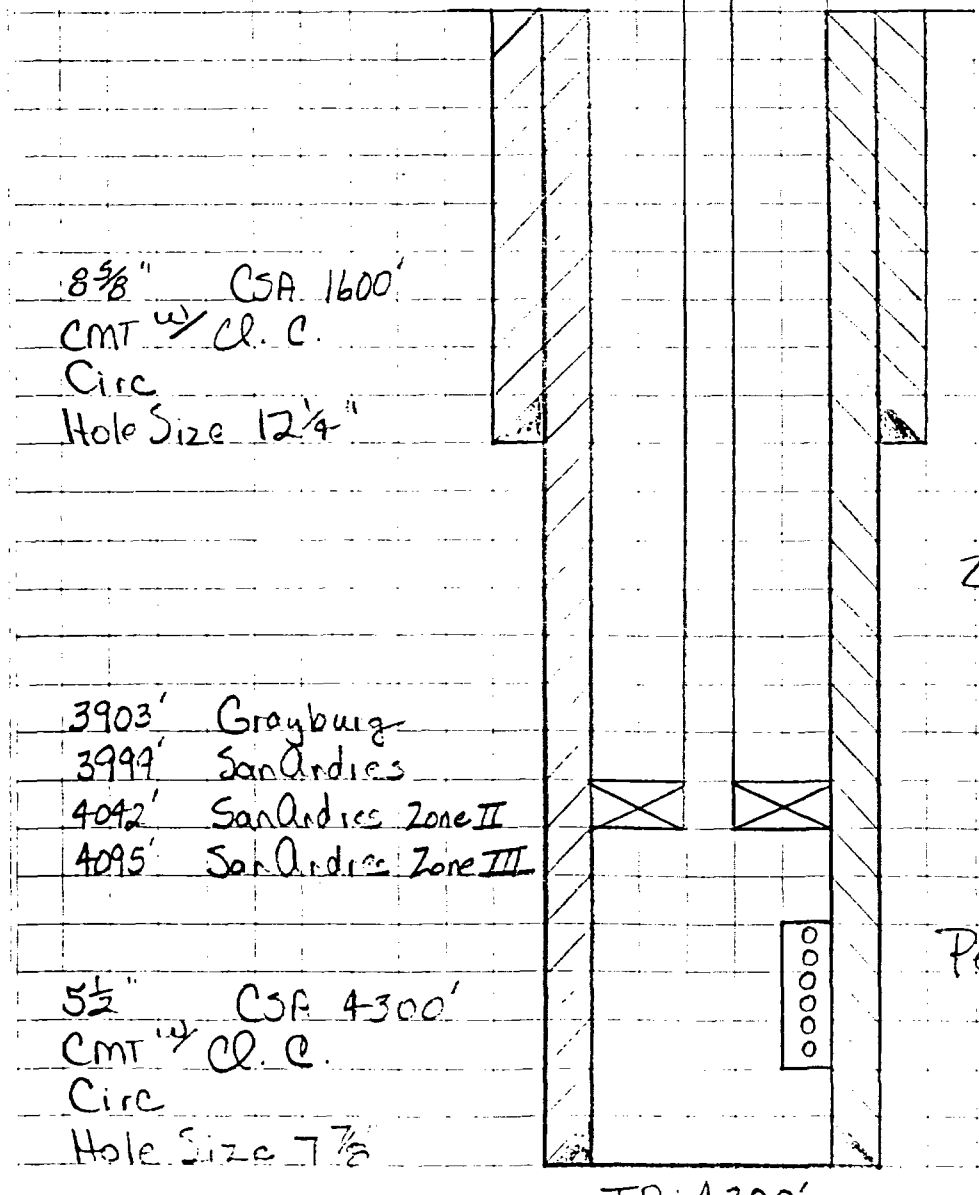
DATE

BY

SUBJECT South Hobbs Unit No. 218

(SL) 652' FNL x 563' FEL, Sec. 4, T-19-S, R-38-E
(BHL) 1000' FNL x 270' FEL, Sec. 4, T-19-S, R-38-E

Elev: 3618' G.L.



8 5/8" CSA 1600'
CMT w/ Cl. C.
Circ
Hole Size 12 1/4"

2 3/8" Plastic Coated TBG
X Baker Lok-set
PSA ± 3990' TVD

3903' Grayburg
3999' San Andres
4042' San Andres Zone II
4095' San Andres Zone III

Perfs: 4042-4224' TVD
Approximate GROSS
Interval

5 1/2" CSA 4300'
CMT w/ Cl. C.
Circ
Hole Size 7 7/8

TD: 4300'

Amoco — South Hobbs Unit
OPERATOR — LEASE

219 — 657 FNL x 787 FWL — 3 — 19-S — 38-E
WELL NO. — FOOTAGE LOCATION — SECTION — TOWNSHIP — RANGE

Schematic

See attached sketch

Tabular Data

Surface Casing
Size 8 5/8" Cemented with _____ sx.
TOC CIRC feet determined by _____
Hole size 12 1/4

Intermediate Casing
Size _____" Cemented with _____ sx.
TOC _____ feet determined by _____
Hole size _____

Long string
Size 5 1/2" Cemented with _____ sx.
TOC CIRC feet determined by _____
Hole size 7 7/8
Total depth 4300

Injection interval
4071 feet to 4222 feet Perfs
(perforated or open-hole, indicate which)

Tubing size 2 3/8 lined with Plastic (material) set in a
Baker lok-set (brand and model) packer at 4020 feet
(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres
2. Name of Field or Pool (if applicable) Hobbs Field
3. Is this a new well drilled for injection? ☒ Yes ☐ No
   If no, for what purpose was the well originally drilled? _____
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) NONE
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Bowers ±3150, Paddock ±5500, Blinebry ±5700, Drinkard ±6600

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

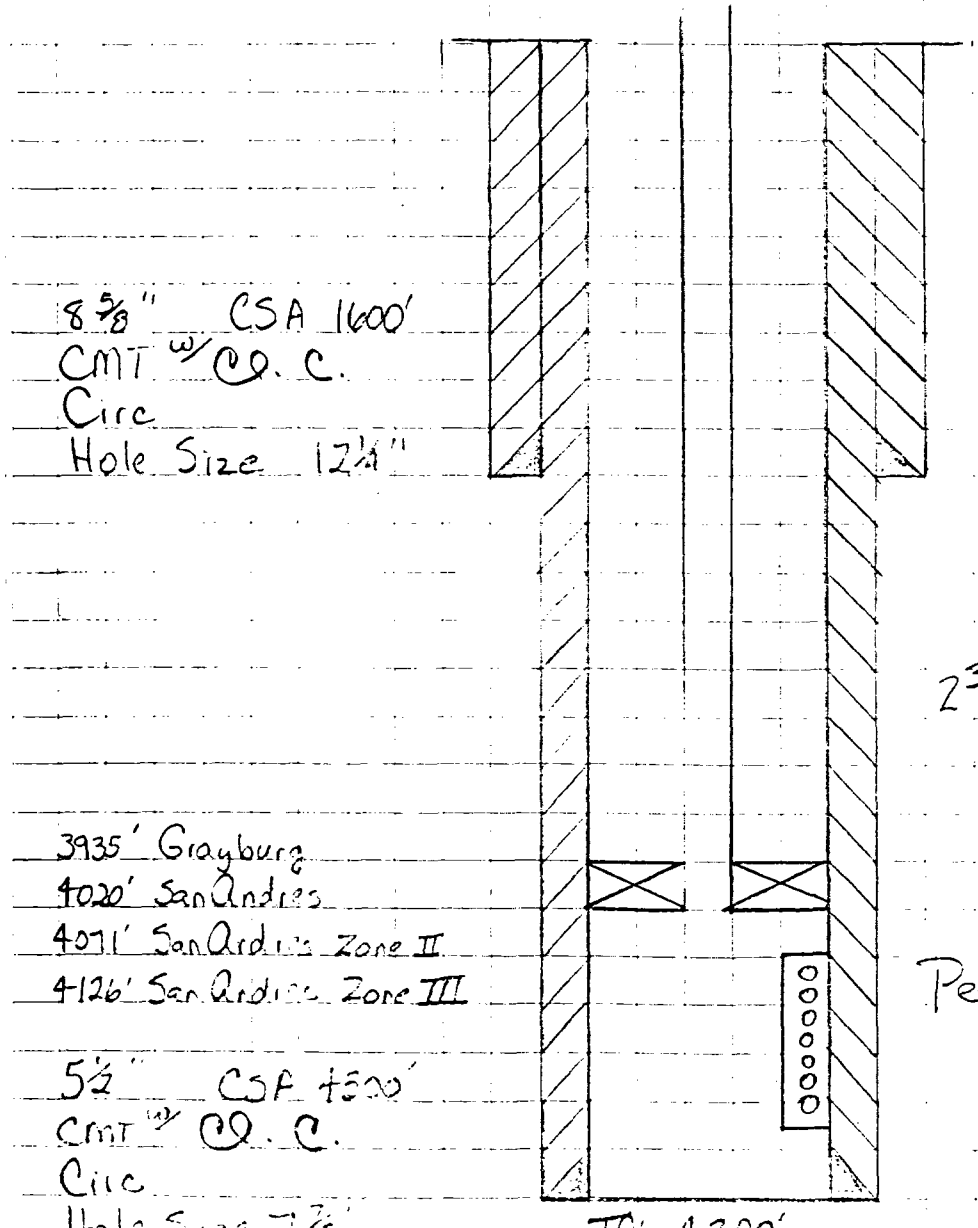
DATE

BY

SUBJECT South Hobbs Unit No 219

(SL) 657' FNL x 787' FWL, Sec. 3, T-19-S, R-38-E
(BHL) 900' FNL x 1220' FWL, Sec. 3, T-19-S, R-38-E

Elev: 3628' G.L.

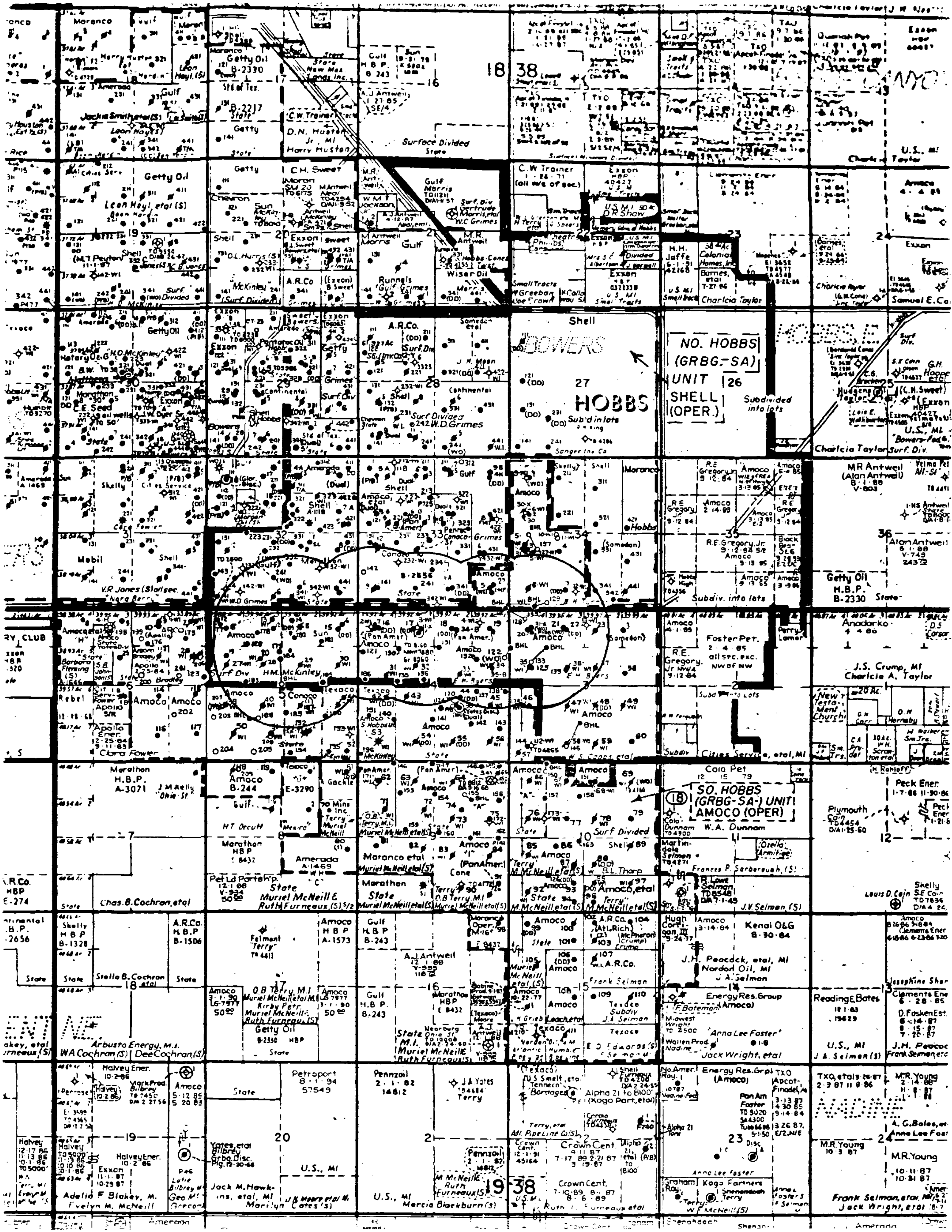


2 3/8" Plastic Coated TBG
X Baker Lok-set
PSA ± 4020' TVD

Perfs: 4071-4222' TVD
Approximate Gross interval

ITEM V

AREA OF REVIEW


18 38
NO. HOBBS (GRBG-SA) UNIT SHELL (OPER.)
BOWERS
HOBBS
Sub'd in lots
Subdivided into lots
Subdiv. into lots
SO. HOBBS (GRBG-SA) UNIT AMOCO (OPER)
Surface Divided State
Getty Oil B-2330
Leon Hoyl, etal (S)
Charlcia Taylor
J.S. Crump, MI
Charlcia A. Taylor
Muriel McNeill & Ruth Furneaux (S) 1/2
Chas. B. Cochran, etal
Marathon H.B.P. A-3071
Amerada A-1469
J.H. Peacock, etal, MI
Nordon Oil, MI
J.A. Selman
Energy Res. Group (Amoco)
Arbusto Energy, M.I.
WA Cochran (S)
Dee Cochran (S)
Petroport
Pennzoil
U.S., MI
19 38
Crown Cent.
Frank Selman, etal, MI
Jack Wright, etal

ITEM VI

PERTINENT DATA FOR WELLS

WITHIN AREA OF REVIEW

The data within Item VI has already been submitted. Please reference the following 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

ITEM VII

PROPOSED OPERATIONS

San Andres Injection Wells:

Average Injection Rate:	1000 BWPD
Average Injection Pressure:	100 psi
Maximum Injection Rate:	2500 BWPD
Maximum Injection Pressure:	In accordance with Rule 11 of Order No. R-4934-E

This system is closed with only South Hobbs Unit produced water and City of Hobbs makeup water being injected.

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.

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

Date Received: 8-20-85
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

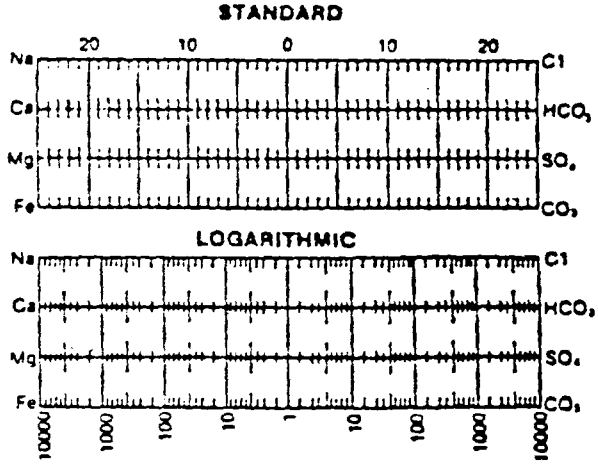
Chloride, Cl	3,720	105
Sulfate, SO_4	640	13
Carbonate, CO_3	0	0
Bicarbonate, HCO_3	1,702	27

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*



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 Fuyton

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

Date Received: 8-20-85
By: PL

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

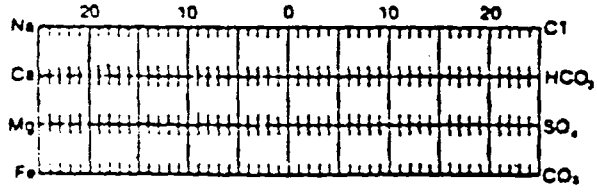
Total Dissolved Solids (calc.) 1,086

OTHER PROPERTIES

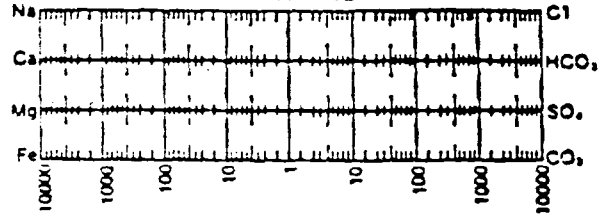
pH	7.8
Specific Gravity, 60/60 F.	1.001
Nonograph Sp. Gr.	0.998 - 1.002
Specific Gravity, Uncorrected	0.998
Temperature, (oF)	75.0
Resistivity, OHMS-CM	850 @ 75.0

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

ITEM VIII

GEOLOGICAL DATA

The Grayburg Formation consists of a sandy dolomite with interbedded dolomite sands. It is approximately 100' thick with the top and bottom at ±3950' and ±4050' respectively.

The San Andres Formation consists of a clean crystalline dolomite. It lies directly below the Grayburg at ±4050'. The injection zone consists of the top 300' from ±4050' to ±4350'.

The lower limit of potable water occurance in this area is ±1600' which is the top of the Rustler Anhydrite. The Ogallala Formation is the primary fresh water aquifer with a lower limit of ±300'.

ITEM IX

PROPOSED STIMULATION PROGRAM

San Andres: Initial stimulation will consist of ±4000 gallons of 15% HCl acid.

ITEM XII

AFFIRMATIVE STATEMENT

While evaluating the proposed wells for injection and gathering the required information for this application, no evidence of open faults or any other hydrologic connection between the proposed injection zones and any underground source of drilling water was found.

ITEM XIII

PROOF OF NOTICE

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 in a supplement thereof for a period

of One weeks.

Beginning with the issue dated August 1, 19 86

and ending with the issue dated August 1, 19 86

Robert L Summers
Publisher.

Sworn and subscribed to before me this 4 day of August, 1986

Vera Murphy
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
AUGUST 1, 1986

TO WHOM IT MAY CONCERN:

Amoco Production Company will on or before August 4, 1986, apply for administrative approval to drill seven water injection wells in our South Hobbs (GSA) Unit.

All proposed drilling locations are in Sections 3, 4, and 5, Township 19 South, Range 38 East, Lea County, New Mexico.

The purpose of this work is to develop the Northern Leaseline area of the South Hobbs Pressure Maintenance Project. Water will be injected into the San Andres Formation at an average rate of 1000 BWIPD with an average pressure of 100 psi. Surface pressures will be limited to .2 psi per foot until step rate tests are performed.

Any questions concerning this project may be directed to Mr. John M. Breeden, District Foreman, Amoco Production Company, P. O. Box 68, Hobbs, NM 88240, Phone: (505) 393-1781.

Interested parties must file objections or request for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, NM 87501, within fifteen (15) days.

L.R. Smith

P 169 573 585

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	Marathon Oil Company
Street and No.	P.O. Box 552
P.O., State and ZIP Code	Midland, TX 79702
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	AUG 4 1986 NM

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1984-446-014

P 169 573 579

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	State of New Mexico, Comm of Publands
Street and No.	P.O. Box 1148
P.O., State and ZIP Code	Santa Fe, NM 87504
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	AUG 4 1986 NM

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1984-446-014

P 169 573 581

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	Phillips Petroleum Company
Street and No.	4001 Penbrook
P.O., State and ZIP Code	Odessa, TX 79762
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	AUG 1986

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1984-446-014

P 169 573 582

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	Shell Western E&P, Inc.
Street and No.	P.O. Box 991
P.O., State and ZIP Code	Houston, TX 77001
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	AUG 1986

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1984-446-014

P 169 573 584

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Chevron USA	
Street and No. P.O. Box 670	
P.O., State and ZIP Code Hobbs, NM 88240	
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	

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P 169 573 580

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Allstate Construction	
Street and No. P.O. Box 1229	
P.O., State and ZIP Code Hobbs, NM 88240	
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	

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P 169 573 583

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Conoco, Inc	
Street and No. P.O. Box 460	
P.O., State and ZIP Code Hobbs, NM 88240	
Postage	$1.92
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.67
Postmark or Date	

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1984-446-014

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

TONEY ANAYA
GOVERNOR

August 8, 1986

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

pp

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

RE: Proposed:
MC_____
DHC_____
NSL X
NSP_____
SWD_____
WFX_____
PMX X

Gentlemen:

I have examined the application for the:

Amoco Production Company South Hobbs GSA Unit
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

I have no objections to Amoco's request for unorthodox locations, permission to injection, or directionally drill wells listed on attached.

Yours very truly,

Jerry Sexton
Supervisor, District 1

/mc

EXHIBIT "A"
SOUTH HOBBS (GSA) UNIT

WELL NAME	TYPE OF WELL	SURFACE LOCATION	BOTTOMHOLE LOCATION	KICKOFF POINT BELOW SURFACE	BOTTOMHOLE DEVIATION	ELEVATION (GRND. LEVEL)
SHU No. 211 *	Prod.	1790' FNL x 1420' FWL, Sec. 5, T-19-S, R-38-E	1600' FNL x 910' FWL, Sec. 5, T-19-S, R-38-E	1,700'	544.2'	3,620.4'
SHU No. 212 *	Inj.	1478' FNL x 2589' FWL, Sec. 5, T-19-S, R-38-E	900' FNL x 2450' FWL, Sec. 5, T-19-S, R-38-E	1,700'	594.5'	3,622.1'
SHU No. 213 *	Inj.	890' FNL x 1275' FEL, Sec. 5, T-19-S, R-38-E	680' FNL x 1375' FEL, Sec. 5, T-19-S, R-38-E	1,700'	232.6'	3,622.9'
SHU No. 215 *	Inj.	1398' FNL x 1227' FWL, Sec. 4, T-19-S, R-38-E	1000' FNL x 1250' FWL, Sec. 4, T-19-S, R-38-E	1,700'	398.7'	3,607.4'
SHU No. 216 *	Inj.	1166' FNL x 2411' FWL, Sec. 4, T-19-S, R-38-E	Straight Hole		0	3,610.4'
SHU No. 217 *	Inj.	1407' FNL x 2203' FEL, Sec. 4, T-19-S, R-38-E	1030' FNL x 1575' FEL, SEc. 4, T-19-S, R-38-E	1,700'	732.5'	3,615.6'
SHU No. 218	Inj.	652' FNL x 563' FEL, Sec. 4, T-19-S, R-38-E	1000' FNL x 270' FEL, Sec. 4, T-19-S, R-38-E	1,700'	454.9'	3,617.9'
SHU No. 219	Inj.	657' FNL x 787' FWL, Sec. 3, T-19-S, R-38-E	900' FNL x 1220' FWL, Sec. 3, T-19-S, R-38-E	1,700'	496.5'	3,628.0'

* Unorthodox Surface Locations

CMH/sh
APRD02-GG(4)