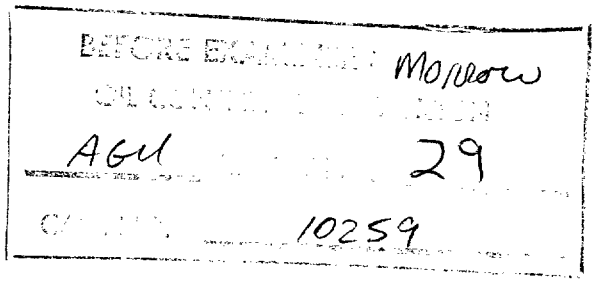

BEFORE EXAMINER: Morrow
AGL
29
10259

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: [X] Secondary Recovery [ ] Pressure Maintenance [ ] Disposal [ ] Storage
Application qualifies for administrative approval? [ ] yes [X] no

II. Operator: Chevron U.S.A., Inc.

Address: PO Box 1150 Midland, TX 79702

Contact party: Mr. B. C. Cotner Phone: (915) 687-7314

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 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: B. C. Cotner Title Unitization Coordinator

Signature: B. C. Cotner Date: 2/7/91

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. _____

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 applic 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.

Arrowhead Grayburg Unit
C-108
Index Reference

Reference Item	Subject
III	Typical Injection Well Schematics
V	Area Map
VIa	Area of Review Data Tables
VIb	Well Schematics - Inside Unit Area
VIc	Well Schematics - Outside Unit Area
VId	Well Schematics - P&A'd Wells
VII	Proposed Operation
VIII	Geologic Data
IX	Stimulation Program
X	Injection Wells Without Logs
XI	Fresh Water Analysis
XII	Affirmative Statement
XIV	Notice

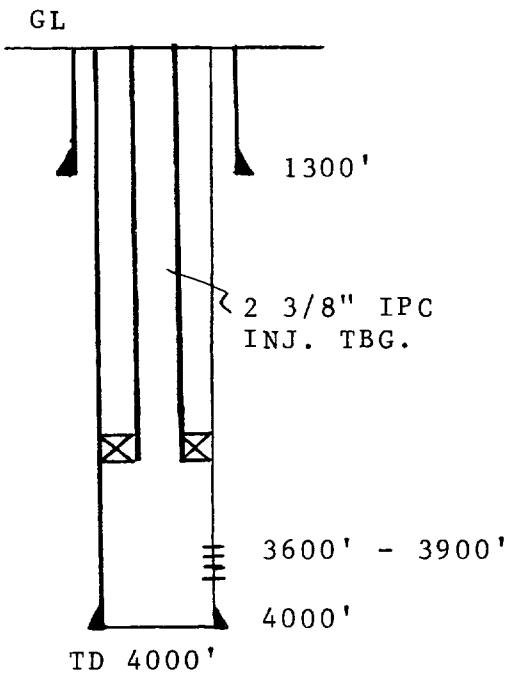
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — OPERATOR
Arrowhead Grayburg Unit — LEASE

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Proposed new injection well.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 8-5/8" — Cemented with 800 sx
TOC Surf — feet determined by Circ.
Hole size 12-1/4"

Long String

Size 5-1/2" — Cemented with 800 sx
TOC Surf — feet determined by Circ.
Hole size 7-7/8"
Total Depth 4000'

Injection Interval

3600 feet to 3900 feet
(perforated)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model) packer at 3500 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg
2. Name of Field or Pool (if applicable) Arrowhead
3. Is this a new well drilled for injection? X 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) No
5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

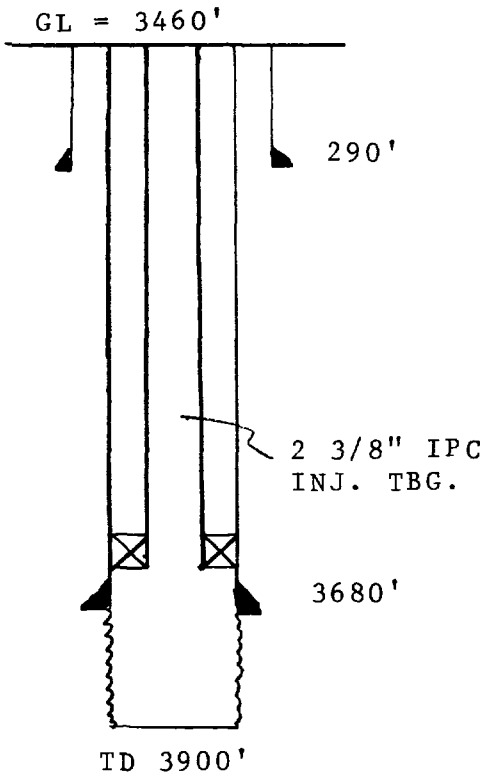
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — OPERATOR
Arrowhead Grayburg Unit — LEASE

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Two strings casing with open hole.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 9-5/8" — Cemented with 215 sx
TOC Surf — feet determined by Circ.
Hole size 11"

Long String

Size 5-1/2" — Cemented with 400 sx
TOC 1546 — feet determined by Calc.

Hole size 7-7/8"
Total Depth 3900'

Injection Interval

3680 feet to 3900 feet
(open hole)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model)
packer at 3580 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg

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

3. Is this a new well drilled for injection? ___ Yes _X_ No
   If no, for what purpose was the well originally drilled? Oil Production

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) No

5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

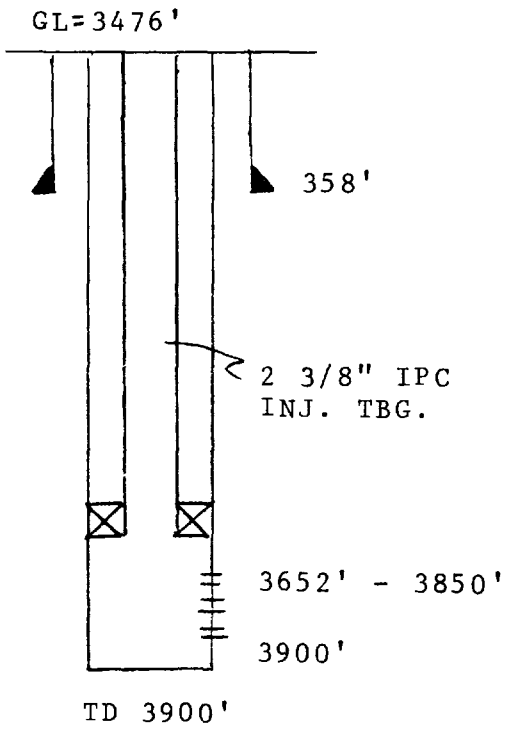
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — OPERATOR
Arrowhead Grayburg Unit — LEASE

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Two strings casing with casing perforations.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 8-5/8" — Cemented with 200 sx
TOC Surf — feet determined by Circ.
Hole size 11"

Long String

Size 5-1/2" — Cemented with 425 sx
TOC 2153' — feet determined by TS
Hole size 7-7/8"
Total Depth 3900'

Injection Interval

3652 feet to 3850 feet
(perforated)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model) packer at 3560 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg
2. Name of Field or Pool (if applicable) Arrowhead
3. Is this a new well drilled for injection? ___ Yes _X_ No
   If no, for what purpose was the well originally drilled? Oil Production
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) No
5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

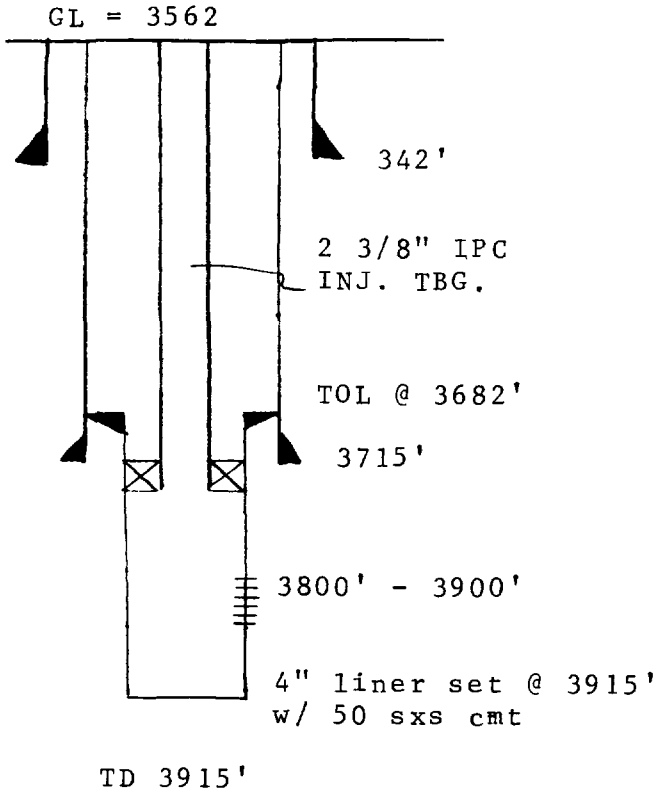
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — OPERATOR
Arrowhead Grayburg Unit — LEASE

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Two strings casing with liner.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 10-3/4" — Cemented with 250 sx
TOC Surf — feet determined by Circ.
Hole size 12-1/4"

Long String

Size 5-1/2" — Cemented with 900 sx
TOC Surface — feet determined by Calc.
Hole size 6-1/4"
Total Depth 3930'

Injection Interval

3800 feet to 3900 feet
(perforated)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model) packer at 3700 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg
2. Name of Field or Pool (if applicable) Arrowhead
3. Is this a new well drilled for injection? ___ Yes _X_ No
   If no, for what purpose was the well originally drilled? Oil Production
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) No
5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

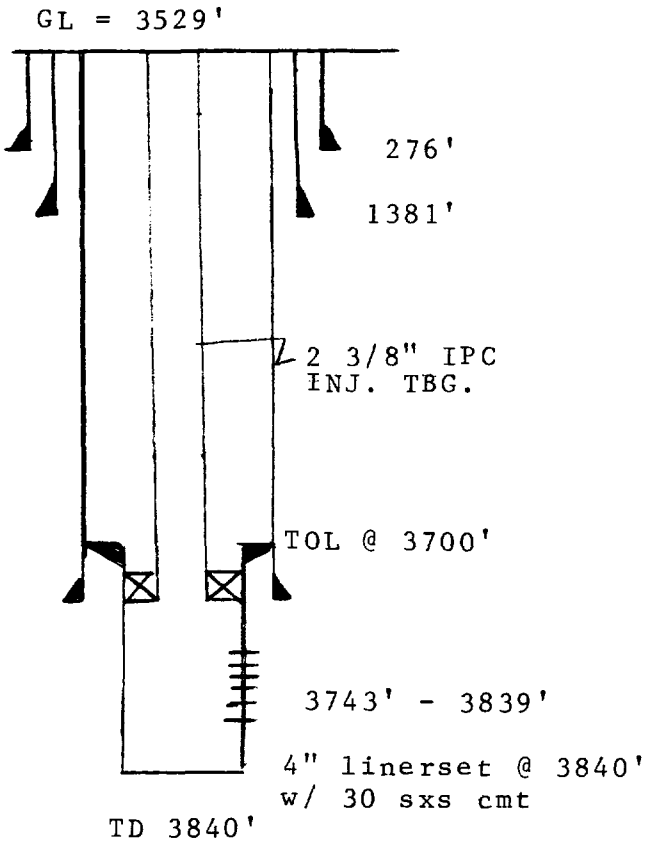
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — OPERATOR
Arrowhead Grayburg Unit — LEASE

WELL NO. | FOOTAGE LOCATION | SECTION | TOWNSHIP | RANGE

Three strings with liner.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 10-3/4 " — Cemented with 225 sx
TOC Surf — feet determined by Circ.
Hole size 15"

Intermediate Casing

Size 7-5/8 " — Cemented with 425 sx
TOC Surface — feet determined by Calc
Hole size 9-7/8"

Long String

Size 5-1/2 " — Cemented with 425 sx
TOC Surface — feet determined by Calc.
Hole size 6-3/4"
Total Depth 3840'

Injection Interval

3743 feet to 3839 feet
(perforated)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model)
packer at 3650 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg

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

3. Is this a new well drilled for injection? ___ Yes _X_ No
If no, for what purpose was the well originally drilled? Oil Production

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) No

5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

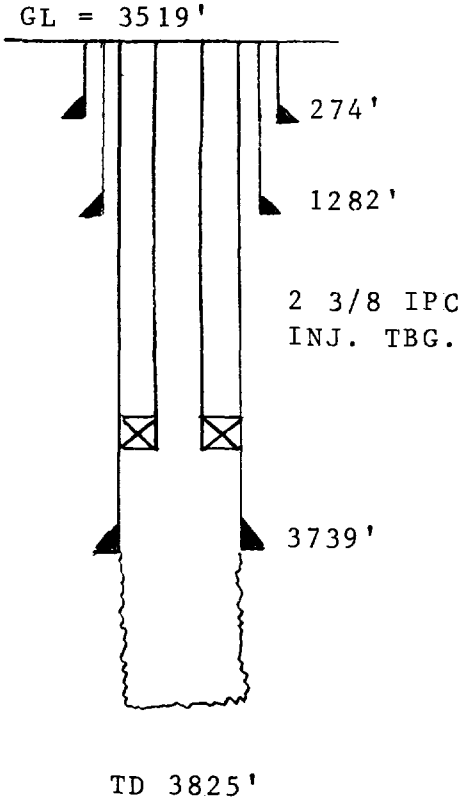
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — Arrowhead Grayburg Unit
'PERATOR — LEASE

WELL NO. | FOOTAGE LOCATION | SECTION | TOWNSHIP | RANGE

Three strings with open hole.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 10-3/4" — Cemented with 225 sx
TOC Surf — feet determined by Calc.

Hole size 13-3/4"

Intermediate Casing

Size 7-5/8" — Cemented with 425 sx
TOC Surf — feet determined by Calc.
Hole size 9-7/8"

Long String

Size 5-1/2" — Cemented with 425 sx
TOC Surf — feet determined by Calc.

Hole size 6-3/4"
Total Depth 3825'

Injection Interval

3739 feet to 3825 feet
(open hole)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model) packer at 3640 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg

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

3. Is this a new well drilled for injection? ___ Yes _X_ No
If no, for what purpose was the well originally drilled? Oil Production

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) No

5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

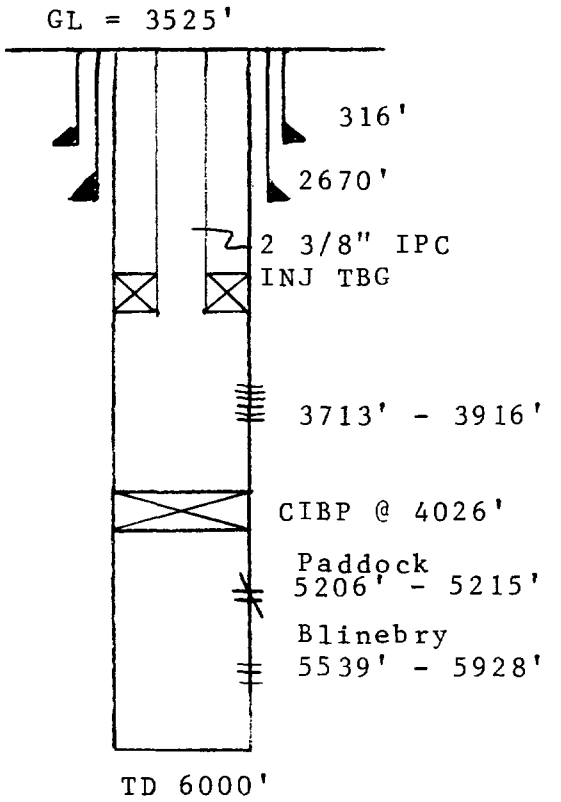
INJECTION WELL DATA SHEET

Chevron U.S.A. Inc. — OPERATOR
Arrowhead Grayburg Unit — LEASE

WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Three strings with perforations.

SCHEMATICS



TUBULAR DATA

Surface Casing

Size 12-3/4 " — Cemented with 375 sx
TOC Surf — feet determined by Circ.
Hole size 17-1/2"

Intermediate Casing

Size 8-5/8 " — Cemented with 320 sx
TOC Surf — feet determined by Circ.
Hole size 11"

Long String

Size 5-1/2 " — Cemented with 800 sx
TOC 900 — feet determined by CBL
Hole size 7-7/8"
Total Depth 6000'

Injection Interval

3713 feet to 3916 feet
(perforated)

Tubing size 2-3/8" lined with IPC (Material) set in a Nickel Plated Baker Model AD-1 Tension (Brand and Model)
packer at 3620 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Grayburg

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

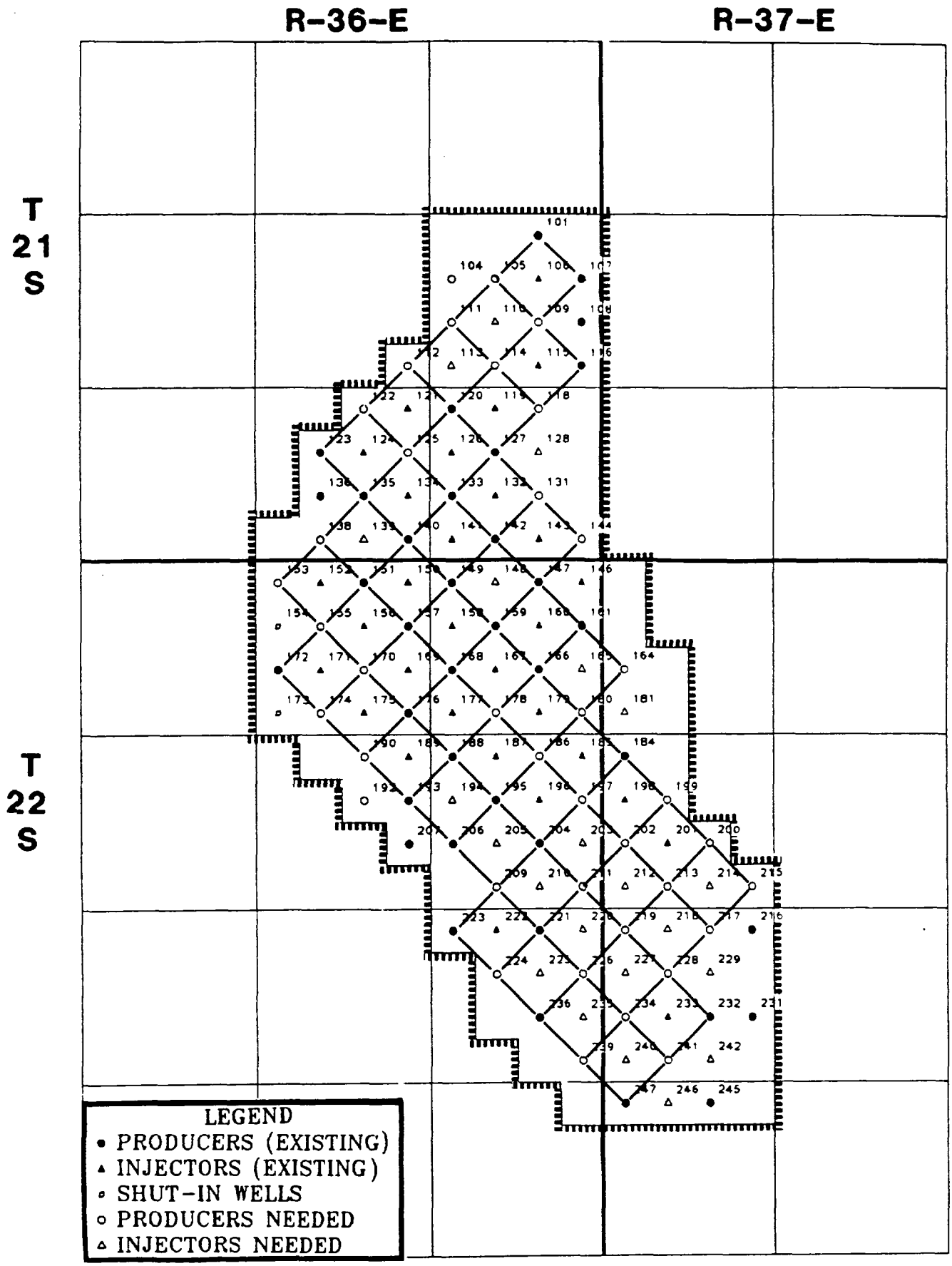
3. Is this a new well drilled for injection? ___ Yes _X_ No
   If no, for what purpose was the well originally drilled? Oil Production

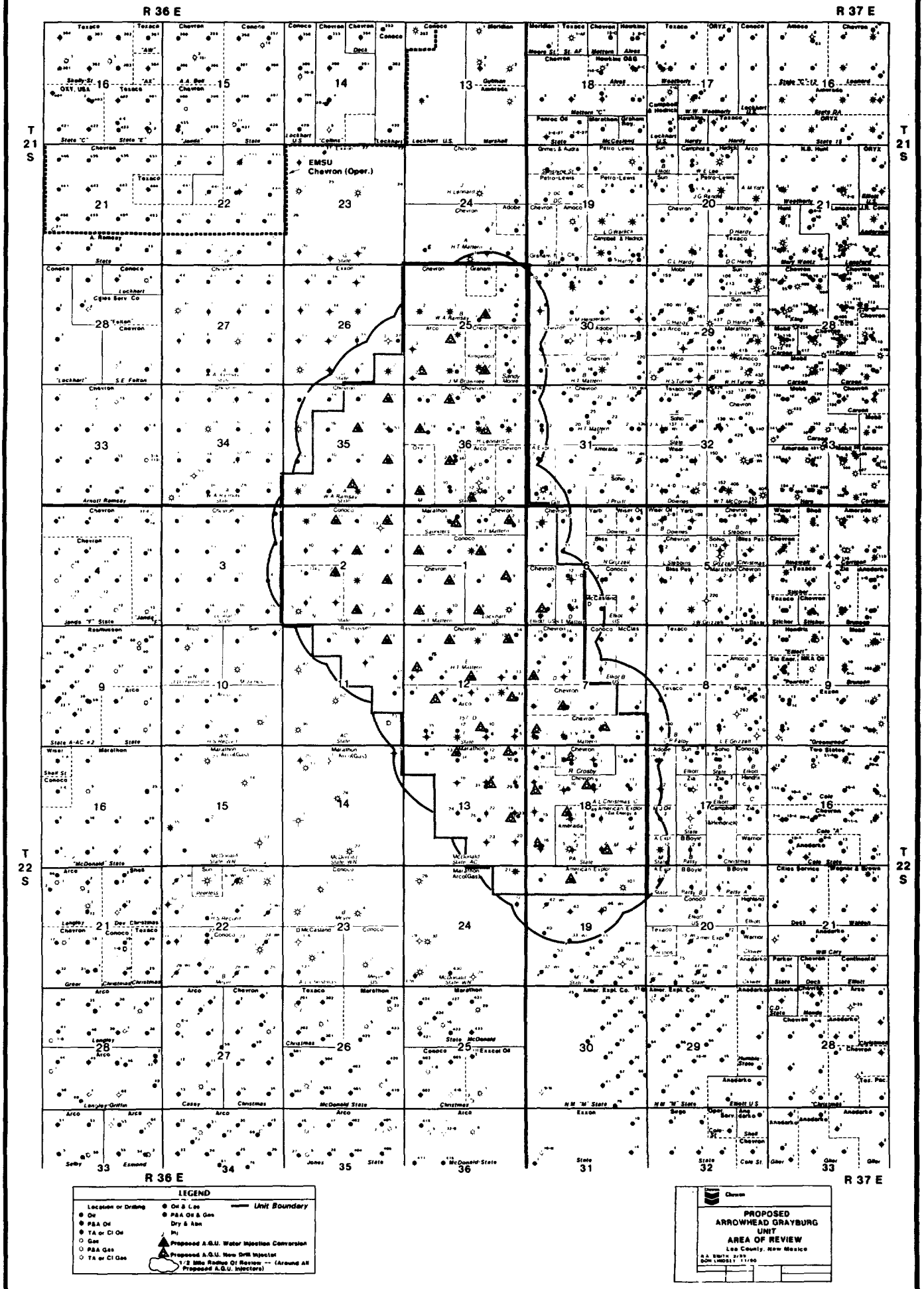
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) Yes, Paddock 5206'-5215', squeezed with 100 sacks cement
   Blinebry 5539'-5928', CIBP @ 4026'

5. Give the depth in and name of any overlying and/or underlying oil or gas zones (pools) in this area. 2400' top of Jalmat, 2600' top of Eumont, 3300' top of Langlie Mattix, 5500' top of Blinebry, 6250' top of Tubb, 6500' top of Drinkard.

Proposed Arrowhead Grayburg Unit

Proposed Injection Pattern and Well Numbering Scheme




R 36 E
R 37 E
T 21 S
T 22 S
EMSU
Chevron (Oper.)
LEGEND
Location or Drilling
Oil
P&A Oil
TA or Cl Oil
Gas
P&A Gas
TA or Cl Gas
Oil & Gas
P&A Oil & Gas
Dry & Abn
Inj
Unit Boundary
Proposed A.G.U. Water Injection Conversion
Proposed A.G.U. New Drill Injector
1/2 Mile Radius Of Review -- (Around All Proposed A.G.U. Injectors)
Chevron
PROPOSED
ARROWHEAD GRAYBURG
UNIT
AREA OF REVIEW
Lea County, New Mexico