

CASE 10712

Application of Yates Petroleum Corporation for amendment of Division Order No. R-2178, as amended, which approved a carbon dioxide/water injection project known as the Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project in the Fourth Sand Member of the Grayburg Formation. Applicant seeks authority to drill a new injection well (West Loco Hills G4S Unit, Tract 13 Well 12) and convert the West Loco Hills G4S Unit Tract 1 Well 10 from injection to production. The project area includes the following described area:

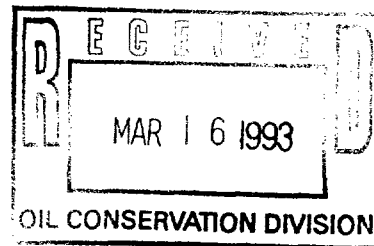
**TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.**

Section 12: E/2

**TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.**

Section 7: W/2

The applicant also requests that the Division establish procedures for the administrative approval of additional injection wells within the pilot project area without the necessity of further hearings and the adoption of any provisions necessary for such other matters as may be appropriate for said pilot project operations. Said area of interest is located approximately \_\_\_\_ miles of \_\_\_\_\_, New Mexico.



CAMPBELL, CARR, BERGE  
& SHERIDAN, P.A.  
LAWYERS

MICHAEL B. CAMPBELL  
WILLIAM F. CARR  
BRADFORD C. BERGE  
MARK F. SHERIDAN  
WILLIAM P. SLATTERY

PATRICIA A. MATTHEWS  
MICHAEL H. FELDEWERT

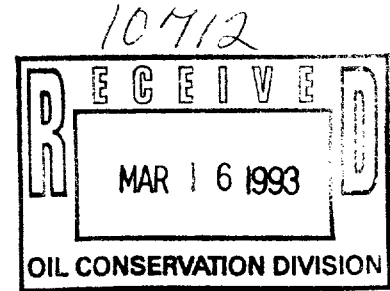
JACK M. CAMPBELL  
OF COUNSEL

JEFFERSON PLACE  
SUITE 1 - 110 NORTH GUADALUPE  
POST OFFICE BOX 2208  
SANTA FE, NEW MEXICO 87504-2208  
TELEPHONE: (505) 988-4421  
TELECOPIER: (505) 983-6043

March 16, 1993

HAND-DELIVERED

William J. LeMay, Director  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
State Land Office Building  
Santa Fe, New Mexico 87503



Re: Application of Yates Petroleum Corporation for Amendment of Division Order No. R-2178 as Amended, Which Approved a Carbon Dioxide/Water Injection Pilot Project Known as the Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project in the Fourth Sand Member of the Grayburg Formation to Provide For a New Injection Well and Convert a Previously Approved Injection Well to Production, Eddy County, New Mexico

Dear Mr. LeMay:

Enclosed is an original and one copy of completed Oil Conservation Division Form C-108 which is the application of Yates Petroleum Corporation in the above-referenced matter. A draft of a legal advertisement for this case is also enclosed.

Yates Petroleum Corporation requests that this case be set for hearing before a Division Examiner on April 8, 1993.

We have provided a copy of this application to the Oil Conservation Division's District Office in Artesia, New Mexico.

Your attention to this matter is appreciated.

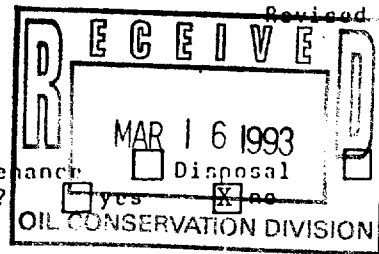
Very truly yours,

WILLIAM F. CARR  
WFC:mlh  
Enclosures

cc w/enc.: Robert S. Fant  
Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, NM 88210

United States Department  
of the Interior  
Bureau of Land Management  
Post Office Box 1778  
Carlsbad, New Mexico 88220

**"Certified Mail**  
**-Return Receipt Requested"**



## APPLICATION FOR AUTHORIZATION TO INJECT

Case 10712

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

II. Operator: Yates Petroleum Corporation

Address: 105 S. 4th Street Artesia, NM 88210

Contact party: Robert S. Fant Phone: (505) 748-1471

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 12-2178-D

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: Robert S. Fant Title Engineer

Signature: Robert S. Fant Date: 2/5/93

\* 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

## 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.

Loco Hills CO<sub>2</sub> Pilot Flood C-108

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: Tertiary Recovery  
Application qualifies for administrative approval? No
- II. Operator: Yates Petroleum Corporation  
Address: 105 South 4th Street  
Artesia, New Mexico  
Contact Party: Robert S. Fant Phone (505)748-1471 Ext 185
- III. Well Data:
- A. The following well data must be submitted for each injection well covered by this application.
1. Lease name; well no.; location by Section, Township and Range, and footage location within the section.
    - a. West Loco Hills Unit G4S Tract 13 Well #12  
Section 12-18S-29E 2408 FNL ~ 440 FEL
  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.

	<u>Surface</u>	<u>Production</u>
Casing size:	8 5/8"	5 1/2
Depth:	400'+	2850'+
Cement	350 sx	400 sx
Hole Size:	10 3/4"	7 7/8"
Top of Cement	Surface	Surface
Top determined by:	Circulating	Circulating
  3. A description of the tubing to be used including its size, lining material, and setting depth.

Tubing Size:	2 3/8"
Lining Material:	Tuboscope TK-99 (or Equivalent)
Depth:	Just above perforations
  4. The name, model and setting depth of the packer used or a description of any other seal system or assembly used.

Packer Name:	Otis Packer
Model:	Interlok
Depth:	Just above perforations (+/-2750')
- B. The following must be submitted for each injection well covered by this application.
1. The name of the injection formation and, if applicable, the field or pool name.

Formation: Grayburg  
Field: Loco Hills  
Pool Name: Loco Hills Queen Grayburg San Andres

2. The injection interval and whether it is perforated or open hole.

About 2800' - 2820', perforated

3. State if the well was drilled for injection or, if not, the original purpose of the well.

This well will be drilled for injection.

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.

There are no other perforated intervals.

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.

Higher: Penrose Sand - 2350'  
Lower: Premier - 3050'

IV. Is this an expansion of an existing project?

Yes. This is an expansion of the project approved by Division Order Number R-2178 D (Case 10476) authorizing Yates Petroleum Corporation to conduct a CO<sub>2</sub> Injection Pilot Project in the Loco Hills Field. A copy of the order is included along with a copy of the Oil Conservation Commission Orders No. R-1267 and No. R-2178 authorizing the Loco Hills Waterflood.

- 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. (See attached map).

VI. Tabulation of well data. (See attached)

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected:

60 tons CO<sub>2</sub> per day alternating with 400 bbls per day H<sub>2</sub>O. Two months of CO<sub>2</sub> to be followed with one month of H<sub>2</sub>O.

2. Whether the system is open or closed.

The system is closed.

3. Proposed average and maximum injection pressures:

H<sub>2</sub>O and CO<sub>2</sub> surface injection pressure not to exceed 1500 psi.

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water.

Injection fluid is CO<sub>2</sub> trucked in to the site.

Injection fluid is fresh water delivered from Maljamar Fresh Water System by pipeline and produced water. These waters are compatible as has been proven by injecting them into the West Loco Hills Unit since 1963.

CO<sub>2</sub> is 99.9% pure. Analysis of fresh water is attached.

VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geological name, and depth to bottom of all underground sources of drinking water overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

The Loco Hills Sand, which is the zone to be injected, goes from 14 to 61 feet thick with an average of 18 feet. The top of the Loco Hills Sand has a depth range from 2,366 to 2,880 feet. The composition consists of light gray to white and light brown, very finely grained, silty sandstone, sandy and minor shale.

The geologic name of the underground source of drinking water overlying the injection zone is the Rustler formation. The Rustler formation extends down to 360 feet and is comprised of anhydrite and interfingering redbeds. It averages 160 feet in thickness. All shallow water overlying the Rustler is comprised of redbeds. Additional information on file, Case No. 1511, Order No. R-1267.

IX. The well be perforated with +/-20' of perforations and fracture stimulated with 2000 gal linear gel followed by 9000 x-linked gel carrying 10,000 lb 20-40 mesh sand.

X. Attach appropriate logging and test data on the well.

There is none - we propose to drill new injection wells. Information will be submitted when the wells have been drilled.

XI. Attach a chemical analysis of fresh water from 2 or more fresh water wells within one mile of an injection well.

There are no fresh water wells within the one mile radius.



Loco Hills CO<sub>2</sub> Pilot Flood C-108  
Page -4-

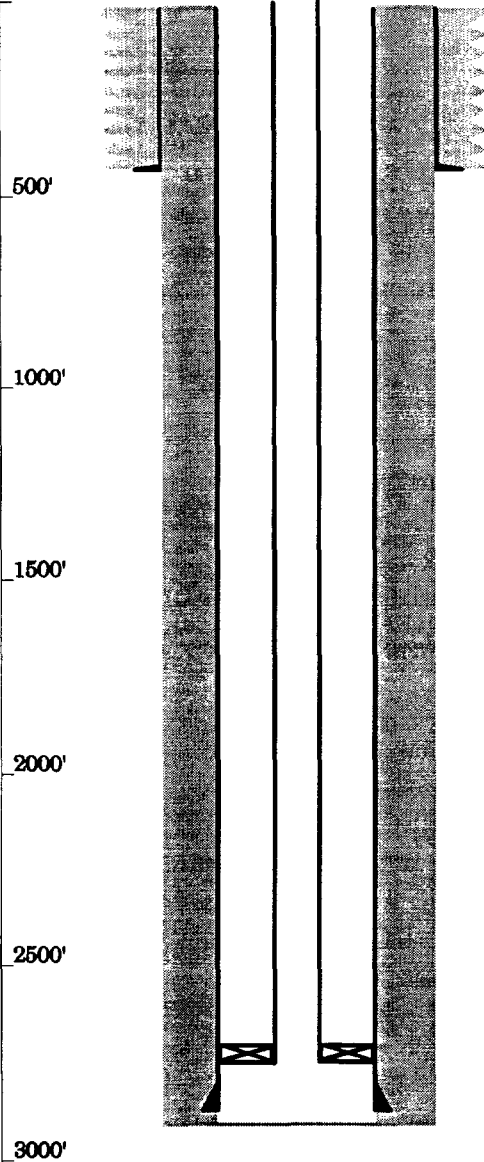
XII. Affirmative statement: (See attached)

XIII. Proof of Notice: (See attached)

# Proposed WLHU Tract 13 Well No. 12

Unit H, 2408' FNL 440' FEL  
Sec. 12-T18S-R29E NMPM

KB=8'  
GL



8 5/8" @ +/-400' w/ 350 Sx cement circulated to surface  
10 3/4" hole to +/- 400'

2 3/8" internally plastic coated tubing (TK-99 Coating) to +/- 2750'  
Otis Interlok Packer @ +/- 2750'  
5 1/2" to +/- 2850' with 400 Sx cement circulated to surface.  
7 7/8" hole to +/- 2850'.

## Proposed Injection Well

West Loco Hills Unit Tract 13 Well No. 12 will be drilled with a 10 3/4" bit to the top of the Salt ( +/- 400'). 8 5/8" casing will be run and cement circulated back to surface. Cement will be drilled out and the well will TD below the Loco Hills Sand with about 50' of rathole for logging tools (+/- 2850'). 5 1/2" K-55 casing will be run to TD and cemented back to surface. The Loco Hills Sand will be perforated and stimulated to allow injection of 60 tons/day CO<sub>2</sub> or 400 bbls/day water at less than 1500 psi. A stainless steel tension/compression packer will be set just above the perforations at +/- 2800'. 2 3/8" internally plastic coated tubing will be used and the annulus will be loaded with inhibited KCl water for protection from corrosion, pressure backup, and thermal conductivity.

R.S. Fant 3/1/1993

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 10476  
ORDER NO. R-2178-D

APPLICATION OF YATES PETROLEUM CORPORATION FOR AMENDMENT  
TO DIVISION ORDER NO. R-2178, AS AMENDED, TO INCLUDE A CARBON  
DIOXIDE INJECTION PILOT PROJECT, TWO UNORTHODOX INJECTION  
WELL LOCATIONS, AND TO RESCIND DIVISION ORDER NO. R-7821, EDDY  
COUNTY, NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 14, 1992, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 9<sup>th</sup> day of July, 1992 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

- (1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) The applicant, Yates Petroleum Corporation, seeks authority to initiate and conduct a pilot carbon dioxide/water injection project to be known as the Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project, hereinafter referred to as "pilot project", for tertiary recovery purposes and to test the CO<sub>2</sub> miscible process in the Fourth Sand Member of the Grayburg formation [as indicated on the Acoustilog run on September 4, 1964 in the Newmont Oil Company West Loco Hills Unit 6 Well No. 3 located 660 feet from the South line and 1980 feet from the East line (Unit O) of Section 12, Township 18 South, Range 29 East, NMPM, Eddy County, New Mexico] underlying portions of the SE/4 NE/4 and NE/4 SE/4 of said Section 12 and Lots 2 and 3 (SW/4 NW/4 and NW/4 SW/4 equivalents) of Section 7, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico, all in the Loco Hills Queen

Grayburg San Andres Pool, West Loco Hills Grayburg No. 4 Sand Unit, West Loco Hills Grayburg No. 4 Sand Unit Waterflood Project (authorized by Division Order No. R-2178, as amended).

(3) Applicant further seeks the rescision of Division Order No. R-7821, dated February 21, 1985, which authorized a similar project in the area but was never initiated by the operator and the other working interest owners due to poor economics and technical concerns.

(4) The applicant proposes to initially develop its proposed pilot project utilizing a twenty-two and one half acre inverted five-spot pattern and a ten acre inverted five-spot pattern which requires the drilling of two carbon dioxide/water injection wells at the following unorthodox locations in said Section 7:

- West Loco Hills G4S Unit Tract 1 Well No. 9  
1980' FNL - 40' FWL (Unit E); and,
- West Loco Hills G4S Unit Tract 1 Well No. 10  
2455' FSL - 50' FWL (Unit L).

(5) The following existing wells will be the producing wells which complete the two aforementioned patterns and will be directly affected by the proposed pilot project:

- West Loco Hills G4S Tract 13A Well No. 4  
1650' FNL - 330' FEL (Unit H) of Section 12;
- West Loco Hills G4S Tract 6 Well No. 1  
1980' FSL - 660' FEL (Unit I) of Section 12;
- West Loco Hills G4S Tract 1 Well No. 2  
1650' FNL - 330' FWL (Unit E) of Section 7;
- West Loco Hills G4S Tract 1 Well No. 3  
1980' FSL - 660' FWL (Unit L) of Section 7; and,
- West Loco Hills G4S Tract 1 Well No. 8  
2310' FNL - 330' FWL (Unit E) of Section 7.

A sixth producing well, to be located approximately 2310 feet from the North line and 330 feet from the East line (Unit H) of Section 12, will be drilled if the project is successful.

(6) The area within the periphery of the five producing wells and the proposed producing well is the area of the pilot project for which this order will hereinafter be concerned.

(7) The pilot project is in an area where extensive primary and secondary recovery operations have been conducted, (see Division Order No. R-2178, as amended), and is of an experimental nature in order to evaluate the effectiveness of carbon dioxide into the subject reservoir and to provide a study of zone isolation, vertical heterogeneity, reservoir directional variation and the carbon dioxide displacement process.

(8) The applicant proposes to inject 60 tons of CO<sub>2</sub> per well per day over a two month period alternating with 400 barrels of water per well per day for a one month period.

(9) There are sufficient differences between the proposed pilot project and the project approved by Order No. R-7821 which made it necessary for the applicant to seek authorization through the Division's hearing process. Therefore, Division Order No. R-7821 should be rescinded at this time and a separate order be issued granting authorization for the proposed pilot project.

(10) The operator of the proposed pilot project should take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and are not permitted to escape to other formations or onto the surface via surrounding injection, production and/or plugged and abandoned wells.

(11) Prior to commencing injection operations, the casing of the subject wells should be pressure-tested throughout the interval, from the surface down to the proposed packer-setting depth, to assure integrity of such casing.

(12) The injection into each of the injection wells, as described in Finding Paragraph No. (4) above, should be accomplished through 2 7/8-inch plastic lined tubing installed in a packer set not more than 100 feet above the uppermost perforation; the casing-tubing annulus of each injection well should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(13) Said injection wells herein authorized and/or the injection authorization system should be so equipped as to limit injection pressure at the wellhead to no more than 560 psi provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(14) The operator shall notify the supervisor of the Artesia District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure test on each of the proposed injection wells so that the same may be inspected.

(15) The evidence presently available indicates that there is not fresh water within the area of interest.

(16) In the event the pilot project is successful and indicates the desirability and economic feasibility of the process, the pilot project could be expanded to include additional lands and wells, and could result in the production of otherwise unrecoverable oil, thereby preventing waste.

(17) The pilot project is to be conducted within the boundaries of the West Loco Hills Grayburg No. 4 Sand Unit Area, a unitized area, and will therefore not impair correlative rights.

(18) The proposed pilot project should be approved, as well as the requested unorthodox injection well locations as described in Finding Paragraph No. (4) above.

**IT IS THEREFORE ORDERED THAT:**

(1) The applicant, Yates Petroleum Corporation, is hereby authorized to initiate and conduct a pilot carbon dioxide/water injection project known as the Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project, hereinafter referred to as the "pilot project" in the Fourth Sand Member of the Grayburg formation underlying portions of the SE/4 NE/4 and NE/4 SE/4 (Units H and I, respectively) of Section 12, Township 18 South, Range 29 East, NMPM, and Lots 2 and 3 (SW/4 NW/4 and NW/4 SW/4 equivalents, Units E and L, respectively) of Section 7, Township 18 South, Range 30 East, NMPM; both portions of said sections located in the Loco Hills Queen-Grayburg-San Andres Pool, West Loco Hills Grayburg No. 4 Sand Unit, Eddy County, New Mexico.

(2) The applicant is hereby authorized to initially develop the above-described pilot project on a 22 1/2-acre and a 10-acre (approximate) inverted five-spot injection pattern utilizing the following wells to be drilled as carbon dioxide/water injection wells hereby approved in Section 7:

- West Loco Hills G4S Unit Tract 1 Well No. 9  
1980' FNL - 40' FWL (Unit E); and,

- West Loco Hills G4S Unit Tract 1 Well No. 10  
2455' FSL - 50' FWL (Unit L).

(3) Injection into each of the above-described injection wells shall be accomplished through 2 7/8-inch tubing installed in a packer set not more than 100 feet above the uppermost perforation;

PROVIDED HOWEVER THAT, the tubing shall be internally plastic lined; the casing-tubing annulus of each injection well shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing or packer.

PROVIDED FURTHER THAT, prior to commencing injection operations, the casing in the subject wells shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Artesia District Office.

(4) The injection wells herein authorized and/or the injection pressurization equipment shall be so equipped as to limit injection pressure at the wellhead to no more than 560 psi, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(5) The operator shall notify the supervisor of the Artesia District Office of the Division in advance of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(6) To further develop the above-described inverted five-spot injection pattern, the applicant is hereby authorized to drill an additional producing well at an undetermined and possible unorthodox location in the SE/4 NE/4 (Unit H) of said Section 12, Township 18 South, Range 29 East, NMPM, provided said well shall be located no closer than 10 feet to any boundary of said quarter-quarter section.

(7) The following existing wells are hereby approved as production wells with the pilot project to fully develop and complete the aforesaid inverted five-spot injection pattern:

- West Loco Hills G4S Tract 13A Well No. 4  
1650' FNL - 330' FEL (Unit H) of Section 12;

- West Loco Hills G4S Tract 6 Well No. 1  
1980' FSL - 660' FEL (Unit I) of Section 12;

both wells being located in said Section 12, Township 18 South, Range 29 East, NMPM;

- West Loco Hills G4S Tract 1 Well No. 2  
1650' FNL - 330' FWL (Unit E) of Section 7;
- West Loco Hills G4S Tract 1 Well No. 3  
1980' FSL - 660' FWL (Unit L) of Section 7; and,
- West Loco Hills G4S Tract 1 Well No. 8  
2310' FNL - 330' FWL (Unit E) of Section 7,

the three above-described wells being located in said Section 7, Township 18 South, Range 30 East, NMPM.

(8) A sixth producing well, if said project is successful, is to be drilled to complete the two injection patterns at a standard oil well location approximately 2310 feet from the North line and 330 feet from the East line (Unit H) of said Section 12.

(9) The area within the periphery of the five existing wells and the proposed producing well as described above shall be the area of the pilot project.

(10) The operator shall immediately notify the supervisor of the Division's Artesia District Office of the failure of the tubing, casing or packer in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(11) Any time that any of the producing wells in the pilot project are shut-in for over ninety consecutive days, the Supervisor of the Artesia District Office shall be notified, at which time it shall be demonstrated that any wells that lie between the outside of the aforesaid five-spot injection pattern and a half-mile radius of the aforesaid injection wells will not be adversely affected by the carbon dioxide/water injection operations.

(12) The Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project shall be governed by this order and the rules contained herein and by the provisions of Rules 701 through 708 of the Division rules which are not in conflict with this order.



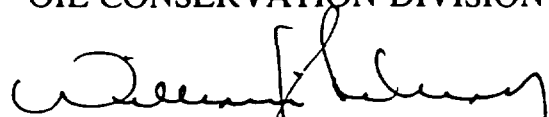
(13) Monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules 706 and 1115 of the Division Rules and Regulations.

(14) Division Order No. R-7821, issued in Case No. 8324 and dated February 21, 1985, is hereby rescinded.

(15) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read 'William J. Lemay', with a long, sweeping vertical line extending downwards from the end of the signature.

WILLIAM J. LEMAY  
Director

S E A L

**LOCO HILLS POOL  
(GRAYBURG WATERFLOOD)  
Eddy County, New Mexico**

Order No. R-1267, Authorizing Newmont Oil Corporation to Conduct a Pilot Waterflood in the Grayburg Formation of the Loco Hills Pool, Eddy County, New Mexico, October 25, 1958.

*Application of Newmont Oil Corporation for an order authorizing a pilot waterflood project in the Loco Hills Pool, Eddy County, New Mexico.*

CASE NO. 1511  
Order No. R-1267

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on October 2, 1958, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 25th day of October, 1958, the Commission, a quorum being present, having considered the application, the evidence adduced and the recommendations of the Examiner Elvis A. Utz, and being fully advised in the premises,

**FINDS:**

1. That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Newmont Oil Corporation, proposes to institute a pilot waterflood project in the Loco Hills Pool to inject water into the Grayburg formation through five (5) wells located in Section 6, Township 18 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, and through one (1) well located in Section 1, Township 18 South, Range 29 East, N.M.P.M., Eddy County, New Mexico.

(3) That the proposed injection wells are as follows:

Yates "A" No. 2 NE/4 NW/4 Section 6 T-18-S, R-30-E

Yates "A" No. 11 NW/4 NE/4 Section 6 T-18-S, R-30-E

Yates No. 5 NW/4 SW/4 Section 6 T-18-S, R-30-E

Yates No. 2 SW/4 NW/4 Section 6 T-18-S, R-30-E

Yates No. 3 SE/4 NW/4 Section 6 T-18-S, R-30-E

Ballard "B" No. 5 NE/4 NE/4 Section 1 T-18-S, R-29-E

(4) That the proposed pilot waterflood injection project will not adversely affect the interests of any other operators in the Loco Hills Pool.

(5) That the proposed program will promote conservation and will tend to prevent waste through the production of oil which might not otherwise be recovered.

**IT IS THEREFORE ORDERED:**

(1) That the application of Newmont Oil Corporation for permission to institute a pilot waterflood project in the Grayburg formation of the Loco Hills Pool in Eddy County, New Mexico, be and the same is hereby approved.

(2) That the following-described wells be and the same are hereby authorized as water injection wells:

Yates "A" No. 2 NE/4 NW/4 Section 6 T-18-S, R-30-E

Yates "A" No. 11 NW/4 NE/4 Section 6 T-18-S, R-30-E

Yates No. 5 NW/4 SW/4 Section 6 T-18-S, R-30-E

Yates No. 2 SW/4 NW/4 Section 6 T-18-S, R-30-E

Yates No. 3 SE/4 NW/4 Section 6 T-18-S, R-30-E

Ballard "B" No. 5 NE/4 NE/4 Section 1 T-18-S, R-29-E

(3) That monthly progress reports on the waterflood project herein authorized shall be submitted to the Commission in accordance with Rule 704 and Rule 1119 of the Commission Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

**MALJAMAR POOL  
(Yates Sand Gas Injection)**

Lea County, New Mexico.

Order No. R-106, Authorizing Buffalo Oil Company to Inject Gas Into the Yates Sand in the Maljamar Pool, Lea County, New Mexico, October 31, 1951.

*The application of Buffalo Oil Company for approval of use of its Baish A Well No. 7, Section 21, Township 17 S., Range 32 E, N.M.P.M., Lea County, New Mexico, for gas injection purposes in the Yates Sand.*

CASE NO. 312  
Order No. R-106

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 10 a.m., October 23, 1951, before the Oil Conservation Commission of New Mexico hereinafter referred to as the "Commission," upon petition of Buffalo Oil Company.

NOW, on this 31st day of October, 1951, the Commission, a quorum being present, having considered all of the testimony adduced and exhibits received at said hearing, and being fully advised in the premises,

**FINDS:**

1. That due public notice having been given as required by law, the Commission has jurisdiction of this case and the subject matter thereof.

(2) That it would be in the interests of conservation, prevent waste and protect correlative rights to permit the petitioners to conduct a gas injection program in the Yates Sand through its Baish A No. 7 well, located in Section 21, Township 17 S., Range 32 E., N.M.P.M., on an experimental basis.

(3) That gas, in excess of the needs of the Maljamar Cooperative Repressuring Agreement, is available from the plant serving the Maljamar Cooperative Repressuring Agreement, and such excess gas is now being vented to the air, and is available to carry out the gas-injection program as proposed by the petitioner.

**IT IS THEREFORE ORDERED:**

(1) That Buffalo Oil Company is hereby granted permission to inject gas in the Yates Sands through its Baish A No. 7 well, Section 21, Township 17 South, Range 32 East, N.M.P.M., Lea County, New Mexico.

(2) That said gas injection program is to be conducted on an experimental basis, injection to be made between the 8- $\frac{5}{8}$  inch and the 10- $\frac{3}{4}$  inch casing strings, and production from the Maljamar Pool, Lea County, New Mexico, may continue through the 7-inch casing.

(3) That no change in plans for the injection of gas into the Yates Sand shall be made except upon application to the Commission, and the Commission may act administratively upon such application if, in its opinion, the rights of third parties are not affected thereby.

Nothing in this order shall be construed as affecting, changing or modifying the Maljamar Repressuring Agreement as provided by Commission Order No. 485, or as creating any vested right to gas from the Maljamar Repressuring Agreement source, or from any other source.

IT IS FURTHER ORDERED, that jurisdiction of this case, be and the same hereby is retained by the Commission for such further order or orders as may seem necessary to the Commission for the promotion of conservation, prevention of waste or protection of correlative rights.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

**LOCO HILLS POOL**  
(West Grayburg No. 4 Sand Unit Area Waterflood)  
Eddy County, New Mexico

Order No. R-2178, Authorizing Newmont Oil Company to Expand its Loco Hills Waterflood Project by Inclusion of the West Loco Hills Grayburg No. 4 Sand Unit Area, Loco Hills Pool, Eddy County, New Mexico

*Application of Newmont Oil Company for expansion of its Loco Hills Waterflood Project, Eddy County, New Mexico.*

CASE NO. 2473  
Order No. R-2178

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on January 4, 1962, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 30th day of January, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

**FINDS:**

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Newmont Oil Company, seeks permission to expand its Loco Hills Waterflood Project to include the West Loco Hills Grayburg No. 4 Sand Unit Area, comprising 5,320 acres, more or less, in Townships 17 and 18 South, Ranges 29 and 30 East, NMPM, Eddy County, New Mexico, which unit was approved by Order No. R-2166.

(3) That the applicant seeks permission to operate the expanded waterflood project as a "capacity" type flood unrestricted by the allowable provisions of Rule 701 E.

(4) That in the interest of increasing ultimate recovery in the Loco Hills Pool, the applicant should be authorized to conduct waterflood operations in the West Loco Hills Grayburg No. 4 Sand Unit Area by the injection of water into the Loco Hills Sand; that the allowables to be assigned to wells in this project should be governed by the provisions of Rule 701 E, except that a buffer zone should be established in which allowables would be unrestricted.

(5) That production from wells outside the buffer zone should be tanked separately from production from wells inside the buffer zone unless the applicant receives approval from the Commission for some other satisfactory means of determining production from each of the two areas.

(6) That for the purpose of determining the project area and computing the project allowable under Rule 701 E, any producing well in said project area lying outside the buffer zone should be entitled to receive credit for offsetting an injection well regardless of whether the injection well is in the buffer zone or in the project area.

**IT IS THEREFORE ORDERED:**

(1) That the applicant, Newmont Oil Company, is hereby authorized to institute a waterflood in the Loco Hills Pool within the West Loco Hills Grayburg No. 4 Sand Unit Area located in Townships 17 and 18 South, Ranges 29 and 30 East, NMPM, Eddy County, New Mexico, by the injection of water initially into the following-described wells:

- Ballard B No. 1—SE/4 NW/4 Section 1, Township 18 South, Range 29 East
- Dixon Yates Federal No. 2—SE/4 SE/4 Section 1, Township 18 South, Range 29 East
- Newmont Canfield No. 1-A—NW/4 NW/4 Section 7, Township 18 South, Range 30 East

**(LOCO HILLS (WEST GRAYBURG NO. 4 SAND UNIT AREA WATERFLOOD) POOL—Cont'd.)**

(2) That the ultimate project area for said waterflood shall consist of all the acreage within the said West Loco Hills Grayburg No. 4 Sand Unit Area, except the following-described acreage which shall constitute a buffer zone:

TOWNSHIP 17 SOUTH, RANGE 29 EAST  
Section 36: S/2 SW/4

TOWNSHIP 18 SOUTH, RANGE 29 EAST  
Section 1: W/2 and S/2 SE/4  
Section 12: NE/4 and N/2 NW/4

TOWNSHIP 18 SOUTH, RANGE 30 EAST  
Section 7: NW/4

(3) That the wells located within the above-described buffer zone may be operated at unrestricted rates of production.

(4) That all producing wells located within said waterflood project and outside the above-described buffer zone shall be operated and produced in accordance with the allowable provisions of Rule 701 E of the Commission Rules and Regulations.

(5) That for the purpose of determining the project area and computing the project allowable under Rule 701 E, any producing well in said project area lying outside the buffer zone shall be entitled to receive credit for offsetting an injection well regardless of whether the injection well is in the buffer zone or in the project area.

(6) That production from wells outside the buffer zone shall be tanked separately from production from wells inside the buffer zone unless the applicant receives approval from the Commission for some other satisfactory means of determining production from each of the two areas.

(7) That jurisdiction of this cause is retained for the event of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinafore designated.

**TOTAH-GALLUP POOL**  
(Tenneco Pressure Maintenance Project and Rules)  
San Juan County, New Mexico

Order No. R-2190, Authorizing Tenneco Oil Company to Institute a Pressure Maintenance Project and Adopting Rules Governing, in the Totah-Gallup Pool, San Juan County, New Mexico, February 21, 1962.

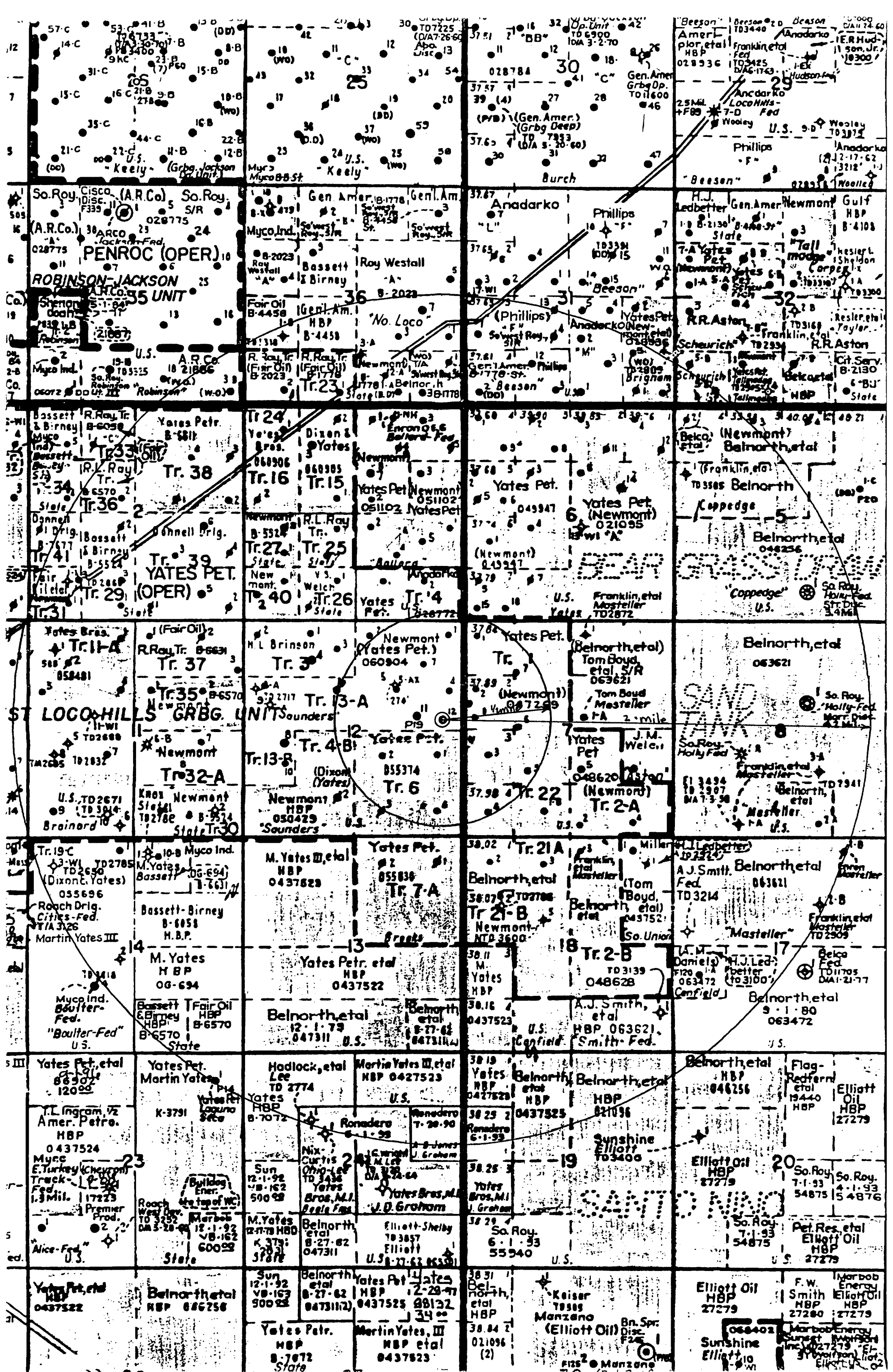
*Application of Tenneco Oil Company for a Pressure Maintenance Project, San Juan County, New Mexico.*

CASE NO. 24  
Order No. R-21

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on January 24, 1962, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 21st day of February, 1962, the Commission, a quorum being present, having considered this application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, and being fully advised in the premises,



## VI. Tabulation of Well Data

- A. West Loco Hills G4S Unit Tract 6-1, formerly the Day #1.  
Located 1980' FSL and 660' FEL of Section 12-18S-29E  
Present operator is Yates Petroleum Corporation, former operators are Newmont Oil Company and Dixon & Yates.  
This well was spudded 2/16/42 and completed 3/24/42 as a producing oil well. Converted to water injection on 1/5/64 with a TD of 2784'. Construction: 8 5/8" 350/50 sx; 7" 20# smls 2635'/100 sx; 4 1/2" 9.5# liner 2565-2744'/65 sx; 4 1/2" 9.5# casing to 2568'/125 sx (TOC 1050').  
Completion record: shot 50 qts Nitroglycerine 2747-60'; shot 30 qts Nitroglycerine 2760-75'; shot 30 qts Nitroglycerine 2775-83'; SOF 1M Strati-lift; Petro-frac 9M-18M; A/1000 gal 15%; A/500 gal 15%; Sandrill 10/20 sd 2766-2770', 2774-2777'; A/500 gal 15%; A/500 gal 28%; A/500 gal/15% & 5 gal Visco IIII.
- B. West Loco Hills G4S Unit Tract 6-2, formerly the Day #2.  
Located 1980' FSL and 1980' FEL Section 12-18S-29E. Present operator is Yates Petroleum Corporation, and former operators are Newmont Oil Company and Dixon & Yates. This well was spudded 3/31/42 and completed 5/5/42. This is a TA'd well with a TD of 2745'. Construction: 8 5/8" 340'/50 sx; 7" 20# smls 2303'/100 . sx. Completion record: shot 1100 qts Nitroglycerine 2695-2722';, SOF 20M-25M#; F/7.5M# 20/40 sd & 375 bbls lease oil; F/500 gal 15% acid 10M gal lease oil & 10M# 20/40 sd. TA'd: Ran CBL f 2600' to 1260' (TOC @1460). Set CIBP @ 2553' w/35' cement on top. Repaired wellhead; tested casing to 600 psi OK; well TA'd 6-9-92.
- C. West Loco Hills G4S Unit Tract 6-4, formerly the Day #4.  
Located 660' FSL and 660' FEL of Section 12-18S-29E.  
Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 9/22/43 and completed 11/3/43. This is a TA'd oil well. TD is 2758'. Construction: 8 1/4" 375'/50 sx; 7" 20# smls 2645'/100 sx. Completion record: shot 120 qts Nitroglycerine 2728-58'; SOF 2670-98'/32M-110M#. TA'd: Run CBL f/2650'-110'; set CIBP @ 2596' w/35' cement on top; tested casing to 500 psi OK; Well TA'd 6-4-92.
- D. West Loco Hills G4S Unit Tract 13-1, formerly called the Saunders "A" #1 and the Saunders #1. Located 330' FNL and 330' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 3/1/39 and completed 7/19/39 as a producing oil well with a TD of 3200'. It has since been a water injection well and is currently P & A. Construction: 8" 24# 424'/50 sx; 7" 20# 2698'/100 sx. Completion record: shot 470 qts Nitroglycerine 2990-3190'; shot 230 qts Nitroglycerine 2803-2850'; A/500 gal 15%. P & A: spot 100 sx w/2% calcium bottom, tag plug @ 2587' perf 4 SPF @ 1170', squeezed 50 sx w/2% calcium, tag plug @ 1040', perf 4 shots @ 390', spot 50 sx w/2% calcium, tag 273' 15 sx top, P & A marker.

Tabulation of Well Data

-2-

- E. West Loco Hills Unit G4S Tract 13A-4, formerly called Saunders "A" #4 and the Saunders #4-A. Located 1650' FNL and 30' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 9/17/41 and completed 10/21/41 as a producing oil well. Since then this well's status has been TA, shut in and is currently producing. TD on this well is 2805'. Construction: 8 1/4" 425'/50 sx; 7" 2680'/100 sx; 4 1/2" 10.5# 2660'/300 sx. Completion record: shot 120 qts Nitroglycerine 2764-2805'; A/500 gal 5% inhibited FE acid; F/395 bbls lease oil & 7500# 20/40 sd; A/1M gal NE-FE acid & 2 drums gyp control chem + 20 bbls water; F/18M gal emulsified oil, 45M#, 20/40 sd, 1400# rock salt.
- F. West Loco Hills G4S Unit Tract 13-5, formerly the Saunders "A" #5-AX and the Saunders #5-AX. Located 1650' FNL and 1670' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 1/5/42 and completed 2/8/42 with a TD of 2768'. This well was completed as a producing oil well and was later converted to an injection well and is now P & A. Construction: 8 1/4" 359'/50 sx; 7" 2632'/100 sx; 4 1/2" 9.5# J-55 liner 2596-2727'/150 sx Cl "C". Completion record: shot 100 qts Nitroglycerine 2739-2768'; F/4300 gal butene 15M-60M; A/500 gal 15%; A/500 gal; A/500 gal; perf/4 SPF 2732-54' 732-54' A/500 gal regular; A/500 gal regular; A/500 gal 28%; P A: tag bottom, pull up 1 jt, spot 100 sx/2% calcium, tag plug 307', set packer 819', squeeze 50 sx, tag plug @ 975', 15 sx, ag plug @ 960', squeeze cement with 2% calcium, tag plug @ 219', mix 15 sx with 2% calcium, P & A marker.
- G. West Loco Hills G4S Unit Tract 13-7, formerly the Saunders "A" #7 and the Saunders #7-A. Located 990' FNL and 990' FEL of section 12-18S-29E. Present operator is Yates Petroleum corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 5/22/47 and completed 6/29/47 with a total depth of 2811'. This well was completed as a producing oil well, but since has also been TA, producing and is now P & A'd. Construction: 8 1/4" 408'/50 sx; 7" 20# 2670'/100 sx. Completion record: shot 100 qts Nitroglycerine 2775-2801'; A/500 gal 5% inhibitor FE acid; sandrill 10/20 sd 2780, 2785, 2790'; A/250 gal 28% F/567 bbls salt water, 24M# 10/20 sd; A/1M gal 15% HCL with inhibitor F/20M gal oil & 40/M# sd & 1400# rock salt. P & A: Set CIBP @ 2640' w/35' cement on top. Ran CBL f/PBTD to surface.TOC @ 1975. Perf @ 1110'. Set cement retainer @ 1060'. Squeeze Base of Salt through holes @ 1110' with 50 sx Class "C" Neat followed by 50 sx Class "C" w/3% CaCl2. Left 35' of cement on retainer. Cut and pulled 7" casing at 405'. Set Cement retainer @ 360'. Squeezed Top of Salt with 50 sx Class "C". Left 35' of cement on top of the retainer. Spot 120 sx plug from 280' to surface. Allow to work behind 7" casing through holes @ 255'. Install P & A marker. Well P & A'd 7/30/92.

- H. West Loco Hills G4S Unit Tract 13-11. Located 2310' FNL and 1175' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operator was Newmont Oil Company. This well was spudded 12/4/75 and completed 12/31/75 with TD of 2828'. This well is a producing oil well. Construction: 8 5/8" 23# 302'/150 sx C1 "H"/2% CaCl 11' hole; 4 1/2" 9.5# J-55 2824'/650 sx C1 "H" 7 7/8" hole. Completion record: A/1000 gal 15% 2760-84'; F/20M gal + 50M# sd 2760-84'; perf 2760-84' w/2 SPF, A/1500 gal 15% NEFE 2760-2784'.
- I. West Loco Hills G4S Unit Tract 1-1, formerly the Canfield "A" #1 and the Canfield #1. Located 330' FNL and 330' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company, Franklin, Aston & Fair; and Franklin Petroleum Corporation. This well was spudded 8/14/39 and completed 9/28/39 with a TD of 2820'. This well was completed as a producing oil well and is now P & A'd. Construction: 8 1/4" 28# 422'/50 sx; 7" 20# smls 2685'/100 sx. Completion record: shot 70 qts Nitroglycerine 2793-2820'; 10M gal 15M# sd 2671-2820'; A/126 gal 15%. P & A: Set CIBP @ 2620' w/35' cement on top. Ran CBL f/PBTD to surface. Perf top of Queen @ 2310. Could not establish injection rate. Spot 25 sx plug f/2365' to 2265' (tagged @ 2220'). Perf 4 holes @ 1110'. C Could not establish injection rate into holes @ 1110'. Spot 25 sx plug f/1175 to 1000'. Cut 7" casing at 405'. Could not pull 7" casing. ; Set cement retainer @ 354'. Squeezed top of Salt through cut 7" casing with 100 sx Class "C". Left 35' of cement o top of the retainer. Spot 50 sx Class "C" + 4% CaCl2. Tag plug @ 182'. Spot 50 sx Class "C" f/182 to surface. Placed 2' of cement in cellar around 8 5/8" head and 7" casing. Install P & A marker. Well P & A'd 8/4/92.
- J. West Loco Hills G4S Unit Tract 1-2, formerly the Canfield "A" #2 and the Canfield #2-A. Located 1650' FNL and 330' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 8/4/41 and completed 9/16/41 with a TD of 2804'. This well was completed as a producing oil well and has since been shut in and is now a producing oil well. Construction: 8" 28# 427'/50 sx; 7" 20# 2690'/100 sx; 4 1/2" 9.5# casing to 2650' w/700 sx (circulated). Completion record: shot 60 qts Nitroglycerine 2785-2804'; 10M gal 15 sd; A/126 gal 15%.
- K. West Loco Hills G4S Unit Tract 1-3, formerly the Canfield "A" #3 and the Canfield #3-A. Located 1980' FSL and 660' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 10/17/42 and completed 12/1/42 as a producing oil well. Clean out and pressure test casing to 750 psi-OK-8/17/91. The TD is 2835'. Construction: 8 1/4" 32# 427'/50 sx; 5" 17# smls 2705'/100 sx.

- L. West Loco Hills G4S Unit Tract 1-4, formerly the Canfield "A" #4 and the Canfield #4-A. Located 660' FSL and 560' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 1/12/44 and completed 3/10/44 as a producing oil well with a TD of 2811'. This well has subsequently been turned in to a water injection well. Construction: 8 1/4" 402'/50 sx; 5 1/4" 2675'/100 sx; 4 1/2" 9.5# J-55 liner 2606-2760'/150 sx C1 "C"/141#; FLAC & 300# salt; 4 1/2" 9.5# casing to 2600'/100 sx (TOC 50'). Completion record: hot 60 qts Nitroglycerine 2777-2811'; shot 70 qts Nitroglycerine 771-2806'; 10M gal 15M# sd 2575-2811'; sandrill 10/20 sd 2779, 782, 2790, 2794'; A/500 gal; perf/4 SPF 2776 & 2797'; jet formation 2762-2806' spot A/500 gal 15% regular; A/500 gal 15% NEFE; A/1500 gal regular.
- M. West Loco Hills G4S Unit Tract 1-5, formerly the Canfield "A" #5 and the Canfield #5-A. Located 1650' FSL and 1650' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair, and Franklin Oil Corp. This well was spudded 12/18/44 and completed 1/29/45 with a TD of 2837'. This well was completed as a producing oil well, was a water injection well and is now P & A'd. Construction: 8 5/8" 425'/50 sx; 7" 2690'/100 sx; 4 1/2" 9.5# J-55 liner 2620-2796'/150 sx C1 "C"/1% D-23 & 2% salt. Completion recored: shot 140 qts Nitroglycerine 2801-2837'; 10M gal 15M# sd; A/500 gal; perf/1 SPF 2805, 2809, 2313, 2818'; A/500 gal 15%. P & A'd: Ran CBl f/2610 to surface. Set CIBP @ 2610' w/80' cement on top. Spot 25 sx plug f/2363' to 2220' (tagged @ 2220'). Perf 4 holes @ 1140'. Set cement retainer @ 11090'. Squeeze base of Salt through holes @ 1140' with 100 sx Class "C". Left 35' of cement on retainer. Cut 7" casing at 500'. Could not pull 7" casing. Set cement retainer @ 450'. Squeezed top of Salt through cut 7" casing with 100 sx Class "C". Left 35' of cement on top of the retainer. Perf 4 holes @ 250'. Set cement retainer @ 200'. Squeeze holes @ 250' with 1256 sx Class "C". Left 100' of cement on top of the retainer. Set 60' surface plug. Install P & A' 9/30/92.
- N. West Loco Hills G4S Unit Tract 1-6, formerly the Canfield "A" #6 and the Canfield #6-A. Located 2590' FNL and 1370' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 11/20/48 and completed 2/3/49 with a TD of 2387'. Repair casing and test to 600 psi on 3/25/92. This is a producing oil well. Construction: 8 1/4" 430'/50 sx; 7" 2698'/100 sx. Completion record: shot 126 qts Nitroglycerine 2795-2837'; shot 200 qts Nitroglycerine 2795-2837'; 10M gal 15M# sd 2698-2837'; 126 gal 15%.



- O. West Loco Hills G4S Unit Tract 1-7, formerly the Canfield "A" #7 and the Canfield #7-A. Located 1270' FNL and 1370' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 4/19/49 and completed 6/3/49 with a TD of 2814'. This well was completed as a producing oil well and subsequently TA and is presently a water injection well. Construction: 8 1/4" 431'/50 sx; 7" 2693'/100 sx; 4 1/2" 9.5# J-55 liner 2594-2769'/300 sx encore/2% salt & 1% D-60; A/500 gal 15% regular; perf 2802-22' 4 SPF A/500 gal 28%; A/1000 gal 28%; A/100 15% regular & 5 gal Visco IIII.
- P. West Loco Hills G4S Unit Tract 1-8, formerly the Canfield "A" #8 and the Canfield #8-A. Located 2310' FNL and 330' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 7/31/56 and completed 8/30/56 with a TD of 2814'. This well was completed as a producing oil well and converted to water injection on 8/7/63. Converted back to a producer on 11/21/91. Construction: 8 5/8" 28# 426'/50 sx; 7" 20# 2774'/ 100 sx; 4 1/2" 2763'/425 sx (circulated). Completion record: 10M SF 15M# 20/40 sd; A/500 gal regular; A/500 gal 28%; A/1000 gal 28%.
- Q. West Loco Hills G4S Unit Tract R1 Well No. 1 formerly the Saunder B #1. Located 2310' FSL and 2310' FWL of Sec 12, T18S-R29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Martin Yates, III et al. This well was spudded on November 26, 1962 and completed on January 2, 1963 with a total depth of 2717'. This well was completed as an injection well for the West Loco Hills G4S Unit and has been P & A'. Construction: 7 " @ 380' w/50 sx, 4 1/2" @ 2642' w/100 sx completion record. Acidize 500 gal mcx; undercam f/2656'-2694'. P & A'd. Ran CBL f/2670 to surface (TOC @ 1690). Used RBP and packer to find holes @ 1460', 1060, 705, 352, and 45'. Set cement retainer @ 2606' squeezed open hole section with 50 sx Class "C" cement. Left 35' cement on top. Spot 25 sx plug f/2242' to 2100' (across Queen). Set cement retainer @ 956'. Squeeze base of salt through hole @ 1060' with 50 sx Class "C". Left 35' of cement on retainer. Set cement retainer @ 322'. Squeezed to of salt through hole @ 352' with 50 sx Class "C". Left 35' of cement on top of the retainer. Circulate 25 sx cement f/60' to surface and through hole @ 45' through the 4 1/2" x 7" annulus. Install P & A marker. Well P & A'd 10/30/92.

XII. Affirmative Statement

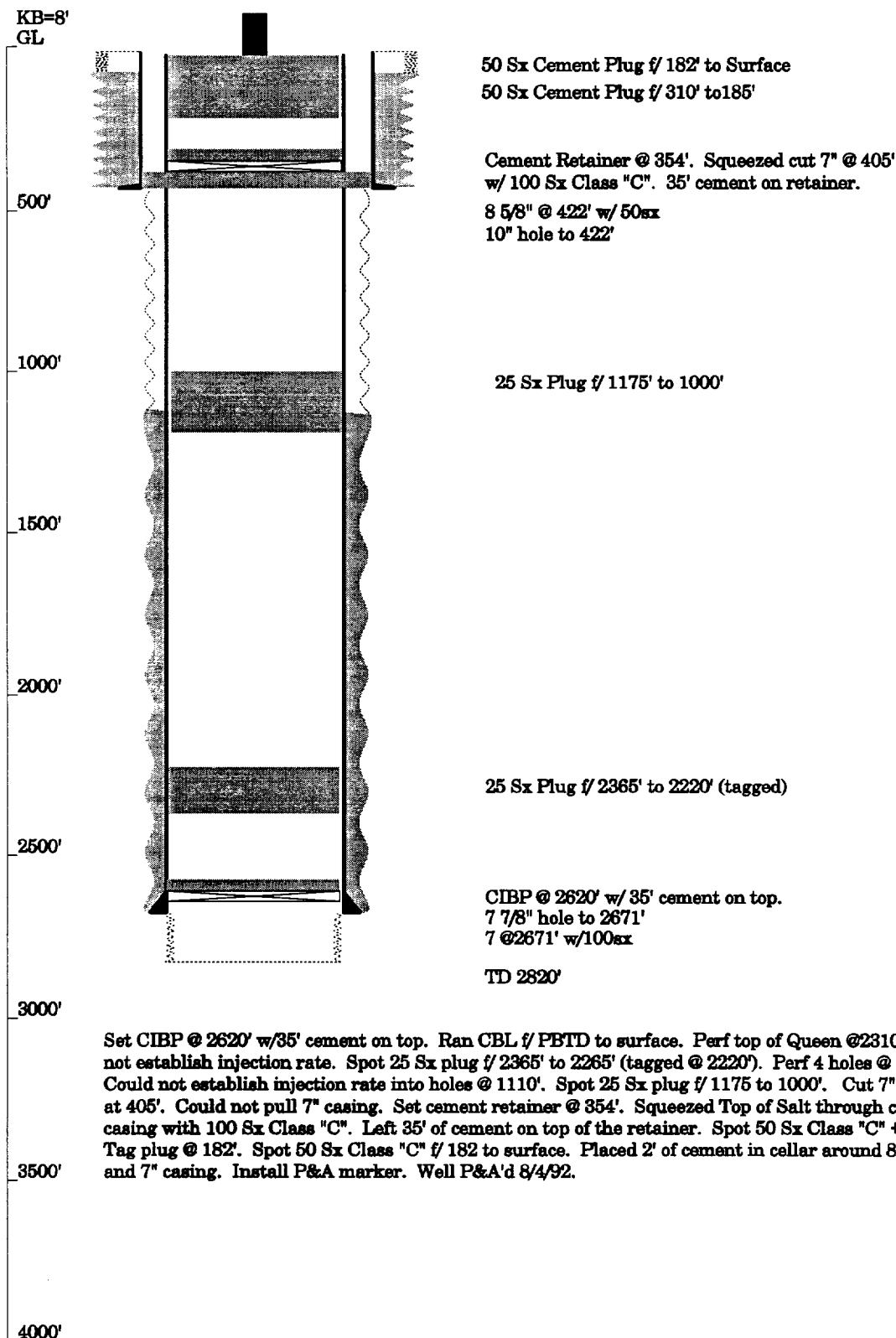
I have examined the available geologic and engineering data for this project and I found no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

Robert S. Fant  
Petroleum Engineer  
Yates Petroleum Corporation

RSF/cvg

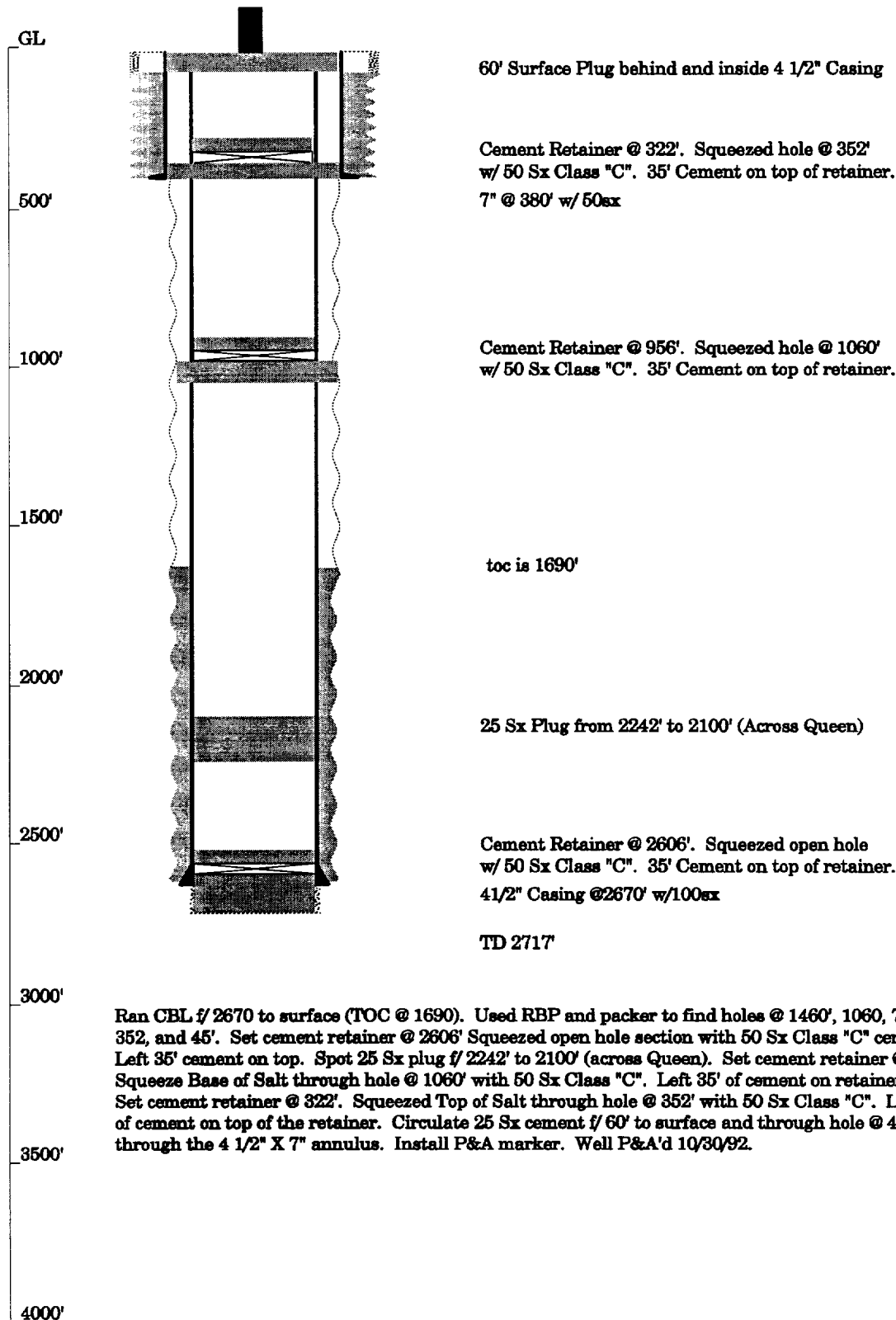
# West Loco Hills Unit #1-1

Unit D, 330' FNL 330' FWL  
Sec. 7-T18S-R30E NMPM



# West Loco Hills Unit #4-1

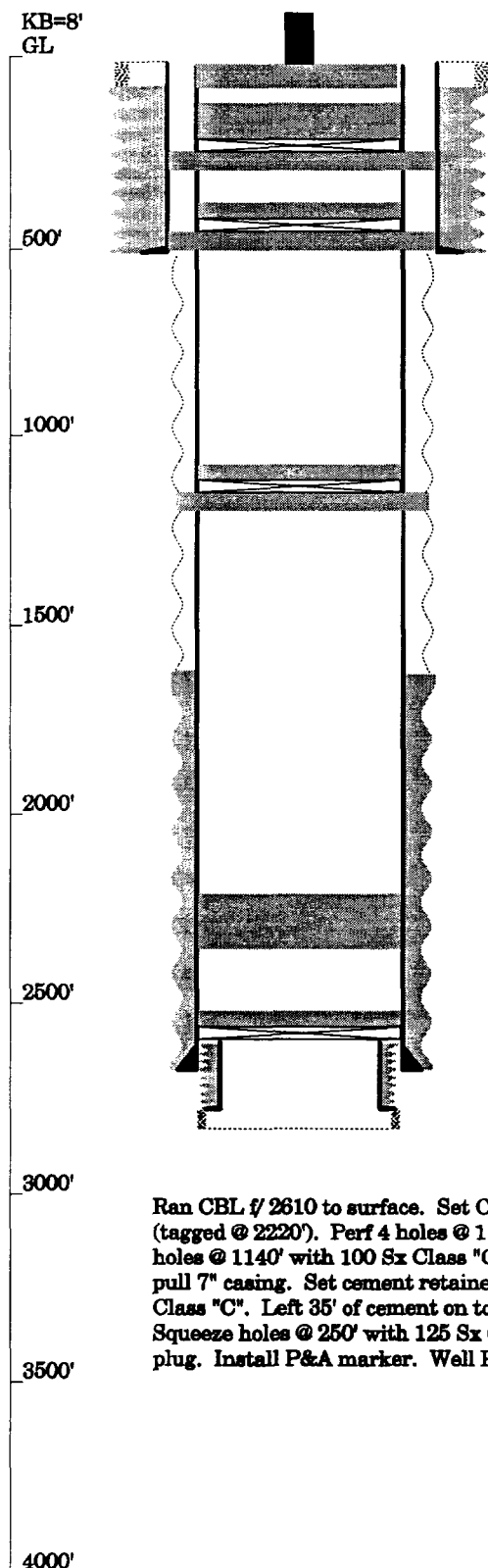
Unit K, 2310' FSL 2310' FWL  
Sec. 12-T18S-R29E NMPM



# West Loco Hills Unit #1-5

Unit K, 1650' FSL 1650' FWL

Sec. 7-T18S-R30E NMPM



60' Surface Plug

Cement Retainer @ 200'. Squeeze hole @ 250' w/ 125 Sx Class "C". 35' of Cement on retainer.

Cement Retainer @ 450'. Squeeze cut 7" @ 500' w/ 100 Sx Class "C". 35' of Cement on retainer.

8 5/8" @ 500' w/ 50sx  
10" hole to 500'

Cement Retainer @ 1090'. Squeeze hole @ 1140' w/ 100 Sx Class "C". 35' of Cement on retainer.

25 Sx cement plug from 2363' to 2220' (tagged)

CIBP @ 2610' w/ 80' cement on top

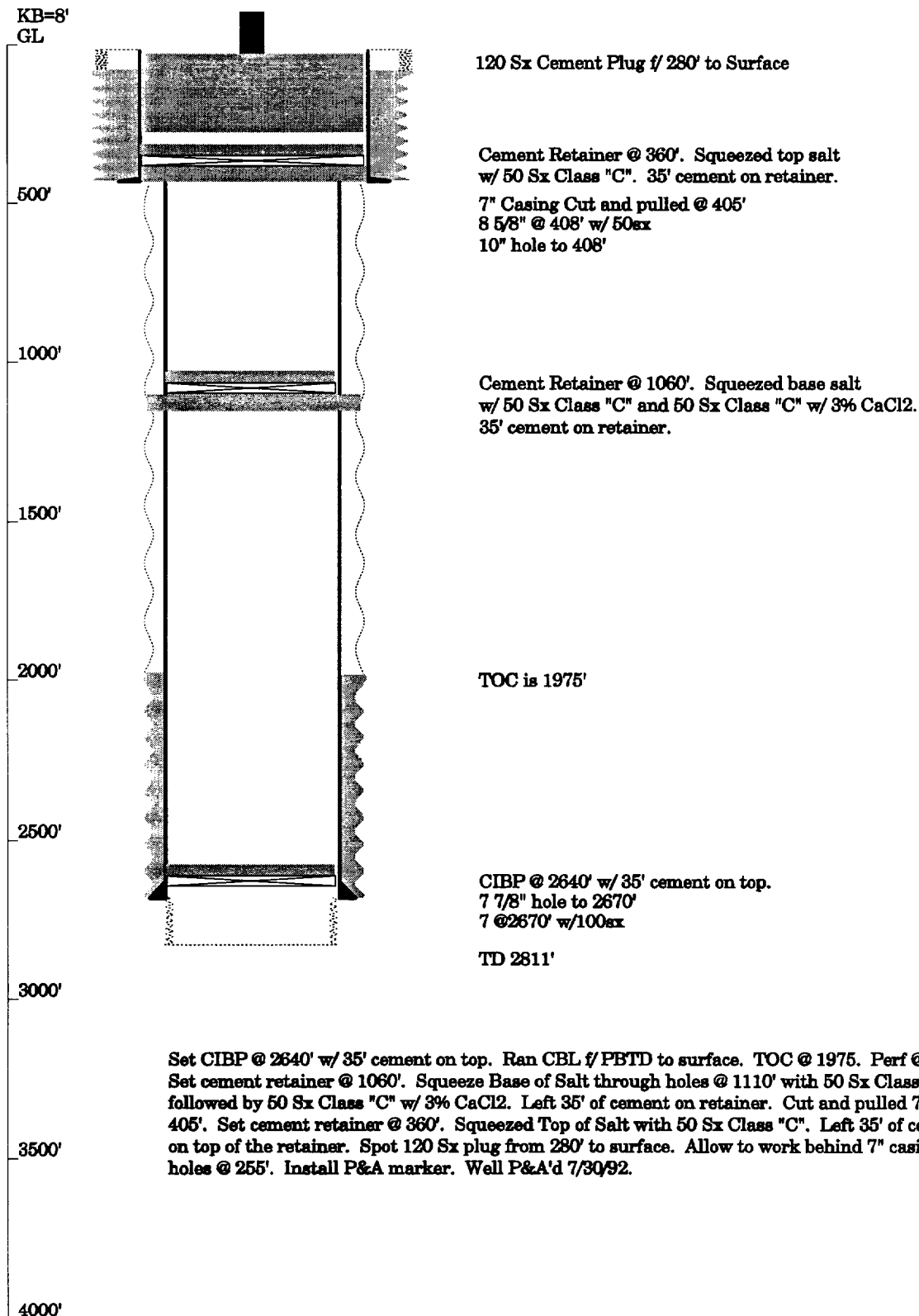
7 @ 2690' w/ 100sx

4 1/2" Liner from 2620'-2796' cemented by squeezing from the top.  
TD 2832'

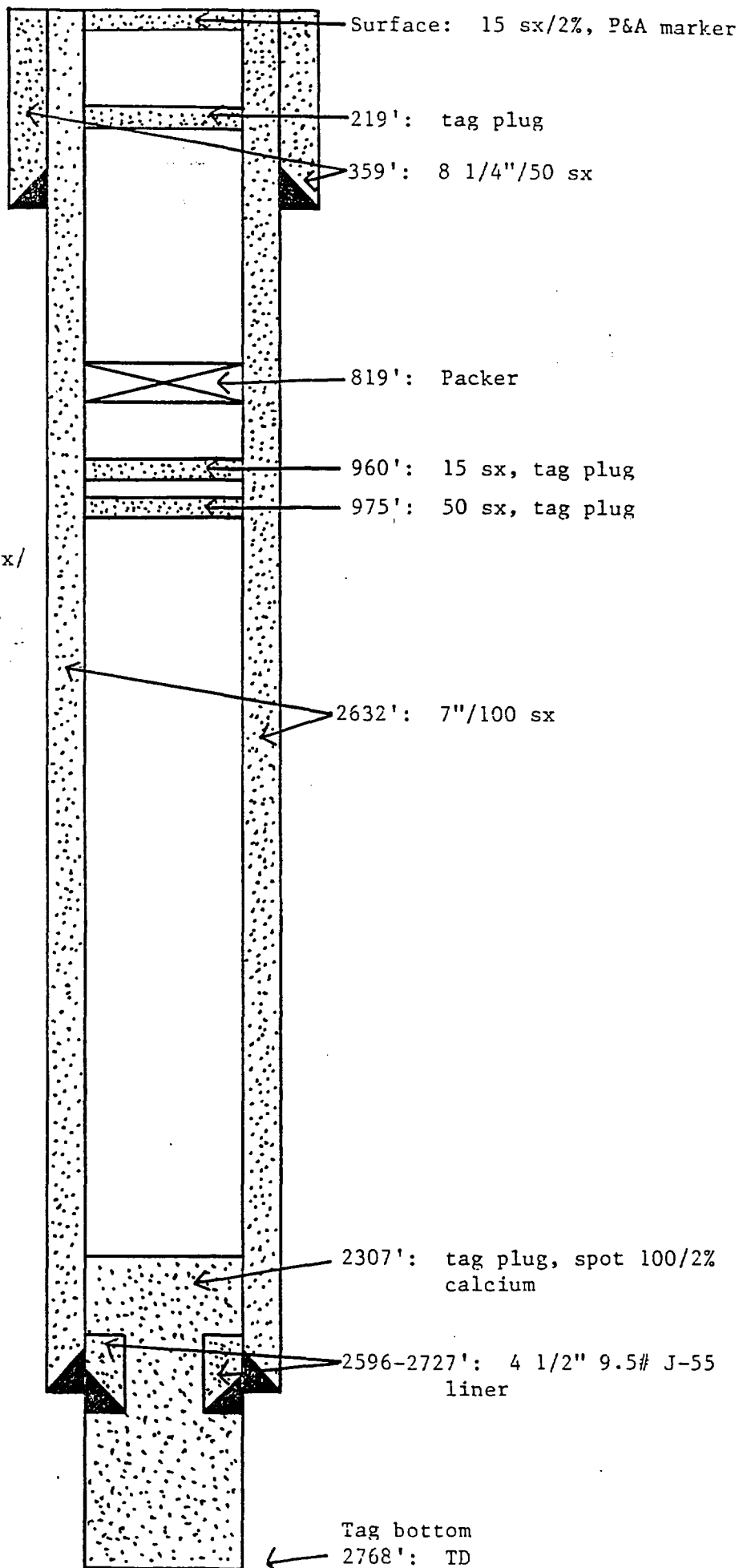
Ran CBL f/ 2610 to surface. Set CIBP @ 2610' w/ 80' cement on top. Spot 25 Sx plug f/ 2363' to 2220' (tagged @ 2220'). Perf 4 holes @ 1140'. Set cement retainer @ 1090'. Squeeze Base of Salt through holes @ 1140' with 100 Sx Class "C". Left 35' of cement on retainer. Cut 7" casing at 500'. Could not pull 7" casing. Set cement retainer @ 450'. Squeezed Top of Salt through cut 7" casing with 100 Sx Class "C". Left 35' of cement on top of the retainer. Perf 4 holes @ 250'. Set cement retainer @ 200'. Squeeze holes @ 250' with 125 Sx Class "C". Left 100' of cement on top of the retainer. Set 60' surface plug. Install P&A marker. Well P&A'd 9/30/92.

# West Loco Hills Unit #13-7

Unit A, 990' FNL 990' FEL  
Sec. 12-T18S-R29E NMPM



West Loco Hills G4S Unit Tract 13-5



P&A: 7/27/83

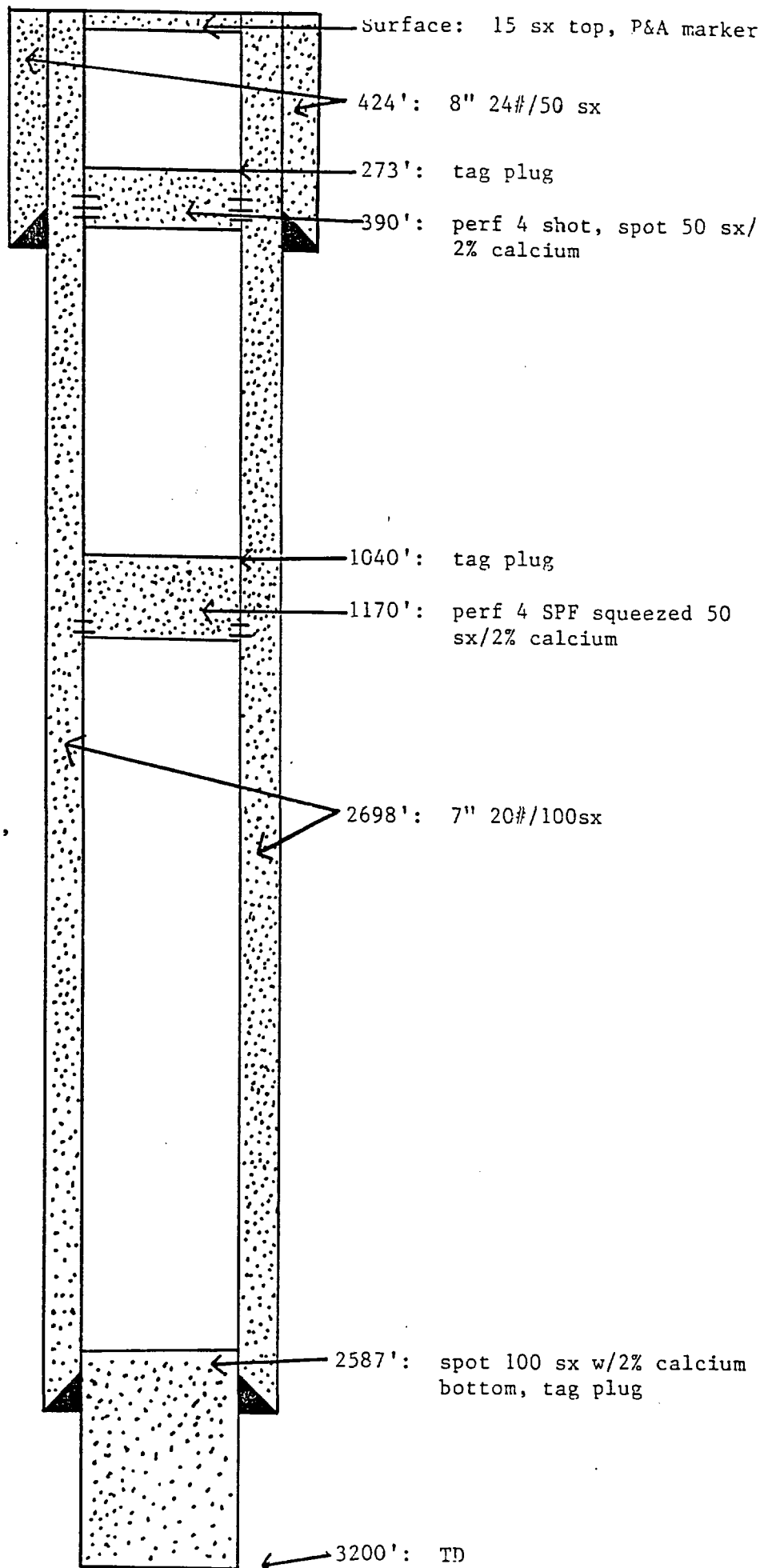
Tag bottom, pull up 1 jt, spot 100 sx/2% calcium, tag plug @ 2307', set packer 819', squeeze 50 sx, tag plug @ 975', 15 sx, tag plug @ 960', squeeze cement with 2% calcium, tag plug @ 219', mix 15 sx with 2% calcium, P&A marker.

West Loco Hills G4S Unit Tract 13-1

330' FNL/330' FEL Sec 12-18S-29E

P&A: 7/14/83

Spot 100 sx 2/2% calcium bottom,  
tag plug @ 2587', perf 4 SPF @  
1170', squeezed 50 sx w/2% calcium,  
tag plug @ 1040', perf 4 shots at  
390', spot 50 sx w/2% calcium, tag  
273' 15 sx top, P&A marker.





# TRETOLITL

Chemicals and Services

PETROLITE

16010 Barker's Point Lane • Houston, Texas 77079  
713 558-5200 • Telex: 4620346 • FAX: 713 589-4737

Reply to: P.O. Box FF  
Artesia, New Mexico 88210  
(505) 746-3588 Phone  
(505) 746-3580 Fax

## WATER ANALYSIS REPORT

Company : YATES PETROLEUM  
Address : ARTESIA, NM  
Lease : MALJAMAR FRESH WATER  
Well : TANK  
Sample Pt. : WELLHEAD

Date : 05/15/92  
Date Sampled : 05/14/92  
Analysis No. : 031

ANALYSIS		mg/L	* meq/L
-----		----	-----
1.	pH	7.6	
2.	H2S		
3.	Specific Gravity	1.000	
4.	Total Dissolved Solids	474.0	
5.	Suspended Solids		
6.	Dissolved Oxygen		
7.	Dissolved CO2		
8.	Oil In Water		
9.	Phenolphthalein Alkalinity (CaCO3)		
10.	Methyl Orange Alkalinity (CaCO3)		
11.	Bicarbonate	HCO3 134.2	HCO3 2.2
12.	Chloride	Cl 149.1	Cl 4.2
13.	Sulfate	SO4 50.0	SO4 1.0
14.	Calcium	Ca 104.0	Ca 5.2
15.	Magnesium	Mg 17.1	Mg 1.4
16.	Sodium (calculated)	Na 19.6	Na 0.9
17.	Iron	Fe 0.0	
18.	Barium	Ba 0.0	
19.	Strontium	Sr 0.0	
20.	Total Hardness (CaCO3)	330.0	

## PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter	Compound	Equiv wt	X meq/L	= mg/L
-----	-----	-----	-----	-----
5 *Ca <----- *HCO3	Ca(HCO3)2	81.0	2.2	178
----- /----->	CaSO4	68.1	1.0	71
1 *Mg -----> *SO4	CaCl2	55.5	1.9	108
----- <----- /	Mg(HCO3)2	73.2		
1 *Na -----> *Cl	MgSO4	60.2		
-----	MgCl2	47.6	1.4	67
Saturation Values Dist. Water 20 C	NaHCO3	84.0		
CaCO3 13 mg/L	Na2SO4	71.0		
CaSO4 * 2H2O 2090 mg/L	NaCl	58.4	0.9	50
BaSO4 2.4 mg/L				

## REMARKS:

----- L. MALLETT / FILE / MLAB

Petrolite Oilfield Chemicals Group

Respectfully submitted,  
LEE MALLETT

WATER ANALYSIS REPORT

Company : YATES PETROLEUM  
Address : ARTESIA, NM  
Lease : W. LOCO HILL PLANT  
Well : INJECTION PLANT  
Sample Pt. : TANK

Date : 05/15/92  
Date Sampled : 05/14/92  
Analysis No. : 032

ANALYSIS	mg/L	* meq/L
1. pH	6.4	
2. H2S	240 PPM	
3. Specific Gravity	1.035	
4. Total Dissolved Solids	61697.8	
5. Suspended Solids		
6. Dissolved Oxygen		
7. Dissolved CO2		
8. Oil In Water		
9. Phenolphthalein Alkalinity (CaCO3)		
10. Methyl Orange Alkalinity (CaCO3)		
11. Bicarbonate	HCO3 1025.0	HCO3 16.8
12. Chloride	Cl 34506.0	Cl 973.4
13. Sulfate	SO4 4125.0	SO4 85.9
14. Calcium	Ca 3600.0	Ca 179.6
15. Magnesium	Mg 2431.2	Mg 200.0
16. Sodium (calculated)	Na 16010.6	Na 696.4
17. Iron	Fe 0.0	
18. Barium	Ba 0.0	
19. Strontium	Sr 0.0	
20. Total Hardness (CaCO3)	19000.0	

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter	Compound	Equiv wt X meq/L	= mg/L
180 *Ca <----- *HCO3	Ca(HCO3)2	81.0 16.8	1362
----- /----->	CaSO4	68.1 85.9	5846
200 *Mg -----> *SO4	CaCl2	55.5 76.9	4269
----- <----- /	Mg(HCO3)2	73.2	
696 *Na -----> *Cl	MgSO4	60.2	
----- +----- +	MgCl2	47.6 200.0	9522
Saturation Values Dist. Water 20 C	NaHCO3	84.0	
CaCO3 13 mg/L	Na2SO4	71.0	
CaSO4 * 2H2O 2090 mg/L	NaCl	58.4 696.4	40698
BaSO4 2.4 mg/L			

REMARKS:

----- L. MALLETT / FILE / MLAB

Petrolite Oilfield Chemicals Group

Respectfully submitted,  
LEE MALLETT

**Working Interest Owners  
West Loco Hills Grayburg No. 4 Sand Unit**

Donna Frost and Leon Binkley  
Personal Representative Of  
The Estate of Kathleen Cone  
P. O. Drawer 1509  
Lovington, NM 88260

Florence M. Dooley  
901 W. Washington Avenue  
Artesia, NM 88210

Paul Slaton  
P. O. Box 2035  
Roswell, NM 88201

Kenneth G. Cone  
P. O. Box 11310  
Midland, Texas 79702

Eugene E. Nearburg  
P. O. Box 31405  
Dallas, Texas 75231-4394

George S. Emmons  
17 N. Lancaster Lane  
Newton, PA 18940

Clifford Cone  
P. O. Box 6010  
Lubbock, Texas 79413

Paula Dooley  
Successor Personal Representative Of  
The Estate of William P. Dooley  
1006 South 2nd Street  
Artesia, NM 88210

Thomas W. Lett  
P. O. Box 35449  
Dallas, Texas 75235

Yates Energy Corporation  
P. O. Box 2323  
Roswell, NM 88202

Thomas W. Lett, Trustee of the  
Sam Lett Testamentary Trust  
P. O. Box 35449  
Dallas, Texas 75235

Harvey E. Yates Company  
P. O. Box 1933  
Roswell, NM 88201

Cibola Energy Corporation  
P. O. Box 1668  
Albuquerque, NM 87103

I & L Development Co.  
P. O. Box 35449  
Dallas, Texas 75235

Thompson Petroleum Corporation  
4500 Republic National Bank Tower  
Dallas, Texas 75201

Douglas Cone  
P. O. Box 64244  
Lubbock, Texas 79464

Yates Petroleum Corporation  
Yates Drilling Company  
John A. Yates  
Yates Petroleum Corp. Acct #4  
Peggy A. Yates Estate  
105 S. 4th Street  
Artesia, NM 88210

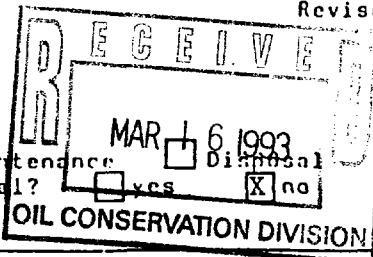
**CO<sub>2</sub> Pilot Project**  
**Offset Operators Within 1/2 Mile of Proposed Injection Wells**

None

**Surface Ownership**

United States Department of the Interior  
Bureau of Land Management  
P. O. Box 1778  
Carlsbad, NM 88220

## APPLICATION FOR AUTHORIZATION TO INJECT



- I. Purpose: ☒ Tertiary Recovery ☐ Pressure Maintenance ☐ Disposal ☐ Storage  
Application qualifies for administrative approval? ☐ yes ☒ no
- II. Operator: Yates Petroleum Corporation  
Address: 105 S. 4th Street Artesia, NM 88210  
Contact party: Robert S. Fant Phone: (505) 748-1471
- 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 12-2178-D
- 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: Robert S. Fant Title Engineer  
Signature: Robert S. Fant Date: 3/3/93
- \* 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.

## 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 schematic 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 2000, 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.

Loco Hills CO<sub>2</sub> Pilot Flood C-108

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: Tertiary Recovery  
Application qualifies for administrative approval? No
- II. Operator: Yates Petroleum Corporation  
Address: 105 South 4th Street  
Artesia, New Mexico  
Contact Party: Robert S. Fant Phone (505)748-1471 Ext 185
- III. Well Data:
- A. The following well data must be submitted for each injection well covered by this application.
1. Lease name; well no.; location by Section, Township and Range, and footage location within the section.
    - a. West Loco Hills Unit G4S Tract 13 Well #12  
Section 12-18S-29E 2408 FNL - 440 FEL
  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.

	<u>Surface</u>	<u>Production</u>
Casing size:	8 5/8"	5 1/2
Depth:	400'+	2850'+
Cement	350 sx	400 sx
Hole Size:	10 3/4"	7 7/8"
Top of Cement	Surface	Surface
Top determined by:	Circulating	Circulating
  3. A description of the tubing to be used including its size, lining material, and setting depth.

Tubing Size:	2 3/8"
Lining Material:	Tuboscope TK-99 (or Equivalent)
Depth:	Just above perforations
  4. The name, model and setting depth of the packer used or a description of any other seal system or assembly used.

Packer Name:	Otis Packer
Model:	Interlok
Depth:	Just above perforations (+/-2750')
- B. The following must be submitted for each injection well covered by this application.
1. The name of the injection formation and, if applicable, the field or pool name.

Formation: Grayburg  
Field: Loco Hills  
Pool Name: Loco Hills Queen Grayburg San Andres

2. The injection interval and whether it is perforated or open hole.

About 2800' - 2820', perforated

3. State if the well was drilled for injection or, if not, the original purpose of the well.

This well will be drilled for injection.

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.

There are no other perforated intervals.

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.

Higher: Penrose Sand - 2350'  
Lower: Premier - 3050'

IV. Is this an expansion of an existing project?

Yes. This is an expansion of the project approved by Division Order Number R-2178 D (Case 10476) authorizing Yates Petroleum Corporation to conduct a CO<sub>2</sub> Injection Pilot Project in the Loco Hills Field. A copy of the order is included along with a copy of the Oil Conservation Commission Orders No. R-1267 and No. R-2178 authorizing the Loco Hills Waterflood.

- 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. (See attached map).

VI. Tabulation of well data. (See attached)

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected:

60 tons CO<sub>2</sub> per day alternating with 400 bbls per day H<sub>2</sub>O. Two months of CO<sub>2</sub> to be followed with one month of H<sub>2</sub>O.

2. Whether the system is open or closed.

The system is closed.



3. Proposed average and maximum injection pressures:

H<sub>2</sub>O and CO<sub>2</sub> surface injection pressure not to exceed 1500 psi.

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water.

Injection fluid is CO<sub>2</sub> trucked in to the site.

Injection fluid is fresh water delivered from Maljamar Fresh Water System by pipeline and produced water. These waters are compatible as has been proven by injecting them into the West Loco Hills Unit since 1963.

CO<sub>2</sub> is 99.9% pure. Analysis of fresh water is attached.

VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geological name, and depth to bottom of all underground sources of drinking water overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

The Loco Hills Sand, which is the zone to be injected, goes from 14 to 61 feet thick with an average of 18 feet. The top of the Loco Hills Sand has a depth range from 2,366 to 2,880 feet. The composition consists of light gray to white and light brown, very finely grained, silty sandstone, sandy and minor shale.

The geologic name of the underground source of drinking water overlying the injection zone is the Rustler formation. The Rustler formation extends down to 360 feet and is comprised of anhydrite and interfingering redbeds. It averages 160 feet in thickness. All shallow water overlying the Rustler is comprised of redbeds. Additional information on file, Case No. 1511, Order No. R-1267.

IX. The well be perforated with +/-20' of perforations and fracture stimulated with 2000 gal linear gel followed by 9000 x-linked gel carrying 10,000 lb 20-40 mesh sand.

X. Attach appropriate logging and test data on the well.

There is none - we propose to drill new injection wells. Information will be submitted when the wells have been drilled.

XI. Attach a chemical analysis of fresh water from 2 or more fresh water wells within one mile of an injection well.

There are no fresh water wells within the one mile radius.

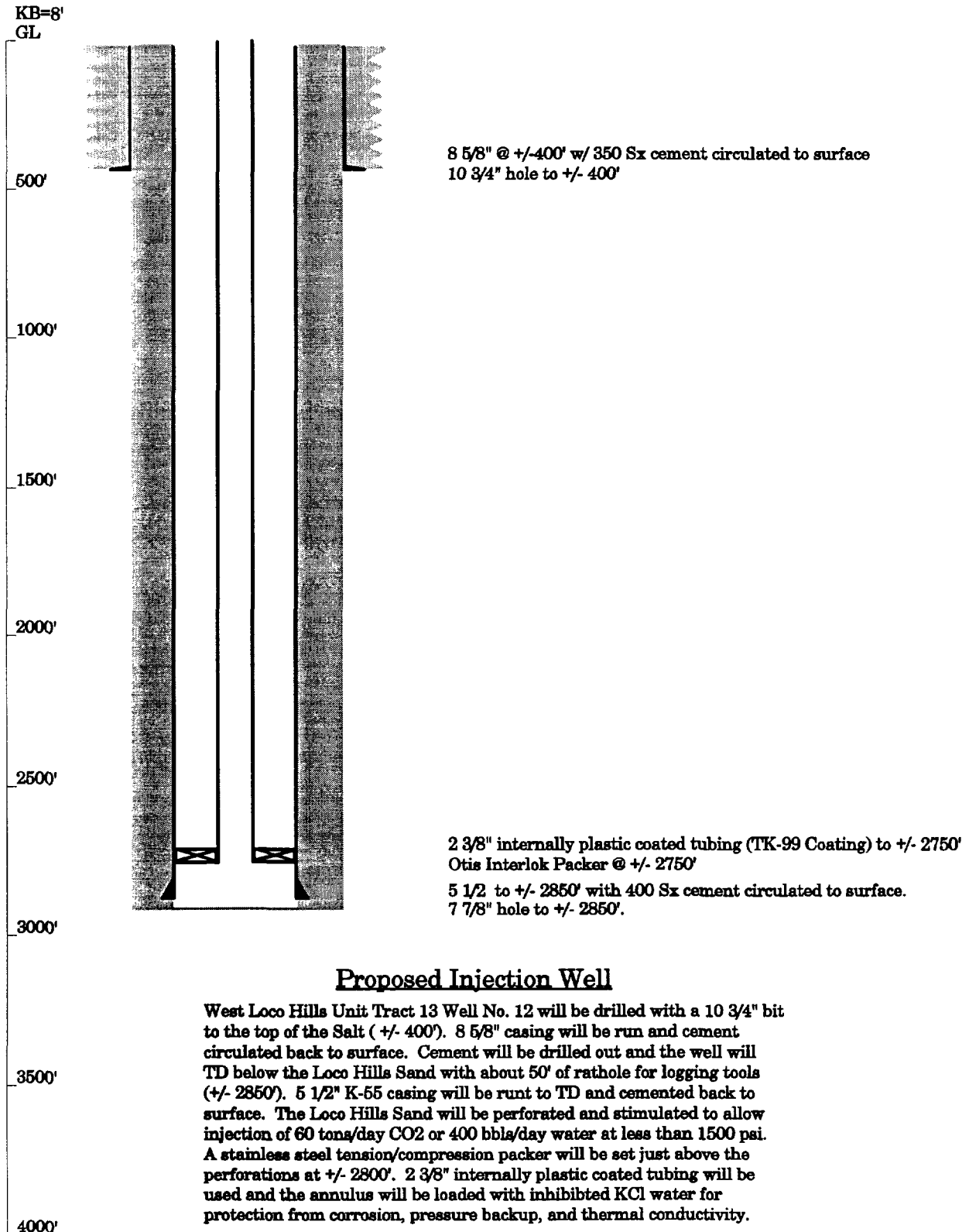
Loco Hills CO<sub>2</sub> Pilot Flood C-108  
Page -4-

XII. Affirmative statement: (See attached)

XIII. Proof of Notice: (See attached)

# Proposed WLHU Tract 13 Well No. 12

Unit H, 2408' FNL 440' FEL  
Sec. 12-T18S-R29E NMPM



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

*CASE NO. 10476  
ORDER NO. R-2178-D*

**APPLICATION OF YATES PETROLEUM CORPORATION FOR AMENDMENT  
TO DIVISION ORDER NO. R-2178, AS AMENDED, TO INCLUDE A CARBON  
DIOXIDE INJECTION PILOT PROJECT, TWO UNORTHODOX INJECTION  
WELL LOCATIONS, AND TO RESCIND DIVISION ORDER NO. R-7821, EDDY  
COUNTY, NEW MEXICO**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 14, 1992, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 9th day of July, 1992 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant, Yates Petroleum Corporation, seeks authority to initiate and conduct a pilot carbon dioxide/water injection project to be known as the Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project, hereinafter referred to as "pilot project", for tertiary recovery purposes and to test the CO<sub>2</sub> miscible process in the Fourth Sand Member of the Grayburg formation [as indicated on the Acoustilog run on September 4, 1964 in the Newmont Oil Company West Loco Hills Unit 6 Well No. 3 located 660 feet from the South line and 1980 feet from the East line (Unit O) of Section 12, Township 18 South, Range 29 East, NMPM, Eddy County, New Mexico] underlying portions of the SE/4 NE/4 and NE/4 SE/4 of said Section 12 and Lots 2 and 3 (SW/4 NW/4 and NW/4 SW/4 equivalents) of Section 7, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico, all in the Loco Hills Queen

Grayburg San Andres Pool, West Loco Hills Grayburg No. 4 Sand Unit, West Loco Hills Grayburg No. 4 Sand Unit Waterflood Project (authorized by Division Order No. R-2178, as amended).

(3) Applicant further seeks the rescission of Division Order No. R-7821, dated February 21, 1985, which authorized a similar project in the area but was never initiated by the operator and the other working interest owners due to poor economics and technical concerns.

(4) The applicant proposes to initially develop its proposed pilot project utilizing a twenty-two and one half acre inverted five-spot pattern and a ten acre inverted five-spot pattern which requires the drilling of two carbon dioxide/water injection wells at the following unorthodox locations in said Section 7:

- West Loco Hills G4S Unit Tract 1 Well No. 9  
1980' FNL - 40' FWL (Unit E); and,
- West Loco Hills G4S Unit Tract 1 Well No. 10  
2455' FSL - 50' FWL (Unit L).

(5) The following existing wells will be the producing wells which complete the two aforementioned patterns and will be directly affected by the proposed pilot project:

- West Loco Hills G4S Tract 13A Well No. 4  
1650' FNL - 330' FEL (Unit H) of Section 12;
- West Loco Hills G4S Tract 6 Well No. 1  
1980' FSL - 660' FEL (Unit I) of Section 12;
- West Loco Hills G4S Tract 1 Well No. 2  
1650' FNL - 330' FWL (Unit E) of Section 7;
- West Loco Hills G4S Tract 1 Well No. 3  
1980' FSL - 660' FWL (Unit L) of Section 7; and,
- West Loco Hills G4S Tract 1 Well No. 8  
2310' FNL - 330' FWL (Unit E) of Section 7.

A sixth producing well, to be located approximately 2310 feet from the North line and 330 feet from the East line (Unit H) of Section 12, will be drilled if the project is successful.

(6) The area within the periphery of the five producing wells and the proposed producing well is the area of the pilot project for which this order will hereinafter be concerned.

(7) The pilot project is in an area where extensive primary and secondary recovery operations have been conducted, (see Division Order No. R-2178, as amended), and is of an experimental nature in order to evaluate the effectiveness of carbon dioxide into the subject reservoir and to provide a study of zone isolation, vertical heterogeneity, reservoir directional variation and the carbon dioxide displacement process.

(8) The applicant proposes to inject 60 tons of CO<sub>2</sub> per well per day over a two month period alternating with 400 barrels of water per well per day for a one month period.

(9) There are sufficient differences between the proposed pilot project and the project approved by Order No. R-7821 which made it necessary for the applicant to seek authorization through the Division's hearing process. Therefore, Division Order No. R-7821 should be rescinded at this time and a separate order be issued granting authorization for the proposed pilot project.

(10) The operator of the proposed pilot project should take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and are not permitted to escape to other formations or onto the surface via surrounding injection, production and/or plugged and abandoned wells.

(11) Prior to commencing injection operations, the casing of the subject wells should be pressure-tested throughout the interval, from the surface down to the proposed packer-setting depth, to assure integrity of such casing.

(12) The injection into each of the injection wells, as described in Finding Paragraph No. (4) above, should be accomplished through 2 7/8-inch plastic lined tubing installed in a packer set not more than 100 feet above the uppermost perforation; the casing-tubing annulus of each injection well should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(13) Said injection wells herein authorized and/or the injection authorization system should be so equipped as to limit injection pressure at the wellhead to no more than 560 psi provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(14) The operator shall notify the supervisor of the Artesia District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure test on each of the proposed injection wells so that the same may be inspected.

(15) The evidence presently available indicates that there is not fresh water within the area of interest.

(16) In the event the pilot project is successful and indicates the desirability and economic feasibility of the process, the pilot project could be expanded to include additional lands and wells, and could result in the production of otherwise unrecoverable oil, thereby preventing waste.

(17) The pilot project is to be conducted within the boundaries of the West Loco Hills Grayburg No. 4 Sand Unit Area, a unitized area, and will therefore not impair correlative rights.

(18) The proposed pilot project should be approved, as well as the requested unorthodox injection well locations as described in Finding Paragraph No. (4) above.

**IT IS THEREFORE ORDERED THAT:**

(1) The applicant, Yates Petroleum Corporation, is hereby authorized to initiate and conduct a pilot carbon dioxide/water injection project known as the Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project, hereinafter referred to as the "pilot project" in the Fourth Sand Member of the Grayburg formation underlying portions of the SE/4 NE/4 and NE/4 SE/4 (Units H and I, respectively) of Section 12, Township 18 South, Range 29 East, NMPM, and Lots 2 and 3 (SW/4 NW/4 and NW/4 SW/4 equivalents, Units E and L, respectively) of Section 7, Township 18 South, Range 30 East, NMPM; both portions of said sections located in the Loco Hills Queen-Grayburg-San Andres Pool, West Loco Hills Grayburg No. 4 Sand Unit, Eddy County, New Mexico.

(2) The applicant is hereby authorized to initially develop the above-described pilot project on a 22 1/2-acre and a 10-acre (approximate) inverted five-spot injection pattern utilizing the following wells to be drilled as carbon dioxide/water injection wells hereby approved in Section 7:

- West Loco Hills G4S Unit Tract 1 Well No. 9  
1980' FNL - 40' FWL (Unit E); and,

- West Loco Hills G4S Unit Tract 1 Well No. 10  
2455' FSL - 50' FWL (Unit L).

(3) Injection into each of the above-described injection wells shall be accomplished through 2 7/8-inch tubing installed in a packer set not more than 100 feet above the uppermost perforation;

PROVIDED HOWEVER THAT, the tubing shall be internally plastic lined; the casing-tubing annulus of each injection well shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing or packer.

PROVIDED FURTHER THAT, prior to commencing injection operations, the casing in the subject wells shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Artesia District Office.

(4) The injection wells herein authorized and/or the injection pressurization equipment shall be so equipped as to limit injection pressure at the wellhead to no more than 560 psi, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(5) The operator shall notify the supervisor of the Artesia District Office of the Division in advance of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(6) To further develop the above-described inverted five-spot injection pattern, the applicant is hereby authorized to drill an additional producing well at an undetermined and possible unorthodox location in the SE/4 NE/4 (Unit H) of said Section 12, Township 18 South, Range 29 East, NMPM, provided said well shall be located no closer than 10 feet to any boundary of said quarter-quarter section.

(7) The following existing wells are hereby approved as production wells with the pilot project to fully develop and complete the aforesaid inverted five-spot injection pattern:

- West Loco Hills G4S Tract 13A Well No. 4  
1650' FNL - 330' FEL (Unit H) of Section 12;



- West Loco Hills G4S Tract 6 Well No. 1  
1980' FSL - 660' FEL (Unit I) of Section 12;

both wells being located in said Section 12, Township 18 South, Range 29 East, NMPM;

- West Loco Hills G4S Tract 1 Well No. 2  
1650' FNL - 330' FWL (Unit E) of Section 7;
- West Loco Hills G4S Tract 1 Well No. 3  
1980' FSL - 660' FWL (Unit L) of Section 7; and,
- West Loco Hills G4S Tract 1 Well No. 8  
2310' FNL - 330' FWL (Unit E) of Section 7,

the three above-described wells being located in said Section 7, Township 18 South, Range 30 East, NMPM.

(8) A sixth producing well, if said project is successful, is to be drilled to complete the two injection patterns at a standard oil well location approximately 2310 feet from the North line and 330 feet from the East line (Unit H) of said Section 12.

(9) The area within the periphery of the five existing wells and the proposed producing well as described above shall be the area of the pilot project.

(10) The operator shall immediately notify the supervisor of the Division's Artesia District Office of the failure of the tubing, casing or packer in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(11) Any time that any of the producing wells in the pilot project are shut-in for over ninety consecutive days, the Supervisor of the Artesia District Office shall be notified, at which time it shall be demonstrated that any wells that lie between the outside of the aforesaid five-spot injection pattern and a half-mile radius of the aforesaid injection wells will not be adversely affected by the carbon dioxide/water injection operations.

(12) The Yates Petroleum Corporation Loco Hills CO<sub>2</sub>/Water Injection Pilot Project shall be governed by this order and the rules contained herein and by the provisions of Rules 701 through 708 of the Division rules which are not in conflict with this order.

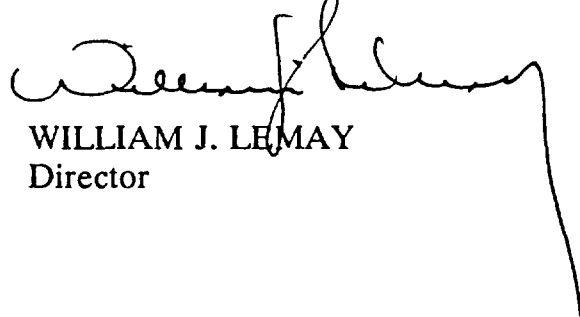
(13) Monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules 706 and 1115 of the Division Rules and Regulations.

(14) Division Order No. R-7821, issued in Case No. 8324 and dated February 21, 1985, is hereby rescinded.

(15) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY  
Director

S E A L

**LOCO HILLS POOL**  
(GRAYBURG WATERFLOOD)  
Eddy County, New Mexico

Order No. R-1267, Authorizing Newmont Oil Corporation to Conduct a Pilot Waterflood in the Grayburg Formation of the Loco Hills Pool, Eddy County, New Mexico, October 25, 1958.

*Application of Newmont Oil Corporation for an order authorizing a pilot waterflood project in the Loco Hills Pool, Eddy County, New Mexico.*

CASE NO. 1511  
Order No. R-1267

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on October 2, 1958, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 25th day of October, 1958, the Commission, a quorum being present, having considered the application, the evidence adduced and the recommendations of the Examiner Elvis A. Utz, and being fully advised in the premises,

**FINDS:**

1. That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Newmont Oil Corporation, proposes to institute a pilot waterflood project in the Loco Hills Pool to inject water into the Grayburg formation through five (5) wells located in Section 6, Township 18 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, and through one (1) well located in Section 1, Township 18 South, Range 29 East, N.M.P.M., Eddy County, New Mexico.

(3) That the proposed injection wells are as follows:

Yates "A" No. 2 NE/4 NW/4 Section 6 T-18-S, R-30-E

Yates "A" No. 11 NW/4 NE/4 Section 6 T-18-S, R-30-E

Yates No. 5 NW/4 SW/4 Section 6 T-18-S, R-30-E

Yates No. 2 SW/4 NW/4 Section 6 T-18-S, R-30-E

Yates No. 3 SE/4 NW/4 Section 6 T-18-S, R-30-E

Ballard "B" No. 5 NE/4 NE/4 Section 1 T-18-S, R-29-E

(4) That the proposed pilot waterflood injection project will not adversely affect the interests of any other operators in the Loco Hills Pool.

(5) That the proposed program will promote conservation and will tend to prevent waste through the production of oil which might not otherwise be recovered.

**IT IS THEREFORE ORDERED:**

(1) That the application of Newmont Oil Corporation for permission to institute a pilot waterflood project in the Grayburg formation of the Loco Hills Pool in Eddy County, New Mexico, be and the same is hereby approved.

(2) That the following-described wells be and the same are hereby authorized as water injection wells:

Yates "A" No. 2 NE/4 NW/4 Section 6 T-18-S, R-30-E

Yates "A" No. 11 NW/4 NE/4 Section 6 T-18-S, R-30-E

Yates No. 5 NW/4 SW/4 Section 6 T-18-S, R-30-E

Yates No. 2 SW/4 NW/4 Section 6 T-18-S, R-30-E

Yates No. 3 SE/4 NW/4 Section 6 T-18-S, R-30-E

Ballard "B" No. 5 NE/4 NE/4 Section 1 T-18-S, R-29-E

(3) That monthly progress reports on the waterflood project herein authorized shall be submitted to the Commission in accordance with Rule 704 and Rule 1119 of the Commission Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

**MALJAMAR POOL**  
(Yates Sand Gas Injection)  
Lea County, New Mexico.

Order No. R-106, Authorizing Buffalo Oil Company to Inject Gas Into the Yates Sand in the Maljamar Pool, Lea County, New Mexico, October 31, 1951.

*The application of Buffalo Oil Company for approval of use of its Baish A Well No. 7, Section 21, Township 17 S., Range 32 E, N.M.P.M., Lea County, New Mexico, for gas injection purposes in the Yates Sand.*

CASE NO. 312  
Order No. R-106

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 10 a.m., October 23, 1951, before the Oil Conservation Commission of New Mexico hereinafter referred to as the "Commission," upon petition of Buffalo Oil Company.

NOW, on this 31st day of October, 1951, the Commission, a quorum being present, having considered all of the testimony adduced and exhibits received at said hearing, and being fully advised in the premises,

**FINDS:**

1. That due public notice having been given as required by law, the Commission has jurisdiction of this case and the subject matter thereof.

(2) That it would be in the interests of conservation, prevent waste and protect correlative rights to permit the petitioners to conduct a gas injection program in the Yates Sand through its Baish A No. 7 well, located in Section 21, Township 17 S., Range 32 E., N.M.P.M., on an experimental basis.

(3) That gas, in excess of the needs of the Maljamar Cooperative Repressuring Agreement, is available from the plant serving the Maljamar Cooperative Repressuring Agreement, and such excess gas is now being vented to the air, and is available to carry out the gas-injection program as proposed by the petitioner.

**IT IS THEREFORE ORDERED:**

(1) That Buffalo Oil Company is hereby granted permission to inject gas in the Yates Sands through its Baish A No. 7 well, Section 21, Township 17 South, Range 32 East, N.M.P.M., Lea County, New Mexico.

(2) That said gas injection program is to be conducted on an experimental basis, injection to be made between the 8- $\frac{1}{2}$  inch and the 10- $\frac{3}{4}$  inch casing strings, and production from the Maljamar Pool, Lea County, New Mexico, may continue through the 7-inch casing.

(3) That no change in plans for the injection of gas into the Yates Sand shall be made except upon application to the Commission, and the Commission may act administratively upon such application if, in its opinion, the rights of third parties are not affected thereby.

Nothing in this order shall be construed as affecting, changing or modifying the Maljamar Repressuring Agreement as provided by Commission Order No. 485, or as creating any vested right to gas from the Maljamar Repressuring Agreement source, or from any other source.

IT IS FURTHER ORDERED, that jurisdiction of this case, be and the same hereby is retained by the Commission for such further order or orders as may seem necessary to the Commission for the promotion of conservation, prevention of waste or protection of correlative rights.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

**LOCO HILLS POOL**  
(West Grayburg No. 4 Sand Unit Area Waterflood)  
Eddy County, New Mexico

Order No. R-2178, Authorizing Newmont Oil Company to Expand its Loco Hills Waterflood Project by Inclusion of the West Loco Hills Grayburg No. 4 Sand Unit Area, Loco Hills Pool, Eddy County, New Mexico

*Application of Newmont Oil Company for expansion of its Loco Hills Waterflood Project, Eddy County, New Mexico.*

CASE NO. 2473  
Order No. R-2178

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on January 4, 1962, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 30th day of January, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

**FINDS:**

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Newmont Oil Company, seeks permission to expand its Loco Hills Waterflood Project to include the West Loco Hills Grayburg No. 4 Sand Unit Area, comprising 5,320 acres, more or less, in Townships 17 and 18 South, Ranges 29 and 30 East, NMPM, Eddy County, New Mexico, which unit was approved by Order No. R-2166.

(3) That the applicant seeks permission to operate the expanded waterflood project as a "capacity" type flood unrestricted by the allowable provisions of Rule 701 E.

(4) That in the interest of increasing ultimate recovery in the Loco Hills Pool, the applicant should be authorized to conduct waterflood operations in the West Loco Hills Grayburg No. 4 Sand Unit Area by the injection of water into the Loco Hills Sand; that the allowables to be assigned to wells in this project should be governed by the provisions of Rule 701 E, except that a buffer zone should be established in which allowables would be unrestricted.

(5) That production from wells outside the buffer zone should be tanked separately from production from wells inside the buffer zone unless the applicant receives approval from the Commission for some other satisfactory means of determining production from each of the two areas.

(6) That for the purpose of determining the project area and computing the project allowable under Rule 701 E, any producing well in said project area lying outside the buffer zone should be entitled to receive credit for offsetting an injection well regardless of whether the injection well is in the buffer zone or in the project area.

**IT IS THEREFORE ORDERED:**

(1) That the applicant, Newmont Oil Company, is hereby authorized to institute a waterflood in the Loco Hills Pool within the West Loco Hills Grayburg No. 4 Sand Unit Area located in Townships 17 and 18 South, Ranges 29 and 30 East, NMPM, Eddy County, New Mexico, by the injection of water initially into the following-described wells:

Ballard B No. 1—SE/4 NW/4 Section 1, Township 18 South, Range 29 East

Dixon Yates Federal No. 2—SE/4 SE/4 Section 1, Township 18 South, Range 29 East

Newmont Canfield No. 1-A—NW/4 NW/4 Section 7, Township 18 South, Range 30 East

**(LOCO HILLS (WEST GRAYBURG NO. 4 SAND UNIT AREA WATERFLOOD) POOL—Cont'd.)**

(2) That the ultimate project area for said waterflood shall consist of all the acreage within the said West Loco Hills Grayburg No. 4 Sand Unit Area, except the following-described acreage which shall constitute a buffer zone:

TOWNSHIP 17 SOUTH, RANGE 29 EAST  
Section 36: S/2 SW/4

TOWNSHIP 18 SOUTH, RANGE 29 EAST  
Section 1: W/2 and S/2 SE/4  
Section 12: NE/4 and N/2 NW/4

TOWNSHIP 18 SOUTH, RANGE 30 EAST  
Section 7: NW/4

(3) That the wells located within the above-described buffer zone may be operated at unrestricted rates of production.

(4) That all producing wells located within said waterflood project and outside the above-described buffer zone shall be operated and produced in accordance with the allowable provisions of Rule 701 E of the Commission Rules and Regulations.

(5) That for the purpose of determining the project area and computing the project allowable under Rule 701 E, any producing well in said project area lying outside the buffer zone shall be entitled to receive credit for offsetting an injection well regardless of whether the injection well is in the buffer zone or in the project area.

(6) That production from wells outside the buffer zone shall be tanked separately from production from wells inside the buffer zone unless the applicant receives approval from the Commission for some other satisfactory means of determining production from each of the two areas.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinafore designated.

**TOTAH-GALLUP POOL**  
(Tenneco Pressure Maintenance Project and Rules)  
San Juan County, New Mexico

Order No. R-2190, Authorizing Tenneco Oil Company to Institute a Pressure Maintenance Project and Adopting Rules of Operation, in the Totah-Gallup Pool, San Juan County, New Mexico, February 21, 1962.

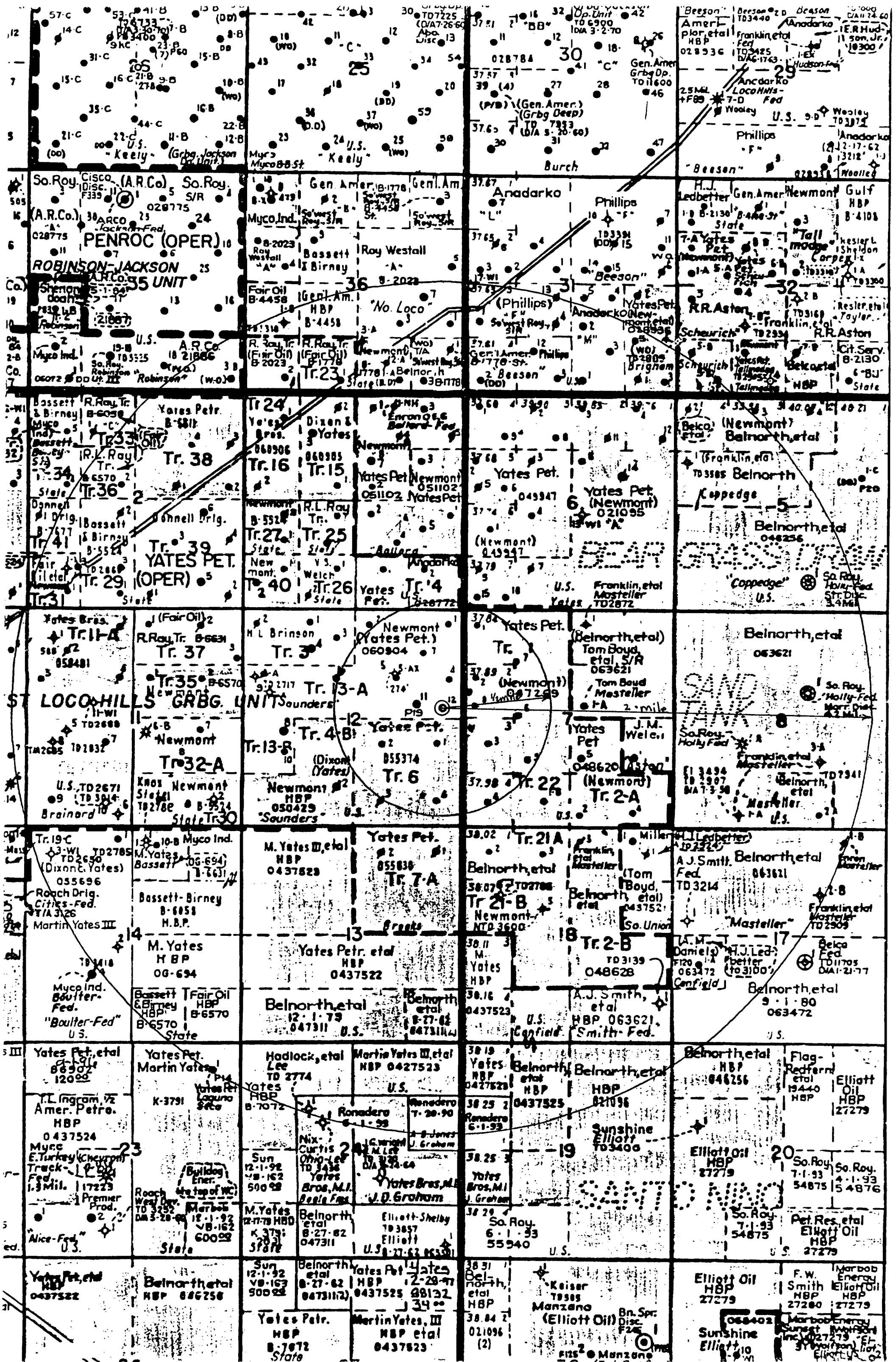
*Application of Tenneco Oil Company for a Pressure Maintenance Project, San Juan County, New Mexico.*

CASE NO. 2474  
Order No. R-2190

**ORDER OF THE COMMISSION**

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on January 24, 1962, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 21st day of February, 1962, the Commission, a quorum being present, having considered this application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, and being fully advised in the premises,



## VI. Tabulation of Well Data

- A. West Loco Hills G4S Unit Tract 6-1, formerly the Day #1.  
Located 1980' FSL and 660' FEL of Section 12-18S-29E  
Present operator is Yates Petroleum Corporation, former operators are Newmont Oil Company and Dixon & Yates.  
This well was spudded 2/16/42 and completed 3/24/42 as a producing oil well. Converted to water injection on 1/5/64 with a TD of 2784'. Construction: 8 5/8" 350/50 sx; 7" 20# smls 2635'/100 sx; 4 1/2" 9.5# liner 2565-2744'/65 sx; 4 1/2" 9.5# casing to 2568'/125 sx (TOC 1050').  
Completion record: shot 50 qts Nitroglycerine 2747-60'; shot 30 qts Nitroglycerine 2760-75'; shot 30 qts Nitroglycerine 2775-83'; SOF 1M Strati-lift; Petro-frac 9M-18M; A/1000 gal 15%; A/500 gal 15%; Sandrill 10/20 sd 2766-2770', 2774-2777'; A/500 gal 15%; A/500 gal 28%; A/500 gal/15% & 5 gal Visco IIII.
- B. West Loco Hills G4S Unit Tract 6-2, formerly the Day #2.  
Located 1980' FSL and 1980' FEL Section 12-18S-29E. Present operator is Yates Petroleum Corporation, and former operators are Newmont Oil Company and Dixon & Yates. This well was spudded 3/31/42 and completed 5/5/42. This is a TA'd well with a TD of 2745'. Construction: 8 5/8" 340'/50 sx; 7" 20# smls 2303'/100 . sx. Completion record: shot 1100 qts Nitroglycerine 2695-2722';, SOF 20M-25M#;F/7.5M# 20/40 sd & 375 bbls lease oil; F/500 gal 15% acid 10M gal lease oil & 10M# 20/40 sd. TA'd: Ran CBL f 2600' to 1260' (TOC @1460). Set CIBP @ 2553' w/35' cement on top. Repaired wellhead; tested casing to 600 psi OK; well TA'd 6-9-92.
- C. West Loco Hills G4S Unit Tract 6-4, formerly the Day #4.  
Located 660' FSL and 660' FEL of Section 12-18S-29E.  
Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 9/22/43 and completed 11/3/43. This is a TA'd oil well. TD is 2758'. Construction: 8 1/4" 375'/50 sx; 7" 20# smls 2645'/100 sx. Completion record: shot 120 qts Nitroglycerine 2728-58';SOF 2670-98'/32M-110M#. TA'd: Run CBL f/2650'-110'; set CIBP @ 2596' w/35' cement on top; tested casing to 500 psi OK; Well TA'd 6-4-92.
- D. West Loco Hills G4S Unit Tract 13-1, formerly called the Saunders "A" #1 and the Saunders #1. Located 330' FNL and 330' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 3/1/39 and completed 7/19/39 as a producing oil well with a TD of 3200'. It has since been a water injection well and is currently P & A. Construction: 8" 24# 424'/50 sx; 7" 20# 2698'/100 sx. Completion record: shot 470 qts Nitroglycerine 2990-3190'; shot 230 qts Nitroglycerine 2803-2850'; A/500 gal 15%. P & A: spot 100 sx w/2% calcium bottom, tag plug @ 2587' perf 4 SPF @ 1170', squeezed 50 sx w/2% calcium, tag plug @ 1040', perf 4 shots @ 390', spot 50 sx w/2% calcium, tag 273' 15 sx top, P & A marker.

Tabulation of Well Data

-2-

- E. West Loco Hills Unit G4S Tract 13A-4, formerly called Saunders "A" #4 and the Saunders #4-A. Located 1650' FNL and 30' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 9/17/41 and completed 10/21/41 as a producing oil well. Since then this well's status has been TA, shut in and is currently producing. TD on this well is 2805'. Construction: 8 1/4" 425'/50 sx; 7" 2680'/100 sx; 4 1/2" 10.5# 2660'/300 sx. Completion record: shot 120 qts Nitroglycerine 2764-2805'; A/500 gal 5% inhibited FE acid; F/395 bbls lease oil & 7500# 20/40 sd; A/1M gal NE-FE acid & 2 drums gyp control chem + 20 bbls water; F/18M gal emulsified oil, 45M#, 20/40 sd, 1400# rock salt.
- F. West Loco Hills G4S Unit Tract 13-5, formerly the Saunders "A" #5-AX and the Saunders #5-AX. Located 1650' FNL and 1670' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 1/5/42 and completed 2/8/42 with a TD of 2768'. This well was completed as a producing oil well and was later converted to an injection well and is now P & A. Construction: 8 1/4" 359'/50 sx; 7" 2632'/100 sx; 4 1/2" 9.5# J-55 liner 2596-2727'/150 sx Cl "C". Completion record: shot 100 qts Nitroglycerine 2739-2768'; F/4300 gal butene 15M-60M; A/500 gal 15%; A/500 gal; A/500 gal; perf/4 SPF 2732-54' 732-54' A/500 gal regular; A/500 gal regular; A/500 gal 28%; P A: tag bottom, pull up 1 jt, spot 100 sx/2% calcium, tag plug 307', set packer 819', squeeze 50 sx, tag plug @ 975', 15 sx, ag plug @ 960', squeeze cement with 2% calcium, tag plug @ 219', mix 15 sx with 2% calcium, P & A marker.
- G. West Loco Hills G4S Unit Tract 13-7, formerly the Saunders "A" #7 and the Saunders #7-A. Located 990' FNL and 990' FEL of section 12-18S-29E. Present operator is Yates Petroleum corporation, former operators were Newmont Oil Company and Dixon & Yates. This well was spudded 5/22/47 and completed 6/29/47 with a total depth of 2811'. This well was completed as a producing oil well, but since has also been TA, producing and is now P & A'd. Construction: 8 1/4" 408'/50 sx; 7" 20# 2670'/100 sx. Completion record: shot 100 qts Nitroglycerine 2775-2801'; A/500 gal 5% inhibitor FE acid; sandrill 10/20 sd 2780, 2785, 2790'; A/250 gal 28% F/567 bbls salt water, 24M# 10/20 sd; A/1M gal 15% HCL with inhibitor F/20M gal oil & 40/M# sd & 1400# rock salt. P & A: Set CIBP @ 2640' w/35' cement on top. Ran CBL f/PBTD to surface.TOC @ 1975. Perf @ 1110'. Set cement retainer @ 1060'. Squeeze Base of Salt through holes @ 1110' with 50 sx Class "C" Neat followed by 50 sx Class "C" w/3% CaCl2. Left 35' of cement on retainer. Cut and pulled 7" casing at 405'. Set Cement retainer @ 360'. Squeezed Top of Salt with 50 sx Class "C". Left 35' of cement on top of the retainer. Spot 120 sx plug from 280' to surface. Allow to work behind 7" casing through holes @ 255'. Install P & A marker. Well P & A'd 7/30/92.

- H. West Loco Hills G4S Unit Tract 13-11. Located 2310' FNL and 1175' FEL of Section 12-18S-29E. Present operator is Yates Petroleum Corporation, former operator was Newmont Oil Company. This well was spudded 12/4/75 and completed 12/31/75 with TD of 2828'. This well is a producing oil well. Construction: 8 5/8" 23# 302'/150 sx C1 "H"/2% CaCl 11' hole; 4 1/2" 9.5# J-55 2824'/650 sx C1 "H" 7 7/8" hole. Completion record: A/1000 gal 15% 2760-84'; F/20M gal + 50M# sd 2760-84'; perf 2760-84' w/2 SPF, A/1500 gal 15% NEFE 2760-2784'.
- I. West Loco Hills G4S Unit Tract 1-1, formerly the Canfield "A" #1 and the Canfield #1. Located 330' FNL and 330' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company, Franklin, Aston & Fair; and Franklin Petroleum Corporation. This well was spudded 8/14/39 and completed 9/28/39 with a TD of 2820'. This well was completed as a producing oil well and is now P & A'd. Construction: 8 1/4" 28# 422'/50 sx; 7" 20# smls 2685'/100 sx. Completion record: shot 70 qts Nitroglycerine 2793-2820'; 10M gal 15M# sd 2671-2820'; A/126 gal 15%. P & A: Set CIBP @ 2620' w/35' cement on top. Ran CBL f/PBTD to surface. Perf top of Queen @ 2310. Could not establish injection rate. Spot 25 sx plug f/2365' to 2265' (tagged @ 2220'). Perf 4 holes @ 1110'. C Could not establish injection rate into holes @ 1110'. Spot 25 sx plug f/1175 to 1000'. Cut 7" casing at 405'. Could not pull 7" casing. ; Set cement retainer @ 354'. Squeezed top of Salt through cut 7" casing with 100 sx Class "C". Left 35' of cement o top of the retainer. Spot 50 sx Class "C" + 4% CaCl2. Tag plug @ 182'. Spot 50 sx Class "C" f/182 to surface. Placed 2' of cement in cellar around 8 5/8" head and 7" casing. Install P & A marker. Well P & A'd 8/4/92.
- J. West Loco Hills G4S Unit Tract 1-2, formerly the Canfield "A" #2 and the Canfield #2-A. Located 1650' FNL and 330' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 8/4/41 and completed 9/16/41 with a TD of 2804'. This well was completed as a producing oil well and has since been shut in and is now a producing oil well. Construction: 8" 28# 427'/50 sx; 7" 20# 2690'/100 sx; 4 1/2" 9.5# casing to 2650' w/700 sx (circulated). Completion record: shot 60 qts Nitroglycerine 2785-2804'; 10M gal 15 sd; A/126 gal 15%.
- K. West Loco Hills G4S Unit Tract 1-3, formerly the Canfield "A" #3 and the Canfield #3-A. Located 1980' FSL and 660' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 10/17/42 and completed 12/1/42 as a producing oil well. Clean out and pressure test casing to 750 psi-OK-8/17/91. The TD is 2835'. Construction: 8 1/4" 32# 427'/50 sx; 5" 17# smls 2705'/100 sx.



- L. West Loco Hills G4S Unit Tract 1-4, formerly the Canfield "A" #4 and the Canfield #4-A. Located 660' FSL and 560' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 1/12/44 and completed 3/10/44 as a producing oil well with a TD of 2811'. This well has subsequently been turned in to a water injection well. Construction: 8 1/4" 402'/50 sx; 5 1/4" 2675'/100 sx; 4 1/2" 9.5# J-55 liner 2606-2760'/150 sx C1 "C"/141#; FLAC & 300# salt; 4 1/2" 9.5# casing to 2600'/100 sx (TOC 50'). Completion record: hot 60 qts Nitroglycerine 2777-2811'; shot 70 qts Nitroglycerine 771-2806'; 10M gal 15M# sd 2575-2811'; sandrill 10/20 sd 2779, 782, 2790, 2794'; A/500 gal; perf/4 SPF 2776 & 2797'; jet formation 2762-2806' spot A/500 gal 15% regular; A/500 gal 15% NEFE; A/1500 gal regular.
- M. West Loco Hills G4S Unit Tract 1-5, formerly the Canfield "A" #5 and the Canfield #5-A. Located 1650' FSL and 1650' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair, and Franklin Oil Corp. This well was spudded 12/18/44 and completed 1/29/45 with a TD of 2837'. This well was completed as a producing oil well, was a water injection well and is now P & A'd. Construction: 8 5/8" 425'/50 sx; 7" 2690'/100 sx; 4 1/2" 9.5# J-55 liner 2620-2796'/150 sx C1 "C"/1% D-23 & 2% salt. Completion recored: shot 140 qts Nitroglycerine 2801-2837'; 10M gal 15M# sd; A/500 gal; perf/1 SPF 2805, 2809, 2313, 2818'; A/500 gal 15%. P & A'd: Ran CBI f/2610 to surface. Set CIBP @ 2610' w/80' cement on top. Spot 25 sx plug f/2363' to 2220' (tagged @ 2220'). Perf 4 holes @ 1140'. Set cement retainer @ 11090'. Squeeze base of Salt through holes @ 1140' with 100 sx Class "C". Left 35' of cement on retainer. Cut 7" casing at 500'. Could not pull 7" casing. Set cement retainer @ 450'. Squeezed top of Salt through cut 7" casing with 100 sx Class "C". Left 35' of cement on top of the retainer. Perf 4 holes @ 250'. Set cement retainer @ 200'. Squeeze holes @ 250' with 1256 sx Class "C". Left 100' of cement on top of the retainer. Set 60' surface plug. Install P & A' 9/30/92.
- N. West Loco Hills G4S Unit Tract 1-6, formerly the Canfield "A" #6 and the Canfield #6-A. Located 2590' FNL and 1370' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 11/20/48 and completed 2/3/49 with a TD of 2387'. Repair casing and test to 600 psi on 3/25/92. This is a producing oil well. Construction: 8 1/4" 430'/50 sx; 7" 2698'/100 sx. Completion record: shot 126 qts Nitroglycerine 2795-2837'; shot 200 qts Nitroglycerine 2795-2837'; 10M gal 15M# sd 2698-2837'; 126 gal 15%.

- O. West Loco Hills G4S Unit Tract 1-7, formerly the Canfield "A" #7 and the Canfield #7-A. Located 1270' FNL and 1370' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 4/19/49 and completed 6/3/49 with a TD of 2814'. This well was completed as a producing oil well and subsequently TA and is presently a water injection well. Construction: 8 1/4" 431'/50 sx; 7" 2693'/100 sx; 4 1/2" 9.5# J-55 liner 2594-2769'/300 sx encoire/2% salt & 1% D-60; A/500 gal 15% regular; perf 2802-22'/4 SPF A/500 gal 28%; A/1000 gal 28%; A/100 15% regular & 5 gal Visco IIII.
- P. West Loco Hills G4S Unit Tract 1-8, formerly the Canfield "A" #8 and the Canfield #8-A. Located 2310' FNL and 330' FWL of Section 7-18S-30E. Present operator is Yates Petroleum Corporation. Former operators were Newmont Oil Company; Franklin, Aston & Fair; and Franklin Oil Corp. This well was spudded 7/31/56 and completed 8/30/56 with a TD of 2814'. This well was completed as a producing oil well and converted to water injection on 8/7/63. Converted back to a producer on 11/21/91. Construction: 8 5/8" 28# 426'/50 sx; 7" 20# 2774'/100 sx; 4 1/2" 2763'/425 sx (circulated). Completion record: 10M SF 15M# 20/40 sd; A/500 gal regular; A/500 gal 28%; A/1000 gal 28%.
- Q. West Loco Hills G4S Unit Tract R1 Well No. 1 formerly the Saunder B #1. Located 2310' FSL and 2310' FWL of Sec 12, T18S-R29E. Present operator is Yates Petroleum Corporation, former operators were Newmont Oil Company and Martin Yates, III et al. This well was spudded on November 26, 1962 and completed on January 2, 1963 with a total depth of 2717'. This well was completed as an injection well for the West Loco Hills G4S Unit and has been P & A'. Construction: 7" @ 380' w/50 sx, 4 1/2" @ 2642' w/100 sx completion record. Acidize 500 gal mcx; undercam f/2656'-2694'. P & A'd. Ran CBL f/2670 to surface (TOC @ 1690). Used RBP and packer to find holes @ 1460', 1060, 705, 352, and 45'. Set cement retainer @ 2606' squeezed open hole section with 50 sx Class "C" cement. Left 35' cement on top. Spot 25 sx plug f/2242' to 2100' (across Queen). Set cement retainer @ 956'. Squeeze base of salt through hole @ 1060' with 50 sx Class "C". Left 35' of cement on retainer. Set cement retainer @ 322'. Squeezed to of salt through hole @ 352' with 50 sx Class "C". Left 35' of cement on top of the retainer. Circulate 25 sx cement f/60' to surface and through hole @ 45' through the 4 1/2" x 7" annulus. Install P & A marker. Well P & A'd 10/30/92.

XII. Affirmative Statement

I have examined the available geologic and engineering data for this project and I found no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

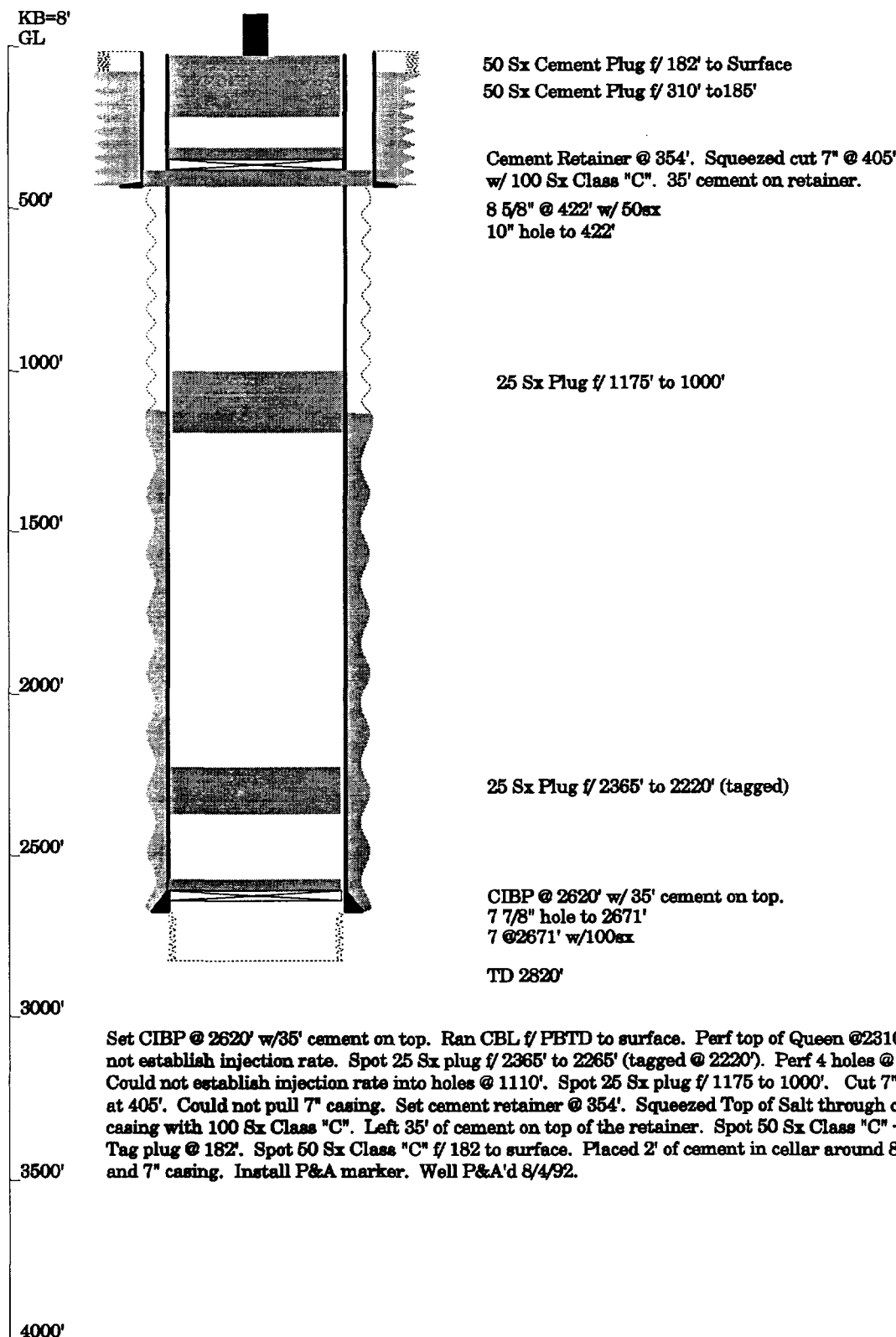
Robert S. Fant  
Petroleum Engineer  
Yates Petroleum Corporation

RSF/cvg

# West Loco Hills Unit #1-1

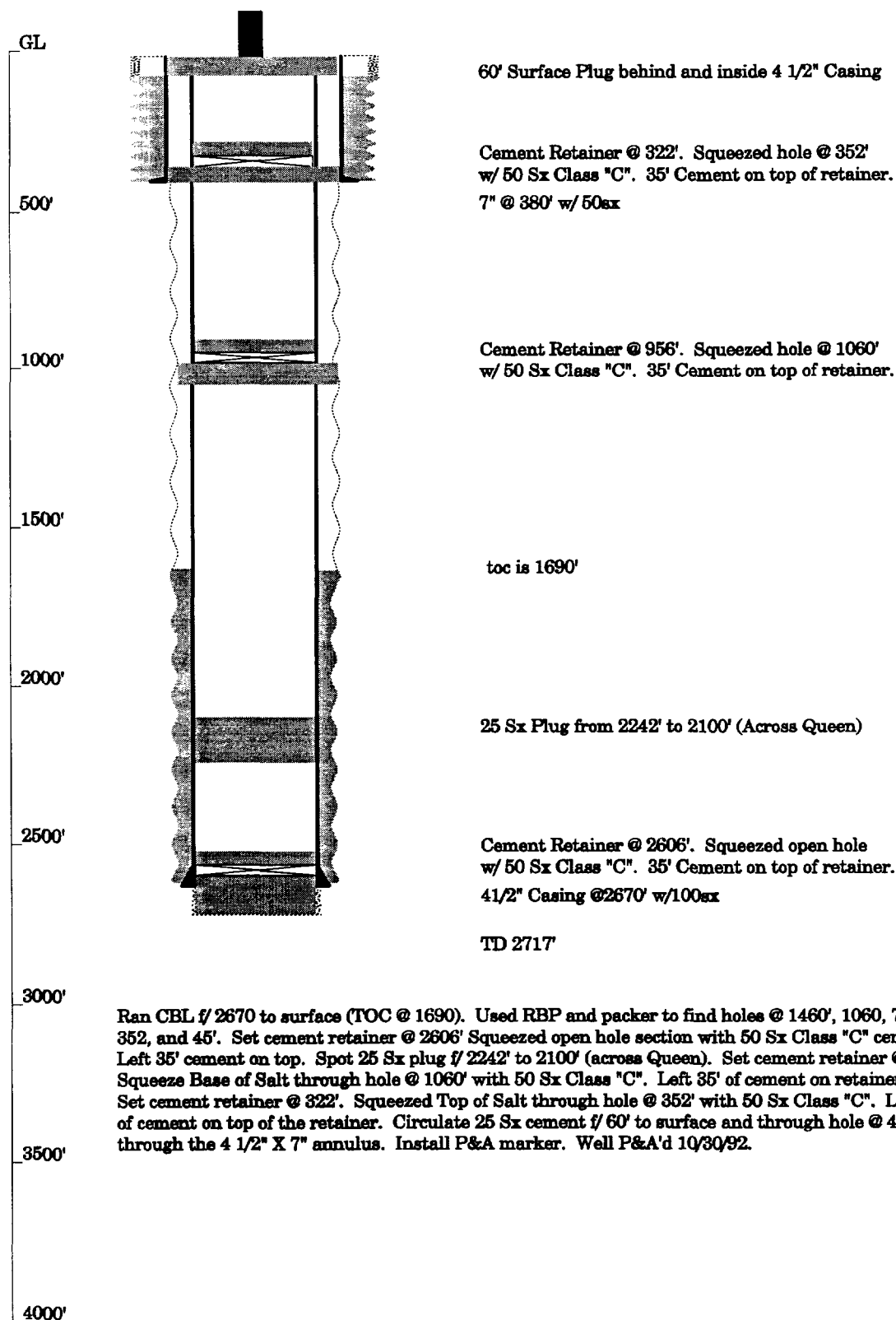
Unit D, 330' FNL 330' FWL

Sec. 7-T18S-R30E NMPM



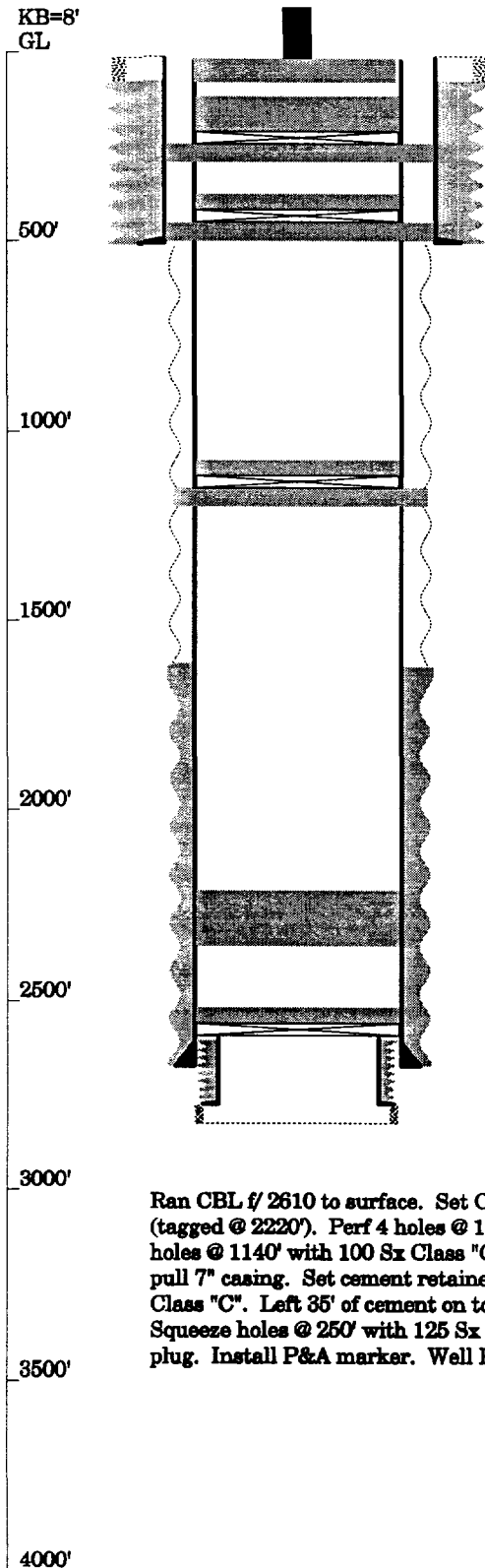
# West Loco Hills Unit #4-1

Unit K, 2310' FSL 2310' FWL  
Sec. 12-T18S-R29E NMPM



# West Loco Hills Unit #1-5

Unit K, 1650' FSL 1650' FWL  
Sec. 7-T18S-R30E NMPM



60' Surface Plug

Cement Retainer @ 200'. Squeeze hole @250'  
w/ 125 Sx Class "C". 35' of Cement on retainer.

Cement Retainer @ 450'. Squeeze cut 7" @500'  
w/ 100 Sx Class "C". 35' of Cement on retainer.

8 5/8" @ 500' w/ 50sx  
10" hole to 500'

Cement Retainer @ 1090'. Squeeze hole @1140'  
w/ 100 Sx Class "C". 35' of Cement on retainer.

25 Sx cement plug from 2363' to 2220' (tagged)

CIBP @ 2610' w/ 80' cement on top

7 @2690' w/100sx

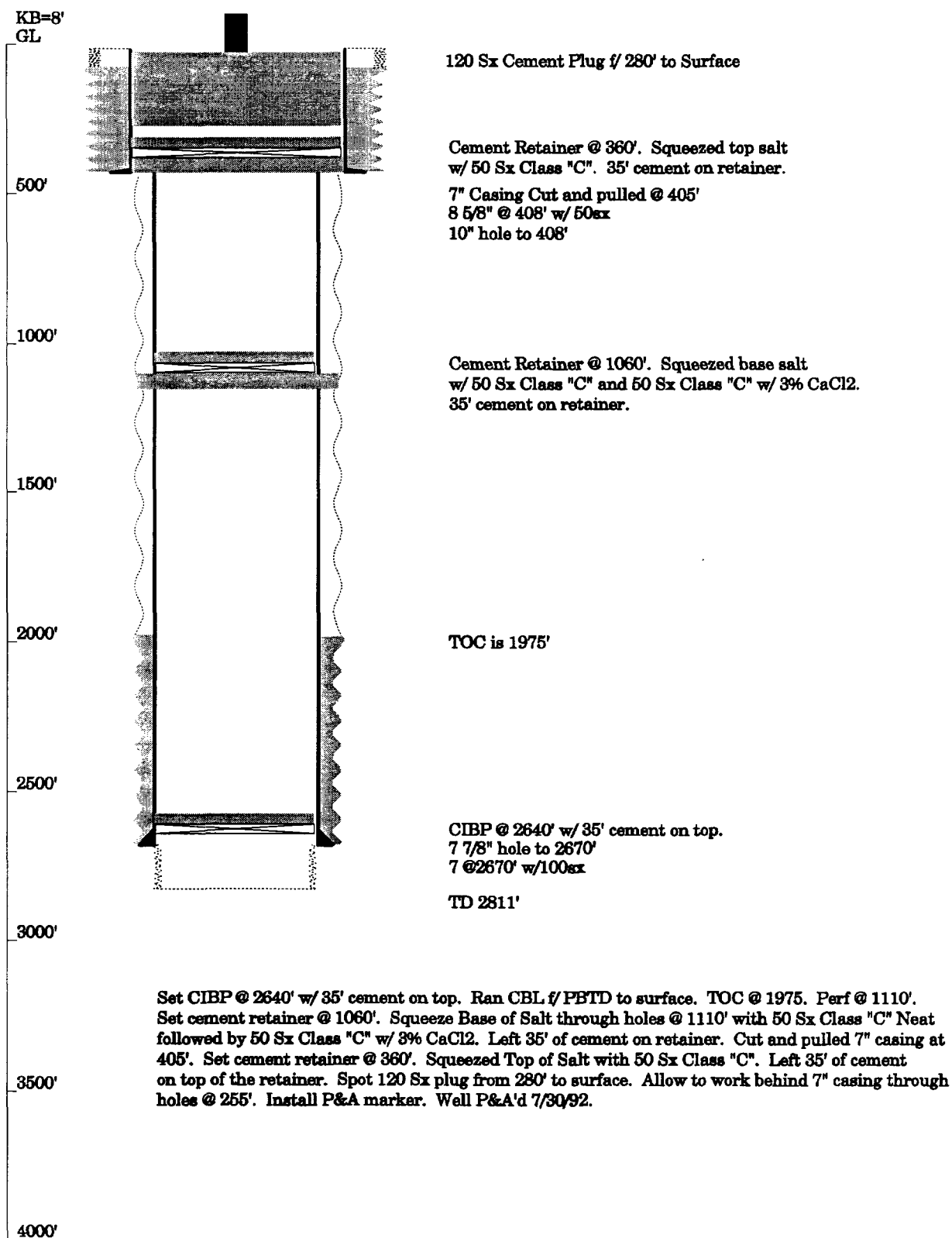
4 1/2" Liner from 2620'-2796' cemented by squeezing from the top.

TD 2832'

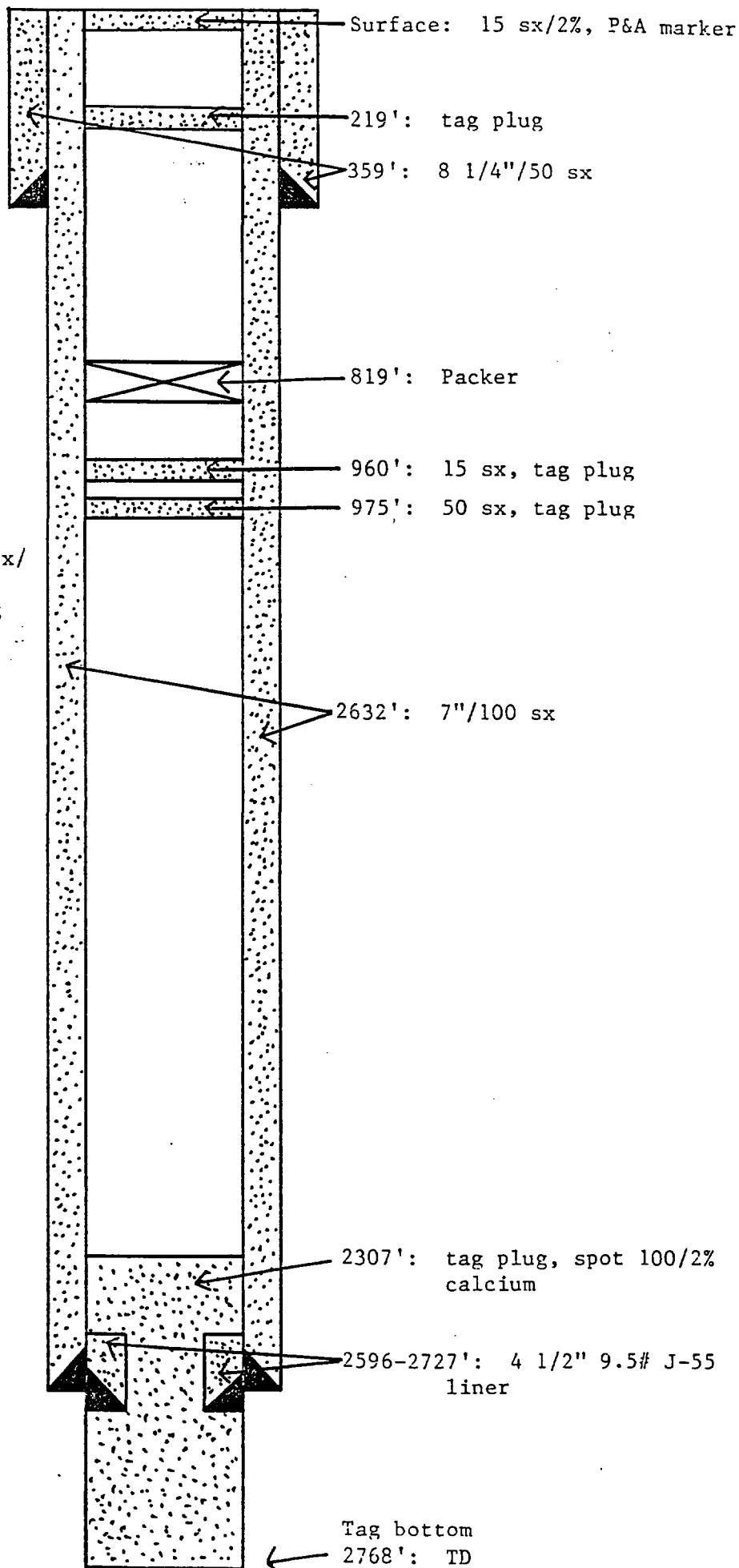
Ran CBL f/ 2610 to surface. Set CIBP @ 2610' w/ 80' cement on top. Spot 25 Sx plug f/ 2363' to 2220' (tagged @ 2220'). Perf 4 holes @ 1140'. Set cement retainer @ 1090'. Squeeze Base of Salt through holes @ 1140' with 100 Sx Class "C". Left 35' of cement on retainer. Cut 7" casing at 500'. Could not pull 7" casing. Set cement retainer @ 450'. Squeezed Top of Salt through cut 7" casing with 100 Sx Class "C". Left 35' of cement on top of the retainer. Perf 4 holes @ 250'. Set cement retainer @ 200'. Squeeze holes @ 250' with 125 Sx Class "C". Left 100' of cement on top of the retainer. Set 60' surface plug. Install P&A marker. Well P&A'd 9/30/92.

# West Loco Hills Unit #13-7

Unit A, 990' FNL 990' FEL  
Sec. 12-T18S-R29E NMPM



West Loco Hills G4S Unit Tract 13-5



P&A: 7/27/83

Tag bottom, pull up 1 jt, spot 100 sx/2% calcium, tag plug @ 2307', set packer 819', squeeze 50 sx, tag plug @ 975', 15 sx, tag plug @ 960', squeeze cement with 2% calcium, tag plug @ 219', mix 15 sx with 2% calcium, P&A marker.

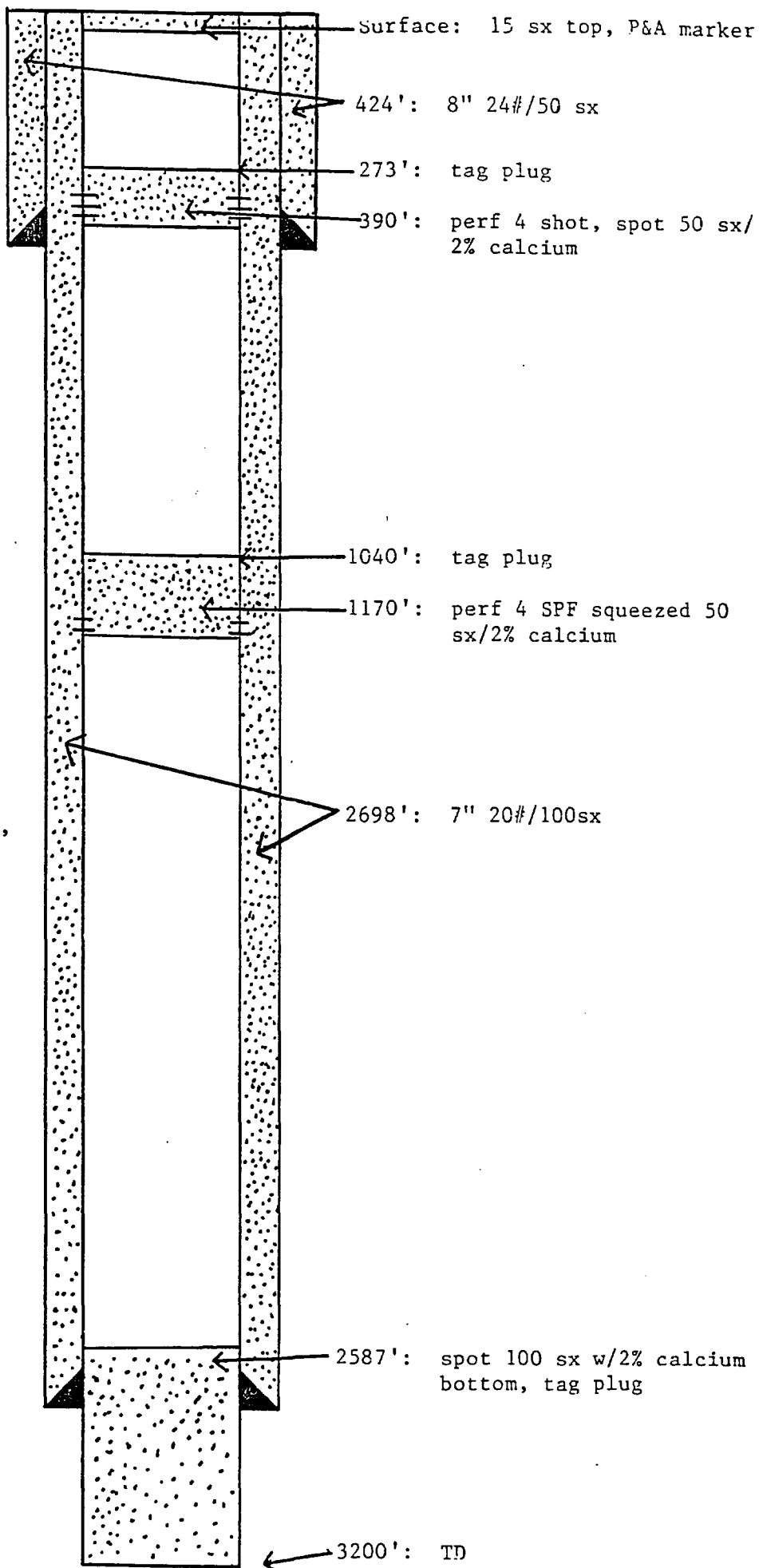


West Loco Hills G4S Unit Tract 13-1

330' FNL/330' FEL Sec 12-18S-29E

P&A: 7/14/83

Spot 100 sx 2/2% calcium bottom,  
tag plug @ 2587', perf 4 SPF @  
1170', squeezed 50 sx w/2% calcium,  
tag plug @ 1040', perf 4 shots at  
390', spot 50 sx w/2% calcium, tag  
273' 15 sx top, P&A marker.



# TRETOLITL

Chemicals and Services



16010 Barker's Point Lane • Houston, Texas 77079  
713 558-5200 • Telex: 4620346 • FAX: 713 589-4737

Reply to: P.O. Box FF  
Artesia, New Mexico 88210  
(505) 746-3588 Phone  
(505) 746-3580 Fax

## WATER ANALYSIS REPORT

Company : YATES PETROLEUM  
Address : ARTESIA, NM  
Lease : MALJAMAR FRESH WATER  
Well : TANK  
Sample Pt. : WELLHEAD

Date : 05/15/92  
Date Sampled : 05/14/92  
Analysis No. : 031

ANALYSIS		mg/L		* meq/L
1. pH	7.6			
2. H2S				
3. Specific Gravity	1.000			
4. Total Dissolved Solids		474.0		
5. Suspended Solids				
6. Dissolved Oxygen				
7. Dissolved CO2				
8. Oil In Water				
9. Phenolphthalein Alkalinity (CaCO3)				
10. Methyl Orange Alkalinity (CaCO3)				
11. Bicarbonate	HCO3	134.2	HCO3	2.2
12. Chloride	Cl	149.1	Cl	4.2
13. Sulfate	SO4	50.0	SO4	1.0
14. Calcium	Ca	104.0	Ca	5.2
15. Magnesium	Mg	17.1	Mg	1.4
16. Sodium (calculated)	Na	19.6	Na	0.9
17. Iron	Fe	0.0		
18. Barium	Ba	0.0		
19. Strontium	Sr	0.0		
20. Total Hardness (CaCO3)		330.0		

## PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter		Compound	Equiv wt	X meq/L	= mg/L
5 *Ca <----- *HCO3	2	Ca(HCO3)2	81.0	2.2	178
----- /----->		CaSO4	68.1	1.0	71
1 *Mg -----> *SO4	1	CaCl2	55.5	1.9	108
----- <----- /		Mg(HCO3)2	73.2		
1 *Na -----> *Cl	4	MgSO4	60.2		
-----		MgCl2	47.6	1.4	67
Saturation Values Dist. Water 20 C		NaHCO3	84.0		
CaCO3 13 mg/L		Na2SO4	71.0		
CaSO4 * 2H2O 2090 mg/L		NaCl	58.4	0.9	50
BaSO4 2.4 mg/L					

## REMARKS:

----- L. MALLETT / FILE / MLAB

Petrolite Oilfield Chemicals Group

Respectfully submitted,  
LEE MALLETT

# PETROLITE

## WATER ANALYSIS REPORT

Company : YATES PETROLEUM  
 Address : ARTESIA, NM  
 Lease : W. LOCO HILL PLANT  
 Well : INJECTION PLANT  
 Sample Pt. : TANK

Date : 05/15/92  
 Date Sampled : 05/14/92  
 Analysis No. : 032

ANALYSIS		mg/L	* meq/L
-----		----	-----
1.	pH	6.4	
2.	H2S	240 PPM	
3.	Specific Gravity	1.035	
4.	Total Dissolved Solids	61697.8	
5.	Suspended Solids		
6.	Dissolved Oxygen		
7.	Dissolved CO2		
8.	Oil In Water		
9.	Phenolphthalein Alkalinity (CaCO3)		
10.	Methyl Orange Alkalinity (CaCO3)		
11.	Bicarbonate	HCO3 1025.0	HCO3 16.8
12.	Chloride	Cl 34506.0	Cl 973.4
13.	Sulfate	SO4 4125.0	SO4 85.9
14.	Calcium	Ca 3600.0	Ca 179.6
15.	Magnesium	Mg 2431.2	Mg 200.0
16.	Sodium (calculated)	Na 16010.6	Na 696.4
17.	Iron	Fe 0.0	
18.	Barium	Ba 0.0	
19.	Strontium	Sr 0.0	
20.	Total Hardness (CaCO3)	19000.0	

## PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter		Compound Equiv wt X meq/L = mg/L			
+-----+		+-----+			
180	*Ca <----- *HCO3	17	Ca(HCO3)2	81.0	16.8 1362
	/----->		CaSO4	68.1	85.9 5846
200	*Mg -----> *SO4	86	CaCl2	55.5	76.9 4269
	<-----/		Mg(HCO3)2	73.2	
696	*Na -----> *Cl	973	MgSO4	60.2	
			MgCl2	47.6	200.0 9522
Saturation Values Dist. Water 20 C			NaHCO3	84.0	
	CaCO3 13 mg/L		Na2SO4	71.0	
	CaSO4 * 2H2O 2090 mg/L		NaCl	58.4	696.4 40698
	BaSO4 2.4 mg/L				

## REMARKS:

----- L. MALLET / FILE / MLAB

Petrolite Oilfield Chemicals Group

Respectfully submitted,  
 LEE MALLET

**Working Interest Owners  
West Loco Hills Grayburg No. 4 Sand Unit**

Donna Frost and Leon Binkley  
Personal Representative Of  
The Estate of Kathleen Cone  
P. O. Drawer 1509  
Lovington, NM 88260

Florence M. Dooley  
901 W. Washington Avenue  
Artesia, NM 88210

Paul Slaton  
P. O. Box 2035  
Roswell, NM 88201

Kenneth G. Cone  
P. O. Box 11310  
Midland, Texas 79702

Eugene E. Nearburg  
P. O. Box 31405  
Dallas, Texas 75231-4394

George S. Emmons  
17 N. Lancaster Lane  
Newton, PA 18940

Clifford Cone  
P. O. Box 6010  
Lubbock, Texas 79413

Paula Dooley  
Successor Personal Representative Of  
The Estate of William P. Dooley  
1006 South 2nd Street  
Artesia, NM 88210

Thomas W. Lett  
P. O. Box 35449  
Dallas, Texas 75235

Yates Energy Corporation  
P. O. Box 2323  
Roswell, NM 88202

Thomas W. Lett, Trustee of the  
Sam Lett Testamentary Trust  
P. O. Box 35449  
Dallas, Texas 75235

Harvey E. Yates Company  
P. O. Box 1933  
Roswell, NM 88201

Cibola Energy Corporation  
P. O. Box 1668  
Albuquerque, NM 87103

I & L Development Co.  
P. O. Box 35449  
Dallas, Texas 75235

Thompson Petroleum Corporation  
4500 Republic National Bank Tower  
Dallas, Texas 75201

Douglas Cone  
P. O. Box 64244  
Lubbock, Texas 79464

Yates Petroleum Corporation  
Yates Drilling Company  
John A. Yates  
Yates Petroleum Corp. Acct #4  
Peggy A. Yates Estate  
105 S. 4th Street  
Artesia, NM 88210

**CO<sub>2</sub> Pilot Project**  
**Offset Operators Within 1/2 Mile of Proposed Injection Wells**

None

**Surface Ownership**

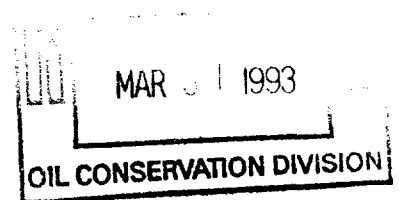
United States Department of the Interior  
Bureau of Land Management  
P. O. Box 1778  
Carlsbad, NM 88220

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 10712

APPLICATION OF YATES PETROLEUM  
CORPORATION FOR AMENDMENT OF  
DIVISION ORDER NO. R-2178, AS AMENDED,  
WHICH APPROVED A CARBON DIOXIDE/WATER  
INJECTION PROJECT KNOWN AS THE YATES  
PETROLEUM CORPORATION LOCO HILLS CO<sub>2</sub>/WATER  
INJECTION PILOT PROJECT IN THE FOURTH SAND  
MEMBER OF THE GRAYBURG FORMATION,  
EDDY COUNTY, NEW MEXICO.



**PRE-HEARING STATEMENT**

This Prehearing Statement is submitted by Campbell, Carr, Berge & Sheridan, P.A.,  
as required by the Oil Conservation Division.

**APPEARANCES OF PARTIES**

**APPLICANT**

Yates Petroleum Corporation \_\_\_\_\_  
c/o Robert S. Fant \_\_\_\_\_  
105 South Fourth Street \_\_\_\_\_  
Artesia, New Mexico 88210 \_\_\_\_\_  
(505) 748-1471 \_\_\_\_\_  
name, address, phone and  
contact person

**ATTORNEY**

William F. Carr, Esq. \_\_\_\_\_  
Campbell, Carr, Berge & Sheridan, P.A.  
Post Office Box 2208 \_\_\_\_\_  
Santa Fe, New Mexico 87504 \_\_\_\_\_  
(505) 988-4421 \_\_\_\_\_

**OPPOSITION OR OTHER PARTY**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
name, address, phone and  
contact person

**ATTORNEY**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

**STATEMENT OF CASE**

**APPLICANT**

(Please make a concise statement of what is being sought with this application and the reasons therefore.)

Yates Petroleum Corporation, applicant in the above-captioned cause, seeks authority to drill a new injection well (West Loco Hills G4S Unit, Tract 13 Well No. 12) and convert the West Loco Hills G4S Unit Tract 1 Well No. 10 from injection to production. The project area includes the following described area: Township 18 South, Range 29 East -n Section 12: E/2; Township 18 South, Range 30 East - Section 7: W/2. The applicant also requests that the Division establish procedures for the administrative approval of additional injection wells within the pilot project area without the necessity of further hearings and the adoption of any provisions necessary for such other matters as may be appropriate for said pilot project operations.

**OPPOSITION OR OTHER PARTY**

(Please make a concise statement of the basis for opposing this application or otherwise state the position of the party filing this statement.)

**PROPOSED EVIDENCE**

APPLICANT

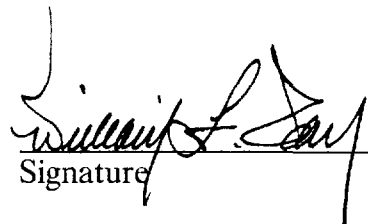
WITNESSES (Name and expertise)	EST. TIME	EXHIBITS
Robert S. Fant, Petroleum Engineer	15 Min.	Approximately 3

OPPOSITION

WITNESSES (Name and expertise)	EST. TIME	EXHIBITS
-----------------------------------	-----------	----------

**PROCEDURAL MATTERS**

(Please identify any procedural matters which need to be resolved prior to hearing)

  
Signature

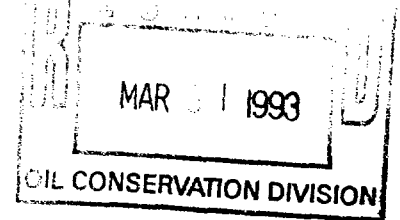


**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 10712

APPLICATION OF YATES PETROLEUM  
CORPORATION FOR AMENDMENT OF  
DIVISION ORDER NO. R-2178, AS AMENDED,  
WHICH APPROVED A CARBON DIOXIDE/WATER  
INJECTION PROJECT KNOWN AS THE YATES  
PETROLEUM CORPORATION LOCO HILLS CO<sub>2</sub>/WATER  
INJECTION PILOT PROJECT IN THE FOURTH SAND  
MEMBER OF THE GRAYBURG FORMATION,  
EDDY COUNTY, NEW MEXICO.



**PRE-HEARING STATEMENT**

This Prehearing Statement is submitted by Campbell, Carr, Berge & Sheridan, P.A.,  
as required by the Oil Conservation Division.

**APPEARANCES OF PARTIES**

**APPLICANT**

Yates Petroleum Corporation \_\_\_\_\_  
c/o Robert S. Fant \_\_\_\_\_  
105 South Fourth Street \_\_\_\_\_  
Artesia, New Mexico 88210 \_\_\_\_\_  
(505) 748-1471 \_\_\_\_\_  
name, address, phone and  
contact person

**ATTORNEY**

William F. Carr, Esq. \_\_\_\_\_  
Campbell, Carr, Berge & Sheridan, P.A.  
Post Office Box 2208 \_\_\_\_\_  
Santa Fe, New Mexico 87504 \_\_\_\_\_  
(505) 988-4421 \_\_\_\_\_

**OPPOSITION OR OTHER PARTY**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
name, address, phone and  
contact person

**ATTORNEY**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STATEMENT OF CASE**

**APPLICANT**

(Please make a concise statement of what is being sought with this application and the reasons therefore.)

Yates Petroleum Corporation, applicant in the above-captioned cause, seeks authority to drill a new injection well (West Loco Hills G4S Unit, Tract 13 Well No. 12) and convert the West Loco Hills G4S Unit Tract 1 Well No. 10 from injection to production. The project area includes the following described area: Township 18 South, Range 29 East -n Section 12: E/2; Township 18 South, Range 30 East - Section 7: W/2. The applicant also requests that the Division establish procedures for the administrative approval of additional injection wells within the pilot project area without the necessity of further hearings and the adoption of any provisions necessary for such other matters as may be appropriate for said pilot project operations.

**OPPOSITION OR OTHER PARTY**

(Please make a concise statement of the basis for opposing this application or otherwise state the position of the party filing this statement.)

**PROPOSED EVIDENCE**

APPLICANT

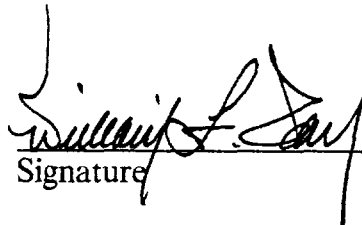
WITNESSES (Name and expertise)	EST. TIME	EXHIBITS
Robert S. Fant, Petroleum Engineer	15 Min.	Approximately 3

OPPOSITION

WITNESSES (Name and expertise)	EST. TIME	EXHIBITS
-----------------------------------	-----------	----------

**PROCEDURAL MATTERS**

(Please identify any procedural matters which need to be resolved prior to hearing)

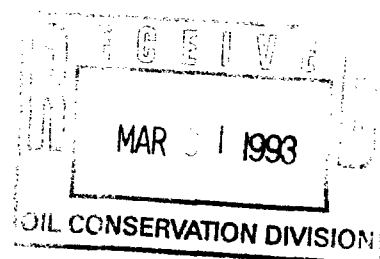
  
Signature

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 10712

APPLICATION OF YATES PETROLEUM  
CORPORATION FOR AMENDMENT OF  
DIVISION ORDER NO. R-2178, AS AMENDED,  
WHICH APPROVED A CARBON DIOXIDE/WATER  
INJECTION PROJECT KNOWN AS THE YATES  
PETROLEUM CORPORATION LOCO HILLS CO<sub>2</sub>/WATER  
INJECTION PILOT PROJECT IN THE FOURTH SAND  
MEMBER OF THE GRAYBURG FORMATION,  
EDDY COUNTY, NEW MEXICO.



**PRE-HEARING STATEMENT**

This Prehearing Statement is submitted by Campbell, Carr, Berge & Sheridan, P.A.,  
as required by the Oil Conservation Division.

**APPEARANCES OF PARTIES**

**APPLICANT**

Yates Petroleum Corporation \_\_\_\_\_  
c/o Robert S. Fant \_\_\_\_\_  
105 South Fourth Street \_\_\_\_\_  
Artesia, New Mexico 88210 \_\_\_\_\_  
(505) 748-1471 \_\_\_\_\_  
name, address, phone and  
contact person

**ATTORNEY**

William F. Carr, Esq. \_\_\_\_\_  
Campbell, Carr, Berge & Sheridan, P.A.  
Post Office Box 2208 \_\_\_\_\_  
Santa Fe, New Mexico 87504 \_\_\_\_\_  
(505) 988-4421 \_\_\_\_\_

**OPPOSITION OR OTHER PARTY**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
name, address, phone and  
contact person

**ATTORNEY**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

**STATEMENT OF CASE**

**APPLICANT**

(Please make a concise statement of what is being sought with this application and the reasons therefore.)

Yates Petroleum Corporation, applicant in the above-captioned cause, seeks authority to drill a new injection well (West Loco Hills G4S Unit, Tract 13 Well No. 12) and convert the West Loco Hills G4S Unit Tract 1 Well No. 10 from injection to production. The project area includes the following described area: Township 18 South, Range 29 East -n Section 12: E/2; Township 18 South, Range 30 East - Section 7: W/2. The applicant also requests that the Division establish procedures for the administrative approval of additional injection wells within the pilot project area without the necessity of further hearings and the adoption of any provisions necessary for such other matters as may be appropriate for said pilot project operations.

**OPPOSITION OR OTHER PARTY**

(Please make a concise statement of the basis for opposing this application or otherwise state the position of the party filing this statement.)

**PROPOSED EVIDENCE**

APPLICANT

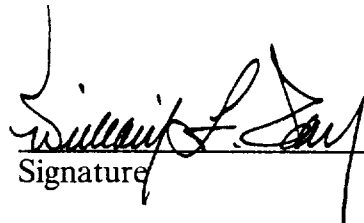
WITNESSES (Name and expertise)	EST. TIME	EXHIBITS
Robert S. Fant, Petroleum Engineer	15 Min.	Approximately 3

OPPOSITION

WITNESSES (Name and expertise)	EST. TIME	EXHIBITS
-----------------------------------	-----------	----------

**PROCEDURAL MATTERS**

(Please identify any procedural matters which need to be resolved prior to hearing)

  
\_\_\_\_\_  
Signature