

BEFORE THE OIL CONSERVATION DIVISION  
ENERGY AND MINERALS DEPARTMENT OF  
THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION )  
OF HARVEY E. YATES COMPANY )  
FOR ADMINISTRATIVE APPROVAL )  
OF AN UNORTHODOX LOCATION )  
LEA COUNTY, NEW MEXICO )

NSL-1759  
Rule 104 F II  
11/6/83

APPLICATION FOR ADMINISTRATIVE APPROVAL

COMES NOW HARVEY E. YATES COMPANY which respectfully states:

1. Applicant proposes to drill its Young Deep 3 Federal #4 well 1,200' FSL and 1,650' FEL of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. *Undesignated Morrow* ~~Undesignated~~

2. The well will be drilled to a depth sufficient to penetrate the Morrow formation or to 13,000'.

3. Applicant would expect a Morrow well at this location to be a gas well.

4. Under New Mexico Oil Conservation Division Rule 104 (B), the above stated location is unorthodox for a Morrow gas well.

5. The proration unit for the well would be the E/2 of Section 3.

6. The proposed location is not closer than 660' to the nearest side boundary nor closer than 990' to the nearest end boundary of the proposed proration unit.

7. The Applicant has included with this application a plat showing the ownership of all leases offsetting the proration or spacing unit for which the unorthodox location is sought. Applicant has marked on the plat all the other wells completed on said leases.

8. Applicant has also included with this application a plat showing the operators of each proration or spacing unit offsetting the proposed proration unit in which this unorthodox location is sought. Each operator shown on the plat (other than Applicant) has been sent a copy of this application (less geologic exhibits) by certified or registered mail.

9. Applicant as operator of certain proration or spacing units offsetting the proposed proration unit does not object to the unorthodox location.

10. Also included with this application are geologic maps, cross-sections, and a discussion of the geologic conditions which result in the necessity for the unorthodox location.

WHEREFORE, Applicant requests:

A. That pursuant to New Mexico Oil Conservation Division Rule 104(F), the Division issue an administrative approval of Applicant's drilling at an unorthodox location 1,200 FSL and 1,650 FEL of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico, its Young Deep 3 Federal #4 well.

B. For such further relief as the Division deems just and proper.

DATED this 14th day of October, 1983.

HARVEY E. YATES COMPANY

By: 

Thomas J. Hall, III  
Attorney For Applicant  
P. O. Box 1933  
Roswell, New Mexico 88201

# HEYCO

PETROLEUM PRODUCERS



# HARVEY E. YATES COMPANY

P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

505/623-6601

ROSWELL, NEW MEXICO 88201

May 21, 1984

New Mexico Oil Conservation Division  
Gilbert Quintana  
Legal Department  
P. O. Box 2088  
State Land Office Building  
Santa Fe, New Mexico 87501

Re: Request for Administrative Approval of  
An Unorthodox Location for the Young  
Deep "3" Federal #4 located 1200' FSL  
& 1650' FEL, Sec. 3, Township 18S,  
Range 32E, Lea County, New Mexico

Dear Gilbert:

Please find attached three copies of the aforementioned request and copies of NSL-1759 granting approval of an unorthodox location for the captioned well in the Morrow and Order R-7023 for the Bone Springs.

The Young Deep "3" Federal #4 was drilled to a total depth of 12915'. After setting 5 1/2" casing, the well was tested in the Morrow and Canyon which were found to be non-commercial. The well was plugged back to isolate the tested intervals and perforated in the Bone Springs from 8611'-8884' which was found to be commercial. A twenty four hour test on 5/9/84 indicated a daily rate of 98 bbls of oil and 97 MCF of gas on pump.

The subject well is located within the Young Deep Unit boundaries and is not closer than 10' to any quarter-quarter. The proration unit is surrounded by acreage operated by the applicant, Harvey E. Yates Company, refer to support data for application for NSL-1759 previously submitted. Also reference is made to Order No. R-7023 paragraph 10 (ten) stating: "That the transfer of allowable between wells within the project area should be permitted"; for your convenience, Order No. R-7023 is enclosed. This would allow the assignment of an allowable to the subject well.

It is therefore requested that NSL-1759 be amended to permit the production from the Bone Springs formation at a non-standard location under the authority and provisions of Rule 104 F., Subparagraph I.

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'Ray F. Nokes'.

Ray F. Nokes  
Reservoir Engineer

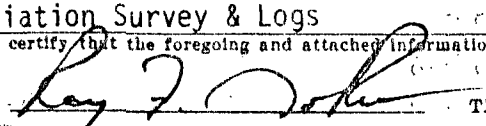
Enclosures

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE\*

(See other in-  
structions on  
reverse side)Form approved.  
Budget Bureau No. 42-R355.5.

## WELL COMPLETION OR RECOMPLETION REPORT AND LOG \*

1a. TYPE OF WELL: OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> Other _____		5. LEASE DESIGNATION AND SERIAL NO. NM-036852	
b. TYPE OF COMPLETION: NEW WELL <input checked="" type="checkbox"/> WORK OVER <input type="checkbox"/> DEEP-EN. <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> Other _____		6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
2. NAME OF OPERATOR Harvey E. Yates Company		7. UNIT AGREEMENT NAME	
3. ADDRESS OF OPERATOR P. O. Box 1933, Roswell, New Mexico 88201		8. FARM OR LEASE NAME Young Deep 3 Federal	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface 1200' FSL & 1650' FEL At top prod. interval reported below At total depth Same		9. WELL NO. 4	
14. PERMIT NO.		DATE ISSUED	
15. DATE SPUNDED 12/2/83		16. DATE T.D. REACHED 1/31/84	
17. DATE COMPL. (Ready to prod.) 4/18/84		18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* 3878.8 GR	
19. ELEV. CASINGHEAD		20. TOTAL DEPTH, MD & TVD 12915	
21. PLUG, BACK T.D., MD & TVD 10965		22. IF MULTIPLE COMPL., HOW MANY* NA	
23. INTERVALS DRILLED BY →		ROTARY TOOLS 0-12915	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 8611 - 8884 Bone Springs		CABLE TOOLS NA	
25. WAS DIRECTIONAL SURVEY MADE NO		26. TYPE ELECTRIC AND OTHER LOGS RUN CD, CN, w/GR; DL w/GR; CBL, GR	
27. WAS WELL CORED NO		28. CASING RECORD (Report all strings set in well)	
CASING SIZE		WEIGHT, LB./FT.	
13 3/8"		48-54	
8 5/8"		28, 24, 32	
5 1/2"		17 & 20	
DEPTH SET (MD)		HOLE SIZE	
664'		17 1/2	
3788'		11	
12915'		7 7/8	
CEMENTING RECORD		AMOUNT PULLED	
600 SXS			
2000 SXS			
1050 SXS			
29. LINER RECORD		30. TUBING RECORD	
SIZE		TOP (MD)	
		BOTTOM (MD)	
		SACKS CEMENT*	
		SCREEN (MD)	
		SIZE	
		DEPTH SET (MD)	
		PACKER SET (MD)	
		NA	
		2 3/8	
		8515	
		8515	
31. PERFORATION RECORD (Interval, size and number)		32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
8611 - 8635' (1 spf)		DEPTH INTERVAL (MD)	
8827 - 8884' (1 spf, 11 holes)		8611 - 8746	
8680 - 8742' (7 holes)		AMOUNT AND KIND OF MATERIAL USED	
		Frac w/60,000 gal 120,000#	
		20/40 sd & 104 tons CO2	
		2500 gal acid	
33. PRODUCTION		DATE FIRST PRODUCTION 4/18/84	
PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Pump		WELL STATUS (Producing or shut-in) Producing	
DATE OF TEST 5/9/84		HOURS TESTED 24	
CHOKE SIZE →		PROD'N. FOR TEST PERIOD →	
OIL—BBL. 98		GAS—MCF. 97	
WATER—BBL. 0		GAS-OIL RATIO 990	
FLOW TUBING PRESS. →		CASING PRESSURE →	
CALCULATED 24-HOUR RATE →		OIL—BBL. 98	
		GAS—MCF. 97	
		WATER—BBL. 0	
		OIL GRAVITY-API (CORR.) 35.5	
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Vent		TEST WITNESSED BY Micky Young	
35. LIST OF ATTACHMENTS Deviation Survey & Logs		36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records	
SIGNED: 		TITLE: Reservoir Engineer	
		DATE: May 18, 1984	

**NEW MEXICO OIL CONSERVATION COMMISSION  
WELL LOCATION AND ACREAGE DEDICATION PLAT**

Form C-102  
Supersedes C-128  
Effective 1-1-85

All distances must be from the outer boundaries of the Section.

Operator <b>HARVEY E. YATES CO.</b>			Lease <b>YOUNG DEEP "3" FEDERAL</b>		Well No. <b>4</b>
Unit Letter <b>0</b>	Section <b>3</b>	Township <b>18 SOUTH</b>	Range <b>32 EAST</b>	County <b>LEA</b>	
Actual Footage Location of Well: <div style="display: flex; justify-content: space-between;"> <span><b>1200</b> feet from the <b>SOUTH</b> line and</span> <span><b>1650</b> feet from the <b>EAST</b> line</span> </div>					
Ground Level Elev. <b>3878.8</b>	Producing Formation <b>Bone Springs</b>		Pool <b>North Young Bone Springs</b>		Dedicated Acreage <b>40</b>

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes    ☒ No    If answer is "yes," type of consolidation \_\_\_\_\_

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) \_\_\_\_\_

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.

1200'

NM-036852

1650'

**CERTIFICATION**

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.*

Name  
**Ray F. Nokes**

Position  
**Reservoir Engineer**

Company  
**Harvey E. Yates Company**

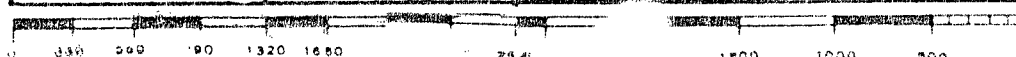
Date  
**May 21, 1984**

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.*

Date Surveyed  
**10-6-83**

Registered Professional Engineer  
and/or Land Surveyor

Certificate No. **JOHN W. WEST, 676**  
**RONALD J. EIDSON, 3239**



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

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

CASE NO. 7595  
Order No. R-7023

APPLICATION OF HARVEY E. YATES  
COMPANY FOR A WATERFLOOD PROJECT,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on May 26, 1982, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 15th day of July, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Harvey E. Yates Company, seeks authority to institute a pilot waterflood project in the North Young-Bone Spring Pool by the injection of water into the perforated interval from 8444 feet to 8488 feet in its Young Deep Unit Well No. 2, located in Unit C of Section 10, Township 18 South, Range 32 East, NMPM, Lea County, New Mexico. Applicant would also inject into certain as yet undetermined selective intervals between the depths of 8500 feet and 8597 feet.
- (3) That the wells in the proposed project are not in an advanced state of depletion and may not properly be classified as "stripper" wells.
- (4) That although the proposed project does not fit the definition of a waterflood project contained in Rule 701 F.1 of the Division Rules and Regulations, it does fit the definition of a pressure maintenance project contained in Rule 701 E.1 of the Division Rules and Regulations.

(5) That the proposed project should be classified as a pressure maintenance project and, in accordance with Rule 701 E., project rules, including the allowable formula, promulgated therefor..

✓(6) That the proposed pressure maintenance project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste, and will not impair correlative rights.

(7) That the initial project area should comprise the following described lands within applicant's proposed Young Deep (Bone Spring) Unit Area, Lea County, New Mexico:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM

Section 3: S/2 SW/4 and W/2 SE/4

Section 4: SE/4 SE/4

Section 9: NE/4 NE/4

Section 10: N/2 NW/4 and NW/4 NE/4

(8) That the project area should be expanded upon completion of additional injection wells or producing wells in the Bone Spring formation in the proposed Young Deep (Bone Spring) Unit Area which may be shown to be affected by the injection program.

(9) That the project allowable should be equal to top unit allowable for the North Young-Bone Spring Pool times the number of developed (production or injection) proration units within the project area.

✓(10) That the transfer of allowable between wells within the project area should be permitted.

(11) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells including the recementing of the 4 1/2-inch casing string back to at least 7900 feet when the Young Deep "4" Federal Well No. 1 in Unit M of Section 3, Township 18 South, Range 32 East, NMPM, is plugged back.

(12) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 1690 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(13) That the subject application should be approved and the project should be governed by the provisions of Rules 702 through 708 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Harvey E. Yates Company, is hereby authorized to institute a pressure maintenance project in the North Young-Bone Spring Pool by the injection of water into selected perforated intervals between the depths of 8444 feet and 8597 feet in its Young Deep Unit Well No. 2, located in Unit C of Section 10, Township 18 South, Range 32 East, NMPM, Lea County, New Mexico.

(2) That injection into said well shall be through internally coated tubing, set in a packer which shall be located as near as practicable to the uppermost perforation; that the casing-tubing annulus of said injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(3) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or packer in any injection well, the leakage of water or oil from or around any producing well, or the leakage of water or oil from or around any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the injection well herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 1690 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) That the subject pressure maintenance project is hereby designated the North Young-Bone Spring Pressure Maintenance Project and shall be governed by Special Rules and by the provisions of Rules 701 through 708 of the Division Rules and Regulations.

(6) That Special Rules and Regulations governing the operation of the North Young Bone Spring Pressure Maintenance Project are hereby promulgated as follows:



SPECIAL RULES AND REGULATIONS  
FOR THE  
NORTH YOUNG BONE SPRING PRESSURE MAINTENANCE PROJECT

Rule 1. That the initial project area shall comprise the following described lands in Lea County, New Mexico:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM  
Section 3: S/2 SW/4 and W/2 SE/4  
Section 4: SE/4 SE/4  
Section 9: NE/4 NE/4  
Section 10: N/2 NW/4 and NW/4 NE/4

Rule 2. That the project area may be expanded administratively within the applicant's proposed Young Deep (Bone Spring) Unit Area by the Division Director upon completion of additional injection wells or production wells, provided it can be shown that such production wells are affected by the injection of water into the Bone Spring formation.

Rule 3. The allowable for the project area shall be any amount up to and including a volume equal to the top unit allowable for the North Young-Bone Spring Pool times the number of proration units in the project area.

Rule 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion.

Rule 5. The Division Director is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the proposed Young Deep (Bone Spring) Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 330 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary. To obtain such approval, the project operator shall file proper application with the Division, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of any proposed injection well which fully describes the casing, tubing, packer, monitoring equipment, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

(d) Such other applicable requirements as may be contained in Rule 701 of the Division Rules and Regulations.

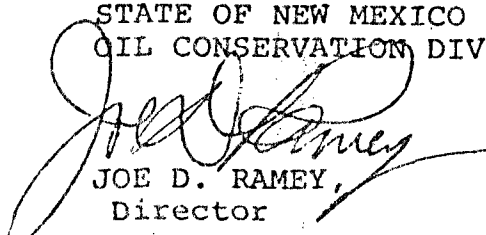
The Division Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

(7) That the pressure maintenance project herein authorized shall be governed by the provisions of Rules 702 through 708 of the Division Rules and Regulations.

(8) That 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

  
JOE D. RAMEY,  
Director

S E A L

**HEYCO**

PETROLEUM PRODUCERS



**HARVEY E. YATES COMPANY**

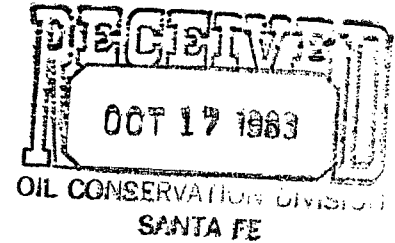
P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING...

505/623-6601

ROSWELL, NEW MEXICO 88201

October 14, 1983



Oil Conservation Division  
State of New Mexico  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Attention: Mr. Richard L. Stamets

Re: Administrative Approval  
Unorthodox Location  
Young Deep 3 Federal #4  
Young Deep Unit  
Lea County, New Mexico

Dear Dick:

Enclosed in triplicate is an application seeking administrative approval of an unorthodox location for a Morrow well on our Young Deep Unit.

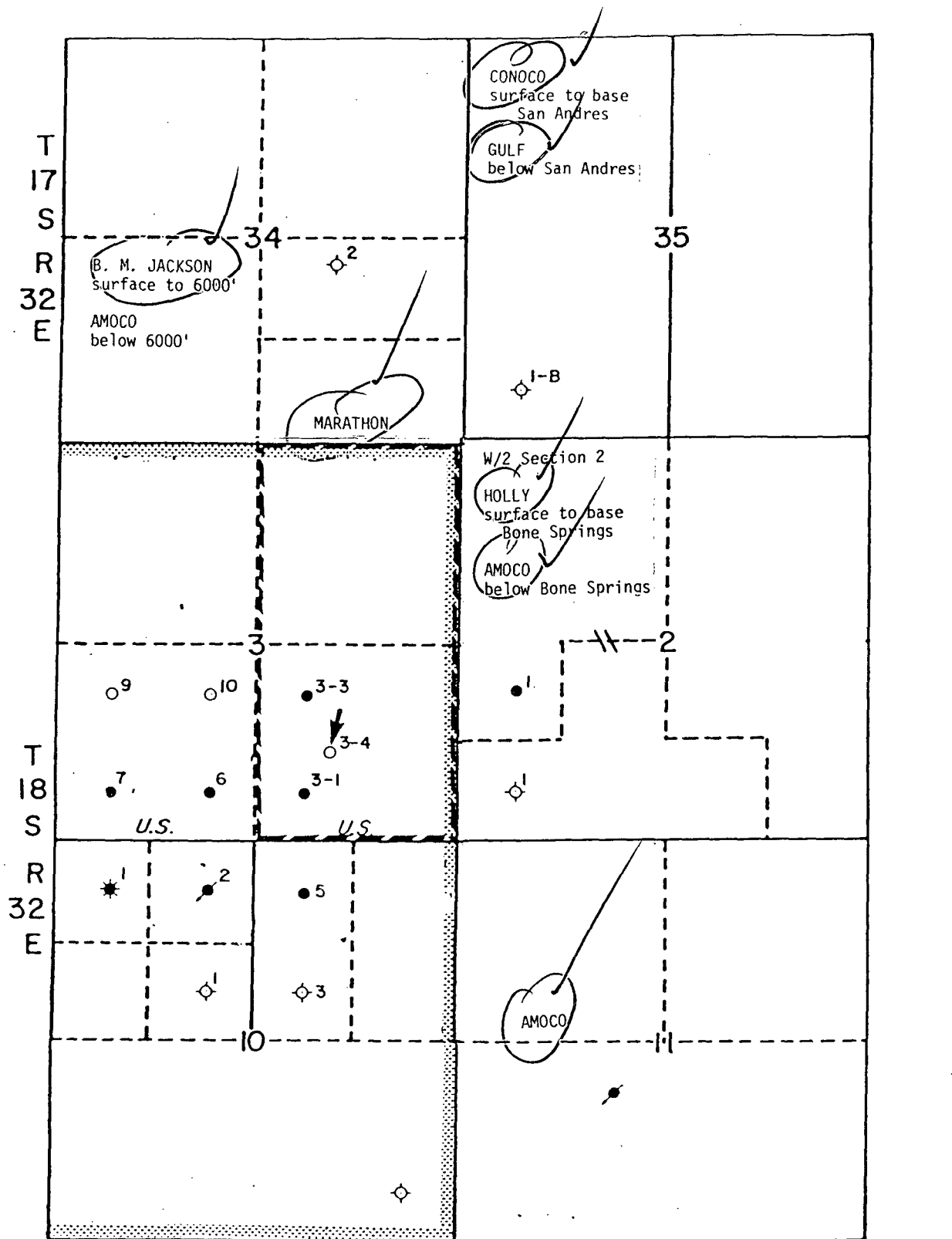
If you decide that it is necessary to have a hearing on the matter, if possible, please schedule for the November 9th hearing.

If you need any additional information or explanation, please call me.

Sincerely,




Thomas J. Hall, III  
Attorney

TJH/mvr  
Enclosures



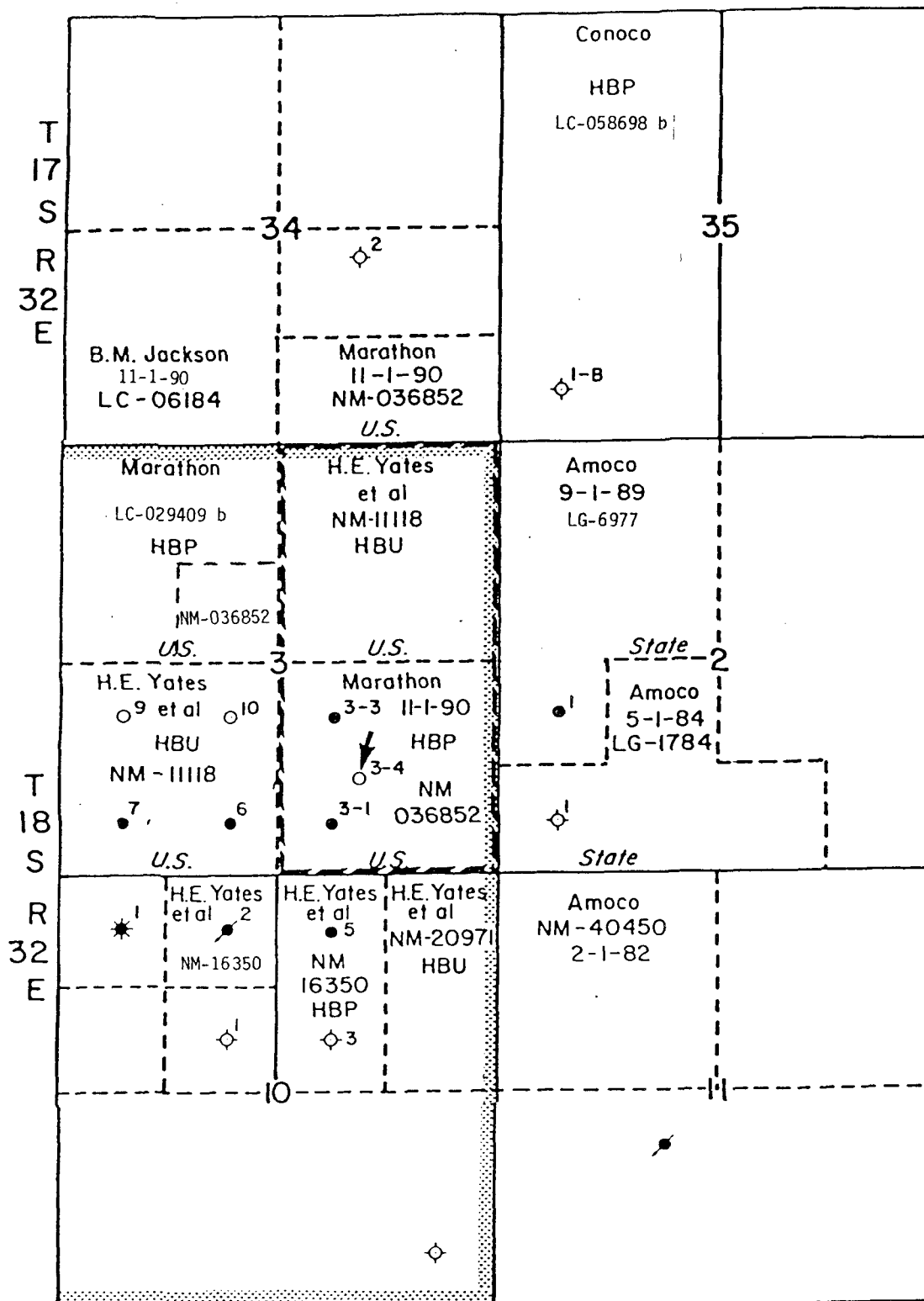
YOUNG DEEP UNIT  
H.E. YATES, OPERATOR  
LEA CO. N.M.

YOUNG DEEP UT.3 FED.#4

-  Proposed Proration Unit
-  Young Deep Unit (Morrow and Bone Springs)
-  Proposed drillsite

OPERATOR PLAT  
HARVEY E. YATES COMPANY  
ROSWELL, NEW MEXICO

10/83



YOUNG DEEP UNIT  
H.E. YATES, OPERATOR  
LEA CO. N.M.

YOUNG DEEP UT.3 FED.#4



Proposed Proration Unit



Young Deep Unit (Morrow and Bone Springs)



Proposed drillsite

LEASE PLAT  
HARVEY E. YATES COMPANY  
ROSWELL, NEW MEXICO

10/83



TO: WORKING INTEREST OWNERS

SUBJECT: GEOLOGICAL DISCUSSION FOR THE PROPOSED  
STRAWN-MORROW TEST IN THE YOUNG DEEP UNIT-  
YOUNG DEEP UNIT 3 FED. #4, 1200 Ft. FSL,  
1650 Ft. FEL, Sec. 3, T18S, R32E  
LEA COUNTY, NEW MEXICO

HARVEY E. YATES Company is proposing a 13,000 ft. Strawn-Morrow test in the Young Deep Unit. Proposed location is 1,200 ft. FSL and 1,650 ft. FEL, Sec. 3, T18S, R32E, Lea County, New Mexico. Subsurface and seismic data establish the presence of a major down to the east fault along the east edge of the Young Deep Unit. Seismic data further indicates that a well drilled at the aforementioned location could be as much as 200 ft. structurally high to the Young Deep #1 well at the Strawn level.

#### STRAWN

The Strawn formation in the area of the Young Deep Unit consists primarily of limestones with interbedded shales. The Strawn has the potential of cleaning up very rapidly, forming primarily patch reefs. The main porosity development in these "patch reefs" is from leaching. However, log character suggests there is also some fracturing which would serve to enhance the porosity and permeability. Both the Young Deep 4 Fed. #1 and the Young Deep #1 wells have thin porosity streaks that appear to be fracture porosity more than anything else. The Sinclair State "974" #1 well (Se/Se of Sec. 2) has a cleaner looking limestone at the top of the Strawn, grading into the slightly dirtier limestones with more shale interbeds lower in the section (see cross-section A-A'). The log character of the Sinclair well suggests it might be very near a patch reef core. The Young Deep Unit is on trend with the Petroleum Development (Shell) Querecho Plains Unit #1 well (see cross-section B-B'). The Shell Querecho Plains well is a "patch reef" that, to date, has produced 495 MBO + 835 MMCFG and is still producing approximately 25 BOPD. Net pay off logs is approximately 45 ft. The Querecho Plains "patch reef" is somewhat less than a square mile in aerial extent, approximately the size feature that may be present under the Young Deep Unit.

Subsurface mapping as well as seismic data define fairly well a major down to the east fault trending N-S along the east edge of the Young Deep Unit. This fault parallels the section line between sections 2 and 3 (T18S, R32E), has approximately 500 feet of throw at the Strawn level (800-1000 feet at Devonian), and can be traced some six miles north and 12 miles south of the Young Deep Unit. Subsurface work strongly suggests that the latest stages of this faulting occurred post Strawn time, during latest Pennsylvanian and early Permian (Wolfcampian) time. Similar Strawn facies may be correlated across the fault, yet they are displaced structurally by some 400-500 feet.



Approximately 2/3 of this displacement may be accounted for in the uppermost Pennsylvanian shales. Approximately 1/3 of this displacement may be accounted for in the Wolfcamp carbonate section. Had the later stages of faulting occurred prior to or during Strawn time, the lithofacies would not correlate nearly as well across this fault. Rather, reef development would occur preferentially on the upthrown block with interbedded shales and dirty limestones on the downthrown blocks. It is probable that the fault was active throughout most of middle and upper Paleozoic time, as is evidenced by the greater displacement along the fault with depth (500 ft at Strawn time, 800-1000 ft at Devonian time). This being the case, it is possible that the area on the upthrown block was slightly higher during Strawn deposition and, therefore, slightly better located for reef development and/or porosity enhancement. To unequivocally state that there is Strawn reef development due to roll-over into the fault in the Young Deep area, though, would be a misnomer. However, with the cleaner limestone fingers in the upper Strawn in the Sinclair well (Sec. 2, cross section A-A'), the possibility for Strawn reef development to the west is greatly enhanced. Also, the fact that the last stages of structural movement were after Strawn deposition increases the possibility of fracture enhanced porosity and permeability at the proposed location.

#### WOLFCAMP

The Wolfcamp in this area is primarily a thick, massive dolomite to the north with predominately limestones and shales to the south. Because the last stages of structural activity were occurring during Wolfcampian time, structurally positive areas were very favorable locations for patch reef development. The Wolfcamp in the Sinclair well (Sec. 2) appears to be predominantly fore-reef limestones and limy shales with some good clean reefal material developed. The Young Deep #1 well has some clean, porous "reefal" dolomite present that carried a poor to fair mudlog show. Seismic data and subsurface mapping show the Young Deep #1 well (Sec. 10) to be structurally low to the proposed Young Deep 3 Fed. #4 location. The Sinclair well (sec. 2) is on the down dropped block and, subsequently, is also structurally low to the proposed location. Subsurface mapping in the area indicates that the Wolfcamp cleans up, forming "patch reef" complexes, over the structural highs. These "patch reef" complexes coincide with the structural trends in the area. Due to the magnitude of this down-to-the-east fault, a major N-S structural feature can be mapped trending across the Young Deep Field. A well drilled at the proposed location should be optimally located for Wolfcamp reef development. A well three miles to the south along this same trend produced 168 MBO from a similar Wolfcamp "reef" development.

#### BONE SPRING

In terms of Bone Spring potential, the proposed location will be near the HEYCO Young Deep 3 Fed. #1 and 3 Fed. #3 wells. This location, 1,200 ft. FSL and 1,650 ft. FEL of Sec. 3, was picked because it is the optimum Strawn location. The Bone Spring will be produced should the



deeper objectives fail to be commercial. The Young Deep 3 Fed. #1 has produced 103 MBO + 105 MMCFG as of June, 1983, while the 3 Fed. #3 well has produced 10 MBO + 8 MMCFG through June, 1983. The Bone Spring Formation is currently under water flood. A well drilled at the proposed location should help to effectively drain the reservoir. Because of the waterflood, ultimate recoverable reserves are still estimated to be in excess of 300 MBO.

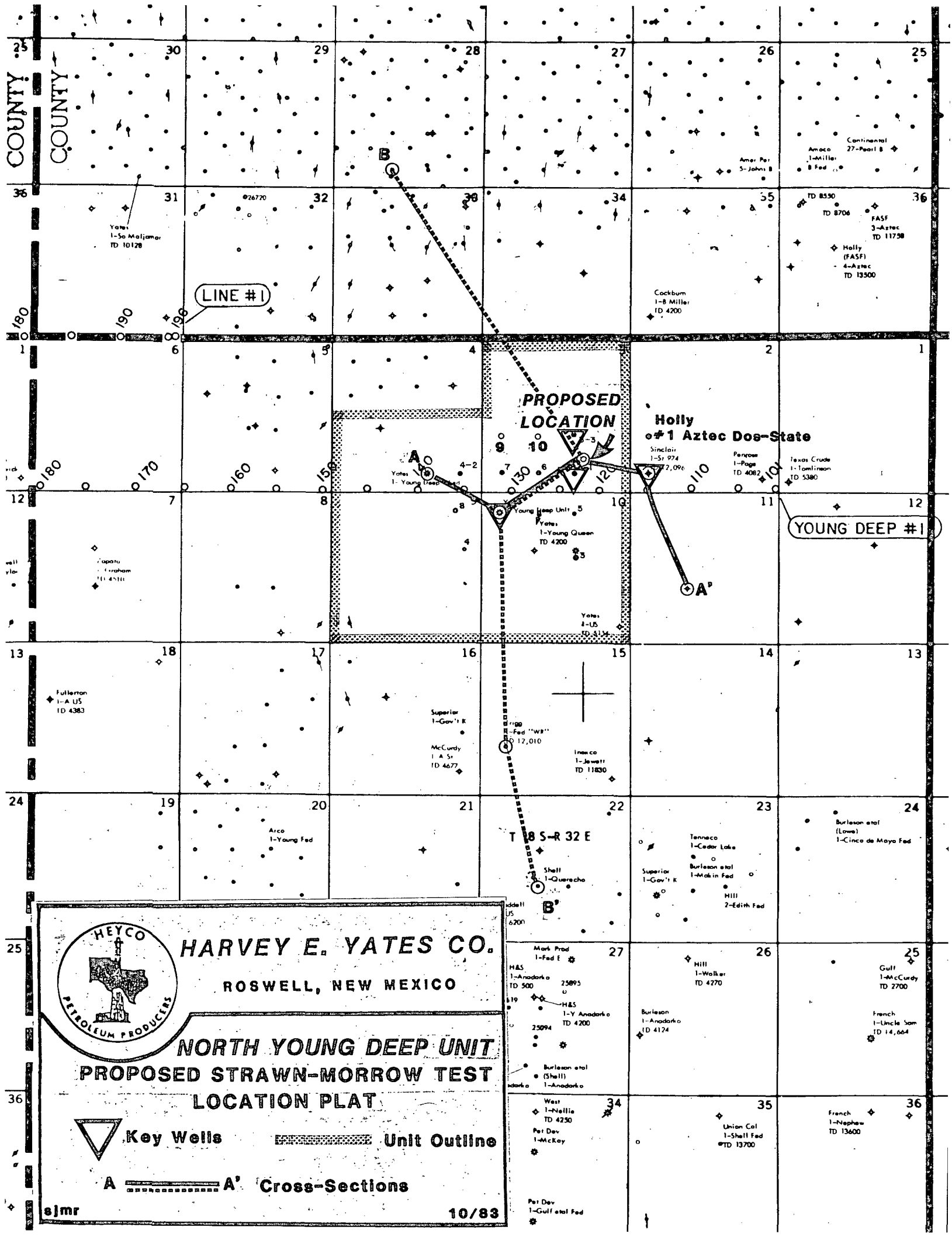
A zone in the upper Bone Spring, 6630-6820 in the Young Deep 3 Fed. #1, appears to be fractured, dolomitic, and very porous. This same interval in the 3 Fed. #3 well is a clean, massive dolomite. The log character suggest the 3 Fed. #1 well is the southern edge of a dolomite development. This zone is a potential new reservoir and needs to be watched and evaluated in the 3 Fed. #4 test.

#### DELAWARE

Another significant facies change occurs in the Delaware sand interval. The Sinclair well, Sec. 2, has some 660 feet of clean Delaware sand above the Bone Spring Formation. This same interval is approximately 400 feet thick in the 3 Fed. #1 well. In the 3 Fed. #3 well, there is some sand, but it occurs in units less than 100 feet thick and has been predominantly replaced by sandy, dolomitic limestones. At the proposed location, the potential exists for finding the updip pinchout of the Delaware sand and setting up a Delaware play in the northern part of the Young Deep Unit.

#### MORROW

HEYCO is proposing the test well to 13,000 feet to test the Morrow sand as well as the Strawn. Although the cumulative production for the Morrow in the immediate area is significantly less than 1 BCFG per well, the structural advantage at the 3 Fed. #4 location appears to be significant enough to warrant the additional 1000 feet of hole necessary to test the Morrow sands. During Morrow time, not much structural activity appears to have occurred. Approximately 40 feet of interbedded sands (gross thickness) were deposited in the area of the Young Deep #1 well. The Young Deep #1 potential for 45 MMCFGPD and produced 342 MMCFG + 12,820 BO from the Morrow before the well was recompleted to the Bone Spring Formation. The Amoco Fed. "BS" Gas Comm. #1, Sec. 11, T18S, R32E, cut some 90 feet of interbedded Morrow sands (gross thickness) with 38 feet of sand having greater than 10% gas effected porosity. These sands were perforated together. The only information released was that the well flowed 1 BO + 6 BW in 1 hr. 30 min. then died. A CIBP was set at 13,065'. There is no record as to treatment or swab tests of the Morrow. With relatively low structural relief during Morrow time (stratigraphic cross section A-A'), Morrow sands were most probably deposited in the area of the proposed location. With the subsequent structural activity that occurred in the upper Pennsylvanian and lower Wolfcampian time, the Morrow along the east side of section 3 is optimally located for a Morrow test.



COUNTY  
COUNTY

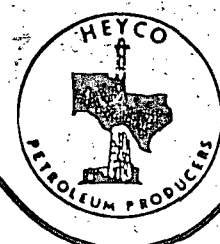
Yates  
1-So Maljamar  
TD 10128

LINE #1

PROPOSED  
LOCATION

Holly  
#1 Aztec Dos-Stat

YOUNG DEEP #1



HARVEY E. YATES CO.  
ROSWELL, NEW MEXICO

NORTH YOUNG DEEP UNIT  
PROPOSED STRAWN-MORROW TEST  
LOCATION PLAT



Key Wells



Unit Outline

A

A'

Cross-Sections

sjmr

10/83

**HEYCO**

**PETROLEUM PRODUCERS**

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED



**HARVEY E. YATES COMPANY**

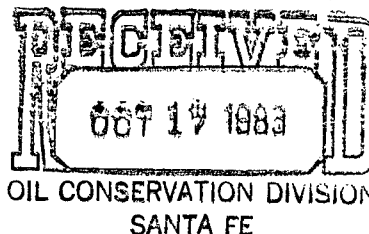
P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

505/623-6601

ROSWELL, NEW MEXICO 88201

October 12, 1983



Gulf Oil Exploration and  
Production Company  
P. O. Box 1150  
Midland, Texas 79702

Attention: Mickey Cohlma, Landman

Re: Unorthodox Well Location -  
Young Deep 3 Federal No. 4  
Young Morrow Gas Pool  
Lea County, New Mexico

Gentlemen:

Attached is a copy of an application filed by Harvey E. Yates Company, as operator of the Young Deep Unit, with the New Mexico Oil Conservation Division, requesting the approval of an unorthodox well location 1,200 feet from the south line and 1,650 feet from the east line of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. This well is to test the Morrow formation.

If you have no objection to the proposed location, please so indicate in the space provided below and return one copy of this letter to Harvey E. Yates Company, P. O. Box 1933, Roswell, New Mexico, to the attention of R. T. Avery.

Your prompt attention to this matter will be greatly appreciated.

Very truly yours,

R. T. Avery  
Projects Manager - Land

RTA/mvr  
Attachments

OBJECTION TO THE PROPOSED LOCATION IS HEREBY WAIVED.

GULF OIL EXPLORATION & PRODUCTION COMPANY

By: \_\_\_\_\_

Date: \_\_\_\_\_

**HEYCO**

PETROLEUM PRODUCERS



**HARVEY E. YATES COMPANY**

P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

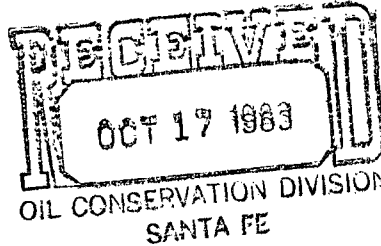
505/623-6601

ROSWELL, NEW MEXICO 88201

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

October 12, 1983

B. M. Jackson  
9201 Meadowbrook Drive  
Dallas, Texas 75220



Re: Unorthodox Well Location -  
Young Deep 3 Federal No. 4  
Young Morrow Gas Pool  
Lea County, New Mexico

Dear Mr. Jackson:

Attached is a copy of an application filed by Harvey E. Yates Company, as operator of the Young Deep Unit, with the New Mexico Oil Conservation Division, requesting the approval of an unorthodox well location 1,200 feet from the south line and 1,650 feet from the east line of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. This well is to test the Morrow formation.

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Your prompt attention to this matter will be greatly appreciated.

Very truly yours,

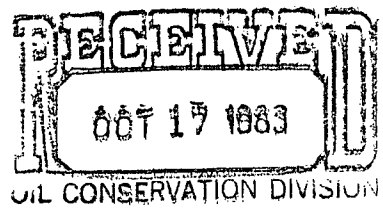
R. T. Avery  
Projects Manager - Land

RTA/mvr  
Attachments

OBJECTION TO THE PROPOSED LOCATION IS HEREBY WAIVED.

B. M. JACKSON

\_\_\_\_\_  
Date: \_\_\_\_\_



**HEYCO**



**HARVEY E. YATES COMPANY**

**PETROLEUM PRODUCERS**

P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

505/623-6601

ROSWELL, NEW MEXICO 88201

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

October 12, 1983

Holly Energy, Inc.  
2600 Diamond Shamrock Tower  
717 N. Harwood Street, Lock Box 23  
Dallas, Texas 75201

Re: Unorthodox Well Location -  
Young Deep 3 Federal No. 4  
Young Morrow Gas Pool  
Lea County, New Mexico

Gentlemen:

Attached is a copy of an application filed by Harvey E. Yates Company, as operator of the Young Deep Unit, with the New Mexico Oil Conservation Division, requesting the approval of an unorthodox well location 1,200 feet from the south line and 1,650 feet from the east line of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. This well is to test the Morrow formation.

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Your prompt attention to this matter will be greatly appreciated.

Very truly yours,

R. T. Avery  
Projects Manager - Land

RTA/mvr  
Attachments

OBJECTION TO THE PROPOSED LOCATION IS HEREBY WAIVED.

HOLLY ENERGY, INC.

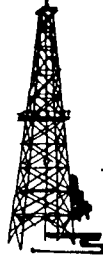
By: \_\_\_\_\_

Title: \_\_\_\_\_

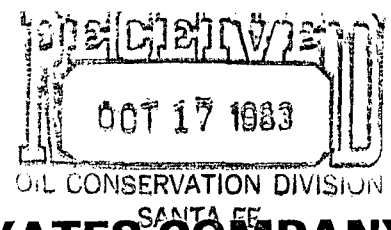
Date: \_\_\_\_\_

**HEYCO**

**PETROLEUM PRODUCERS**



**HARVEY E. YATES COMPANY**



P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

505/623-6601

ROSWELL, NEW MEXICO 88201

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

October 12, 1983

CONOCO, INC.  
P. O. Box 460  
Hobbs, New Mexico 88240

Attention: M. K. Mosley

Re: Unorthodox Well Location -  
Young Deep 3 Federal No. 4  
Young Morrow Gas Pool  
Lea County, New Mexico

Gentlemen:

Attached is a copy of an application filed by Harvey E. Yates Company, as operator of the Young Deep Unit, with the New Mexico Oil Conservation Division, requesting the approval of an unorthodox well location 1,200 feet from the south line and 1,650 feet from the east line of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. This well is to test the Morrow formation.

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Your prompt attention to this matter will be greatly appreciated.

Very truly yours,

R. T. Avery  
Projects Manager - Land

RTA/mvr  
Attachments

OBJECTION TO THE PROPOSED LOCATION IS HEREBY WAIVED.

CONOCO, INC.

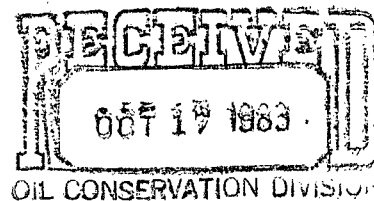
By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**HEYCO**

PETROLEUM PRODUCERS



**HARVEY E. YATES COMPANY**

P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

505/623-6601

ROSWELL, NEW MEXICO 88201

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

October 12, 1983

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

Attention: J. W. Nichols

Re: Unorthodox Well Location -  
Young Deep 3 Federal No. 4  
Young Morrow Gas Pool  
Lea County, New Mexico

Gentlemen:

Attached is a copy of an application filed by Harvey E. Yates Company, as operator of the Young Deep Unit, with the New Mexico Oil Conservation Division, requesting the approval of an unorthodox well location 1,200 feet from the south line and 1,650 feet from the east line of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. This well is to test the Morrow formation.

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Your prompt attention to this matter will be greatly appreciated.

Very truly yours,

R. T. Avery  
Projects Manager - Land

RTA/mvr  
Attachments

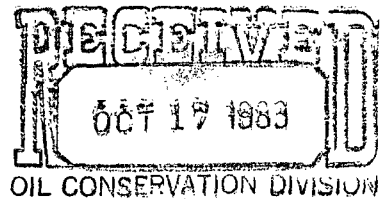
OBJECTION TO THE PROPOSED LOCATION IS HEREBY WAIVED.

MARATHON OIL COMPANY

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**HEYCO**



**HARVEY E. YATES COMPANY**

PETROLEUM PRODUCERS

P. O. BOX 1933

SUITE 300, SECURITY NATIONAL BANK BUILDING

505/623-6601

ROSWELL, NEW MEXICO 88201

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

October 12, 1983

Amoco Production Company  
P. O. Box 3092  
Houston, Texas 77002

Attention: Division Operating  
Superintendent

Re: Unorthodox Well Location -  
Young Deep 3 Federal No. 4  
Young Morrow Gas Pool  
Lea County, New Mexico

Gentlemen:

Attached is a copy of an application filed by Harvey E. Yates Company, as operator of the Young Deep Unit, with the New Mexico Oil Conservation Division, requesting the approval of an unorthodox well location 1,200 feet from the south line and 1,650 feet from the east line of Section 3, Township 18 South, Range 32 East, N.M.P.M., Lea County, New Mexico. This well is to test the Morrow formation.

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Your prompt attention to this matter will be greatly appreciated.

Very truly yours,

R. T. Avery  
Projects Manager - Land

RTA/mvr  
Attachments

OBJECTION TO THE PROPOSED LOCATION IS HEREBY WAIVED.

AMOCO PRODUCTION COMPANY

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_