



R. E. Irelan  
Division Manager  
Production Department  
Hobbs Division  
North American Production

Conoco Inc.  
P.O. Box 460  
726 East Michigan  
Hobbs, NM 88240  
(505) 393-4141

March 24, 1987

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

Attention Mr. W. J. LeMay

Gentlemen:

Application For Administrative Approval to Convert Eaves A Well No. 5 to Water Injection

By the authority of Rule 701 E (3), Conoco Inc. respectfully requests administrative approval to convert its Eaves "A" Well No. 5 from a shut-in oil well to a water injection well in an approved pressure maintenance project located in Section 19, T-26-S, R-37-E, Lea County, New Mexico. The Eaves "A" Pressure Maintenance Project was approved by Orders No. R-3487 and 3487-A and subsequently expanded by the Order No. R-6277.

Conoco Inc. is a co-owner and operator of the Eaves "A" Lease, consisting of the S/2, S/2 NW/4, NW/4 NW/4 of Section 19 and the N/2 N/2 of Section 30, T-26-S, R-37-E, and of all wells within the area of review. The well of this application has declined below the economic limit, with no remedial prospects.

An engineering study indicates the possibility of oil being trapped between producing wells which is not being swept by existing injectors. Granting this application is in the best interest of conservation and prevention of waste and will not impair the correlative rights of any party.

Form C-108 and supporting data are attached to this application. A copy of this letter and attachments are being sent by certified mail to the Bureau of Land Management and to all other owners of the Eaves "A" Lease and Pressure Maintenance Project. If there are no objections within 15 days after receipt of this application, it is requested that an administrative order be written approving this request.

Yours very truly,

HAI/tm

cc: NMOCD-Hobbs  
BIM - Roswell, Attn: Fran Cherry  
Amoco - Houston  
Arco - Midland  
Chevron - Hobbs

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose:  Secondary Recovery  Pressure Maintenance  Disposal  Storage  
Application qualifies for administrative approval?  yes  no
- II. Operator: Conoco Inc.  
Address: P.O. Box 460, Hobbs, NM 88240  
Contact party: Hugh Ingram Phone: 505-392-8176
- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project?  yes  no  
If yes, give the Division order number authorizing the project R-3487, 3487-A, 6277
- 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: Hugh Ingram Title Conservation Coordinator

Signature:  Date: March 24, 1987

- \* 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 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.

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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.

Eaves "A" No. 5 -- Convert to WIW

III. Well Data:

Lease: Eaves "A"

Well: No. 5

Location: 1980' FSL & 1980' FWL, S-19, T-26S, R-37E, Lea County

Casing:

Surface -- 7-5/8", 24# set at 1228' w/500 sx (circ)

Production -- 5-1/2", 14# set at 3219' w/600 sx (TOC at 950'--  
temp survey)

Tubing:

Injection -- 2-7/8", 6.5# set at  $\pm 2880'$  (not lined)

Packer: 5-1/2", Model AD-1 tension packer set at  $\pm 2880'$

Injection Formation/Pool: Yates Y5 - Seven Rivers SR4 zones in  
Scarborough Yates - Seven Rivers pool

Injection Interval - Perfs: 2937'-3213'

Original Purpose for Well: Drilled and completed in 1949 as a  
Scarborough Yates Seven Rivers oil well. Last produced in  
January, 1987. Produced 750,000 BO during economic life.

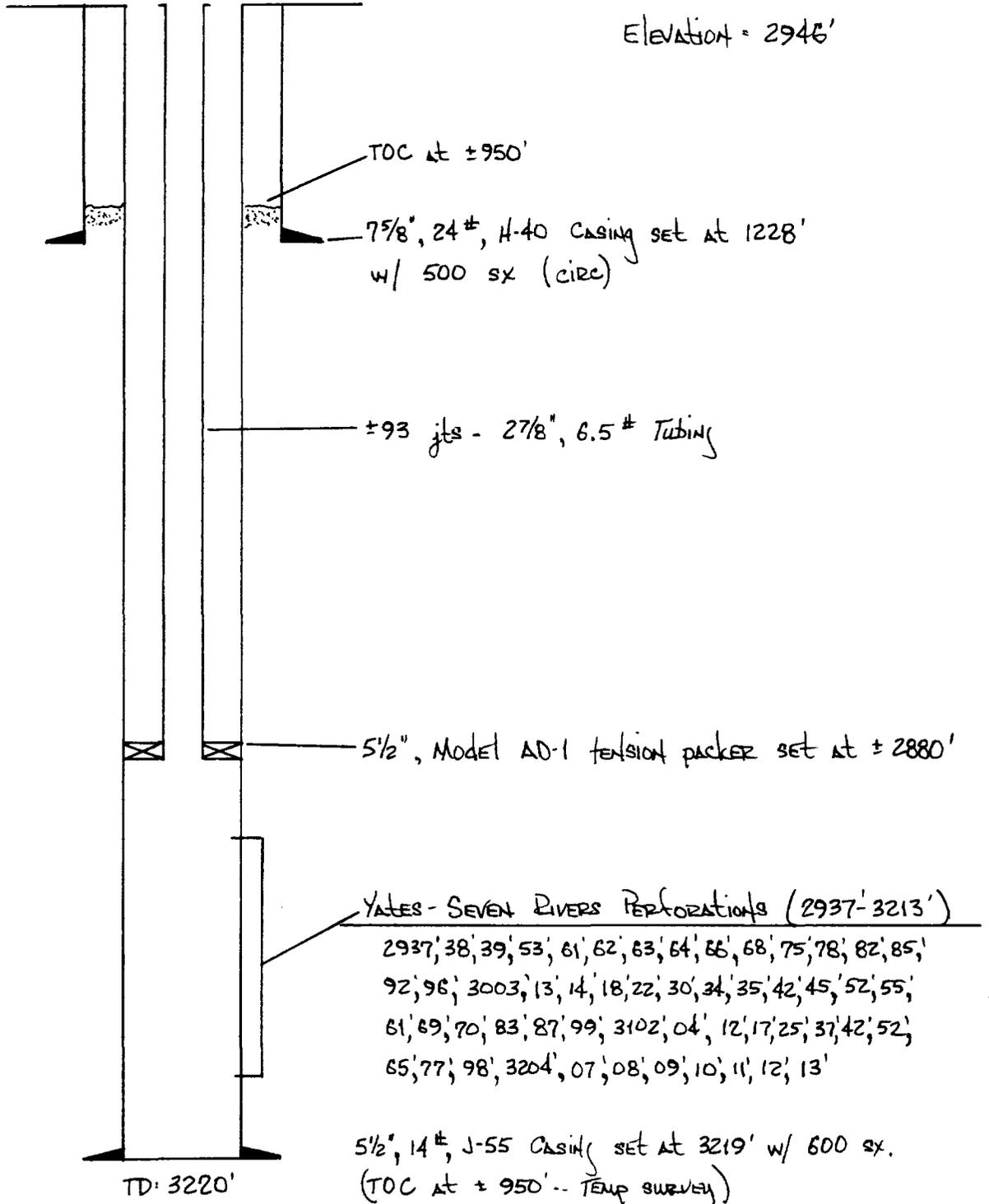
Other Perforated Intervals: None

Depth of Other Nearby Producing Intervals: All wells within 1/2  
mile are operated by Conoco Inc. and produce from same  
formation. See attached schematic.

EAVES "A" No. 5

1980' FSL & 1980' FWL  
Sec 19, T26S, R37E

ELEVATION = 2946'



LJK 3/20/87

EAVES "A" No 5  
PROPOSED SKETCH

NMFU -- Scarborough Pool  
Lee County, NM



*Case 6728*

WELLS IN AREA OF REVIEW

LEASE	WELL	TYPE	CONSTRUCTION	DATE DRILLED	LOCATION	DEPTH	RECORD OF COMPLETION
Conoco Eaves "A"	1	Prod	OH (2840'-TD)	July 1928	330' FSL 2310' FEL	3000'	OH 2840'-3000' (Y4-SR1)
Eaves "A"	2	Prod	OH (3100'-TD)	June 1936	660' FSL 660' FWL	3200'	OH 3100'-3200' (Y5-SR1)
Eaves "A"	3	Prod	OH (3087'-TD)	Feb. 1937	2310' FSL 330' FWL	3192'	OH 3087'-3192' (Y8-SR3)
Eaves "A"	4	Prod	OH (3088'-TD)	Aug. 1947	1980' FNL 1650' FWL	3137'	OH 3088'-3137' (SR2-SR4) Perf 2874'-3037' (Y4-Y9)
Eaves "A"	7	WIW Prod	7" Prod. Csg	Oct. 1950	1980' FSL 2310' FEL	3230'	Perf 3082'-3226' (Y7-SR3)
Eaves "A"	8	Prod	5-1/2" Prod. Csg	Feb. 1953	990' FSL 2310' FWL	3228'	Perf 2933'-3217' (Y6-SR4)
Eaves "A"	9	Prod	5-1/2" Prod. Csg	Sept. 1957	1980' FNL 660' FWL	3250'	Perf 3120'-3186' (SR1-SR3)
Eaves "A"	12	Prod	OH (3085'-TD)	June 1937	660' FNL 1980' FWL	3245'	OH 3085'-3245' (Y5-SR4)
Eaves "A"	15	Prod	5-1/2" Prod. Csg	Dec. 1971	660' FSL 2540' FEL	3307'	Perf 3019'-3267' (SR1-SR4)
Eaves "B-1"	17	Prod	OH (2806'-TD)	Jan. 1941	2310' FNL 2310' FEL	3126'	OH 2806'-3126' (Y1-Y6)
Eaves "B-1"	18	Prod	4-1/2" liner	June 1941	660' FNL 1980' FWL	3222'	OH 2740'-3040' (Y1-Y7) Perf 3085'-3180' (Y8-SR3)
McCallister "A"	7	Prod	5-1/2" Prod. Csg	Dec. 1970	2310' FNL 380' FEL	3236'	Perf 2966'-3223' (Y1-Y8)

VII. Proposed Operation:

Avg Daily Rate: 3000 BWPD

Max Daily Rate: 4000 BWPD

Open System

Avg Injection Pressure: 350 psi

Max Injection Pressure: 500 psi

Re-inject Produced Water only

VIII. Geological Data:

Injection Zone:

Name: Yates-Seven Rivers

Lithology: Sand and Lime

Depth: 2800' ( $\pm 150'$  SL)

Thickness:  $\pm 500'$  (gross)

Fresh Water Zone:

Name: Ogallala

Depth to base:  $\pm 196'$

IX. Stimulation

None. Inject into existing perfs (not frac'd)

X. Log & Test Data

Logs: on file

Tests: IP: 2/49 792 BOPD, 0 BWPD, 917 MCFD  
IMY: 2/87 Trace oil, 1600 BWPD  
Cum: 750 MBO

WATER ANALYSIS REPORT  
furnished by TRETOLITE CHEMICALS

COMPANY: CONOCO  
 LEASE: EAVES  
 SAMPLE POINT: WINDMILL      location: 250' FSL & 2500' FWL, SEC 19, T-26S, R-37E  
 SAMPLE DATE: 3/25/87  
 SAMPLE TEMP.:

pH: 6.4  
 SPECIFIC GRAVITY: ~~1.005~~ 1.002

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO <sub>3</sub>	366.00	6.00
Cl	448.00	12.62
SO <sub>4</sub>	800.00	16.67
Ca	280.00	14.00
Mg	60.75	4.98
Na	375.06	16.31

IONIC STRENGTH = 0.05  
 TOTAL HARDNESS = 950.0 mg/ltr.  
 TOTAL DISSOLVED SOLIDS = 2330.2 mg/ltr.  
 TOTAL IRON (Fe) = 5.0 ppm

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO <sub>3</sub> ) <sub>2</sub>	6.00	486.24
CaSO <sub>4</sub>	8.00	544.56
CaCl <sub>2</sub>	0.00	0.00
Mg(HCO <sub>3</sub> ) <sub>2</sub>	0.00	0.00
MgSO <sub>4</sub>	4.98	299.72
MgCl <sub>2</sub>	0.00	0.00
NaHCO <sub>3</sub>	0.00	0.00
Na <sub>2</sub> SO <sub>4</sub>	3.69	261.90
NaCl	12.62	737.75

CALCULATED SCALING TENDENCIES

SCALING INDEX

CaCO<sub>3</sub> @ 80 DEG F. = -0.2  
 CaCO<sub>3</sub> @ 120 DEG F. = 0.2

SATURATION POINT

CaSO<sub>4</sub> @ 70 DEG F. = 2507.8 MG/LTR.  
 CaSO<sub>4</sub> @ 110 DEG F. = 2564.6 MG/LTR.

(THIS SAMPLE CONTAINED 544.6 MG/LTR. CaSO<sub>4</sub>)

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION



GARREY CARRUTHERS  
GOVERNOR

POST OFFICE BOX 2089  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-5800

May 22, 1987

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

RE: Application to Inject Eaves A Well. No. 5

Dear Hugh:

In regards to the application filed by Conoco March 24, 1987, for authorization to inject into the Eaves "A" Well No. 5, located in Section 19, T-26 South, R-37 East, NMPM, Lea County, some additional information will be required before the application can be processed. Under Part VI of Form C-108, the applicant is required to furnish well construction information on all wells within a half-mile radius of the proposed injection well. The information you submitted is incomplete. Please submit further information on each wells construction, (surface casing, setting depths, and cementing information on all casing strings.)

If you have any questions, please contact myself at (505) 827-5807.

Sincerely,

A handwritten signature in cursive script that reads "David Catanach".

David Catanach  
Engineer

DC/ag



Production Department  
Hobbs Division  
North American Production

Conoco Inc.  
P.O. Box 460  
726 East Michigan  
Hobbs, NM 88240  
(505) 393-4141

June 12, 1987

David Catanach  
NM Oil Conservation Division  
P. O. Box 2088  
Santa Fe, NM 87501

RE: Application to Inject -- Eaves "A" No. 5

Dear Sir:

In response to your May 22, 1987 letter to Hugh Ingram requesting additional information for our application to reject water into the Eaves "A" No. 5 well, located in Section 19, T-26S, R-37E, NMPM, Lea County, a table containing the offset well construction data is attached. I hope this will meet your needs and allow for quick approval of our application.

Please feel free to contact me to discuss any specifics concerning this project. My telephone number is (505) 393-4141 ext. 174.

Sincerely yours,

A handwritten signature in cursive script that reads "L. N. Kendrick".

L. N. Kendrick  
Production Engineer

LNK:mgt

Attachment

Eaves A #5 -- Surrounding Wells Construction Information

<u>Lease:</u>	<u>Well:</u>	<u>Casing:</u>	<u>Setting Depth:</u>	<u>Cement, Sx</u>	<u>TOC</u>	
Eaves "A"	1	16", 70#	535'	mudded	N/A	✓
		10 3/4", 40#	1591'	mudded	N/A	
		8 1/4", 32#	2840'	40	2550'	
Eaves "A"	2	13", 50#	446'	200	circ	✓
		9 5/8", 36#	2728'	400	1040'	
		7", 24	3100'	400	1110'	
Eaves "A"	3	13", 50#	263'	175	circ	✓
		9 5/8", 36#	1563'	450	circ	
		7", 24#	3087'	400	1100'	
Eaves "A"	4	10 3/4", 40.5#	293'	250	circ	✓
		5 1/2", 14#	3089'	500	2175'	
Eaves "A"	7	9 5/8", 36#	1159'	465	circ	✓
		7", 22#	3215'	740	circ	
Eaves "A"	8	7 5/8", 26#	1190'	440	circ	✓
		5 1/2", 14#	3228'	600	circ	
Eaves "A"	9	8 5/8", 24#	374'	275	circ	✓
		5 1/2", 14#	3250'	1209	1000'	
Eaves "A"	12	13", 50#	261'	100	circ	✓
		9 5/8", 36#	1588'	425	485'	
		7", 22#	3065'	425	950'	
Eaves "A"	15	8 5/8", 20#	517'	300	circ	✓
		5 1/2", 14#	3307'	200	1800'	
Eaves "B-1"	17	9 5/8", 36#	1234'	425	circ	✓
		7", 22#	2806'	500	1110'	
Eaves "B-1"	18	9 5/8,	1219'	425	circ	✓
		7", 24#	2740'	425	630'	
		4 1/2", 9.5# liner	3222'	125	2400'	
McCallister "A"	7	8 5/8", 20#	503'	350	circ	✓
		5 1/2", 14#	3236'	100	2600'	



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

GARREY CARRUTHERS  
 GOVERNOR

April 24, 1987

POST OFFICE BOX 1980  
 HOBBS, NEW MEXICO 88241-1980  
 (505) 393-6161

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

APR 27 1987

RE: Proposed:  
 MC \_\_\_\_\_  
 DHC \_\_\_\_\_  
 NSL \_\_\_\_\_  
 NSP \_\_\_\_\_  
 SWD \_\_\_\_\_  
 WFX    XX \_\_\_\_\_  
 PMX \_\_\_\_\_

Gentlemen:

I have examined the application for the:

Eaves A #5-K	19-26-37		
Operator	Lease & Well No.	Unit	S-T-R

and my recommendations are as follows:

OK -- Jerry Sexton

Yours very truly,

Jerry Sexton  
 Supervisor, District 1

/ed