

as CASE 5686: ANADARKO PROD. CO.
FOR A WATERFLOOD PROJECT, EDDY *my*
COUNTY, NEW MEXICO *st*

CASE NO.

5686

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,
ETC.

Case F. 16 5686

BLS

GENERAL OFFICE
P. O. BOX 2517
FORT WORTH, TEXAS 76107



ANADARKO PRODUCTION COMPANY

1014 W. AVENUE K
AREA CODE 505 396-4018

LOVINGTON, NEW MEXICO 88260
CABLE ADDRESS: ANDARK

P. O. Box 67
Loco Hills, New Mexico 88255
April 5, 1977

New Mexico Oil Conservation Commission
P. O. Drawer DD
Artesia, New Mexico 88210

Attn: Mr. Bill Gressett

Re: CASE NO. 5686
Order No. R-5224
Premier L & M Waterflood Project

Federal L No. 2
UL E, Sec. 31, T-17S, R-30E
Eddy County, New Mexico

RECEIVED

APR 8 1977

O. C. C.
ARTESIA, OFFICE

This letter is written in response to a provision of Order No. R-5224 which states "the operator should conduct tests to determine the pressure at which injection into said well may be maintained without causing fracturing of the cement or formation around the well and resultant migration of injected fluid out of the injection zone".

Current Rate and Pressure - 103 BWPD @ 1400#.

Cement - During October, 1967 a 4½" liner was set through the Grayburg pay zones and cemented with 100 sacks of Class C w/2% CaCL. Halliburton cementing tables show this cement to possess 3935 psi compressive strength at 80° F (bottom hole temperature) after 72 hours setting time.

Dowell Chemical Company's frac guide formulas are used in the calculations shown below to determine the maximum wellhead pressure attained at the time fracturing occurs around the immediate well bore. This fracture pressure is generally agreed to be the instant shut down pressure after a frac job. The Federal L #2 was fraced during September, 1972 w/35,000 gals gelled water and 35,000# sand. The instant shut down pressure was 1600#. (see attached Dowell treating report - Exhibit #1) This was recorded after the flush and while the hole was loaded with fresh water.

P_f (Fracture Pressure) = P_{FGD}

where: P_{FG} = fracturing gradient

D = depth = 3002' (top perforation)

Fracturing gradient = $\frac{P_h + P_w - P_f - P_{pf}}{D}$

where: P_h = hydrostatic pressure, psi = specific gravity x wt/ft of fresh water x D = 1.06 (see Exhibit #2) x .433 x 3002 = 1378#

P_w = wellhead pressure, psi = I.S.D.P. = 1600#

P_f = pipe friction pressure, psi = at the rate of 103 BWPD
I assume this figure to be equal to or only slightly greater than zero, therefore = 0#

P_{pf} = perforation friction pressure, psi = same as P_f = 0#

Then:
$$\left(P_F = \frac{P_h + P_w - P_f - P_{pf}}{D} \times D \right) = (P_h + P_w - P_f - P_{pf}) =$$

$$(P_h + P_w) = (1378\# + 1600\#) = 2978 \text{ psi}$$

Therefore: Fracturing can occur when a wellhead pressure of 1600# together with a hydrostatic of 1378# applies a total force of 2978 psi on the perforations at a depth of 3002'.

It should be noted that this fracturing can occur in a horizontal plane and still be contained within the pay zone. Dowell's frac guide says that a fracture gradient of $<.7$ consists of vertical fractures; $>.7$ but <1 = vertical or horizontal and >1 = horizontal fractures. The fracture gradient here calculates:

$$P_{FG} = \frac{P_h + P_w - P_f - P_{pf}}{D} = \frac{1378 + 1600 - 0 - 0}{3002} = .992$$

This .992 strongly suggests horizontal fractures. Due to this slow rate it would seem that the depth of penetration of a fracture would be quite limited.

Also fracturing can occur between sand stringers within the Grayburg Section without harmful effects since the Grayburg section frequently contains multiple thin sands and our intention is to ultimately flood all sand stringers in this zone.

RECEIVED

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D. C. C.
ARTESIA, OFFICE

Jerry E. Duckles

FOR CONVERSION PURPOSES 24 BBLS EQUALS 1000 GALLONS

ARRIVED ON LOCATION:

TIME LEFT LOCATION	AVG. LIQUID INJ. RATE	ADJ. RATE: SOLIDS INJ.	TOTAL FLUID PUMPED		PROPS AND LIQUIDS INJECTED		
	20.5	21	OIL	WATER	TYPE	SIZE OR PURPOSE	AMOUNT
FINAL PRESSURE	AVG. PRESSURE	FINAL PUMP IN PRESSURE	SHUT IN PRESSURE		RF-40	PHD-FRAC	35,000
	3200	3150	IMMEDIATE	15 MINUTES	SAND	20-40	30,000
WELL LOCATION	DUPONT ENGINEER				SAND	10-20	5,000
WELL NO. N.M.	V.D. Carosono				6-35	GR PEAN	200

LOCATION

OSWELL ENGINEER

1934, N. m.

V. G. Cersano

1000

CUSTOMER REP. CONTACTED

CUSTOMER ☐ SATISFACTORY
 CONSIDERED ☐ UNSATISFACTORY
 SERVICE ☐ UNKNOWN

PHOD. BEFORE TREATMENT

TEST	ALLOWABLE
------	-----------

PROD. AFTER TREATMENT	
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TEST	ALL
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TRETOLITE DIVISION

359 Marshall Avenue / Saint Louis, Missouri 63110
(314) WO 1-3500/TWX 910-760-1660/Telex 44-2417

WATER ANALYSIS REPORT

PROPERTY Madazko Production Co. ADDRESS Loco Hills, New Mex. DATE 6/9/76
 SOURCE Federal J. & M Lease DATE SAMPLED 6/1/76 ANALYSIS NO. 11506
 Analysis Mg/L *Meq/L

1. PH	<u>6.4</u>				
2. H_2S (Qualitative)	<u>Pos.</u>				
3. Specific Gravity	<u>1.060</u>				
4. Dissolved Solids		<u>78,924</u>			
5. Suspended Solids					
6. Phenolphthalein Alkalinity (CaCO_3)					
7. Methyl Orange Alkalinity (CaCO_3)		<u>630</u>			
8. Bicarbonate (HCO_3)		<u>769</u>	$\div 61$	<u>12.6</u>	HCO_3
9. Chlorides (Cl)		<u>46,000</u>	$\div 35.5$	<u>1,296</u>	Cl
10. Sulfates (SO_4)		<u>3,000</u>	$\div 48$	<u>63</u>	SO_4
11. Calcium (Ca)		<u>3,200</u>	$\div 20$	<u>160</u>	Ca
12. Magnesium (Mg)		<u>2,187</u>	$\div 12.2$	<u>179</u>	Mg
13. Total Hardness (CaCO_3)		<u>17,000</u>			
14. Total Iron (Fe)		<u>9.0 ppm</u>			
15. Barium (Qualitative)					
16.					

Milli equivalents per liter

PROBABLE MINERAL COMPOSITION

	Ca	Mg	Na	HCO_3	SO_4	Cl	Compound	Equiv. Wt.	X	Meq/L	=	Mg/L
160							$\text{Ca} (\text{HCO}_3)_2$	81.04		12.6		1,021
179							Ca SO_4	69.07		63		4,290
1,033							Ca Cl_2	55.50		84		4,662
							$\text{Mg} (\text{HCO}_3)_2$	73.17				
							Mg SO_4	60.19				
							Mg Cl_2	47.62		179		8,520
							Na HCO_3	24.00				
							$\text{Na}_2 \text{SO}_4$	71.03				
							Na Cl	58.46		1,033		60,431

Saturation Values Distilled Water 20°C

 Ca CO_3 13 Mg/L $\text{Ca SO}_4 \cdot 2\text{H}_2\text{O}$ 2,090 Mg/L Mg CO_3 103 Mg/L

APR 8 1977

REMARKS Buckles

a/c Salzman - Worsham - Nix - File

Respectfully submitted
TRETOLITE COMPANY

RayShaffner

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 26, 1976

EXAMINER HEARING

IN THE MATTER OF:

Application of Anadarko Production) CASE
Company for a waterflood project,) 5686
Eddy County, New Mexico.)
)

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission:	William F. Carr, Esq. Legal Counsel for the Commission State Land Office Building Santa Fe, New Mexico
For the Applicant:	Jason W. Kellahin, Esq. KELLAHIN & FOX Attorneys at Law 500 Don Gaspar Santa Fe, New Mexico

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General Court Reporting Service
825 Calle Mejia, No. 122, Santa Fe, New Mexico 87501
Phone (505) 982-9212

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I N D E X

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DAN KERNAGHAN

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1 MR. STAMETS: The hearing will please come to order.
2 We will call next Case 5686.

3 MR. CARR: Case 5686, application of Anadarko
4 Production Company for a waterflood project, Eddy County,
5 New Mexico.

6 MR. KELLAHIN: If the Examiner please, Jason
7 Kellahin of Kellahin and Fox, Santa Fe, appearing for the
8 applicant and we have one witness to be sworn.

9 (THEREUPON, the witness was duly sworn.)

10
11 DAN KERNAGHAN

12 called as a witness, having been first duly sworn, was
13 examined and testified as follows:

14
15 DIRECT EXAMINATION

16 BY MR. KELLAHIN:

17 Q Would you state your name, please?

18 A My name is Dan Kernaghan.

19 Q How do you spell that, Mr. Kernaghan?

20 A K-e-r-n-a-g-h-a-n.

21 Q By whom are you employed and in what position?

22 A I'm employed by Anadarko Production Company as
23 Division Evaluation Engineer.

24 Q Have you testified before the Oil Conservation
25 Commission or one of its examiners and made your qualifications

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1 as an engineer a matter of record?

2 A. Yes, I have.

3 MR. KELLAHIN: Are the witness's qualifications
 4 acceptable?

5 MR. STAMETS: They are.

6 Q (Mr. Kellahin continuing.) Mr. Kernaghan, are
 7 you familiar with the application of Anadarko Production
 8 Company in Case 5686?

9 A. Yes, I am.

10 Q. What does the Applicant propose in this case?

11 A. We propose to enter our well, our Federal "L" No. 2
 12 Well and convert it for water injection for the purposes of
 13 waterflooding these leases.

14 Q. Would you give a history of this area; has there
 15 not already been a waterflood in this area?

16 A. Yes, sir.

17 Q. Would you outline what has occurred here?

18 A. Yes, these two, Anadarko's Federal "I." and "M"
 19 leases were part of a waterflood cooperative project made up
 20 of all of Section 31. This project was a waterflood of the
 21 Loco Hills sand only. It was authorized on July 13, 1961
 22 by Order Number R-2032. It gave permission for numerous
 23 injection wells in that section and provided for the injection
 24 of water into the Loco Hills sand which occurs at a depth of
 25 approximately twenty-eight hundred feet below the surface.

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1 Q Now, the sand you propose to flood is also in the
2 Loco Hills Pool?

3 A That's right, it is within the vertical limits of
4 the Loco Hills Pool but it is the Premier sand which occurs
5 some two hundred feet down the hole from the Loco Hills sand.

6 Q Since the other order only authorized injection in
7 the Loco Hills sand a hearing was necessary for this one?

8 A We felt this was true, yes. This project, the
9 Loco Hills flood was developed soon after the initial order
10 in 1961. It was a successful flood but over the past several
11 years it has declined to the point where it is no longer
12 economic and we are recompleting wells into the Premier sand.
13 The wells in the area were originally completed for primary
14 purposes in both the Loco Hills and the Premier. The Loco
15 Hills was separated for operational purposes for the initial
16 project.

17 Q Now, referring to what has been marked as Applicant's
18 Exhibit Number One, would you identify that exhibit?

19 A Exhibit One shows the area surrounding the water-
20 flood project. The "L" and "M" leases are outlined in yellow
21 and the well which we are asking permission to inject into
22 is shown with the red circle.

23 Q Referring to what has been marked Exhibit Number Two,
24 would you identify that exhibit?

25 A Exhibit Number Two is another plat showing this

1 project in somewhat more detail. The red circles are wells
2 which have been recompleted in the Premier sand. The red
3 arrow indicates the well which we propose to convert for
4 injection purposes into the Premier.

5 Q Now, under the old project is the water still being
6 injected into the Loco Hills sand?

7 A It is, into Well No. 6, which is location "J" of
8 Section 31. There are also active injection wells on Newmont's
9 Brigham "A" lease, the east half of the southeast quarter of
10 31.

11 Q As to the other injection wells shown on the
12 exhibit?

13 A They have been abandoned.

14 Q They have been abandoned?

15 A Yes, sir.

16 Q Now, referring to what has been marked as Exhibit
17 Number Three, would you discuss that exhibit, please?

18 A Exhibit Number Three gives the production history
19 of the first three pages of the production history of our
20 Loco Hills waterflood. It shows that it starts at or near the
21 peak producing rate of that flood in 1964 and it shows the
22 history from then until the present time, indicating that it
23 has gone from seventeen, eighteen thousand barrels a month in
24 January of '64 down to approximately fifty barrels a month in
25 April of this year.

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1 The last page of that exhibit shows the production
2 from the Premier sand completions only on our Federal "L"
3 and Federal "M" leases. The initial recompletion into the
4 Premier after the waterflood was in 1972. That was the
5 Federal "L" No. 2 Well. It produced for about two years and
6 we completed the Federal "L" 4 and the Federal "M" No. 5.

7 Q Now, has the production steadily declined in the
8 Premier sands?

9 A Yes. Any individual well, yes, it has. The increase
10 is due to new recompletions.

11 Q So, you have more wells producing in 1976 than you
12 had initially, is that correct?

13 A That's correct.

14 Q In your opinion is it reaching an advanced stage
15 of depletion?

16 A Yes, it is. The sand was depleted for primary
17 production before the Loco Hills waterflood was initiated and,
18 you know, it is still in the same stage of depletion as it was
19 back in '61 when we moved out of it and completed in the
20 Loco Hills zone. Yes, it has had many, many years of primary
21 production prior to the first waterflood.

22 Q In effect, this is actually just another step in
23 the same waterflood, isn't it?

24 A That's correct.

25 Q Now, referring to what has been marked as Exhibit

1 Number Four, would you identify that, please?

2 A Yes, Exhibit Four graphically represents the data
3 shown tabulated in Exhibit Three. It is the production curve
4 of the Loco Hills sand waterflood and the Premier sand comple-
5 tion.

6 Q Now, again on the Premier sand completions, marked
7 increase in 1974, is that due to additional wells?

8 A That is correct.

9 Q Not to any increase from the individual wells?

10 A That is correct, it is due to the recompletion of
11 the Federal "L" 4 and the "M" No. 5.

12 Q Now, referring to what has been marked as Exhibit
13 Number Five, would you identify that exhibit?

14 A Exhibit Five is a schematic diagram of our proposed
15 completion for injection purposes for our Federal "L" No. 2
16 Well.

17 It shows that we intend to inject down plastic-
18 lined tubing set on a packer just above the producing horizon
19 of the Premier zone. It shows that the Loco Hills perforations
20 above that have been squeezed and that the packer will be
21 set below that. It shows that we are estimating a surface
22 injection pressure of about fifteen hundred pounds which is
23 half a pound per foot.

24 Q And then what volume of water will you inject?

25 A We anticipate ultimately three hundred barrels

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1 a day of a fresh, produced water mixture. Initially we do
2 not intend to inject to make up any fresh water. We will
3 inject the produced water from the two leases until we have a
4 chance to recomplete some additional wells into the Premier
5 sand and further develop these leases. As we recomplete
6 these wells we will have more produced water to dispose of.

7 Q Then you propose to re-inject that water, is that
8 correct?

9 A Yes, that is correct.

10 Q And in the event that you continue to flood, will
11 you use fresh water?

12 A Yes, we will.

13 Q What is the source of that water?

14 A Well, it will be from one of the commercial sources
15 in the area. The Loco Hills sand flood had a contract with
16 Double Eagle, I believe it was, to secure water, but the
17 status of that contract is unknown really right now.

18 Q Now, you are utilizing a plastic-coated tubing,
19 are you not?

20 A Yes, we will.

21 Q And you will have a pressure gauge at the surface?

22 A We'll have a pressure gauge or a flow monitor of
23 some sort. We would prefer to leave the annulus open so that
24 we can detect a water flow.

25 Q And that is what you propose to do in this case?

1 A Yes.

2 Q Will you fill the casing-tubing annulus with an
3 inert fluid?

4 A Yes, we will.

5 Q Now, referring to what has been marked as Exhibit
6 Number Six, will you identify that exhibit, please?

7 A This is a Dresser-Atlas sonic log of the proposed
8 injection well, showing the formations of interest and the
9 perforations in this well from three thousand and two to
10 three thousand and twelve feet.

11 Q Mr. Kernaghan, in your opinion will approval of
12 this application result in the recovery of oil that would not
13 otherwise be recovered?

14 A Yes, in my opinion it will.

15 Q Do you have any estimate of what the recovery might
16 be as a result of this waterflood?

17 A We don't at this time, since the two leases are
18 not fully developed, we are still in the process of recompleting
19 these wells. The next well we intend to work on is the "M" 6
20 which is our current injection well that we are using to
21 dispose of the produced water into the Loco Hills sand, so we
22 feel that it is a little early to give an estimate of what
23 the potential might be.

24 Q But you do feel that there is unrecovered oil
25 remaining in the Premier sand?

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1 A. Yes.

2 Q. That can be recovered as a result of the waterflood?

3 A. Yes, I think so.

4 Q. Will the proposed waterflood fully protect correlative

5 rights of the interest owners in the area?

6 A. Yes, I believe it will.

7 Q. In your opinion will it prevent waste?

8 A. Yes.

9 Q. Were Exhibits One through Six prepared by you or

10 under your supervision?

11 A. Yes, they were.

12 MR. KELLAHIN: Mr. Examiner, I would like to offer

13 into evidence Exhibits One through Six.

14 MR. STAMETS: These exhibits will be admitted.

15 (THEREUPON, Applicant's Exhibits One through

16 Six were admitted into evidence.)

17 MR. KELLAHIN: That completes our examination of the

18 witness, Mr. Stamets.

19

20 CROSS EXAMINATION

21 BY MR. STAMETS:

22 Q. Mr. Kernaghan, are there any other Premier floods

23 in the area shown on your Exhibit Number Two at the present

24 time?

25 A. To my knowledge, no. The Newmont West Loco Hills

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1 Unit which encompasses the west half of Section 1 and the
2 acreage around there shown in the cross-hatched outline is
3 an active unit but it is flooding the Loco Hills sand.

4 Q And I believe in your application you requested
5 administrative procedure for the expansion of the flood on
6 these two leases?

7 A That is correct. As we recomplete additional wells and
8 proceed with this project we anticipate adding injection wells.

9 Q This would be the typical type of expansion procedure
10 that the Commission puts in its orders?

11 A Yes.

12 Q How fast do you plan to recomplete these wells into
13 the Premier?

14 A Well, we have plans for reCompleting the "M" 6 just
15 as soon as we can convert the "L" 2 to injection.

16 Q What about General American, do you know if they
17 have any plans to recomplete any closer wells in the Premier,
18 assuming that they are the owner of the southwest quarter of
19 31?

20 A They are the owner. I know of no definite plans
21 though they have, as you can see, reCompleted their "F" 15, the
22 Beeson "F" No. 2 in the far southwest corner of Section 31 which
23 produced only water on recompletion, so that delayed some of
24 their activity in that southwest quarter but this project is
25 known to them also and I see no reason why they wouldn't

1 proceed with it if, you know, based on favorable results
2 on our property.

3 Q At what depth will the packer be set in this well?

4 A We would like to set it at approximately a hundred
5 feet above the perforation or at twenty-nine hundred feet
6 to allow an interval in there in which to get a zero
7 temperature line on our temperature log. Recently we have
8 presented this as a request in other applications and we
9 feel that it gives more flexibility at a later date when we
10 go to survey the well.

11 Q Do you have a water analysis on the produced water
12 yet?

13 A No, I don't.

14 Q Would you submit one at the time water injection
15 commences?

16 A Okay, we certainly will.

17 Q Now, Mr. Kernaghan, on the recent orders the
18 Commission has tended to limit the pressure on injection wells
19 so that the bottom-hole pressure does not exceed seventy
20 percent of the depth of the well to the perforations. Just
21 some rough calculations on this it appears to me that would be
22 a surface pressure of something on the order of six hundred
23 pounds. Would that be sufficient pressure on this well to
24 allow you to inject?

25 A I don't think it would be sufficient to allow us to

1 inject three hundred barrels a day. I think it would severely
2 hamper our operation here. A pressure of four-tenths to
3 five-tenths pounds per foot at the surface is, generally
4 speaking, what it would take in this area, I believe, to inject
5 sufficient quantities of water.

6 Q Do you have any evidence to indicate that this
7 pressure would not lead to fracturing of the formations in
8 this area, fracturing to the point where water could escape?

9 A No.

10 Q Is there any fresh water in the vicinity?

11 A Not to my knowledge.

12 Q That would be all of the area shown on your Exhibit
13 Number Two, to your knowledge there is no fresh water in the
14 vicinity?

15 A Not to my knowledge there is no fresh water. It
16 is off the caprock several miles and I know of no fresh water
17 wells in the area.

18 Q The community of Loco Hills up there, have they
19 been getting their water piped in off the caprock for a
20 number of years?

21 A I cannot say. I'm not personally familiar with
22 that.

23 MR. STAMETS: Are there any other questions of
24 the witness?
25

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CROSS EXAMINATION

BY MR. RAMEY:

Q Mr. Kernaghan, what has been the injection pressure of the Loco Hills sand flood? Has it been comparable to the half a pound per square foot?

A I think it has been less but it has been so many years since we have had full injection on that project, it was prior to the time that I came with Anadarko that we had full injection. Why don't I research that and write a letter, just drop a note saying what it was because I cannot.

Q You have no indication of fracturing or channeling of waters out of your injection interval?

A No, none that I know of.

Q I do want to complement you on your taste in neckties.

MR. STAMETS: Mr. Kernaghan, along that same line, not about neckties, but Loco Hills, is the Loco Hills zone a more uniform zone, a little easier to flood than the Premier?

THE WITNESS: Yes, it is. It is a much more blanket deposit across the area. The Premier is a more erratic deposit.

MR. STAMETS: What about the cementing on this well, was this carried out late enough that you are confident that you have got a good cement job on the injection well?

1 THE WITNESS: This well was drilled in 1941. The
2 liner was set at a later date when we initiated the Loco Hills
3 flood. We are pretty confident about the cementing job on
4 the liner. The original well was not drilled by us and like
5 I say, it was back in 1941. I think it would be pushing us to
6 say that we are that confident of it.

7 MR. STAMETS: But you are confident the liner for
8 the injection will be?

9 THE WITNESS: Yes, that was worked out by Ambassador
10 and we feel that it will sufficiently protect it.

11 MR. STAMETS: Are there any other questions of
12 the witness? He may be excused.

13 (THEREUPON, the witness was excused.)

14 MR. STAMETS: Anything further in this case. We
15 will take the case under advisement.


16
17 MR. STAMETS: Just for the record in this case, we
18 would note that the Loco Hills was squeezed, the squeezed
19 pressure was three thousand pounds.

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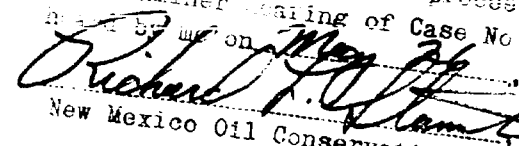
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REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,
do hereby certify that the foregoing and attached Transcript
of Hearing before the New Mexico Oil Conservation Commission
was reported by me, and the same is a true and correct record
of the said proceedings to the best of my knowledge, skill and
ability.


Sidney F. Morrish, C.S.R.

sid morrish reporting service
General Court Reporting Service
825 Calle Mejia, No. 122, Santa Fe, New Mexico 87501
Phone (505) 982-9212

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 5682
held by me on May 24, 1976.

Richard F. Williams, Examiner
New Mexico Oil Conservation Commission

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5686
Order No. R-5224

APPLICATION OF ANADARKO PRODUCTION
COMPANY FOR A WATERFLOOD PROJECT,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 26, 1976,
at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 1st day of June, 1976, the Commission, a
quorum being present, 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 Commission has jurisdiction of this cause and the
subject matter thereof.
- (2) That the applicant, Anadarko Production Company, seeks
authority to institute a waterflood project on its Federal "L"
and Federal "M" Leases, Loco Hills Pool, by the injection of
water into the Premier Sand of the Grayburg formation through
its Federal "L" Well No. 2 located in Unit E of Section 31,
Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico.
- (3) That applicant further seeks an administrative procedure
for expansion of the project by approval of additional injection
and production wells at standard and non-standard locations.
- (4) That the wells in the project area are in an advanced
state of depletion and should properly be classified as
"stripper" wells.
- (5) That the proposed waterflood project should result in
the recovery of otherwise unrecoverable oil, thereby preventing
waste.
- (6) That the operator should take all steps necessary to
ensure that the injected water enters only the proposed injec-
tion interval and is not permitted to escape to other formations
or onto the surface from injection, production, or plugged and
abandoned wells.

Case No. 5686
Order No. R-5224

(7) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Anadarko Production Company, is hereby authorized to institute a waterflood project on its Federal "L" and Federal "M" Leases, Loco Hills Pool, by the injection of water into the Premier Sand of the Grayburg formation through its Federal "L" Well No. 2, located in Unit E of Section 31, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico.

PROVIDED HOWEVER, that the operator should conduct tests to determine the pressure at which injection into said well may be maintained without causing fracturing of the cement or formation around the well and resultant migration of injected fluid out of the injection zone.

PROVIDED FURTHER, that the operator shall file both the test data and the results with the Commission upon the conclusion of such tests.

(2) That injection into said well shall be through internally coated tubing, set in a packer which shall be located approximately 100 feet above the uppermost perforation; that the casing-tubing annulus of the 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 Commission's Artesia district office of the failure of the tubing or packer in any injection wells, the leakage of water or oil from around any producing well, or the leakage of water or oil from 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 subject waterflood project is hereby designated the Anadarko Premier L and M Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(5) The Secretary-Director of the Commission is hereby authorized to approve additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Anadarko Premier L and M Waterflood Project Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 330 feet to any lease line 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

-3-

Case No. 5686
Order No. R-5224

Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

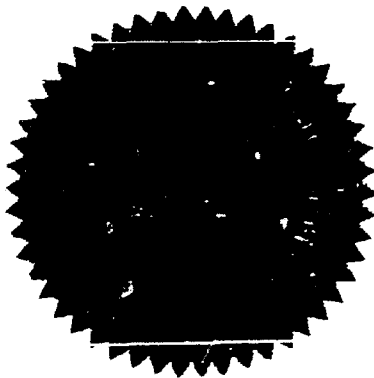
- (A) A plat showing the location of proposed well, all wells within the project area, and offset operators, locating wells which offset the project area.
- (B) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.
- (C) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

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

(6) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(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 hereinabove designated.



S E A L

jr/

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Phil R. Lucero

PHIL R. LUCERO, Chairman

Emery C. Arnold

EMERY C. ARNOLD, Member

Joe D. Ramey

JOE D. RAMEY, Member & Secretary

ANADARKO PRODUCTION COMPANY

A Panhandle Eastern Pipe Line Company Subsidiary

Two Greenway Plaza East, Suite 410
Houston, Texas 77046
(713) 628-7610

May 27, 1976



Mr. Joe D. Ramey, Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

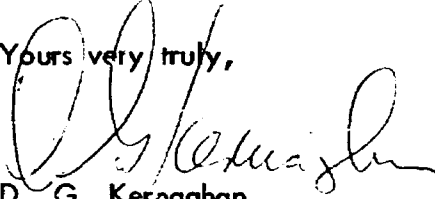
Dear Mr. Ramey:

In response to your question raised in Case 5686 regarding the injection pressure encountered in Anadarko's Loco Hills Flood, Eddy County, New Mexico, we submit the following data:

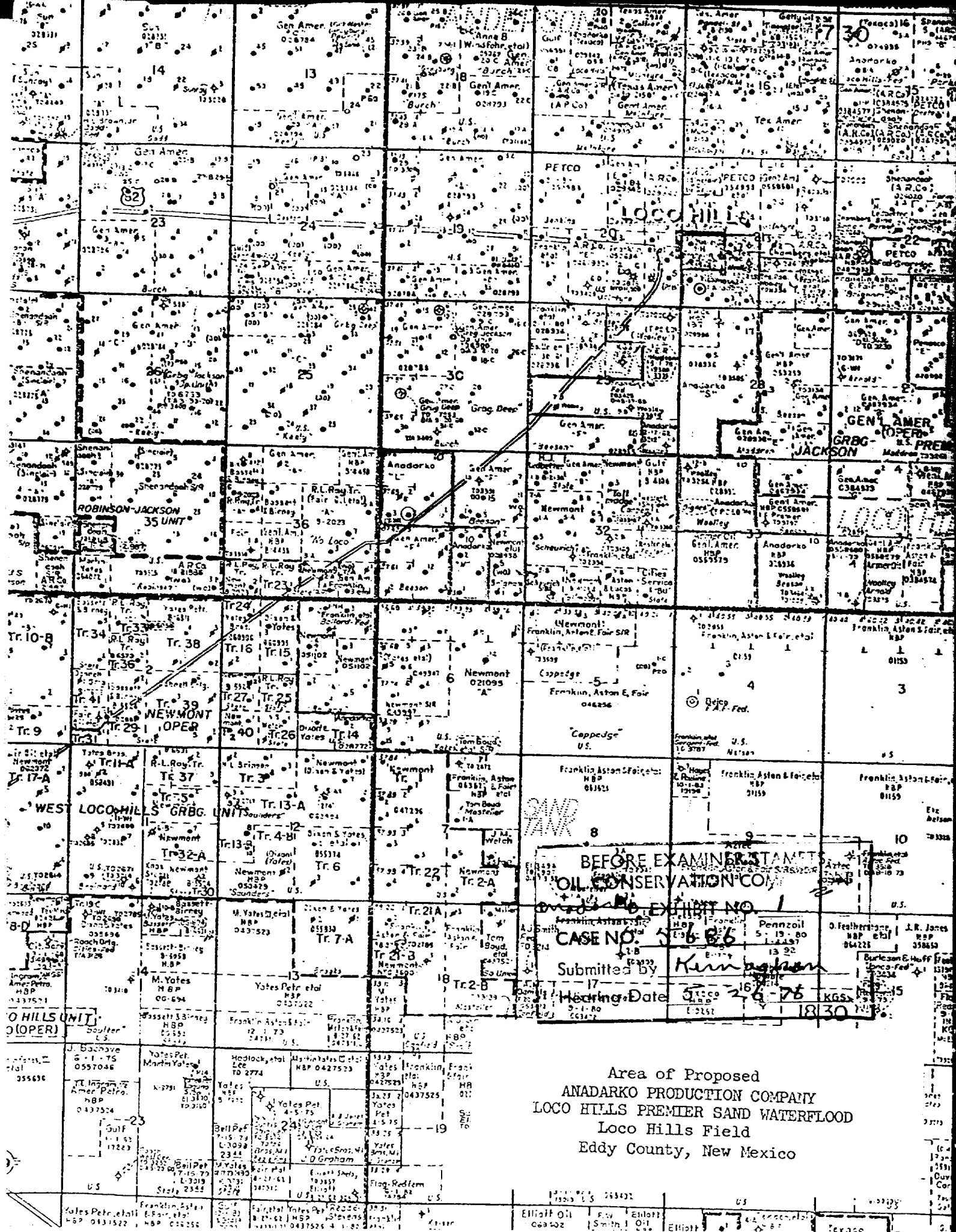
Maximum wellhead pressure after fillup was 1660 psi at a typical injection rate of 650 BWPD. The pressure varied with rate and was as low as 1200 psi in some wells.

Our office in Loco Hills reports that the community of Loco Hills is supplied fresh water by Caprock Water Company.

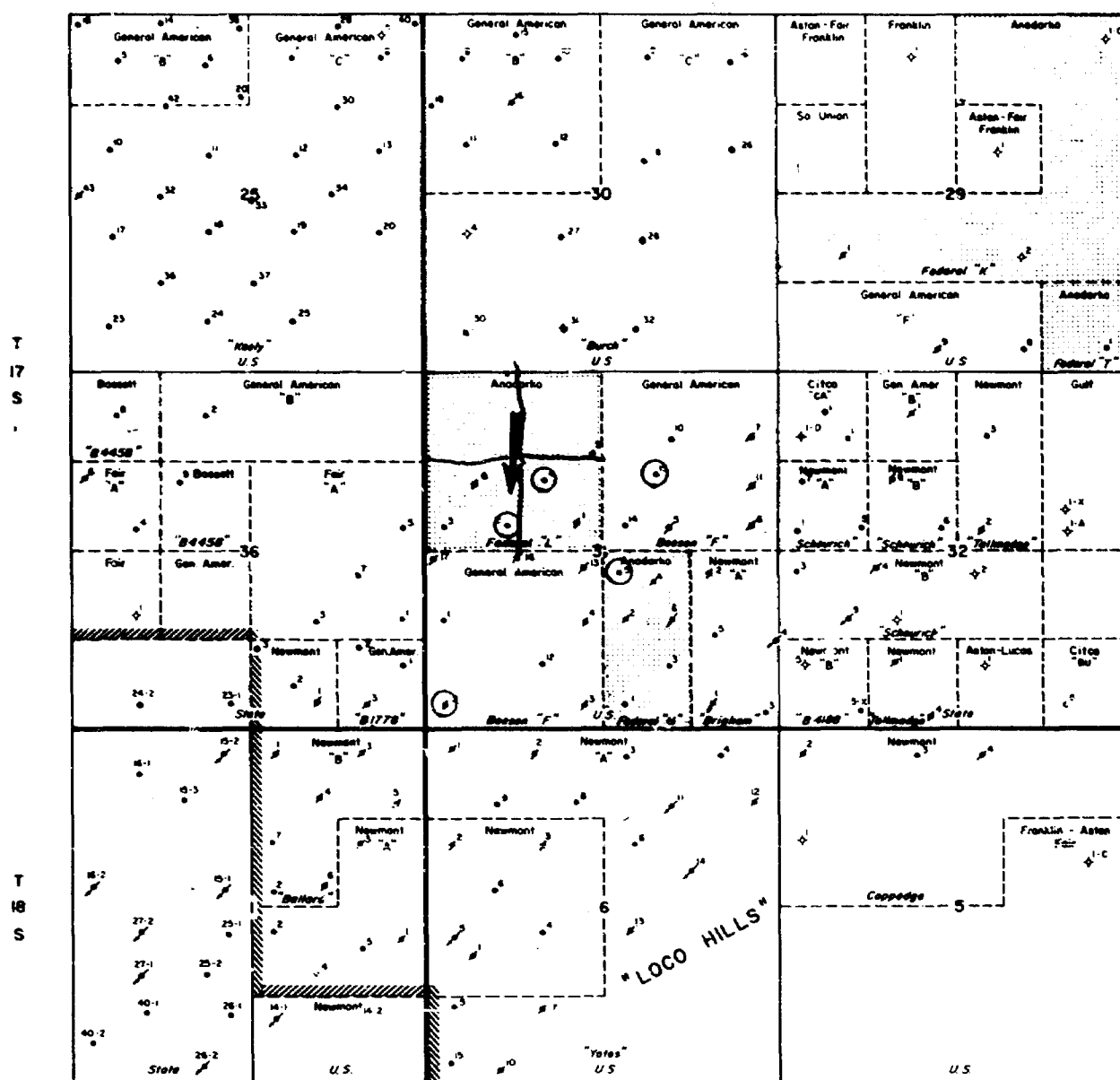
Yours very truly,


D. G. Kernaghan
Division Evaluation Engineer

DGK/mm



R-30-E



- Oil Well
- ◆ Plugged & Abandoned
- ◆ Temporarily Abandoned
- ◇ Dry & Abandoned
- ⚡ Water Injection Well
- ▨ Anadarko Acreage
- ▨▨▨ Newmont Operated
- West Loco Hills Grayburg Unit
- Premier Completions

anadarko EXHIBIT NO. 2

CASE NO. 5686

Submitted by: Don Kernaghan

Hearing Date 5.26.76

LOCO HILLS

EDDY COUNTY, NEW MEXICO

PROPOSED
LOCC HILLS PREMIER SAND
WATERFLOOD

A horizontal scale bar with tick marks at 1200, 2400, 3600, and 4800 feet. The text "SCALE FEET" is centered below the bar.

PRODUCTION HISTORY
ANADARKO LOCO HILLS WATERFLOOD
Eddy County, New Mexico

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1964	Jan	17,883
	Feb	14,604
	Mar	14,229
	Apr	12,625
	May	11,833
	Jun	9,536
	Jul	8,664
	Aug	7,747
	Sep	6,897
	Oct	6,375
	Nov	5,166
	Dec	5,475
TOTAL YEAR		121,034
CUMULATIVE		1,303,661

1965	Jan	6,696
	Feb	5,766
	Mar	5,985
	Apr	6,269
	May	5,999
	Jun	5,829
	Jul	6,278
	Aug	6,277
	Sep	5,187
	Oct	4,977
	Nov	4,432
	Dec	4,105
TOTAL YEAR		67,800
CUMULATIVE		1,370,853

1966	Jan	3,652
	Feb	3,033
	Mar	3,216
	Apr	2,847
	May	2,743
	Jun	2,393
	Jul	2,129
	Aug	1,844
	Sep	1,596
	Oct	1,692
	Nov	1,724
	Dec	1,775
TOTAL YEAR		28,644
CUMULATIVE		1,399,497

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1967	Jan	1,793
	Feb	1,468
	Mar	1,493
	Apr	1,339
	May	604
	Jun	1,300
	Jul	1,300
	Aug	1,894
	Sep	3,558
	Oct	2,831
	Nov	2,583
	Dec	2,730
TOTAL YEAR		22,898
CUMULATIVE		1,422,387

1968	Jan	2,744
	Feb	2,417
	Mar	2,533
	Apr	2,281
	May	2,361
	Jun	2,182
	Jul	2,059
	Aug	2,041
	Sep	1,894
	Oct	1,809
	Nov	1,630
	Dec	1,582
TOTAL YEAR		25,533
CUMULATIVE		1,447,948

1969	Jan	1,618
	Feb	1,373
	Mar	1,485
	Apr	1,324
	May	1,251
	Jun	3,698
	Jul	2,910
	Aug	2,489
	Sep	2,268
	Oct	2,250
	Nov	2,318
	Dec	2,265
TOTAL YEAR		25,249
CUMULATIVE		1,473,197

BEFORE EX
OIL CONSER
ANADARKO E
CASE NO. 5686
Submitted by: Dan Remington
Hearing Date 5-26-76
3

PRODUCTION HISTORY
ANADARKO LOCO HILLS WATERFLOOD
Eddy County, New Mexico

- 2 -

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1970	Jan	2,216
	Feb	2,069
	Mar	1,934
	Apr	1,609
	May	1,669
	Jun	1,354
	Jul	1,314
	Aug	1,151
	Sep	1,117
	Oct	1,059
	Nov	1,030
	Dec	1,039
TOTAL YEAR		17,561

CUMULATIVE 1,490,758

1971	Jan	916
	Feb	867
	Mar	853
	Apr	968
	May	868
	Jun	795
	Jul	884
	Aug	871
	Sep	766
	Oct	897
	Nov	792
	Dec	724
TOTAL YEAR		10,201

CUMULATIVE 1,500,959

1972	Jan	756
	Feb	725
	Mar	802
	Apr	693
	May	714
	Jun	676
	Jul	598
	Aug	608
	Sep	725
	Oct	547
	Nov	541
	Dec	525
TOTAL YEAR		7,910

CUMULATIVE 1,508,869

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1973	Jan	555
	Feb	430
	Mar	488
	Apr	471
	May	502
	Jun	459
	Jul	452
	Aug	398
	Sep	420
	Oct	432
	Nov	422
	Dec	430
TOTAL YEAR		5,459

CUMULATIVE 1,514,328

1974	Jan	423
	Feb	392
	Mar	230
	Apr	214
	May	242
	Jun	247
	Jul	270
	Aug	300
	Sep	323
	Oct	318
	Nov	335
	Dec	291
TOTAL YEAR		3,585

CUMULATIVE 1,517,913

1975	Jan	392
	Feb	327
	Mar	350
	Apr	363
	May	318
	Jun	272
	Jul	262
	Aug	277
	Sep	279
	Oct	186
	Nov	46
	Dec	48
TOTAL YEAR		3,120

CUMULATIVE 1,521,033

<p>BEFORE EXAMINATION OIL CONSERVATION COMMISSION EXHIBIT</p>
<p>CASE NO. _____</p> <p>Submitted by _____</p> <p>Hearing Date _____</p>

PRODUCTION HISTORY
ANADARKO LOCO HILLS WATERFLOOD
Eddy County, New Mexico
-3-

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>	<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1976	Jan	115			
	Feb	31			
	Mar	63			
	Apr	48			

PRODUCTION HISTORY
PREMIER SAND COMPLETIONS
ANADARKO FEDERAL L&M LEASES
Eddy County, New Mexico

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1972	Jan	
	Feb	
	Mar	
	Apr	
	May	
	Jun	
	Jul	
	Aug	
	Sep	225
	Oct	424
	Nov	349
	Dec	313
TOTAL YEAR		1,311
CUMULATIVE		1,311

1973	Jan	303
	Feb	272
	May	274
	Apr	272
	May	257
	Jun	231
	Jul	243
	Aug	188
	Sep	177
	Oct	191
	Nov	176
	Dec	180
TOTAL YEAR		2,764
CUMULATIVE		4,075

1974	Jan	181
	Feb	168
	Mar	1,755
	Apr	1,485
	May	1,710
	Jun	1,178
	Jul	1,149
	Aug	1,281
	Sep	1,202
	Oct	1,170
	Nov	1,212
	Dec	921
TOTAL YEAR		13,412
CUMULATIVE		17,487

<u>YEAR</u>	<u>MONTH</u>	<u>OIL PRODUCTION</u>
1975	Jan	1,256
	Feb	1,258
	Mar	1,264
	Apr	1,129
	May	1,072
	Jun	1,099
	Jul	1,051
	Aug	1,120
	Sep	988
	Oct	1,070
	Nov	1,025
	Dec	1,224
TOTAL YEAR		13,556
CUMULATIVE		31,053

1976	Jan	1,084
	Feb	1,170
	Mar	1,074
	Apr	1,057
	May	
	Jun	
	Jul	
	Aug	
	Sep	
	Oct	
	Nov	
	Dec	

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

EXHIBIT NO. _____

CASE NO. _____

Submitted by _____

Hearing Date _____

Anadarko Production Company - Federal L & Federal M Leases
 Loco Hills Sand Production
 Loco Hills Field, Eddy County, N. M.

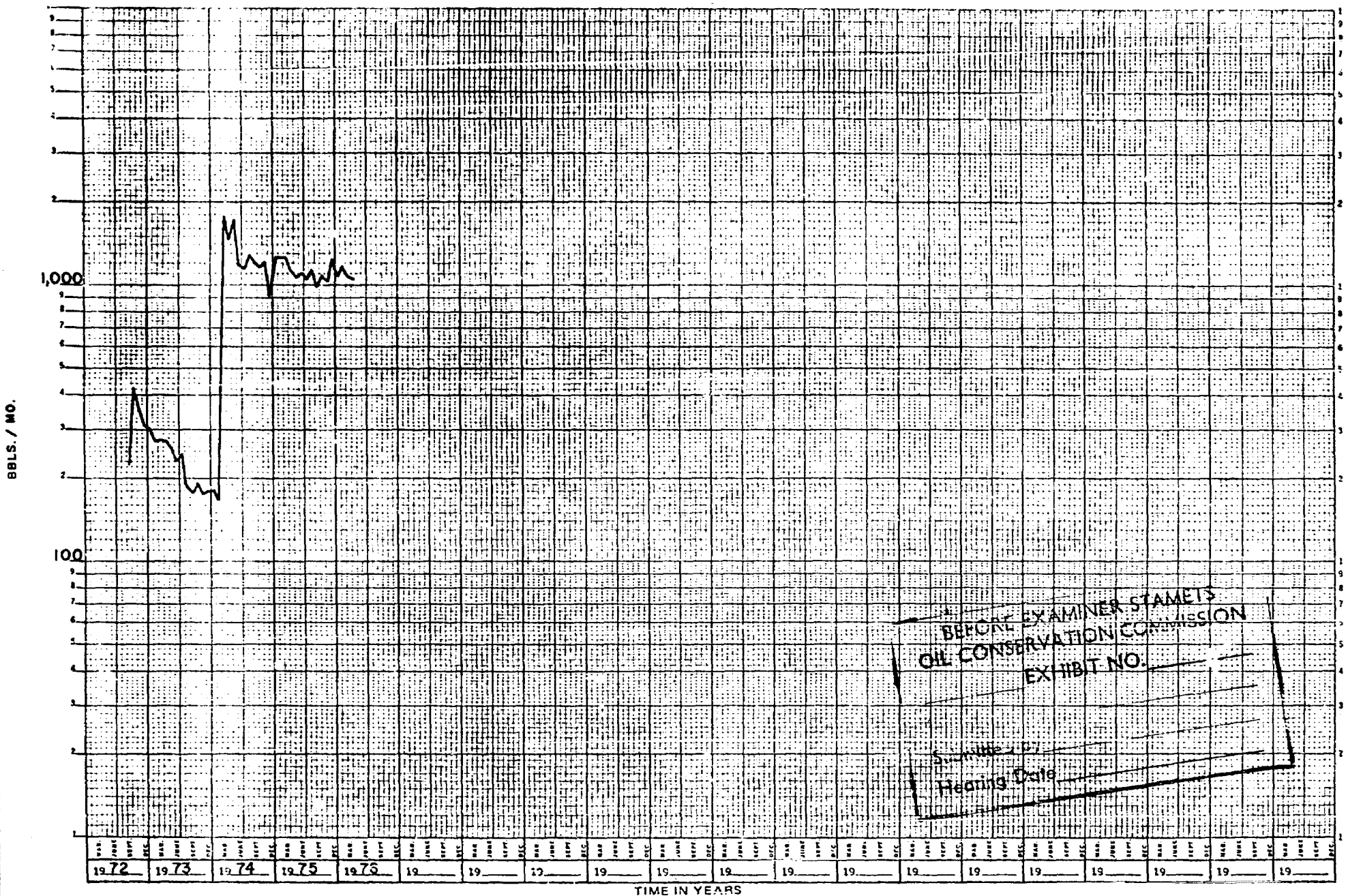


ACCT. CODE NO. _____

LEASE NAME _____

WELL NO. _____

Anadarko Production Company - Federal L & Federal M Leases
Premier Sand Production
Loco Hills Field, Eddy County, N. M.

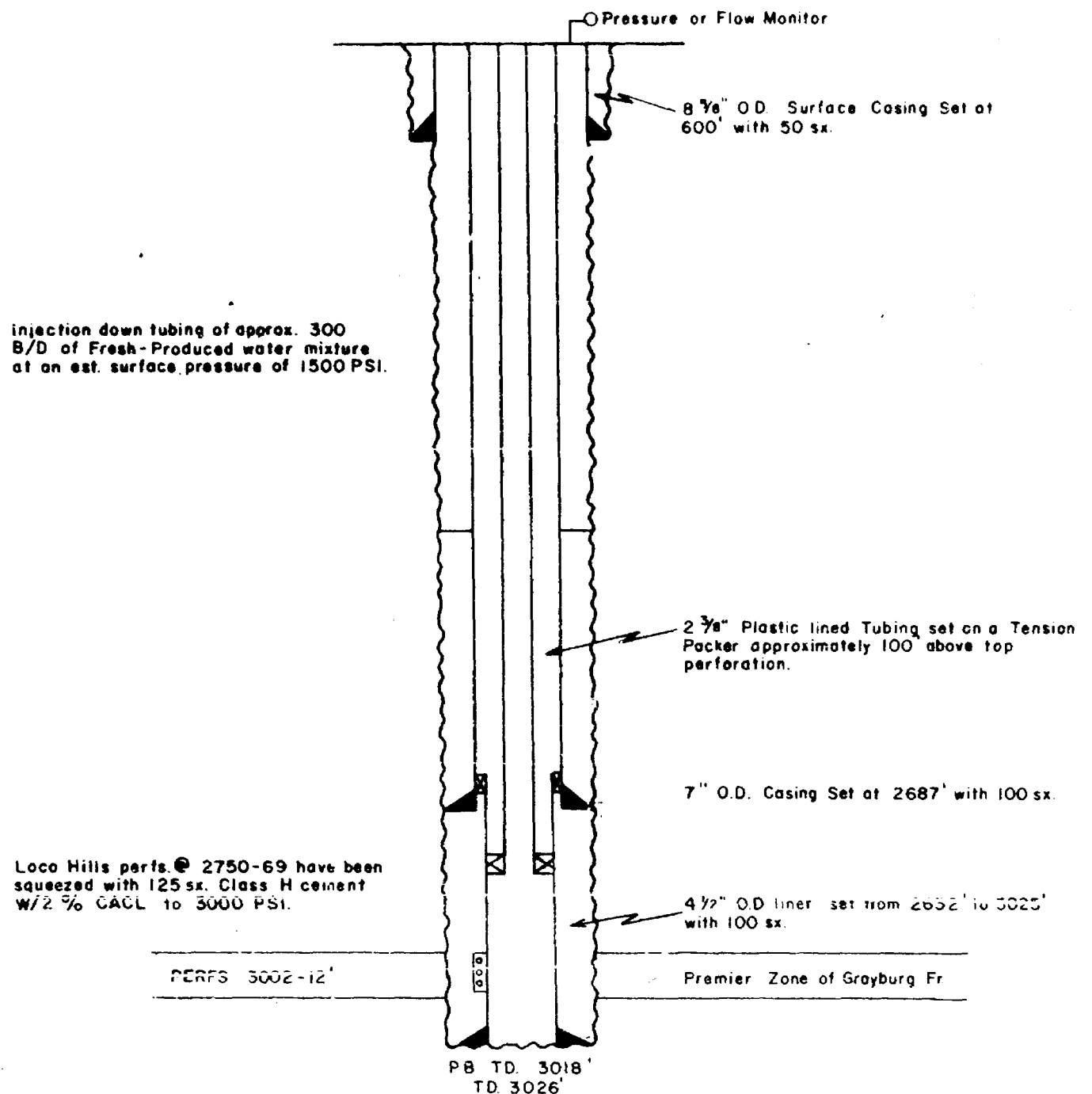


ACCT. CODE NO. _____

LEASE NAME _____

WELL NO. _____

FEDERAL "L" WELL NO. 2
SECTION 31 - T17S - R30E
2310 FNL & 1210 FWL
ELEV 3550' GL



BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

Anadarko EXHIBIT NO. 5

CASE NO. 5686

Submitted by *D. Kernaghan*

Hearing Date 5-26-76

ANADARKO PRODUCTION COMPANY

LOCO HILLS FIELD
EDDY COUNTY, NEW MEXICO

SCHEMATIC DIAGRAM
OF
PROPOSED INJECTION WELL COMPLETION

Case 5686

JASON W. KELLAHIN
ROBERT E. FOX
W. THOMAS KELLAHIN

KELLAHIN AND FOX

ATTORNEYS AT LAW

500 DON GASPAR AVENUE

POST OFFICE BOX 1769

SANTA FE, NEW MEXICO 87501

TELEPHONE 982-4315
AREA CODE 505

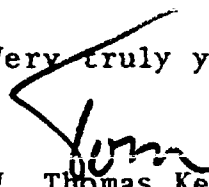
May 3, 1976

Mr. Bill Carr
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Bill:

Please find enclosed on behalf of Anadarko Production Company, our application for waterflood project in Eddy County, New Mexico which we would appreciate being set for hearing on May 26, 1976.

Very truly yours,


W. Thomas Kellahin

CC: Mr. Dan Kernaghan

WTK:kjf

Enclosure

JUN -4 1976
OIL CONSERVATION COMMISSION

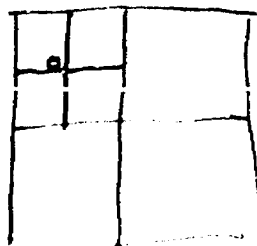
BEFORE THE
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
ANADARKO PRODUCTION COMPANY FOR AUTHORITY
TO INSTALL AND OPERATE A WATERFLOOD
PROJECT IN EDDY COUNTY, NEW MEXICO.

A P P L I C A T I O N

COMES NOW ANADARKO PRODUCTION COMPANY and applies to the Oil Conservation Commission of New Mexico for authority to install and operate a waterflood project on Anadarko's Loco Hills Federal "L" and "M" leases, Section 31, T17S, R30E, Eddy County, New Mexico, for conversion of one well to water injection, for approval of administrative procedures for the expansion or modification of said waterflood project and in support thereof would show:

1. Applicant seeks permission to institute a waterflood project to inject water into the Premier Sand in its Federal "L" #2 well located 2310 feet from the North line and 1210 feet from the West line of Section 31, T17S, R30E, N.M.P.M., through perforations 3002 feet to 3012 feet, the location of said well is shown on the attached plat.
2. The subject acreage was previously in a cooperative project which was waterflooding the Loco Hills sands some 400 feet above the Premier. This project is essentially inactive at this time and all injection in the Loco Hills sand will cease when the subject injection well is converted.
3. Injection will be through plastic lined tubing set on a packer.




4. That the proposed waterflood project will result in the recovery of otherwise unrecoverable oil, thereby preventing waste and the granting of this application will not impair the correlative rights of others.

5. Applicant further requests that administrative procedures be authorized whereby modification or expansion of the project including the drilling of additional injection wells and or producing wells, and the conversion of existing wells to injection at both orthodox and unorthodox locations may be approved without further notice and hearings.

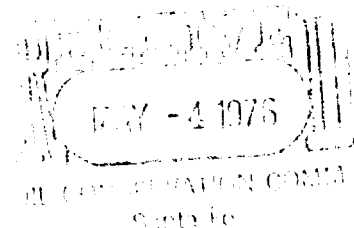
WHEREFORE, applicant respectfully requests this matter be set for hearing before the Commission's duly appointed examiner and that after notice and hearing as required by law, the Commission enter its order approving the application as prayed for.

Respectfully submitted,

ANADARKO PRODUCTION COMPANY

By 
KELLAHIN & FOX
P. O. Box 1769
Santa Fe, New Mexico 87501

Attorneys for Applicant



BEFORE THE
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
ANADARKO PRODUCTION COMPANY FOR AUTHORITY
TO INSTALL AND OPERATE A WATERFLOOD
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Respectfully submitted,

ANADARKO PRODUCTION COMPANY

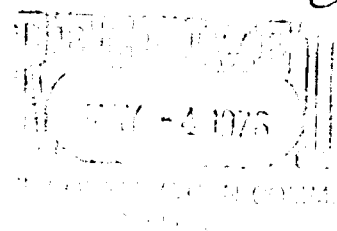
By


KELLAHIN & FOX

P. O. Box 1769

Santa Fe, New Mexico 87501

Attorneys for Applicant



BEFORE THE
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
ANADARKO PRODUCTION COMPANY FOR AUTHORITY
TO INSTALL AND OPERATE A WATERFLOOD
PROJECT IN EDDY COUNTY, NEW MEXICO.

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Respectfully submitted,

ANADARKO PRODUCTION COMPANY

By


KELLAHIN & FOX

P. O. Box 1769

Santa Fe, New Mexico 87501

Attorneys for Applicant

Dockets Nos. 16-76 and 17-76 are tentatively set for hearing on June 9 and June 23, 1976. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 26, 1976

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stanets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 5473: (Reopened) (Continued from May 12, 1976 Examiner Hearing)

In the matter of Case 5473 being reopened pursuant to the provisions of Order No. R-5029, which order established special rules and regulations for the West Knowles-Drinkard Pool, Lea County, New Mexico, including a provision for 80-acre spacing and proration units. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

CASE 5684: Application of Morris R. Antweil for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp and Pennsylvanian formations underlying the W/2 of Section 11, Township 22 South, Range 26 East, South Carlsbad Field, Eddy County, New Mexico, to be dedicated to applicant's Mesa Grande Well No. 1 to be drilled 1980 feet from the North and West lines of said Section 11. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 5685: Application of C & K Petroleum, Inc. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying all of Section 15, Township 24 South, Range 26 East, White City-Pennsylvanian Gas Pool, Eddy County, New Mexico, to be dedicated to a well to be drilled at an orthodox location in Unit K of said Section 15. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 5686: Application of Anadarko Production Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Loco Hills Pool by the injection of water into the Premier Sand formation through its Federal "L" Well No. 2, located in Unit E of Section 31, Township 17 South, Range 30 East, Eddy County, New Mexico. Applicant further seeks an administrative procedure for expansion of the project by approval of additional injection and production wells at standard and non-standard locations.

CASE 5687: Application of Atlantic Richfield Company for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to simultaneously dedicate a previously approved 160-acre non-standard gas proration unit comprising the SW/4 of Section 25, Township 21 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico, to its J. M. Brownlee Well No. 4, located in Unit N of said Section 25 and to its Brownlee Well No. 1, at an unorthodox gas well location 2310 feet from the South and West lines of said Section 25.

dr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5686

Order No. R- 5224

APPLICATION OF ANADARKO PRODUCTION COMPANY
FOR A WATERFLOOD PROJECT, EDDY
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 26
19 76, at Santa Fe, New Mexico, before Examiner, Richard L. Stamets.

NOW, on this day of June, 19 76, the
Commission, a quorum being present, 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 Commission has jurisdiction of this cause and the
subject matter thereof.

(2) That the applicant, Anadarko Production Company,
seeks authority to institute a waterflood project on its
Federal "L" and "M" Leases, Loco Hills
Pool, by the injection of water into the Premier Sand of The Grayburg
formation through its Federal "L" Well No. 2 located in Unit E of
injection wells in Sections 31,
Township 17 South, Range 30 East, NMPM, Eddy
County, New Mexico.

(3) That the wells in the project area are in an advanced
state of depletion and should properly be classified as
"stripper" wells.

(4) That the proposed waterflood project should result
in the recovery of otherwise unrecoverable oil, thereby preventing
waste.

(3) That applicant further seeks an administrative procedure
for expansion of the project by approval of additional injection and
production wells at standard and non-standard locations.

(8) 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.

(9) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Anadarko Production Company, is hereby authorized to institute a waterflood project on its Federal "L" and "M" Leases, Loco Hills Pool, by the injection of water into the Premier Sand of the Grayburg its Federal "L" Well No. 2, located in Unit E of formation through ~~the following described wells in Township xxxxxx South,~~ of Section 31, Township 17/ South, Range 30 East, NMPM, Eddy County, New Mexico.

Provided However, that the operator should conduct tests to determine the pressure at which injection into said well may be maintained without causing fracturing of the cement or formation around the well and the resultant migration of injected fluid out of the injection zone.

(2) That injection into ~~each of~~ said wells shall be through internally coated tubing, set in a packer which shall be located ~~as near as practicable to~~ *approximately 100 feet above* the uppermost perforation; that the casing-tubing annulus of ~~each~~ *the* 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 Commission's Artesia district office of the failure of the tubing or packer in any ~~of said~~ injection wells, the leakage of water or oil from around any producing well, or the leakage of water or oil from 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.

Provided further that the operator shall file both the test data and the results with the Commission upon the conclusion of such tests.

Case NO. _____
Order No. R _____

(4) That the subject waterflood project is hereby designated the Anadarko Premier Land M Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(6) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(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 hereinabove designated.

(8) The Secretary-Director of the Commission is hereby authorized to approve ~~such~~ additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Anadarko Premier Land M Waterflood Project Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 330 feet to any lease line 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 Commission, 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 showing the location of proposed well, all wells within the project area, and offset operators, locating wells which offset the project area.
- (b) A schematic drawing of the proposed well which fully describes the casing, tubing, 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.

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