

CASE 2522: Application of SHELL for
a dual completion of its STATE GA
WELL NO. 2 - Lea County.

452 / 10.

2522

dition, Transcript,
all Exhibits, Etc.

State of New Mexico
Oil Conservation Commission

P. O. BOX 871
SANTA FE

Re: CASE NO. 2522

ORDER NO. **R-2216**

APPLICANT:
Shell Oil Company

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.
A. L. PORTER, Jr.
Secretary-Director

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

OTHER

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. 2522
Order No. R-2216

APPLICATION OF SHELL OIL COMPANY
FOR A DUAL COMPLETION, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 11, 1962, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 18th day of April, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Shell Oil Company, is the owner and operator of the State GA Well No. 2, located in Unit M of Section 16, Township 15 South, Range 36 East, NMPM, Lea County, New Mexico.
- (3) That the applicant seeks permission to complete said State GA Well No. 2 as a dual completion (conventional) in such a manner as to permit the production of oil from the Caudill Permo-Pennsylvanian Pool through a string of 1-inch tubing and the production of oil from the Caudill-Devonian Pool through a string of 2 3/8-inch tubing, a hydraulic casing pump and the casing-tubing annulus.
- (4) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.
- (5) That approval of the subject application will neither cause waste nor impair correlative rights.

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CASE No. 2522
Order No. R-2216

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby authorized to complete its State GA Well No. 2, located in Unit W of Section 16, Township 15 South, Range 36 East, NMPM, Lea County, New Mexico as a dual completion (conventional) in such a manner as to permit the production of oil from the Caudill Permian-Pennsylvanian Pool through a string of 1-inch tubing and the production of oil from the Caudill-Devonian Pool through a parallel string of 2 3/8-inch tubing, a hydraulic casing pump and the casing-tubing annulus.

PROVIDED HOWEVER, That the applicant shall complete, operate and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations.

PROVIDED FURTHER, That the operator shall conduct packer-leakage tests upon completion and annually thereafter during the Annual Gas-Oil Ratio Test Period for the Devonian zone, and at such other times as the Secretary-Director of the Commission may prescribe.

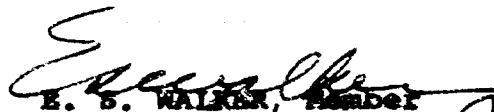
(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

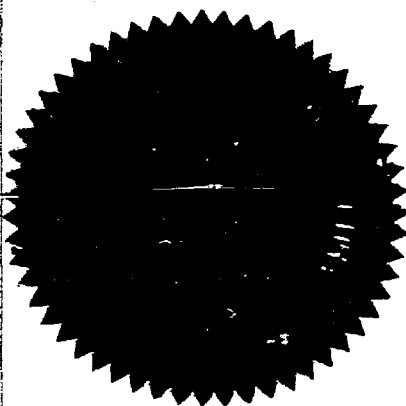
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



EDWIN L. MECHEM, Chairman


E. S. WALKER, Member

A. L. PORTER, Jr., Member & Secretary



esr/

No. 11-62

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 11, 1962

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

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, as Alternate Examiner:

CASE 2521: Application of Pan American Petroleum Corporation for a non-standard gas proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 160-acre non-standard gas proration unit in the Basin-Dakota Gas Pool, comprising the NW/4 of Section 23, Township 29 North, Range 13 West, San Juan County, New Mexico, said unit to be dedicated to the Gallegos Canyon Unit Well No. 94 located 1850 feet from the North and West lines of said Section 23.

CASE 2522: Application of Shell Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its State GA Well No. 2, located in Unit N of Section 16, Township 15 South, Range 36 East, Lea County, New Mexico, as a dual completion (conventional) in the Caudill Permo-Pennsylvanian and Caudill-Devonian Pools with the production of oil from the Permo-Pennsylvanian zone to be through a string of 1-inch tubing and the production of oil from the Devonian zone to be through a parallel string of 2 1/16-inch tubing, a hydraulic casing pump and the casing-tubing annulus.

CASE 2523: Application of Consolidated Oil & Gas, Inc., for an unorthodox gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox gas well location in the Blanco-Mesaverde Gas Pool for its Tribal "C" Well No. 2-6 to be 1650 feet from the North line and 1550 feet from the West line of Section 6, Township 26 North, Range 3 West, Rio Arriba County, New Mexico.

CASE 2524: Application of Cities Service Petroleum Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 320-acre non-standard gas proration unit in the Jalmat Gas Pool, comprising the E/2 of Section 19, Township 24 South, Range 37 East, Lea County, New Mexico; said unit is to be dedicated to

Docket No. 11-62

the Thomas Well No. 2 located at an unorthodox location 2310 feet from the North line and 2210 feet from the East line of said Section 19.

- CASE 2525: Application of Cities Service Petroleum Company for conversion of two wells in the Drickey-Queen Sand Unit, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the conversion of the Drickey-Queen Sand Unit Wells Nos. 7-1 and 21-3 located, respectively, in the NW/4 NW/4 of Section 1 and the SE/4 NE/4 of Section 2, all in Township 14 South, Range 31 East, Chaves County, New Mexico, to water injection wells. Said wells have not received a response from the waterflood operations.
- CASE 2526: Application of Texaco Inc., for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its State "R" (NCT-4) Well No. 2 located in Unit D, Section 7, Township 18 South, Range 35 East, Lea County, New Mexico, as a dual completion (tubingless) in an undesignated Drinkard pool and adjacent to the Vacuum-Abo Pool, with the production of oil from both zones to be through parallel strings of 2 7/8-inch casing.
- CASE 2527: Application of Humble Oil & Refining Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its State "BO" Well No. 1, located in Unit H, Section 12, Township 18 South, Range 34 East, Lea County, New Mexico, as a dual completion (combination) in an undesignated Drinkard pool and adjacent to the Vacuum Abo Pool, with the production of oil from the Abo zone to be through tubing inside 4½-inch casing and the production of oil from the Drinkard zone to be through a parallel string of 2 7/8-inch tubing.
- CASE 2528: Application of R & G Drilling Company for special allowables, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to produce 12 wells in the West Kutz-Pictured Cliffs Gas Pool and 2 wells producing from the Farmington formation, located in Sections 22, 27, 28, 32, 33 and 34, Township 28 North, Range 11 West, and in Section 10, Township 27 North, Range 11 West, San Juan County, New Mexico, under a project allowable of 3300 MCF of gas per day to be produced from any well or combination of wells in the project. Applicant further seeks approval to install compression equipment with which to produce said wells.

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Docket No. 11-62

CASE 2529: Application of R & G Drilling Company for an exception to Order No. R-2046, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of the two following described non-standard gas proration units in the Basin-Dakota Gas Pool in San Juan County, as an exception to Order No. R-2046 which established a series of non-standard Dakota Units:

(1) Lots 3, 4, 5, 6 & 7, the SE/4 NW/4 and the E/2 SW/4 of Section 6, and Lots 1 and 2 and the E/2 NW/4 of Section 7, containing 342.51 acres;

(2) Lots 3 and 4 and the E/2 SW/4 of Section 7, and the W/2 of Section 18, containing 320.27 acres, all in Township 30 North, Range 13 West, San Juan County.

iqg/



St. Francis 9
Right 1001

SHELL OIL COMPANY *OFFICE 000*

P. O. Box 1858
Roswell, New Mexico *1962 MAR 22 AM 8:45*

March 20, 1962

Subject: Application to Dual Complete
State GA-2 in Caudill Permo-
Penn and Caudill Devonian
Lea County, New Mexico

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Gentlemen:

Please find attached Shell's application for dual completion of our State GA-2 in the Caudill Permo-Penn and Caudill Devonian. This well, located in Unit N, Section 16, T-15-S, R-36-E, is presently being produced from the Devonian by a hydraulic casing pump. As per the attached schematic, we propose to flow the Permo-Penn through 1" integral joint tubing and continue pumping the Devonian with a hydraulic casing pump.

If this dual completion does not qualify for administrative approval after review of Humble's Case No. 2518, we request this application to be placed on the earliest possible docket for a hearing.

Yours very truly,

B. L. Rankin

R. L. Rankin
Division Production Manager

Attachment

*Received
March 23-30-62
[Signature]*

NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

APPLICATION FOR MULTIPLE COMPLETION

MAIL OFFICE 000

Operator Shell Oil Company County Lea Date March 20, 1962
 Address P. O. Box 1858, Roswell, New Mexico Lease 1962 WAD Well No. 2
 Location of Well Unit N Section 16 Township 15-S Range 36-E

1. Has the New Mexico Oil Conservation Commission heretofore authorized the multiple completion of a well in these same pools or in the same zones within one mile of the subject well? YES _____ NO X
2. If answer is yes, identify one such instance: Order No. _____; Operator, Lease, and Well No.:

Pending Case No. 2518

3. The following facts are submitted:	Upper Zone	Intermediate Zone	Lower Zone
a. Name of Pool and Formation	<u>B. P. Penn</u>		<u>Devonian</u>
b. Top and Bottom of Pay Section (Perforations)	<u>(10,450-10,465')</u> <u>(10,468-10,498')</u> <u>(10,514-10,526')</u>		<u>13,406-13,510'</u>
c. Type of production (Oil or Gas)	<u>Oil</u>		<u>Oil</u>
d. Method of Production (Flowing or Artificial Lift)	<u>Flow</u>		<u>Pump</u>

4. The following are attached. (Please mark YES or NO)

- Yes a. Diagrammatic Sketch of the Multiple Completion, showing all casing strings, including diameters and setting depths, centralizers and/or turbolizers and location thereof, quantities used and top of cement, perforated intervals, tubing strings, including diameters and setting depth, location and type of packers and side door chokes, and such other information as may be pertinent.
- Yes b. Plat showing the location of all wells on applicant's lease, all offset wells on offset leases, and the names and addresses of operators of all leases offsetting applicant's lease.
- Yes c. Waivers consenting to such multiple completion from each offset operator, or in lieu thereof, evidence that said offset operators have been furnished copies of the application.*
- No d. Electrical log of the well or other acceptable log with tops and bottoms of producing zones and intervals of perforation indicated thereon. (If such log is not available at the time application is filed, it shall be submitted as provided by Rule 112-A.)

5. List all offset operators to the lease on which this well is located together with their correct mailing address.

Columbian Carbon Company, 1266 Butternut Street, Abilene, Texas

Cities Service Company, P. O. Box 97, Hobbs, New Mexico

Humble Oil and Refining Company, Box 1600, Midland, Texas

Sunray Mid-Continent Oil Company, 1101 Wilco Building, Midland, Texas

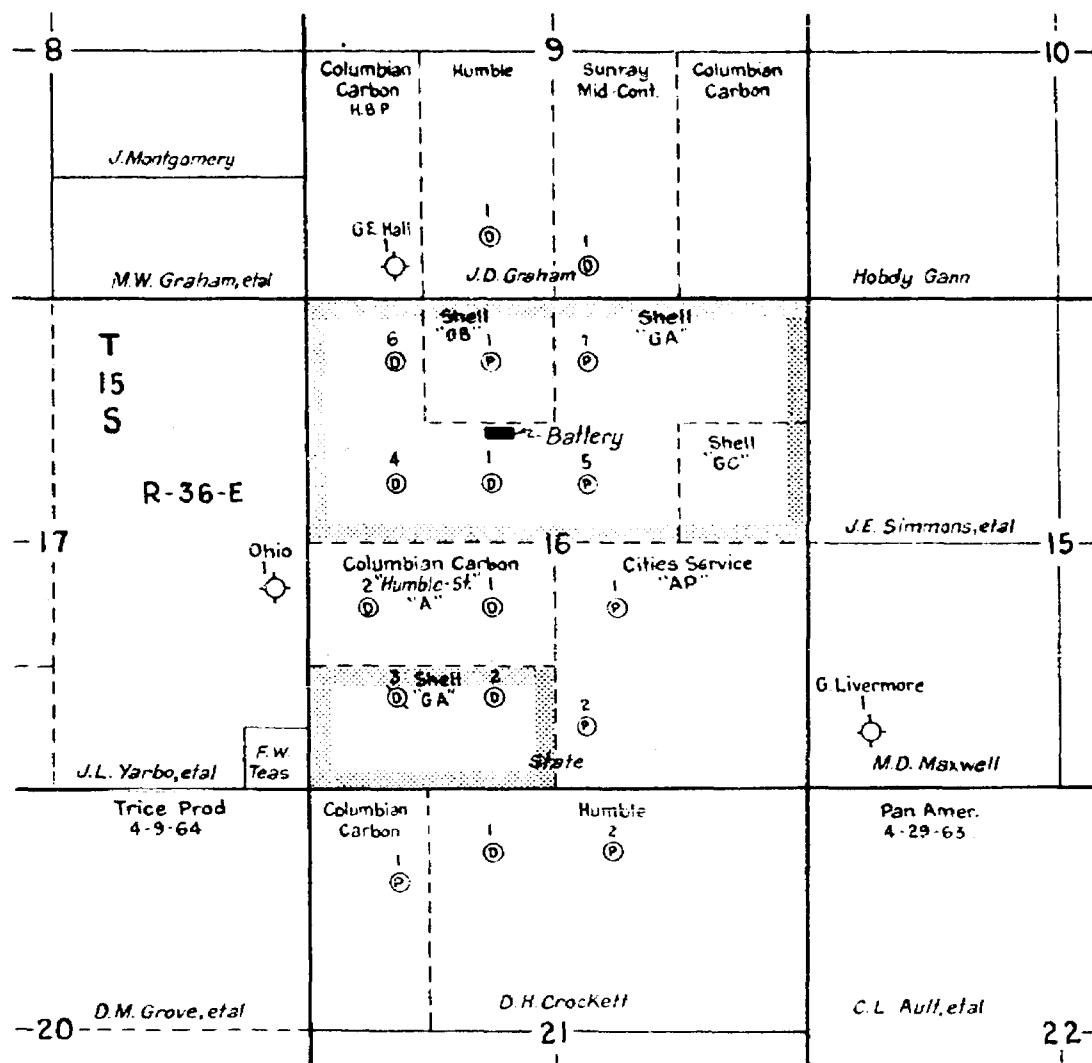
Trice Production Company, P. O. Box 167, Midland, Texas

6. Were all operators listed in Item 5 above notified and furnished a copy of this application? YES X NO _____. If answer is yes, give date of such notification March 21, 1962.

CERTIFICATE: I, the undersigned, state that I am the Division Production Manager of the Shell Oil Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

B. Z. Rankin
Signature

- * Should waivers from all offset operators not accompany an application for administrative approval, the New Mexico Oil Conservation Commission will hold the application for a period of twenty (20) days from date of receipt by the Commission's Santa Fe office. If, after said twenty-day period, no protest nor request for hearing is received by the Santa Fe office, the application will then be processed.
- NOTE: If the proposed multiple completion will result in an unorthodox well location and/or a non-standard perforation unit in either or both of the producing zones, then separate application for approval of the same should be filed simultaneously with this application.



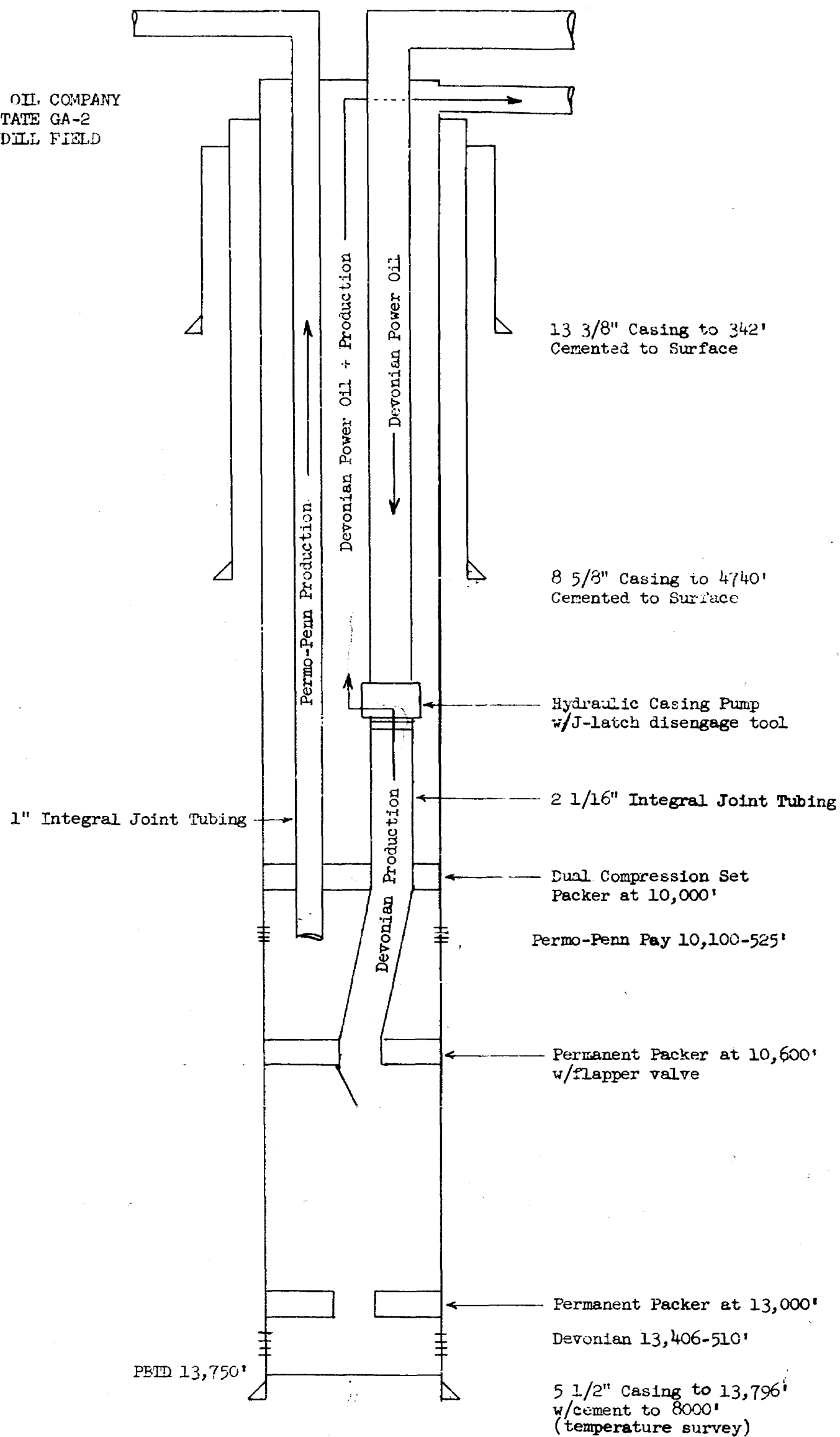
0 500 1000 2000 3000 4000
Scale in Feet

⊙ Permo-Penn. Producer
⊗ Devonian Producer

Shell Oil Company
CAUDILL FIELD
Lea Co., New Mex.
3-20-62

Case 2522

SHELL OIL COMPANY
STATE GA-2
CAUDILL FIELD



Case 2522



2522

SHELL OIL COMPANY OFFICE 000

P. O. Box 1858
Roswell, New Mexico

1962 MAR 22 AM 9 08

March 20, 1962

Subject: Application to Dual Complete
State GA-2 in Caudill Permo-
Penn and Caudill Devonian
Lea County, New Mexico

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Gentlemen:

Please find attached Shell's application for dual completion of our State GA-2 in the Caudill Permo-Penn and Caudill Devonian. This well, located in Unit N, Section 16, T-15-S, R-36-E, is presently being produced from the Devonian by a hydraulic casing pump. As per the attached schematic, we propose to flow the Permo-Penn through 1" integral joint tubing and continue pumping the Devonian with a hydraulic casing pump.

If this dual completion does not qualify for administrative approval after review of Humble's Case No. 2518, we request this application to be placed on the earliest possible docket for a hearing.

Yours very truly,

R. L. Rankin

R. L. Rankin
Division Production Manager

Attachment

1522
MAIN OFFICE OCC
OIL CONSERVATION COMMISSION
1962 MAR 30 AM 6:29
-BOX 2045

HOBBS, NEW MEXICO

DATE March 26, 1962

OIL CONSERVATION COMMISSION
BOX 971
SANTA FE, NEW MEXICO

Re: Proposed NSP _____

Proposed NSL _____

Proposed NFC _____

Proposed DC X

Gentlemen:

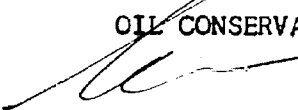
I have examined the application dated 3/22/62
for the Shell Oil Co. State GA-2 16-15-36
Operator Lease and Well No. S-T-R

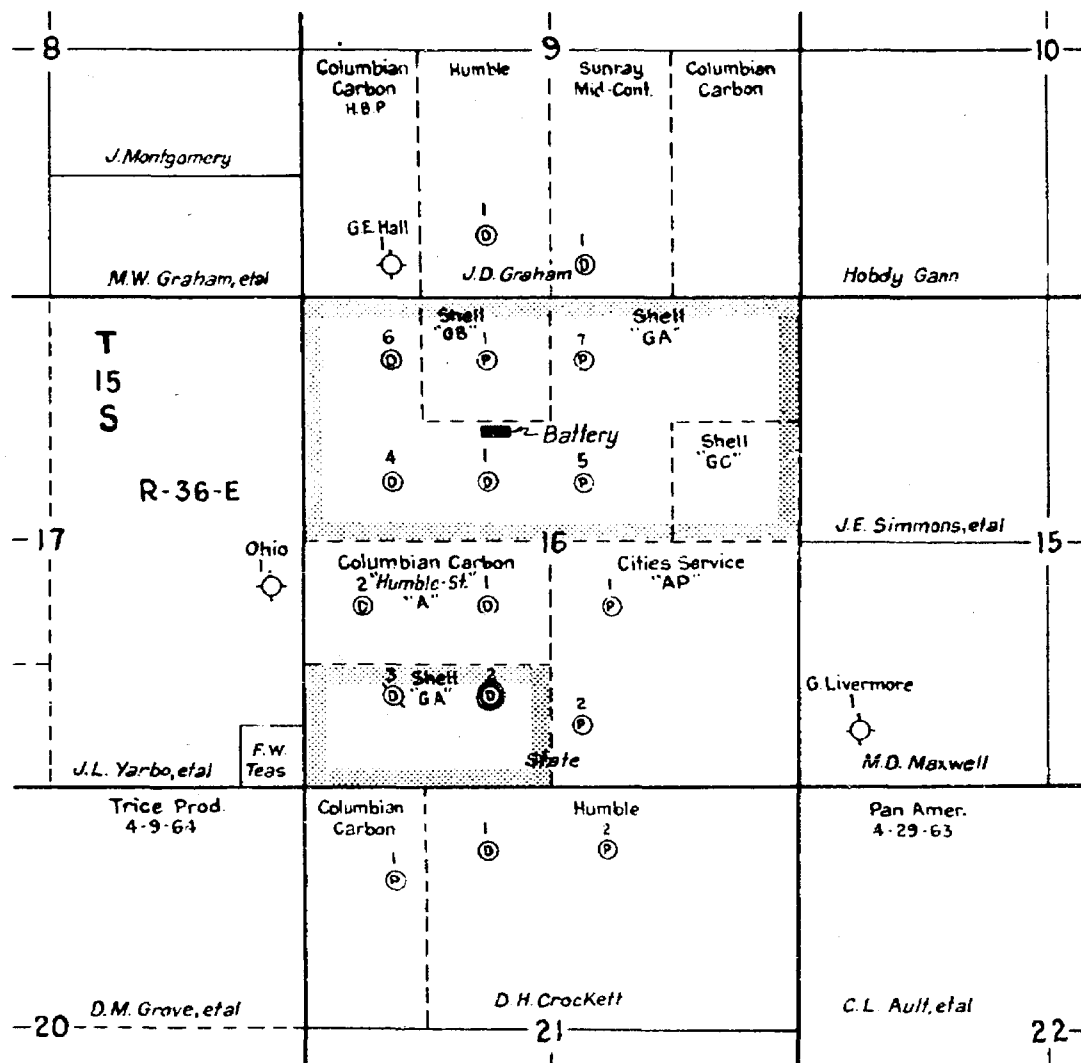
and my recommendations are as follows:

1" tubing for Permo-Penn section does not comply with R-112-A III (g)---E.F.E.

Geologically O.K.---J.W.R.

Yours very truly,


OIL CONSERVATION COMMISSION



0 500 1000 2000 3000 4000
Scale in Feet

Ⓟ Permo-Penn. Producer
Ⓣ Devonian Producer

Shell Oil Company
CAUDILL FIELD
Lea Co., New Mex.
3-20-62

CASE 2522
Exhibit I

SHELL OIL COMPANY
STATE GA-2
CAUDILL FIELD

3/4" & 7/8" Sucker Rods

2 3/8" Integral Joint
Tubing

Conventional Rod Pump

Compression Set
Packer at 10,000'

13 3/8" Casing to 342'
Cemented to Surface

8 5/8" Casing to 4740'
Cemented to Surface

1" Integral Joint Tubing

Hydraulic Casing Pump with
Crossover Assembly 10,000'

Permo-Penn Pay 10,100-525'

Permanent Packer at 10,600'
w/flapper valve

Devonian
Production

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2522
CASE NO. 2522

Permanent Packer at 13,000'

Devonian 13,406-510'

5 1/2" Casing to 13,796'
w/cement to 8000' (Temp. Survey)

PERFD 13,750'

~~CASE 2522~~
~~Exhibit III~~

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 328-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 11, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Shell Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its State GA Well No. 2, located in Unit N of Section 16, Township 15 South, Range 36 East, Lea County, New Mexico, as a dual completion (conventional) in the Caudill Permo-Pennsylvanian and Caudill-Devonian Pools with the production of oil from the Permo-Pennsylvanian zone to be through a string of 1 inch tubing and the production of oil from the Devonian zone to be through a parallel string of 2 1/16-inch tubing, a hydraulic casing pump and the casing-tubing annulus.

CASE 2522

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will call the next case, 2522.

MR. MORRIS: Case 2522: Application of Shell Oil Company for a dual completion, Lea County, New Mexico.

MR. HANNAHS: Fred Hannahe with Seth and Montgomery, Federici and Andrews, in behalf of the Applicant, Shell Oil Company. We have only one witness.

MR. MORRIS: Would you stand and be sworn, please?

(Witness sworn.)



NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING - DANIEL S. NUTTERSANTA FE, NEW MEXICOREGISTERHEARING DATE APRIL 11, 1962TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
<i>D. J. Nutter</i>	<i>Cities Service Petr. Co.</i>	<i>Hobbs</i>
<i>Jason Kellahin</i>	<i>Kellahin & Fox</i>	<i>Santa Fe</i>
<i>George E. Farnham</i>	<i>Consolidated Oil & Gas Inc.</i>	<i>Denver, Colo</i>
<i>W. H. Lanning</i>	<i>El Paso Natural Gas</i>	<i>El Paso, Tex</i>
<i>A. R. Kendrick</i>	<i>OCC</i>	<i>Albuquerque</i>
<i>F. Norman Woodruff</i>	<i>El Paso Natural Gas Co.</i>	<i>El Paso</i>
<i>Ben R. Howell</i>	<i>" "</i>	<i>Santa Fe</i>
<i>A. H. Parker</i>	<i>OCC</i>	

(Whereupon, Applicant's Exhibits 1 and 2, marked for identification.)

WILLIAM R. GREEN

called as a witness, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. HANNAHS:

Q Will you please state your name, address, and occupation?

A William R. Green, 1403 West Seventh Street, Roswell, New Mexico. I'm an engineer with Shell Oil Company, Division Production Engineer.

Q Have you previously testified before this Commission?

A No, I haven't.

Q Will you please give us a brief resume of your educational experience, background, insofar as it pertains to the oil industry?

A I graduated from Texas A & M in 1952 with a B.S. degree in Mechanical Engineering. I joined Shell that year; after spending two years in the Army, I finished Shell's training program and was assigned as a Mechanical Engineer in Hobbs, New Mexico. I spent four years in that capacity. I spent a year and a half in a field training assignment and was assigned to Roswell, New Mexico as Division Production Engineer a year and a half ago, and have been in that capacity ever since.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1112

ALBUQUERQUE, N. M.
PHONE 243 6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

MR. HANNAHS: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir. Please proceed.

Q (By Mr. Hannahs) You are familiar with Shell's application filed in this case, are you not?

A Yes.

Q I wonder if you would please tell the Examiner what Shell is seeking by its application?

A We are seeking to dually complete State GA No. 2, Caudill Field. It is presently a Devonian producer. We wish to dually complete in the Permo-Pennsylvanian pay. We wish to ask exception to Rule 112-A, in that we would like to run a one-inch flow string for the Permo-Pennsylvanian, and we also wish to produce the Devonian production up the casing-tubing annulus.

Q Do you have an exhibit showing the location of the well in question?

A Yes, Exhibit No. 2.

Q Will you please explain to the Examiner what is shown by this exhibit?

A The subject well is circled in red; the offset wells marked with a "P" are the present Permo-Pennsylvanian producing wells; the wells marked with a "D" are the Devonian producing wells. It can be seen that the subject well is offset, a direct offset to the east and a diagonal offset in three directions.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

Q How many wells are there producing from the Permo-Pennsylvanian in that immediate area?

A We're offset by four wells.

Q Four. Is it necessary for you to produce from the Permo-Pennsylvanian to protect drainage, insofar as your well is concerned?

A We feel that it is, since this section is shown on our logs.

Q Is the well in question presently in production?

A Yes, it is. It's presently a Devonian producer.

Q What is the condition of the casing in this well? How old a well is it?

A It's seven years old; it was new casing when it was run in, 17 pound and 20 pound. We have no evidence of any casing corrosion.

Q Do you know of any experience of corrosion in the other wells, the Permo-Pennsylvanian, in the immediate area?

A No, we do not.

Q Do you have any reason to believe that you would have any corrosion problem?

A We are presently inhibiting against corrosion in this well. Production is being made through a hydraulic pumping system where the pump is actuated through power oil string, the production and the power oil are both produced up the tubing-casing annulus. We inject corrosion-inhibiting material in the power oil



string and it inhibits casing corrosion.

Q Have you had any paraffin problem or do you anticipate any paraffin problem if the application is granted?

A No, we do not.

Q Do you have an exhibit showing the physical equipment or hook-up proposed for this well?

A Yes, Exhibit No. 2.

Q Will you explain what Exhibit No. 2 shows?

A The lower packer, permanent packer at 13,000 feet is the present packer that we are using. We'll leave it there; it does not have a flapper on it. We will install a permanent packer at 10,600 feet; that's the second packer from the bottom. It will have a lower flapper to protect from commingling the zones in the well bore while the well is being completed, and subsequently. The small string on the left is the Permo-Pennsylvanian string. It will be one-inch integral joint Hardy Griffin DDS N-80 tubing. This small size tubing is necessary in order that we may produce the Devonian zone at its present capacity.

The Devonian string on the right, we wish to make two and three-eighths integral joint Hardy Griffin DDS N-80 tubing and this will be our power oil string for the Devonian pay.

This well presently is producing approximately 100 barrels of water a day and 900 barrels of oil; so we need a large displacement type pump in order to produce at this rate. This hydraulic casing double-acting pump, we'll get more volume than



we could expect from any other type. The size of this J-latch assembly disengaging tool below the hydraulic pump is such that the only other size tubing that we could pass for the Permo-Pennsylvanian production would be one-inch tubing. That's the largest size we could pass by the J-latch disengaging tool. We need the disengaging tool in order to pull and repair the hydraulic casing pump.

Q What type packers do you intend to use?

A The lower pump, the one shown in the middle here, will be a Baker Model "D" permanent packer with a flapper valve.

Q How about the upper one?

A The upper packer will be a Baker Model "J" dual set compression packer.

Q Has Shell Oil Company used the Baker Model "D" packer in any of its other wells?

A Yes, it's used extensively in our operations.

Q Is that a permanent type packer?

A It is permanent.

Q The Model "J", is that a permanent or retrievable type?

A That is a retrievable type.

Q Do you know if that packer has been used, or is generally used?

A It is generally used, according to the Baker Tool Company. We haven't used it in New Mexico, to my knowledge.

Q Has this type packer been used in dual completion areas



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182ALBUQUERQUE, N. M.
PHONE 243-6691

that you know of?

A Yes, it has.

Q Will a packer leakage test be made?

A Yes.

Q Will you describe how such test will be conducted?

A The lower packer will be checked in the conventional manner by shutting in both zones until the pressures are stabilized, and then producing the Devonian zone while watching the Permo-Pennsylvanian for pressure change. If there is a pressure change, this will indicate a leak in the packer.

The upper packer will be checked by closing in the casing and pressuring up with the hydraulic pump and holding a pressure on the casing. If there should be a leak in the upper packer, this pressure would bleed off into the Permo-Pennsylvanian zone.

Q What is the differential in the pressure zones, differential in pressure in the zones?

A The Devonian zone is approximately 5200 pounds pressure at the present. It's a strong water drive reservoir, so we expect this to remain relatively constant.

The Permo-Pennsylvanian zone, approximately 3,000 feet higher, we expect to have a pressure of 3200 pounds initially. The pressure differential across the lower packer will depend on the fluid above the Devonian zone, since it's 90 percent water, this will hold enough pressure on the Devonian zone so that the



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FARMINGTON, N. M.
PHONE 325-1182ALBUQUERQUE, N. M.
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differential across the lower packer will be practically nil until we begin producing the Permo-Pennsylvanian pay, and if this is drawn down, then the pressure differential may be in the order of 3,000 pounds. The differential across the upper packer will always be from the top after the well is in production, because the Devonian production will be above the compression set packer, tending to set it more.

In addition to the hydraulic head on the packer, we'll have approximately 10,000 pounds from the weight of the tubing. So any pressure differential from under the compression packer will not be as much as the differential from above it. In other words, it will be tending to set more all the time.

Q Will you please describe your cementing program on this well?

A The 13-3/8th was circulated to surface, and the 8-5/8th was circulated to surface. The 5-1/2 inch 17 and 20 pound oil string was cemented back to 8,000 feet.

Q Is the cementing job satisfactory, in your opinion?

A Yes, it was checked with a temperature survey and found at 8,000 feet.

Q Is there any difference in the oil in the two zones, and if so, can it be identified?

A Devonian production is 60-degree gravity and it's a light kerosene color. The Permo-Pennsylvanian production is approximately 44-degree gravity and it's darker.



Q I notice on Exhibit No. 2 you changed the tubing from 2 1/16th to 2-3/8th inch. I believe the application said 2-1/16th inch tubing. You intend to amend your application to that extent, is that correct?

A Yes. We can run 2-3/8th due to the fact that the J-latching assembly will be the largest OD tool in the hole. The 2-3/8ths coupling OD will be smaller than the J-latching assembly, so it would not be a limiting factor. In order to run the hydraulic casing pump with the least friction drop, we can use 2-3/8th tubing.

Q Will the proposed completion in your opinion give assurance of complete separation between the producing formations?

A Yes. We have no reason to believe that it will not.

Q Is it adequate to protect the zones when only one zone is being produced?

A Yes, it is. We have had very few failures with the Model "D" permanent packer, and in the case of the compression set packer, the pressure differential will be tending to set it more, in this case.

Q Have you made any test to determine if production from a one-inch string, as you have proposed here, would be feasible?

A Yes, our company has been working on this problem for years, as well as other companies have. In this particular one-inch string, we calculate from our gradient data that we'll have approximately 1440 pounds pressure loss through this string.



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That's assuming a top allowable production of 164 barrels of oil per day with a GOR of 2,000.

Q What, if any, devices or methods will be used which will indicate a mechanical failure, or any mechanical failure?

A If there were a failure in the Devonian power oil string, this would be obvious from the power pressure loss and the production loss from the Devonian zone. A failure in the Permo-Pennsylvanian tubing string would be evident from water production in the Permo-Pennsylvanian, from the Permo-Pennsylvanian zone, and it would also kill the flowing Permo-Pennsylvanian, possibly. Also if there was any commingling it would be evident in the gravity of the oil change.

Q Is the proposed dual completion in this well of a similar type which has heretofore been approved by the Commission, so far as you know?

A Humble's Case 2518 was of a similar type. They had, they requested permission for an inch and a quarter tubing to produce the Permo-Pennsylvanian, whereas we requested one-inch.

Q Do you have any figures on the economics of this well as a dual completion, as opposed to a new well?

A This dual completion will cost approximately \$40,000. To drill a new Permo-Pennsylvanian well with 4-1/2 inch oil string would cost approximately \$140,000. A new well would be marginal, as to whether we could complete it at all or not, profitably.

Q Do you have anything further to state in support of



the Shell Oil Company's application in this case, or any other exhibits that you care to introduce?

A No.

Q Did you accompany your application with copies of the log on this well?

A Yes.

Q Have these been marked?

A No, they haven't been marked.

MR. HANNAHS: Would you like to have these marked?

MR. NUTTER: We would like to have a copy of the log marked as an exhibit.

(Whereupon, Applicant's Exhibit 3 marked for identification.)

Q (By Mr. Hannahs) Were Shell's Exhibits 1 and 2 prepared by you or under your supervision?

A Yes.

Q And in your opinion would approval of Shell's application in this case be in the interest of conservation and prevention of waste?

A Yes.

MR. HANNAHS: That's all we have at this time. We move the acceptance of Shell's Exhibits 1 and 2, as well as the logs which were not accompanied with the application.

MR. NUTTER: Shell's Exhibits 1 through 3 will be admitted in evidence. Does anyone have any questions?

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MR. MORRIS: Yes, sir.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Green, would you explain to me an operation of the flapper valve? I'm not an engineer, but I would like to know how this valve works. I can't see how your Devonian production gets into the 2 and 3/8ths inch tubing.

A This flapper valve is part of the permanent packer. When this power oil string and upper packer are run, it sticks through the flapper valve and holds it open. In other words, the tubing goes through that valve a little different than is shown there.

Q So once your tubing is set in the packer, then the valve has no further use?

A Right.

MR. MORRIS: That's all I have.

BY MR. NUTTER:

Q Is there any producing horizon between the shoe of the 8-5/8ths at 4740 and the top of the cement at 8,000 in this area?

A Not to my knowledge.

Q There's none being produced at this present time in this pool, is there?

A No.

Q What is the GOR on the Permo-Pennsylvanian?

A Presently it is ranging from 1400 to 2,000.



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Q And yours hasn't been completed yet so you don't know what it will be on this well?

A Right.

Q And the GOR on the Devonian?

A It's too small to measure.

Q You stated that this one-inch tubing will be adequate to produce the Permo-Pennsylvanian. I believe you stated you would have a drop of 1440 pounds, assuming a top allowable of 164, was it?

A Yes.

Q And a GOR of 2,000. What about artificially lifting the Permo-Pennsylvanian?

A If this becomes necessary, we have one possible arrangement that we could artificially lift it. Should we pass this out?

MR. HANNAHS: Let's mark it as an exhibit.

A I have it marked Exhibit 3. I think he marked the logs as Exhibit 3.

MR. HANNAHS: That should be 4.

(Whereupon, Applicant's Exhibit 4 marked for identification.)

A This is another reason that we wish to run 2-3/8ths tubing instead of 2-1/16th tubing, in the event we have to produce the Permo-Pennsylvanian zone, we could switch the strings and produce the Permo-Pennsylvanian by rod pumping and produce the Devonian pay through the one-inch string hydraulically.

Q (By Mr. Nutter) Would you get adequate power oil down



one-inch tubing to produce 1,000 barrels of liquid a day?

A We could, but it would be with a higher pressure drop, an additional thousand pounds pressure drop.

Q What's the remaining expected life of the Devonian?

A Five years.

MR. NUTTER: Any further questions of Mr. Green? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Hannahs?

MR. HANNAHS: I would like to offer Exhibit 4 in evidence.

MR. NUTTER: Exhibit 4 will be admitted in evidence. Do you have anything further?

MR. HANNAHS: No.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2522? We'll take the case under advisement.

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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing was reported by me in machine shorthand, and that the same contains a true and correct record of said proceedings to the best of my knowledge, skill and ability.

DATED this 12th day of April, 1962, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1963.

I do hereby certify that the foregoing is a correct and true copy of the transcript in the hearing of Case No. 2522 heard by me on 4/11/62, 1962.

J. H. H. H., Examiner
New Mexico Oil Conservation Commission

