

CASE 3125: Appli. of SHELL OIL CO.
for the dual completion of its
ANTELOPE RIDGE UNIT WELL NO. 4-1.

CASE No.
3125

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

DRAFT

JMD/esr

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. 3125

Order No. R- 2781

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
October 13, 1964, at Santa Fe, New Mexico, before Examiner
Daniel S. Nutter *Elvis G. Nutter*

NOW, on this day of October, 1964, 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, Shell Oil Company,
seeks authority to complete its Antelope Ridge Unit
Well No. 4-1, located in Unit B of Section 4, Township

24 South, Range 34 East, NMPM, Lea County, New
~~XXXXXX~~ ~~XXXXXX~~

(conventional) ~~XXXX~~
Mexico, as a dual completion ~~XXXXXXXXXX~~ to produce gas
~~XXXXXXXXXX~~

from the Antelope Ridge *marrow* Pennsylvanian Gas Pool through 2 3/8 inch
tubing Pennsylvanian and Antelope Ridge-Devonian Gas Pools through a
parallel strings of 2 7/8-inch tubing, with separation of
zones by a packer set at approximately 13 525 feet.

(3) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.

(4) That approval of the subject application will prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby authorized to complete its Antelope Ridge Unit Well No. 4-1, located in Unit B of Section 4, Township

24 ~~North~~ ^{South}, Range 34 East, NMPM, Lea County, New

Mexico, as a dual completion ~~(conventional)~~ ~~(combination)~~ ~~(tubingless)~~ to produce gas

from the Antelope Ridge- ~~Pennsylvanian~~ ^{move over Pennsylvanian Gas Pool through} ~~pool~~ ^{To produce gas from the} ~~Antelope Ridge-Devonian Gas Pool~~ through

a parallel string of 2 7/8-inch tubing, with separation of zones by a packer set at approximately 13,525 feet;

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 insofar as said rule is not inconsistent with this order;

PROVIDED FURTHER, that the applicant shall take packer-leakage tests upon completion and annually thereafter during the Annual ~~Gas-Oil Ratio~~ ^{Injection Pressure} Test Period for the Antelope Ridge-Devonian Gas Pool. ~~Reliability~~

(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 herein-above designated.

SHELL OIL COMPANY
PROPOSED DUAL COMPLETION
ANTELOPE RIDGE UNIT NO. 4-1
WELL TEST AND RESERVOIR DATA
CASE NO. 3125 - EXHIBIT NO. 4

	<u>Antelope Ridge Morrow-Pennsylvanian Gas</u>	<u>Antelope Ridge Devonian Gas</u>
Net Pay	40'	173'
Porosity	8.0%	5.0%
Permiability	22.4 md.	4.5 md.
Water Saturation	25.0%	35.0%
Reservoir Temperature	172° F.	217° F.
Original Reservoir Pressure	8,716 psi	*6,375 psi
Current Reservoir Pressure	6,400 psi	*6,375 psi
Gas-Oil Ratio	116,667	*46,448
Gas Gravity	0.600	*0.665
Condensate Gravity	48.0° API	*57.5° API
CAOF	38 MMCF/D	*11 MMCF/D

*Denotes DST Data

LOB/psm
10-8-64

See log.

See log.

Bowse
12 1/2 miles per year
Corrosion

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
<u>A</u>	EXHIBIT NO. <u>4</u>
CASE NO. <u>3125</u>	



MAIN OFFICE DUC

SHELL OIL COMPANY

P. O. Box 1858
Roswell, New Mexico

SEP 21 AM 10 54

RECEIVED

SEP 21 AM.

SETH & MONTGOMERY

Seth, Montgomery, Federici & Andrews
P. O. Box 2307
Santa Fe, New Mexico

Attention Mr. R. S. Morris

→ to occ Rom

Gentlemen:

We would appreciate your preparing and submitting as soon as possible, a letter(s) of application for a hearing before the New Mexico Oil Conservation Commission, for the purpose of obtaining permission to dually complete our Antelope Ridge Unit No. 4-1 located:

660' FNL & 1650' FEL Section 4-24S-34E,
Lea County, New Mexico.

The well is now producing as an Antelope Ridge Penn single. We propose to dually complete this well as a conventional gas-gas dual in the Antelope Ridge Pennsylvanian (upper) and Antelope Ridge Devonian (lower) zones. Each zone will be produced through parallel tubing strings. No similar dual completion from the same common sources of supply has been previously authorized by the Oil Commission. The necessity for a hearing is stipulated in Rule 112-A (II) a. of the Rules and Regulations of the N.M.O.C.C.

Attached in quadruplicate are completed copies of the N.M.O.C.C. form "Application for Dual Completion", schematic diagrams of the proposed installation, and lease plats to facilitate your preparation of the application. We would appreciate your advising us as soon as the date of the hearing is known.

Very truly yours,

T. H. Dwyer
Production Division Manager

Attachments

DOCKET MAILED

Date 10-1-64

NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

7-3-58

APPLICATION FOR DUAL COMPLETION

Field Name <u>Antelope Ridge Penn & Devonian</u>		County <u>Lea</u>	Date <u>September 17, 1964</u>
Operator <u>Shell Oil Company</u>		Lease <u>Antelope Ridge Unit</u>	Well No. <u>4-1</u>
Location of Well Unit <u>E</u>	Section <u>4</u>	Township <u>24-S</u>	Range <u>34-E</u>

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

3. The following facts are submitted:	Upper Zone	Lower Zone
a. Name of reservoir	<u>Antelope Ridge Penn</u>	<u>Antelope Ridge Devonian</u>
b. Top and Bottom of Pay Section (Perforations)	<u>12,898' - 13,153'</u>	<u>14,742' - 14,803'</u>
c. Type of production (Oil or Gas)	<u>Gas</u>	<u>Gas</u>
d. Method of Production (Flowing or Artificial Lift)	<u>Flowing</u>	<u>Flowing</u>

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

- Yes a. Diagrammatic Sketch of the Dual Completion, showing all casing strings, including size and setting, 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.
- No c. Waivers consenting to such dual 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.

<u>Gulf Oil Corporation</u>	<u>P. O. Drawer 1938, Roswell, New Mexico</u>
<u>Continental Oil Company,</u>	<u>P. O. Box 1377, Roswell, New Mexico</u>
<u>Pan American Petroleum Corporation</u>	<u>P. O. Box 1540, Midland, Texas</u>
<u>Sunray D-X Oil Company</u>	<u>P. O. Box 128, Hobbs, New Mexico</u>
<u>Phillips Petroleum Company</u>	<u>P. O. Box 2105, Hobbs, New Mexico</u>
<u>S. G. Horne, Jr.</u>	<u>600 No. Wyoming, Roswell, New Mexico</u>

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

CERTIFICATE: I, the undersigned, state that I am the Division Production Mgr. of the Shell Oil (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.


Signature T. H. DWYER

- * 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 dual completion will result in an unorthodox well location and/or a non-standard proration unit in either or both of the producing zones, then separate application for approval of the same should be filed simultaneously with this application.

DOCKET: EXAMINER HEARING - TUESDAY - OCTOBER 13, 1964

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, Alternate Examiner:

CASE 3108: (Continued from the September 30, 1964 examiner hearing)

Application of Monsanto Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Dagger Draw Well No. 1, located in Unit O of Section 6, Township 20 South, Range 25 East, Eddy County, New Mexico, to produce gas from the Strawn and Morrow formations through the casing-tubing annulus and through tubing, respectively.

CASE 3115: Application of Monsanto Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Lowe-State Well No. 1 located in Unit F of Section 36, Township 21 South, Range 23 East, Eddy County, New Mexico, to produce gas from the Cisco Canyon and Lower Morrow formations through parallel strings of tubing.

CASE 3116: Application of Tex-Star Oil & Gas Corporation for force-pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Pearl-Queen Pool underlying the NW/4 NW/4 of Section 24, Township 19 South, Range 35 East, Lea County, New Mexico.

CASE 3117: Application of Tex-Star Oil & Gas Corporation for force-pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin-Dakota Pool underlying the E/2 of Section 26, Township 30 North, Range 14 West, San Juan County, New Mexico.

CASE 3118: Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Penrose Skelly Unit Area comprising 4,400 acres, more or less, of Federal, State and Fee lands in Township 22 South, Range 37 East, Penrose Skelly Pool, Lea County, New Mexico.

October 13, 1964 Examiner Hearing

- CASE 3119: Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Penrose Skelly Pool in its South Penrose Skelly Unit Area by the injection of water into the Grayburg formation through six wells in Sections 5 and 6, Township 22 South, Range 37 East, Lea County, New Mexico.
- CASE 3120: Application of Dr. Sam G. Dunn for a Review of the Commission's Directive of August 27, 1964, concerning salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks a review of the Commission's Directive of August 27, 1964, prohibiting the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Pool and adjacent areas in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico. Applicant specifically requests an extension of the November 1st deadline and a determination that salt water disposal in unlined pits in Sections 26, 27, and 34, Township 7 South, Range 26 East, among other areas, does not constitute a hazard to fresh waters and should be excepted from the Commission's directive.
- CASE 3121: Application of Dr. Sam G. Dunn for a water injection project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a water injection project by the injection of water into the San Andres formation through one well located in Section 33, Township 6 South, Range 26 East, Linda-San Andres Pool, and by the injection of water into one well in Section 32 or 33, and one well in Section 27, Township 7 South, Range 26 East, all in Chaves County, New Mexico.
- CASE 3122: Application of Continental Oil Company for an unorthodox location and a non-standard unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to complete its Meyer B-4 Well No. 27 at an unorthodox location 5,610 feet from the South line and 660 feet from the East line of Section 4, Township 21 South, Range 36 East, Oil Center Blinbry Pool, Lea County, New Mexico. Said well would be dedicated to a 53-acre non-standard unit comprising that portion of Lots 1 and 8 of said Section 4 which is productive from the Oil Center Blinbry Pool.
- CASE 3123: Application of Continental Oil Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of special pool rules including a provision for 80-acre spacing and a gas-oil ratio of 6000 to 1 for the Monument-Tubb Pool in Township 20 South, Range 37 East, Lea County, New Mexico.

October 13, 1964 Examiner Hearing

- CASE 3124: Application of Continental Oil Company to amend Order No. R-2566, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-2566, which authorized the Continental Baish-Yates Waterflood Project, to also provide authority for the injection into each well of approximately 500 barrels of LPG.
- CASE 3125: Application of Shell Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Antelope Ridge Unit Well No. 4-1 in Unit B of Section 4, Township 24 South, Range 34 East, Lea County, New Mexico, to produce gas from the Antelope Ridge Pennsylvanian and Antelope Ridge Devonian Gas Pools through parallel strings of tubing.
- CASE 3126: Application of Murphy Oil Corporation for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Pool by the injection of water into the Gallup formation through five wells in Sections 17, 18 and 20, Township 32 North, Range 17 West, San Juan County, New Mexico. Applicant further seeks the promulgation of special rules for the operation of said project.
- CASE 2654: (Reopened)
In the matter of Case No. 2654 being reopened pursuant to the provisions of Order No. R-2349, which order established temporary 320-acre gas proration units for the Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, for a period of two years. The Commission will consider indefinite extension of Order No. R-2349 in the absence of evidence to the contrary.
- CASE 3127: Application of Shell Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the China Canyon Unit Area comprising 7611 acres, more or less, of Federal, State and Fee lands in Township 23 South, Ranges 23 and 24 East, Eddy County, New Mexico.
- CASE 3128: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Grama Ridge Unit Area comprising 3052 acres, more or less, of Federal and State lands in Townships 21 and 22 South, Range 34 East, Lea County, New Mexico.

PAGE -4-
October 13, 1964 Examiner Hearing

CASE 3129: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Wilson Deep Unit Area comprising 3360 acres, more or less, of State and Fee lands in Township 21 South, Range 34 East, Lea County, New Mexico.

ir/

Case 3125.

Heard 10-13-64

Rec. 10-14-64

Grant Shell permission to Dually
complete their Antelope Ridge
unit # A-1 B-4-245-34E. in.
Antelope Ridge Penn + Devonian.
E. H. H. H.

Antelope Ridge-Morrow Pennsylvanian gas Pool

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. 3125
Order No. R-2787

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 October 13, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 21st day of October, 1964, 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, Shell Oil Company, seeks authority to complete its Antelope Ridge Unit Well No. 4-1, located in Unit B of Section 4, Township 24 South, Range 34 East, NMPM, Lea County New Mexico, as a dual completion (conventional) to produce gas from the Antelope Ridge-Morrow Pennsylvanian Gas Pool through 2 3/8-inch tubing and gas from the Antelope Ridge-Devonian Gas Pool through a parallel string of 2 7/8-inch tubing, with separation of zones by a packer set at approximately 13,575 feet.

(3) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.

(4) That approval of the subject application will prevent waste and protect correlative rights.

-2-

CASE No. 3125

Order No. R-2787

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby authorized to complete its Antelope Ridge Unit Well No. 4-1, located in Unit B of Section 4, Township 24 South, Range 34 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to produce gas from the Antelope Ridge-Morrow Pennsylvanian Gas Pool through 2 3/8-inch tubing and to produce gas from the Antelope Ridge-Devonian Gas Pool through a parallel string of 2 7/8-inch tubing, with separation of zones by a packer set at approximately 13,575 feet;

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 insofar as said rule is not inconsistent with this order;

PROVIDED FURTHER, that the applicant shall take packer-leakage tests upon completion and annually thereafter during the Annual Shut-In Pressure Test Period for the Antelope Ridge-Devonian Gas Pool.

(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

Jack M. Campbell

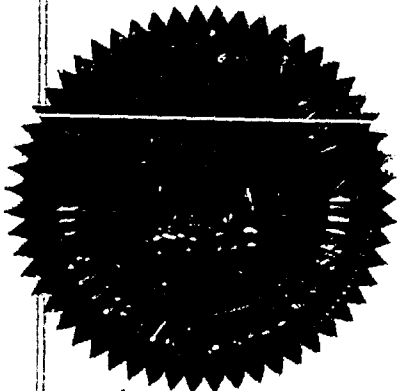
JACK M. CAMPBELL, Chairman

E. S. Walker

E. S. WALKER, Member

A. L. Porter, Jr.

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



esr/

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. B. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

October 23, 1964

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Re: CASE NO. 3125
ORDER NO. R-2787
APPLICANT SHELL OIL COMPANY

Dear Sir:

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

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

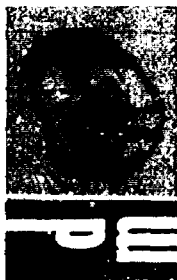
Aztec OCC

OTHER

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

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PAGE 1

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 13, 1964

EXAMINER HEARING

IN THE MATTER OF: Application of Shell Oil
Company for a dual completion, Lea County,
New Mexico.

Case No. 3125

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

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MR. UTZ: We will now take up Case Number 3125.

MR. MORRIS: If the Examiner please, I am Richard Morris of Seth, Montgomery, Federici & Andrews, Santa Fe, New Mexico: appearing on behalf of the Applicant.

We will have one witness in this Case, Mr. Brady. I ask that he be sworn at this time, please.

Also, we would like to have Applicant's Exhibit's One through Four marked for identification.

(Whereupon, Applicant's Exhibit's One through Four marked for identification.)

MR. UTZ: Will you stand, Mr. Brady, and be sworn?

H A R R Y B R A D Y, called as a witness herein, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Brady, please state your name, by whom you are employed and in what capacities, and where you are located.

A My name is Harry Brady, I am employed by Shell Oil Company as a mechanical engineer in Roswell, New Mexico.

Q Would you briefly state your education and your experience in the oil industry.

A I received a B.S. Degree in Civil Engineering from Kansas University. I have been employed by Shell Oil Company

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for approximately 4 1/2 years as a Mechanical Engineer. For the past 3 1/2 years I have been assigned to Shell's Roswell Division in New Mexico, and have had as one of my responsibilities the planning and design of multiple completion installations.

Q Mr. Brady, are you familiar with the Application of Shell Oil Company in Case 3125?

A Yes, sir.

MR. MOERIS: Are the witness' qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q (By Mr. Morris) Please state what it is that Shell seeks by this Application.

A Shell Oil Company proposes to dual complete, in a conventional manner, its Antelope Ridge Unit Well Number 4-1, located in Unit B of Section 4, Township 24 South, Range 34 East, Lea County, New Mexico, to produce gas from the Antelope Ridge Morrow-Pennsylvanian and Antelope Ridge Devonian Gas Pools through parallel strings of tubing. The well is now completed as Antelope Ridge Morrow-Penn single.

Q Referring to what has been marked as Exhibit Number One in this case, Mr. Brady, will you state what it is and what it shows.

A Exhibit Number One is an ownership plat indicating the location of Well Number 4-1, and the offset wells and operators. The boundaries of the Antelope Ridge Unit are outlined

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in red. The Unit is operated by Shell Oil, holding a 94.79 percent interest. The remaining 5.21 percent interest is Continental's share. We have Continental's agreement to dual complete the well.

Q Before we leave this Exhibit, Mr. Brady, would you point out the existing wells in the Antelope Unit and state in what formations they are presently completed?

A Yes. We have in Section 27, Township 23 South, Range 34 East, the Antelope Ridge 27-1 which is completed in the Devonian formation. In Section 34 we have the Antelope Ridge 34-1 which is completed also in the Devonian formation. In Section 4 we have the subject well, 4-1, which is currently completed in the Morrow-Penn formation.

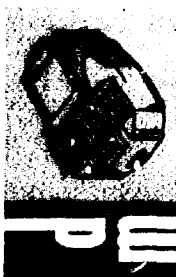
Q Is this well also completed in the Devonian formation, but not yet put on production?

A Yes, that's correct.

Q Referring now, if you will, to what has been marked as Exhibit Number Two in this Case, will you state what it is that it shows?

A Yes. Exhibit Number Two is a diagrammatic sketch of the proposed dual completion installation for Well Number 4-1. The diagram shows that two permanent production packers will be used to isolate the two gas zones. Both packers are already in position, having been placed there during initial completion





operations. The upper packer is a large-bore Baker "FA" production packer. A Baker parallel flow tube will be used in conjunction with this packer to accommodate two tubing strings for the dual installation. The lower packer is a Baker Model "D" production packer. An inhibited packer fluid will be placed in the casing-tubing annulus above the upper packer toward the conclusion of dual completion operations.

Q Do you have an electric log on this well?

A Yes, that is Exhibit Number Three.

Q I don't believe it would be necessary to go into any detail on the electric log; that is Exhibit Number Three, Mr. Examiner, except to state that there has been indicated on the log the existing and proposed perforated intervals and formation tops, casing points, pay section intervals, and the Devonian gas-oil-water contact --

A That's correct.

Q -- is that correct, Mr. Brady?

Would you briefly summarize the history of the subject well?

A Well, Well Number 4-1 was spudded on September 13, 1962, and was drilled to the Ellenburger to a TD of 17,895 feet. After reaching TD, various potential pays were production tested back up the hole, including the Ellenburger, Fusselman, and Lower Devonian zones. The well was completed on

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September 12, 1963, in the Morrow-Pennsylvanian zone. The well has been producing from that zone since completion through the perforated interval 12,898 feet to 13,153 feet. The Devonian zone, which we now propose to dually complete with the existing Morrow-Penn zone, was drill-stem tested while drilling through it. The well was not dualled during initial completion operations because the unusually high reservoir pressure of the Morrow-Penn zone (above the normally pressured Devonian zone) would have made such an operation extremely difficult and costly. The well was completed in the Morrow-Penn section in order to deplete the unusually high reservoir pressure, and to obtain a marketable supply of sweet gas. The reservoir pressure of the Morrow-Penn has now been depleted satisfactorily for dual completion operations.

Q Referring still to Exhibit Number Two, the diagrammatic sketch, would you give a more detailed description of the production strings in that well?

A Yes. The Devonian tubing will consist of 2 7/8ths inch O.D. 6.5 pounds per foot Hydril "CS" I. J. Grade C-75 tubing from surface to the upper packer at 12,720 feet, and will taper from that point to 2 3/8ths inch O.D. 4.7 pounds per foot. Hydril "CS" I. J. Grade C-75 tubing which will be hung at 14,600 feet. The dual parallel flow tube (full opening 2 3/8ths inch tubing on long string side) will be run on this string and

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will seal into the "FA" packer at 12,780 feet. Seals for the lower packer will also be run on the Devonian string and will be spaced out to seal off in the lower packer. Landing nipples will be located in the string as indicated on Exhibit Number Two, with a short blast nipple immediately above each landing nipple. Blast-resistant nipples will be located on the Devonian string opposite the Morrow-Penn gas perfs for protection of the tubing. All tubing will be pressure tested to 6000 psi while running.

The Morrow-Penn String will consist of 2 3/8 inch O.D. 4.7#/ foot Hydril "GS" I. J. Grade C-75 tubing and will set into the dual parallel flow tube at 12,780 feet by means of a latching-type seal assembly. The tubing string will be equipped with landing nipples as indicated on Exhibit Number Two. Again each landing nipple will be run with a short blast nipple immediately above it for protection of the tubing. All tubing will be pressure tested to 6000 psi while running.

Q Are there any unusual features of the wellhead equipment on this well?

A There are no unusual -- however, our tubing spool and Christmas Tree will have 10,000 pounds working pressure rating. The Christmas Tree will be equipped with double master valves, a wing valve, and a safety valve for each zone.

Q What procedure will you intend to follow in actually

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accomplishing the dual completion of this well?

A The well will be cleaned out to the plugged back total depth at 14,990 feet. All production equipment will then be run, the inhibited packer fluid placed in the casing-tubing annulus, and the wellhead installed before perforating the Devonian through the tubing from 14,962 feet to 14,823 feet. The packer seals will be pressure tested at convenient points during the dual completion operation. If deemed necessary after production testing, the Devonian will be treated with 5000 gallons of acid down the tubing.

Q Mr. Brady, do you have an Exhibit prepared showing the reservoir and fluid contacts on each of the two zones in this well?

A Yes; that is Exhibit Number Four.

Q Would you summarize the information shown on that, please?

A The Devonian zone, located at approximately 14,700 feet, has a reservoir pressure of 6375 psi. The Devonian is believed to be a depletion type reservoir. Devonian gas production is characterized by a GOR of 46,500 feet, a gas gravity of 0.665, and a condensate gravity of 57.5 degrees API. The above is DST data, but it correlates very closely with production data from our Number 27-1 and Number 34-1 Devonian wells.

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The Morrow-Penn is located at approximately 13,000 feet, and is also a depletion type reservoir. As has been mentioned, this zone was originally unusually high pressured. Original reservoir pressure was 8716 psi; however, after producing the well for approximately a year the reservoir pressure has depleted to 6400 psi. Penn gas production is characterized by a GOR of 116,667, a gas gravity of 0.600, and a condensate gravity of 48.0 degrees API.

Q Mr. Brady, will these pressure or gas-oil reservoirs, or other reservoirs, propose any particular problems in dually completing this well?

A No, sir, they won't.

Q Do you have any corrosion problems?

A The Morrow-Penn Gas is not corrosive and treatment is not necessary before marketing. The gas contains only 0.232 grains per 100 standard cubic feet total sulphurs and only one tenth of one percent CO_2 . Our purchases requires the sulphur content be less than 0.25 grains/ 100 SCF.

The Devonian gas contains about 400 grains/100 SCF of sulphur (0.63 Mol percent H_2S) and 1.44 Mol percent CO_2 . Stressed coupon and weight-loss coupon tests run in our Number 27-1 Devonian well have indicated that H_2S embrittlement is not a serious problem in the Antelope Ridge Devonian Gas. The latest weight-loss coupons indicate maximum corrosion rates of

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only 0.24 mils per year with no measurable pitting. And this Number 27-1, incidentally, has a comparable gas analysis to drillstem test data from the 4-1. However, in view of our short period of operating experience in this field, as a precautionary measure we will use Grade C-75 tubular goods and downhole equipment for sulfide service. For simplification of running procedures, the sweet Penn zone string will also be of Grade C-75 materials. All wellhead equipment exposed to high pressures will have NACE trim. We have found this equipment to have a very low susceptibility to H₂S cracking.

Q Do you have additional information to present to the Examiner concerning your cementing program and the adequacy of the casing in this well?

A Yes. As indicated on Exhibit Number Two, both zones are adequately covered with cement. The casing is sound and has been successfully tested all the way from top to bottom.

Q From an engineering standpoint, Mr. Brady, do you believe the proposed dual completion to be according to good engineering practices and in conformity with the conservation practices of the New Mexico Oil Conservation Commission?

A Yes, sir.

Q Were Exhibits One through Four prepared by you or under your direction?

A Yes, they were.

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MR. MORRIS: We offer Exhibit Numbers One through Four at this time.

MR. UTZ: Without objection the Exhibit's One through Four will be entered into the record of this Case.

(Whereupon, Exhibit's One through Four admitted into evidence.)

MR. MORRIS: That's all I have of Mr. Brady.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Brady, let's discuss your cementing program a little bit more.

A Yes, sir.

Q Referring to Exhibit Number Two, the interval between 14,181 and 14,440; is that open behind the casing?

A Yes, sir, it is.

Q Is there any potential producing formations in there or any danger of exerting pressures or loss of hydrocarbons causing that communication?

A No, sir, there are not.

Q The same question on the interval 912 to 1500.

A No, sir.

Q And those are the only two intervals in all of your casing strings which you have formations open behind the pipe; is that correct?

A No, sir, if you will notice on lower, from 15,331

there is somewhat below that to 15,750; that is also open, but

there is no chance for communication for, or escape of reservoir fluids behind the pipe in that case, either.

MR. UTZ: All right, sir. Are there any other questions of the witness?

(No response.)

MR. UTZ: The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any statements in this Case?

(No response.)

MR. UTZ: The Case will be taken under advisement.

(Whereupon, the taking of the Case was concluded.)

* * *

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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss.

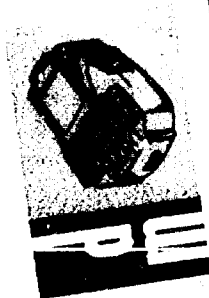
I, CHARLES FLOYD WALKER, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF, I have affixed my hand and notarial seal this 26th day of October, 1964.

Charles Floyd Walker
NOTARY PUBLIC

My Commission Expires:
March 25, 1968.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3125 heard by me on 6.1.13. 1964.
Glenn W. [Signature], Examiner
New Mexico Oil Conservation Commission



I N D E X

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E X H I B I T S

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