CASE 2846: Application of RALPH LOWE for creation of new gas pool for UPPER PENNSYLVANIAN gas production.

tion, Transcript,

Chilosophia Etc.

### BEFORE THE OIL COMSERVATION COMMISSION OF THE STATE OF NEW MEXICO

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

> CASE No. 2846 Order No. R-2516 NONRECLATURE

APPLICATION OF RALPH LOWE TO CREATE A NEW POOL FOR UPPER PENNSYLVANIAN GAS PRODUCTION AND FOR EPECIAL POOL RULES, EDDY COUNTY, NEW MEXICO.

### ORDER OF THE COMMISSION

### BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on June 26, 1963, at Santa Fe, New Mexico, before Daniel S. Mutter, 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  $\frac{9\text{th}}{}$  day of July, 1963, 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, Ralph Lowe, seeks the creation of a new gas pool for Upper Pennsylvanian production and the promulgation of temporary special rules and regulations governing said pool, including a provision for 640-acre spacing units.
- (3) That a new gas pool for Upper Pennsylvanian production should be created and designated the Indian Hills-Upper Pennsylvanian Gas Pool. This pool was discovered by the Ralph Lowe Indian Hills Unit Well No. 1, located 660 feet from the South line and 660 feet from the West line of Section 21, Township 21 South, Range 24 East, NMPM, Eddy County, New Mexico.
- (4) What temporary special rules and regulations establishing 600-acre spacing units should be promulgated for the subject pool in order to prevent the possibility of economic loss resulting from the drilling of unnecessary wells and in order to allow

-2-CASE No. 2846 Order No. R~2516

the operators in the subject pool to gather information concerning the reservoir characteristics of the pool.

- (5) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.
- (6) That special rules and regulations should be established for a temporary period to expire one year from the date that a pipeline connection is first obtained for a well in the pool; that during this temporary period all operators in the subject pool should gather all available information relative to drainage and recoverable reserves.
- (7) That this case should be reopened at an examiner hearing one year from the date that a pipeline connection is first obtained for a well in the Indian Hills-Upper Pennsylvanian Gas Pool, at which time the operators in the subject pool should appear and show cause why the Indian Hills-Upper Fennsylvanian Gas Pool should not be developed on 160-acre spacing units.
- (8) That the first operator to obtain a pipeline connection for a well in the Indian Hills-Upper Pennsylvanian Cas Pool should notify the Commission in writing of such fact, and that the Commission should thereupon issue a supplemental order designating an exact date for reopening this case.

### IT IS THEREFORE ORDERED:

(1) That a new pool in Eddy County, New Mexico, classified as a gas pool for Upper Pennsylvanian production is hereby created and designated the Indian Hills-Upper Pennsylvanian Gas Pool, consisting of the following-described area:

### TOWNSHIP 21 SOUTH, RANGE 24 EAST, MMPM Section 21: All

(2) That Special Rules and Regulations for the Indian Hills-Upper Pennsylvanian Gas Pool are hereby promulgated as follows:

### SPECIAL RULES AND REGULATIONS FOR THE INDIAN HILLS-UPPER PENNSYLVANIAN GAS POOL

RULE 1. Each well completed or recompleted in the Indian Hills-Upper Pennsylvanian Gas Pool or in the Upper Pennsylvanian formation within one mile of the Indian Hills-Upper Pennsylvanian Gas Fool, and not neares to or within the limits of another designated Upper Pennsylvanian pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

-3-CASR No. 2845 Order No. R-2516

- RULE 2. Each well completed or recompleted in the Indian Hills-Upper Pennsylvanian Gas Pool shall be located on a standard unit containing 540 acres, more or less, consisting of a single governmental section.
- The Secretary-Director may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Lands Survey, or the following facts exist and the following provisions are complied with:
  - (a) The non-standard unit consists of quarterquarter sections or lots that are contiguous by a common bordering side.
  - (b) The non-standard unit lies wholly within a single governmental section and contains less acreage than a standard unit.
  - (c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.
  - (d) In lieu of Paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.
- RULE 4. Each well completed or recompleted in the Indian Hills-Upper Pennsylvanian Gas Pool shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.
- RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may

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approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

### IT IS FURTHER ORDERED:

- (1) That any well presently drilling to or completed in the Upper Pennsylvanian formation within the Indian Hills-Upper Pennsylvanian Gas Pool or within one mile of the Indian Hills-Upper Pennsylvanian Gas Pool that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of Rule 4. The operator of any such well shall notify the Artasia District Office in writing of the name and location of the well on or before August 1, 1963.
- (2) That any operator desiring to dedicate 640 acres to a well presently drilling to or completed in the Indian Hills-Upper Pennsylvanian Gas Pool shall file a new Form C-128 with the Commission on or before August 1, 1963.
- (3) That this case shall be reopened at an examiner hearing one year from the date that a pipeline connection is first obtained for a well in the Indian Hills-Upper Fennsylvanian Gas Pool, at which time the operators in the subject pool may appear and show cause why the Indian Hills-Upper Pennsylvanian Gas Pool should not be developed on 160-agre spacing units.
- (4) That the first operator to obtain a pipeline connection for a well in the Indian Hills-Upper Pennsylvanian Gas Pool shall notify the Commission in writing of such fact, and that the Commission will thereupon issue a supplemental order designating an exact date for reopening this case.
- (5) 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, Chairman

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

### SCHILUMBERGER WELL SURVEYING CORPORATION

### HOUSTON, TEXAS

June 17, 1963

PLEASE REPLY YO PERMIAN BASIN DIVISION 706 PETROLEUM LIPE SLDG. P. O. BOX 638

Ralph Lowe Box 832 Midland, Texas

### Gentlemen:

We have analized the porosity from the Sonic log on your Indian Hills Unit #1, Wildcat, Eddy County, N. M. The section analyzed was from 7306 to 7896. The integrated curve gives an average travel time of 54.3 micro seconds per foot. Using a matrix velocity of 23000 feet per second for Dolomite, we get an average porosity of 7.3% for the entire 590 feet. We have tabulated these porosities on a two foot basis.

These interpretations represent our best judgment, and we are happy to give them to you. Nevertheless, since all interpretations are based on inferences from electrical measurements, we cannot and do not guarantee their accuracy or correctness, and we shall not be lible or responsible, except in the case of willful negligence on our part, for any loss, costs, damages or expenses that may be incurred or sustained from such interpretations.

Interval	Sonic Porosity	Interval	Sonic Porosity
7306 - 08	4.0	7356 - 58	9.0
7308 - 10	7.0	7358 - 60	10.0
7310 - 12	8.5	7360 - 62	11.0
7312 - 14	5.5	7362 - 64	9.5
7314 - 16	2.5	7364 - 66	7.0
7316 - 18	6.0	7366 - 68	8.3
7318 - 20	9.0	7368 - 70	9.5
7320 - 22	5.8	7370 - 72	7.5
7322 = 24	6.0	7372 - 74	8.0
7324 - 26	10.0	7374 - 76	6_3
7326 - 28	8.0	7376 - 78	5.0
7328 - 30	10.0	7378 <b>- 8</b> 0	2.5
7330 - 32	8.5	7380 - 82	1.5
7332 - 34	6.0	7382 - 84	6.0
7334 - 36	10.3	7384 - 86	3,0
7336 - 38	<b>4.</b> 0	7386 - 88	5.0
7338 - 40	10.5	7388 - 90	14.0
7340 - 56	washed out unable	7390 - 92	10.0
	to obtain porosity value	7392 - 94	5.5

Interval	Sonic Porosity	Interval	Sonic Porosity
7394-96	8.0	7500-02	11.0
7396-98	3.6	7502-04	11.0
7398-7400	12.0	7504-06	2.0
7400-02	5.0	7506-08	4.0
7402-04	5,3	7508-10	5.5
7404-06	9.0	7510-12	4.0
7406-08	6.0	7512-14	6.0
7408-10	6.5	7514-16	3.7
7410-12	6.0	7516-18	6.4
7412-14	8.0	7518-20	2.7
7414416	6.0	7520-22	
7416-18	5.5	7522-24	6.0
7418-20	5.3	7524-26	9.0
7420-22	6.0	7526-28	7.0
7422-24	5.7	7528-30	6.5
7424-26	1.7		7.7
7426-28	<b>4.</b> 7	7530-32 7533-34	7.7
7428-30	9.5	7532-34 7534-36	8.0
7430-32	8.3	7534 <b>-</b> 36	3.5
7432-34	6.2	7536 <b>-</b> 38	5.0
7434-36		7538-40	1.5
7436-38	6.0	<b>7</b> 340-42	6.2
7438-40	8.0 5.7	7 <b>5</b> 42-44	5.7
7440-42	5.7	7544-46	6.0
7442-44	3.0	7546-48	8.2
7444-46	1.5 1.5	7548-50	8.7
7446-48		7550-52	6.3
7448-50	3.0	7552-54 7556-56	5.8
7450-52	5.2 9.0	7554-56	<b>6.</b> 3
7452-54	6 <sub>2</sub> 0	7 <b>9</b> 56-58	4,0
7454-56	7.7	75 <b>5</b> 8-60	3.8
7456-58	8.0	7 <b>5</b> 60-62 7 <b>3</b> 62-64	4.0
7458-60	9.5	7 <del>5</del> 62-64 7564-66	3.0
7460-62	3.0	7504-00 7 <b>5</b> 66-68	1.0
7462-64	3.0	7 <b>5</b> 00-08 7 <b>\$</b> 68-70	2.0
7464-66	6.5	7 <b>5</b> 70-72	5.0 3.5
7466-68	5.0	7572-74	
7468-70	9.0	7574-76	1.0
7470-72	6.5	7576-78	7.5 2.5
7472-74	4.7	7 <b>3</b> 76-76 7 <b>3</b> 78-80	
7474-76	8.2	7 <b>5</b> /0-80	3.0 5.5
7476=78	5.7	7562-64	
7478-80	5.5	7 <b>5</b> 84-86	3.0 7.0
7480-82	7.0	7 <b>5</b> 86-88	4.5
7482-84	8.0	7588-90	5.0
7484-86	6.0	7 <b>3</b> 90-92	4.0
7486-88	4.0	7 <b>5</b> 92-94	1.5
7488-90	3.5	7 <b>3</b> 92-94 7 <b>3</b> 94-96	5.0
7490-92	1.7	7 <del>3</del> 94-96 7 <del>8</del> 96-98	<b>8.</b> 5
7492-94	4.0	<b>7</b> 598-7600	6.5
7494-96	5.5	7600-02	6.3
7496-98	12.0	7602-02 7602-04	9.2
7498-7500	3.0	7604-06	10,0
, 470-7500	320	7,004-00	411,11

Page 3			nemosity
		Interval	Sonic Porosity
•	Sonic Porosity		3.0
Interval		7714-16	3.0
	5.0	7716-18	3.0
7606-08	8.2	7718-20	
7608-10	4.0	7720-22	5.7
7610-12	3.5	7722-24	3.8
7612-14	5.0	7724-26	2.5
7614-16	3.6	7726-28	4.0
7616-18	2.6	7728-30	5.8
7618-20	3.0	7730-32	7.0
7620-22	9.0	7732-34	5.7
7622-24	7.0	7734-36	6.2
7624-26	5.0	7736-38	4.2
7626-28	4.0	7738-40	4.3
7628-30	7.5	7740-42	3.7
7630-32	4.0	7742-44	5.7
7632-34	4.0	7744-46	3,0
7634-36		7746-48	1.8
7636-38	2.0	7748-50	1.5
7638-40	4.3	7 <b>7</b> 50-52	1.8
7640-42	4.0	7752-54	1.6
7642-44	16.0	7754-56	2.0
7644-46	5.5	7/34-30	2.0
7646-48	5.0	7756-58	4.7
7648-50	3.6	7758-60	4.5
7650-52	6.0	7760-62	3.5
7652-54	6.0	7762-64	2.5
7654-56	10.0	7764-66	5.5
7656-58	1.0	7766-68	1.5
7658-60	4.2	7768-70	2.5
7660-62	7.8	7770-72	14.0
7662-64	2.0	7772-74	1.0
	5.5	7774-76	4.0
7664-66	3.0	7776-78	6.5
7666-68	2.5	7778=80	5.5
7668-70	5.5	7780-82	4.0
7670-72	7.0	7782-84	4.5
7672-74	6.0	7784-86	7.3
7674-76	4.5	7786-88	6.2
7676-78	5.0	7788-90	6.0
7678-80	4.0	7790-92	8.0
7680-82	3.8	7792-94	9.5
7682-84	4.5	7794-96	8.0
7684-86	7.7	7796-98	c Q
7686-88	2.0	7798-7800	5.0
7688-90	4.0	7800-02	3.5
7690-92	4.0	7802-04	2.0
7692-94	7.8	7804-06	4.0
7694-96	1.0	7806-08	1.5
7696-98	2.0	7808-10	3.0
7698-770	5,0	7810-12	3.8
7700-02	2.5	7812-14	4.0
7702-04	5.0	7884-16	5.5
7704-06	7 0	7816-18	6.2
7706-08	c 5	7818-20	6.5
7708-10	2 5	7820-22	٠.٥
7710-12	2.0	,	
7712-14			

Sonic Porosity

Interval	Sonic Porosity	Interval	Sonic Porosity
7822-24 7824-26 7826-28 7826-28 7828-30 7830-32 7832-34 7834-36 7836-36 7836-36 7838-40 7840-42	7.0 5.7 5.5 6.0 5.8 6.2 5.0 2.5 2.7 3.0 5.5	Interval  7860-62 7862-64 7864-66 7866-68 7868-70 7870-72 7872-74 7874-76 7876-78 7876-80 7880-82 7882-84	1.6 1.8 1.8 2.0 2.5 3.0 5.7 5.2 3.2 3.5 5.5
7844-46 7846-48 7848-50 7850-52 7852=54 7854-56 7856-58	8.0 5.8 3.0 5.5 2.0 4.0 3.4 5.5	7884-86 7886-86 7888-90 7890-92 7892-94 7894-96	4.0 2.5 4.5 4.0 3.8 3.0

If we can be of further service, please let us know.

George Horst

GFH/blm

Ade: Det for fine 24 Chamin Delephone del to papers & bill Howard Bratton for calle : for all.

Case 2846 Application of Ralph Rome to create

a new pool for appear Pennsylvanian

gas production, and for special pool

rules, Eddy Caunty, New mexico

Applicant, in the above - styled

Caus, seeks the creation of a new

gas pool for Upper Pennsylvanian

gas production in Section 21,

Jawaship 21 Douth, Range 24 Cast,

and the astablishment of temporary

pool rules therefor, including a

provision for 640 - acre spacing

and a provision restricting well

locations.

DRAFT JMD/esr

July 9, 1963

Elbet etta coj jelean fola

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:

Don

CASE No. 2846

Order No. R- 25/6

NOMENCLATURE

APPLICATION OF RALPH LOWE TO CREATE A NEW POOL FOR UPPER PENNSYLVANIAN GAS PRODUCTION AND FOR SPECIAL POOL RULES, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

### BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on June 26, 1963, 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 day of July, 1963, 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, Ralph Lowe, seeks the creation of a new gas pool for Upper Pennsylvanian production and the promulgation of temporary special rules and regulations governing said pool, including a provision for 640-acre spacing units.
- (3) That a new gas pool for Upper Pennsylvanian production should be created and designated the Indian Hills-Upper Pennsylvanian Gas Pool. This pool was discovered by the Ralph Lowe Indian Hills Unit Well No. 1, located 660 feet from the South line and 660 feet from the West line of Section 21, Township 21 South, Range 24 East, NMPM, Eddy County, New Mexico.

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-2-CASE No. 2846

(4) That temporary special rules and regulations establishing 640-acre spacing units should be promulgated for the subject pool in order to prevent the possibility of economic loss resulting from the drilling of unnecessary wells and in order to allow the operators in the subject pool to gather information concerning the secureir characteristics of the pool.

should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

- (6) That special rules and regulations should be established for a temporary period to expire one year from the date that a pipeline connection is first obtained for a well in the pool; that during this temporary period all operators in the subject pool should gather all available information relative to drainage and recoverable reserves.
- (7) That this case should be reopened at an examiner hearing one year from the date that a pipeline connection is first obtained for a well in the Indian Heart Upper Pennsylvanian Gas Pool, at which time the operators in the subject pool should appear and show cause why the Indian Heart Upper Pennsylvanian Gas Pool should not be developed on 160-acre spacing units.
- (8) That the first operator to obtain a pipeline connection for a well in the Indian **Bills**-Upper Pennsylvanian Gas Pool should notify the Commission in writing of such fact, and that

### IT IS THEREFORE ORDERED:

(1) That a new pool in Eddy County, New Mexico, classified as a gas pool for Upper Pennsylvanian production is hereby created and designated the \_\_\_\_\_\_Indian Hills-Upper Pennsylvanian Gas Pool, consisting of the following-described area:

### TOWNSHIP 21 SOUTH, RANGE 24 EAST, MAPM Section 21: All

SPECIAL RULES AND REGULATIONS

POR THE

INDIAN HILLS-UPPER PENNSYLVANIAN GAS POOL

RULE 1. Each well completed or recompleted in the <u>Indian</u>

Hills-Upper Pennsylvanian Gas Pool or in the Upper Pennsylvanian formation within one mile of the <u>Indian Hills-Upper</u>

Pennsylvanian Gas Pool, and not nearer to or within the limits of another designated Upper Pennsylvanian pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Hills-Upper Pennsylvanian Gas Pool shall be located on a standard unit containing 640 acres, more or less, consisting of a single governmental section.

RULE 3. The Secretary-Director may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Lands Survey, or the following facts exist and the following provisions are complied with:

- (a) The non-standard unit consists of quarterquarter sections or lots that are contiguous by a common bordering side.
- (b) The non-standard unit lies wholly within a single governmental section and contains less acreage than a standard unit.
- (c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.
- (d) In lieu of Paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days

CASE No. 2846

after the Secretary-Director has received the application.

RULE 4. Each well completed or recompleted in the Upper Pennsylvanian Gas Pool shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

### IT IS FURTHER ORDERED:

- (1) That any well presently drilling to or completed in the Upper Pennsylvanian formation within the Indian Hills-Upper Pennsylvanian Gas Pool or within one mile of the Indian Hills-upper Pennsylvanian Gas Pool that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of Rule 4. The operator of any such well shall notify the Artesia District Office in writing of the name and location of the well on or before August, 1963.
- (2) That any operator desiring to dedicate 640 acres to a well presently drilling to or completed in the Indian Hills - Upper Pennsylvanian Gas Pool shall file a new Form C-128 with the Commission on or before Migust 1, 1963.

ing one year from the date that a pipeline connection is first obtained for a well in the Indian was -- Upper Pennsylvanian Garage Pool, at which time the operators in the subject pool may appear and show cause why the Indian ####-Upper Pennsylvanian Cas Pos

tion for a well in the Indian Line Upper Pennsylvanian Gas Poch shall notify the Commission in writing of such fact, and that the Commission will thereupon issue a supplemental order designation an exact date.

entry of such further orders as the Commission may deem necessary.

DOWE at Santa Fe, New Mexico, on the day and year herein-

LAW OFFICES

J. M. HERVEY 1874-1953

HERVEY, DOW & HINKLE

CLAPENCE E. HINKLE

W. E. BONDURANT, JR.

GEORGE H. HUNKER, JR.

HOWARD C. SPRATTON

S. E. CHRISTY IV.

LEWIS C. COL, JR.

PAUL W. EATON, JR.

CONRAD E. COFFIELD

HAROLD L. LEWIS L. COLF, JR.

June 19, 1963

LAW OFFICES

HERVEY, DOW & HINKLE

HINKLE BUILDING

AREA CODE 505

POSTED ICE BOX 10

Mr. A. L. Porter, Jr.
Secretary- Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

Ralph Lowe hereby requests that a hearing be scheduled before an Examiner at the first possible date to do the following:

- 1. Create a new gas pool designated the Indian Hills Upper Pennsylvanian Gas Pool consisting of Section 21, Township 21 South, Range 24 East, N.M.P.M., Eddy County, New Mexico.
- 2. Provide temporary field rules for said pool, such rules to remain in effect until one year after a pipe line connection in the pool. The temporary rules to provide for 640-acre spacing and proration units, and to provide for location of wells no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any Governmental quarter-quarter section line.

Your attention to this request will be appreciated.

Very truly yours,

HERVEY, DOW & HINKLE

Howard C. Bratton

HCB:1m

cc: Mr. Charles Morgan Ralph Lowe Midland, Texas

### DOVERNER JACK M. CAMPBELL DHAIRMAN

### State of New Mexico **Bil Conserbation Commission**

E & JOHNNY WALKER



STATE DEDLOGIST A L PORTER JR.

July 10, 1963

Mr. Howard C.	Bratton
Hervey, Dow &	Hinkle
Attorneys at 1	LEW
Post Office Bo	DX 10
Roswell, New !	Mex1co

le:	Case No. 2846
	Order No. R-2516
	Applicant:
	RALPH LOWE

Dear Sire

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

A. L. PORTER, Jr. Secretary-Director

ir/	•
Carbon copy o	f order also sent to:
Bobbs occ	×
Artesia OCC_	<u> </u>
Astec occ	
OTHER	

### SUPPLEMENTAL DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 26, 1963

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

The following case will be heard before Daniel S. Nutter, Examiner, or Elvis A. Utz, as alternate examiner:

CASE 2847:

Application of Neil H. Wills for certain unorthodox oil well locations, Eddy, County, New Mexico. Applicant, in the above-styled cause, seeks approval of the non-standard location for several oil producing wells in his Russell Pool Waterflood Project, Russell Pool, Eddy County, New Mexico.

### DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 26, 1963

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE AND 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 2821: (Continued from June 5, 1963 examiner hearing)

Application of D. W. Falls, Inc., for an extension of Order No. R-2213, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the extension of Order No. R-2213, which order assigned a temporary deliverability for allowable purposes to applicant's Federal Well No. 2-11, located in Unit O of Section 11, Township 28 North, Range 13 West, Basin-Dakota Gas Pool, San Juan County, New Mexico.

- CASE 2833: Application of Tenneco Oil Company for approval of a unit agreement, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Central Cha Cha Unit Area comprising 674.05 acres, more or less, of Federal land located in Sections 30 and 31, Township 29 North, Range 13 West, San Juan County, New Mexico.
- CASE 2834: Application of Tom Brown Drilling Company for a unit agreement, Eddy County, New Mexico. Applicant, in the abovestyled cause, seeks approval of the Runyan Ranch Unit Area comprising 10,890.12 acres of State and Federal lands in Township 19 South, Range 21 East, Eddy County, New Mexico.
- CASE 2835: Application of Jake L. Hamon for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Southeast Bell Lake Unit Area comprising 9,597.09 acres of State, Federal and Fee lands in Townships 24 and 25 South, Ranges 34 and 35 East, Lea County, New Mexico.
- CASE 2836: Application of Union Oil Company of California for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West McDonald Unit Area comprising 2,320 acres of State and Fee lands in Township 14 South, Range 35 East, Lea County, New Mexico.
- CASE 2837: Application of Continental Oil Company for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Eastcap Queen Pool Unit Area

compressing 1900 trues of State and Fee lands, located in Fouriship 14 peak, Lenge 31 East, Chaves County, New Mexico.

### CASE 2838:

Application of Continental Oil Company for a waterflood project. Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a water-flood project by the injection of water into the Queen formation, Caprock Queen Pool, through 17 wells located in Sections 22, 23, 27, 34, and 35, Township 14 South, Range 31 East, Chaves County, New Mexico.

### CASE 2839:

Application of Amerada Petroleum Corporation for a multiple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment of Order No. R-1750-A to permit the multiple completion (tubingless), of its Wimberley Well No. 13, located in Unit N of Section 24, Township 25 South, Range 37 East, Lea County, New Mexico, to permit the production of gas from the Langlie Mattix Pool, the production of oil from the Justis-Blinebry Oil Pool, and the disposal of salt water into the San Andres formation through parallel strings of casing cemented in a common well bore.

### CASE 2840:

Application of Amerada Petroleum Corporation for a non-standard gas proration unit, Lea County, New Mexico.

Applicant, in the above-styled cause, seeks approval of a 120-acre non-standard gas proration unit comprising the S/2 NE/4 and NW/4 SE/4 of Section 19, Township 21 South, Range 37 East, Blinebry Gas Pool, Lea County, New Mexico, to be dedicated to its L. G. Warlick "A" Well No. 2 located in Unit J of said Section 19.

### CASE 2841:

Application of Shell Cil Company for an unorthodox Location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to drill its Middleton Tederal Well No. B-l at an unorthodox location 660 feet from the North and West lines of Section 31, Township 19 South, Range 32 East, Lusk-Morrow Gas Pool, Lea County, New Mexico.

### CASE 2842:

Application of Compass Exploration, Inc. for an amendment of Commission Order Mo. R-2462, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an amendment of Order No. R-2462 concerning the Largo Gallup Gas Pool to provide 320-acre gas well spacing and an increase in the maximum allowable for each spacing unit from 500 to 1,000 MCV par day.

-3-Docket No. 18-63

CASE 2843:

Application of Gulf Oil Corporation for a special gas well test, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce and flare approximately 3000 MCF of gas per day for a period of not less than 6 nor more than 9 days from its Hackberry Hills Unit Well No. 1, located in Unit 0 of Section 1, Township 22 South, Range 25 East, Eddy County, New Mexico, to determine if the gas reserves in place justify the expense of a pipeline to the nearest market outlet.

CASE 2844:

Application of Sinclair Oil & Gas Company for the creation of the Teas Pennsylvanian Gas Pool and for special temporary pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Pennsylvanian Gas Pool for its Mahaffey-Federal (ARC) Well No. 1, located in Unit C of Section 14, Township 20 South, Range 33 East, Lea County, New Mexico, and for the establishment of temporary pool rules therefor, including a provision for 640 acre spacing units.

CASE 2845:

Application of Sinclair Oil & Gas Company for an exception to Order No. R-1670, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order permitting its Barber Gas Unit Well No. 1, located in Unit E of Section 8, Township 20 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, to produce 600 MCF of gas per month in exception to the shut-in provisions of Rule 15(A) of Order No. R-1670, said gas to be utilized in the oil well gas-lift system on applicant's B. J. Barber Lease.

CASE 2846:

Application of Ralph Lowe to create a new pool for Upper Pennsylvanian gas production, and for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new gas pool for Upper Pennsylvanian Gas production in Section 21, Township 21 South, Range 24 East, and the establishment of temporary pool rules therefor, including a provision for 640-acre spacing and a provision restricting well locations.

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STATE LAND OFFICE BLDG SANTA FE NMEX=

RE CASE 2846 = MARATHON OIL COMPANY JOINS IN THE

REQUEST FOR RALPH LOWE THAT TEMPORAY POOL RULES BE

ESTABLISHED FOR THE UPPER PENNSYLVANIAN GAS PRODUCTION

ENCOUNTERED IN THE RALPH LOWE TNDTAN HILLS WELL NO. 1

IN SECT ON 21 TOWNSHIP 21 SOUTH, RANGE 24 EAST, EDDY

COUNTY. NEW MEXICO

MARATHON'S JOINDER IS ON THE BASIS THAT THE RULES PROPOSED BY APPLICANT ARE SUBSTANTIALLY THE SAME AS

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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1933 JUN 2 LA016 KA073 SSC051 K DVA186 NL PD AR=DENVER COLO 25= NEW MEXICO OIL CONSERVATION COMMISSION, ATTN DANIEL S NUTTER= : STATE LAND OFFICE BLDG SANTAFE NMEX=

REGARDING CASE NUMBER 2846 DOCKET NUMBER 18-63 EXAMINER HEARING JUNE 26 1963 AS WORKING INTEREST OWNERS IN THE INDIAN HILLS UNIT WE DO NOT OBJECT TO THE APPLPCATION BY RALPH LOWE IN THE ABOVE REFERRED TO CASE NUMBER 2846 AND RESPECTFULLY REQUEST YOUR FAVORABLE CONSIDERATION

OF SAME

INTERNATIONAL OIL AND GAS CORP 825 PETROLEUM CLUB BUILDING DENVER 2 COLO BY W B MACEY MR MARION E SPITLER 4348 SOUTH AKRON ENGLEWGOD COLORADO

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D LLG270 PD=FAX DALLAS TEX 25 327P CST= NEW MEXICO OIL CONSERVATION COMMISSION= STATE LAND OFFICE BLDG SANTAFE NMEX=

RE: CASE 2846 SUN OIL CO. AS AN INTEREST OWNER IN THE INDIAN HILLS UNIT, SUPPORT APPLICATION OF RALPH LOWE TO CREATE NEW POOL FOR UPPER PENNSYLVANIAN GAS PRODUCTION AND TO ESTABLIST TEMPORARY POOL RULES INCLUDING (40) ACRE SPACING AND A 1650 MINIMUM DISTANCE FROM LEASE LINES=

SUN OIL CO BY GRANVILLE DUTTON=

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NEW MEXICO CONSERVATION COMMISSION SANTA FE NMEX=

WE, AS PART INTEREST OWNERS IN INDIAN HILLS UNIT ENDORSE REQUEST FOR 640 ACREAS SPACING AS PER REQUEST IN CASE NUMBER 2846 DOCKETT NUMBER 18-63=

MONSANTO CHEMICAL CO HARRY S LATH REGIONAL

MANAGER==

GILS W CES NOT EES

MAIN OFFICE OCC

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THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE.

### FARMINGTON, N. M. PHONE 325-1182 DEARNLEY-MEIER REPORTING SERVICE,

BEFORE THE OIL CONSERVATION COMMISSION Santa Fe, New Mexico June 26, 1963

### EXAMINER HEARING

IN THE MATTER OF:

Application of Ralph Lowe to create a new pool for Upper Pennsylvanian gas production, and for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new gas pool for Upper Pennsylvanian Gas production in Section 21, Township 21 South,) Range 24 East, and the establishment of temporary pool rules therefor, including a provision for 640-acre spacing and a provision restricting well locations.

Case 2846

BEFORE: Daniel S. Nutter, Examiner.

### TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The next case will be Case 2846.

MR. DURRETT: Application of Ralph Lowe to create a new pool for Upper Pennsylvanian gas production, and for special pool rules, Eddy County, New Mexico.

MP. BRATTON: Howard Bratton, appearing on behalf of the applicant. We have two witnesses.

MR. NUTTER: Have your witnesses stand and be sworn, please.



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(Witnesses sworn.)

### WILLIS F. AMMENTORP

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

### DIRECT EXAMINATION

### BY MR. BRATTON:

- Q Will you state your name, please?
- A Willis F. Ammentorp.

MR. NUTTER: How do you spell that?

A A-m-m-e-n-t-o-r-p.

MR. NUTTER: Thank you.

- Q By whom are you employed and in what capacity?
- A Ralph Lowe, geologist.
- Q Will you state briefly your professional and educational background?

A I received a Bachelor's and Master's degrees in geology at the University of Wisconsin and have worked the past five years for Pan American, and the most recent, last year for Ralph Lowe as geologist.

Q Are you familiar with the Indian Hills Unit in Eddy County, New Mexico and the matters contained in this application?

A Yes, sir.

MR. BRATTON: Are the witness's qualifications

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MR. NUTTER: Yes, sir.

Mr. Ammentorp, in this application is Ralph Lowe asking for the creation of a new pool for Upper Pennsylvanian production composed of Section 21, I can't spot the township --

Township 21 South and Range 24 East. A

-- and promulgation of temporary pool rules, including Q 640-acre spacing, is that correct?

That is correct. A

And specified well locations within the sections, those wells: locations to be 1650 to the section line or 330 to a quarter, quarter line?

That is correct.

(Whereupon, Applicant's Exhibit No. 1 was marked for identification.)

Refer to your Exhibit No. 1, Mr. Ammentorp; does this indicate the location of the well in question in that Section 21, is that correct?

That is correct. A

And this is in a Federal unit, Indian Hills Federal Unit, which is outlined?

Yes, sir. A

Q Would you indicate the reference between this well and



the Ralph Lowe Indian Basin wells there?

Well, the well site is approximately four miles east of our three-well Indian Basin operating unit area, and was completed June 14 of 1963, when the initial, the calculated absolute open flow potential was filed.

The three Indian Basin wells are indicated here, what sections are those in?

The first well, No. 1 in Section 23; the second well, Α the No. 1.A, Section 22; the third well, the No. 1-B in Section 14.

Those wells encountered the same Upper Pennsylvanian Q production, is that correct?

That is correct. A

And they have been designated as Upper Pennsylvanian Q Pool and have the identical rules that we're asking for in connection with this well, is that correct?

Yes, sir.

Is there anything else you care to point out in connection with this?

Well, only that the Marathon Oil Company is drilling the No. 1 North Indian Basin Unit which is approximately two miles north of our Indian Basin Area, and it has also encountered the same Upper Pennsylvanian dolomite pay zone.



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- Has it been completed as yet? Q
- A No, sir.
- Is there anything further you care to point out? Q
- No.

(Whereupon, Applicant's Exhibit No. 2 was marked for identification.)

Let's go to Exhibit No. 2. This contains substantially the same information we have been talking about with reference to location of wells on the right-hand side. Would you explain what is shown on it, please?

This is a geological cross section or sample log À showing the thickness of Upper Pennsylvanian dolomite we encountered in our No. 1 Indian Hills Unit well showing the section of the overlying shale and the underlying limestone. The amount of visual porosity logged by myself while sitting on the well is plotted on the well, and as you can see, it is a continuous, massive dolomite section with porosity throughout.

- Did you get any cores of this well?
- No, sir, it was mechanically impossible.
- How does this formation encountered here compare with what you encountered in your Indian Basin wells?

Well, it is very much the same. The gross thickness is about 600 feet, which is 175 feet thicker, but the character



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of the dolomite, the secondary crystals within the porosity, and the general nature of the rock itself is extremely similar.

Q How about your depths, were they approximately the same or did you have much differential?

A They were very much the same. There's a 200-foot difference in elevation, the Indian Hills being lower, and the top of the formation was encountered at approximately the same depths in each well, the same drilling depth.

Q Is there anything further you care to state with reference to this sample log?

A I don't think so.

(Whereupon, Applicant's Exhibit No. 3 was marked for identification.)

Q Turning then to your next exhibit which is Exhibit No.

3, is this a report from Schlumberger as to porosity?

A Yes, this is a sonic porosity determination report, and porosity was measured in two-foot intervals through our dolomite, Upper Pennsylvanian dolomite section, and these have been measured by George Horst, the Schlumberger engineer, and he gives the average porosity of this reservoir, 7.3%.

Q Is that all this reflects, Mr. Ammentorp?

A Yes, sir. We prepared that report in lieu of a core analysis, since we were unable to --

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I believe our next four exhibits are four different Q types of logs, is that correct?

Α Yes, sir.

> (Whereupon, Applicant's Exhibits 4, 5, 6 & 7 were marked for identification.)

Q Referring to your Exhibit No. 4, let's say sonic log, and with particular reference to the area in question, the Upper Penn, would you explain what it reflects?

The curve on the right is a direct electrical measurement of porosity in the dolomite and the dark curve on the left indicates the amount of shale and the lighter curve is the caliper survey indicating the diameter of the hole. The dolomite section was penetrated approximately 20 feet during drilling, and on drill-stem test of this interval flowed a maximum of 2,830,000 cubic feet of gas per day. After completion of drilling operations the zones indicated were perforated, the results stated on the log.

Q What are those results, coming from the bottom up to the top?

The first zone swabbed 45 barrels of sulphur water per hour with a trace of gas. That depth was from 7690 to 7740 feet. That was after an acid treatment of 1,000 gallons. The well was then plugged back, these perforations were squeezed with 150 sacks



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and a new set of perforations were taken from 7590 to 7610. These perforations were acidized with 1,000 gallons and it flowed 65 barrels of sulphur water per hour plus 2,000 MCF gas. These perforations were cemented with 175 sacks of cement. The well was next perforated from 7536 to 48, acidized with 1,000 gallons, and it flowed 70 barrels of sulphur water per hour plus 2,250,000 cubic feet of gas per day, and the perforations were then cemented with 85 sacks.

Next the well was perforated from 7410 to 20, acidized with 1,000 gallons, and the well flowed 18,600,000 cubic feet of gas per day on a one-inch choke, the flowing tubing pressure was 475 pounds.

A bridge plug was then set at 7385 feet and the well was perforated from 7316 to 72, acidized with 1,000 gallons, the well flowed 1400 MCF. The well was then reacidized with 2,000 gallons and the well flowed 18,000,000 cubic feet of gas per day on a one-inch choke, flowing tubing pressure 475 pounds. The calculated absolute potential was taken from this last zone, which is open at the present time.

Q What does this indicate, Mr. Ammentorp, do you have water in the bottom portion of your reservoir?

A Yes, sir, this is similar to the Indian Basin where you have, on production tests you recover almost 100% water at the

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base of our reservoir section, and as you test upward in it the amount of gas that is produced with the water increases until you approach what we are calling our water table, and above this point entirely gas is produced. This water table is roughly the same as Indian Basin.

- The water table is approximately the same as in the Indian Basin?
  - Yes, sir. A
- So the productive characteristics of the formation Q here are the same as in the Indian Basin?
  - Yes. A
- Go then to your next Exhibit No. 5, what type of log Q is that?
  - It's a dual induction laterolog. A
- Turn then to your zone of interest and explain what that Q log reflects.
- The main purpose of the dual induction laterolog is A to enable us to calculate the resistivity of the formation logged and to determine where the gas-water contact may be, or intially the presence of hydrocarbons.
- Does this log, in effect, confirm what you found from your actual production experience and your actual perforation experience?



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Yes, sir. A

Turn to your next Exhibit No. 6. What type of log is that?

This is what is called a fracture finder log, and the curve on the right has both a dotted curve and a solid curve. This is a sonic tool or a sound velocity tool, and where the dotted curve departs from the solid, indicates fracturing or fractured zones. This log is exhibited to show the large number of fractures that we have encountered in this reservoir which would indicate extremely good permeability.

You have one apparently cavern around 7350, is that correct?

Yes, sir. This is a zone that around the well bore A has infinite porosity and permeability.

But going on down, excellent fracturing or permeability is indicated clear down through the zone, is that correct?

A That is correct.

Q Turn to your next log, Mr. Ammentorp, what type of log is that?

A This is a microlaterolog, which is still another tool to measure permeability in our Upper Pennsylvanian dolomite. The curve on the right-hand side of the log shows many kicks to the left which indicate fractures and good permeability.



This confirms again what's shown in your fracture log? Q

Yes, sir. A

Were these Exhibits 1 through 7 prepared by you or Q under your supervision, or by the companies indicated?

Yes, sir. A

Mr. Ammentorp, from your study of the geology of this formation, and from the study of the available information, the logs and your sample analysis, what is your opinion of this reservoir insofar as the ability of one well to produce a specified area?

I think the ability to produce over a large area is A excellent due to the massive nature of the dolomite. There seems to be no vertical separation, and visual porosity in samples as well as all electrical logs indicate excellent permeability and porosity.

Q Based upon the evidence that you have, would it be your opinion that one well in this area would efficiently drain 640 acres?

Yes, sir. A

Q Is there anything further you care to state, Mr. Ammentorp?

Oh, just that the dolomite section in this well seems very similar, or almost the same as all the characteristics



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whether it's the same reservoir at this time because of the distance?

Yes, sir.

exhibited in our Indian Basin Area.

But it easily could be or couldn't be?

We have a number of facts that suggest that it is A the same. Of course, the first is the actual lithology of the rocks penetrated, type of gas that is in the reservoir, the age of the rocks as determined by paleontological methods.

As a practical matter, Mr. Ammentorp, you can't tell

Either it's the same reservoir, or if it isn't, does it have all of the same geologic characteristics?

A Yes, it does.

MR. BRATTON: I believe that's all we have of Mr. Ammentorp.

> MR. NUTTER: Are there any questions of the witness? CROSS EXAMINATION

## BY MR. NUTTER:

A number of times during your testimony you have stated that in your opinion this is a very similar reservoir to the one to the west; however, you haven't presented anything here showing the similarity, have you? The similarity would have to be made by the Commission or determined by the Commission by



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comparing what you have got here with the record in the other case, in the Indian Basin, I presume?

Yes, sir. Additional data, pressure data will be presented by Mr. Landua showing the initial reservoir pressure to be the same, and it is too early to make an accurate map of this reservoir, and of course, we don't have proof by drilling that the reservoir is present between the two drilled areas.

Were you working for Ralph Lowe when the Indian Basin wells were drilled?

Yes, sir.

You mentioned that you had sat on this Indian Hills A well, did you sit on those wells out there?

Yes, sir.

Is this Indian Hills well a dual completion with Upper Q Pennsylvanian and Lower Pennsylvanian?

No, we have a Lower Pennsylvanian sand that produced a fair amount of gas on drill-stem test, but since there was no market available in the area at the time we have decided to not dually complete the well as a matter of economics.

Well, Exhibit No. 4 shows a drill-stem test down in the interval of 9160 to 9225, with some substantial flow rate indicated there. There is economic gas present in the Lower Pennsylvanian, isn't there?



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Yes, sir. The amount of sand we had delivered a large A amount of gas, but the pressure data during the test did not look favorable, the pressures seemed to drop and the pay is actually only about ten feet thick. If we get a pipeline in the area eventually we would probably come back and dual complete the well at that time.

- What size casing is this well equipped with?
- Five and a half inch. A
- Over in Indian Basin there were two pays established as Q pools with pool rules, and I believe there was a third pay up above that. Which does this correspond to, the one that you are asking for the rules today in this interval of 73 -- approximately 7300 to 7600, I guess, 7700?
  - This corresponds to the Upper Pennsylvanian dolomite. A
  - That's the middle pay over in the other area? Q
  - No, it's the upper one. A
  - The extreme top one? Q
- I believe it occurs at 7200 feet there, the top of it, so it would be within 100 feet drilling depthwise, as I say.
- Considering subsea elevations here, is this approximately 200 feet lower on a subsea datum than the area to the west?
- No, sir. The dolomite in the Indian Hills is flat, with our third well over there subsea, the No. 1-B, the northern-



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most well, so it is roughly 140 feet low to the first well.

And the No. 3 in the Indian Basin was low to the other Q two wells?

Yes, sir. Α

This swings around on the same elevation with the No. Q 3 elevation up there?

Yes, this is flat on the subsea datum with the third well.

Drill-stem testing in this well in the 7,000 foot range did recover sulphur water from 7690 to 7640. Recovered water from 7590 to 7610, during the drill-stem tests in the area to the west recovery water.

Yes, sir, they did in the No. 1-A. The No. 1 formation A did not give up large quantities of sulphur water on drill-stem test, but on subsequent production test they did, so there was a plugging of some nature of the reservoir during drilling that had to be broken with acid.

Are the two intervals here which you've tested and which made water here correlative to any two similar intervals in the wells to the west?

Yes, sir. The perforated intervals are all below the known water table in that area. On an exact footage comparison I couldn't say. I do not know. The two upper water zones, I

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would say are certainly on the same subsea horizon with general water zones determined in the first wells.

- You actually perforated five intervals in this area, Q this 7,000-foot area, and then you ended up cementing the three lower ones because they all three made water?
  - Yes, sir. A
  - And you left two open? Q
  - The one has a bridging plug between it, it's set there Α at --
    - Oh, that BP is a bridge plug between the two intervals? Q
    - Yes. A

MR. LANDUA: We chose not to squeeze it up but set a bridge plug.

- So you have one perforated interval right in the top Q of the Pennsylvania dolomite?
  - Yes. A
- On Exhibit No. 4, the sonic log, you have a very Q definit kick there at 7308, or something like that?
  - 7308. A
- It shows very definitely on this log, does that same Q marked kick show on the logs of the other wells to the west?
  - Yes. A
  - Are those wells perforated in the very same top section Q



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of the Pennsylvanian just under this kick like this?

- I believe the 1-B is essentially the same.
- Now, the analysis of the sonic log which you obtained from Schlumberger, and which is Exhibit No. 3, is that normal service that Schlumberger offers or is it made only upon special request of analysis of a sonic log?
  - It's made only on special request. MR. LANDUA: Anyone can get it, it's available. A
    - And he computes your porosity to be 7.3%? Q
  - You haven't stated anything as to reserves and cost Right. A of the well, will the other witness testify as to that?

MR. NUTTER: Are there any further questions of this Yes, sir. A witness? He may be excused. (Witness excused.)

## MARVIN L. LANDUA

called as a witness, having been first duly sworm, testified as follows:

## DIRECT EXAMINATION

## BY MR. BRATTON:

- Will you state your name, please? Q
- Marvin L. Landua, L-a-n-d-u-a.



SANTA PE. N. M. PHONE 983-3971

ALBUQUERQUE, N. M. PHONE 243 6691

FARMINGTON, N. M. PHONE 325-1182

- Q What is your position, Mr. Landua?
- A Technical Administrator for Ralph Lowe.
- Q Have you previously testified before this Commission as an expert witness?
  - A Yes, sir.
- Q Are you familiar with the area in question and the matters contained in this application?
  - A Yes, sir.

(Whereupon, Applicant's Exhibit No. 8 was marked for identification.)

- Q Mr. Landua, will you refer to Applicant's Exhibit No. 8 and explain what it is and what it reflects?
- A Exhibit 8 is the calculated absolute open flow potential obtained on the Indian Hills No. 1 in line with the rules of the Commission. In general it indicates that we have calculated an absolute open flow of 21,500,000 cubic feet of gas per day, and in addition the tests indicate that the gas contains approximately ten barrels of condensate per million cubic feet of gas.
- Q Would you explain anything unusual encountered in taking this test?
- A By the rules of the Commission at least a 5% drawdown in shut-in pressure is required for flow rates for use in making this calculation. This well had such fine permeability that it



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was difficult to obtain the 5% drawdown requirement so that we got flow rights high enough to make a calculation. At a flow rate of 5,774,000 cubic feet of gas per day, our drawdown was less than 4% from the original shut-in. It indicated extreme permeability in our opinion. That's the most unusual thing about our flow tests.

Q As a result of that, what was done, did you contact the Commission or what with relation to this test?

A Yes, this test was discussed with Mr. Utz. He indicated that by calculations for friction losses that extremely low rates of production, that errors may creep into calculations, and in this particular case he indicated that we could turn in a test based on this five million seven, assuming a slope of five-tenths, and that was the manner in which this open flow potential was obtained.

Q That comes from how much interval in this well?

A Just the 16 feet from 7316 to 32, which is located approximately at the top of this producing dolomite interval.

Q Refer to your other information shown on this exhibit, Mr. Landua, your gravity of your hydrocarbons and your other information shown under pressure calculations there. Do you have the information from the Indian Basin wells to give to the Commission to compare with these?

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Yes, by way of comparison, the Indian Basin No. 1, Α through perforations from 7376 to 7538, has calculated open flow of 16,100,000 cubic feet of gas per day, along with a condensate content of approximately ten barrels per million. The gravity of the condensate was 61 degrees, corrected to 60 degrees. On the No. 1-A Indian Basin, which was the second well for that area, through perforations at 7505 to 7572, we obtained a calculated open flow of 14,250,000 cubic feet of gas per day along with approximately the same condensate content. This condensate has measured gravity of 58.4 at 60 degrees Fahrenheit. By comparison the Indian Hills No. 1, located approximately four miles to the east, had a calculated open flow of 21,500,000 cubic feet per day along with approximately the same condensate content.

- Mr. Landua, what is your pipeline situation in this area?
- A Right now we have no connection to either of the two areas.
- Q I believe there was a case here a short while ago on the Hackberry Hills, and this area is some ten or twelve miles to the west of it, is that correct?
  - Α. Correct.
- What would be the effect on development, and on getting a pipeline into this area, of further development in the area on a



## 640-acre pattern, Mr. Landua?

It is our opinion that by 640-acre spaced wells, greater reserves would be proven in a shorter period of time which would help pipeline people to see reserves of a large enough amount to be interested in these areas.

Surely if you step out on 640-acre spacing and develop a large area of reserves you are liable to get a pipeline in that much sooner, is that correct?

That's our opinion.

Q Do you have any other information available other than what has been testified to here and what you have testified to from which you can determine the area one well will drain in this area? Is there any other information available at this time?

At this time there's none, because we have no withdrawals in the area.

Based upon the information, the capability of this Q. well, Mr. Landua, do you have any opinion as to whether or not this well will efficiently drain 640 acres?

Yes, sir.

What is that opinion? Q

I am of the opinion that of the reservoir material that we obtained in this well and the quality of this pay, that it would have no difficulty in draining areas perhaps in excess



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of 640 acres. I'd also like to point out, Mr. Bratton, that the reason for not coring and not taking drill-stem tests in this dolomite was because of the drilling difficulty, after we drilled the top 25 feet we lost circulation, which indicates extreme permeability of a formation, and it was mechanically impossible to take drill-stem tests and cores, and that's why we had to rely on the route of logs and log calculations for indications of reservoir volume.

In your opinion. Mr. Landua, would economic waste occur if development were to take place at this time in this area on less than 640-acre pattern?

Yes, sir. I think without question. This well will cost us in the neighborhood of \$350,000. We have not obtained all of our cost information because invoices are still coming Drilling is rather difficult in this area.

Q In that connection, Mr. Landua, actually we ought to point out this well isn't drilled on the pattern that we are talking about. Would you explain why?

We would like to have drilled this well on a 1650 pattern, but the topography of the area is such that a 1650 location here would have cost us approximately a hundred thousand dollars more just for dirt work, road work and surface work than the 660 location, so, since we were statewide we chose to go

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ahead and drill the 660 location. Now that we have gas and have reserves in the area, we would not mind the additional expense of spacing these wells to a pattern.

- This is right in the heart of what they call the Rocky Arroyos country, is that correct?
  - That's my understanding.
- And also at the time that you drilled this well, this was a wildcat well?
  - Α Yes.
- Mr. Landua, at this time have you made any economic calculations that you'd feel confident enough to give to the Commission?

It's so early, but just based on reservoir volume, we A believe that perhaps an estimate of 30 to 40 billion foot a section would be in place in this dolomite reservoir that we're talking about here at this hearing.

- Until actual further development takes place in the area and you get a pipeline in the area and some production history, you won't have much firm in the way of economics?
  - A No, sir.
- Q Is there anything further you'd care to state in connection with the application, Mr. Landua?
  - We would like to request that the sections be included A



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in this field since the well is located 660 out of the south and west corners of Section 21, we would like to make the specific request that Sections 20, 29 and 28 be included in this field designation at this time. The thickness of the pay sections, the extreme fine quality certainly indicates that it should cover a wide area. Those sections are undoubtedly productive and we respectfully request that the Commission consider the four in their designation.

- Mr. Landua, that would give you temporary development of this whole general area on a 640-acre pattern, which, as we've discussed before, would prove at an earlier date what area we're talking about?
  - That's correct.
  - And how much reserves there are in the area?
  - Yes, sir.
- And which would tend to bring a pipeline in earlier if Q you develop extensive reserves?
- To the best interest of the state and the federal government and all land owners in the area.
- Is there anything further you'd care to state in connection with this application, Mr. Landua?
  - Mo, sár. A
  - Was Exhibit No. 7 prepared under your supervision? Q

Yes, No. 8. A

Q Eight.

MR. BRATTON: We would offer in evidence Applicant's Exhibits 1 through 8.

MR. NUTTER: Exhibits 1 through 8 are admitted in cvidence.

> (Whereupon, Applicant's Exhibits Nos. 1 through 8 were offered and admitted in evidence.)

MR. NUTTER: Does anyone have a question of Mr. Landua?

MR. DURRETT: Yes. I have a question.

## CROSS EXAMINATION

## BY MR. DURRETT:

Would you have anything else to offer to the Commission other than your determination as to the permeability on this well to indicate that Sections 20, 28 and 29 might be productive of gas that should be included in this pool?

Would you restate your question? A

Q Yes, sir. Do you have anything other than just your determination that you have made concerning the permeability of your well, the subject well, to offer to the Commission to indicate that Sections 20, 28, and 29 should be included in this pool?

Just the extreme permeability of the pay and the thickness indicated by our logs, indicates to us that it should cover



an appreciable area.

Well, and you would like to request that the Commission include it, even though the one mile rule would actually govern production in these three sections?

A Yes, sir, I would.

MR. BRATTON: Mr. Durret, I doubt if you could do that at this time on this hearing because all that's called for is Section 21. If the Commission should determine to grant the application in this case, then I believe Mr. Landau's request to the Commission would be that it considered at a subsequent nomenclature hearing, considering on the basis of this evidence and the location of this well right in the corner of these sections that they would be governed.

- We are going to try and get 360 spacing anyway. A
- You are suggesting that we should consider this at a subsequent nomenclature case?
  - A The mechanics of it.

MR. NUTTER: The ad here is restricted to Section 21?

Yes, sir, we understand the petition, but we wanted to get the request in and, like I said, the mechanics, we would be delighted to come back up and testify at a proper hearing.

Q (By Mr. Durrett) I think that clears that up. Now, one other question. I don't understand that you want temporary



rules. Do you want temporary one-year rules, is that what you are proposing?

In our Indian Basin Area, I think our rules were granted on the basis of one year from the time that we got pipeline connection.

Yes, that's the point I was making. Would you like the same thing in this case?

That's the request we would like to make here also.

Would you have any estimate as to when you think you Q can get a connection here?

We have had numerous inquiries. Most of them have A been from people of a promoter type or nature. We don't know whether they actually have sales down the line. We have had absolutely no inquiry from a legitimate transmission company as to the extent of these reserves, and whether they're ready to come in, but our concept is to see how much we have and what we have and then build a line ourself to tap into somebody.

Q I see.

Or really get someone interested in this area whenever we can show enough reserves.

Q You are tentatively --

I would say that just from a judgment, that it would be A at least two years before you could sell any gas in appreciable



quantities.

You are tentatively planning, if you can't get somebody to come in, to build your own line?

If we see enough reserves, which we certainly can foresee that, we will take that under consideration.

MR. DURRETT: I think that's all.

## BY MR. NUTTER:

Are there additional wells drilling in this general Q area at this present time?

Right now in Section 10 north of the Indian Basin Area which shows up on Exhibit 1 is an active well.

That's the Marathon well?

Marathon, yes, sir. Then we believe that immediately around the Indian Hills Federal Unit there's quite a bit of activity because of lease terminations, majors and independents So I would say, Mr. Nutter, that before the end of the year there may be four or five rigs busy within this tenmile radius.

Are there quite a few leases that have early expiration Q dates?

I think so. I have not made a study myself, but in A our company I understand, in fact, we are trying to make well deals ourselves.



Q This Exhibit No. 1 shows a location, J. H. Trigg location down in Section 6?

A Yes, sir. We don't know whether it's one of those deals where leases are terminating and he has a cable tool on it, I don't know just what type of location, but it's an active location.

- Q It's an active location with a cable tool rig?
- A Yes. We understand south of him three miles that Superior Oil Company has a unit together and probably has a location, but it's getting a little south of the area that we're discussing here.
- Q Does Ralph Lowe plan any additional drilling in the immediate future in this area?

A Well, we will, under the terms of our Federal Unit, possibly drill another location say on the unit itself within six months, and we do anticipate additional wells around the unit if we can get our deals over. We are actively engaged in trying to make well deals.

- Q This Well No. 1 here was completed when?
- A June the 14th.
- Q And I suppose the unit requires another well be started within six months after the completion date?
  - A I don't know if it would require a well under the



shut-in gas deal, but we have to report on some basis.

Is the status of the pipeline connection for this area, including the Indian Basin, any different than it was at the time that you were in here on Indian Basin?

No, sir. About the same, we have had a few inquiries, but nothing firm has transpired.

You made a rough estimate of reserves and you figured it at 40 billion per square mile?

- A Yes.
- What is that estimate based on?

Based on 150 feet of free gas dolomite pay with about 7% porosity, and using a water saturation of roughly 30%. This is just gas in place, this's not recoverable gas.

Are those reserves similar then to what you had west of here?

- A They are better.
- Better reserves than in the Basin?
- Yes, sir. A

If I read this Exhibit No. 4 correctly, this perforated interval from 7410 to 7420 flowed 18,600 MCF a day. Why was the bridge plug set there and the zone isolated?

A Well, Mr. Nutter, from our producing characteristic we think this reservoir is going to have a water drive, so to



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get the maximum recovery we thought it best to perforate in the extreme top and then let the water encroach up and produce water-free gas for a longer period of time.

Q So, actually, although you've got 16 feet of perforation here in your computation, you were talking about the 150 feet of dolomite?

A That's correct.

And you are expecting to gain this gas from down below here by vertical migration with the water drive?

Yes. We think there's no question but there's extremely fine vertical communication.

And the water drive will get this gas up into the upper area?

À Yes, sir.

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

(Witness excused.)

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

MR. BRATTON: I believe not.

MR. NUTTER: Mr. Bratton, several references have been made to the similarity of this area to the Indian Basin as far as permeability and reservoir characteristics, and we have considerable data in our files regarding that area. Was it your

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intent to incorporate by reference the evidence that we have in that case in this one?

MR. BRATTON: We would request that the Commission take administrative notice of whatever is in that file.

MR. LANDUA: We did not request that you consider as one area right now, but I think eventually it will be.

MR. NUTTER: But we have your permission to look at our files some day?

MR. BRATTON: If the Examiner please, I suspect he might whether I requested him to or not.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2846?

MR. DURRETT: If the Examiner please, I believe we have some correspondence concerning this case. The Commission has received a communication in the form of a telegram from Manzano Chemical Company, Harry S. Lane, Regional Manager. They state in general that they are part interest owners in the unit and endorse the request in this case.

We also have received a communication from I believe Marathon Oil Company by I. G. Barell, Division Manager, stating that they support the application, and they state that they're joinders on the basis that the rules proposed by applicant are substantially the same as adopted for Indian Basin, Upper



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Pennsylvanian Gas Pool in Case 2749.

We also have received a communication in the form of a telegram from International Oil and Gas Corporation. state that they do not object to the application by Ralph Lowe, and that they request favorable consideration.

We also have received a communication from Sun Oil Company by Granville Dutton. This communication is in the form of a telegram, and I would like to read it in its entirety as it is somewhat unusual. It reads as follows: "Re Case 2846: Sun Oil Company, as an interest owner in the Indian Hills Unit, support application of Ralph Lowe to create new pool for Upper Pennsylvanian gas production and to establish temporary pool rules including 40-acre spacing and a one 1650 minimum distance from lease lines.

That is all the communications we received. I have a suspicion that last telegram might be in error.

MR. BRATTON: If the Examiner please, I would ask for confirmation from Western Union, or preferably from Mr. Dutton.

MR. DURRETT: These telegrams will be in the Commission file, if anyone would like to read them in their entirety.

MR. NUTTER: If nothing further in Case 2846, we will take the case under advisement.

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STATE OF NEW MEXICO SS COUNTY OF BERNALILLO )

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission 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 5th day of July, 1963.

My commission expires: June 19, 1967.

> I do hereby certify that the foregoing in a complete record of the proceeding the Examiner hearing of Case No. 2

New Mexico Oil Conservation Commission

