

CASE 3370: Application of SHELL
for an exception to Rule 8 of
Order No. R-2065 and Rule 301.

ASE No.

3370

Application,
Transcripts,

Small Exhibits

ETC.

Date _____
Top Unit Allowable For Pool Next Month, BPD _____
Average Reservoir Pressure _____
Supercompressibility Factor _____
Gas Equivalent, Net Water Injected, MCF _____

Most Recent Test (Last Month for Producing Wells)					Production and Injection Last Month										Supercompressibility Factor Gas Equivalent, Net Water Injected, MCF							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Well No.	Location	Inf. Prod or Prod	Meth of Prod	Date of Test	24-hr Oil Prod, bbls.	24-hr Gas Prod, cu ft	24-hr Water Prod, bbls.	Gas- Oil Ratio, ft/bbl	Ave. Daily Oil Prod, bbls.	Ave. Daily Gas Prod, cu ft	Ave. Daily Gas Inf., cu ft	Ave. Daily Water Prod, bbls.	Ave. Daily Water Inf., bbls.	Ave. Inf. Press psi	Cum. Gas or Water Inf.	Est. Non Penal ized Allow	Penal- ized Allow For H GOR	Gas Inf. Credit Assigned To Well	Adj. Allow Each Well	Allow Trans From Other Wells	Allow Trans To Other Wells	Final Allow: (Col 20 Plus 21 Minus Col 22)
	U S T R																					
TOTALS																						

CERTIFICATE: I, the undersigned, state that I am the _____ of the _____ (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 herein are true, correct, and complete to the best of my knowledge.

SIGNATURE



SHELL OIL COMPANY

Post Office Box 1200
Farmington, New Mexico

December 22, 1965

Subject: Case No. 2360
Order No. R-2065
Carson Unit & Rule 301

Case 3370

State of New Mexico
Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico

Attention Mr. A. L. Portor, Sr.

Gentlemen:

Further to our letter of December 14, 1965, captioned subject, we hereby apply for a hearing to obtain an exception of Rule 8, Order No. R-2065 to allow us reporting of a unit-wide GOR instead of monthly individual well GOR data. We ask for the hearing to be held at your convenience anytime after the third week of January, 1966, before either the Commission or Examiner as you desire.

Very truly yours,

B W Shepard

for

B. Kazarian
Division Production
Superintendent

JQH:HLG

DOCKET MAILED

Date 1-13-66

[Signature]

January 26, 1966 Examiner Hearing

CASE 3369: Application of Texaco Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Devonian formation through perforations from 10,604 to 10,780 feet in its State "B0" Well No. 4 located in Unit M, Section 13, Township 11 South, Range 32 East, Moore-Devonian Pool, Lea County, New Mexico.

CASE 3370: Application of Shell Oil Company for an exception to Rule 8 of Order No. R-2065 and to Rule 301, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 8 of Order No. R-2065 and to Rule 301 of the Commission rules and regulations to permit discontinuance of individual gas-oil ratio tests in its Carson Bisti-Lower Gallup Pressure Maintenance Project, Bisti-Lower Gallup Oil Pool, San Juan County, New Mexico. Applicant proposes to report gas production and ratios on a unit-wide basis rather than individual well GOR data.

CASE 3371: Application of Midwest Oil Corporation for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Harris State Well No. 1 at an unorthodox location 660 feet from the South line and 1980 feet from the West line of Section 29, Township 13 South, Range 34 East, Nonombre-Pennsylvanian Field, Lea County, New Mexico.

CASE 3372: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the amendment to Rule 104 F of the Commission rules and regulations to provide administrative procedure for the approval of an unorthodox location necessitated by recompletion of a well previously drilled to another horizon.

CASE 3373: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider amendment of Rule 301 to provide executive authority for the Secretary-Director to exempt, for good cause, certain pools from the annual gas-oil ratio test requirements; further, the Secretary-Director could, where necessary, order annual oil production tests in lieu of gas-oil ratio tests.

CASE 3374: In the matter of the hearing called by the Oil Conservation Commission on its own motion to amend Rule 302 of the Commission rules and regulations to eliminate the requirement for calibration of bottom-hole pressure test bombs prior and subsequent to each pressure test.

DOCKET: EXAMINER HEARING - WEDNESDAY - JANUARY 26, 1966

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

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

CASE 2720: (Reopened and continued from the January 5, 1966 Examiner Hearing)

In the matter of Case No. 2720 being reopened pursuant to the provisions of Order No. R-2397-B which continued the original order for an additional year, establishing special rules governing the production of oil and gas wells in the Double-X Delaware Pool, Lea County, New Mexico, including classification of wells as gas wells when the gas-liquid hydrocarbon ratio exceeds 30,000 to one.

CASE 3365: Application of Humble Oil & Refining Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the North Cedar Hills Unit Area comprising approximately 8,500 acres of Federal, State and Fee lands in Township 20 South, Range 28 East, and Township 21 South, Range 27 East, Eddy County, New Mexico.

CASE 3366: Application of Coastal States Gas Producing Company for a pilot pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot pressure maintenance project by the injection of water into the San Andres formation through three wells in Sections 15, 21 and 33, Township 9 South, Range 33 East, Flying "M" San Andres Pool, Lea County, New Mexico; applicant further seeks rules governing said project including a provision for administrative approval for the conversion of additional wells to water injection.

CASE 3367: Application of Penroc Oil Corporation for a non-standard oil proration unit and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard oil proration unit comprising the NE/4 SW/4, N/2 SE/4, and SW/4 SE/4 of Section 7, Township 19 South, Range 32 East, Lusk-Strawn Pool, Lea County, New Mexico, said unit to be dedicated to a well to be drilled at an unorthodox location for said pool 660 feet from the South line and 1650 feet from the East line of said Section 7.

CASE 3368: Application of Standard Oil Company of Texas for a waterflood expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its Maljamar Waterflood Project, formerly the Leonard Nichols Maljamar Waterflood Project, by the conversion to water injection of nine wells located in Sections 3, 4, 9, 10, 11 and 15, Township 17 South, Range 32 East, Lea County, New Mexico.

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. 2360
Order No. R-2065

APPLICATION OF SHELL OIL COMPANY
FOR APPROVAL OF THE CARSON BISTI-
LOWER GALLUP PRESSURE MAINTENANCE
PROJECT, SAN JUAN COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 30, 1961, at Santa Fe, New Mexico, before Elvis A. Utz, 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 19th day of September, 1961, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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, proposes to institute a pressure maintenance project in the Bisti-Lower Gallup Oil Pool by the injection of water into the Gallup formation in the Carson Unit Area in Sections 7, 17, 18, 19, 20 and 30, Township 25 North, Range 11 West, NMPM, and in Sections 11, 12, 13, 14, 23 and 24, Township 25 North, Range 12 West, NMPM, and in the proposed expansion of said Carson Unit Area in Sections 10 and 15, Township 25 North, Range 12 West, NMPM, all in San Juan County, New Mexico.

(3) That the applicant proposes that an administrative procedure be established whereby said pressure maintenance project may be expanded for good cause shown, and whereby additional wells in the project area may be converted to water injection.

(4) That Special Rules and Regulations for the operation of the Carson Bisti-Lower Gallup Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the

project allowable from any well or wells in the project in any proportion, provided that no well in the project area which directly or diagonally offsets a well outside the project area producing from the same common source of supply should be allowed to produce in excess of top unit allowable for the Bisti-Lower Gallup Oil Pool until such time as the well has experienced a substantial response to water injection. When such a response has occurred, the well should be permitted to produce up to two times top unit allowable for the Bisti-Lower Gallup Oil Pool. Production of such well at a higher rate should be authorized only after notice and hearing.

IT IS THEREFORE ORDERED:

(1) That the applicant is hereby authorized to institute a pressure maintenance project in the Bisti-Lower Gallup Oil Pool, San Juan County, New Mexico, to be designated as the Carson Bisti Lower-Gallup Pressure Maintenance Project, by the injection of water into the Gallup formation through the following wells:

TOWNSHIP 25 NORTH, RANGE 11 WEST, NMPM

Section 7: No. 24-7;
Section 17: Nos. 1, 23-17, 24-17, 31-17,
43-17;
Section 18: Nos. 21-18, 22-18, 23-18, 24-18;
Section 19: Nos. 21-19, 22-19;
Section 20: Nos. 11-20, 23-20, 32-20, 41-20;
Section 30: No. 11-30;

TOWNSHIP 25 NORTH, RANGE 12 WEST, NMPM

Section 10: No. 31-10;
Section 11: Nos. 22-11, 23-11, 24-11;
Section 12: No. 13-12;
Section 13: Nos. 21-13, 22-13, 23-13, 24-13;
Section 14: Nos. 21-14, 22-14, 23-14, 24-14;
Section 15: No. 14-15;
Section 23: No. 21-23;
Section 24: Nos. 21-24, 23-24, 32-24;

In addition, Mudge 6 Lease Wells No. 12-16A and 14-16A, located in the SW/4 NW/4 and SW/4 SW/4, respectively, of Section 16, Township 25 North, Range 11 West, NMPM, are hereby approved for conversion to water injection, to form a water barrier between the Carson Unit Area and the acreage to the east thereof.

(2) That Special Rules and Regulations governing the operation of the Carson Bisti Lower-Gallup Pressure Maintenance Project, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
CARSON BISTI LOWER-GALLUP PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Carson Bisti Lower-Gallup Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise that area described as follows:

TOWNSHIP 25 NORTH, RANGE 11 WEST

Section 7: SW/4, S/2 SE/4
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 30: N/2 NW/4

TOWNSHIP 25 NORTH, RANGE 12 WEST

Section 10: E/2, E/2 SW/4
Section 11: S/2, SW/4 NE/4, SE/4 NW/4,
W/2 NW/4
Section 12: SW/4, S/2 SE/4
Section 13: All
Section 14: All
Section 15: E/2, SW/4, E/2 NW/4
Section 22: NE/4 NE/4
Section 23: NE/4, N/2 SE/4, SE/4 SE/4,
E/2 NW/4, NW/4 NW/4
Section 24: All
Section 25: N/2 N/2

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio or are shut-in for any of the following reasons: pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to each 80-acre proration unit with one or more injection wells located thereon shall be top unit allowable for the pool. The presence of a producing well on such a unit shall not entitle the unit to any increase in allowable. The allowable assigned to each 40-acre proration unit shall be one-half the top unit allowable for the pool.

RULE 5. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3, shall be determined by a 24-hour test at a stabilized rate of production, which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Bisti-Lower Gallup Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

RULE 6. The allowable assigned to a proration unit with one or more producing wells but no injection wells located thereon shall be equal to the wells' ability to produce or to top unit allowable for the Bisti-Lower Gallup Oil Pool subject to the proration units' acreage factor, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Bisti-Lower Gallup Oil Pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the Bisti-Lower Gallup Oil Pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2,000}{\frac{P_g - I_g}{P_o}}$$

Where:

- A_{adj} = the well's daily adjusted allowable
- TUA = top unit allowable for the pool
- F_a = the well's acreage factor
- P_g = average daily volume of gas produced by the well during the preceding month, cubic feet
- I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet
- P_o = average daily volume of oil produced by the well during the preceding month, barrels

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$, to

be less than 2,000 cubic feet of gas per barrel of oil produced.

RULE 7. Credit for daily average net water injected into the Bisti-Lower Gallup Oil Pool through any injection well located within the project area may be converted to its gas equivalent and applied to any well producing with a gas-oil ratio in excess of two thousand cubic feet of gas per barrel of oil. Total credit for net water injected in the project area shall be the gas equivalent volume of the daily average net water injected during a one-month period. The daily average gas equivalent of net water injected shall be computed in accordance with the following formula:

$$E_g = (V_w \text{ inj} - V_w \text{ prod}) \times 5.61 \times \frac{P_a}{15.025} \times \frac{520^\circ}{T_r} \times \frac{1}{Z}$$

where:

- E_g = Average daily gas equivalent of net water injected, cubic feet
- $V_w \text{ inj}$ = Average daily volume of water injected, barrels
- $V_w \text{ prod}$ = Average daily volume of water produced, barrels
- 5.61 = Cubic foot equivalent of one barrel of water
- P_a = Average reservoir pressure at mid-point of the pay-zones of Bisti Lower-Gallup Oil Pool in project area, psig + 11.5, as determined from most recent survey
- 15.025 = Pressure base, psi
- 520° = Temperature base of 60°F expressed as absolute temperature
- T_r = Reservoir temperature of 145°F expressed as absolute temperature (605°R)
- Z = Compressibility factor from analysis of Bisti-Lower Gallup gas at average reservoir

-6-
CASE No. 2360
Order No. R-2065

pressure, P_a , interpolated from compressibility
tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9950	800	.9000
100	.9900	850	.8938
150	.9825	900	.8875
200	.9775	950	.8825
250	.9725	1000	.8775
300	.9625	1050	.8713
350	.9563	1100	.8663
400	.9500	1150	.8600
450	.9425	1200	.8550
500	.9363	1250	.8500
550	.9300	1300	.8450
600	.9238	1350	.8400
650	.9175	1400	.8360
700	.9115	1450	.8325
750	.9050		

RULE 8. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 9. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the Project in any proportion.

RULE 10. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the Project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall include the following:

- (1) A plat showing the location of proposed injection

-7-

CASE No. 2360
Order No. R-2065

well, all wells within the project area, and offset operators, locating wells which offset the project area.

(2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth showing that the injection of gas or water will be confined to the Gallup formation.

(3) A letter stating that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

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

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

E. S. WALKER. Member

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

S E A L

esr/

*Plc. See San Juan Special
letter*

DRAFT

JMD/esr

Jan 31, 1966

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CF Subj. _____

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

CASE No. 3370

Order No. R-3039

APPLICATION OF SHELL OIL COMPANY
FOR AN EXCEPTION TO RULE 8 OF ORDER
NO. R-2065 AND TO RULE 301, SAN JUAN
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
January 26, 1966, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this _____ day of February, 1966, 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 an excep-
tion to Rule 8 of Order No. P-2065 and Rule 301 of the Commis-
sion's ~~General~~ Rules and Regulations to report gas production
and gas-oil ratios on a unit basis in its Carson Bisti-Lower Gallup
Pressure Maintenance Project in the Bisti-Lower Gallup Oil Pool,
San Juan County, New Mexico.

(3) That the reporting of gas production and gas-oil
ratios on a unit basis in the Carson Bisti-Lower Gallup Pres-
sure Maintenance Project Area will relieve the unit operator
from unnecessary operating expenses and will provide the Com-
mission sufficient information to assure that the owner of each

property in the Bisti-Lower Gallup Oil Pool will receive its just and equitable share of the oil and gas in the pool.

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby granted an exception to ^{the gas-oil ratio test requirements of} Rule 8 of Order No. R-2065 and Rule 301 of the Commission's ~~General~~ Rules and Regulations to report gas production and gas-oil ratios on a unit basis in its Carson Bisti-Lower Gallup Pressure Maintenance Project in the Bisti-Lower Gallup Oil Pool, San Juan County, New Mexico.

(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.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

Copies sent to Hobbs & Aztec OCC -

February 9, 1966

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

Dear Sir:

Enclosed herewith are two copies of Order No. R-3039 entered by the Commission in Case No. 3370 on February 9, 1966.

This order grants your client, Shell Oil Company, an exception to the gas-oil ratio testing requirements of Rule 301 of the Commission's Rules and Regulations and, as an exception to Order No. R-2065, permits Shell to report gas production and gas-oil ratios on a unit basis in its Carson Bisti-Lower Gallup Pressure Maintenance Project, Bisti-Lower Gallup Oil Pool, San Juan County, New Mexico.

In completing its "Pressure Maintenance Project Operator's Monthly Report," Shell is authorized to omit individual well data in columns 7, 9, and 11; however these data relating to gas production and gas-oil ratios shall be shown for the unit as a whole.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/ir

Enclosures

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. 3379
Order No. R-3039

APPLICATION OF SHELL OIL COMPANY
FOR AN EXCEPTION TO RULE 8 OF ORDER
NO. R-2065 AND TO RULE 301, SAN JUAN
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
January 26, 1966, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this 9th day of February, 1966, 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 an excep-
tion to Rule 8 of Order No. R-2065 and Rule 301 of the Commis-
sion's Rules and Regulations to report gas production and gas-oil
ratios on a unit basis in its Carson Bisti-Lower Gallup Pressure
Maintenance Project in the Bisti-Lower Gallup Oil Pool, San Juan
County, New Mexico.

(3) That the reporting of gas production and gas-oil ratios
on a unit basis in the Carson Bisti-Lower Gallup Pressure Mainte-
nance Project Area will relieve the unit operator from unnecessary
operating expenses and will provide the Commission sufficient
information to assure that the owner of each property in the

-2-

CASE No. 3370
Order No. R-3039

Bisti-Lower Gallup Oil Pool will receive its just and equitable share of the oil and gas in the pool.

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby granted an exception to the gas-oil ratio test requirements of Rule 8 of Order No. R-2065 and Rule 301 of the Commission's Rules and Regulations to report gas production and gas-oil ratios on a unit basis in its Carson Bisti-Lower Gallup Pressure Maintenance Project in the Bisti-Lower Gallup Oil Pool, San Juan County, New Mexico.

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

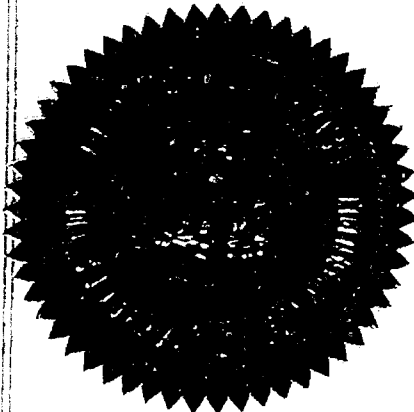
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

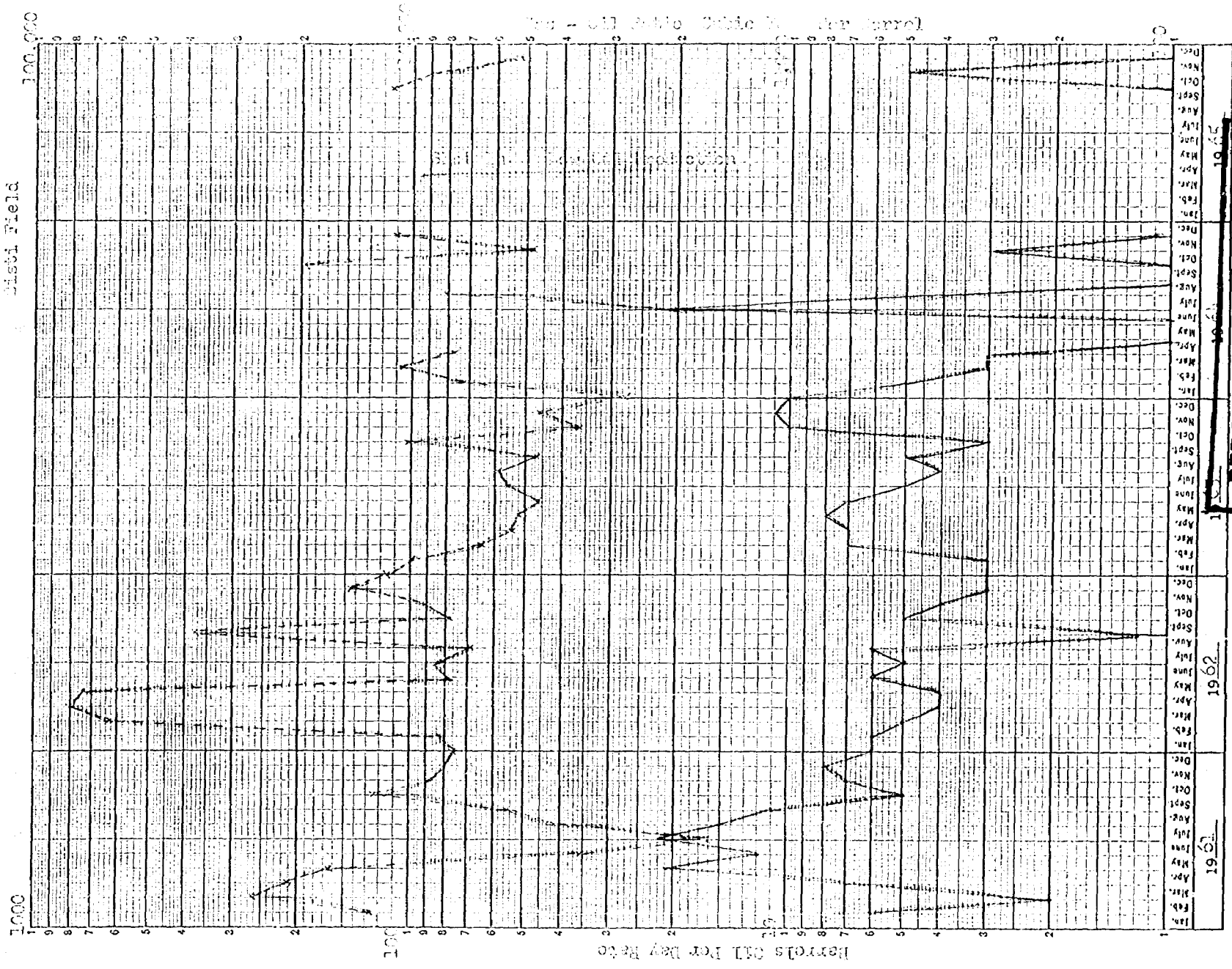
Guyton B. Hays
GUYTON B. HAYS, Member

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



esr/

44-13
Carbon Unit
Disti Field



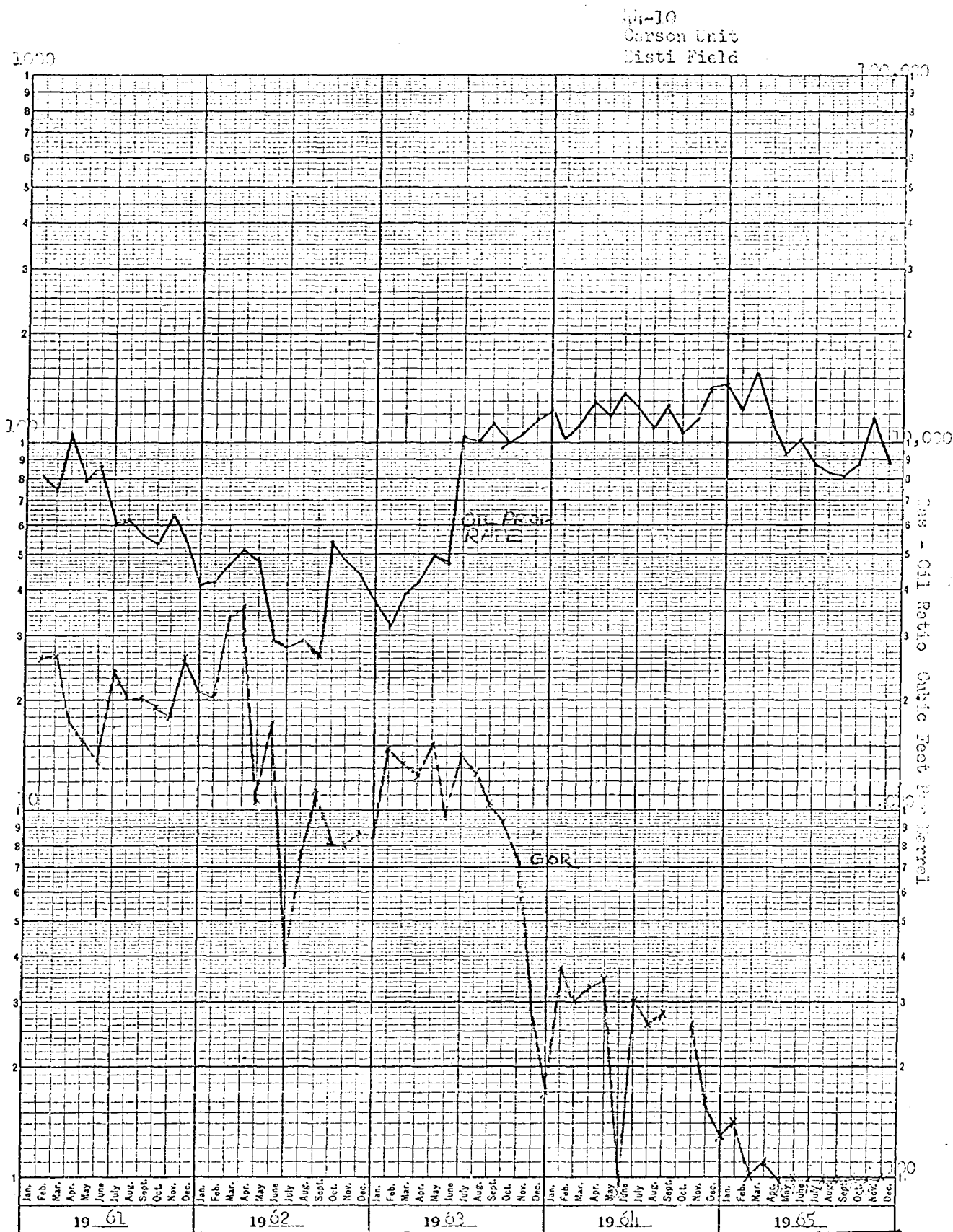
5 YEARS BY MONTHS 359-195
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION

EXHIBIT NO. 11
CASE NO. 2370

K&E
5 YEARS BY MONTHS 359-195
X 3 CYCLES
KEUFFEL & ESSERCO. MADE IN U.S.A.

Barrels Oil Per Day Rate



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 3370

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

Case 3370

December 17, 1965

C
O
P
Y

Mr. B. Kazarian
Division Production Superintendent
Shell Oil Company
Post Office Box 1200
Farmington, New Mexico

Dear Mr. Kazarian:

With reference to your letter of December 14th concerning a unit-wide GOR for your Carson Unit, this could not be done without a hearing since our statewide rule does not provide for administrative exceptions.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir



SHELL OIL COMPANY

Post Office Box 1200
Farmington, New Mexico

December 14, 1965

Subject: Case No. 2360
Order No. R-2065
Carson Unit & Rule 301

New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Attention Mr. A. L. Porter, Jr.

Gentlemen:

We would like to discontinue the obtaining and reporting of individual well Gas-Oil Ratio tests on captioned unit and instead report a GOR on a unit-wide basis. The GOR for the unit has declined to about 250 cu.ft./bbl. or a total of 215 MCF/D gas for 885 bbls./day oil. At present 71 wells are productive in the unit with 11 of these having gas rates too small to measure. Our request is occasioned by the increasing costs to obtain individual well tests and the increased costs of repair and calibration of meters. Please contact us if you need additional information.

Very truly yours,

B. Kazarian
B. Kazarian
Division Production Superintendent

BK:GC

Case 3370

Heard 1-26-66

Rec. 1-27-66

1. Grant Shell an exemption to Rule 301 and Rule 8 of Order R 20.65, reference to taking monthly or annual individual well Gas Oil Ratios.
2. Provide that ^{data in} Columns 7, 9 & 11 may omitted for individual wells on the ~~monthly~~ "Pressure maintenance Project Operators Monthly Report" ~~however~~ ~~post~~ project totals for these columns shall be reported.

Thos A. McR.

dearnley-meier reporting service, inc.

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

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 26, 1966

EXAMINER HEARING

IN THE MATTER OF:

Application of Shell Oil Company for an
exception to Rule 8 of Order No. R-2065
and to Rule 301, San Juan County, New
Mexico.

Case No. 3370

BEFORE:

Elvis A. Utz, Gas Engineer

TRANSCRIPT OF HEARING

MR. UTZ: Call Case 3370. Application of Shell Oil Company for an exception to Rule 8 of Order No. R-2065 and to Rule 301, San Juan County, New Mexico.

MR. MORRIS: I'm Richard Morris of Seth, Montgomery, Federici & Andrews, of Santa Fe, appearing for Shell Oil Company. We will have one witness, Mr. Bob Kazarian.

(Witness sworn.)

* * * *

(Whereupon, Applicant's Exhibits 1-4 marked for identification.)

B O B K A Z A R I A N, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Kazarian, will you please state your name, where you reside, by whom you are employed and in what capacity?

A Bob Kazarian, I reside in Farmington, New Mexico, I'm employed at the Shell Oil Company as Division Production Superintendent.

Q Have you testified before the New Mexico Oil Conservation Commission or one of its Examiners?

A I have not.

Q Then will you briefly state your education and

business experience?

A I obtained a Bachelor of Engineering Degree from the University of Southern California in 1951, was employed by Shell Oil Company in the capacity of Exploitation Engineer, remained in that capacity for about ten years, and in the past five plus or minus years have been in operations and operations supervision.

Q What is your area of responsibility as Division Production Superintendent in Farmington for the Pacific Coast Area?

A I'm directly responsible for the production of oil and gas, the fields in and around Farmington, New Mexico.

Q Does the Carson Bisti Unit come under your area of responsibility?

A Yes, it does.

MR. MORRIS: Are the witnesses qualifications acceptable?

MR. UTZ: Yes, they are.

Q (By Mr. Morris) Would you state briefly, Mr. Kazarian, what it is that Shell is seeking by an application in this case?

A We seek an exception to Rule 8 of Order Number R-2065 and to Rule 301 granting us exception from individual well gas-oil ratios. Instead, we wish to report gas-oil ratios on the unit-wide basis and our gas production on the

unit-wide basis.

Q Since we will be referring to Exhibit 1 and 2 interchangeably throughout this hearing would you identify what we have marked as Exhibit 1?

A Exhibit 1 is a map of the Carson Unit portion of the Bisti Field operated by Shell. Shell is the only interest owner in this particular unit. All the wells in the unit are shown with the exception of the water source wells. The plain dark circles are producing wells. Those dark circles that have arrows pointing towards them are water injection wells. The wells that have a cross on top of them are wells that are abandoned.

Q I also see that some of the wells are marked in red and green. Will you come back and refer to those later on in your testimony?

A Yes, I will. These are wells that we picked for part of the testimony.

Q Now, what would you identify the Exhibit Number 2?

A Exhibit Number 2 is a graphical representation of part of the field's statistics, a portion of them. The red lines depict the gas-oil ratio of the field since its discovery. The oil production, daily oil production rate is shown and marked on the exhibit and the water injection rate is also shown and marked on the exhibit.

Q Referring further to Exhibit 2, would you go into a little more detail now as to Shell's operation of the Carson Unit and point out what its experience has been with the pressure maintenance project that is being operated there?

A All right. At the present time we have approximately 70 producers and, well, say, 46 injection wells including the wells that are along a common boundary such as a boundry between the Carson and Central Bisti Unit operated by Sunray, and the 4 boundry wells separating the Carson Unit from the East Bisti Unit operated by Skelly. The field was drilled beginning about somewhere in 1957 and produced by National Production, by that I mean pumping units and flowing, until the early part of 1959. At that time the Central Bisti Unit operator started injecting water along the West line to set up a boundary to prevent migration of oil and gas across the common boundary between the two units. We began an active water injection program in February of 1962 after the Commission had granted an order allowing us to conduct this waterflood operation. Since that time the field has been produced in accordance with the order and the performance as shown here on the graph.

Q Your graph, now, shows that your oil production rate was declining rapidly from 1959 until, say, 1962, and since that time has more or less leveled off on a less steep

decline curve?

A Yes.

Q Exhibit 2 also shows your gas-oil ratio curve in red. What are your current levels of gas-oil ratios in this field?

A Well, as you can see from the graph the gas-oil ratio started declining shortly after we commenced oil-water injection and have been declining at a very rapid rate. The current level on the unit-wide basis is approximately 150 cubic feet per barrel of oil; our current production rate is in the realm of 800 barrels of oil, so our total gas can be figured by a multiplication of two, I don't have the figure multiplied out.

Q During the early days of the pressure maintenance operation in this unit what has been, and up to the present time, what has been Shell's practice as to taking and reporting gas-oil ratio tests?

A We've obtained a gas-oil ratio test on each producing well each month and reported it on the appropriate form as dictated by the Commission. This required something in the order of about 3 tests per day to cover the number of producers we had in the field; two to three, now.

Q Now, these were special tests that were run on each well, each producing well, each month in this unit, these were not just producing ratios that were furnished to the

Commission?

A No, the form, I'm sorry, I don't have one with me, the form asked for a specific date of the test the oil production water provides gas-oil production, so they were actually special tests, they were not a monthly average as such.

Q Now, referring back to Exhibit Number 1, could you give the Examiner a picture of just what your gas-oil ratio pattern is in this unit with reference to specific areas and even specific wells?

A I'll say that all wells with exception of those three that are shown with the red circles around them are well below the 2,000 to 1 ratio as stated in the orders and the general rules and regulations. We have not been penalized for allowables on any wells since shortly after the commencement of the water-flooding injection program. Our water injection converted to gas equivalent is in the order of 35,000 MCF so we have some latitude. These three wells in red on the recent monthly individual well report show gas-oil ratios that approach 2,000. Now, of the three, 4413 which is in the central portion of the field, there is an SD alongside of it, is shut down because the oil rate is too low to allow us to produce it using economic considerations.

Q So with your oil being low your gas-oil ratio was relatively meaningless?

A Yes, it's hard to measure anyway. We use displacement pipe required but when you convert that any error is magnified in these meters. The monthly well report showed that the well had been shut down for a considerable length of time and produced periodically and then it drops off to nothing, and so the gas-oil ratio, and actually it doesn't have much meaning, the amount of gas withdrawn in spite of the high gas-oil ratio is a pretty nominal amount. I can't quote any figure right now, I've got it with me if anyone is interested, but it is a minor amount of gas withdrawal, there's no undue dissipation. The other well is currently suspended. We plan to invert that to an injector. The necessary documents will be filed within a very short period of time to convert it to an injector. I might mention that there was an original gas cap or suggestion of one in this Southeast corner of the Carson Unit, and it did extend over to the East Bisti. The wells with all those little markings, the two wells in the Southeast corner of the Carson Unit, they were gas wells; they are now water injectors. We do plan to convert 1220 to water injection. Carson 4 is another high gas-oil ratio well, but the gas-oil ratio of that well is now down to 6700 cubic feet per barrel, it's declining rapidly. Our waterflood efforts, we can see them now, and the gas-oil ratio is coming down rather rapidly.

Q Does the Carson 4, is it capable of producing large

quantities of oil?

A No, it's 10 barrels a day, has been. We hope it gets better but we're talking about 10 barrels a day.

Q Even though the ratio on that well is in excess of 2,000 to 1, does that result in a penalized allowable?

A No, it doesn't, it had been in excess of 2,000 to 1 but recently has been down below a thousand. As stated earlier we haven't been penalized here because of our water injection efforts. Our basic purpose for seeking exception to these rules is several-fold. Primarily economics, we in our operations in the engineering of this flood find no further use for gas-oil ratios as such and in order to get these we must repair and keep in proper operating order several hard to keep in repair meters. Also, the manpower required to obtain these tests can be better utilized in other phases of the waterflood operation. We are limited on manpower and at times have to hire additional help to catch up on the work that they get behind in, and this additional time, if the gas-oil ratio, monthly gas-oil ratio on the individual well is not required, can be better utilized along those efforts.

Q Did you testify, Mr. Kazarian, in concerning what the green wells mean as shown on this Exhibit 1?

A The green wells were more or less picked in a random fashion as representative of the field. The wells themselves,

dearnley-meier reporting service, inc.

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

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

the gas-oil ratios have been high and have rapidly declined with the waterflood and are currently in the order of a hundred, maybe, times 70 or 80 cubic feet per barrel of low gas-oil ratio, and as I say I don't know how accurate they are because of practical limitation on our operating facilities.

We selected 4118 and 4218 towards the right-hand side of the unit because these two wells are producing in the order of a hundred to a hundred and fifty barrels of oil, so even though at one time have had very high gas-oil ratios. These have declined very rapidly. As pointed out in all but three cases, all wells are well below the gas-oil ratio of 2,000.

Q Now, your Exhibit Number 2 shows the gas-oil ratio and production curves for the entire field. Do you have a curve that you could produce with respect to a well that you would classify as a typical well in this unit?

A I have curves on each one of these wells that are circled if you're interested. The one I'm handing there is 4410. Incidentally, I did get some of these covered up because the Xerox in processing doesn't show this. The green line shows the oil production. Our oil production is in the order of a hundred barrels a day plus or minus the scale for the oil ratio on the left, or gas-oil ratio is down there, 80, 90, 70 cubic feet per barrel. Now, this is one of the

better producers in the unit. We have 4413 which is one of the wells that are currently shut down. This is intended to show that the oil production rate on this well is very low. Its been shut in there from November of 1964 to September of 1965. The well was shut in; we test it occasionally to see if we've gotten any waterflood response in that particular row of wells, and still have a high gas-oil ratio on the last test in excess of 5,000 cubic feet per barrel, but in the earlier testimony I stated that this figure did not really represent a dissipation of energy because of an extremely low oil production rate.

Q That was the first well circled in red?

A Yes, this well will be continued to be shut down until such time that the oil rate will justify producing it.

Q The gist of your testimony and of the facts that you have presented here, as I take it, is that the gas-oil ratio tests simply do not provide universal information at this point in the development and operation of this pressure maintenance project?

A That is correct. In the past we used it as a device to help us predict performance and extrapolate the performance of the reservoir, but now that it is extremely low, as you would expect under waterflood operations, we don't use it any more.

dearnley-meier reporting service, inc.

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

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

Q And your application here to the Commission is for an exception to any further gas-oil ratio tests for any of the producing wells within this unit area?

A Yes, it is, providing nothing unforeseen happens. Even under our proposed method of reporting if for any reason we haven't predicted the future of this flood properly it will show up, the gas rate will go up or the oil rate will jump. If there's any large changes in our field or unit then we would certainly want to examine some wells, some representative wells for our own information, and of course these tests would be furnished the Commission.

Q Were Exhibits 1 through 4 prepared by you or under your direction?

A Yes, they were.

MR. MORRIS: We offer Shell's Exhibits 1 through 4 into evidence.

(Whereupon, Applicant's Exhibits 1 through 4 offered into evidence.)

MR. UTZ: If there are no objections 1 through 4 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 4 admitted into evidence.)

CROSS-EXAMINATION

BY MR. UTS:

Q Mr. Kazarian, do you have a purchaser for this gas at the present time?

A Yes, excess gas is sold to El Paso Natural Gas Company. There is no gas flared. We use most of it in our operations. Well, let me back out, we use some of it in our operations, the rest is sold to El Paso.

Q And the volume would be your average GOR times your production rate or about a hundred and twenty-seven cubic feet per day?

A I don't have the total of gas on our forms here, I don't have them totaled up lease by lease, but it would be on that order.

Q So we aren't talking about any sizeable volume of gas, are we?

A No, no, we're not.

Q Now, do you have a proposal for changing Rule 8? I think you're aware of the fact that Rule 8 is a little bit elusive in that it doesn't mention the requirement of taking monthly GOR tests only by virtue of the form that we prescribed.

A Yes, that's right, we have interpreted this to mean that these tests were required monthly since a monthly form must be submitted in one of the columns designated gas-oil ratio. What we would propose to do under the gas-oil ratio is



just write "Exempt". We would still file the form monthly and then show a unit-wide gas-oil ratio.

Q You're not proposing any rule change, you're proposing an order that would exempt you from the requirements of Rule 310 and Rule 8?

A Yes.

MR. UTZ: Are there any other questions of the witness?

MR. KENDRICK: Yes, A. R. Kendrick with the Oil Commission.

CROSS-EXAMINATION

BY MR. KENDRICK:

Q Do you have any well, Mr. Kazarian, which can produce more than 280 feet per day?

MR. MORRIS: For my own edification what is the significance?

Q (By Mr. Kendrick) That is the gas limit per well under the top level for the Bisti?

A I venture a guess and say, no, on that. I would have to look that up. Really, most of the wells are in the order of a hundred or two hundred gas-oil ratio cubic feet per barrel. Our large wells, by large are big oil wells producing a hundred to a hundred and fifty barrels a day, are down from anywhere to seventy to a hundred.

Q I would like you to look over this form filed on December of 1965. I make the assumption that this is filed MCF instead of cubic feet?

A No, this is cubic feet.

Q This is cubic feet per day?

A We have positive--

Q Assuming this form is an average monthly thing the maximum production per well is 10 feet, I believe, as shown on this form?

A Well, it might be 10 MCF, let me back up, it says cubic feet.

Q Even so, this is considerably less, the highest gas production is considerably less than the gas production per well under the top pool allowable?

A Yes.

Q Would you propose that these columns 5 through 9 on the Pressure Maintenance Project Report be omitted on your future monthly reports, and the allowable assigned based on the column 10 average daily oil production in case this is granted rather than taking a production test each month on a specific day?

A Well, we obtain enough production tests, probably one a month or maybe one every two months, it depends on the size of the well. Column 5 and 6 is no problem. What we're

dearnley-meier reporting service, inc.

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

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

trying to do is discontinue our gas measurement by individual well. I would propose eliminating column 7, and we certainly want to know our water production which is column 8. Column 9, those two columns there which deal with the gas measurement on individual wells, we'd still report a total unit-wide gas production, total unit-wide gas-oil ratio.

MR. KENDRICK: That's all.

RE-CROSS-EXAMINATION

BY MR. UTZ:

Q Did you mention eliminating column 8?

A I don't remember.

MR. KENDRICK: No, sir, he said they wanted their water production.

A That's right, only those columns dealing with individual well gas measurement.

Q (By Mr. Utz) Well, that would be column 9 and gas oil ratios?

A And column 7.

Q That would be the 24,000 gas production cubic feet. Now, you don't propose to eliminate the average daily gas production column, do you?

A On the unit we can continue that and we want to know the unit-wide, but not particularly well by well.

Q You're not injecting any gas?



A No, sir, we're injecting all the water we produce and--

Q I believe those three columns that you're asking an exception from reporting are columns 7, 9 and 11?

A I think those are the columns, I didn't specifically look at 11 but 7 and 9 were two of them, yes. Eleven would be affected also since we wouldn't have a last month's figure.

MR. UTZ: Other questions of the witness?

MR. MORRIS: Just one question, Mr. Examiner.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Kazarian, if you noted any unusual increases in your gas-oil ratios for the wells, for any well in the unit area here, would you be willing to have a procedure set up whereby you would notify the Commission of such an occurrence so that the matter could be inquired into?

A Yes, we would. We'd certainly want to know for our own benefit, too, if we saw unusual statistics that we couldn't explain, we might want to make a test. We would certainly have to modify our facilities since these meters are expensive to repair, and we'd like to discontinue the repair on them. We'd also like to utilize the parts of the gas system for other facets of this waterflood operation, but we would be in a position to make a test if necessary.

dearnley-meier reporting service, inc.

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

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE 18

MR. MORRIS: That's all.

MR. UTZ: Other questions of the witness? Any other statements to be made in this case? The case will be taken under advisement.

I N D E X

WITNESS	PAGE
BOB KAZARIAN	
Direct Examination by Mr. Morris	2
Cross-Examination by Mr. Utz	12
Cross-Examination by Mr. Kendrick	14
Recross-Examination by Mr. Utz	16
Redirect Examination by Mr. Morris	17

E X H I B I T S

<u>NUMBER</u>	<u>MARKED FOR IDENTIFICATION</u>	<u>OFFERED</u>	<u>ADMITTED</u>
Applt's. 1	2	12	12
Applt's. 2	2	12	12
Applt's. 3	2	12	12
Applt's. 4	2	12	12

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
 1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO
 1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, BOBBY J. DAVIS, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 25th day of March, 1966.

Bobby J. Davis
 NOTARY PUBLIC

My Commission Expires:
 March 13, 1969.

I do hereby certify that the foregoing is a complete record of the proceedings in the Hearing before of Case No. 3370, heard by me on *March 24*, 19*66*.
Thos. L. [Signature], Examiner
 New Mexico Oil Conservation Commission