Case No.

1342

Application, Transcript,
Small Exhibits, Etc.

CASE 1342: Shell Oil Co. application to ~~install~~ centralized automatic production facilities & lease custody transfer system, Pearl Queen Pool.

Special Letter D
Hobbs, New Mexico

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 11-29-57

CASE 1342 Hearing Date 11-20-57

My recommendations for an order in the above numbered cases are as follows:

1. Same order as R-1029 for Cannon unit. except,
(a) Since several lease comm'ts one Production and test header ~~have~~ should specify that ~~some~~ proper mechanical schemes be provided to prevent the transfer of oil from one lease to another by accident. (Check-valves)

(b) The lease P.D. meters should be tested every 30 days. until sufficient field data is obtained to justify longer test periods.

(c) I believe that in spite of the fact that all wells are pumped this should be safety precautions taken to shut the well down in the event of line breakage. (Waste)

Staff Member

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. 1816
Order No. R-1101-A

APPLICATION OF SHELL OIL COMPANY
FOR PERMISSION TO COMMINGLE THE
PRODUCTION FROM SEVERAL SEPARATE
POOLS FROM SEVERAL SEPARATE LEASES
AND FOR PERMISSION TO INSTALL
AUTOMATIC CUSTODY TRANSFER EQUIP-
MENT TO HANDLE THE PRODUCTION FROM
SAID LEASES IN LEA COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 24, 1959, 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 16th day of December, 1959, 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 by Order R-1101 the applicant was authorized to commingle the production from the Pearl-Queen Pool in Lea County, New Mexico, from the following-described leases after separately metering the production from each lease and to transfer custody of said production by means of automatic custody transfer equipment:

McIntosh "E" lease, E/2 SW/4 of Section 21

McIntosh "D" lease, E/2 of Section 21

McIntosh "B" lease, E/2 NW/4 and NW/4 SW/4 of Section 22

McIntosh "A" lease, SW/4 SW/4 of Section 22

McIntosh "C" lease, NE/4 and NE/4 SE/4 of Section 28

McIntosh lease, W/2 NW/4 and NW/4 SW/4 of Section 27

Kimberlin lease, E/2 SW/4 and W/2 SE/4 of Section 22

State "PB" lease, E/2 NW/4 of Section 27

State "PA" lease, E/2 SW/4 of Section 27

Hooper lease, W/2 NE/4 of Section 27

Allen Estate "A" lease, E/2 NE/4 of Section 27

Allen Estate lease, E/2 SE/4 and NW/4 SE/4 of Section 27 and NE/4 NE/4 of Section 34

Record "A" lease, SW/4 SE/4 of Section 27

State "PD" lease, NW/4 of Section 34

State "PC" lease, W/2 NE/4 of Section 34

State "PE" lease, SE/4 NE/4 of Section 34 and SW/4 NW/4 and NW/4 SW/4 of Section 35

State "PF" lease, N/2 SE/4 of Section 34

State "PG" lease, S/2 SE/4 of Section 34 and S/2 SW/4 of Section 35

Record lease, S/2 SW/4 of Section 23, all of Section 26, N/2 N/2 and SW/4 NE/4 and SE/4 NW/4 and NE/4 SW/4 and NW/4 SE/4 and S/2 SE/4 of Section 35

State "PI" lease, SE/4 NE/4 and NE/4 SE/4 of Section 35

Record "B" lease, all of Section 25

State "PJ" lease, N/2 and SW/4 of Section 36

all in Township 19 South, Range 35 East.

State "PH" lease, all of Section 2, Township 20 South, Range 35 East.

(3) That by Administrative Order CTB-38, issued April 28, 1959, the applicant was authorized to commingle the production from the Pearl-Queen Pool from the said State "PA," State "PB," State "PC," State "PD," State "PE," State "PF," and State "PG" leases without separately metering the production from each of said leases.

(4) That the applicant now proposes to commingle the Pearl-Queen, San Andres, and Atoka production from the said State "PI" lease and the said Record lease after separately metering the production from each zone of each of said leases.

(5) That the applicant further proposes to enlarge the previously authorized automatic custody transfer equipment to handle the Pearl-Queen production from all wells presently drilled or hereafter completed on the leases described in Finding No. 2 and also to handle San Andres and Atoka production from the said State "PI" lease and the said Record lease.

(6) That the previous use of automatic custody transfer equipment, similar to that proposed by the applicant, has demonstrated that such equipment is a reliable and economic means of transferring the custody of oil, and that the use of such equipment should be permitted.

IT IS THEREFORE ORDERED:

(1) That the applicant be and the same is hereby authorized to commingle the Pearl-Queen, San Andres, and Atoka production from all wells presently drilled or hereafter completed on the following-described leases after separately metering the production from each zone of each lease and to commingle said production with Pearl-Queen production from all leases described in this order:

State "PI" lease, SE/4 NE/4 and NE/4 SE/4 of Section 35

Record lease, S/2 SW/4 of Section 23, all of Section 26, N/2 N/2 and SW/4 NE/4 and SE/4 NW/4 and NE/4 SW/4 and NW/4 SE/4 and S/2 SE/4 of Section 35

both in Township 19 South, Range 35 East, NMPM, Lea County, New Mexico.

(2) That the applicant be and the same is hereby authorized to commingle the production from the Pearl-Queen Pool from all wells presently drilled or hereafter completed on the following-described leases after separately metering the production from each lease and to commingle said production with the production from all leases described in this order:

McIntosh "E" lease, E/2 SW/4 of Section 21

McIntosh "D" lease, E/2 of Section 21

McIntosh "B" lease, E/2 NW/4 and NW/4 SW/4 of Section 22

McIntosh "A" lease, SW/4 SW/4 of Section 22

McIntosh "C" lease, NE/4 and NE/4 SE/4 of Section 28

McIntosh lease, W/2 NW/4 and NW/4 SW/4 of Section 27

Kimerlin lease, E/2 SW/4 and W/2 SE/4 of Section 22

Hooper lease, W/2 NE/4 of Section 27

Allen Estate "A" lease, E/2 NE/4 of Section 27

Allen Estate lease, E/2 SE/4 and NW/4 SE/4 of Section 27 and NE/4 NE/4 of Section 34

Record "A" lease, SW/4 SE/4 of Section 27

Record "B" lease, all of Section 25

State "PJ" lease, N/2 and SW/4 of Section 36

all in Township 19 South, Range 35 East.

State "PH" lease, all of Section 2, Township 20 South, Range 35 East.

(3) That the applicant be and the same is hereby authorized to commingle the Pearl-Queen Pool production from all wells presently completed or hereafter drilled on the following-described State leases without separately metering the production from each lease and to commingle said production with the production from all leases described in this order:

State "PB" lease, E/2 NW/4 of Section 27

State "PA" lease, E/2 SW/4 of Section 27

State "PD" lease, NW/4 of Section 34

State "PC" lease, W/2 NE/4 of Section 34

State "PE" lease, SE/4 NE/4 of Section 34 and SW/4 NW/4 and NW/4 SW/4 of Section 35

State "PF" lease, N/2 SE/4 of Section 34

State "PG" lease, S/2 SE/4 of Section 34
and S/2 SW/4 of Section 35

PROVIDED HOWEVER, That the total production from the above-described seven State leases shall not be commingled with the production from any other leases until it has been separately metered.

(4) That the applicant be and the same is hereby authorized to enlarge the previously authorized automatic custody transfer equipment to handle the Pearl-Queen production from the leases described in this order and also to handle San Andres and Atoka production from the above-described State "PI" lease and the Record lease, and, if necessary, to transport the oil off of said leases prior to measurement.

PROVIDED HOWEVER, That the applicant shall install adequate facilities to permit the testing of all wells on the subject leases at least once each month to determine the individual production from each well.

PROVIDED FURTHER, That the above-described system shall be so equipped as to prevent the undue waste of oil in the event of malfunction or flow-line break.

PROVIDED FURTHER, That all meters used in the above-described system shall be operated and maintained in such a manner as to ensure an accurate measurement of the liquid hydrocarbon production at all times.

PROVIDED FURTHER, That all meters shall be checked for accuracy at least once each month until further direction by the Secretary-Director. Meters shall be calibrated against a master meter or against a test tank of measured volume and the results of such calibration filed with the Commission on the Commission form entitled "Meter Test Report."

(5) That Order No. R-1101 and Administrative Order Nos. CTB-20 and CTB-38 be and the same are hereby superseded.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

S E A L

MURRAY E. MORGAN, Member

vem/

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

Case 1342

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NEW MEXICO
OIL CONSERVATION COMMISSION

SUPPORTING INFORMATION
APPLICATION FOR PERMISSION TO USE
CENTRALIZED AUTOMATIC PRODUCTION FACILITIES
AND AUTOMATIC CUSTODY TRANSFER EQUIPMENT

SHELL OIL COMPANY
PEARL QUEEN FIELD
LEA COUNTY, NEW MEXICO

NEW MEXICO
OIL CONSERVATION COMMISSION

SUPPORTING INFORMATION
APPLICATION FOR PERMISSION TO USE
CENTRALIZED AUTOMATIC PRODUCTION FACILITIES
AND AUTOMATIC CUSTODY TRANSFER EQUIPMENT

PEARL QUEEN FIELD
LEA COUNTY, NEW MEXICO

SHELL OIL COMPANY
ROSWELL, NEW MEXICO

OCTOBER 28, 1957

TABLE OF CONTENTS

ABSTRACT

This brochure has been assembled to supplement Shell Oil Company's application to the New Mexico Oil Conservation Commission to use centralized automatic production facilities and automatic transfer equipment in the Pearl Queen Field, Lea County, New Mexico, and should be considered along with the letter of application. The proposed method of handling and measuring production is illustrated by drawing and description and the advantages to the lessors, State of New Mexico and Shell Oil Company are enumerated.

CONTENTS OF LETTER OF APPLICATION

APPLICATION BY SHELL OIL COMPANY
FOR EXCEPTION TO RULE 309 OF THE RULES AND REGULATIONS
OF THE NEW MEXICO OIL CONSERVATION COMMISSION

By this letter of application Shell Oil Company requests approval of an exception to Section (a) of Rule 309 of the Rules and Regulations of the New Mexico Oil Conservation Commission to permit (1) oil to be transported from a lease for measurement, and (2) the production of more than 8 wells into common storage in the Pearl Queen Pool, Lea County, New Mexico.

It is the desire of the Company to install a system employing centralized automatic production facilities and lease custody transfer on Shell's leases in the Pearl Queen Field. These leases and their location are described as follows:

1. Shell's McIntosh "E" lease consisting of 80 acres in the E/2 SW/4, Section 21, T-19-S, R-35-E.

2. Shell's McIntosh "D" lease consisting of 320 acres in the E/2, Section 21, T-19-S, R-35-E.

3. Shell's McIntosh "B" lease consisting of 120 acres in the E/2 NW/4 and NW/4 SW/4, Section 22, T-19-S, R-35-E.

4. Shell's McIntosh "A" lease consisting of 40 acres in the SW/4 SW/4, Section 22, T-19-S, R-35-E.

5. Shell's McIntosh "C" lease consisting of 200 acres in the NE/4 and NE/4 SE/4, Section 28, T-19-S, R-35-E.

6. Shell's McIntosh lease consisting of 120 acres in the W/2 NW/4 and NW/4 SW/4, Section 27, T-19-S, R-35-E.

7. Shell's Kimberlin lease consisting of 120 acres in the E/2 SW/4 and W/2 SE/4, Section 22, T-19-S, R-35-E.

8. Shell's State "PB" lease consisting of 80 acres in the E/2 NW/4, Section 27, T-19-S, R-35-E.

9. Shell's State "PA" lease consisting of 80 acres in the E/2 SW/4, Section 27, T-19-S, R-35-E.

10. Shell's Hooper lease consisting of 80 acres in the W/2 NE/4, Section 27, T-19-S, R-35-E.

SHELL OIL COMPANY No. 357

Lease Production Record

Date_____

LEASE STATE PA PEARL QUEEN FIELD

Meter

TANK SAMPLE	AUTO. LINE SAMPLE
API GRAVITY	API GRAVITY
Observed ..... @__°F	Observed ..... @__°F
Corrected ..... @ 60°F	Corrected ..... @ 60°F
BS&W ..... %	BS&W ..... %

METER READING (Uncorrected)

Volume (BBL) — Finish	
Volume (BBL) — Start	
Gross Volume (BBL)	

	BBL READING — Finish
	BBL READING — Start

TOTAL BBL DELIVERED (Corrected to 60°F)

RUN TICKET NO._____

REMARKS:_____

Gauger's Signature

SHELL OIL COMPANY No. 358

Automatic Custody Transfer Shipping Record

Date_____

LEASES PEARL QUEEN FIELD

Meter

TANK SAMPLE	AUTO. LINE SAMPLE
API GRAVITY	API GRAVITY
Observed ..... @__°F	Observed ..... @__°F
Corrected ..... @ 60°F	Corrected ..... @ 60°F
BS&W ..... %	BS&W ..... %

METER READING (Uncorrected)

Volume (BBL) — Finish	
Volume (BBL) — Start	
Gross Volume (BBL)	

	BBL READING — Finish
	BBL READING — Start

TOTAL BBL DELIVERED (Corrected to 60°F)

RUN TICKET NO._____

REMARKS:_____

Gauger's Signature

11. Shell's Allen Estate "A" lease consisting of 80 acres in the E/2 NE/4, Section 27, T-19-S, R-35-E.

12. Shell's Allen Estate lease consisting of 160 acres in the E/2 and NW/4 SE/4, Section 27 and NE/4 NE/4, Section 34, T-19-S, R-35-E.

13. Shell's Record "A" lease consisting of 40 acres in the SW/4 SE/4, Section 27, T-19-S, R-35-E.

14. Shell's State "PD" lease consisting of 160 acres in the NW/4, Section 34, T-19-S, R-35-E.

15. Shell's State "PC" lease consisting of 80 acres in the W/2 NE/4, Section 34, T-19-S, R-35-E.

16. Shell's State "PE" lease consisting of 120 acres in the SE/4 NE/4, Section 34, and SW/4 NW/4 and NW/4 SW/4, Section 35, T-19-S, R-35-E.

17. Shell's State "PF" lease consisting of 80 acres in the N/2 SE/4, Section 34, T-19-S, R-35-E.

18. Shell's State "PG" lease consisting of 160 acres in the S/2 SE/4, Section 34 and S/2 SW/4, Section 35, T-19-S, R-35-E.

19. Shell's Record lease consisting of 1120 acres in the S/2 SW/4, Section 23, All Section 26, and N/2 N/2 and SW/4 NE/4 and SE/4 NW/4 and NE/4 SW/4 and NW/4 SE/4 and S/2 SE/4, Section 35, T-19-S, R-35-E.

20. Shell's State "PI" lease consisting of 80 acres in the SE/4 NE/4 and NE/4 SE/4, Section 35, T-19-S, R-35-E.

21. Shell's State "PH" lease consisting of 640 acres in Section 2, T-20-S, R-35-E.

22. Shell's Record "B" lease consisting of 640 acres in Section 25, T-19-S, R-35-E.

23. Shell's State "PJ" lease consisting of 480 acres in N/2 and SW/4, Section 36, T-19-S, R-35-E.

The said system is designed to perform the following functions automatically:

1. Control on-off producing periods of wells.

2. Measure and record production from each lease before the production enters common storage.

3. Test each well periodically to determine volume rates of oil, gas, and water.

4. During custody transfer, prevent (a) transferring oil to the pipeline if the positive displacement meter is not functioning properly, (b) overrunning daily and/or monthly allowable, and (c) transferring non-merchantable oil. Also, during transfer, a composite sample will be stored under pressure for determination of API gravity and BS&W content.

By copy of this letter, all operators, owning offsetting interests in the Pearl Queen Area, have been notified by certified mail of this application.

Wherefore, Shell Oil Company requests that the foregoing application for an exception to Rule 309 be heard before the New Mexico Oil Conservation Commission in Santa Fe, New Mexico, at the regularly scheduled November meeting.

INTRODUCTION

Shell Oil Company is initiating a development program in the Pearl Queen Field which may eventually include 23 leases and 128 wells; Shell's leases are shown in Exhibit I. The extent of development will, of course, be dependent upon successful completions but a sufficient number of wells have been completed to enable Shell to plan the location of centralized gathering and measuring facilities.

The Pearl Queen Field presents an unusual opportunity for the installation of modern oil handling and measuring equipment using latest techniques to produce the properties in the most efficient manner. The proposed design incorporates features to conserve oil vapors above ground, to eliminate waste of crude from tank cleaning, and to avoid tank spillage, thus conserving crude oil in the reservoir.

DESCRIPTION OF PROPOSED FACILITIES

The initial Pearl Field facilities will consist of (1) two remotely located gathering stations and (2) one central station with custody transfer equipment. The locations of these facilities are shown in Exhibit II. An extension of this initial system is shown in Exhibit III, indicating probable future remote and central facility locations if the entire area is productive.

Remote Stations

Well control, well testing, lease production measurement, and gas separation will be performed at the remote locations. The paths which the produced fluid will take during test and during normal production are shown in Exhibit IV, which is a diagram of remote station No. I-1. When a specific well is on test, the fluid will follow a path (shown in red) through the test separator and back to the particular production separator serving its lease. Fluid from the wells, other than the specific well being tested, will bypass the test separator and be routed directly to central storage through the individual lease production separators. (This path is shown in orange.) Routing of the produced fluid is automatically controlled by diaphragm valves on the well production and test header manifold and on the test separator manifold. The on-off producing period, the test sequence, and the length of the test of the wells connected to each remote location facility will be automatically controlled by equipment installed at that remote station.

From the test separator, the fluid passes through a monitor cell of Shell's "Phase-Null" cut recorder (0-70% BS&W cut range) and a positive displacement meter. The gross fluid and net oil measurements obtained are transmitted to a data recorder. The gas from the test separator is measured

by a positive displacement or orifice meter and measurement data are transmitted to the control house where the volume is recorded. It is our intent to test each well automatically on a schedule; however, provision is made to place a well on test at any time.

From the production separators, fluid passes through a positive displacement meter located immediately upstream from the separator dump valve. This fluid is then combined with the production from other leases and transferred to the central facility and lease custody transfer station. Mixing of the fluid from separate leases takes place in a 100-barrel tank equipped with automatic controls to start and stop a transfer pump. This tank is equipped with two separate high level switches to shut in all wells connected to the remote station if transfer of crude is interrupted for any reason. The positive displacement meter on the production separator will be equipped with temperature compensation (to correct measurements to a base of 60° F.), a large numeral counter, and a ticket printer. By inserting a ticket in the printer at the beginning of a measurement period, and printing the opening reading, the ticket is locked automatically and sealed in place and cannot be removed without mutilation until the closing reading is printed. An automatic sampler is operated in conjunction with each production separator. The volume of sample taken is directly proportional to the production from the lease, and is used to determine the average gravity and BS&W content of the lease production. Royalty payments for each lease will be based on its allocated share of the total net production shipped from the central facility, as determined by the printed tickets from the lease production meters and the BS&W content obtained with the sampler. We believe that this method is fair to all parties.

Central Facility and Custody Transfer

The central facility, shown in Exhibit V, provides equipment to perform all of the functions of a remote station and in addition has facilities for treating all of the produced fluid and transferring oil to the purchaser automatically. Currently, oil is being transported from the lease by truck. However, it is anticipated that pipe line facilities will eventually be provided for the field.

Incoming fluid is automatically routed to the heated gun barrel for treating; oil from the gun barrel gravitates into a surge tank and is transferred to the purchaser through custody transfer equipment. The surge tank is equipped with liquid level float switches as shown in Exhibit VI. As the tank fills to the upper operating level, a control valve opens and, when the manual truck connection is opened by the trucker, oil will be pumped into the tank truck. When a pipe line connection is available, the upper operating level switch will open the control valve and start both charging pump and pipe line shipping pump. Oil will be transferred until the number of barrels set on a Predetermined Shipping Control Counter has been reached or until the oil level reaches the lower operating level; the meter run set stop valve will then close and the pump will stop. The high level and the emergency high level switches are safety devices to shut in all wells connected to the central facility, either directly or through the remote facilities. The switches are independent of each other; the emergency will act only if the high level switch fails.

Oil is pumped from the bottom of the surge tank and passes through the following custody transfer equipment in succession:

1. The Charging Pump performs two functions. It is used to maintain a pressure in the metering system above the vapor pressure of the crude and to pump unmerchantable oil (determined by cut monitor) back through the treating system.

2. The Strainer will trap any foreign objects which might get into the line.

3. The Cut Monitor, operating on a dielectric constant principle, allows only merchantable oil to pass through the meter. If the set value of 1 per cent BS&W is exceeded, the monitor closes the set stop valve and shuts down the pipe line shipping pump. The excess cut signal from the monitor also actuates a three-way, two-position reroute valve and recirculates the non-merchantable oil through the treating system. As soon as the oil is acceptable, the monitor causes the bypass to close and shipping is resumed. If the oil does not become merchantable, probably through fault of the treating plant, the surge tank will fill until the high level switch operates to shut down the producing wells.

4. The Sampler will be driven by electrical impulses from the meter so that a small measured sample from each barrel of oil passing through the meter is drawn into a hermetically sealed sample container.

5. The Gas Eliminator will remove free air or gas if it should accidentally get into the line.

6. The Meter will be the positive displacement type with counters reading in units, tenths, and hundreths of barrels. Each meter is equipped with a temperature compensator and dual recording heads; one head is equipped with a ticket printer to record volume measurements

corrected to 60° F., and the other head is equipped to record gross volume on a counter. By inserting a ticket in the printer at the beginning of a measurement period, and printing the opening reading, the ticket is locked in place automatically and sealed and can not be removed without mutilation until the closing reading is printed. A lock-out safety device on the meter, which requires manual reset, closes the set stop valve (after a short delay) in the event the counter ceases to function. The predetermined shipping control is designed to shut down custody transfer operations whenever maximum daily and/or monthly production has been run from the central facility.

7. The Set Stop Valve is the main control valve for the custody transfer system. The valve is opened by the upper operating level switch and closed by the lower level operating switch in the surge tank. In addition, the valve will be closed if any of the following conditions occurs, regardless of the signal from the upper operating level switch:

(a) If signal from cut monitor indicates unmerchantable oil

(b) If meter counter fails

(c) If daily allowable has been transferred

(d) If monthly allowable has been transferred

(e) If power fails

8. The Back Pressure Regulator is manually set to maintain pressure on the meter above the vapor pressure of the crude.

9. The Shipping Pump, when pipe line connection is made, will be the property of the pipe line company and will be operated automatically by the same controls operating the meter run set stop valve.

The ACT control panel, which is locked and sealed, contains the various relays, switches, time delays, etc., to accomplish the functions set out above. Every effort has been made to design fail-safe equipment to prevent malfunctions which could cause mismeasurement of oil.

MEASUREMENT ACCURACY

Custody Transfer

Positive displacement meters used for custody transfer measurement of crude oil should be at least as accurate as manual tank gauges, the current standard means of measurement. Based on Shell's experience, and that of others in the industry, it has been found that meters are as accurate as the most carefully controlled manual methods of gauging. The major sources of error as a result of manual tank gauging are:

1. Wax and corrosion incrustations on the inside of tank walls reduce the actual tank volume.
2. Average temperature of oil in the tank differs from the observed temperature.
3. Basic sediment under gauge hatch changes from opening to closing gauge.
4. In many cases, per cent error is excessive when measuring liquid level to nearest 1/4 inch.
5. Widely used abridged ASTM Table 7 for oil volume correction to 60° F. is less accurate than ASTM Table 6. (The proposed meters will correct at the coefficient of expansion of the oil being shipped as determined by ASTM Table 6.)

In addition to these errors, there are a number of smaller possible errors in manual gauging, among these are tank strapping inaccuracy, tank expansion and contraction, tank tilt, and out-of-roundness, and bottom flexure from high to low gauge.

In the only report we have seen on the matter it was stated that extensive investigation had shown that the volume of oil computed from

tank gauging methods may differ from -1.0% to +0.15% of the true volume as a result of these errors. As determined by field tests by Shell and the work of other companies, the summation of positive displacement meter errors is approximately +0.15% As the magnitude of this error is considerably less than that for manual tank gauging, positive displacement meters should offer the more accurate means of oil measurement.

Considerably more data are available to support the case for positive displacement meters for lease custody transfer service. However, the data currently available have already been presented to the Commission by Shell Oil Company in their application for the use of automatic custody transfer equipment in the Bisti Field, San Juan County, New Mexico. To add it to this brochure would only be repetitious.

Lease Production Allocation

In most respects, the system described in the brochure is comparable to the system proposed by Shell Oil Company for the Bisti Field, San Juan County, New Mexico. The outstanding difference is in the method of allocating production among the leases.

The Bisti Field, for the most part, is a unitized operation and does not have the lease production allocation problem found in the Pearl Queen Field. In cases where allocation is necessary for wells not admitted to the participating area in a prescribed period, it was the Commission's order that the oil either be measured in tanks or metered continuously by means of positive displacement meters prior to being commingled with oil production from the participating area of the Carson Unit Area.

In essence, it is our request that permission be granted to allocate production in the same manner on a permanent basis. This method of allocation is not new and has been in use in other localities by Shell and other companies for some time. In the Quitman Field in Texas, Shell uses positive displacement meters to measure production and allocate royalty payments from ten leases; custody transfer is accomplished from one central location. The difference between adjusted meter volume and gauged volume for the first five months of operation was 0.22 per cent. During this period, 48,000 barrels of crude were handled. A similar installation, plus an automatic custody transfer installation at the central collection point, is operated by Western Gulf Oil Company in California. Again, royalty payments are based on volumes recorded by the positive displacement meters located on the various leases. In the Esperanza Field in California, Shell is installing equipment identical to that described in this brochure.

The State of Louisiana granted permission to Shell to commingle production from gas-condensate wells on six leases and to allocate production on the basis of positive displacement meter measurements. Percentage differences between meter volumes and gauged volumes have been consistently one-half of one per cent, or less.

Positive displacement meters have also been used in many cases to measure production from different pay zones prior to commingling production. In one such case in the Big Mineral Field of Texas, Shell metered a total of 1,456,137 barrels of crude from five pay zones with a cumulative difference of 0.28 per cent.

Preliminary tests on the Kimberlin lease in the Pearl Queen Field indicate that accuracies within ±0.2 per cent may be expected from the

positive displacement meters measuring crude from the leases. We believe that allocation of lease production based on measurements of this indicated accuracy is fair to all parties.

The accuracy of the meters used for lease production and test measurement will be maintained by a routine recalibration and replacement program. The calibration data of meters used in similar or the same service as above described indicate that a calibration check for each 100,000 barrels of fluid through-put would prevent a meter factor drift greater than 0.1 per cent.

Meter Calibration--Custody Transfer Meter

Meter calibration tests (meter proving) will be conducted by Shell Oil Company and witnessed by the transport company until pipe line facilities are available. The Shell Pipe Line Corporation will provide for proving and maintaining the custody transfer metering facilities following installation of their gathering system. The frequency of calibration will be determined by experience. It is anticipated that calibration tests will be run every 30 days initially and that this program will be revised as experience dictates.

Calibrations are made to determine a factor by which the meter reading is multiplied to compute the true volume of oil measured. Another important objective of calibration is to detect mechanical trouble before it significantly affects meter accuracy. Since a meter factor change is usually indicative of internal wear, a sizable factor change from one calibration to the next indicates that maintenance is required.

Meters will be proved in accordance with the API ASME Code 1101, "Installation, Proving, and Operation of Positive Displacement Meters in Liquid Hydrocarbon Service". Several alternate calibration methods are approved by this code. The volumetric method, which will be used, specifies that a metered volume be remeasured in a container of accurately known volume. Comparison of the two measurements indicates the accuracy of the meter being checked. This container, or prover tank, will have a capacity such that the meter can flow into it for at least one minute at maximum flow rate. It will be internally coated to prevent scale and wax deposition on the walls and will be insulated to maintain constant oil temperatures during proving operations.

This tank will be calibrated initially, and at reasonable intervals thereafter, by the water withdrawal method. This method determines the prover tank volume by first filling with water which is then withdrawn into measures calibrated by the National Bureau of Standards. Calibrations are repeated until two consecutive volume measurements agree within 0.02 per cent. The average of these two measurements is taken as the prover tank volume at the pressure and temperature of the tests. Proper correction factors are applied to tank volume for temperature conditions other than calibration temperature. The prover is calibrated at its operating pressure (in this case, atmospheric pressure). Standard industry practice is to first fill the prover tank with the oil to wet the walls and bring it to the oil temperature. The tank is then drained, and calibration runs are made until two meter factor determinations agree within 0.05 per cent. The average of these two values is taken as the meter

factor for the following operating period. With properly designed proving equipment and experienced personnel, usually only two or three calibration runs are needed to achieve the desired reproducibility.

A meter proving data sheet which will be witnessed and signed by transport company or pipe line and lease operator representatives becomes a permanent record of both parties.

Sample Testing

The API gravity and BS&W content of the oil tendered to the transport or pipe line company will be determined from that of the automatically-obtained composite sample whenever a run is completed. Representatives of Shell and the transport or pipe line company will jointly witness these tests.

Throughout the oil industry during the past several years, large quantities of crude oil have been accounted for on the basis of automatically-obtained line samples. Both Shell Oil Company and Shell Pipe Line Corporation have conducted tests regarding the reliability and accuracy of these devices, and both have concluded that samples obtained by properly designed, installed, and maintained automatic samplers are more accurate than those taken manually.

ECONOMIC BENEFITS

The use of centralized automatic production handling facilities and well control as herein described instead of conventional tankage is expected to result in economic benefits of considerable magnitude.

Petroleum Conservation

Conservation of crude oil will result because the proposed metering system eliminates the exposure of crude to air throughout the gathering and storage systems. Thus, light petroleum fractions are retained in the crude, thereby maintaining volume, gravity, and value. Tank cleaning, and the attendant waste, will be minimized; automatic controls at the central facility will prevent spillage.

No quantitative data that show how much loss in gravity will be prevented by a completely closed oil handling system are available for the Pearl Queen Field. However, Shell made detailed studies in the Wasson Field in Texas which showed definite gravity increases when a closed oil handling and automatic custody transfer system was installed. The closed system prevents normal losses due to hand gauging methods which require frequent opening of tank gauge hatches. Conserving the oil will mean additional revenue to the lessors, to the State of New Mexico, and to Shell. In addition, if the closed system maintains the gravity in a higher price bracket, lessors will receive more revenue.

Operating Economy

The lease operating costs of the Pearl Queen Field will be materially decreased by the centralization of treating and storage facilities, use of automatic equipment, elimination of hand gauging, and

reduction of equipment maintenance. Inasmuch as the economic limit is reached when the cost of production equals the revenue from production, the reduction in operating costs will serve to increase the economic life of the field resulting in additional oil recovery from the reservoir. This increased oil recovery means additional revenue to the lessors and to the State of New Mexico and to Shell.

Safety

In addition to the increased revenue, the safety of personnel will be improved with the elimination of tank gauging and the attendant hazards from tank vapors, climbing, and fire.

Fire hazards will be decreased, at least in proportion to the reduction in the number of storage tanks, and possible losses will also decrease by minimizing above-ground storage.

R 35 E

T 19 S

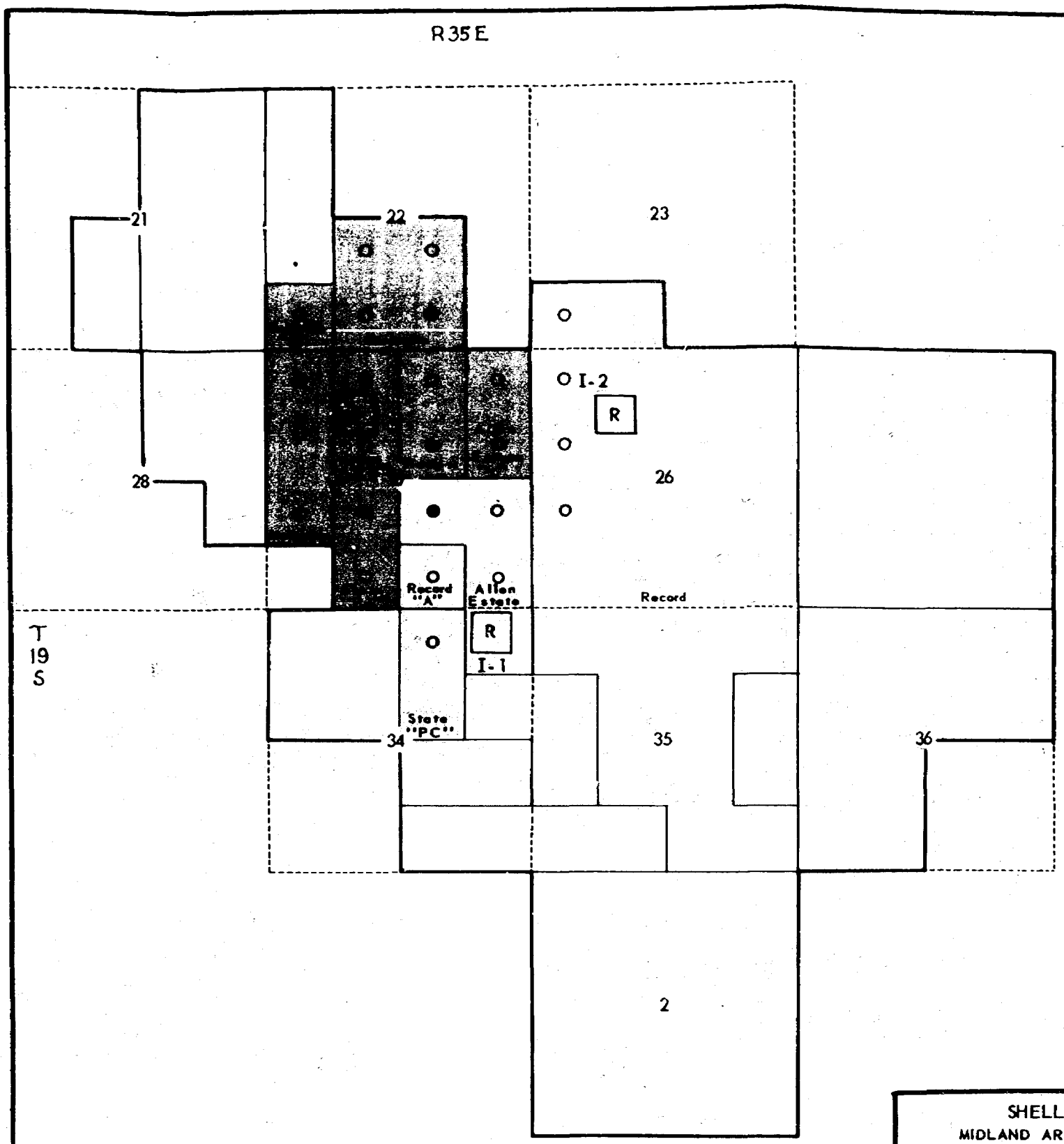
Shell
Shell
21
Shell
22
Shell
23
McIntosh "B"
Shell
McIntosh "E"
McIntosh "D"
Shell
McIntosh "A"
Kimberlin
Shell
Shell
Shell
Shell
Shell
Shell
"A" Allen Estate
State "PB"
Shell
G. Hooper
27
Shell
28
26
25
McIntosh "C"
McIntosh
Shell
Record "A"
State PA
Record
Record "B"
Shell
Shell
Shell
Allen Estate
Shell
Shell
State "PD"
State "PC"
34
Shell
35
36
State "PE"
State "PI"
State "PF"
Shell
State "PG"
State "PJ"
Shell
2
State "PH"

SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD

PROPOSED LEASES INCLUDED
WITHIN EXCEPTION
LEA COUNTY, NEW MEXICO

Scale: 1"= ½ mile
Date 10/9/57
Data By G F Y - J W M
Approved R L E
Drawn By J W D

EXHIBIT I

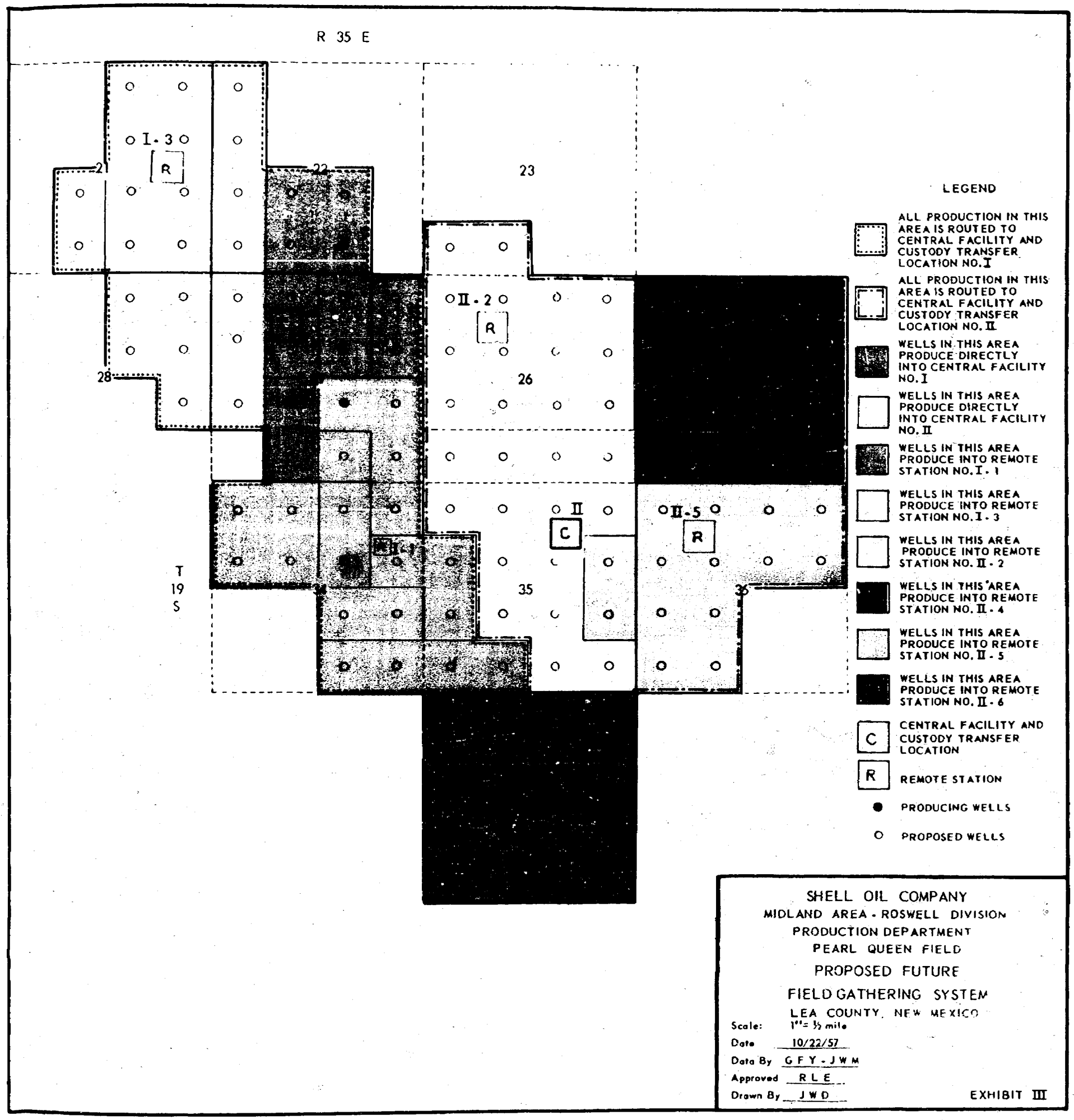


SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD
LEA COUNTY, NEW MEXICO

PROPOSED INITIAL FIELD GATHERING SYSTEM

Scale: 1" = ½ mile
Date: 10/22/57
Data By: G F Y - J W M
Approved: R L E
Drawn By: J W D

EXHIBIT II



SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD

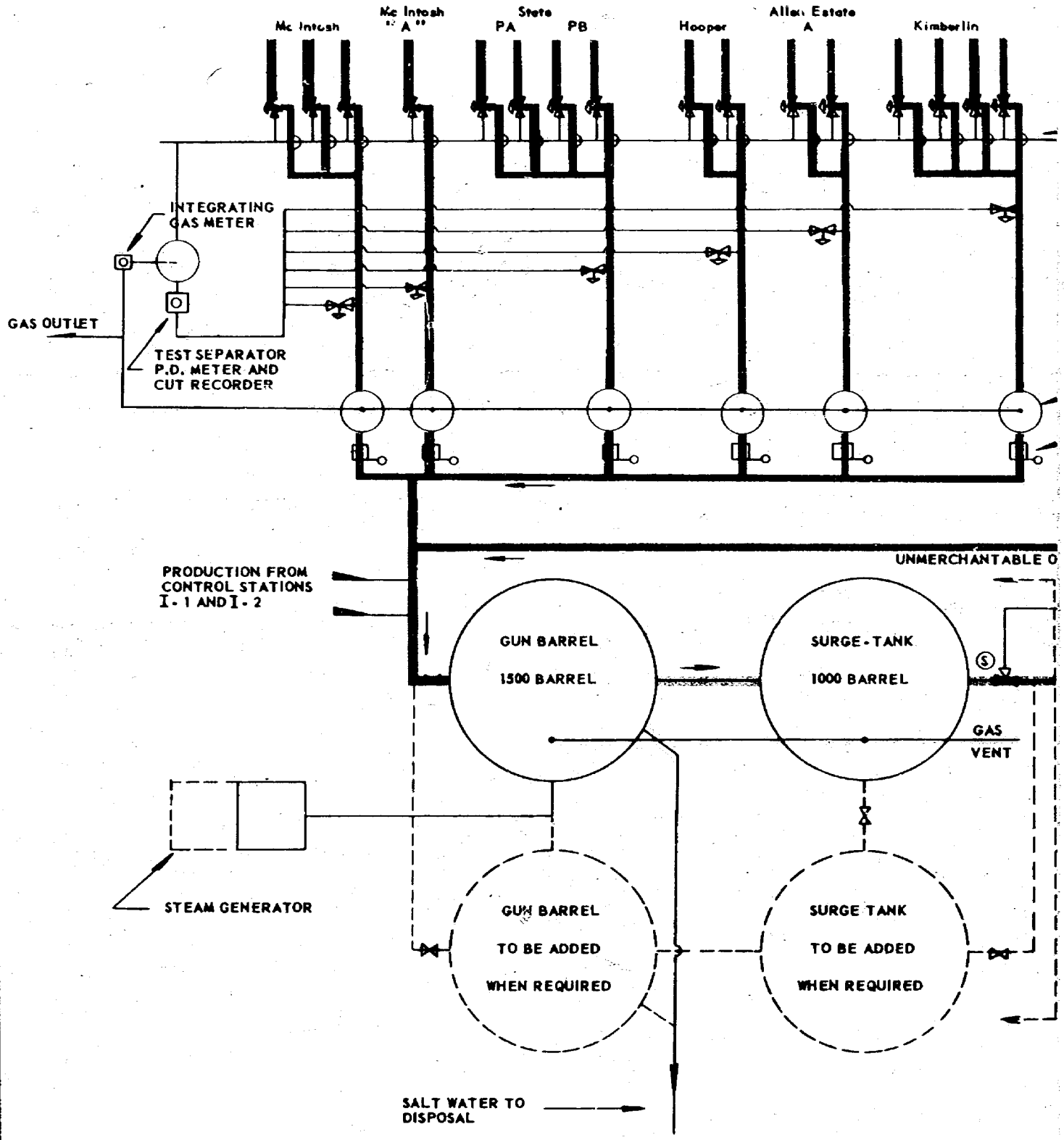
PROPOSED FUTURE FIELD GATHERING SYSTEM

LEA COUNTY, NEW MEXICO

Scale: 1" = ½ mile
Date 10/22/57
Data By G F Y - J W M
Approved R L E
Drawn By J W D

EXHIBIT III

WELLS PRODUCING DIRECTLY INTO CENTRAL FACILITIES



LEGEND

GAS LINES

TREATED OIL

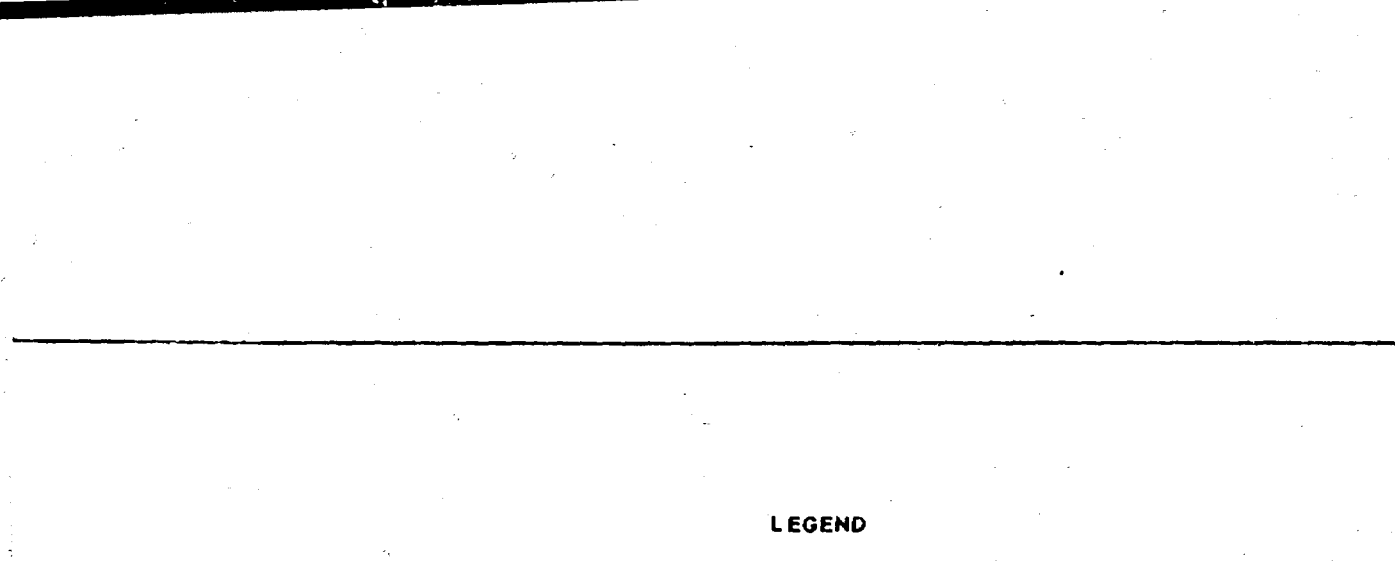
LEASE CRUDE OR OIL REQUIRING FURTHER TREATING

SALT WATER LINES

WELL PRODUCTION AND TEST HEADER

PRODUCTION SEPARATORS

P.D. METERS AND SAMPLERS



(S) SEALED VALVES

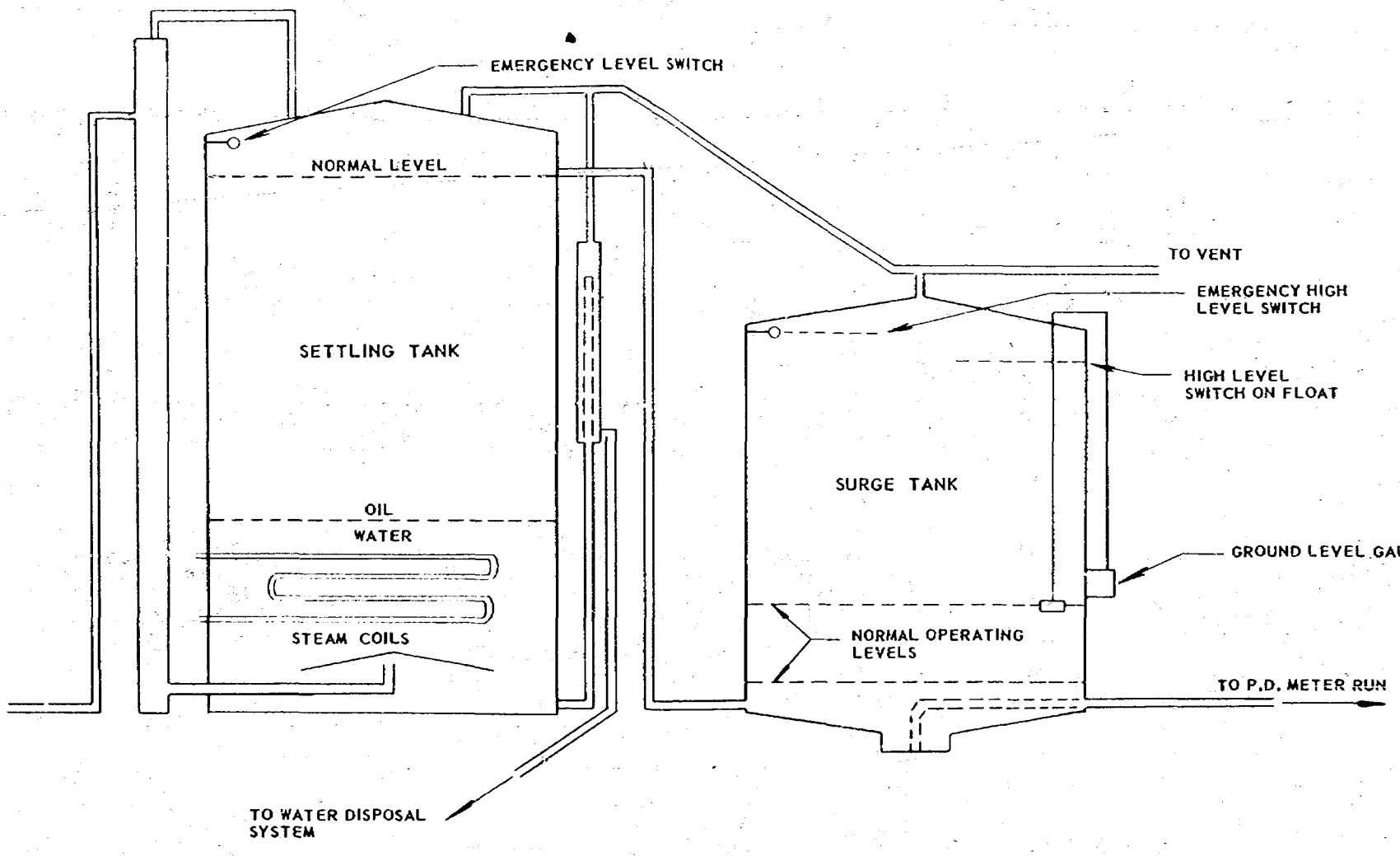
SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD

PROPOSED INITIAL CENTRAL FACILITIES NO. 1: TEST STATION, TREATING SYSTEM, AND AUTOMATIC CUSTODY TRANSFER FACILITIES

LEA COUNTY, NEW MEXICO

Date 10/22/57
Date By G F Y - J W M
Approved R L E
Drawn By D V H

EXHIBIT V



SHELL OIL COMPANY
MIDLAND AREA - ROSWELL DIVISION
PRODUCTION DEPARTMENT
PEARL QUEEN FIELD

PROPOSED CENTRAL SETTLING TANK
AND SURGE TANK INSTALLATION
LEA COUNTY, NEW MEXICO

Date 10/22/57
Data By G F Y - J W M
Approved R L E
Drawn By D V H

EXHIBIT VI

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE NO. 1342
Order No. R-1101

APPLICATION OF SHELL OIL COMPANY
FOR PERMISSION TO INSTALL CENTRALIZED
AUTOMATIC PRODUCTION FACILITIES AND
LEASE CUSTODY TRANSFER SYSTEM ON
CERTAIN OF ITS LEASES IN THE PEARL
QUEEN POOL, LEA COUNTY, NEW MEXICO,
AND FOR PERMISSION TO PRODUCE MORE
THAN EIGHT WELLS INTO COMMON STORAGE
AND TO TRANSPORT OIL FROM THE LEASES
PRIOR TO MEASUREMENT.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 20, 1957, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the New Mexico Oil Conservation Commission, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 18th day of December, 1957, 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, is the operator of 23 oil and gas leases in the Pearl Queen Pool located in Sections 21, 22, 23, 25, 26, 27, 28, 34, 35, and 36 in Township 19 South, Range 35 East, and Section 2 in Township 20 South, Range 35 East, NMPM, all in Lea County, New Mexico.

(3) That the applicant proposes to install automatic testing and production facilities and automatic lease custody transfer equipment to handle the oil production from said leases from the Pearl Queen Pool.

(4) That the applicant proposes to measure and record the production from each lease prior to being commingled in common storage with the production from other leases.

(5) That the applicant also proposes to transfer custody of the production from all of said leases to the purchaser thereof by means of positive displacement meters.

(6) That the applicant seeks permission to produce more than eight wells into the above-described central production and test facilities and to transport the oil off of said leases prior to measurement.

(7) That the applicant should be permitted to install automatic testing and production facilities and automatic lease custody transfer equipment on the above-referenced leases in the Pearl Queen Pool, provided the production from each lease is measured and recorded prior to being commingled in common storage with the production from other leases.

(8) That the applicant should be permitted to produce all wells completed in the Pearl Queen Pool on the above-referenced leases into said central production and testing facilities and to transport the oil off of said leases prior to measurement if necessary.

(9) That positive displacement meters will provide an accurate and reliable means for measuring the amount of oil produced from each lease and that their use should be permitted provided said meters are periodically checked for accuracy.

(10) That the previous use of automatic custody transfer equipment, similar to that proposed by the applicant, has shown that such equipment is a reliable and economic means of transferring the custody of oil and that the use of such equipment should be permitted.

(11) That each of the several systems should be so equipped as to prevent the undue waste of oil or gas in the event of malfunction or line break.

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, be and the same is hereby authorized to install automatic testing and production facilities and automatic custody transfer equipment to handle the production from the following described leases in the Pearl Queen Pool:

Shell's McIntosh "E" lease consisting of 80 acres in the E/2 SW/4, Section 21, Township 19 South, Range 35 East.

Shell's McIntosh "D" lease consisting of 320 acres in the E/2, Section 21, Township 19 South, Range 35 East.

Shell's McIntosh "B" lease consisting of 120 acres in the E/2 NW/4 and NW/4 SW/4, Section 22, Township 19 South, Range 35 East.

Shell's McIntosh "A" lease consisting of 40 acres in the SW/4 SW/4, Section 22, Township 19 South, Range 35 East.

Shell's McIntosh "C" lease consisting of 200 acres in the NE/4 and NE/4 SE/4, Section 28, Township 19 South, Range 35 East.

Shell's McIntosh lease consisting of 120 acres in the W/2 NW/4 and NW/4 SW/4, Section 27, Township 19 South, Range 35 East.

Shell's Kimberlin lease consisting of 120 acres in the E/2 SW/4 and W/2 SE/4, Section 22, Township 19 South, Range 35 East.

Shell's State "PB" lease consisting of 80 acres in the E/2 NW/4, Section 27, Township 19 South, Range 35 East.

Shell's State "PA" lease consisting of 80 acres in the E/2 SW/4, Section 27, Township 19 South, Range 35 East.

Shell's Hooper lease consisting of 80 acres in the W/2 NE/4, Section 27, Township 19 South, Range 35 East.

Shell's Allen Estate "A" lease consisting of 80 acres in the E/2 NE/4, Section 27, Township 19 South, Range 35 East.

Shell's Allen Estate lease consisting of 160 acres in the E/2 and NW/4 SE/4, Section 27 and NE/4 NE/4, Section 34, Township 19 South, Range 35 East.

Shell's Record "A" lease consisting of 40 acres in the SW/4 SE/4, Section 27, Township 19 South, Range 35 East.

Shell's State "PD" lease consisting of 160 acres in the NW/4, Section 34, Township 19 South, Range 35 East.

Shell's State "PC" lease consisting of 80 acres in the W/2 NE/4, Section 34, Township 19 South, Range 35 East.

Shell's State "PE" lease consisting of 120 acres in the SE/4 NE/4, Section 34, and SW/4 NW/4 and NW/4 SW/4, Section 35, Township 19 South, Range 35 East.

Shell's State "PF" lease consisting of 80 acres in the N/2 SE/4, Section 34, Township 19 South, Range 35 East.

Shell's State "PG" lease consisting of 160 acres in the S/2 SE/4, Section 34 and S/2 SW/4, Section 35, Township 19 South, Range 35 East.

Shell's Record lease consisting of 1120 acres in the S/2 SW/4, Section 23, all Section 26, and N/2 N/2 and SW/4 NE/4 and SE/4 NW/4 and NE/4 SW/4 and NW/4 SE/4 and S/2 SE/4, Section 35, Township 19 South, Range 35 East.

Shell's State "PI" lease consisting of 80 acres in the SE/4 NE/4 and NE/4 SE/4, Section 35, Township 19 South, Range 35 East.

Shell's State "PH" lease consisting of 640 acres in Section 2, Township 20 South, Range 35 East.

Shell's Record "B" lease consisting of 640 acres in Section 25, Township 19 South, Range 35 East.

Shell's State "PJ" lease consisting of 480 acres in N/2 and SW/4, Section 36, Township 19 South, Range 35 East,

all in Lea County, New Mexico, provided the production from each lease is measured and recorded prior to being commingled in common storage with the production from other leases.

(2) That the applicant be and the same is hereby authorized to produce all wells completed in the Pearl Queen Pool on the above-referenced leases into said central production and testing facilities and to transport the oil off of said leases prior to measurement if necessary; provided however, that each well connected to each of the above-described systems shall be individually tested at least once a month.

(3) That each of the positive displacement meters in the above-described systems shall be checked for accuracy at intervals and in a manner satisfactory to the Commission.

(4) That each of the above-described systems shall be so equipped as to prevent the undue waste of oil or gas in the event of malfunction or line break.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

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

ir/

Case 1317

MAIN OFFICE
1957 OCT 21 AM 8:50

SHELL OIL COMPANY

P. O. Box 1957
Hobbs, New Mexico

October 16, 1957

Subject: APPLICATION BY SHELL OIL COMPANY FOR EXCEPTION TO RULE 309 OF THE RULES AND REGULATIONS OF THE NEW MEXICO OIL CONSERVATION COMMISSION

Docket Mailed
10-24-57

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

Attention: Mr. A. L. Porter, Jr.

Gentlemen:

By this letter of application Shell Oil Company requests approval of an exception to Section (a) of Rule 309 of the Rules and Regulations of the New Mexico Oil Conservation Commission to permit (1) oil to be transported from a lease for measurement, and (2) the production of more than 8 wells into common storage in the Pearl Queen Pool, Lea County, New Mexico.

It is the desire of the Company to install a system employing centralized automatic production facilities and lease custody transfer on Shell's leases in the Pearl Queen Field. These leases and their location are described as follows:

1. Shell's McIntosh "E" lease consisting of 80 acres in the E/2 SW/4, Section 21, T-19-S, R-35-E.
2. Shell's McIntosh "D" lease consisting of 320 acres in the E/2, Section 21, T-19-S, R-35-E.
3. Shell's McIntosh "B" lease consisting of 120 acres in the E/2 NW/4 and NW/4 SW/4, Section 22, T-19-S, R-35-E.
4. Shell's McIntosh "A" lease consisting of 40 acres in the SW/4 SW/4, Section 22, T-19-S, R-35-E.
5. Shell's McIntosh "C" lease consisting of 200 acres in the NE/4 and NE/4 SE/4, Section 28, T-19-S, R-35-E.
6. Shell's McIntosh lease consisting of 120 acres in the W/2 NW/4 and NW/4 SW/4, Section 27, T-19-S, R-35-E.
7. Shell's Kimberlin lease consisting of 120 acres in the E/2 SW/4 and W/2 SE/4, Section 22, T-19-S, R-35-E.
8. Shell's State "PB" lease consisting of 80 acres in the E/2 NW/4, Section 27, T-19-S, R-35-E.
9. Shell's State "PA" lease consisting of 80 acres in the E/2 SW/4, Section 27, T-19-S, R-35-E.

10. Shell's Hooper lease consisting of 80 acres in the W/2 NE/4, Section 27, T-19-S, R-35-E.

11. Shell's Allen Estate "A" lease consisting of 80 acres in the E/2 NE/4, Section 27, T-19-S, R-35-E.

12. Shell's Allen Estate lease consisting of 160 acres in the E/2 and NW/4 SE/4, Section 27 and NE/4 NE/4, Section 34, T-19-S, R-35-E.

13. Shell's Record "A" lease consisting of 40 acres in the SW/4 SE/4, Section 27, T-19-S, R-35-E.

14. Shell's State "PD" lease consisting of 160 acres in the NW/4, Section 34, T-19-S, R-35-E.

15. Shell's State "PC" lease consisting of 80 acres in the W/2 NE/4, Section 34, T-19-S, R-35-E.

16. Shell's State "PE" lease consisting of 120 acres in the SE/4 NE/4, Section 34, and SW/4 NW/4 and NW/4 SW/4, Section 35, T-19-S, R-35-E.

17. Shell's State "PF" lease consisting of 80 acres in the N/2 SE/4, Section 34, T-19-S, R-35-E.

18. Shell's State "PG" lease consisting of 160 acres in the S/2 SE/4, Section 34 and S/2 SW/4, Section 35, T-19-S, R-35-E.

19. Shell's Record lease consisting of 1120 acres in the S/2 SW/4, Section 23, All Section 26, and N/2 N/2 and SW/4 NE/4 and SE/4 NW/4 and NE/4 SW/4 and NW/4 SE/4 and S/2 SE/4, Section 35, T-19-S, R-35-E.

20. Shell's State "PI" lease consisting of 80 acres in the SE/4 NE/4 and NE/4 SE/4, Section 35, T-19-S, R-35-E.

21. Shell's State "PH" lease consisting of 640 acres in Section 2, T-20-S, R-35-E.

22. Shell's Record "B" lease consisting of 640 acres in Section 25, T-19-S, R-35-E.

23. Shell's State "PJ" lease consisting of 480 acres in N/2 and SW/4, Section 36, T-19-S, R-35-E.

The said system is designed to perform the following functions automatically:

1. Control on-off producing periods of wells.

2. Measure and record production from each lease before the production enters common storage.

3. Test each well periodically to determine volume rates of oil, gas, and water.

4. During custody transfer, prevent (a) transferring oil to the pipeline if the positive displacement meter is not functioning properly (b) overrunning daily and/or monthly allowable, and (c) transferring non-merchantable oil. Also, during transfer, a composite sample will be stored under pressure for determination of API gravity and BS&W content.

By copy of this letter, all operators owning offsetting interests in the Pearl Queen Area, have been notified by certified mail of this application.

Wherefore, Shell Oil Company requests that the foregoing application for an exception to Rule 309 be heard before the New Mexico Oil Conservation Commission in Santa Fe, New Mexico, at the regularly scheduled November meeting.

Yours very truly,

SHELL OIL COMPANY

By: W. E. Owen

W. E. Owen
Division Manager

MAIN OFFICE OCC

THE TEXAS COMPANY
TEXACO PETROLEUM PRODUCTS

PRODUCING DEPARTMENT
WEST TEXAS DIVISION
O. F. SEBESTA, ASSISTANT DIVISION MANAGER

P. O. BOX 1720
FORT WORTH 1, TEXAS

November 21, 1957

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

Attention: Mr. A. L. Porter, Jr.

Re: Application by Shell Oil Company for Exception to Rule 309 of the Rules and Regulations of the New Mexico Oil Conservation Commission

Gentlemen:

The Texas Company was notified of Shell Oil Company's request for approval of an exception to Section (a) of Rule 309 of the Rules and Regulations of the New Mexico Oil Conservation Commission to permit (1) oil to be transported from a lease for measurement, and (2) the production of more than eight wells into common storage in the Pearl Queen Pool, Lea County, New Mexico, by receipt of a copy of Shell's letter of application to the Commission dated October 16, 1957.

This is to inform you that The Texas Company has no objection to the application of Shell Oil Company as outlined above.

Yours very truly,

THE TEXAS COMPANY

O. F. Sebesta
Assistant Division Manager

HNW-JEB

DOMESTIC SERVICE

Check the class of service desired; otherwise this message will be sent as a fast telegram

TELEGRAM	
DAY LETTER	
NIGHT LETTER	

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S
E

WESTERN UNION TELEGRAM

1206 (4-55)

W. P. MARSHALL, PRESIDENT

INTERNATIONAL SERVICE

Check the class of service desired; otherwise the message will be sent at the full rate

FULL RATE	
LETTER TELEGRAM	
SHORE-SHIP	

NO. WDS.-CL. OF SVC.	PD. OR COLL.	CASH NO.	CHARGE TO THE ACCOUNT OF	TIME FILED
			OIL CONSERVATION COMMISSION	3:20 p.m.

Send the following message, subject to the terms on back hereof, which are hereby agreed to

DECEMBER 6, 1957

ED NESTOR
SHELL OIL CO.
MIDLAND, TEXAS

COMMISSION WILL APPROVE SHELL'S APPLICATION CASE 1342. ORDER SHOULD FOLLOW WITHIN A FEW DAYS.

A. L. PORTER, JR.
OIL CONSERVATION COMMISSION

No. 34-57

DOCKET: EXAMINER HEARING NOVEMBER 20, 1957

Oil Conservation Commission 9:00 a.m. Mabry Hall, State Capitol, Santa Fe, New Mex.

The following cases will be heard before Elvis A. Utz, Examiner:

CASE 1340: Application of the Ohio Oil Company for an order authorizing an oil-oil dual completion in the Monument-Blinebry Pool and Monument-Paddock Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing it to dually complete its Bertha Barber Well No. 9 located 1980 feet from the North line and 560 feet from the West line of Section 5, Township 20 South, Range 37 East, Lea County, New Mexico, in such a manner that oil may be produced through parallel strings of tubing from the Monument-Blinebry Pool and Monument-Paddock Pool, Lea County, New Mexico.

CASE 1341: Application of R. Olsen for an order authorizing an oil-oil dual completion in the Tubb Gas Pool and Blinebry Oil Pool in Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Sarkeys Well No. 2, located 660 feet from the North line and 660 feet from the West line of Section 25, Township 21 South, Range 37 East, Lea County, New Mexico, in such a manner that oil may be produced through parallel strings of tubing from the Tubb Gas Pool and Blinebry Oil Pool, Lea County, New Mexico.

CASE 1342: Application of Shell Oil Company for permission to install centralized automatic production facilities and lease custody transfer system on certain of its leases in the Pearl-Queen Pool area, Lea County, New Mexico, and for permission to produce more than eight wells into common storage and to transport oil from the leases prior to measurement. Applicant, in the above-styled cause, seeks an order authorizing it to install automatic production facilities and lease custody transfer system on twenty-three of its leases in the Pearl-Queen Pool area located in Sections 21, 22, 23, 25, 26, 27, 28, 34, 35, and 36, all in Township 19 South, Range 35 East, and Section 2, Township 20 South, Range 35 East, Lea County, New Mexico, and further authorizing the production of more than eight wells into common storage and permitting the transportation of oil from said leases prior to measurement.

CASE 1343: Application of Humble Oil and Refining Company for an order authorizing two producing wells on a 640-acre gas proration unit in the Eumont Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing two Eumont gas wells on its Eumont Gas Unit No. 1 which comprises Section 4, Township 20 South, Range 37 East, Lea County, New Mexico, said unit is presently dedicated to the applicant's Eumont Gas Unit #1, Well No. 1, located 2310 feet from the South line and 1980 feet from the East line of said Section 4. The proposed additional well is the applicant's Eumont

Gas Unit #1, Well No. 2, located 2180 feet from the South line and 660 feet from the West line of said Section 4. Applicant proposes to limit the production from the No. 2 Well to no more than 50% of the unit allowable.

CASE 1344: Application of Pan American Petroleum Corporation for a non-standard gas proration unit and an unorthodox gas well location in the Blanco Mesaverde Gas Pool in San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a 331-acre non-standard gas proration unit in the Blanco Mesaverde Gas Pool consisting of the S/2 S/2 N/2 and S/2 of Section 18, Township 29 North, Range 9 West, San Juan County, New Mexico, and for an unorthodox gas well location for said unit well at a point 1820 feet from the South line and 1850 feet from the East line of said Section 18.

CASE 1345: Application of Pan American Petroleum Corporation for a non-standard gas proration unit and an unorthodox gas well location in the Blanco Mesaverde Gas Pool in San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a 409-acre non-standard gas proration unit in the Blanco Mesaverde Gas Pool consisting of the N/2 and N/2 S/2 of Section 19, Township 29 North, Range 9 West, San Juan County, New Mexico, and for an unorthodox gas well location for said unit well at a point 1750 feet from the North line and 1750 feet from the East line of said Section 19.

CASE 1346: Application of Pan American Petroleum Corporation for a non-standard gas proration unit and an unorthodox gas well location in the Blanco Mesaverde Gas Pool in San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a 408-acre non-standard gas proration unit in the Blanco Mesaverde Gas Pool consisting of the S/2 S/2 of Section 19, and the N/2 of Section 30, Township 29 North, Range 9 West, San Juan County, New Mexico, and for an unorthodox gas well location for said unit well at a point 990 feet from the North line and 1650 feet from the East line of said Section 30.

CASE 1347: Application of Pan American Petroleum Corporation for approval of a non-standard gas proration unit in the Tubb Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a non-standard gas proration unit in the Tubb Gas Pool consisting of the W/2 W/2 of Section 32, Township 22 South, Range 38 East, Lea County, New Mexico, said unit to be dedicated to the applicant's State "S" No. 3 Well located 1980 feet from the North line and 660 feet from the West line of said Section 32.

CASE 1348: Application of Cities Service Oil Company for approval of two non-standard gas proration units in the Tubb Gas Pool and the Blinebry Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a 160-acre non-standard gas

proration unit in the Tubb Gas Pool and Blinebry Gas Pool consisting of the E/2 W/2 of Section 32, Township 22 South, Range 38 East, Lea County, New Mexico, said units to be dedicated to the applicant's dually completed State "P" No. 1 Well located 1980 feet from the North line and 1980 feet from the West line of said Section 32.

CASE 1349: Application of Continental Oil Company for an order approving a 320-acre non-standard gas proration unit in the Eumont Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a 320-acre non-standard gas proration unit in the Eumont Gas Pool consisting of the E/2 of Section 15, Township 21 South, Range 36 East, Lea County, New Mexico, said unit to be dedicated to the applicant's State D-15 No. 8 Well located 660 feet from the South line and 660 feet from the East line of said Section 15.

CASE 1350: Application of John J. Eisner for a non-standard gas proration unit in the Empire-Pennsylvanian Gas Pool, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a non-standard gas proration unit in the Empire-Pennsylvanian Gas Pool consisting of the S/2 SE/4 of Section 20, and the N/2 NE/4 of Section 29, Township 17 South, Range 28 East, Eddy County, New Mexico, said unit to be dedicated to applicant's well to be drilled at a point 330 feet from the North line and 990 feet from the East line of said Section 29.

CASE 1351: Application of Amerada Petroleum Corporation for approval of a 240-acre non-standard gas proration unit in the Eumont Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing a 240-acre non-standard gas proration unit in the Eumont Gas Pool consisting of the SE/4 of Section 34, and the N/2 SW/4 of Section 35, all in Township 20 South, Range 36 East, Lea County, New Mexico, said unit to be dedicated to the applicant's L. W. White No. 1 Well located 660 feet from the South line and 660 feet from the East line of said Section 34.

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SIGNAL OIL AND GAS COMPANY
GENERAL OFFICES, 811 WEST SEVENTH STREET, LOS ANGELES 17, CALIFORNIA

MID-CONTINENT DIVISION OFFICE
1010 FORT WORTH NATIONAL BANK BLDG.
FORT WORTH 2, TEXAS

November 14, 1957

New Mexico Oil Conservation Commission
Mabry Hall, State Capitol Building
Santa Fe, New Mexico

Attention: Mr. Elvis A. Utz, Examiner

Re: Examiner Hearing - Case No. 1342
"Application of Shell Oil Co. for
Exception to Rule 309 of Rules & Reg.
of New Mexico Oil Cons.Commission"

Gentlemen:

Signal Oil and Gas Company, as offset operator, hereby approves the application of Shell Oil Company for permission to install centralized automatic production facilities and lease custody transfer on certain of its leases in the Pearl-Queen pool of Lea County, New Mexico; and for permission to produce more than eight (8) wells into common storage, and to transfer oil from the leases prior to measurement.

Very truly yours,

SIGNAL OIL AND GAS COMPANY

By N. E. Godbe
N. E. Godbe
Chief Division Engineer

NEG:LP

cc: Shell Oil Company
Roswell, New Mexico
Atten: Mr. J. W. Montgomery

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
November 20, 1957

IN THE MATTER OF
CASE NO. 1342

TRANSCRIPT OF PROCEEDINGS

DEARNLEY · MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE - SANTE FE
3-6691 2-2211

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
November 20, 1957

IN THE MATTER OF:

Application of Shell Oil Company for permission to install centralized automatic production facilities and lease custody transfer system on certain of its leases in the Pearl-Queen Pool area, Lea County, New Mexico, and for permission to produce more than eight wells into common storage and to transport oil from the leases prior to measurement. Applicant, in the above-styled cause, seeks an order authorizing it to install automatic production facilities and lease custody transfer system on twenty-three of its leases in the Pearl-Queen Pool area located in Sections 21, 22, 23, 25, 26, 27, 28, 34, 35, and 36, all in Township 19 South, Range 35 East, and Section 2, Township 20 South, Range 35 East, Lea County, New Mexico, and further authorizing the production of more than eight wells into common storage and permitting the transportation of oil from said leases prior to measurement.

CASE NO. 1342

BEFORE:

Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: The next case on the docket will be Case 1342.

MR. COOLEY: Case 1342. Application of Shell Oil Company for permission to install centralized automatic production facilities and lease custody transfer system on certain of its leases in the Pearl-Queen Pool area, Lea County, New Mexico, and for permission

to produce more than eight wells into common storage and to transport oil from the leases prior to measurement.

MR. SETH: Mr. Examiner, we have some exhibits. May we have just a moment to put them up?

MR. UTZ: Yes, sir. There will be a five minute recess.

(Short recess)

MR. UTZ: The hearing will come to order. Will you proceed?

MR. SETH: We would like to call Mr. Montgomery as a witness.

MR. COOLEY: Is he the only witness?

MR. SETH: Yes. I am Oliver Seth appearing for Shell Oil Company. If the Commission please, this is an application for exception to Rule 309 to permit the installation of centralized automatic transfer equipment and automatic reduction equipment. Our first witness is Mr. Montgomery.

J. W. MONTGOMERY

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

DIRECT EXAMINATION

BY MR. SETH:

Q Will you state your name, please?

A J. W. Montgomery.

Q By whom are you employed?

A Shell Oil Company.

Q In what capacity?

A I am an engineer in our Roswell Division office.

Q Will you outline for the Commission, please, your qualifications?

A I graduated from Iowa State College with a B.S. in electrical engineering in 1952; worked for Shell Oil Company since June of 1952, and during that time I spent approximately two years on development and automation work, and I am a registered professional engineer in the State of New Mexico.

MR. SETH: May he testify as an expert?

MR. UTZ: His qualifications are acceptable.

Q Mr. Montgomery, are you generally familiar with the automatic system installed or being installed by Shell in the Bisti area in New Mexico?

A Yes, sir. I was here at the hearing and I read their testimony and their presentation.

Q You are likewise familiar with the plan and the equipment sought to be installed under the present application in this Case 1342? A Yes, sir.

Q Would you state for the Commission, please, any significant difference between this system and the Bisti system?

A The only significant difference is in the method of allocation of production to the various leases in the field.

Q Would you describe that?

A Exhibit 1 here is a plat showing the leases in the field and they are composed of state leases, for example, and private individual leases in the field. Our centralization and automation

program is here, this is the initial proposed plan, shown in Exhibit 2, where we have one centralized facility, where there would be automatic custody transfer, and also your production from these leases outlined -- shown in green will come in and be controlled in the center.

We have two remote facilities where the oil will be tested and gathers and metered. I should say that the oil in this case, from each lease, will be metered before it enters the common storage point and remote facility, it will be metered before it enters and is transferred from the remote facility to central custody. This is the ultima[illegible] proposed system, or would be final for the lease that we have there provided development is complete for Shell's holdings in the lease.

Q What exhibit are you referring to?

A That's Exhibit 3.

Q And what do the colors represent, different leases on this lease on the different areas to be served, right?

A The colors represent the area served either by a central facility or a remote facility, and the yellow would be producing into this remote facility, and everything in this dashed area, here, would be transferred from the remote facilities into the central storage, central facility, treating facility, and tested, and in the other case; inside this area, it comes into this central custody transfer point, and the colors represent the remote or the origin where the test and control of the wells take place.

Q Now, referring again to the same exhibit, does that cover the entire area which is the subject of the application in this case?

A It does.

Q Now, are there any other significant differences between this and the Bisti system?

A No, sir. The only significant difference, as I said, is in the matter of allocation of production back to the leases from the central facility, from the central custody point. I can go into that a little more in detail.

Q I think if you would describe that a little more in detail.

A As I pointed out at Exhibits 2 and 3, the custody transfer point, represented by C and shown in green in the case of Exhibit 2, and in brown in Exhibit 3, brown and black or gray, those will be the custody transfer points where the oil is transferred from the production operator to the pipe line. The meters at those points will serve -- they will be the only metering points for all of the production from the leases in the area served by that custody transfer point. Now, the royalty payment for each lease will be based on its allocation, share of the total net production shipped from the central facility and determined by production meters from each of the leases. I should say production meters and samplers from each of the leases, pardon me.

Q You have automatic sampling and positive displacement meters for each lease, is that correct?

A Yes, sir, the automatic sampler would be the same as that

proposed in the Bisti report in that we will have, I should say, meter tickets.

Q Now, will you refer to Exhibit 4, if you would, please, when you get through there, and indicate the location of this equipment and then describe its operation briefly on the ticket system?

A Exhibit 4 is an exhibit showing one of the proposed remote control facilities or control stations. In this particular case, there are three leases coming into the control point, the Allen Estate, State "PC" and Record "A". Your production from your individual wells on any one lease is controlled at the remote location by the clock, and it is routed through a three-way valve into your individual separators is a P.D. meter and an automatic sampler. Production from this lease would go through its lease production separator, P.D. meter, and into a run tank, as we call it, for storage into the central facility. Production from another lease follows essentially the same route except that it goes through its individual production separator and P.D. Meter and sampler before it enters into what you call a comingling point or a common point to be transferred to the central facility.

Q Now, is this sampling equipment for each individual lease, is that under automatic operations? A Yes, sir.

Q Would you describe that briefly?

A The system — I will go to the tickets then on that. Each one of the leases, for example, the one shown is No. 357. In your meter there will be a ticket number, a meter number, excuse me, this

ticket will be inserted into the meter and a handle is pressed down there and the ticket is fixed so that it cannot be taken out of the meter without being mutilated. On that you will have your meter number and the lease will be printed on there. The example shown is the State P.A. lease. The pumper just inserts it into the separator. The meter then will print out a barrel reading that is corrected to sixty degrees Fahrenheit, but it is not corrected for API gravity. It will give you a beginning barrel reading and ending barrel reading, and the difference will be the total production that flows from the lease in fluid. That, with the information which will be entered later, where automatic line sample is shown, with that information then, you will have the net oil run from the lease. Those will be provided, one for each lease.

Q And the automatic line sample comes up with correct figures, does it not, correct -- A Yes, sir.

Q Now, by this system, again referring to Exhibit 4, is it possible also to test the individual wells?

A Yes, sir, the test portion is shown in red on each one of these. Your production coming in at this point can be routed either through the production separator shown in brown, or if it is you wish to test this well, which is done automatically or manually, it is set to test automatically, but you have manuel testing too, any way, you want it, or any time. It follows this route through the test separator, P.D. meter and cut recorder. Now, on that, that is Shell's "phase-null" cut recorder, and I can go into that

with a little more detail. It is routed back by means of other valves and this is automatically controlled, whether you are doing it manually.

Your manual operation consists of just flipping a switch, so that this is still automatic on the lease and goes back through the production separator on the lease from which it came so that your meter all oil from a given lease, whether it is on test or on its normal flow period.

Now, you can only have one well testing at a time due to the way the control system is set up, but you can test at the same time that you flow regular production from the field. Then, you have an integrated gas meter and in your control house you record the lease number, the well number, the month, the time that the test is initiated and the time it ended. You have a time print, the gross fluid, and net oil, and your gas in standard cubic feet. Now, this can be printed as a total at the end of your test or on a rate basis.

Q Now, can it be set up so that individual wells are tested on a regular cycle?

A Yes, sir. It would normally be set up for that, but we will test regularly, once a month or oftener.

Q That cycle can be interrupted, can't it, for particular tests? A Yes, sir, at any time.

Q For well tests you can set up a special test, is that right?

A Yes, sir.

Q And the test data you say is printed on a tape or graph of some sort?

A It is printed on a strip of paper is what it would be. It would be a tape. I might add at that point, that on our automatic test, we intend to test with the unit allowable. All of our wells are pumping, they all have the same allowable, and they are all making their allowable at the present time, but we will test on a unit allowable basis in that our equipment in the control house, when your production goes through the separator pumper, will set up the unit allowable plus this 25 percent allowance at the first of the month, in each one of the wells we will then test for that amount of oil and when that amount of oil is reached, we will go to the next test.

Q Will the system later on down the line, will it shut off when the allowables have been reached?

A You mean the lease allowable?

Q The lease allowability?

A No, we don't have any provisions. We don't feel it is necessary in your automatic system. Referring to Exhibit 5, from this point back, this is the central facility, and this is identical to that, except that it has more wells, and the other two control stations come in at this point. The system is, as I said, earlier, essentially the same as the Bisti Field, but at this point, at custody transfer point, we have provisions where the monthly allowable for all leases and all wells connected to the central facility

can't be overrun in a month, or daily allowables.

Q Do you have any comment or opinion on the accuracy of these positive displacement meters as compared to the ordinary tank guages, do you believe they are more accurate or less accurate?

A We feel that they are more accurate, or at least equally accurate to the closest controlled manual guages in tanks.

Q Now, this system is an entirely enclosed system, is it not?

A Yes, sir, it is.

Q Does that prevent the loss of volatile gases?

A It does. It intends to maintain gravity that is accrued.

Q Is that a significant factor in system of this type, the prevention of loss? A Yes, sir.

A Yes, sir. It is one of the basic advantages of a system of this type.

Q And does it thereby intend to prevent waste of crude?

A Yes, sir.

Q Is there anything unusual on the type of crude that is handled in this particular --

A No, sir, we know of nothing unusual at this point. There seems to be nothing. We have provided in our meters for corrosion resistant material, we don't expect corrision. It is just an added safety device.

Q Now, on Exhibit 3, you have indicated -- what is your present thinking on the expansion of the facilities? What actually may occur in the future is going to depend on a large extent on the

actual development in the field, is it not?

A That's correct.

Q And consequently, there may be some necessary variations on this proposal, is that correct? A Yes, sir.

Q Do you have any recommendation to make to the Commission concerning the calibration of the meters?

A On the custody transfer point, we have recommended the same as the Bisti, and that was one month's calibrating period in the lease custody, pardon me, the lease production meters. We are recommending that it be calibrated on through-put basis of a hundred thousand barrels of fluid. We have discussed this with meter manufacturers and representatives from other companies and we believe this to be a very conservative figure. The hundred thousand barrels is based on calibration data of meters under identical, for all practical purposes, conditions of metering, and it was in Louisiana and it was the experience of personnel making the calibration checks that your meter factor drift would be less than one-tenth of one percent if it was checked every one hundred thousand barrels.

Q Would you consider that within reasonable limits on the amount of drift?

A Yes, sir, we do. I would like to point out that any large area, if any meter -- malfunction of a meter will be noticed by the pumper at that time, from our monthly test data.

Q That would be immediately disclosed on your regular cycle of testing, would it not? A Yes, sir.

Q Would this meter go out of function because of time, or amount of fluid?

A No, sir. Time alone wouldn't wear out a meter, it is a matter of through-put.

Q And in your opinion, every hundred thousand barrels of fluid would be a reasonable time to calibrate? A Yes, sir.

Q Have you run any preliminary test on the accuracy or on the elements of the system?

A We have conducted limited tests on the Kimberlin lease. I will point that out here, where we have a producing well at the present time, and indications were on that, that we could except an accuracy of plus or minus two-tenths of a percent. We point out in our report several other cases under similar circumstances where the accuracies were within that range.

Q Have you received any objections from any of the adjoining lease owners regarding the installation of a system of this character? A No, sir, we have not.

Q Do you know whether or not the transporters are prepared to truck out of this central lease facilities?

A They are. It's presently being trucked out by Western Oil Transportation and they have indicated by letter that they do -- that they go along with our proposal.

Q Have you any experience or know of any experiences the company has had or other producers with other transporters in other parts of the country with similar facilities? There are similar

facilities installed in other parts of the country?

A Yes, sir.

Q Have you heard of any objection from transporters concerning such facilities? A No, sir, we have not.

MR. SETH: I would like to offer this.

MR. UTZ: This is entered as Exhibit No. 6? It will be so identified.

Q I hand you what has been marked as Exhibit No. 6. Is that the letter that you referred to from the current transporter there?

A Yes, sir.

Q We will offer this letter in evidence.

MR. UTZ: Do you want to offer this separately or all together?

MR. SETH: We can offer them all together.

Q Do you have any other comments, Mr. Montgomery, on this application proposal? A No, sir.

MR. SETH: That's all on direct.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Montgomery, I am referring to Exhibit No. 3. Each color on that exhibit represents more than one lease?

A No, sir. Some of them represent more than one lease and some do not.

Q And the little square within the unit designates the meter set-up as shown on Exhibit 4, does it not?

A That is correct.

Q And you are metering on the setup as shown on Exhibit 4 more than one lease? A Yes, sir.

Q Would there be any possibility of error in measuring the production from separate leases by having too many valves open on the header as you went through the test separator and going into the wrong meter?

A No, sir. There would be separate controls, I am sure that can't happen. And we do have suitable checks. There will be check valves in our system, in our header system so that you can't have them go back through into our other leases from one lease to the other.

Q What you are saying is that that will be prevented by check valves? A Yes, sir.

MR. UTZ: Are there any further questions of Mr. Montgomery?

BY MR. COOLEY:

Q Mr. Montgomery, let's try to summarize the exceptions from Rule 309 that Shell Oil Company seeks from this application. First, with respect to your automatic production and testing facilities as shown on Exhibit 4, I believe you propose to measure the production by means of positive displacement meters rather than in tanks, is that correct? A That's correct.

Q Further, you propose to accomplish this measurement of the lease in certain instances, at least? A Yes, sir.

Q And there will be a possibility, at least, in your request-

ing permission to produce more than eight wells into such measuring facilities? A Yes, sir.

Q And likewise, you propose to use a positive displacement meter for custody transfer from the operator of the wells, or leases, to the pipeline? A Yes, sir.

Q Or the purchaser of the oil? A Yes, sir.

Q In answer to one of Mr. Seth's questions, I believe I misunderstood you. Would you please tell me if this automatic custody or these automatic productions and testing facilities are so designed as to prevent the production of any given lease in excess of that lease's allowable?

A I am sorry, would you repeat that?

Q On Exhibit 4, I believe -- I will try it another way. You have a test separator for all leases producing into that system, and you have a separate production separator for each lease?

A That's correct.

Q And a separate positive displacement meter showing the exact amount of production from that lease?

A The amount of fluid, yes, sir.

Q Amount of fluid. With the testing equipment you can then calculate the amount of oil that has been produced from any given lease?

A From the automatic sampler and the meter, that is correct.

Q Now, all fluids will be constantly metered, is that correct?

A That's correct.

Q This will not be an estimate? A No, sir.

Q Now, is the system so designed to -- say the lease producing into the production separator on the far left, as shown on Exhibit 4, that lease has three wells producing into it as shown there, does it not?

A Yes, sir.

Q And assume those three wells to be top allowable, when the production from that lease has reached, the allowable for that lease, the cumulative allowable, since we do prorate by wells, is the system designed to prevent any further production during that month from that lease?

A From that lease, no, sir. The only point that we have -- That is, at the custody transfer point, we have a numeral counter there, and as I pointed out, there will be tickets printed at that lease so that any over production at that time would be compensated for during the next month. That would be standard practice from the lease. Now, the central facility, for all wells connected to the central facility, there is a method, or it is designed to prevent over production being run from the central facility.

Q What do you mean by over production, the cummulative production?

A All leases and wells connected to the central facility.

Q Mr. Montgomery, is there some method which can be, or some facility that can be added to your present setup that will automatically cut off the production from the lease when it has achieved its allowable?

A Just as far as to all fluid is concerned, that could be, but we felt that it was unnecessary.

Q It seems very necessary to me that the lease be kept within its allowable. Similarly then, it would be impossible to prevent any given lease from producing its allowable plus the five days tolerance, is that correct, if you can't keep it within the allowable you can't keep it within the five day tolerance?

A If you mean automatically, that is correct. And Rule 502 provides that any oil produced in excess, plus the five day tolerance, is illegal oil.

Q I don't believe your company desires to produce illegal oil?

A No, sir, but we can shut down the lease manually at any time, and we do have a continuous record for all production from that lease.

Q Then, if this --

A It would be a case for the production department, our own operating personnel shutting down the lease so that we don't over run production from the lease then.

Q If this application were approved, subject to the condition that no lease will produce in excess of its monthly allowable plus the five day tolerance, it would be necessary to manually shut it off, at least until the time that that point had been reached?

A Not necessarily. As I stated before, we could put in equipment to shut it down on the fluid basis automatically. In other words, anything that we have at the custody transfer point, which

is a P. D. moter installation, could incorporate any shutdown equipment, could be incorporated at the lease point also.

Q Mr. Montgomery, let's assume for the moment that you are in charge of an operation where the production has produced into a tank, as has been the standard case up until the time of automation, and you go out to measure this tank to determine whether your well has produced its allowable or not, do you make a calculation as to what portion of the fluids produced is oil? When you measure this tank? You measure the oil to determine -- A Yes, sir.

Q Not the total fluid? A Yes, sir.

Q Similiarly, in this situation, you could, by a combination of the reading of the positive displacement meter for the given lease, combine it with the data you have --

A From the automatic sampler.

Q -- from the automatic sampler to determine what the total oil production at any given time has been from that lease?

A Yes, sir.

Q The time that this lease reaches its top allowable plus tolerance, it would have to be shut in? A Yes, sir.

Q Do you have any method of determining how much oil is in storage at any given time and whether that oil is attributable to lease "A" or lease "B"?

A We can determine the amount that would be in storage at any given time, and can attribute, or allocate it back to the various leases in the same manner that we would royalty payments for all

oil run from the custody point.

Q How do you determine the amount of oil from the storage system?

A The only point where you have, where you would have a varying amount of oil -- I presume you mean at the end of the month.

Q Especially in regard to the Bisti report on Form 115, the amount of oil sold and the amount of oil stored on the lease?

A We would have some in transit in our lines and also in our treating system, which could easily be calculated. The amount in our tanks would be measured by ground level gauges at any time, so that you have --

Q It would not be an insurmountable problem to determine how much oil you have above ground on the lease at any given period of time?

A No, sir.

Q Mr. Montgomery, what will be the maximum number of wells producing into any control station as shown on Exhibit 4?

A Into any control station? It is hard to say. I can say what we have in our exhibit. We have sixteen shown into one. I will have to count them, I don't remember exactly . They are less, considerably less than thirty; I believe it is 21. I should say, as shown on Exhibit 4, but Exhibit 5, I believe, has the largest number of wells, but from this point, as I stated before, it is the same as the remote facilities. It's either this, I think it is this one or this one, if I am not mistaken.

Q That number, in any event, would be less than 30?

A Considerably less, around 20 or 22.

Q It would be possible to test each well at lease once during any given month? A Yes, sir.

Q How many wells does Shell Oil Company presently have completed capable of producing into this system, if it were approved?

A Six.

Q Six? A Yes.

Q All these wells will be producing from the same pool?

A Yes, sir.

Q And in this application you seek authority for the entire system as shown on Exhibit 3?

A That's correct. I believe we stated earlier that it might be modified to a certain degree.

MR. COOLEY: I believe that's all the questions I have, Mr. Examiner.

MR. UTZ: Are there any other questions? Mr. Nutter.

BY MR. NUTTER:

Q Mr. Montgomery, the area colored on Exhibit 3 is the area under consideration today. Is Shell the only working interest owner in that colored area? A That is correct.

Q How many separate royalty accounts are in that particular area?

A I don't have that information readily available.

Q Are there several royalty accounts represented though?

A Yes, sir, State and private interests.

Q How many private tanks owned by different individuals are

included in the area?

A That's covered in our letter of application. Just a second and I will count them. I believe it is 11, although I am not certain about three of them. That is the Record "A", the Record A and the Record B. Whether that is the same individual or whether it is in the family or not, I don't know.

Q Have you received approval from the State Land Commissioner for commingling of production from the various state leases that are included in this area?

A We have, with the exception of Section 2, which is the State "PH" lease.

Q Has Shell mentioned this proposal of commingling to the various other royalty interests in their --

MR. SETH: I could answer that better. The answer is no, we do not feel that it is necessary to get consent of the royalty owners.

MR. NUTTER: And yet there is no provision for determining whether a lease has been overproduced or not?

MR. SETH: We have a continuous record of the production on each lease, so there is certainly a way of telling whether or not it is.

Q (Mr. Nutter) You can tell how much a lease has produced, but there is no facility for shutting it off automatically?

A No, sir.

Q Mr. Montgomery, are these positive displacement meters that

you propose here the same type of positive displacement meters that were proposed for installation in the Bisti Pool?

A Yes, sir.

Q And that type of meter has been subjected to field tests, has it not?

A Yes, sir.

Q What system do you propose for the calibration of P.D. meters in this installation?

A Well, either dprover or tank or master meter, we haven't specified any one of them.

Q You will use either one of these two systems, however?

A Yes, sir, our custody transfer prover tank, and it is shown on the brouchure.

Q Mr. Montgomery, will this type of installation require less personal attention on the part of a switcher or pumper --

A Yes, sir.

Q -- than a manually operated system is required?

A Yes, sir.

Q Has any protection been provided against overflow of tanks or line breakage in the event that the switcher isn't around?

A We have all the safety devices but not on a flow line breakage. We have given some consideration to that, and our plans haven't been finalized on that point yet, but we do have high level and emergency flow switches in all of our tanks.

Q So that the tanks won't overflow?

A No, sir, we do not expect that at all.

Q Are these low pressure wells or high pressure wells?

A Low pressure wells, they are all pumping wells at the present time.

Q What is the minimum size of any of these leases, are there any 40-acre leases in this area?

A Yes, sir, they are single well leases up to full sections. I will have to correct that. Yes, I believe this one lease is practically two sections in size.

Q Now, the production from each separate lease will be metered separately in a remote controlled station, is that correct?

A Either there or at the central facility, in that we have a control station at the central facility as well as the remote points.

Q In other words, the production from a 40-acre lease would be going through one of these positive displacement meters at either the remote control station or central facility?

A Yes, sir.

Q Have you made any calculations as to the amount of time it might take for a normal unit allowable from one of these wells to go through one of these positive displacement meters in the event there was one well producing from the meter in order to get this hundred thousand barrels?

A It would be a considerable time.

Q Is this oil sweet oil? A No, I believe it is sour.

Q It might be a little corrosive, then?

A Yes, sir. As I pointed out, we have corrosion materials in

our meter but we are providing for that.

Q Mr. Montgomery, at the rate of thirty-seven barrels per day, it will take something like seven and a half years for a hundred thousand barrels to go through one of those meters. Don't you think the meter should be calibrated a little more frequently than that possibly?

A Well, we have recommended one hundred thousand barrels and we feel that a meter wears with through-put rather than time.

Q Even with corrosive oil?

A I think probably, but that is something we could check. I will state this, just as a standard practice, that we will -- naturally it is a new system, and we will be testing or checking frequently, and especially something like that, on our own.

Q In that event, Shell Oil Company would have no objection to the order that is entered in this case being similar to the order that was entered in the Bisti automatic custody transfer case in which the order merely stated that the meter would be tested or calibrated at intervals prescribed by the Commission, and at the time, the Commission felt that thirty days' test would be adequate, but left the door open for the operator and the Commission to change that length of time for calibration. If it became known that thirty days was too frequent to obtain the tests, would Shell Oil Company have any objection to an order like that?

MR. SETH: Well, if I may answer that, we wouldn't want to have that kind of an order because of the large number of meters,

and this situation is contemplated, if there is full development, as compared to the Bisti, there are many more meters here, and you will notice also that the automatic test cycling, every meter is really checked, every test cycle, and that, together with the fact that we are speaking about one hundred thousand barrels of fluid and not of oil going through these meters, we thought that that was sufficient. That is what the meter manufacturers say, and from other experiences in other areas, that was a frequent period of calibration.

Now, as I understand it, there is a varying amount of water here, but in some areas, it is quite large, so that the time factor that you indicated for oil would be somewhat less because we are talking about fluid, total fluid, through-put through the meters. Now, if the meters on the individual leases are calibrated every month, it's going to be quite a burden to do that, and as I pointed out, with the individual test cycle which is automatic, that is, a continuous switching from well to well automatically, we can compare that test data with the meter reading data and we can tell whether any meter is substantially out of kilter. Is that a correct analysis of it, Mr. Montgomery.

A To a certain -- I should like to say on that, that if we were required monthly calibration test of all of these meters, that that would nullify any gain that we would get through reduced labor cost. Practically nullify it, I should say.

MR. NUTTER: My only thought is that Shell Oil Company pro-

pose, Mr. Nutter, was on the automatic custody transfer, but I don't recall that we proposed any calibration period for the relatively few meters that the Commission asked to be installed on the non-participating areas on the Bisti, so we don't have much of a problem up there. As you can see, in this instance, with the large number of leases involved here, how many meters there will be. If the Commission -- we'll be happy to cooperate and run a series of tests and give them a history on these meters as we go along and see what the experience shows. I think experience is going to answer that question more than anything else.

MR. NUTTER: That was the purpose of the Bisti Order being written the way it was. Actually the order left the door open for changing the test interval, if experience showed that they were being tested too frequently.

MR. SETH: But our point here is that 30 days is too frequently on these lease meters in view of the amount of usage. I understand your point on corrosion, even if the meter is idle, but we would like to try it out on a longer period than 30 days or have a volume rather than a time, or whatever the Commission wants done, but not 30 days, if we can avoid it.

MR. COOLEY: Your position, then, Mr. Seth, is that Shell has no objection to provisions similiar to that in Order 1029 approving the Bisti system, only that you are pointing out that 30 days might not be a reasonable period in this instance.

MR. SETH: That's right. No, we think that the time should

be left open as Mr. Nutter indicated, because the situation may be different down here.

MR. NUTTER: How is the production attributed to any lease to be known except by the accuracy of the meter?

MR. SETH: Well, the accuracy of two meters really, that is the only way it is known.

A The meter and well testing information.

MR. NUTTER: I believe that's all.

BY MR. COOLEY:

Q Mr. Montgomery, there is a question about an additional meter, is that the meter shown on Exhibit 4 after the oil passes from the test separator? Would you point out the additional meter which you referred to? A Yes, it is the one.

Q It is your test meter? A Yes, sir.

MR. COOLEY: Thank you.

MR. SETH: I have a few more questions if there are no others.

MR. UTZ: I have one more.

BY MR. UTZ:

Q Mr. Montgomery, regarding an answer to one of Mr. Nutter's questions, I believe that you stated that there were no safety precautions taken at the wellhead to prevent excessive pressures or to shut in the well in case of linebreak or low pressures, is that correct?

A That's correct. There is none in the system as planned.

Q Could such automatic valves be installed to prevent the waste

of oil in case of linebreak between the wellhead and the metering equipment.

A Could there be, you say?

Q Yes. A Yes, sir, I believe so.

Q Can you say what was done in the Bisti as a result of the Commission's Order No. 1029 which reads, "Provided", and I read from the order "Provided further that each of the above described system shall be so equipped so as to prevent undue waste of oil and gas in event of malfunction of linebreaks?"

MR. SETH: If the Commission please, this witness is from the Roswell-Midland area, and the Farmington people handled the Bisti. We'll get you a written report on that if you like. That system is under construction now. I don't believe this witness is familiar with what construction --

MR. COOLEY: He testified that this system would be essentially the same as the Bisti.

MR. SETH: You are asking him what they have done on the ground, if I understand the question in the Bisti, in conformance with that order, and what variations on the facility have been made.

MR. UTZ: Well, Mr. Seth, if he can't answer the question, he can so state.

Q (Mr. Utz) Can you answer the question, Mr. Montgomery?

A No, sir.

Q (Mr. Utz) Would the installation of such equipment, in your opinion, be an excessive cost or an undue requirement?

A I'll say that it will be an added cost, and I would like to state that as far as we know now, we are almost certain that all of these wells will be pumping wells, which I am not sure about the Bisti, I don't believe that was the case entirely up there, and on the pumping well, we still have to have approximately the same amount of pumper supervision on this automatic system as we do in a normally operated system in that our stuffing boxes, and so forth, we still have that same problem which happens to be one of the big problems of the industry an a pumping well, so that our pumper will have to visit the leases approximately the same number of times as he would under a normal operating system. Our savings that I mentioned earlier are due to the testing time required. Some of the calculation time that is required while he is on the lease, and the measuring of his tanks and the gauging of his tanks.

Q How often will there be personnel present on the lease that would detect a linebreak? In other words, what I am trying to get at is, if a line did break, how long would it be before it was detected?

A I can't answer that exactly. I am not that familiar with the exact operation in that field or what it will be in the future. I think I stated in my last statement that I think it will be essentially the same for all practical purposes, that we won't lessen our supervision, I mean, the time on the lease of personnel, our operating personnel will be essentially the same. I would assume that that would be approximately once a day.

MR. UTZ: Are there any further questions of Mr. Montgomery? Mr. Seth, you may proceed.

MR. SETH: That was the question that I was going to ask him. I don't believe I have any more questions.

I would like to move the admission of Exhibits 1 through 6. I would like also to incorporate in the record in this case, the record in 1275, either completely or insofar as it is pertinent to the testimony that has been given here. It's part of the Commission's records, anyway. I don't know whether you need a formal motion on that or not.

MR. UTZ: Is there objection to the entrance of Shell's Exhibits 1 through 6? Is there objection to the entrance of the record of Case 1275 insofar as it is applicable to Case 1342?

If not, it will be so entered.

MR. SETH: It was just called to my attention whether the witness was sworn or not.

MR. UTZ: Yes, he was. Any further statement in this case? The witness may be excused.

(Witness excused)

MR. COOLEY: There is one statement in this case, a communication from Signal Oil & Gas Company, Los Angeles, California, addressed to the Oil Conservation Commission. Reads as follows:

"Signal Oil and Gas Company, as offset operator, hereby approved the application of Shell Oil Company for permission to install centralized automatic production facility and lease custody

transfer in certain of its leases in the Pearl-Queen Pool of Lea County, New Mexico and for permission to produce more than eight wells into common storage and to transfer oil from the leases prior to measurement. Signed Signal Oil & Gas Company, by N. E. Goodby, Chief Division Engineer.

MR. UTZ: Is there any further statement in this case? Case will be taken under advisement.

C E R T I F I C A T E

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I, J. A. TRUJILLO, 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 in Stenotype and reduced to typewritten transcript by me and/or under my personal supervision; the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal, this, the 28th day of December, 1957, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

J. A. Trujillo
Notary Public

My Commission Expires:

October 5, 1960.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1342 heard by me on Nov. 20, 1957.

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

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

December 26, 1957

COPY

Mr. Oliver Seth
Seth & Montgomery
P.O. Box 828
Santa Fe, New Mexico

Dear Sir:

Enclosed herewith is Order No. R-1101 entered December 18, 1957, in Case No. 1342, the application of Shell Oil Company for approval of an automatic custody transfer system in the Pearl-Queen Pool, Lea County, New Mexico.

You will note that in the "It Is Therefore Ordered" portion of Order R-1101 that paragraph three requires "That each of the positive displacement meters in the above-described systems shall be checked for accuracy at intervals and in a manner satisfactory to the Commission."

Shell Oil Company is hereby directed to so calibrate each positive displacement meter at intervals not to exceed one month by means of a master calibrated meter or a meter test tank. The above-described tests shall be conducted until further notice from the Commission and a report of said calibrations filed monthly with the Commission.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

ALP/DSN:bp
Encls.

WESTERN OIL TRANSPORTATION CO., INC.

OFFICE PHONE MU 3-1891 P. O. BOX 1219

MIDLAND, TEXAS

November 18, 1957

Mr. M. T. Smith
Shell Oil Company
Crude Oil Department
P. O. Box 1509
Midland, Texas

Dear Sir:

This has reference to Shell Oil Company leases, which Western Oil Transportation Company, Inc. is transporting oil from in the Pearl Queen Field area of Lea County, New Mexico. As we have discussed, the production department is preparing to install a Lease Automatic Custody, P. D. Meter LACT Unit.

We are very agreeable to transporting this oil on the basis of measurements set forth on this meter unit. We have discussed the matter thoroughly with the production department, and it appears that it will be a very workable operation for both parties. It is mutually understood that in case any problems should arise, we will work together and iron them out. If this meter unit works as effectively as it appears it will, it will definitely be a time and money saving operation for our company.

If we can in any way be of assistance in the testing or actual installing of this meter system, please contact us at this office.

Very truly yours,

W. D. Kleine

W. D. Kleine

WDK/mjw

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Shell EXHIBIT No. 6
CASE 1342

FACTOR

McIntosh "A"
McIntosh "B"
McIntosh "D"
McIntosh "E"

1.0000
.9980
.9960
.9940
.9920
.9900
.9880
.9860
.9840
.9820
.9800

Repair Prover Meter

State "PA-PB"
Record "A"
McIntosh

1.0040
1.0020
1.0000
.9980
.9960
.9940
.9920
.9900
.9880
.9860

Repair Lease Meter

Repaired Prover Meter

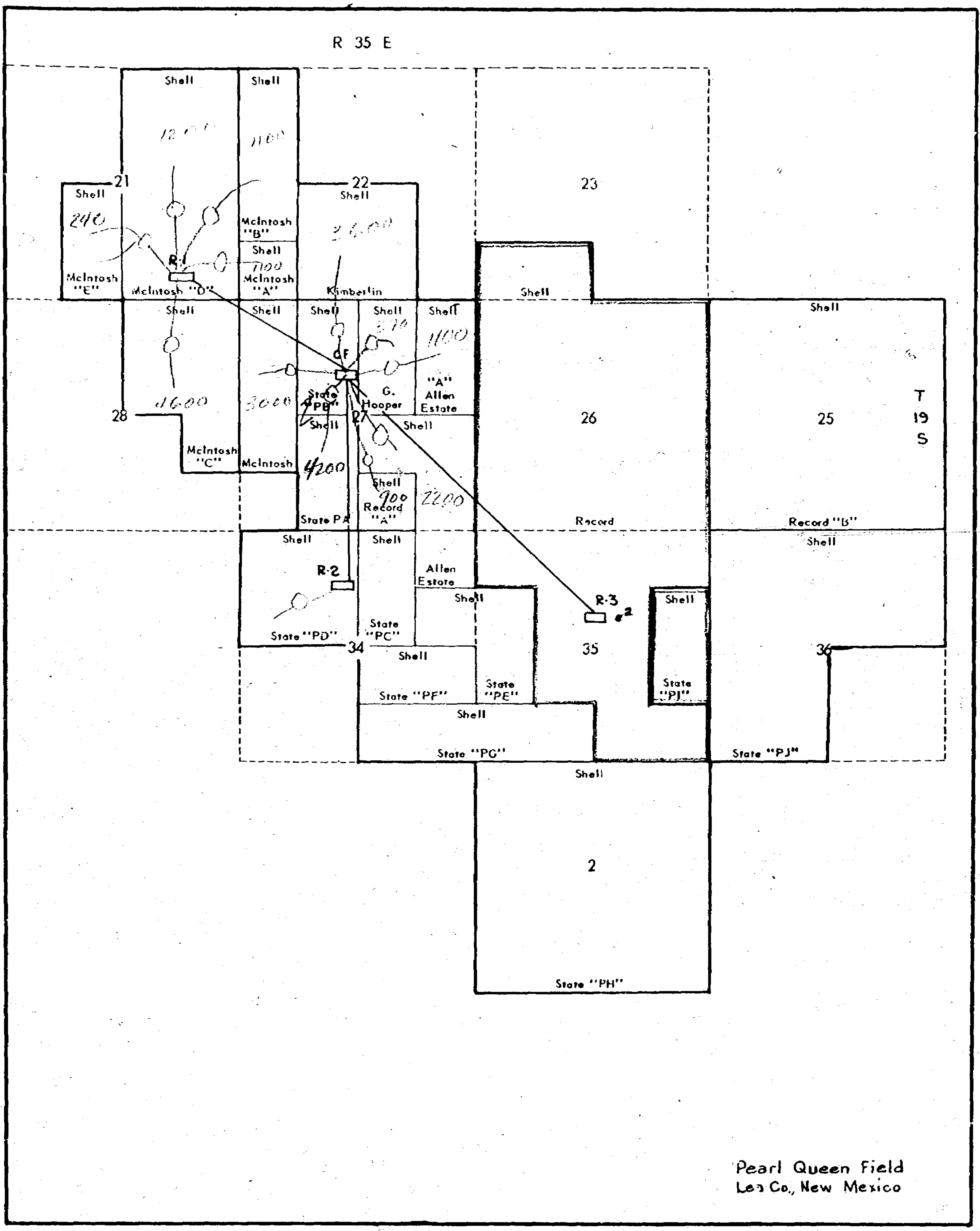
Hooper
Kimberlin
Allen Est. "A"
Allen Est.

1.0040
1.0020
1.0000
.9980
.9960
.9940
.9920
.9900
.9880
.9860

Repaired Lease Meter

Repaired Prover Meter

7-58 8-58 9-58 10-58 11-58 12-58 1-59 2-59 3-59 4-59 5-59 6-59 7-59 8-59 9-59 10-59 11-59 12-59


R 35 E
T 19 S
21
22
23
26
25
27
28
34
35
36
2
Shell
McIntosh "B"
McIntosh "A"
McIntosh "D"
McIntosh "E"
McIntosh "C"
McIntosh
Kimberlin
State "PB"
G. Hooper
"A" Allen Estate
Record "A"
State PA
Record
Record "B"
Allen Estate
State "PD"
State "PC"
State "PF"
State "PE"
State "PG"
State "PJ"
State "PH"
R-1
R-2
R-3
CF
12000
1100
240
2600
7100
1600
3000
4200
900
2200
1100
Pearl Queen Field
Lea Co., New Mexico

SIX MONTH AVERAGE FACTORS COMPARED TO OVERALL AVERAGE FACTORS

FOR LEASE METERS

Lease	Initial Meter Factor 7-58	Average of Each Sixth Meter Factor	Overall Average Factor Excluding 12-58	Difference Between Six Month Average and Overall Average Factor	Per Cent Difference	Remarks -
Central Facility						
Record "A"	.9898	.9894	.9906	+.12	+.12	
McIntosh	.9944	.9902	.9928	+.26	+.26	
State "FA-FB"	.9965	.9945	.9954	+.09	+.09	Average of the two factors for 8-1 and 8-15-58 was used in calculating overall average; meter was repaired 8-15-58
Hooper	.9924	.9929	.9935	+.06	+.06	
Kimberlin	.9938	.9936	.9947	+.11	+.11	Meter repaired 1-15-59, average of two factors for 1-1 and 1-15-59 was used
Allen Estate "A"	1.0017	.9960	.9962	+.02	+.02	
Allen Estate	.9936	.9941	.9956	+.15	+.15	Excluding 8-58
Remote Facility						
McIntosh "A"	.9826	.9861	.9875	+.14	+.14	
McIntosh "B"	.9851	.9882	.9897	+.15	+.15	
McIntosh "C"	.9399					Calibrator on meter was reset 7-1-59
McIntosh "D"	.9925	.9957	.9959	+.02	+.02	
McIntosh "E"	.9872	.9901	.9917	+.16	+.16	

NOTE: Factors for 12-58 were excluded due to broken temperature compensating element on prover meter.

METER FACTORS

Date	Central Facility							Remote Facility					ACT
	Record "A"	McIntosh	State "PA-PB"	Hooper	Kimberlin	Allen Estate "A"	Allen Estate	McIntosh "A"	McIntosh "B"	McIntosh "C"	McIntosh "D"	McIntosh "E"	
7-58	.9898	.9944	.9965	.9924	.9938	1.0017	.9936						1.0066
8-58	.9905	.9953	.9980	.9928	.9957	1.0025	1.0135						
9-58	.9921	.9960	.9992* .9984	.9957	.9953	1.0003	.9961						1.0139
10-58	.9910	.9933	.9969	.9936	.9945	.9970	.9950						1.0128
11-58	.9927	.9930	.9966	.9944	.9911	.9973	.9939						1.0168
12-58	.9924	.9921	.9929	1.018	.9865	.9947	.9930	.9913	.9928	.9477	.9901	.9862	1.0180
1-59**	.9866	.9863	.9916	.9924	.9901* .9917	.9896	.9876	.9826	.9851	.9399	.9525	.9872	
2-59	.9872	.9870	.9947	.9927	.9921	.9916	.9906	.9830	.9849	.9470	.9920	.9881	1.0151
3-59	.9881	.9881	.9926	.9900	.9935	.9921	.9918	.9832	.9864	.9421	.9954	.9886	1.0143 1.0004***
4-59	.9870	.9873	.9923	.9918	.9901	.9911	.9900	.9838	.9853	.9395	.9916	.9874	.9983***
5-59	.9902	.9945	.9997	.9925	.9964	.9958	.9987	.9889	.9896	.9392	.9980	.9898	.9998
6-59	.9920	.9948	.9941	.9919	.9965	.9961	.9977	.9895	.9912	.9346	.9988	.9930	.9944
7-59	.9917	.9899	.9954	.9939	.9988	.9968	1.0010	.9899	.9929	.9980***	.9955	.9987	.9957
8-59	.9925	.9926	.9911	.9941	.9951	.9961	1.0007	.9915	.9944	.9971	.9973	.9930	.9958
9-59	.9934	.9962	.9938	.9963	.9994	.9968	1.0020	.9911	.9947	.9981	.9980	.9950	.9970
10-59	.9942	1.0026	.9962	.9983	1.0007	.9984	.9995	.9916	.9925	.9980	1.0000	.9963	.9965

* Repaired Lease Meter
** Repaired Prover Meter
*** Reset Calibrator