

CASE 2053: Application of CONTINENTAL
to obtain complete and accurate
22-23 Well No. 1 - Rio Arriba Co.

Casa No.

2053

Application, Transcript,
Small Exhibits, Etc!

**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. 2083
Order No. R-1761**

**APPLICATION OF CONTINENTAL OIL
COMPANY FOR A TRIPLE COMPLETION
IN THE GALLUP FORMATION, THE
GREENHORN FORMATION, AND THE
DAKOTA FORMATION, RIO ARriba
COUNTY, NEW MEXICO.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 24, 1960, at Santa Fe, New Mexico, before Daniel S. Hutter, 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 30th day of August, 1960, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Hutter, 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, Continental Oil Company, is the owner and operator of the Jicarilla 22-22 Well No. 1, located in the NW/4 SE/4 of Section 22, Township 25 North, Range 4 West, SPM, Rio Arriba County, New Mexico.

(3) That the applicant proposes to triple complete the said Jicarilla 22-22 Well No. 1 in such a manner as to permit the production of hydrocarbons from the Gallup formation, the production of hydrocarbons from the Greenhorn formation, and the production of hydrocarbons from the Dakota formation through parallel strings of 4-1/2 inch, 2-7/8 inch, and 4-1/2 inch casing, respectively, cemented in a common well-bore. Further, that the applicant proposes to install 2-3/8 inch tubing in each of the aforementioned 4-1/2 inch casing strings.

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

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CASE No. 2053
Order No. R-1761

(5) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

That the applicant, Continental Oil Company, be and the same is hereby authorized to triple complete its Jicarilla 22-22 Well No. 1, located in the NW/4 SE/4 of Section 22, Township 25 North, Range 4 West, NMPM, Rio Arriba County, New Mexico, in such a manner as to permit the production of hydrocarbons from the Gallup formation, the production of hydrocarbons from the Greenhorn formation, and the production of hydrocarbons from the Dakota formation through parallel strings of 4-1/2 inch, 3-7/8 inch, and 4-1/2 inch casing, respectively, cemented in a common well-bore.

PROVIDED FURTHER, That applicant shall ensure that cement behind the casing shall come to at least 100 feet above the top of the Pictured Cliffs formation from a stage collar to be set at approximately 1300 feet, and also that cement shall be brought to at least 100 feet above the tops of the Greenhorn, the Gallup and the Greenhorn formations. Provided further, that casing centralizers or turboliners shall be installed throughout the cemented interval of the three producing formations and on the first three joints of casing above the top of each.

PROVIDED FURTHER, That applicant shall install tubing for the production of hydrocarbons from the Gallup formation and from the Dakota formation.

PROVIDED FURTHER, That the applicant shall complete, operate, and produce said well in accordance with the applicable provisions of Section V, Rule 112-A.

PROVIDED FURTHER, That the applicant shall take communication tests upon completion and annually thereafter, or at such times as the Secretary-Director may prescribe.

IT IS FURTHER ORDERED:

That jurisdiction of this cause is hereby retained by the Commission for such further order or orders as may seem necessary or convenient for the prevention of waste and/or the protection of correlative rights; upon failure of the applicant to comply with any requirement of this order, the Commission may terminate the authority hereby granted and require the applicant or its successors and assigns to limit its activities to dual zone or regular single-zone production in the interest of conservation.

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CASE No. 1053
Order No. N-1761

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

John Burroughes
JOHN BURROUGHS, Chairman

William H. Hume
WILLIAM H. HUME, Member

A. L. Foster, Jr.
A. L. FOSTER, Jr., Member & Secretary

CSX/

GOVERNOR
JOHN BURROUGHS
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
MURRAY E. MORGAN
MEMBER

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

P. O. BOX 871
SANTA FE

August 30, 1960

Mr. James Kellahin
Kellahin & Fox
Box 1713
Santa Fe, New Mexico

Re: Case No. 2053
Order No. B-1751
Applicant:

Continental Oil Company

Dear Sir:

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

Very truly yours,

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

ir/

Carbon copy of order also sent to:

Hobbs OCC X
Artesia OCC
Aztec OCC X

Other

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 8/24/40

CASE 2053

Hearing Date 9am DSN @ SF 8/24

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

Approve triple completion as
proposed. Provide adequate cement
and centralizers as testified
by Coull's witness

San Juan
Staff Member

DOCKET: EXAMINER HEARING AUGUST 24, 1960

Oil Conservation Commission - 9 a.m., Mabry Hall, State Capitol, Santa Fe

The following cases will be heard before Daniel S. Nutter, Examiner, or Oliver E. Payne, Attorney, as alternate Examiner:

CASE 2053:

Application of Continental Oil Company for a triple completion utilizing three strings of casing. Applicant, in the above-styled cause, seeks an order authorizing it to triple complete its Jicarilla 22-22 Well No. 1, located in the NW/4 SE/4 of Section 22, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of oil from the Gallup formation, the production of oil from the Greenhorn formation and the production of oil from the Dakota formation through parallel strings of 4½-inch, 2 7/8-inch, and 4½-inch casing respectively, cemented in a common well bore. Applicant proposes to install tubing to the Gallup and Dakota formations.

CASE 2054:

Application of Continental Oil Company for a triple completion utilizing three strings of casing. Applicant, in the above-styled cause, seeks an order authorizing it to triple complete its Jicarilla 28-27 Well No. 3, located in the NW/4 SE/4 of Section 27, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of oil from the Gallup formation, the production of oil from the Greenhorn formation and the production of oil from the Dakota formation through parallel strings of 4½-inch, 2 7/8-inch, and 4½-inch casing respectively, cemented in a common well bore. Applicant proposes to install tubing to the Gallup and Dakota formations.

CASE 2055:

Application of Aztec Oil & Gas Company for a gas-gas dual completion utilizing two strings of casing. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Hanks Well No. 12-D, located in Unit H, Section 7, Township 27 North, Range 9 West, San Juan County, New Mexico, in such a manner as to permit the production of gas from the Fulcher Kutz-Pictured Cliffs Pool and the production of gas from the Dakota Producing Interval through parallel strings of 2 7/8-inch and 4½-inch casing cemented in a common well bore. Applicant proposes to install 2 3/8-inch tubing to produce the Dakota gas.

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Docket No. 24-60

CASE 2056: Application of Gulf Oil Corporation for permission to commingle the production from all wells on several leases in Townships 21 and 22 South, Range 36 East, Lea County, New Mexico, and for approval of two automatic custody transfer facilities to handle said commingled production from the Arrowhead Pool, Eumont Pool, Eunice-Monument Pool, South Eunice Pool and Jalmat Pool, all in Lea County, New Mexico.

CASE 2057: Application of Kay Kimbell for an order force-pooling all interests in a 320-acre standard gas unit in the Dakota Producing Interval. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Dakota Producing Interval in a 320-acre standard gas unit consisting of the W/2 of Section 22, Township 29 North, Range 11 West, San Juan County, New Mexico.

CASE 2058: Application of Anderson-Prichard Oil Corporation for a triple completion and for a 181-acre non-standard gas proration unit. Applicant, in the above-styled cause, seeks an order authorizing the triple completion of its Western-Federal Well No. 1, located 330 feet from the North and West lines of Section 5, Township 23 South, Range 38 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Blinebry Pool, the production of gas from the Tubb Gas Pool and the production of oil from the Drinkard Pool through parallel strings of 2 3/8-inch tubing, 2 1/16-inch tubing, and 2 3/8-inch tubing respectively. Applicant, further seeks the establishment of a 181-acre non-standard gas proration unit in the Tubb Gas Pool consisting of Lots 1, 2, 3, and 4 of said Section 5, to be dedicated to the said Western-Federal Well No. 1.

CASE 2059: Application of Humble Oil & Refining Company for an oil-oil dual completion utilizing two strings of casing. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its State "M" Well No. 24, located in Unit O, Section 19, Township 22 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Langlie-Mattix Pool and the production of oil from an undesignated Drinkard Pool through parallel strings of 2 7/8-inch and 4 1/2-inch casing cemented in a common well bore.

CASE 2060: Application of Drilling and Exploration Company, Inc., for approval of a unit agreement. Applicant, in the above-styled cause seeks approval of its Mescalero Unit Agreement, which unit is to embrace approximately 4829 acres of Federal and State land in Townships 18 and 19 South, Ranges 33 and 34 East, Lea County, New Mexico.

CASE 2061: Application of Ralph Lowe for approval of a unit agreement. Applicant, in the above-styled cause, seeks approval of its Northeast Maljamar Unit Agreement, which unit is to embrace approximately 800 acres in Townships 16 and 17 South, Range 33 East, Lea County, New Mexico.

CASE 2040: (Continued)

Application of Neville G. Penrose, Inc., for an order authorizing the dual completion of its Grizzel Well No. 1, located in Unit G, Section 5, Township 22 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of gas from the Tubb Gas Pool and the production of oil from the Drinkard Pool through the casing-tubing annulus and 2 3/8-inch tubing respectively.

ig/

MAIN OFFICE OCC



1960 AUG 17 AM 8:23

CONTINENTAL OIL COMPANY

LEGAL DEPARTMENT

DENVER 2, COLORADO

A. T. SMITH
GENERAL ATTORNEY
C. R. HAMPTON
F. E. RADLOFF
W. M. GRIFFITH
G. H. MATHER
R. A. HOLLEN
ATTORNEYS

August 15, 1960

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

Dear Mr. Nutter:

Pursuant to our telephone conversation, I would like to request that Continental Oil Company's two applications for triple completion be postponed until the September hearing of the commission. I am making this request at this time instead of on the hearing date on August 24 in order that there will be sufficient time to re-advertise the two applications in the event the commission holds a hearing in the early part of September.

When I come down for the hearing in September I will bring the data you requested on our waterflood in the Rattlesnake Field.

Very truly yours,

William M. Griffith
William M. Griffith

by

Griffith called 3:25 pm 8/19/60 and said he would be able to make disregard postponement of the 24th hearing

NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

APPLICATION FOR ~~DUAL~~ ^{TRIPLE} COMPLETION

Case 2053 7-3-58

Field Name		Undesignated		County	Rio Arriba	Date	August 1, 1960
Operator		Continental Oil Company		Lease	Jicarilla 22-22	Well No.	1
Location of Well	Unit	Section	22	Township	25 North	Range	4 West

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

Case No. 2018; Continental Oil Company - Jicarilla 22-27 - Well No. 2

3. The following facts are submitted:	Upper Zone	Lower Zone	Respect Zone
a. Name of reservoir	Gallup	Greenhorn	Dakota
b. Top and Bottom of Pay Section (Perforations)	6653 - 7083 (proposed)	7540 - 7600 (proposed)	7600 - 7948 (proposed)
c. Type of production (Oil or Gas)	Oil	Oil	Oil
d. Method of Production (Flowing or Artificial Lift)	Flowing	Flowing	Flowing

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

YES a. Diagrammatic Sketch of the Dual Completion, showing all casing strings, including size and setting, top of cement, perforated intervals, tubing strings, including diameters and setting depth, location and type of packers and side door chokes, and such other information as may be pertinent.

YES b. Plat showing the location of all wells on applicant's lease, all offset wells on offset leases, and the names and addresses of operators of all leases offsetting applicant's lease.

_____ c. Waivers consenting to such dual completion from each offset operator, or in lieu thereof, evidence that said offset operators have been furnished copies of the application. *

_____ d. Electrical log of the well or other acceptable log with tops and bottoms of producing zones and intervals of perforation indicated thereon. (If such log is not available at the time application is filed, it shall be submitted as provided by Rule 112-A.)

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

1. Humble Oil Company - P. O. Box 1287 - Roswell, New Mexico

2. El Paso Natural Gas Products Co. - P. O. Box 997, Farmington, New Mexico

6. Were all operators listed in Item 5 above notified and furnished a copy of this application? YES ☒ NO ☐ . If answer is yes, give date of such notification August 1, 1960

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

William M. Griffith
Signature

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

ADDITIONAL DATA FOR TRIPLE COMPLETION

This well will be located in the NW SE Sec. 22, T25N, R4W, Rio Arriba County, New Mexico. The well will produce oil from the Gallup, Greenhorn and Dakota formations. Attached is a sketch of the proposed completion and a lease plat showing the location.

Basically, the program will consist of the following:

1. Drill a 16" hole to 200'.
2. Run 200' of 13 3/8" OD surface pipe and cement to surface.
3. Drill a 12" hole to the base of the Gallup formation or approximately 7083'.
4. Drill a 9" hole from the base of the Gallup to TD at the base of the Dakota formation at approximately 7916'.
5. Run and hang 4 1/2" OD casing to the base of the Dakota.
6. Run and hang 2 7/8" OD casing to the base of the Greenhorn.
7. Run and hang 4 1/2" OD casing to the base of the Gallup.
8. Cement the Dakota and the Greenhorn through the Dakota string of 4 1/2" OD casing.
9. Cement the Gallup through the Gallup string of 4 1/2" OD casing.
10. Cement the Mesa Verde through a stage collar in the Dakota string.
11. Cement the Fractured Cliffs through a stage collar in the Gallup string.
12. Perforate each producing zone (Dakota, Greenhorn, and Gallup) separately utilizing a gun which can be oriented to perforate only one string at a time.
13. Selectively sand-oil treat the Gallup and Dakota formations.
14. Acidize the Greenhorn formation.
15. Complete each string for production through a casing head designed to prevent comingling of the hydrocarbons.

Gallup

A sequence of fine-grained beach sands interbedded in a matrix of fractured marine shales and siltstones. This formation is considered to have a common source of supply separate from

that of the formations immediately above and below. The marine shales are considered the source beds and this formation is bounded above and below by impermeable shale.

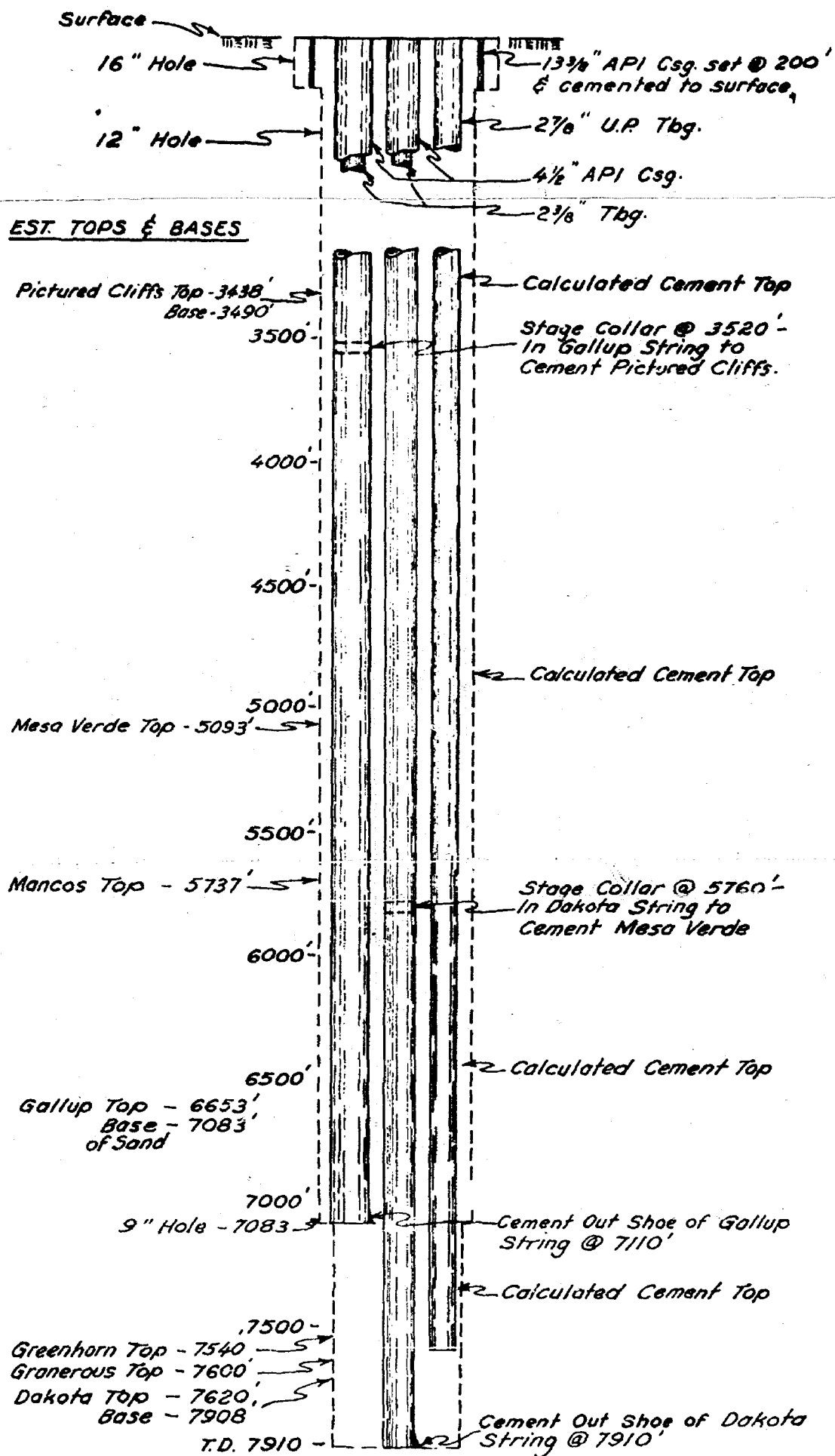
Greenhorn

A series of interbedded fractured marine limestone and limy shale. This formation is considered as having a common source of supply separate from that of the Dakota, due to its environment of deposition.

Dakota

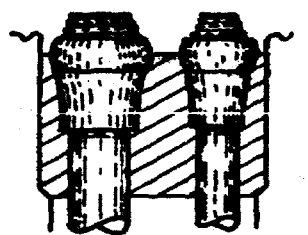
This is a sandstone, fine to medium grained, fractured, low porosity and permeability, interbedded with black marine shales. The Dakota is considered as a common source of supply beneath the environment of deposition (a fractured system of sand bodies interbedded with black marine shales.) The Dakota is normally isolated from strata above and below with an impermeable shale.

We believe this proposed type of completion is necessary to economically develop the Jicarilla-Apache lease. This type of completion will prevent waste of the resources of the State of New Mexico by the use of proper production practices. It will also protect the correlative rights of everyone concerned by providing separate production facilities for each of the three producing formations which will prevent the comingling of the hydrocarbons.

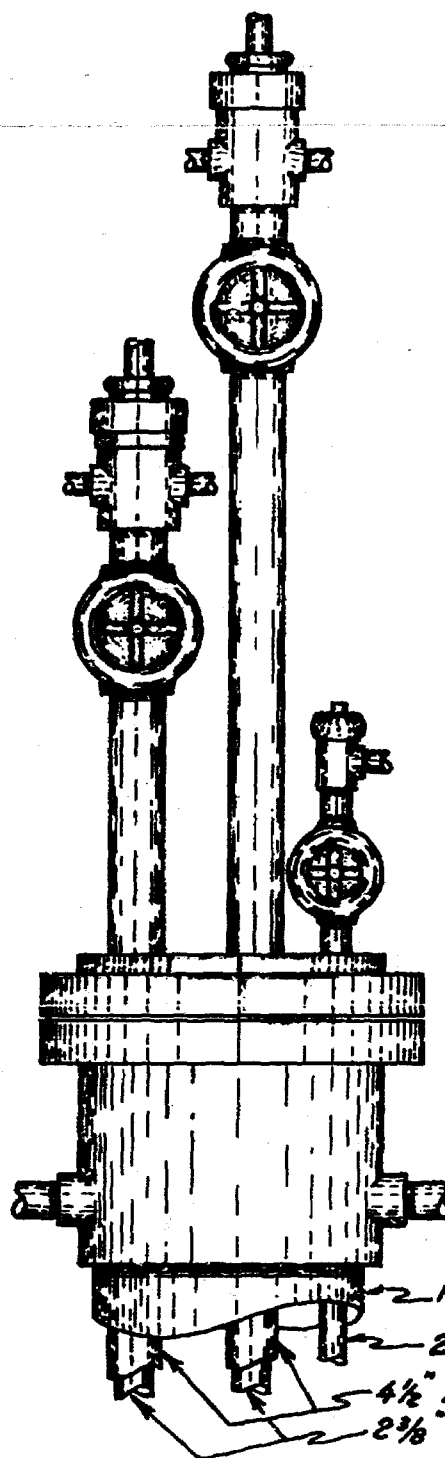


CONTINENTAL OIL COMPANY
 PROPOSED CASING AND CEMENTING PROGRAM
 FOR TRIPLE COMPLETING A WELL
 JICARILLA 22 - 22 No.1

NOT TO SCALE



Landing Mandrels



2 13 3/8" API Csg. - 8 rnd. thd.

2 2 1/8" OD API UP Tbg. - 8 rnd. thd.

5 4 1/2" API Csg. - 8 rnd. thd.

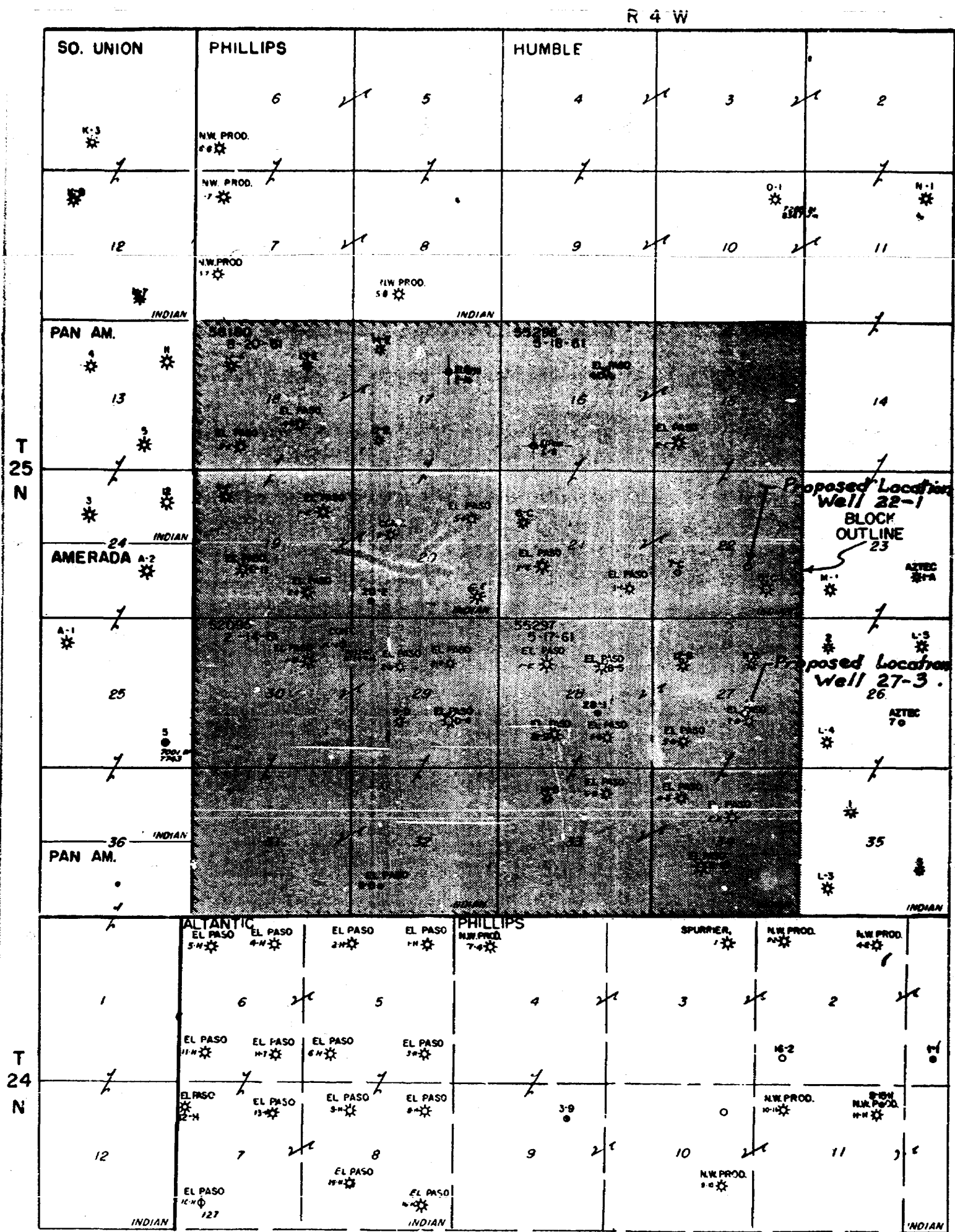
2 2 3/8" OD API Tbg. - 8 rnd. thd.

2000 Lb. Cold Working Pressure

CONTINENTAL OIL COMPANY

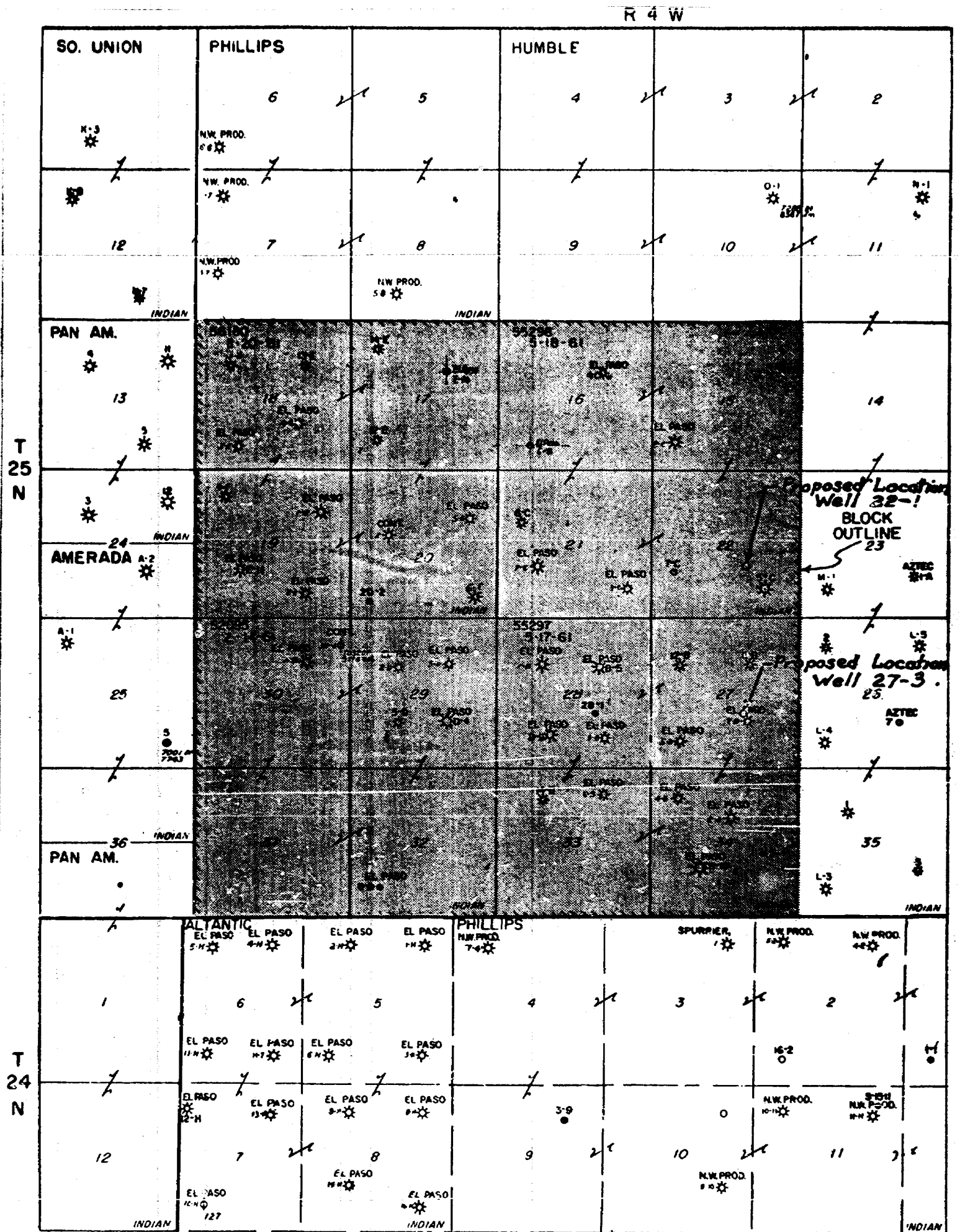
WELLHEAD ASSEMBLY
TRIPLE CASING COMPLETION

NOT TO SCALE



Notes: Shallow Gas rights farmed out to El Paso
 Natural Gas Company under Contract No 8879
 Entire block within K.G.S.

WEST LINDRITH BLOCK NO. 207
 RIO ARRIBA CO., N. MEX.



Note: Shallow Gas rights farmed out to El Paso

Natural Gas Company under Contract No 8879

Entire block owned by

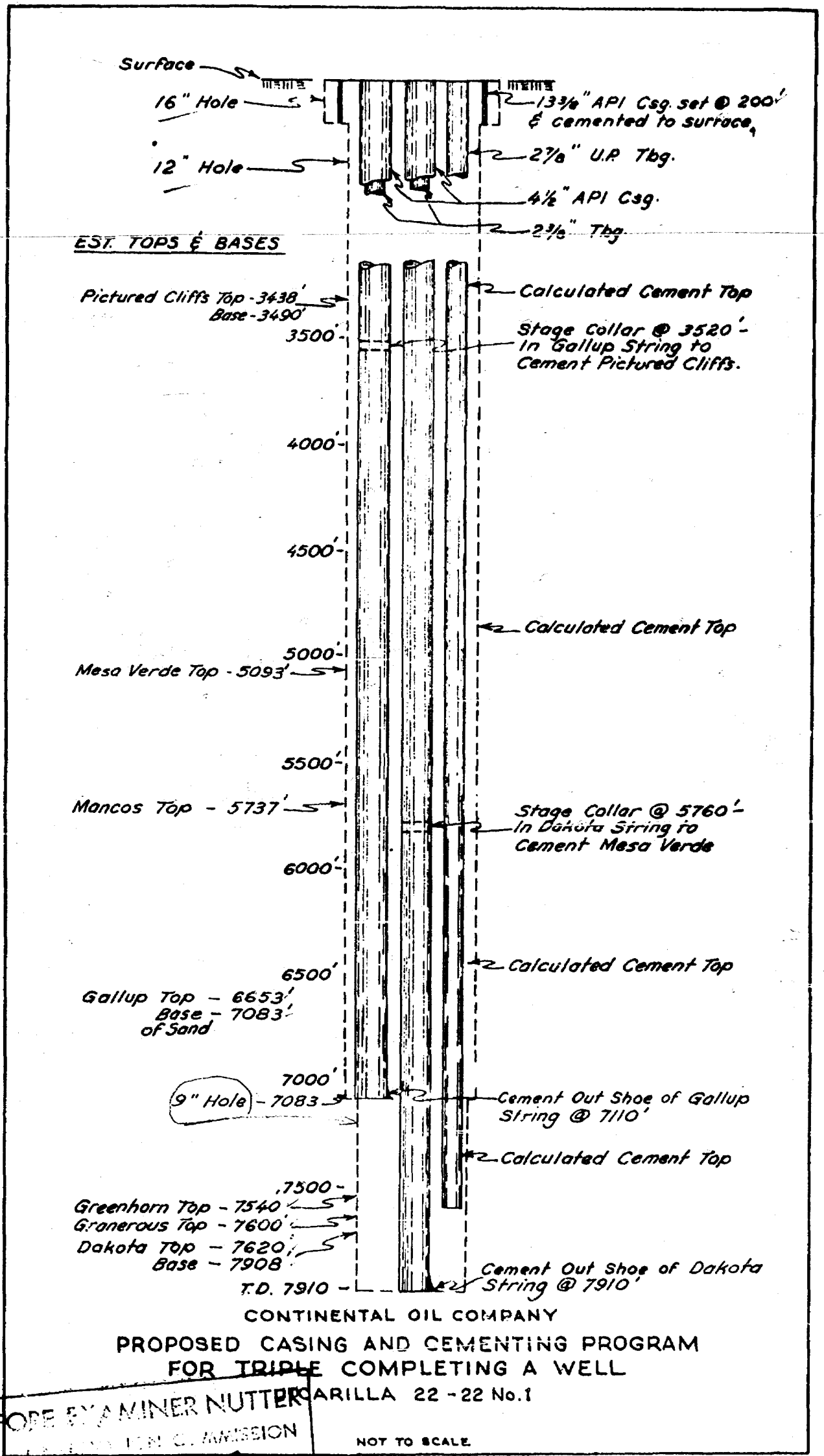
BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

Cont'd EXHIBIT NO. 1

CASE NO. 7053 + 7054

WEST LINDRITH BLOCK NO. 207
RIO ARRIBA CO., N. MEX.



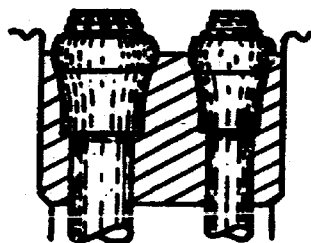
BEFORE EXAMINER NUTTER

CIL

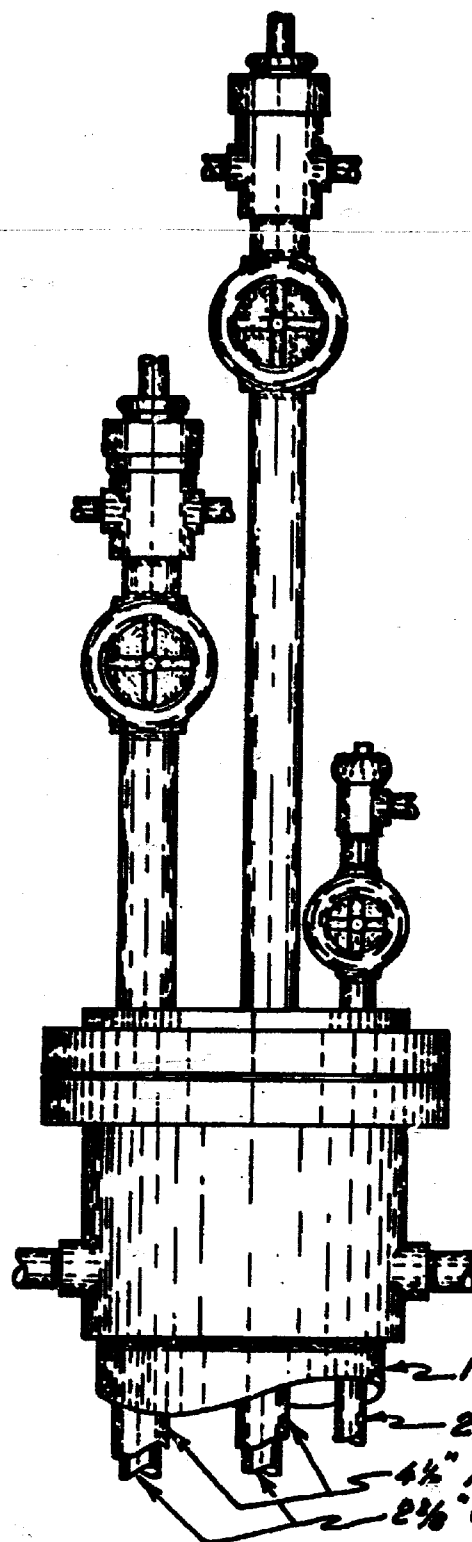
EXHIBIT NO. 2

NO. 7055 - 2054

NOT TO SCALE



Landing Mandrels



$13\frac{3}{8}$ " API Csg. - 8 rnd. thd.
 $2\frac{1}{2}$ " OD API UP Tbg. - 8 rnd. thd.
 $4\frac{1}{2}$ " API Csg. - 8 rnd. thd.
 $2\frac{1}{2}$ " OD API Tbg. - 8 rnd. thd.

2000 Lb. Cold Working Pressure

BEFORE EXAMINED MUTTER
 OIL CONSERVATION
 EXHIBIT NO. 4
 CASE NO. 9053-2054

CONTINENTAL OIL COMPANY

WELLHEAD ASSEMBLY
 TRIPLE CASING COMPLETION

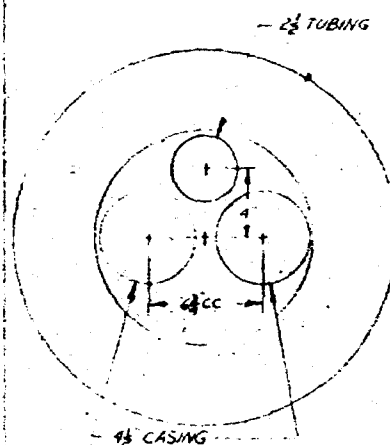
NOT TO SCALE

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

Contd EXHIBIT NO. 5

CASE NO. 7053-7054



TOP VIEW
3/8" SCALE

JUNK RING

PACKING

SLIPS

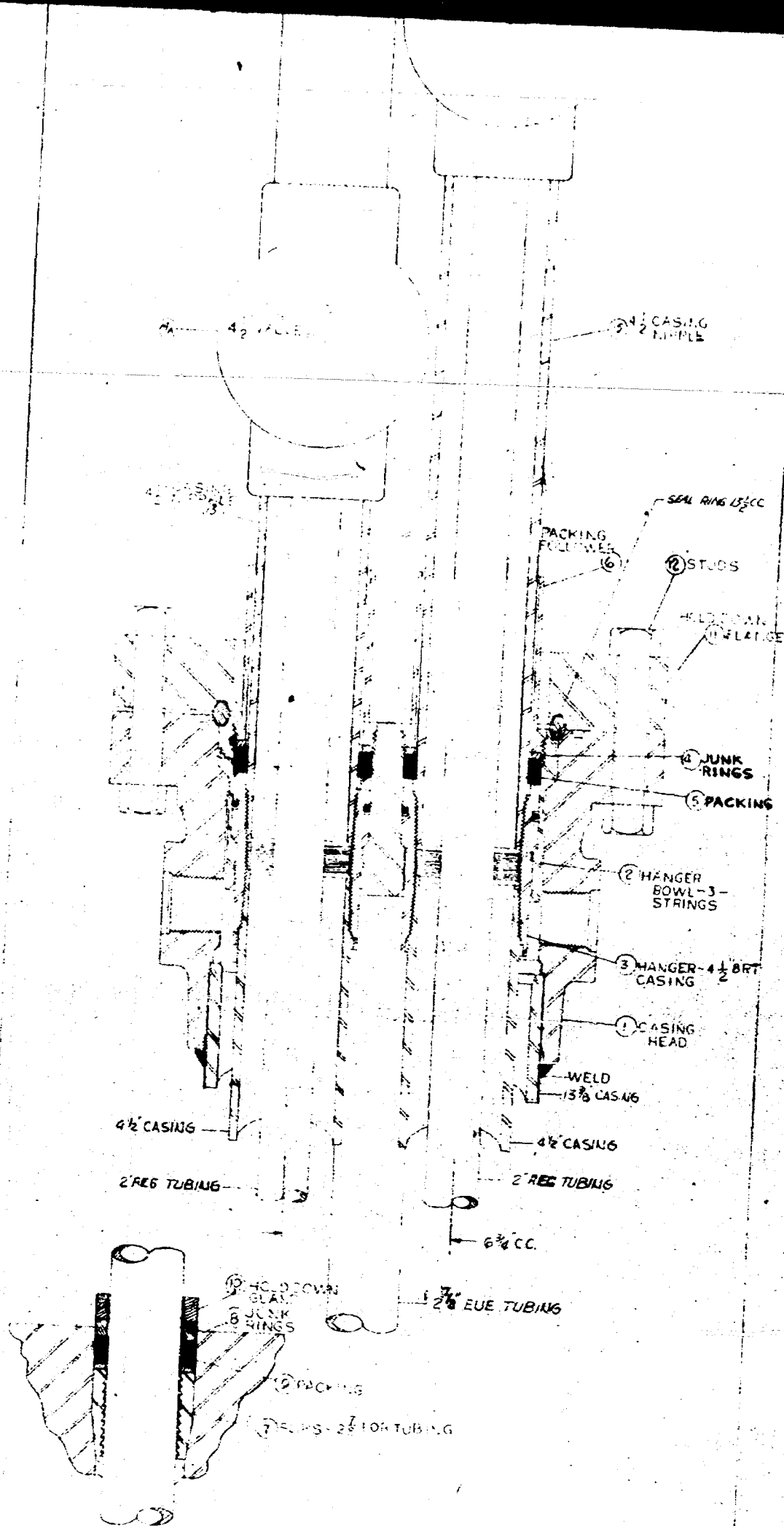
TUBING HEAD
ADAPTER

STRIPPER
PLUG

TUBING HEAD

2 1/2" VALVE

4 1/2" CASING
HEAD



DETAIL OF 2 1/2" SIDE

TOLERANCES			PRINT ISSUED
FRACTIONAL ± 1/32	DECIMAL ± 0.01	ANGULAR ± 1/2	
UNLESS OTHERWISE SPECIFIED IN THE DRAWING OR NOTED ON THE DRAWING			SCALE 3/8" = 1'
RECTOR WELL EQUIPMENT COMPANY			OWN R.W. 6-1
			CHRD 60
			APPD
			DWG NO 0-60-0251 REV

BEFORE THE
OIL CONSERVATION COMMISSION
MABRY HALL
Santa Fe, New Mexico
August 24, 1960

EXAMINER HEARING

IN THE MATTER OF:

Application of Continental Oil Company for a triple completion utilizing three strings of casing. Applicant, in the above styled cause, seeks an order authorizing it to triple complete its Jicarillo 22-22 Well No. 1, located in the NW/4 SE/4 of Section 22, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of oil from the Gallup formation, the production of oil from the Dakota formation through parallel strings of 4 1/2 inch, 2-7/8 inch and 4 1/2 inch casing respectively, cemented in a common well bore. Applicant proposes to install tubing to the Gallup and Dakota formations.

Application of Continental Oil Company for a triple completion utilizing three strings of casing. Applicant, in the above styled cause, seeks an order authorizing it to triple complete its Jicarilla 28-27 Well No. 3, located in the NW/4 SE/4 of Section 27, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of oil from the Gallup formation, the production of oil from the Dakota formation through parallel strings of 4 1/2 inch, 2-7/8 inch and 4 1/2 inch casing respectively, cemented in a common well bore. Applicant proposes to install tubing to the Gallup and Dakota formations.

BEFORE:

Daniel Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order. The first case will be 2053.

MR. PAYNE: Application of Continental Oil Company for a triple completion utilizing three strings of casing.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO

File:

Case

2053



DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 2-6691

ALBUQUERQUE, NEW MEXICO

MR. KELLAHIN: My name is Jason Kellahin of Kellahin and Fox. I am representing the applicant, Continental Oil Company, and I am associated with Mr. William Griffith, a member of the Colorado Bar, who will present the case.

MR. GRIFFITH: It it would please the commission, Continental would like to consolidate case 2053 with case number 2054 for the purposes of testimony.

MR. NUTTER: We will also call case 2054. Its your motion for consolidating for taking testimony. Case 2053 and 2054.

MR. GRIFFITH: Continental has one witness, M. A. Mac Leenan and who should be sworn.

(Whereupon the witness was sworn)

M. A. MAC LEENAN

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

MR. GRIFFITH: Continental has marked Exhibit 1, a map. At this time we would like to move for administrative notice of the locations of these proposed triple completion as set forth in the C101 of the notice of intent to drill in both cases.

MR. NUTTER: Does this exhibit apply to both cases?

MR. GRIFFITH: Yes, sir it has both well locations for the two cases.

MR. NUTTER: Very good. Proceed.

(Whereupon Exhibits 2 and 3 were marked for identification.)



DIRECT EXAMINATION

By MR. GRIFFITH:

Q Would you please state your name.

A M. A. Mac Lennan.

Q And by whom are you employed?

A Continental Oil Company.

Q What is your position with Continental Oil Company?

A Acting District Engineer in Durango District.

Q Have you ever testified as an expert witness, as a petroleum engineer before the New Mexico Conservation Commission before?

A Yes, I have.

MR. GRIFFITH: I move that this witnesses qualifications as an expert witness be accepted by the commission.

MR. NUTTER: His qualifications are accepted. Will you proceed.

MR. GRIFFITH: Will you please explain Exhibits 2 and 3?

A Exhibit 2 and 3 are schematic diagrams of the proposed triple completion. Exhibit number 2 is the proposed casing cement program for the Jicarilla 22-22 Well No. 1 and number 3 is for the Jicarilla at 28-27 No. 1.

Q Exhibit Number 2 is offered in connection with Case No. 2053 and Exhibit Number 3 is offered in connection with Case No. 2054, is that correct?

DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO



A That is correct.

Q Were those exhibits prepared or directed under your supervision?

A Yes, sir.

Q Would you briefly state what Exhibit Number 2 shows.

A These exhibits show the diameter of the hole size we propose to drill, the various sizes of casings to be used, setting depths, proposed estimate depths in the basis of the producing formations and location of cementing collars for stage cementing.

Q What formations in these two wells will be completed.

A In both wells we propose to complete the wells as an oil producer, in the Gallup and oil producer, in the Greenhorn an oil producer and in the Dakota.

Q What is the estimated top and base of each of these three formations in the two wells?

A On Exhibit number 2 for Jicarilla at the 22-22 Number 1, the estimated top of the Gallup will be at 6653. The estimated base at 7083. The estimated top of the Greenhorn will be 7540 and the estimated base will be 7600. The estimated top of the Dakota will be 7620 and the estimated base will be 7908. For the Jicarilla 28-27 Number 3, the estimated top of the Gallup will be 6393. The estimated base will be 6825. The estimated top of the Greenhorn will be 7280 and the estimated base at 7340. The estimated top of the Dakota will be 7360 and the estimated base at 7648.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO



Q And both of these wells will be completed in the same formation, is that correct?

A Yes, each of the two proposed completions will be completed in the Gallup, Greenhorn and Dakota.

Q Would you briefly describe each of the proposed producing formations?

A The Gallup formation is a sequence of fine grained sands interbedded in a matrix of fractured marine shales and silt stones. This formation is bounded above and below by impermeable shales. The Greenhorn is a series of interbedded fractured marine lime stones and limey shales. This formation is considered as having a common source of supply separate from the Dakota. The source being the marine lime stones and shales. The Greenhorn is isolated from zones above and below by impermeable shale. The Dakota is a fine grained fractured sand stone interbedded with black marine shales. The Dakota is considered a common source of supply based on the environment of deposition. The Dakota is also isolated from zones above and below by an impermeable shale.

Q What is the basis of your information on these proposed producing formations and their various depths?

A The description of these formations and the estimated tops were obtained from geologic studies of available logs and core analysis from wells in the immediate area.

Q Is the manner of completion of the two wells substan-

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tially the same in both cases?

A Basically it is the same, with the exception of the different depths of the producing formations.

Q Will you please describe the manner of the proposed drilling of completion of these two wells.

A We propose to drill a 16 inch hole to the depth of 200 feet and run and cement 200 feet of 13-3/8 surface pipe. We propose to drill a 12 OD hole to the base of the Gallup formation and 9 inch from the base of the Gallup to TD at the base of the Dakota. Then we plan to run ES induction and sonic logs and a section gauge. The section gauge will be used to calculate the amount of cement required to adequately cover each of the formations as shown on exhibits number 2 and number 3. The following on the ruling of logs and the section gauge, we plan to run a string of 4 1/2 inch OD casing to the base of the Dakota and a string of 2-7/8 OD tubing to the Greenhorn formation and a string of 4 1/2 inch OD casing to the Gallup formation. We plan to cement the Dakota string and the Greenhorn formations through the 4 1/2 inch Dakota string and we plan to cement the Gallup formation too through the 4 1/2 inch Gallup string. We then plan to cement the Mesaverde formation with the stage collar located in the Dakota string and cement the Pictured Cliffs formation with the stage collar located in the Gallup string. And after allowing the cement to set, we plan to perforate the Dakota string with a conventional

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perforating gun and then perforate the 2-7/8 inch Greenhorn string and the 4 1/2 inch Gallup string using a nuclear oriented perforating gun.

Q Has this nuclear oriented perforating gun been used before in New Mexico?

A Yes, it has.

Q What additional action will be taken to complete the well?

A We plan to select sand oil to treat the Gallup and Dakota formations and in addition the Greenhorn formation and then we plan to run a 2 inch tubing for production strings in the 4 1/2 inch Gallup string, the 4 1/2 inch Dakota string.

Q What type of well head will be used?

A We propose to use a triple casing head designed to prevent commingling of hydro-carbons from each of the three formations.

Q I show you what has been marked as Exhibit 4 and ask if you can identify this exhibit.

A Yes, this is a schematic drawing of the well head assembly for a triple casing completion.

Q Was this exhibit prepared by you or under your supervision?

A Yes, it was.

Q And what does this exhibit show?



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A This exhibit is merely to show the type of head used and will provide for straight control valves and tubing heads on each of the three production strings.

(Whereupon Exhibit 5 was marked for identification.)

Q I show you Exhibit 5 and ask if this exhibit was prepared by you or by whom was this exhibit prepared?

A This exhibit was prepared by Rector Well Equipment Company for Continental Oil Company.

Q What does Exhibit 5 show?

A Exhibit 5 is a detailed drawing of the specific head we intend to use, and the components of the head are identified on the drawing.

Q What are the advantages in using this type of head?

A The main advantage of this type of head is the ease in which the majority of workovers can be conducted in any of the three producing strings of casing. With this type of head it is possible to work on one of these zones without disrupting production from either of the other two.

Q Will this type of plan completion provide for separation of production in the well and on the surface?

A Yes, it will.

Q With this manner of completion will it allow for surface investigation for pressure testing?



A Yes, it will be possible to obtain sub-surface pressure measurements with conventional measure bond.

Q Is there any way of testing whether there is possible communication between the completed zones?

A Yes, it will be possible to test for communication between the various strings of casing by a test similar to that used for specker leakage test on the dual completion.

Q Will your manner of proposed completion allow for the determination of the oil gas ratio for each zone?

A Yes, it will.

Q Why does Continental Oil Company desire to triply complete these two wells?

A Primarily for economic reasons that we propose this type of completion. It will result in an estimated savings of approximately \$40,000.00 over a conventional dual completion utilizing 7 inch casing and 2 strings of tubing and also this type of completion is possible to complete in the Greenhorn formation which we do not feel has sufficient reserves to support an individual well and also it is anticipated that the cost for the majority of our original work will be substantially less than the dual completion due to the fact we will not have to disrupt production to all three strings for the majority of workovers.

Q Will the correlative rights of the landowner be protected?

A Yes, they will.

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Q To your knowledge has the New Mexico Conservation Commission previously approved this type of completion using this type of well head?

A Yes, sir it has. A similar type of completion has been approved for the Jicarilla 28-27 No. 2 Well in Order No. R-1734.

(Whereupon Exhibit 6 was marked for identification.)

Q I show you Exhibit Number 6 which is a letter from the El Paso Natural Gas Company to the effect they do not object to either of these triple completions. Does the commission have any questions of this witness?

CROSS EXAMINATION

By MR. PAYNE:

Q Mr. Mac Lennan, have you completed the wells that were the triple completions that have been previously authorized?

A No, sir we are currently drilling on the Jicarilla well and yesterday morning we were down to 6600 feet.

Q Now, do you have any estimate of the gas oil ratio that has been encountered in each of these zones?

A Yes, I have. The gas oil ratios for the Gallup of the Dakota formations which are producing in our Jicarilla 28-27 No. 1 which is a dual completion.

MR. NUTTER: That is approximately 1 mile west, is that correct?

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A Yes, sir.

MR. PAYNE: What are these ratios?

A They are for the Gallup, the gas oil ratio as recorded on 7-28-60 was 2375. The gas oil ratio for the Dakota on 7-28-60 was 762.

Q Do you have gravity figures on these zones?

A Yes, sir. The Gallup formation was 41.38, 60 degrees. The Dakota 41.0 has 60 degrees.

Q What led you to believe that the Dakota is going to be productive of oil rather than gas, your experience with that well that is about a mile away?

A Yes, sir.

Q Mr. Mac Lennan, would you give the footage on these calculated cement tops as shown on Exhibits 2 and 3?

A On all the cement tops we propose to bring the cement from two to three hundred feet above the top of the producing formation.

Q I see.

MR. NUTTER: That will be one continuous sheath of cement from the Dakota shoe to 200 feet above the top of the Greenhorn,

A That is correct. The Dakota and the Greenhorn will be cemented together.

MR NUTTER: And then the cement of the Gallup will be brought to 200 to 300 feet to the top of the Gallup.

A Yes, sir.



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MR. PAYNE: Now this cement string that comes up above the Mesaverde, what will be the top of it, sir?

A There it will be similar to 200 to 300 feet above the top of the producing interval. The Mesaverde is similar to the well we are drilling at the present time.

Q Then you will use stage collars in the Gallup String and cement the Pictured Cliffs also?

A Yes.

Q And bring the cement up to 300 feet to the top of the Pictured Cliffs?

A Yes.

Q Now, centralizers will be used on these casing strings?

A Yes, sir we plan to use turbolizers on the 2-7/8 inch string and slim hole centralizers on the two strings of 4 1/2.

MR. NUTTER: Do you have any bottom hole pressures on any of these formations, Mr. Mac Lennan?

A Yes, sir I have bottom hole pressures for the Gallup and Dakota. These are also obtained from 28-28 No. 1. For the Gallup formation I have 1937 at 6750 depth, that was 115 hour shut-in and was recorded on 5-14-60.

MR. NUTTER: And the Dakota?

A And the Dakota 2560 at 7320, that was a 72 hour shut-in on 12-21-59.

MR. NUTTER: Will it be possible to currently lift these



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wells with these mechanical arrangements, Mr. Mac Lennan?

A Yes, sir it will.

MR. NUTTER: Does anyone have any further questions of Mr. Mac Lennan?

MR. PAYNE: You say centralizers on the 4 1/4 inch strings?

A Yes, sir.

Q At what intervals?

A Through the cemented intervals for each of the strings through the producing formations.

MR. PAYNE: Thank you.

MR. NUTTER: Any further questions? Mr. Mac Lennan may be ~~announced~~.

MR. GRIFFITH: Continental offers Exhibits 1, 2, 3, 4, 5, and 6.

MR. NUTTER: They will be entered. We will take the case under advisement and call case 2056 next and call 2055 at the end of the hearing.



STATE OF NEW MEXICO)
COUNTY OF BERNALILLO)

ss

I, Lowellyn Nelson, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing was reported by me in Stenotype, and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

DATED this 29th day of August, 1960, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Lowellyn P. Nelson
NOTARY PUBLIC

My Commission Expires:

June 14 1964

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2053-2054 heard by me on 8/24, 1960.
Examiner
New Mexico Oil Conservation Commission

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