

CASE 3630: Application of PAN
AMERICAL FOR SPECIAL RULES FOR
HOGBACK-DAKOTA POOL.

Case Number

3630

Application
Transcripts.

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. 3630
Order No. R-3296

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR SPECIAL POOL RULES, SAN
JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 9, 1967,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 15th day of August, 1967, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Pan American Petroleum Corporation,
seeks the establishment of special rules and regulations for the
Hogback-Dakota Pool, San Juan County, New Mexico, to permit the
drilling of wells as near as 165 feet to the outer boundary of
the quarter-quarter section, and as near as 300 feet to another
well producing from the same formation.

(3) That adoption of the proposed special rules and regula-
tions will prevent waste and protect correlative rights, provided
a 40-acre proration unit does not receive more than a 40-acre
top unit allowable for wells in the 0-5000 foot depth in Northwest
New Mexico, regardless of the number of wells on the 40-acre unit.

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CASE No. 3630

Order No. R-3296

IT IS THEREFORE ORDERED:

That Special Rules and Regulations for the Hogback-Dakota Pool, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
HOGBACK-DAKOTA POOL

RULE 1. Each well completed or recompleted in the Hogback-Dakota Pool or in the Dakota formation within one mile thereof, and not nearer to or within the limits of another designated Dakota oil pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well shall be located no nearer than 165 feet to the outer boundary of the quarter-quarter section on which it is located and no nearer than 300 feet to any other well producing from the same pool.

RULE 3. The Secretary-Director of the Commission shall have authority to grant exceptions to Rule 2 without notice and hearing where an application therefor has been filed in due form and the necessity for the exception is based on topographical conditions.

All operators owning acreage within 330 feet of the proposed location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all operators owning acreage within 330 feet of the proposed location or if no such operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 4. A 40-acre proration unit shall not produce in excess of the 40-acre top unit allowable for wells in the 0-5000 foot depth range in Northwest New Mexico, regardless of the number of wells on the unit.

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the Hogback-Dakota Pool or in the Dakota formation

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CASE No. 3630

Order No. R-3296

within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Aztec District Office of the Commission in writing of the name and location of the well on or before September 1, 1967.

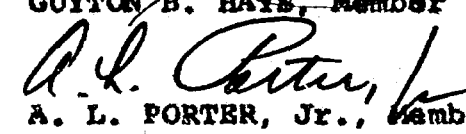
(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

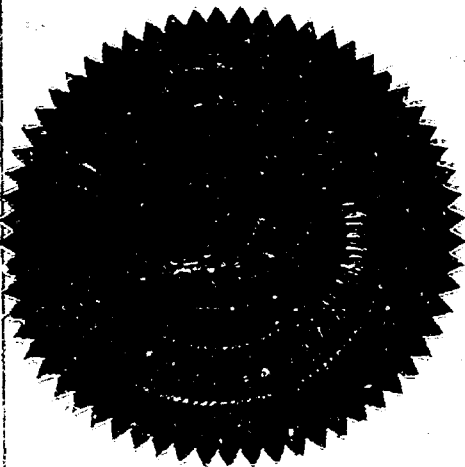
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


DAVID F. CARGO, Chairman


GUYTON B. HAYS, Member


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



esr/

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

August 15, 1967

Mr. Lewis Ross
Pan American Petroleum Corporation
Security Life Building
Denver, Colorado 80202

Re: Case No. 3630
Order No. R-3296
Applicant:

Pan American Petroleum Corp.

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

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC x

Other _____

Memo

From
D. S. NUTTER
CHIEF ENGINEER

To

Approve Pan Am
request for Pool
Rules for Hogback
Dak. ~~Pool~~, Rules will
be similar to those
recently entered
for Allick Rock Dakota
Pool,

PAN AMERICAN PETROLEUM CORPORATION

SECURITY LIFE BUILDING
DENVER, COLORADO 80202

Case 3630

July 19, 1967

File: AMR-1563-986.511

Re: Request for Special Field Rules
For Dakota Formation in
Hogback Field, San Juan County,
New Mexico

AIR MAIL

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Dear Sir:

Pan American Petroleum Corporation encloses in triplicate its Application requesting special field rules for the Dakota formation in Hogback Field, San Juan County, New Mexico.

We request this matter be set for examiner hearing, unless you feel that, with no other party besides Pan American affected, the Application is complete enough to merit your administrative approval without the need for a hearing.

Yours very truly,

R/B Giles

Attachments

cc: New Mexico Oil Conservation Commission - Aztec w/attachments (2)
U. S. Geological Survey - Farmington w/attachment

MAIN OFFICE

'67 JUL 20 PM 1 21

DOCKET MAILED

Date 7-27-67

R

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

IN THE MATTER OF THE APPLICATION OF
PAN AMERICAN PETROLEUM CORPORATION
FOR AN ORDER PERMITTING SPECIAL
FIELD RULES FOR THE DAKOTA
FORMATION IN HOGBACK FIELD
SAN JUAN COUNTY, NEW MEXICO

1 JUL 20 PM 1 21

Cox 3638

A P P L I C A T I O N

COMES NOW Pan American Petroleum Corporation and respectfully presents this Application to the Oil Conservation Commission of the State of New Mexico for an Order permitting wells to be located within the established field limits for the Hogback Dakota pool 165 feet from the outer boundary of the quarter quarter section on which they are located but no closer than 300 feet from another Dakota well, and that for allowable purposes no 40 acre proration unit be produced in excess of the 40 acre top unit allowable for wells in the 0-5,000 feet depth range in Northwest New Mexico; and in support of this Application states:

1. That Pan American Petroleum Corporation (hereinafter called Pan American or Applicant), is a Delaware corporation and is duly authorized to transact business in and is transacting business in the State of New Mexico.

2. That Pan American is Operator and sole working interest owner and that the Navajo Indians are the only royalty interest owner in the Hogback Dakota pool designated and established as a pool by Commission Order No. R-13, March 15, 1950, underlying the S/2 of Section 18 and all of Section 19, T29N-R16W, San Juan County, New Mexico; that, therefore, no correlative rights are involved in Applicant's request for special field rules for the Dakota formation in Hogback Field.

3. That in the Hogback Field, the Dakota productive sand occurs in a small anticline at a shallow depth of approximately 625 to 800 feet, has been producing oil for about 44 years under a very active water drive and is now in an advanced stage of depletion. That Dakota wells heretofore were drilled without respect to spacing pattern to take full advantage of faulting conditions and structural position.

4. That a workover program and review of reservoir performance indicates there are structural fault traps within the Hogback Dakota pool containing oil that cannot be effectively recovered without the drilling of additional wells. That Pan American, therefore, requests approval of special field rules within the designated Hogback Dakota pool which will permit wells to be located 165 feet from the outer boundary of the quarter quarter section on which they are

Revised
Hogback Dakota

located but no closer than 300 feet from another Dakota well. The terrain in the field is extremely rough due to the course of the Chaco wash, and the surface well location must be adjusted accordingly to avoid excessive construction costs.

5. That Pan American proposes to drill immediately two additional Dakota wells, to prevent waste that otherwise would occur by leaving recoverable oil in the ground at the following locations:

<u>Well Name</u>	<u>Location</u>
U.S.G. Section 19 Well No. 23	990' FNL & 2310' FEL, Section 19, T29N-R16W
U.S.G. Section 19 Well No. 24	2310' FSL & 1650' FEL, Section 19, T29N-R16W

That said wells do not comply with the Commission's General Rule 104 C.I as to location requirements for development wells. Additional field extension and infill wells may be found to be necessary to secure maximum recovery, depending upon the outcome of planned workovers and the hereinabove proposed two wells.

6. That attached hereto as Exhibit "A" is a plat showing the land ownership in Hogback Field, the location of all wells including dry and abandoned wells within the area of interest and Pan American's current geological interpretation of structural fault traps and contours of the Dakota formation to support the need for additional wells.

7. That attached hereto as Exhibit "B" is a schematic drawing of the completion program for the proposed additional Dakota wells. Nearly all of the older wells have been completed natural from the open hole Dakota (upper) section by setting production casing at the top of the Dakota. However, it is desired to test the lower Dakota sands in the first proposed well above, so it is planned to drill completely through the Dakota section and set production casing at total depth on this well. The completion method of subsequent wells will depend upon the results of lower Dakota tests. The sand intervals may be stimulated by sand-oil fracture treatment if insufficient flow capacity is experienced.

8. That attached hereto as Exhibit "C" is a tabulation of presently completed wells showing the location at which each well was drilled, when it was completed, each well's current producing capability in terms of oil and water production and its cumulative production to the latest month for which such Dakota production is readily available. That the oil produced from the Hogback Dakota Field is transported by Four Corners Pipe Line Corporation.

9. That the aggregate production from Dakota wells already completed in the quarter quarter sections upon which Applicant proposes to drill additional wells is less than the 40 acre top unit allowable for wells in the 0-5,000 feet depth range in Northwest New Mexico. That Applicant requests the special field rules order include a provision that for allowable purposes no 40 acre proration unit be produced in excess of the 40 acre top unit allowable for wells in the 0-5,000 feet depth range in Northwest New Mexico.

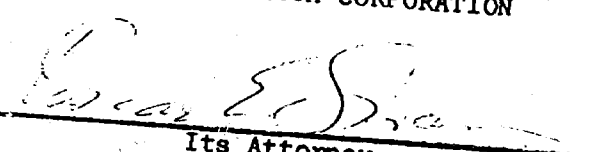
10. That Pan American owns sole working interest in and around the productive limits of the Hogback Field; that all of the acreage in and around the Hogback Field is Indian land and therefore held by only one common royalty interest owner; therefore, no other affected party is involved or need be notified by Applicant pursuant to Applicant's request for a special field rules Order for Hogback Field.

WHEREFORE, Pan American requests this Application be set for examiner hearing, unless the Director believes that, with no other party besides Applicant affected, this Application is complete enough to merit administrative approval by the Director without the need for a hearing.

Respectfully submitted,

PAN AMERICAN PETROLEUM CORPORATION

By


Its Attorney

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
) ss
COUNTY OF DENVER)

R. B. GILES, of lawful age, being first duly sworn on his oath deposes and says:

That he is employed by Pan American Petroleum Corporation as an Engineering Group Supervisor in its Denver, Colorado office; that Pan American Petroleum Corporation's Application for an Order permitting special field rules for the Dakota formation in Hogback Field, San Juan County, New Mexico, has been prepared under his direction and supervision; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that to the best of his information, knowledge and belief, Pan American Petroleum Corporation is the sole working interest owner and no other affected party is involved or need be notified by Applicant pursuant to Applicant's request for a special field rules Order for Hogback Field in accordance with the provisions of the Rules and Regulations of the Oil Conservation Commission of the State of New Mexico.

RB Giles
R. B. Giles

Subscribed and sworn to before me on this 19TH day of July, 1967.

Kathleen L. Allison
Notary Public

My Commission expires July 26, 1967.

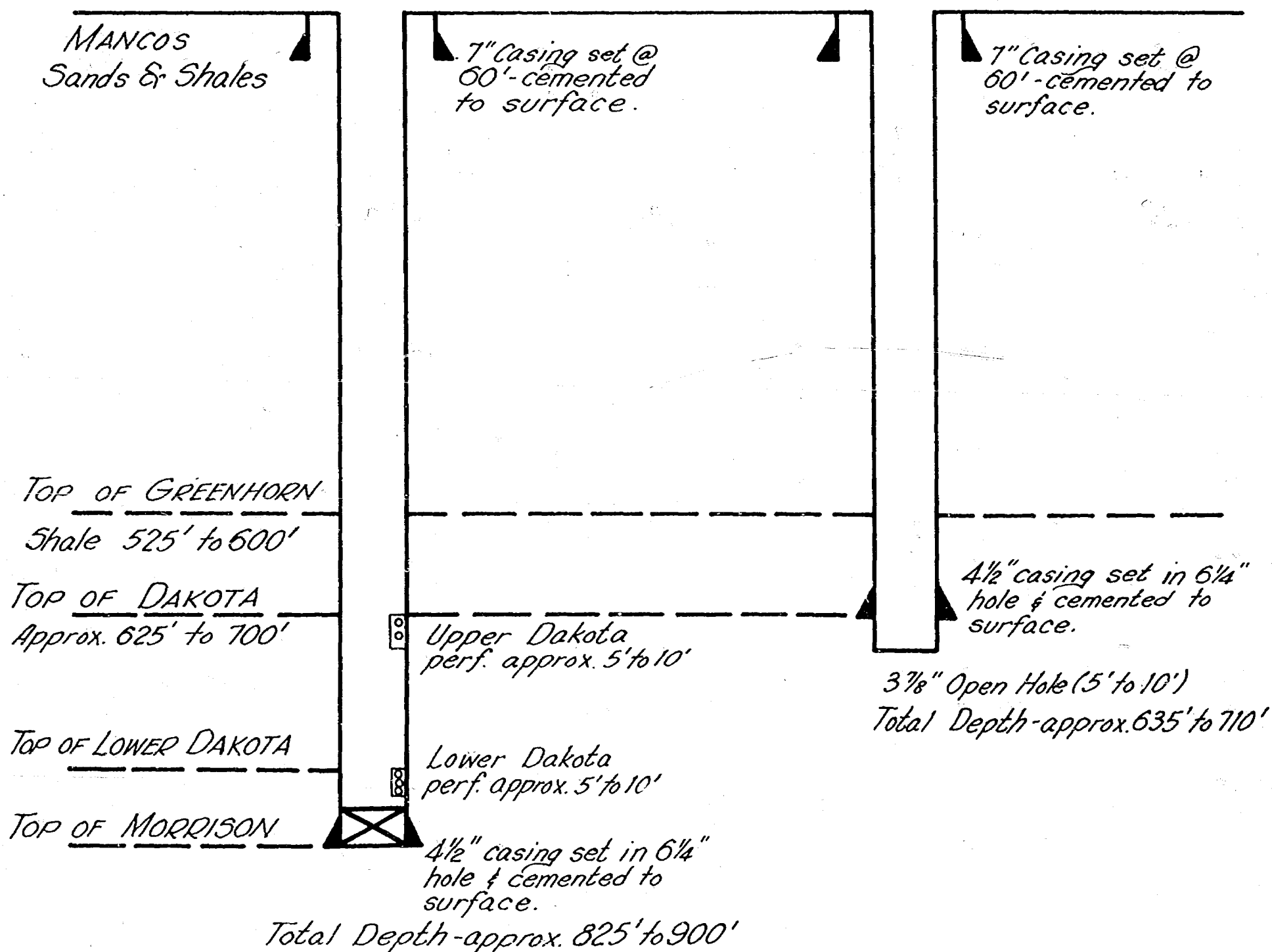
PROPOSED DRILLING & COMPLETION PROGRAMS

HOGBACK DAKOTA FIELD

San Juan County, New Mexico

Casing Set-Through
Completion-(For Test
of Lower Dakota)

Open Hole
Completion
(Upper Dakota Only)



*Sand interval maybe stimulated
by sand-oil-fracture treatment
if limited flow capacity indicated.*

PAN AMERICAN
PETROLEUM CORPORATION

EXHIBIT "B"

DR	CR.	AP.	AP.	NO.
<i>JRJ</i>				
DATE <i>July 18, 1967</i>				
SCALE				

FORM 458 2-57

1 INCH

HIGHWAY 8 1000'

EXHIBIT "C"

HOGBACK DAKOTA FIELD
SAN JUAN COUNTY, NEW MEXICO

U.S.G. Section 18, T29N-R16W

<u>Well No.</u>	<u>Location</u>	<u>Completion Date</u>	<u>Current Producing Rate</u>		<u>*Cumulative Prod. Barrels Oil, to June 1, 1967</u>
			<u>BOPD</u>	<u>BWPD</u>	
8	330' FSL & 2310' FEL	5-5-24	1	--	31,296

U.S.G. Section 19, T29N-R16W

<u>Well No.</u>	<u>Location</u>	<u>Completion Date</u>	<u>Current Producing Rate</u>		<u>*Cumulative Prod. Barrels Oil, to June 1, 1967</u>
			<u>BOPD</u>	<u>BWPD</u>	
2	1020' FNL & 2327' FWL	7-21-23	13	45	292,902
5	1980' FSL & 1980' FEL	11-15-23	2	--	17,294
7	330' FNL & 2310' FEL	3-27-24	10	45	31,303
9	990' FNL & 1650' FEL	10-3-24	7	3	205,476
11	2310' FNL & 1320' FEL	12-16-24	52	126	36,280
12	2244' FNL & 2453' FEL	3-31-25	2	10	227,236
14	2050' FNL & 1910' FEL	5-18-53	15	45	51,763
15	1600' FNL & 2374' FEL	10-2-56	52	375	14,950
19	1650' FNL & 2310' FWL	2-24-60	12	30	13,799

*Unallocated production prior to 1-1-50 is 2,904,483 barrels oil.

Case 3630

ATWOOD & MALONE
LAWYERS

IN OFFICE
JUL 28 AM 8 10
P. O. DRAWER 700
TELEPHONE 505 822-6321
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO
88201

JEFF D. ATWOOD (883-1960)
CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER
ROBERT A. JOHNSON
JOHN W. BASSETT, JR.
ROBERT E. SABIN

July 27, 1967

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico

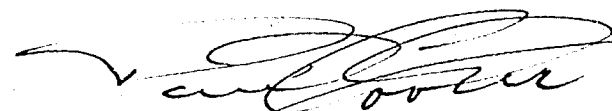
RE: Case Number 3630 on the August 9, 1967 Docket

Dear Mr. Porter:

Would you please file the enclosed Entry of Appearance on behalf of Pan American Petroleum Corporation in the captioned case. The actual presentation will be made by L. G. Gaskins, one of Pan American Petroleum Corporation's Denver attorneys.

Very truly yours,

ATWOOD & MALONE


Paul A. Cooter

PAC:sah

Encl.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION)
OF PAN AMERICAN PETROLEUM COR-)
PORATION FOR SPECIAL FIELD RULES,) No. 3630
DAKOTA FORMATION, HOGBACK FIELD,)
SAN JUAN COUNTY, NEW MEXICO.)

ENTRY OF APPEARANCE

COMES NOW Atwood & Malone of Roswell, New Mexico,
and enters its appearance herein as New Mexico counsel for Pan
American Petroleum Corporation.

DATED this 27th day of July, 1967.

ATWOOD & MALONE

By


Post Office Drawer 700
Roswell, New Mexico

MAIN OFFICE
'67 JUL 28 AM 8 10

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 9, 1967

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

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

CASE 3630: Application of Pan American Petroleum Corporation for special pool rules, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Hogback-Dakota Pool, San Juan County, New Mexico, to permit the drilling of wells as near as 165 feet to the outer boundary of the quarter-quarter section, and as near as 300 feet to another well producing from the same formation.

CASE 3431: (Reopened) To be continued to the September 6, 1967 Examiner Hearing.

In the matter of Case 3431 being reopened pursuant to the provisions of Order No. R-3100 to permit Sinclair Oil & Gas Company to show cause why its W. H. Turner Well No. 1 located in Unit L of Section 29, Township 21 South, Range 37 East, Lea County, New Mexico, a dual completion in the Drinkard and Blinebry Oil Pools, should not be completed in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations.

CASE 3631: Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Simpson formation through two wells on its C. E. La Munyon Lease in Section 22, Township 23 South, Range 37 East, Teague-Simpson Pool, Lea County, New Mexico.

CASE 3632: Application of Len Mayer for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a well at an unorthodox location no nearer than 990 feet from the North and East lines, nor nearer than 330 feet from a quarter-quarter section line, of Section 32, Township 18 South, Range 26 East, Atoka-Pennsylvanian Pool, Eddy County, New Mexico, in exception to the pool rules which require that wells be drilled in the NW/4 or the SE/4 of the section.

CASE 3633: Application of V. F. Vasicek and J. M. Fullinwider, dba V-F Petroleum for compulsory pooling, Lea County, New Mexico. Applicants, in the above-styled cause, seek the force-pooling of all mineral interests in the NW/4 SW/4 of Section 6, Township 13 South, Range 37 East, Lea County, New Mexico, to be dedicated to a well to be located 2310 feet from the South line and 990 feet from the West line of said Section 6, said well being projected to the Devonian formation adjacent to the West Bronco-Devonian Pool.

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August 9, 1967 Examiner Hearing

Docket No. 23-67

CASE 3634: Application of Aztec Oil & Gas Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Federal "MA" Well No. 2 located in Unit I of Section 21, Township 18 South, Range 33 East, Lea County, New Mexico, to produce oil from an undesignated Wolfcamp pool and gas from the South Corbin-Morrow Gas Pool through parallel strings of tubing.

dearnley-meier reporting service, inc.

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

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



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 9, 1967

EXAMINER HEARING

In the Matter of:

Application of Pan American
Petroleum Corporation for special
pool rules, San Juan County,
New Mexico.

Case No. 3630

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE AUGUST 9, 1967 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
Frank H. Halbergard	Reo America Petr. Corp.	Denver, Colorado
Louis C. Ross	" " " "	" "
Charles E. Mace	Gulf Oil	Roswell
P. J. McHath	U.S.G.S.	Farmington
Jason Kellah	Kellahin & Fox	Santa Fe
Richard S. Morris	Montgomery, Feleni & Andrews	- Santa Fe
Clyde E. Altow	Marathon Oil Co.	Houston
L.M. Stevens	Aztec Oil & Gas Co.	Dallas
Lin Mayer	self	Roswell
Rw. Landerburg	Self	Cortina
VICTOR F. VASICEK	V F PETROLEUM	Midland, Texas
J.M. Fullinwider	" "	" "
DAVE PENNEL	" "	" "
A.L. Porter, Jr.	OCC	Santa Fe
Kira DeBourne	PW Bynum	Austin - Santa Fe

MR. NUTTER: The hearing will come to order. The first case this morning is Case 3630.

MR. HATCH: Case 3630, Application of Pan American Petroleum Corporation for special pool rules, San Juan County, New Mexico.

MR. ROSS: May it please the Commission, my name is Louis Ross, attorney for Pan American. I think the record shows that Atwood and Malone have entered their appearance in this case, isn't that correct, Mr. Hatch?

MR. HATCH: Yes, sir.

MR. ROSS: I have one witness, Mr. Frank Hollingsworth. Now, Frank has appeared before the Commission before, but it has been five years and he has had about five years more experience, adding up to nine years in the Farmington area. Are you satisfied with his qualifications, Mr. Nutter, or would you prefer that we refresh your memory on them.

MR. NUTTER: Why don't we qualify Mr. Hollingsworth.

MR. ROSS: Very good, sir. Will you be seated?

MR. HATCH: Would you stand and be sworn first, please?

(Witness sworn.)

FRANK. H. HOLLINGSWORTH, called as a witness by the Applicant, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ROSS:

Q State your name, please.

A Frank H. Hollingsworth.

Q What is your profession?

A Petroleum Engineer with Pan American Petroleum

Corporation.

Q What is your educational background, Mr. Hollingsworth?

A I have a Bachelor of Science in Petroleum Engineering from the University of Texas; graduating in January, 1952.

Q What has been your experience as a Petroleum Engineer?

A I worked for the Pan American Petroleum Corporation, formerly Standard Oil and Gas Company, as a roustabout roughneck and petroleum engineer since February of 1952, except for three and a half years of military leave. I worked for nine years in the Farmington, New Mexico area from 1957 to 1966, and the past year I have been working in Pan American's Denver, Colorado Office as a Reservoir Engineer.

Q Mr. Hollingsworth, are you familiar with this application that we have filed in this hearing?

A Yes, sir.

Q Have you worked on this project?

A Yes, sir.

MR. ROSS: Mr. Nutter, is the Commission satisfied with the witness's qualifications?

MR. NUTTER: Yes, we are. Go ahead, please.

Q (By Mr. Ross) Is there any precedence for this application?

A Yes. The Slick Rock-Dakota Oil Pool, which is approximately five miles north of the Hogback-Dakota Pool have special field rules granted by Order Number R-3252, hearing was held May 24th, 1967, and we are asking for field rules similar to these.

(Whereupon, Applicant's Exhibit Number 1 was marked for identification.)

MR. ROSS: At this time, I would like to introduce our Exhibit 1, which is a Vicinity Map. The sole purpose of this is just to indicate the field area.

Q Would you please explain our Exhibit 1, Mr. Hollingsworth?

A Yes. On Exhibit 1, several shallow Dakota oil producing fields are colored green. The location of the Hogback-Dakota Pool is indicated by a red arrow in the town of Farmington and the four corners are indicated in red. The previously mentioned Slick Rock-Dakota Pool there, is also indicated.

(Whereupon, Applicant's Exhibit Number 2 was marked for identification.)

Q Now, our second exhibit, Exhibit 2, is a Vicinity Map and there is a large copy of it on the wall if we need it, and I have a small copy that I will introduce into evidence along with it, which shows the formation that we are dealing with here. Mr. Hollingsworth, will you explain this exhibit and the history of the field?

A The exhibit demonstrates that the Hogback field is an antic-cline. The Dakota is at fairly shallow depths, 650 to 800 feet deep, depending on the surface elevation. It shows indicated faults in the field. The location of the two wells, two new wells we propose to drill, as can be seen there, the well is not -- the field has not been drilled according to the state-wide rules at the present, but the field was discovered in September of 1922 and most of this development took place between that time to 1925. At that time there was seven producing wells completed, four dry holes were drilled, and, in the last fifteen years, we did a little additional drilling, completing three wells as oil wells and drilling two dry holes. The map was --

(Whereupon, Applicant's Exhibit 3 was marked for identification.)

Q Do you have an exhibit showing the cumulative

production of the Hogback-Dakota Field?

A Yes.

Q Please state the purpose of our Exhibit 3, which I now introduce?

A This Exhibit is the current producing rate of the producing wells in the field. You can see that cumulative production, both field-wide and individual wells has been very high, over 3.8 million barrels of oil have been produced to date. The reserves of capulated conservative, as being over 600,000 barrels yet to be recovered. Now, the previously discussed structure map, has been based both on subsurface, ~~surface data~~ and an aerial photo.

(Whereupon, Applicant's Exhibit 4 was marked for identification.)

Q I would like to introduce a copy of the aerial photo and ask the witness to please state the purpose of this exhibit, our Exhibit 4. Unfortunately, we only have one copy of this.

A This aerial photo has the Hogback-Dakota Field outlined in a red tape, the same area as outlined on the structure map, and with a blue ink, I have outlined the fault trends as depicted on the map there. These are based on block lines and drainage areas. The most evident of these is the series of near parallel faults going from a south-

westerly direction to the northeast part. And this is a, I think, very evident fact that this drainage from a southwesterly direction is running headon into the drainage of the Chaco Wash, which the normal drainage would be in a westerly direction, so apparently, there has been some structural change there to cause this drainage, these two drainage areas to just run headon like this.

This is also supported by one of the last wells we drilled, USG 19, Number 20, which is in the northwest quarter of the southeast quarter of Section 19, which was a dry hole, but structurally lower than Well Number 5 there to the south. At the time we drilled that Number 20, we couldn't understand how this happened, but after we spent a little more study on it, we seen this fault.

The other faults do not have a lot of displacement, but they are apparently there and possibly sealing the faults. In other words, I believe our application for these two new wells, plus a change in field rules, is to allow us to drill and produce these little trapped areas, or possible trapped areas. The Well Number 23, there, as you can see, in the northwest of the northeast of Section 19, has a fault immediately to the north of it. Well Number 24 is on the southeast side of that southeast fault there, in which effectively, we only have one producing well in that area, Well

Number 11.

Well Number 5, there, only makes a barrel of oil a day and is not effectively draining that area.

Q The red dots on Exhibit 2 indicate the proposed wells, correct?

A Right.

(Whereupon, Applicant's Exhibit 5 was marked for identification.)

Q Now, concerning your manner of completion of these wells, I would like to introduce our Exhibit 5, Plaintiffs' or rather Applicant's Exhibit Number 5, which shows the completion program that is proposed and the contemplated wells, and I would like to ask the witness to please explain this exhibit.

A This exhibit shows two proposed methods of completing wells in this field, one being a set-through type completion, or cased-through type; the other one being open hole in which casing is set on the top of the Dakota formation. Most of the older wells are completed in this open-hole method. This is probably the cheapest method to drill and complete the wells and allows you to make penetration into the Dakota Sandstone in limited amounts in trying to avoid excessive water production. The first well we propose drilling, the Number 23, will be the set-through type

completion.

The reason for this method here, is that we desire to drill all the way through the Dakota section and test a lower Dakota interval that had a show of oil in a previous well. This will be U.S.G. 19, Number 14.

MR. NUTTER: May I interrupt for a moment. Is

the Lower Dakota productive in any of the wells?

THE WITNESS: No.

MR. ROSS: I think our next exhibit will serve to answer that question.

(Whereupon, Applicant's Exhibit 6 was marked for identification)

Q (By Mr. Ross) I would like at this time to introduce our Exhibit 6, which is a well log of, I think it is Number 14, isn't it Frank?

A Yes, this is U.S.G. Section 19, Number 14.

Q Where they did actually test the lower Dakota. Will you explain this exhibit, please, sir?

A This is a log and core description composite of wells 14 and 13, which are located there in the southwest quarter of the northeast quarter of Section 19. I am afraid it is a little hard to read, but -- This well was drilled completely through the Dakota Section, casing set at TD, and four benches in the Dakota were tested prior -- five benches were tested

prior to completion in the Upper Dakota. Most of these flowed a hundred percent water, but the lower-most interval, 840 to 856, started out with a very good show of oil, as shown on that tabulation --

(Whereupon, Applicant's Exhibits 7 and 8 were marked for identification.)

MR. ROSS: I would like to interrupt and introduce our Exhibit Number 7 which shows the perforation results in Well Number 14, that the witness has been discussing, and which the Commissioner has before him.

I would like to ask you a little bit about your proposed flow-line system and how you intend to handle the water that is produced from these wells, and for this purpose, I would like to introduce our last Exhibit, Exhibit Number 8.

A I would like to point out before we get into that, that our first proposed well, Number 23, is considered to be structurally higher than this Well Number 14, and that is the reason we want to test this Lower Dakota Section again.

Q You really don't know what is going to happen in the Lower Dakota, is what you are saying, is that correct?

A Right.

Q Very good. Now, would you get into our Exhibit 8? It shows the proposed flow-line system and the central tank

battery and the method you intend to employ.

A The field production had gotten down to about a hundred and twenty barrels of oil a day during the early part of 1966, so the latter part of 1966 and early part of 1967, we did some clean-outs, running of pumps and restimulating by -- not restimulating, but stimulating by sand-oil fracture treatment of a number of wells that have got field production up to over two hundred barrels a day at the present.

As a consequence of this, we have increased water production considerably, so in conjunction with the new field rules and drilling of these two wells, we plan to revamp our old lease flow-lines, producing facilities and install a produced water disposal system.

The last exhibit shows the new flow-line routes as tentatively planned, with all oil and water production being carried to the central tank battery there in the southeast quarter of Section 19. From there it will be taken into a pre-water knock-out, then, the water will be pumped over to Well Number 17 in the northeast quarter of the southeast quarter of Section 19, which is an approved disposal well.

This well was approved for a casing, has a nine and five eighths inch casing, seven inch casing annulus disposal that was approved by Case Number 2762, Order Number R-2438, dated February 27, 1963.

Q For the purpose of the record, I would like to ask the witness if he is familiar with the lease ownership in the Hogback field?

A Yes, Pan American is a hundred percent owner in the field, and as shown on the second exhibit, the large map, all the area within the dotted line is Pan American's acreage, plus additional acreage in the north half of Section 18 there, in the west half of the northwest quarter of 17, so Pan American has no offset operator within reasonable limits of the field.

Q Is the royalty the same under all these leases?

A Yes, the Navajo Tribe is the royalty owner under all the leases.

Q Aren't you presently operating a disposal well? Isn't that a Pennsylvanian disposal well?

A Yes, this is the one well, this was USG Section 19, Number 17. I didn't mention the well properly.

Q Hasn't that well already been approved by the Commission?

A Yes, as mentioned, it was approved by the Order Number R-2438.

Q Mr. Hollingsworth, in your opinion, would the granting of this application in this field tend to promote conservation and protect the correlative rights and not

interfere with anyone else's rights?

A Yes, sir, the drilling of these two wells, we believe, will ultimately increase field production, will get current production up to much more profitable rates. This will also help us operate the field for a longer economic life.

In conjunction with this, we have been negotiating with the Navajo Tribe Utility to bring electricity into the field, with the running of electric motors on the one pumping well on the salt water disposal pump and the proposed lease, automatic transfer pump, all of this sort of ties together, that we can get production up. This is easier justified to our management and ourselves.

MR. ROSS: If it please the Commission, I believe that concludes our direct evidence.

CROSS EXAMINATION

BY MR. NUTTER:

Q I don't know what you want to put electricity in here for, this thing has been going good for forty-five years without it.

A Well, butane has been costing us nine hundred and fifty dollars a month out here because we don't have any gas to burn, and we hopefully can cut this to about six hundred, to six fifty electrical bill. So, this is the reason for that

and it gives you more reliable operations to have electricity.

Q There is an active water drive present in this field, is there not?

A Yes, sir.

Q And as a result, most of the wells still flow?

A Yes, sir. As I say, there is only one pumping well, this is the Well Number 19 there in the southeast quarter of the northwest quarter. This well didn't have a real good developed section and I think it is just a more or less restricted flow.

Q That is the newest well in the pool, then?

A Yes, that is the latest producer we drilled.

In requesting these field rules, contingent on the outcome of these two wells, we are considering the drilling of additional plant wells.

Q Now, this Well Number 9 on Exhibit Number 2 is shown on the fault. Did that well actually cut a fault, do you know?

A I can't tell for sure. I just have a driller's log on it. It appears to be a little out of the ordinary on structural position, it is high. It is probably the highest well in the field, I believe there.

Q Now, Well Number 14 had some pretty good production

from the Lower Dakota zone and then finally fell off to four barrels, and was abandoned. How good a well is it in the Upper Dakota zone?

A It is a fair well. There on a previous exhibit, it makes eighteen barrels of oil a day, forty-five barrels of water.

MR. ROSS: I think the witness is referring to Exhibit 3, for the record.

A That is from the Upper Dakota.

Q (By Mr. Nutter) Well, was the lower zone squeezed off?

A Yes. As shown on the log cross section there, the Lower Dakota zone was squeezed off and then these other zones, four zones were tested after that. It wasn't squeezed off. It was a bench plug with a hydromatic cap on it.

Q Yes, sir.

A I think the philosophy at the time was to complete that water-free, with a very small water cut and as seen on the test data, the water cut was fairly high.

Q Well, it still turned out with a high water cut in the upper zone too, however, didn't it?

A Right. Well, it was completed in the upper zone water-free at the time it, like I say, it has got a high water cut now, and our philosophy has changed a little bit.

We live with these high water cuts now, where in 1953, they were attempting to get a water-free completion.

Q I see.

A This was due to the previous experience on wells in the Dakota, where you had water production, or high water cut initially, it just climbed rapidly as the well was produced so, but our experience has been, now, that this is not necessarily true because the high water cut on some of the Upper Dakota intervals here, we have been living with them for ten, fifteen years now.

Q And Number 13 and 14 are the only wells which have been drilled to the lower zone?

A Right. Well, the Well Number 17, the disposal well, was drilled, but it was way off the flank, the structure there in the southeast.

Q Was the Dakota tested in that well?

A No, we looked at the samples. There was no straining in them, and of course, we knew it was below the original estimated oil and water contact, so it was not tested other than a log interpretation of the samples.

Q Well, since the Lower Dakota Sand has been shown to be productive, at least in one well, there is a potential zone there that might be tapped by deepening some of these older wells?

A Yes, sir, that's correct. Rather than deepen the old wells, mechanically, it would probably be better to drill a new well, because some of these have three and a half inch casing in them and deepening that much open hole would involve using a liner, and you are getting awful -- you get down to jeweler's tools then.

Q Yes.

A If we can get some production out of this lower Dakota, this will explain one of the problems we have had over the years. I think the original reserve estimate for the field was about three million barrels, based on pore volume estimates. As you can see, we have passed that by almost a million barrels now, revised pore volume estimate in 1956 was 4.1 million barrels. I mean -- yes, 4.1 million barrels and we are obviously going to pass that, so we don't know where this additional oil, whether it is a percent recover factor or unknown pay thickness or what, or possibly migration from a lower Dakota. But, we think it is about time to find out what we have got out here.

Q So, you propose these rules in which a well would be permitted to be drilled one hundred and sixty-five feet from the forty acre line, but no nearer than three hundred feet to another well?

A Right. As I stated earlier, this is similar to the Slick Rock Dakota Field, which gives us plenty of leeway in doing some additional drilling out here.

Q Then, you would end up possibly with several wells on a forty acre tract, but each forty acre tract would be limited to one normal forty acre allowable?

A Yes, sir.

Q I see. Now, you mentioned that Pan American was the sole working interest owner. Is the royalty identical under all of the acreage?

A Yes, the royalty interest is identical. There is a carried working interest in Lease Number 19.

Q What does that comprise?

A It is about 9.9 percent.

Q And where is Lease Number 19?

A It is Section 19.

Q Oh, which would make it slightly different in ownership then, than eighteen --

A Yes, sir.

Q -- the south half of 18?

A But, as I say, this is a carried working interest. It was actually a geologist who discovered the field for Mid-West Corporation back in 1922, and the production, well, between the two leases, 18 and 19 will both be comingled

under this new lease production operation, but it will be allocated on the basis of test.

Right now, Section 18 is, only has the one producing well, making a barrel or two a day, this is Well Number 8. Hopefully we can drill to the east and west of it though.

MR. NUTTER: Are there any further questions of Mr. Hollingsworth?

MR. ROSS: We have none, Mr. Examiner.

MR. NUTTER: You may be excused.

MR. ROSS: I believe that concludes our case.

MR. NUTTER: Did you wish to offer exhibits 1-8?

MR. ROSS: Yes, I would like to formally introduce Exhibits 1 through 8.

MR. NUTTER: Pan American's Exhibits 1 through 8 will be admitted into evidence.

(Whereupon, Applicant's Exhibits 1 through 8 were admitted into evidence.)

MR. NUTTER: Does anyone have anything they wish to offer in Case 3630? We will take the case under advisement.

MR. ROSS: Thank you, gentlemen.

IN WITNESS WHEREOF I have affixed my hand and
notarial seal this 11th day of Sept, 1965.

My Commission Expires:

7-10-70

I do hereby certify that the foregoing is a complete record of the proceedings at the public hearing of Case No. 3630, held on 8/9, 1967.

[Signature]
Oil Conservation Commission

EXHIBIT

HOGBACK DAKOTA FIELD
SAN JUAN COUNTY, NEW MEXICO

U.S.G. Section 18, T29N-R16W

<u>Well No.</u>	<u>Location</u>	<u>Completion Date</u>	<u>Current Producing Rate (June)</u>		<u>*Cumulative Prod. Barrels Oil, to July 1, 1967</u>
			<u>BOPD</u>	<u>BWPD</u>	
8	330' FSL & 2310' FEL	5-5-24	1	-	31,319

U.S.G. Section 19, T29N-R16W

<u>Well No.</u>	<u>Location</u>	<u>Completion Date</u>	<u>Current Producing Rate (June)</u>		<u>*Cumulative Prod. Barrels Oil, to July 1, 1967</u>
			<u>BOPD</u>	<u>BWPD</u>	
2	1020' FNL & 2327' FWL	7-21-23	16	45	293,382
5	1980' FSL & 1980' FEL	11-15-23	2	0	17,356
7	330' FNL & 2310' FEL	3-27-24	13	45	31,665
9	990' FNL & 1650' FEL	10- 3-24	8	3	205,718
11	2310' FNL & 1320' FEL	12-16-24	64	200	38,210
12	2244' FNL & 2453' FEL	3-31-25	2	10	227,298
14	2050' FNL & 1910' FEL	5-18-53	18	45	52,306
15	1600' FNL & 2374' FEL	10- 2-56	64	375	16,880
19	1650' FNL & 2310' FWL	2-24-60	14	34	14,221
			201	757	
			BOPD	BWPD	

* Unallocated production prior to 1-1-50 is 2,904,483 barrels oil.

BEFORE EXAMINER NUTTER	
OIL CONSERVATION COMMISSION	
<i>Ray Am</i> EXHIBIT NO. <u>#3</u>	
CASE NO. <u>3630</u>	

PROPOSED DRILLING & COMPLETION PROGRAMS

HOGBACK DAKOTA FIELD

San Juan County, New Mexico

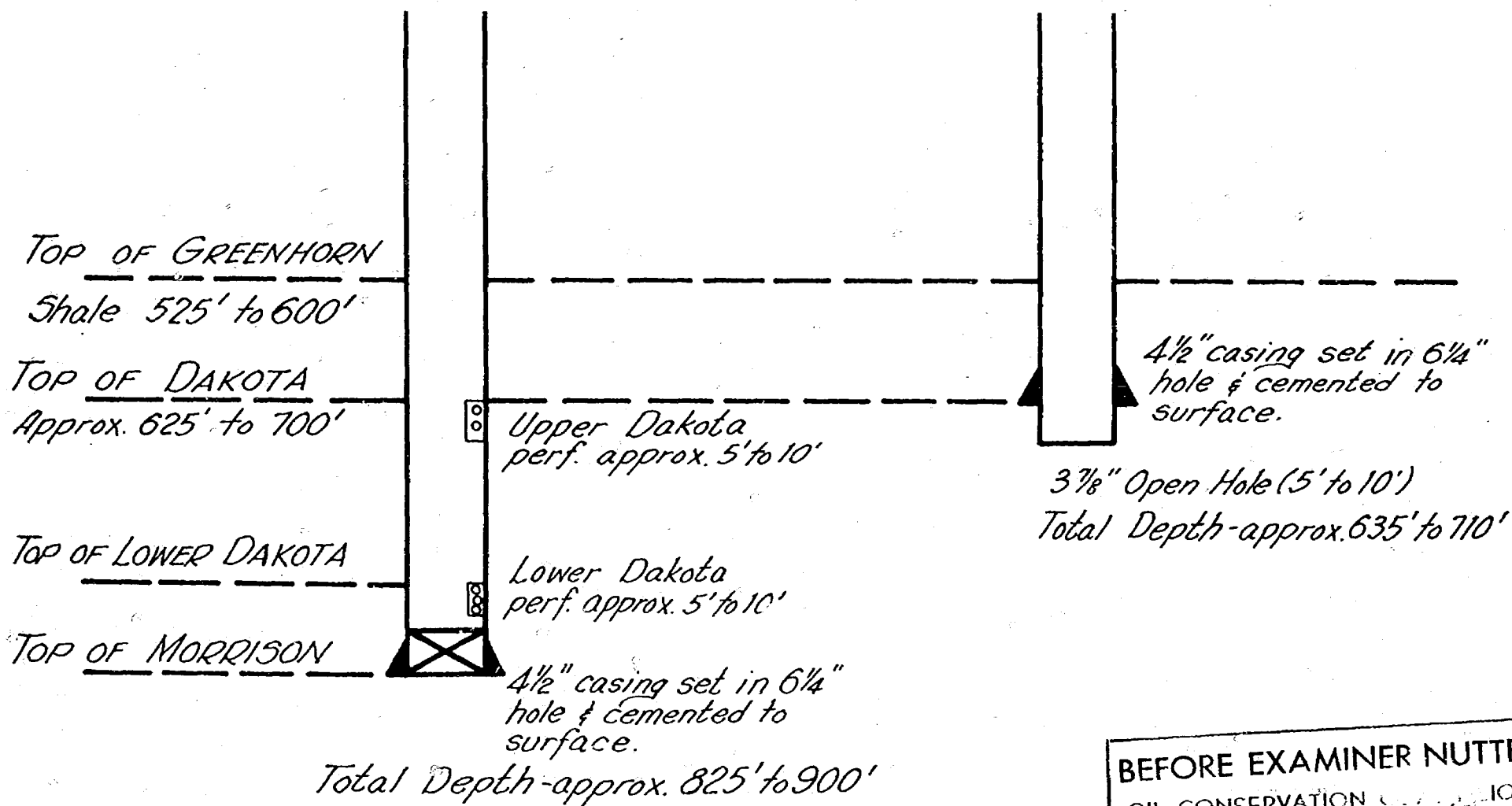
*Casing Set-Through
Completion-(For Test
of Lower Dakota)*

*Open Hole
Completion
(Upper Dakota Only)*

*MANCOS
Sands & Shales*

*7" Casing set @
60'-cemented
to surface.*

*7" Casing set @
60'-cemented to
surface.*



Sand interval maybe stimulated
 by sand-oil-fracture treatment
 if limited flow capacity indicated.

BEFORE EXAMINER NUTTER	
OIL CONSERVATION	ION
Pan Am	EXHIBIT NO. <u>#5</u>
CASE NO.	<u>3630</u>

PAN AMERICAN PETROLEUM CORPORATION				
#5 EXHIBIT				
DR. SRJ	CK.	AP.	AP.	NO.
SCALE		DATE <u>July 18, 1967</u>		

U. S. G. Section 19 - Well No. 14
Hogback Dakota Field
San Juan Co., New Mexico
Test of Perforations 840-856

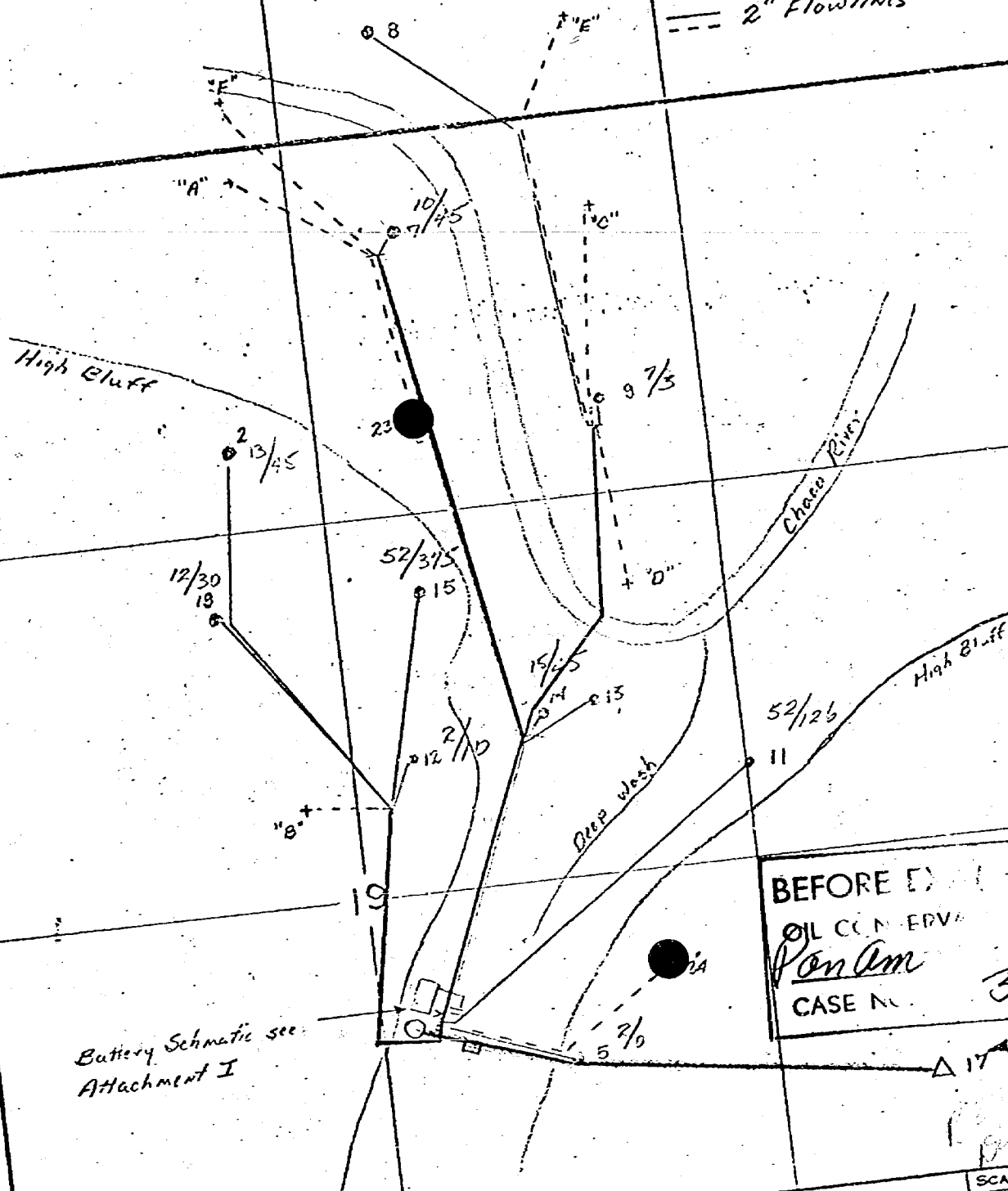
Date	Flow Test Recovery		Hours	Choke
	BO	BW		
3-29-53	29.93	33.81	24	1/2" (TPF 6.5 psi)
3-30-53	26.22	51.72	32	1/2"
4-1-53	17	40	18	
4-2-53	17	52	22 1/2	1/2"
4-3-53	17	42	18	1/2" Gravity 54°
?	NG	16.54	19 1/2	1/2" (TPF 110 psi)
4-4-53	7.89	11.03	24	1/2" (TPF 110 psi)
4-5-53	1.34	12.4	24	" "
4-6-53	2.7	13.78	24	1/2" "
4-7-53	3.36	7.95	19	" "
4-8-53	6.28	12.98	24	" "
4-9-53	5.44	12.56	24	" "
4-11-53	12	26	48	" "
4-12-53	5	13	24	1/2" "
4-13-53	5.48	12.5	24	" "
4-14-53	3.75	13.33	24	" "
4-15-53	4	13	24	" "
Zone Abandoned				

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Ken Am EXHIBIT NO. *117*
CASE NO. *3630*

Attachment II

Color Code

- 3" Production Line & 2" Test Line
- 4" Production Line & 2" Test Line
- 2 7/8" Disposal Line
- 2" Flowlines



BEFORE EXAMINED BY NUTTER
OIL CONSERVATION COMMISSION
Pan Am
CASE NO. 3630

Battery Schematic see
Attachment I

PAN AMERICAN PETROLEUM CORPORATION

Hogback Field Proposed Flowline System

SCALE:

DRG.
No.