

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 11, 1960

EXAMINER HEARING

PHONE CH 3-6691

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, NEW MEXICO

IN THE MATTER OF:)

Application of Gulf Oil Corporation for)
approval of a unit agreement. Appli-)
cant, in the above-styled cause, seeks)
approval of its North Caverns Unit)
Agreement, which unit will embrace ap-)
proximately 6,303 acres of Federal and)
State land in Townships 22 and 23 South,)
Range 24 East, Eddy County, New Mexico.)

Case 1960

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. PAYNE: "Application of Gulf Oil Corporation for approval of a unit agreement."

MR. KASTLER: If the Commission please, I am Bill Kastler from Roswell, New Mexico appearing on behalf of Gulf Oil Corporation in Case 1960. Our two witnesses will be R. H. Cress and Mr. J. P. Cavanaugh.

If the Examiner please, we are going to present through the first witness, Mr. Cress, four exhibits which have been labeled Exhibits A, B, C and D, but which should be stamped, and appropriately, exhibits, as Exhibits No. 1, 2, 3 and 4.

(Witnesses sworn.)



R. H. CRESS

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Would you please state your name?

A My name is Robert Cress.

Q By whom are you employed and where are you employed?

A I'm employed by the Gulf Oil Corporation in Roswell, New Mexico.

Q What is your position?

A My present position is District Exploration Geologist.

Q Have you previously appeared before the New Mexico Oil Conservation Commission and qualified as an expert geological witness?

A No, sir.

Q Mr. Cress, would you please state what your qualifications are, where you attended school and briefly outline the nature of your experience in petroleum geology?

A I graduated from the University of Minnesota in 1949 with a Bachelor's degree in geological engineering. I was employed by the Gulf Oil Corporation as a geologist in 1950 and have worked with them in that capacity to the present time.

Q Where have you been employed by Gulf?

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A I have been employed in various areas of Texas and New Mexico, the last three years being in Roswell.

Q Are you familiar with the lands in Eddy County under lease by Gulf and in the general vicinity of Townships 22 South and 23 South, 24 East?

A Yes, I am.

Q I call your attention now to exhibit marked Exhibit No. 1 in Case No. 1960.

MR. KASTLER: Mr. Nutter, are the witness' qualifications accepted?

MR. NUTTER: Yes, sir, please proceed.

Q Would you please refer to Exhibit No. 1 and explain what is shown on there that is pertinent to Gulf's application for approval of this unit?

A Exhibit No. 1 is a regional plat that shows the proposed unit outlined with respect to geographic locations and major geologic features. You will notice that we are located approximately ten miles northwest of White City and the same distance from the outcrop of the Capitan Reef which is shown with a heavy inked line on the plat.

This reef marks the west and northwest extremity of the Delaware Basin in Capitan time. The plat further shows the location of nearby deep dry holes.

The unit area is located in an area of fairly rugged relief

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with approximately 250 feet of relief across the unit outline.

Q What is the size of the proposed unit area?

A The proposed unit area is approximately 6,302 acres.

Q Is this a unit unitized for exploration?

A Yes, sir, it is.

Q Would you identify the surrounding wells that are shown on Exhibit 1?

A We might turn to Exhibit B which has the name of the well and the formation it bottomed in. To the northeast of the unit area the Guadalupe Foot Hills, the Phillips No. 1 Guadalupe Foot Hills, was drilled in Section 20 to a total depth of 13,034. The test bottomed in Ellenberger and after testing water was plugged and abandoned. Very slight shows in the Pennsylvanian encouraged Phillips to reenter this in 1958. They were not successful in completing from these zones and the well was plugged.

To the north of the unit area, the Northern Natural Gas No. 1 McKittrick Hills Federal in Section 23 of 24 East, reached a total depth of 11,890 feet in sediments of Devonian age, and after testing salt water the well was plugged and abandoned.

MR. NUTTER: Salt water in the Devonian?

A Yes, sir. I might mention that a test of the Lower Pennsylvanian sands, in testing the Lower Pennsylvanian sands they tested a zone for 800,000 cubic feet of gas. This ~~decreased~~ to approximately 74,000 cubic feet of gas at the end of the test.

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To the west of the unit area the Humble No. 1 Bandana Point well drilled to the Ellenberger, the total depth of the well was 12,262 feet. They tested water in the Ellenberger and in the Devonian. They plugged back to 10,035 feet in the Pennsylvanian and completed through perforations around 9800 feet for a gas well of a million eight hundred thousand cubic feet of gas per day.

Q That Bandana Point well is in Section 13 of Township 23 South, Range 23 East?

A Yes, sir. The area is complicated by facies changes in the Permian as the basin sediments enter the opening and pass into the reef and back reef facies. You'll notice on our Exhibit A we have a large bulge in the Capitan Reef, and this anomalous development of the reef from its narrow linear trend suggested to us a structure on the concave side of the bulge.

Q You have referred to Exhibit A and Exhibit B and you are intending to refer to Exhibits 1 and 2 respectively?

A Yes, sir.

Q All right, proceed. Is there anything further that can be shown or can be seen or described in connection with Exhibit No. 1?

A Yes, sir. I would mention 140 feet of contour regional dip between the Phillip's Guadalupe Foot Hills well and the Northern Natural Gas No. 1 McKittrick Hills well at the Devonian level. The regional dip in the area is approximately 200 feet

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to the mile to the east into the Delaware Basin. This counter regional dip and the large bulge on the reef are the primary geologic basis for the prospect.

Q One other question concerning Exhibit No. 1 or other facts that are not particularly shown, how near is the nearest known Devonian producing well?

A The nearest Devonian production is in 18-31 in the Shugart-Devonian Field, I believe the name of that field is. I don't know how far it is, but it's a fair distance.

Q Now, calling your attention back to Exhibit No. 2, would you state what is shown in the dashed lines there and describe where the proposed unit area is situated on this plat?

A Exhibit 2 shows the outline of the proposed unit area in hashed lines, and it is situated in Townships 22 South, 24 East and Townships 23 South and 24 East. The plat further shows seismic control in the area. We show it in a southwesterly direction in search of our high from the Guadalupe Foot Hills unit well and encountered a turnover that crested in Section 12, having a north-south turnover. We then shot an east-west line to determine the dip in that direction.

We developed a strong turnover cresting along the west line of Section 11. This control indicated to us a generally, a large generally north-south trending structure with 300 feet of enclosure at the Bone Springs level and 500 feet of enclosure at the Devonian

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level. The basis for the unit boundary was the minus 6100 foot contour on the Devonian map, this is on Exhibit D.

Q Or Exhibit 4.

A Yes, sir. This is the lowest closing contour on our feature.

Q At minus 6100 feet?

A Yes, sir. I might mention in connection with the seismic work, it was extremely expensive and it cost Gulf approximately \$10,000 a mile to shoot the facies changes, in the Permian the rugged topography and the dense outcropping dolomite influenced or modified the results. We thought to fully shoot it out it would take at least ten miles more work and this would cost in the neighborhood of approximately \$100,000. Our estimated cost for this test is approximately \$280,000 and we felt it was more prudent to evaluate the area by drilling the wildcat test than to attempt further exploratory work in that we had seismic evidence of this large north-south trending feature as well as geologic evidence of this structure.

Q Now, Mr. Cress, as I understand it, Exhibit 4, which is also labeled Exhibit D, is the structure on top of the Devonian that you have developed from the seismic control shown in Exhibit No. 2, is that correct?

A Yes, it is. This is at an approximate Devonian horizon.

Q The enclosure of minus 6100 feet is roughly the area

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that is ~~enclosed~~ by the proposed unit area?

A Yes, sir, it is.

Q Now, where is your unit test well in relation with this on Exhibit 4?

A Our unit test well is located in the northwest of the southwest corner of Section 11, Township 23 South, Range 24 East.

Q That's so indicated on Exhibit D or Exhibit No. 4?

A Yes, sir, it is.

Q Now, ~~calling~~ your attention briefly to Exhibit C or Exhibit No. 3. What is shown on that exhibit?

A Exhibit 3 shows contours on Bone Springs horizon, which is a Permian horizon, and shows a structure with approximately 300 feet of closures. A seismic structure with approximately 300 feet of closure at this level.

Q Has this geological information been presented to the U.S.G.S. in connection with Gulf's petition for the approval?

A Yes, sir.

Q Preliminary designation and final designation of this unit area?

A Yes, it has.

Q That has been accompanied with a confidential report?

A Yes, it has.

Q That report containing substantially the same facts and matters that you have testified to here?

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A Yes, sir, it does.

Q Has the U.S.G.S. indicated it's approval?

A Yes, I was informed by our Law Department and our Land Department that we had received final approval on May 10th by phone.

Q That's final approval? A Yes, sir.

Q Has this same geological confidential report and this material also been presented to the Commissioner of Public Lands?

A Yes, it has.

Q Has the test well been commenced, Mr. Cress?

A Yes, sir, it has and it is presently drilling at approximately 10,500 feet.

Q And what is the objective depth of that well?

A The objective depth of the test is 11,750 feet and the objective horizon is the Devonian.

Q You are now at or below 10,500 feet?

A Yes, sir.

Q In your opinion would the unit agreement, the North Caverns Unit Agreement, as outlined, provide for, fully for exploration in this area and in the event of production would it provide adequately for the orderly development of the reservoir?

A Yes, sir, it would.

Q Were Exhibits 1, 2, 3 and 4 prepared by you or at your direction and under your supervision?

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A Yes, sir, they were.

MR. KASTLER: This concludes the direct examination on direct testimony.

MR. NUTTER: Does anyone have any questions of the witness?

MR. PAYNE: Yes, sir.

MR. NUTTER: Mr. Payne.

CROSS EXAMINATION

BY MR. PAYNE:

Q Are there any wells on this unit drilled to any formation?

A No, sir, there aren't.

MR. KASTLER: Other than the one --

A Other than the one that's presently drilling.

Q Yes. Just seismic holes? A Yes, sir.

Q Is your other witness going to testify more as to what the unit agreement contains?

MR. KASTLER: Yes, he is.

MR. PAYNE: Thank you.

BY MR. NUTTER:

Q Is this considered a Pennsylvanian prospect also?

A Yes, sir. It's Pennsylvanian and Devonian prospect.

Q In your opinion, is the unit outline sufficiently large as to cover the Devonian structure and provide adequate control of the structure by the unit operator?



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A Yes, sir, in my opinion it is.

Q In your opinion is the unit outline unnecessarily large to enclose an undue amount of acreage?

A No, sir.

Q Other than what is on the structure?

A No, sir, in my opinion it is not.

MR. NUTTER: Any further questions of the witness? He may be excused.

(Witness excused.)

MR. KASTLER: Our next witness is Mr. J. P. Cavanaugh.

J. P. CAVANAUGH

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q For the record, will you please state your name, where you reside, by whom you are employed and what your position is?

A My name is J. P. Cavanaugh, I reside in Roswell, New Mexico, I'm employed by Gulf Oil Corporation in the Roswell District as a land man.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A No, sir, I have not.

Q What has been your experience as a land man, Mr.



Cavanaugh?

A My experience as land man started with Humble Oil and Refining Company in the Gulf Coast Division with Warren Petroleum Corporation.

Q In what year?

A In the year of 1939, '40 and '41, prior to my war service, I returned to Humble Oil and Refining Company in 1945 and in 1950 I was employed by Warren Petroleum Corporation in the Gulf Coast Division, the Abilene District and finally the Roswell District. Three years ago I was employed by Gulf Oil Corporation in the Roswell District as a land man. With Warren in the Abilene and Roswell Districts I was District Land Man for them.

Q Mr. Cavanaugh, are you familiar with the North Caverns Unit Agreement?

A Yes, sir, I am.

Q Were you instrumental in getting the unit agreement put together, agreed to by a number of parties, and executed?

A Yes, sir, I was. Exploration units are basically my concern with Gulf Oil Corporation in the Roswell District.

(Whereupon Gulf's Exhibit No. 5
was marked for identification.)

Q Do you have a plat for introduction as an exhibit here, and may that be submitted for identification and stamping and so forth?



A As Exhibit No. 5.

Q Calling your attention to Exhibit No. 5, does that show enclosure of the proposed North Caverns unit area?

A Yes, sir, it does in the hashed outline.

Q What is the status of lands there as to ownership, whether Federal, State or fee lands?

A This unit includes 5,669.99 acres of Federal land, 632.64 acres of State of New Mexico land, and it does not include any fee land.

Q Are the respective owners of working interest leases shown on this plat, which is Exhibit No. 5?

A Yes, sir, they are, on the respective tracts as owned.

Q Briefly, would you recapitulate the number or names of the working interest owners in this unit?

A Yes, sir. Gulf Oil Corporation is shown on the plat under their respective tract followed by Northern Natural Gas Producing Company, Phillips Petroleum Company, Superior Oil Company, Hondo Oil and Gas Company, Tidewater Oil Company, Texaco Seaboard, Inc. and A. C. Holder.

Q Are the lease expiration dates also shown on Exhibit No. 5?

A Yes, sir, they are.

Q And as well, does Exhibit No. 5 show lease serial numbers and whether the leases are Federal or State leases?

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A Yes, sir, it does.

Q And the respective lease ownerships?

A Yes, sir, it does.

Q Now, Mr. Cavanaugh, is this a usual type of Federal Unit Agreement following closely to the code of Federal regulations that prescribe the form of the unit agreement itself?

A Yes, sir.

Q The purpose of this unit is for exploration?

A Yes, sir, it is.

Q What are the safeguards or the provisions in the unit agreement contained for the drilling of an initial test well?

A The safeguards for the drilling of the initial test well are one, to share in the cost of development by the working interest owners; secondly, getting into the royalty ownership to form a participating area, after which the initial test well or any succeeding wells are completed.

Q In other words, as I understand it, this unit agreement provides for a fixed working interest participation, is that correct?

A Yes, it does. A fixed working interest participation on each and every well drilled under the unit operating agreement.

Q Does it also contain provisions whereby less than all parties may undertake the drilling of any wells?

A Yes, sir, it has a provision included in the unit



operating agreement for non consent wells to be drilled.

Q Does it provide for further development after initial discovery or before initial discovery for the drilling of more wells?

A Yes, sir, it does.

Q Does it substantially accord correlative rights for the owners of all interests in the unit area?

A Yes, sir, I believe it does.

Q Does it provide for subsequent joinder of any parties who have not joined?

A Yes, sir, it does.

Q Does it provide for the subsequent joinder or the joinder of the parties who are subsequently taken in by an expansion or enlargement of the unit area?

A Yes, sir, it does.

Q Does it as well provide for the contraction of the unit area for failure to develop?

A Yes, sir, it does.

Q How many of the working interest owners have signed and committed themselves or their companies to this unit agreement?

A One hundred percent, or all of them.

Q Are there any overriding royalty ownerships?

A Yes, sir, there are overriding royalty ownerships that affect Federal land.

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Q There are no overriding royalty ownerships affecting State lands?

A No, sir.

Q In all, how many owners of record of overriding royalty or production payment interests are there?

A There are probably eleven.

Q Have all eleven parties been offered the opportunity of consenting to and ratifying this unit agreement?

A Yes, sir, by registered mail.

Q Have any of them replied?

A Yes, sir, all with the exception of three parties have replied, four have replied in the negative, four have replied in the affirmative. However, of the four that have replied in the affirmative, one instrument will have to be resubmitted for proper legal procedure.

Q Do you have copies of the consents and ratifications submitted to Gulf as unit operator by those overriding royalty or production payments owners desiring to join the unit?

A Yes, sir. If the Commission please, we would appreciate submitting photostatic copies of the originals. The originals will remain in our files.

MR. PAYNE: That's all right, Mr. Cavanaugh.

MR. KASTLER: All right, these are verifax copies.

Q In connection with the royalty participation, how is that

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~~provided in the event of production, would the royalty owners~~
throughout the unit share in one-eighth of the production?

A No, sir, the royalty owners within the participating area share in the production from the well that's within this participating area.

Q Does the unit agreement provide that the participating area will be agreed upon and declared as a matter of agreement between the working interest owners, representatives of the U.S.G.S., representatives of the Commissioner of Public Lands and representatives of the Oil Conservation Commission?

A Yes, sir. Within the month that the well is completed.

Q Or as soon thereafter as practical?

A Yes, sir.

Q Was Exhibit No. 5 prepared by you or under your direction and supervision?

A Yes, sir, it was.

MR. KASTLER: I have no further questions on direct testimony at this time.

MR. NUTTER: Does anyone have any questions?

MR. PAYNE: Yes.

MR. NUTTER: Mr. Payne.

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Cavanaugh, does this unit agreement contain a

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segregation clause as to the State and Federal land?

A The segregation of any Federal lease committed to this agreement is covered by fourth paragraph in 17 (b) of the act as amended by the act of July 29, 1954, (68 Statutes 583, 585.) That's on page 18 of the unit agreement.

MR. KASTLER: That would apply to Federal segregation however. Are State leases to be segregated as well?

A Yes, sir, I believe they are.

MR. NUTTER: Paragraph (i) on 18 I think.

Q (By Mr. Payne) Now, Mr. Cavanaugh, did you testify that the Oil Conservation Commission also has to approve the participating area?

A It is subject to the approval, sir.

Q Well, now, where is that in the unit agreement?

A "The parties hereto, including the State Commission, agree that all powers and authority vested in the State Commission in and by any provisions of this agreement are vested in the State Commission and shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject in any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico."

Q Is that provision consistent with paragraph 11 on page 11 relative to the participation after discovery?

A To what language do you refer?

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Q The language in this paragraph as to the effect that only the supervisors of the U.S.G.S. and the Commissioner of Public Lands need to approve a participating area. Let's see, the second full paragraph on page 12, the State Commission along with the supervision and the State Commissioner is given authority to impound royalties and in so establishing a participating area I believe it is our procedure to consult or submit same to the Oil Conservation Commission, is that right, Mr. Kastler?

MR. KASTLER: Well, off the record.

(Whereupon a discussion was held off the record.)

MR. KASTLER: Back on the record. Mr. Cavanaugh, in the event of the establishment of a participating area, would Gulf Oil Corporation, as the unit operator, confer with the State Oil Conservation Commission as to the participating area to be declared?

A Yes, sir, it would.

Q (By Mr. Payne) Mr. Cavanaugh, what happens here if you get production before the appropriate parties have approved your unit agreement? As I understand it, your well is at 10,500 now, is that right?

A Yes, sir, it is. However, prior to the commencement of this well we had one hundred percent agreement as to the cost.

MR. KASTLER: By the working interest owners.

A We did not run any risk in commencing this well.

Q As your participating area does that contain a



retroactive provision that it relates back to the time of first production?

A Yes, sir.

MR. KASTLER: Might I state for the record that the effective date of the entire instrument is to be the date of final approval by the U.S.G.S., and inasmuch as we have been notified by telephone that the U. S. Geological Survey Director yesterday approved our unit agreement, that any order the Oil Conservation Commission might issue would be made retroactive to be dated effective May 10 or to be dated the date that the Commissioner of U.S.G.S. finally approved the unit.

MR. PAYNE: So that would take care of the allocation of any production that might accrue prior to actual approval by all these parties?

MR. KASTLER: Yes, it would, and the agreement would as well because the effective date would have occurred prior to production.

MR. NUTTER: In other words, this clause in this unit agreement that provides that the initial participating area would be effective as of the date of completion of the well or the effective date of the unit agreement would apply as the effective day of the unit agreement is May the 10th regardless of any subsequent approvals that may come after this?

MR. KASTLER: Yes.

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MR. NUTTER: The effective date will be May 10th?

MR. KASTLER: That will be the effective date of the unit agreement, yes. The production, the allocation of production is otherwise provided for, but is, of course, provided for either within the unit agreement or the unit operating agreement.

MR. NUTTER: I think the unit agreement provides that the effective date of any revision of any participating area will be the first of the month in which is obtained the knowledge or information on which the revision is predicated?

MR. KASTLER: That is correct.

MR. NUTTER: That would take care of subsequent expansions?

MR. KASTLER: And I don't see any problems in connection with that. I would like to state further for the record that we appear to be beyond the fret or worry now of not having the unit finally approved at the time we completed our initial test well, subject of course to the approval of the Oil Conservation Commission, we do most earnestly solicit your approval. I wish to state also that the Commissioner of Public Lands has only tentatively given its approval, basing their actual approval somewhat upon the condition that you approve it.

MR. NUTTER: In other words, you have tentative approval from the Commissioner of Public Lands?

MR. KASTLER: Yes.

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MR. NUTTER: You have tentative plus final approval from the U.S.G.S. and we're having a hearing today for the third one. Mr. Cavanaugh, you stated that the Exhibit 5 showed the expiration date of the various leases. What is the expiration date of Lease OB6176?

A I improperly stated that, the OB6176, that the exhibit shows an expiration date. However, that date is November 17, 1969.

MR. NUTTER: It's not about to run out then, is it?

A That, however, is shown on Exhibit B of the Unit Operating Agreement.

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

(Witness excused.)

MR. KASTLER: I move that Exhibits Nos. 1, 2, 3, 4 and 5 be entered into evidence.

MR. NUTTER: Gulf's Exhibits 1 through 5 will be entered. Do you have anything further, Mr. Kastler?

MR. KASTLER: No, sir, I haven't.

MR. NUTTER: Does anyone have anything further for Case 1960? We will take the case under advisement and take a fifteen minute recess.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. heard by me on, 19.....

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



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ALBUQUERQUE, NEW MEXICO

STATE OF NEW MEXICO)
 : SS
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this day of May, 1960.

Ada Dearnley

Notary Public-Court Reporter

My commission expires:
June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1960, heard by me on 5/11, 1960.
[Signature], Examiner
New Mexico Oil Conservation Commission



BEFORE THE
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(Witnesses sworn.)

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A No, sir.

Q Mr. Cress, would you please state what your qualifications are, where you attended school and briefly outline the nature of your experience in petroleum geology?

A I graduated from the University of Minnesota in 1949 with a Bachelor's degree in geological engineering. I was employed by the Gulf Oil Corporation as a geologist in 1950 and have worked with them in that capacity to the present time.

Q Where have you been employed by Gulf?



A I have been employed in various areas of Texas and New Mexico, the last three years being in Roswell.

Q Are you familiar with the lands in Eddy County under lease by Gulf and in the general vicinity of Townships 22 South and 23 South, 24 East?

A Yes, I am.

Q I call your attention now to exhibit marked Exhibit No. 1 in Case No. 1960.

MR. KASTLER: Mr. Nutter, are the witness' qualifications accepted?

MR. NUTTER: Yes, sir, please proceed.

Q Would you please refer to Exhibit No. 1 and explain what is shown on there that is pertinent to Gulf's application for approval of this unit?

A Exhibit No. 1 is a regional plat that shows the proposed unit outlined with respect to geographic locations and major geologic features. You will notice that we are located approximately ten miles northwest of White City and the same distance from the outcrop of the Capitan Reef which is shown with a heavy inked line on the plat.

This reef marks the west and northwest extremity of the Delaware Basin in Capitan time. The plat further shows the location of nearby deep dry holes.

The unit area is located in an area of fairly rugged relief

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A Yes, sir, it is.

Q Would you identify the surrounding wells that are shown on Exhibit 1?

A We might turn to Exhibit B which has the name of the well and the formation it bottomed in. To the northeast of the unit area the Guadalupe Foot Hills, the Phillips No. 1 Guadalupe Foot Hills was drilled in Section 20 to a total depth of 13,034. The test bottomed in Ellenberger and after testing water was plugged and abandoned. Very slight shows in the Pennsylvanian encouraged Phillips to reenter this in 1958. They were not successful in completing from these zones and the well was plugged.

To the north of the unit area, the Northern Natural Gas No. 1 McKittrick Hills Federal in Section 23 of 24 East, reached a total depth of 11,890 feet in sediments of Devonian age, and after testing salt water the well was plugged and abandoned.

MR. NUTTER: Salt water in the Devonian?

A Yes, sir. I might mention that a test of the Lower Pennsylvanian sands, in testing the Lower Pennsylvanian sands they tested a zone for 800,000 cubic feet of gas. This decreased to approximately 74,000 cubic feet of gas at the end of the test.

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To the west of the unit area the Humble No. 1 Bandana Point well drilled to the Ellenberger, the total depth of the well was 12,262 feet. They tested water in the Ellenberger and in the Devonian. They plugged back to 10,035 feet in the Pennsylvanian and completed through perforations around 9800 feet for a gas well of a million eight hundred thousand cubic feet of gas per day.

Q That Bandana Point well is in Section 13 of Township 23 South, Range 23 East?

A Yes, sir. The area is complicated by facies changes in the Permian as the basin sediments enter the opening and pass into the reef and back reef facies. You'll notice on our Exhibit A we have a large bulge in the Capitan Reef, and this anomalous development of the reef from its narrow linear trend suggested to us a structure on the concave side of the bulge.

Q You have referred to Exhibit A and Exhibit B and you are intending to refer to Exhibits 1 and 2 respectively?

A Yes, sir.

Q All right, proceed. Is there anything further that can be shown or can be seen or described in connection with Exhibit No. 1?

A Yes, sir. I would mention 140 feet of contour regional dip between the Phillip's Guadalupe Foot Hills well and the Northern Natural Gas No. 1 McKittrick Hills well at the Devonian level. The regional dip in the area is approximately 200 feet

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to the mile to the east into the Delaware Basin. This counter regional dip and the large bulge on the reef are the primary geologic basis for the prospect.

Q One other question concerning Exhibit No. 1 or other facts that are not particularly shown, how near is the nearest known Devonian producing well?

A The nearest Devonian production is in 18-31 in the Shugart-Devonian Field, I believe the name of that field is. I don't know how far it is, but it's a fair distance.

Q Now, calling your attention back to Exhibit No. 2, would you state what is shown in the dashed lines there and describe where the proposed unit area is situated on this plat?

A Exhibit 2 shows the outline of the proposed unit area in hashed lines, and it is situated in Townships 22 South, 24 East and Townships 23 South and 24 East. The plat further shows seismic control in the area. We show it in a southwesterly direction in search of our high from the Guadalupe Foot Hills unit well and encountered a turnover that crested in Section 12, having a north-south turnover. We then shot an east-west line to determine the dip in that direction.

We developed a strong turnover cresting along the west line of Section 11. This control indicated to us a generally, a large generally north-south trending structure with 300 feet of enclosure at the Bone Springs level and 500 feet of enclosure at the Devonian

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level. The basis for the unit boundary was the minus 6100 foot contour on the Devonian map, this is on Exhibit D.

Q Or Exhibit 4.

A Yes, sir. This is the lowest closing contour on our feature.

Q At minus 6100 feet?

A Yes, sir. I might mention in connection with the seismic work, it was extremely expensive and it cost Gulf approximately \$10,000 a mile to shoot the facies changes, in the Permian the rugged topography and the dense outcropping dolomite influenced or modified the results. We thought to fully shoot it out it would take at least ten miles more work and this would cost in the neighborhood of approximately \$100,000. Our estimated cost for this test is approximately \$280,000 and we felt it was more prudent to evaluate the area by drilling the wildcat test than to attempt further exploratory work in that we had seismic evidence of this large north-south trending feature as well as geologic evidence of this structure.

Q Now, Mr. Cress, as I understand it, Exhibit 4, which is also labeled Exhibit D, is the structure on top of the Devonian that you have developed from the seismic control shown in Exhibit No. 2, is that correct?

A Yes, it is. This is at an approximate Devonian horizon.

Q The enclosure of minus 6100 feet is roughly the area

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that is enclosed by the proposed unit area?

A Yes, sir, it is.

Q Now, where is your unit test well in relation with this on Exhibit 4?

A Our unit test well is located in the northwest of the southwest corner of Section 11, Township 23 South, Range 24 East.

Q That's so indicated on Exhibit D or Exhibit No. 4?

A Yes, sir, it is.

Q Now, calling your attention briefly to Exhibit C or Exhibit No. 3. What is shown on that exhibit?

A Exhibit 3 shows contours on Bone Springs horizon, which is a Permian horizon, and shows a structure with approximately 300 feet of closures. A seismic structure with approximately 300 feet of closure at this level.

Q Has this geological information been presented to the U.S.G.S. in connection with Gulf's petition for the approval?

A Yes, sir.

Q Preliminary designation and final designation of this unit area?

A Yes, it has.

Q That has been accompanied with a confidential report?

A Yes, it has.

Q That report containing substantially the same facts and matters that you have testified to here?

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A Yes, sir, it does.

Q Has the U.S.G.S. indicated it's approval?

A Yes, I was informed by our Law Department and our Land Department that we had received final approval on May 10th by phone.

Q That's final approval? A Yes, sir.

Q Has this same geological confidential report and this material also been presented to the Commissioner of Public Lands?

A Yes, it has.

Q Has the test well been commenced, Mr. Cress?

A Yes, sir, it has and it is presently drilling at approximately 10,500 feet.

Q And what is the objective depth of that well?

A The objective depth of the test is 11,750 feet and the objective horizon is the Devonian.

Q You are now at or below 10,500 feet?

A Yes, sir.

Q In your opinion would the unit agreement, the North Caverns Unit Agreement, as outlined, provide for, fully for exploration in this area and in the event of production would it provide adequately for the orderly development of the reservoir?

A Yes, sir, it would.

Q Were Exhibits 1, 2, 3 and 4 prepared by you or at your direction and under your supervision?

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A Yes, sir, they were.

MR. KASTLER: This concludes the direct examination on direct testimony.

MR. NUTTER: Does anyone have any questions of the witness?

MR. PAYNE: Yes, sir.

MR. NUTTER: Mr. Payne.

CROSS EXAMINATION

BY MR. PAYNE:

Q Are there any wells on this unit drilled to any formation?

A No, sir, there aren't.

MR. KASTLER: Other than the one --

A Other than the one that's presently drilling.

Q Yes. Just seismic holes? A Yes, sir.

Q Is your other witness going to testify more as to what the unit agreement contains?

MR. KASTLER: Yes, he is.

MR. PAYNE: Thank you.

BY MR. NUTTER:

Q Is this considered a Pennsylvanian prospect also?

A Yes, sir. It's Pennsylvanian and Devonian prospect.

Q In your opinion, is the unit outline sufficiently large as to cover the Devonian structure and provide adequate control of the structure by the unit operator?



A Yes, sir, in my opinion it is.

Q In your opinion is the unit outline unnecessarily large to enclose an undue amount of acreage?

A No, sir.

Q Other than what is on the structure?

A No, sir, in my opinion it is not.

MR. NUTTER: Any further questions of the witness? He may be excused.

(Witness excused.)

MR. KASTLER: Our next witness is Mr. J. P. Cavanaugh.

J. P. CAVANAUGH

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q For the record, will you please state your name, where you reside, by whom you are employed and what your position is?

A My name is J. P. Cavanaugh, I reside in Roswell, New Mexico, I'm employed by Gulf Oil Corporation in the Roswell District as a land man.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A No, sir, I have not.

Q What has been your experience as a land man, Mr.



Cavanaugh?

A My experience as land man started with Humble Oil and Refining Company in the Gulf Coast Division with Warren Petroleum Corporation.

Q In what year?

A In the year of 1939, '40 and '41, prior to my war service I returned to Humble Oil and Refining Company in 1945 and in 1950 I was employed by Warren Petroleum Corporation in the Gulf Coast Division, the Abilene District and finally the Roswell District. Three years ago I was employed by Gulf Oil Corporation in the Roswell District as a land man. With Warren in the Abilene and Roswell Districts I was District Land Man for them.

Q Mr. Cavanaugh, are you familiar with the North Caverns Unit Agreement?

A Yes, sir, I am.

Q Were you instrumental in getting the unit agreement put together, agreed to by a number of parties, and executed?

A Yes, sir, I was. Exploration units are basically my concern with Gulf Oil Corporation in the Roswell District.

(Whereupon Gulf's Exhibit No. 5 was marked for identification.)

Q Do you have a plat for introduction as an exhibit here, and may that be submitted for identification and stamping and so forth?

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A As Exhibit No. 5.

Q Calling your attention to Exhibit No. 5, does that show enclosure of the proposed North Caverns unit area?

A Yes, sir, it does in the hashed outline.

Q What is the status of lands there as to ownership, whether Federal, State or fee lands?

A This unit includes 5,669.99 acres of Federal land, 632.64 acres of State of New Mexico land, and it does not include any fee land.

Q Are the respective owners of working interest leases shown on this plat, which is Exhibit No. 5?

A Yes, sir, they are, on the respective tracts as owned.

Q Briefly, would you recapitulate the number or names of the working interest owners in this unit?

A Yes, sir. Gulf Oil Corporation is shown on the plat under their respective tract followed by Northern Natural Gas Producing Company, Phillips Petroleum Company, Superior Oil Company, Hondo Oil and Gas Company, Tidewater Oil Company, Texaco Seaboard, Inc. and A. C. Holder.

Q Are the lease expiration dates also shown on Exhibit No. 5?

A Yes, sir, they are.

Q And as well, does Exhibit No. 5 show lease serial numbers and whether the leases are Federal or State leases?



A Yes, sir, it does.

Q And the respective lease ownerships?

A Yes, sir, it does.

Q Now, Mr. Cavanaugh, is this a usual type of Federal Unit Agreement following closely to the code of Federal regulations that prescribe the form of the unit agreement itself?

A Yes, sir.

Q The purpose of this unit is for exploration?

A Yes, sir, it is.

Q What are the safeguards or the provisions in the unit agreement contained for the drilling of an initial test well?

A The safeguards for the drilling of the initial test well are one, to share in the cost of development by the working interest owners; secondly, getting into the royalty ownership to form a participating area, after which the initial test well or any succeeding wells are completed.

Q In other words, as I understand it, this unit agreement provides for a fixed working interest participation, is that correct?

A Yes, it does. A fixed working interest participation on each and every well drilled under the unit operating agreement.

Q Does it also contain provisions whereby less than all parties may undertake the drilling of any wells?

A Yes, sir, it has a provision included in the unit

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operating agreement for non consent wells to be drilled.

Q Does it provide for further development after initial discovery or before initial discovery for the drilling of more wells?

A Yes, sir, it does.

Q Does it substantially accord correlative rights for the owners of all interests in the unit area?

A Yes, sir, I believe it does.

Q Does it provide for subsequent joinder of any parties who have not joined?

A Yes, sir, it does.

Q Does it provide for the subsequent joinder or the joinder of the parties who are subsequently taken in by an expansion or enlargement of the unit area?

A Yes, sir, it does.

Q Does it as well provide for the contraction of the unit area for failure to develop?

A Yes, sir, it does.

Q How many of the working interest owners have signed and committed themselves or their companies to this unit agreement?

A One hundred percent, or all of them.

Q Are there any overriding royalty ownerships?

A Yes, sir, there are overriding royalty ownerships that affect Federal land.

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Q There are no overriding royalty ownerships affecting State lands?

A No, sir.

Q In all, how many owners of record of overriding royalty or production payment interests are there?

A There are probably eleven.

Q Have all eleven parties been offered the opportunity of consenting to and ratifying this unit agreement?

A Yes, sir, by registered mail.

Q Have any of them replied?

A Yes, sir, all with the exception of three parties have replied, four have replied in the negative, four have replied in the affirmative. However, of the four that have replied in the affirmative, one instrument will have to be resubmitted for proper legal procedure.

Q Do you have copies of the consents and ratifications submitted to Gulf as unit operator by those overriding royalty or production payments owners desiring to join the unit?

A Yes, sir. If the Commission please, we would appreciate submitting photostatic copies of the originals. The originals will remain in our files.

MR. PAYNE: That's all right, Mr. Cavanaugh.

MR. KASTLER: All right, these are verifax copies.

Q In connection with the royalty participation, how is that

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~~provided in the event of production, would the royalty owners throughout the unit share in one-eighth of the production?~~

A No, sir, the royalty owners within the participating area share in the production from the well that's within this participating area.

Q Does the unit agreement provide that the participating area will be agreed upon and declared as a matter of agreement between the working interest owners, representatives of the U.S.G.S., representatives of the Commissioner of Public Lands and representatives of the Oil Conservation Commission?

A Yes, sir. Within the month that the well is completed.

Q Or as soon thereafter as practical?

A Yes, sir.

Q Was Exhibit No. 5 prepared by you or under your direction and supervision?

A Yes, sir, it was.

MR. KASTLER: I have no further questions on direct testimony at this time.

MR. NUTTER: Does anyone have any questions?

MR. PAYNE: Yes.

MR. NUTTER: Mr. Payne.

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Cavanaugh, does this unit agreement contain a

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segregation clause as to the State and Federal land?

A The segregation of any Federal lease committed to this agreement is covered by fourth paragraph in 17 (b) of the act as amended by the act of July 29, 1954, (68 Statutes 583, 585.) That's on page 18 of the unit agreement.

MR. KASTLER: That would apply to Federal segregation however. Are State leases to be segregated as well?

A Yes, sir, I believe they are.

MR. NUTTER: Paragraph (i) on 18 I think.

Q (By Mr. Payne) Now, Mr. Cavanaugh, did you testify that the Oil Conservation Commission also has to approve the participating area?

A It is subject to the approval, sir.

Q Well, now, where is that in the unit agreement?

A "The parties hereto, including the State Commission, agree that all powers and authority vested in the State Commission in and by any provisions of this agreement are vested in the State Commission and shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject in any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico."

Q Is that provision consistent with paragraph 11 on page 11 relative to the participation after discovery?

A To what language do you refer?

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Q The language in this paragraph as to the effect that only the supervisors of the U.S.G.S. and the Commissioner of Public Lands need to approve a participating area. Let's see, the second full paragraph on page 12, the State Commission along with the supervision and the State Commissioner is given authority to impound royalties and in so establishing a participating area I believe it is our procedure to consult or submit same to the Oil Conservation Commission, is that right, Mr. Kastler?

MR. KASTLER: Well, off the record.

(Whereupon a discussion was held off the record.)

MR. KASTLER: Back on the record. Mr. Cavanaugh, in the event of the establishment of a participating area, would Gulf Oil Corporation, as the unit operator, confer with the State Oil Conservation Commission as to the participating area to be declared?

A Yes, sir, it would.

Q (By Mr. Payne) Mr. Cavanaugh, what happens here if you get production before the appropriate parties have approved your unit agreement? As I understand it, your well is at 10,500 now, is that right?

A Yes, sir, it is. However, prior to the commencement of this well we had one hundred percent agreement as to the cost.

MR. KASTLER: By the working interest owners.

A We did not run any risk in commencing this well.

Q As your participating area does that contain a



retroactive provision that it relates back to the time of first production?

A Yes, sir.

MR. KASTLER: Might I state for the record that the effective date of the entire instrument is to be the date of final approval by the U.S.G.S., and inasmuch as we have been notified by telephone that the U. S. Geological Survey Director yesterday approved our unit agreement, that any order the Oil Conservation Commission might issue would be made retroactive to be dated effective May 10 or to be dated the date that the Commissioner of U.S.G.S. finally approved the unit.

MR. PAYNE: So that would take care of the allocation of any production that might accrue prior to actual approval by all these parties?

MR. KASTLER: Yes, it would, and the agreement would as well because the effective date would have occurred prior to production.

MR. NUTTER: In other words, this clause in this unit agreement that provides that the initial participating area would be effective as of the date of completion of the well or the effective date of the unit agreement would apply as the effective day of the unit agreement is May the 10th regardless of any subsequent approvals that may come after this?

MR. KASTLER: Yes.

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MR. NUTTER: The effective date will be May 10th?

MR. KASTLER: That will be the effective date of the unit agreement, yes. The production, the allocation of production is otherwise provided for, but is, of course, provided for either within the unit agreement or the unit operating agreement.

MR. NUTTER: I think the unit agreement provides that the effective date of any revision of any participating area will be the first of the month in which is obtained the knowledge or information on which the revision is predicated?

MR. KASTLER: That is correct.

MR. NUTTER: That would take care of subsequent expansions?

MR. KASTLER: And I don't see any problems in connection with that. I would like to state further for the record that we appear to be beyond the fret or worry now of not having the unit finally approved at the time we completed our initial test well, subject of course to the approval of the Oil Conservation Commission, we do most earnestly solicit your approval. I wish to state also that the Commissioner of Public Lands has only tentatively given its approval, basing their actual approval somewhat upon the condition that you approve it.

MR. NUTTER: In other words, you have tentative approval from the Commissioner of Public Lands?

MR. KASTLER: Yes.

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MR. NUTTER: You have tentative plus final approval from the U.S.G.S. and we're having a hearing today for the third one. Mr. Cavanaugh, you stated that the Exhibit 5 showed the expiration date of the various leases. What is the expiration date of Lease OB6176?

A I improperly stated that, the OB6176, that the exhibit shows an expiration date. However, that date is November 17, 1969.

MR. NUTTER: It's not about to run out then, is it?

A That, however, is shown on Exhibit B of the Unit Operating Agreement.

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

(Witness excused.)

MR. KASTLER: I move that Exhibits Nos. 1, 2, 3, 4 and 5 be entered into evidence.

MR. NUTTER: Gulf's Exhibits 1 through 5 will be entered. Do you have anything further, Mr. Kastler?

MR. KASTLER: No, sir, I haven't.

MR. NUTTER: Does anyone have anything further for Case 1960? We will take the case under advisement and take a fifteen minute recess.

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STATE OF NEW MEXICO)
 : SS
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this day of May, 1960.

Ada Dearnley

Notary Public-Court Reporter

My commission expires:
June 19, 1963.

