CASE 6266: DE NOVO NOVEMBER 7, 1978
HARVEY E. YATES COMPANY FOR AN UNORTHO-
DOX GAS WELL LOCATION, EDDY COUNTY

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CASE NO.

6266

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date NOVEMBER 14, 1978 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Andrew Lattu	Harvey E. Yates	Midland
SAECO AFGHANS	HARVEY E. YATES	MIDLAND
William F. Carr	Catron, Catron & Sawtell	Santa Fe
A. J. Losee	Losee, Carson & Dickerson	Artesia
Guy Buell	Amoco	Houston
Jim Allen	"	"
Ed Loomis	"	"
Robert J. Pickens	MARATHON	Houston
Verne E. Hull	"	MIDLAND
Al Kollaja	"	MIDLAND
Tom Dugan	Jerome P. McHugh	Farmington
Richard Tully	Jerome P. McHugh	Farmington

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
14 November 1978

COMMISSION HEARING

IN THE MATTER OF:

Application of Harvey E. Yates for an unorthodox gas well location, Eddy County, New Mexico. CASE 6266

BEFORE: Commissioner Ramey
Commissioner Arnold

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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ANDREW LATTU (RECALLED)

E X H I B I T S

MR. RAMEY: Call next Case 6266.

MS. TESCHENDORF: Case 6266. Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico.

This case will be heard de novo pursuant to the provisions of Rule 1220.

MR. RAMEY: I'll ask for appearances at this time.

MR. LOSEE: A. J. Losee, Losee, Carson, and Dickerson, Artesia, New Mexico, appearing on behalf of the applicant. I have two witnesses to be sworn.

MR. BUELL: For Amoco Production Company, my name is Guy Buell.

MR. RAMEY: Do you have any witnesses, Mr. Buell?

MR. BUELL: We'll probably have two, Mr. Ramey.

MR. CARR: William F. Carr, Catron, Catron, and Sawtell, Santa Fe, appearing on behalf of Marathon Oil. I am associated today with Robert J. Pickens.

MR. RAMEY: Mr. Carr, do you have any witnesses?

MR. CARR: We have one witness.

MR. RAMEY: I ask that all witnesses stand at this time and be sworn. (Witnesses sworn.)

MR. RAMEY: Mr. Losee, you may proceed.

MR. LOSEE: Mr. Ramey, this is a de novo hearing on an application of Harvey Yates Company for an unorthodox gas well location within the one-mile limit of the Indian Basin Field in Eddy County, New Mexico.

The field is spaced on 640 acres and is prorated.

The application requested alternative locations of 660 or 990 feet out of the north and east corner.

The field rules provide for 1650 feet as a standard location.

Order 5802, which was entered by the Division on September 20, 1978, approved the unorthodox location and established an allowable factor for the 660 foot location of 29 percent, or 0.29, and allowable factor of 32 percent, 0.32, for the 990 location.

In order to save the Commission's time, I would at this time move to introduce the entire record in the original hearing before Examiner Nutter, held on July the 6th, 1978, including the testimony and exhibits. At that hearing both Amoco and Marathon were present by their same counsel and witnesses that are here.

MR. RAMEY: Mr. Losee, I don't like to clutter the record and this is a hearing anew, and so I think we should start anew.

MR. LOSEE: You don't care to have the record introduced?

MR. RAMEY: Right.

MR. LOSEE: All right.

ANDREW LATTU

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. LOSEE:

Q. State your name, residence, and occupation.

A. I'm Andrew Lattu. I live in Midland, Texas. I'm a geologist for Harvey E. Yates Company.

Q. Have you previously testified before this Commission as an expert witness and had your qualifications as a geologist made a matter of record?

A. Yes, I have and they are.

MR. LOSEE: Are Mr. Lattu's qualifications acceptable?

MR. RAMEY: Mr. Lattu is considered qualified.

Q. (Mr. Losee continuing.) Will you refer to what has been marked Exhibit One and explain what is portrayed by this exhibit?

A. Exhibit One is a land plat which shows the

relation of the proposed location, and the proposed location marked here is the 660, the alternate location, 990, I don't have spotted, they're so close together at this scale, I didn't want to confuse the map. This shows the relation of the proposed location to the surrounding acreage and ownership and wells. It also shows that the proposed location is at least 5000 feet from the nearest producing gas well in the Indian Basin-Cisco Zone.

Q. Please refer to what's been marked Exhibit Two, Mr. Lattu, and explain what is portrayed by this exhibit.

A. Exhibit Two is an Isopach of the Indian Basin-Cisco Zone. This is an Isopach of the entire zone, not just the productive interval of the Cisco.

MR. BUELL: Excuse me, Mr. Losee. Should we identify these as DN-1 and 2 to distinguish from the prior hearing? The date will distinguish, but do you think that's enough?

MR. LOSEE: Well, actually they are marked this case de novo, as far as the exhibits are concerned.

MR. RAMEY: I think they're probably adequately marked.

Q. (Mr. Losee continuing.) Go ahead, Mr. Lattu.

A. All right. This Isopach shows the massive nature of this Indian Basin-Cisco Zone. It is approximately 400, close to 500 feet thick, up in the north end of this

map, as you see in Section 5 of Township 22 South, Range 24 East.

It thins down to virtually -- or disappears entirely at the south end of the map in a distance of approximately three and a half miles.

This then shows how quickly the entire interval is developed.

The basic strike of this Cisco Basin -- Indian Basin-Cisco Zone is east/west; however, on the southern end of this developed bank there is a slight change of strike and also thickness. If you go to Section 15, Township 22 South, Range 23 East, you see the Gulf Helbing Federal Com Unit "F" has 302 feet of this section; however, both to the east and west the section thins to 227 feet and 195 feet. So therefore this isn't a uniform thinning to the south.

As you move over to Section 23 there is a slight change of strike between, let's see, the Monsanto Ralph Lowe Estate, which is located 1650 from the south and 1980 from the east, and this causes a pullout to the southeast of this Indian Basin-Cisco Zone.

You move a little further to the east, over to Section 19 of Township 22, 24, the Superior Cone Butte Unit, this is located up in the northwest corner of Section 19, and this also causes a pullout to the southeast in rela-

tion to the well up in Section 13 of 22 South, Range 23 East, which is the PanAm HOC Federal Gas Com.

This change in strike indicates a possibility of an additional buildup similar to what's encountered by the Gulf Helbing Federal in Section 15; this buildup occuring in Sections 23 and 24, as interpreted by this map.

The proposed location is unorthodox in an attempt to penetrate as thick a section of this Indian Basin-Cisco Zone as possible. The Indian Basin-Cisco Zone consists of a mixture of dolomites and limes. It's principally dolomite to the north and as you come to the southern edge of this bank dolomites and limestones intermingle. The limestones have porosity and therefore contribute gas; however, the limestone has very little permeability, and permeability is established by the dolomite in a section. This is to describe it as a straw that draws the gas out of the limestone.

Section 21 of 22 South, Range 23 East, the Hanagan Indian Federal, which is located 1650 from the north and 1980 from the west, had 92 feet of this section and did encounter gas and pressures and had some dolomite in that section, in the Indian Basin-Cisco section.

In Section 23, however, two wells have been drilled to date, the Monsanto Ralph Lowe Estate 1650 from the south and 1980 from the east, and the Texas Oil and Gas

Lowe Federal 1650 from the north and 2310 from the west. Both wells encountered limestone and no dolomite, at least that could be detected from samples or logs.

The Texas Oil and Gas Well had 122 feet of Cisco -- or Indian Basin-Cisco Zone. The Monsanto Ralph Lowe Estate had 108 feet of the Indian Basin-Cisco Zone. Both wells were commercial failures in the sense that they were unable to produce any gas.

DST's through the Indian Basin-Cisco Zone had very low shut-in pressures, indicating no permeability through the limestone that was encountered. A log analysis revealed 11 feet of porosity in excess of two percent in the Monsanto Ralph Lowe Estate Well and 7 feet of porosity in excess of two percent in the Texas Oil and Gas Federal, but again without permeability to drain any gas in the section, both wells were dry holes.

Q. What pressures were encountered in drilling the Hanagan well and also in drilling the Marchand, now Southwest Natural Gas Well, and the Texas Oil and Gas well?

A. All right, the Hanagan well was drilled in 1966 and encountered a bottom hole pressure of 2835 pounds. Indian Basin Field pressure at that time was 2879 pounds. Now this indicates excellent permeability throughout the field in this zone.

The Southwest Natural Gas Well was drilled

in 1969. It had a bottom hole pressure of 2627 pounds. Indian Basin Field pressure at that time was 2790 pounds. Again, these pressures are fairly close together.

The Texas Oil and Gas Helbing Well, drilled in 1972, had a bottom hole pressure of 2335 pounds. Indian Basin Field pressure at that time was 2370 pounds. Again, very close together, indicating excellent permeability throughout the producing section of this Cisco Canyon-Indian Basin Zone.

Q. Does that, those pressures, reflect an excellent communication throughout this field?

A. Well, yes, they do. That's what I meant by the permeability.

Q. Okay.

A. They show -- they also show that the southern acreage was being drained by the wells in the north. The ultimate reserves for the Indian Basin Field are estimated at 2.2 trillion cubic feet of gas. Production to date has produced 755 billion cubic feet, which represents approximately 33 percent depletion.

I anticipate, if Section 23 is found productive, that it will reflect this drainage to the -- by the field of our acreage.

Q. Please refer to what has been marked as Exhibit Three, Mr. Lattu, and explain what it shows by that

exhibit.

A. Exhibit Three is a structure map contoured on the top of the Indian Basin Zone. It shows the field water level to be approximately minus 3750 feet. The nosing I have contoured across Section 23 and into 24 of Township 22 South, Range 23 East, is based on the interpretation of the Isopach map, which showed this change in strike, is the thickness of the Cisco-Indian Basin Zone.

Of the 58 producing wells in the Indian Basin Field, 19 are unorthodox locations; 7 were grandfathered in; 10 were drilled for topographic reasons; and two were drilled on geologic evidence. These are the two wells in Section 21 and 22.

Q. That's the Southwest Natural Gas Well and the Texas Oil and Gas Well in 22?

A. Yes, that's correct.

Q. Please refer to your cross section, marked as Exhibit Four, and explain what is portrayed in this exhibit.

A. All right. This is a cross section which -- and note I have an index map on the cross section, and I have it drawn on the Indian Basin-Cisco Isopach.

Now, this shows the relationship of the limestone to dolomite and also buildup, the thickening of the Indian Basin-Cisco Zone to the north.

The dolomite/limestone faces is again the key to a producing well in this field. As you see, all right, the Superior Cone Butte Unit, located in Section 19, which is number four on this cross section, it had no dolomite recorded in samples, and it did not test the zone, although by log analysis it shows a very good SP response. It is also below the water -- the water level, as shown on the structure map, Exhibit Three.

This well without any dolomite was probably, had it been even above the water, would not have been a commercial gas well. That's interpretation on my part but it's been the history of the wells in the field, that you needed the dolomite to have a producing well.

The log interpretation does show porosity, however, so what I feel this shows is that the limestone section does have porosity, and where it is above the water would contribute gas to the reservoir, although without dolomite it could not be drained commercially.

And this is reflected when you come across to wells number two and three in the cross section that do have dolomite and are commercial gas wells in the Indian Basin-Cisco Canyon Zone.

And the last well, number one on the left, which is the Monsanto Ralph Lowe Estate Well in Section 23, and it shows the straddle packer DST of this zone, recovered

30 feet of mud with a 60-minute initial shut-in pressure of 84 pounds and 120-minute final shut-in pressure of 127 pounds and this well had no dolomite and the zoning line, of course, is thin, much thinner than the other two wells that do produce.

So I feel the thickness of the section decreases your risk of -- as far as encountering dolomite, and that's why we are requesting the unorthodox location, to try and penetrate as thick a section of the Cisco Canyon Zone as possible, to minimize our risk of encountering only porous lime without the dolomite to make a commercial well.

Q. Mr. Lattu, would you refer back to Exhibit Two and using that as a basis, explain to the Commission what portion of Section 23 could possibly contribute gas to a well at either of your unorthodox locations?

A. All right. I've shaded in in blue the 125-foot Isopach, or in other words, portions of Section 23 which are thicker in the Indian Basin-Cisco Zone than 125 feet. Now this is based on the two dry holes already drilled in Section 23, one of which had 120 feet of the Indian Basin-Cisco Zone; the other one with 108 feet.

It's difficult to establish an exact thickness as to where you would encounter dolomite. As you refer back to the west in Section 21, the Hanagan Indian Basin Federal had 92 feet of section and did have some dolomite.

But using a conservative interpretation, I picked 125 feet as the portion of Section 23 that would contribute gas to a producing well in either of the two locations. The only difference between the two locations, the 660 or 990, being the less risk, or decreasing the risk to the operator of drilling a well.

Q. Have you planimetered the area above the 125-foot contour?

A. I haven't planimetered with a planimeter, but I've squared it off, checkerboarded it, and this adds up to approximately 350 acres of Section 23 that will have a thickness of the Indian Basin-Cisco Zone greater than 125 feet, and therefore I feel will be contributing to a producing well in that section.

Q. Now, Mr. Lattu, turning to Section 22, the Gulf well in the northeast quarter, which was plugged and abandoned as not commercially productive, did that well have water in it?

A. No. That well -- it was drilled deeper than just through the Indian Basin Zone and there is a second carbonate developed below this Indian Basin-Cisco Zone that is charged with water. This carbonate is present throughout the Indian Basin Field and is wet throughout the Indian Basin Field, and it is the current belief that it was the communication of the water from this lower zone that kept that Gulf

well from being a commercial producer.

Q. Now, did you explain to the Commission whether or not you felt your 660-foot location had any greater advantage over the offset wells than the 990?

A. I feel that the 660 location will have no greater advantage to the offset wells over the 990 location, due to the excellent permeability of the dolomite in this Indian Basin-Cisco Zone.

The only difference would be to the amount of risk to the operator of establishing a commercial well.

MR. LOSEE: I move the introduction of Exhibits -- I'm sorry.

Q. Were Exhibits One through Four prepared by you or under your direction and supervision?

A. Yes, they were.

MR. LOSEE: I move the introduction of Exhibits One through Four.

MR. RAMEY: These Exhibits One through Four will be admitted.

MR. LOSEE: That's all my direct examination.

MR. RAMEY: Any questions of the witness? Mr. Carr?

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Lattu, you talked about the possibility of a build-up in Sections 23 and 24, is that correct?

A. Yes.

Q. Is it also in your opinion possible that that build-up does not exist?

A. Well, I believe it exists is why we want to drill the well.

Q. Would drilling a well confirm this, the existance of such a build-up?

A. Yes, I believe it will.

Q. If when you drill this well, you in fact did not encounter such a build-up, wouldn't this radically affect your estimates of the productive acres in Section 23?

A. Oh, yes, it would. I mean we could even end up with a dry hole there.

MR. RAMEY: Mr. Carr, could you speak up, please?

Q. Mr. Lattu, looking at your Exhibit Number Two, you've shaded in blue Section 23, and am I correct in assuming the area that is shaded in blue is what you consider to be productive acreage?

A. I believe that's -- it's 125-foot Isopach that I shaded in blue, and I believe that this is a conservative interpretation of the acreage that would contribute gas by the drainage of the limestone through a dolomite straw

that I gave in my other testimony, so this would be acreage that would contribute to a gas well, though you could drill a well in it and encounter a very thin section of dolomite and not be able to drain it adequately to make a commercial well.

Q. When I look at the Texas Oil and Gas Well No.-- well in the north half of Section 23, it appears to me that you interpret the productive acreage as coming virtually right down to that well, is that correct?

A. Yes, that's correct. There is porosity in the limestone in that well. There is just no dolomite had been recorded.

Q. Now, Mr. Lattu, was any gas encountered in the drill stem tests of the dry holes in Section 23?

A. I'll have to check the scout tickets.

The Monsanto well reported 90 foot of mud with no shows.

The Texas Oil and Gas Lowe Federal through that zone recovered 40 feet of mud. Again no shows were reported.

Q. Mr. Lattu, what made you think that the dolomite comes right down to the Texas Oil and Gas well in Section 23, and doesn't it terminate somewhat north of there?

A. Well, it could even be -- dolomitization isn't a uniform process, as you can see from the Hanagan well with

only 92 feet of section, it encountered some dolomite. Dolomite is developed by fluids passing through the limestone. Now, there could even be dolomite in those wells in three, four, five, or six inch stringers, say, that wouldn't be detected in the samples while drilling, and therefore, with such small stringers, it's like trying to draw through a pinched straw. I mean the straw is there but it's too thin to really produce commercially.

Q. In your opinion there might be dolomite south of that well, in the acreage south of that well?

A. I believe that could be possible.

Q. On the other hand, there could be substantial acreage north of it that there could not?

A. It's difficult to say just where it is and isn't. Based on the control you can say that right where that well is, that it isn't there.

Q. So you really don't know?

A. I don't know precisely, that's correct.

Q. Now, you state that the wells to the north are draining the acreage to the south. Exactly what data are you relying on in reaching this conclusion?

A. I've been using the Dwight's Oil and Gas Reports, published by.

Q. And what data there? Production history?

A. Yes, that's a gas production history.

Q. Do you have any well north of Section 23 that seems to be performing in a fashion different than any other well in the reservoir and that therefore gave you some basis for this conclusion?

A. I don't understand what you're asking.

Q. What well -- what production history exactly are you referring to that made you think that you're experiencing this drainage of Section 23?

A. I've based this on bottom hole pressures as encountered by the Hanagan well, the Texas Oil and Gas. The productive wells that were drilled on the south edge of the field generally found pressures that were very close to the Indian Basin bottom hole pressures at the time the well was drilled. Now, this shows a permeability throughout the interval and that the acreage to the south is being drained by the wells to the north.

Now I can read over them, if you'd like.

A. I don't think that's necessary.

Mr. Lattu, if you owned acreage in the Indian Basin Pool, would you rather have an offset drained -- drilled 990 feet from your boundary or 660 feet, or wouldn't you care?

A. Oh, I'm not in that position so I haven't really thought about it.

Q. Well, would you think about it?

A. Well, the 660 location is 5000 feet away from the nearest two wells that are producing gas.

Q. My question really was, if you have a well being drilled on an offsetting piece of property --

A. Uh-huh.

Q. -- would you rather have them drill 990 from the lease line or 660 from the lease line?

A. I believe only 300 feet wouldn't really make any difference, so I wouldn't have any preference.

MR. CARR: I have no further questions of Mr. Lattu.

MR. RAMEY: Mr. Buell?

MR. BUELL: Mr. Ramey, I have one or two and I'll try not to repeat anything that Mr. Carr has.

CROSS EXAMINATION

BY MR. BUELL:

Q. Mr. Lattu, at the outset, would you tell me what your relationship is with the Harvey Yates Company?

A. I'm an employed geologist by the company.

Q. And what is your area of responsibility both from the standpoint of geography and as far as initiating recommendations to drill wells?

A. Exploration geologist, I deal with prospects from Kansas all the way down --

Q. And did you do the exploration geology that resulted in the recommendation for this well to be drilled by your company?

A. This was a submittal they took from Aaron Giebel. Aaron Giebel owns the Section 25 and 24. He got a farmout from Holley Energy for Section 23. Now, this was a deal submitted by Giebel with the recommendation of drilling a well in Section 23.

I examined the geology and did some of my own based on my own experience in the area and recommended that Harvey Yates Company take the deal and drill the well.

Q. Let me ask you this. This gentleman's name you mentioned, Giebel, or something like that, is that the reason you've got two other sections other than 23 outlined in red on your exhibits?

A. Those are -- yes, those are his sections that are contained in the proposed deal we took from Giebel.

Q. All right, sir, and your study of this proposal that ended up in your recommendation to your company to drill the well, what did that study encompass?

A. Examined the geology as done by AAron Giebel's geologist. I made one -- a map of my own by going to the subsurface library and pulling logs.

Q. I don't want to nitpick with you or anything, but generally speaking was the Giebel map you looked at and

the map that you prepared similar to the ones that we're seeing here today?

A. Yes, they're essentially similar. There are some differences between them.

Q. All right, sir, and making your study that ended up with your recommendation to drill the well to concur with the other recommendation to drill the well, what did you anticipate well costs would be for a well in this northeast corner of Section 23?

A. All right, Aaron Giebel prepared an AFE with estimated well costs of a completed well being $356,000, or slightly over that, say $357,000. It's probably gone up since we first got this AFE, since drilling costs have gone up.

Q. Do you disagree or do you agree with that well cost?

A. It looked all right to me. I don't get into those too much. We had an engineer employed by the company and he goes over these.

Q. I see. All right, sir, in preparing to make your recommendation to your company, did you attempt to make a reserve determination of the remaining reserves under Section 23?

A. Yes, I did.

Q. Do you recall what that was and if your at-

torney doesn't mind, I'd like you to state it for the record, please?

A. You don't have any objection?

MR. LOSEE: No, not now.

A. The estimated gas in place for Section 23 was -- I gave it approximately 5 Bcf.

Q. All right, that's gas in place, and I asked you for remaining reserves.

A. Well, that depends on the allowable assigned. In other words, if -- I felt that the well there could probably produce up to 5 B's if it was given 100 percent allowable, and --

Q. Well, now, you anticipated a penalty, didn't you, when you saw those two dry holes staring you in the face.

A. Yes, yes, we did.

Q. All right. What did you tell your company they were looking at in the way of recoverable reserves?

A. Well, I -- most of my recommendation is based on the science of the prospect and the validity of interpretation and George Yates, who was essentially acting exploration manager then, does the economic analysis based on reserves and well costs.

Q. All right, sir. In determining those 5 Bcf remaining gas in place, were you looking at everything above

125 foot contour that we're looking at here today on your Exhibit, what was it, Two?

A. Exhibit Two. Yes, it was based on that and also based on production history of the two other wells also drilled on the south edge of this field in unorthodox locations, and of course, the known penalty that they had, I'm sure George took into account when he worked his economics of the prospect.

Q. Well, we've left George. We're dealing with you now, Mr. Lattu. What did you look at when you determined your 5 Bcf of remaining gas in place under the northern portion of Section 23?

A. I looked principally at my Isopach map and at the productive history of the two wells in Sections 21 and 22.

Q. What does the productive history of the two wells out of Section 23 have to do with remaining gas in place under 23?

A. Well, the two wells in 23 are so far both dry holes.

Q. I'm getting a little confused, Mr. Lattu, and it's pretty easy for me, but I thought you said you were a scientist and you just looked at the reservoir rock and you left the practicalities to George.

A. That's not entirely true. You asked me about

the two wells in Section 23 and how they affected the reserves and I said they were both dry holes and therefore I took that into account.

Q. Well, now, what I'm trying to find out is where under Section 23 did you make your scientific determination that there was 5 Bcf of remaining gas in place.

A. I anticipated the validity of the Isopach map, anticipate encountering porous dolomite, which until the well is drilled you really don't know will happen, and based my reserve estimates on the productive history of the two other wells to the west in Sections 21 and 22, which are also on the south fringe, and I anticipate we will probably --

Q. All right, sir, looking at your Exhibit Two, which is your Isopach map, where did you look in the northern half of Section 23 to I believe you used the word "anticipate" porosity?

A. Well, there's porosity in both those wells. It's permeability that you need to make a commercial gas well.

The reason we request the unorthodox location is to penetrate as thick a section of the Cisco-Indian Basin Zone as possible to minimize the risk of not encountering a sufficient thickness of dolomite to make a commercial well.

Q. I believe I see now, your 5 Bcf, you included gas that's in the limestone.

A. Yes, that's correct.

Q. Did you make any attempt to determine the remaining gas in place only in dolomite?

A. No, I think that would be rather difficult to do. The dolomite drains the limestone. It's, like I say, it's the straw and the limestone can't contribute gas without it.

Q. Yes, sir, I remember that testimony, and you made no attempt to determine where you had dolomite under the northern portion of Section 23. You just looked at the limestone.

A. Yeah, I looked at the overall interval, that is correct.

Q. The majority of which was limestone.

A. In Section 23 there are two wells both there; both have limestone, yes.

Q. Did you see any dolomitization or dolomite at all from any data you have on Section 23?

A. No, I do not.

Q. Would have been pretty hard even for an expert geologist to determine the remaining gas in place in the dolomite under Section 23.

A. Well, that's why I didn't make any estimate on the dolomite.

Q. Mr. Lattu, have you ever seen two dry holes

that were any more dry than the two wells in Section 23?

A. A dry hole is a dry hole.

Q. They didn't give up nothing, did they?

A. No, they did not.

Q. All right, sir, let me ask you this. How do you know there is gas in place in the porous but impermeable limestone?

A. Well, that's based on log analysis of the limestone. It will have a porosity and low water saturation but without permeability, of course, it can't deliver whatever is in the porosity. The low water saturation causes me to interpret that it's filled with gas.

Q. So you say it's porous; we've got porosity there; we've got pore space. The data don't show me that it's filled with water. It must be filled with something, so it's got to be gas.

A. That's exploration interpretation, yes.

Q. Have any cores been taken, or anything, that let's you smell that limestone, or see if you could drill a hole in it and any gas would come out to determine that it was ever bearing of gas?

A. Not in these two particular wells. I mean cores were taken in the Indian Basin Zone up in the field.

Q. All right, sir. You mentioned your theory a moment ago that these dolomite stringers or fingers -- if

I use the wrong nomenclature, you correct me -- serve as a straw to produce the gas out of the limestone.

A. Yes.

Q. And they can serve as a straw because they have permeability in the limestone.

A. That's correct.

Q. What, in your opinion, has the most permeability, a dolomite stringer or the five or seven inch hole in a wellbore?

A. The wellbore would have considerably more permeability.

Q. If these limestones that are porous and impermeable in your expert opinion contain gas won't give up gas to a wellbore that has infinite permeability, how are they going to give it up to a dolomite stringer?

A. Well, this is going back to why I talked about the dolomite fingers penetrate all the limestone. Your wellbore penetrates the limestone only at the wellbore. Therefore once the gas that is in that porosity is broken up and lost through the drill bit, the limestone won't give up any more to the wellbore.

Q. If it won't give it up to the wellbore, how is it going to give it up to the much less permeable dolomite stringers?

A. Well, the dolomite stringers penetrate con-

siderable much in a larger area of this lime than the wellbore. In other words, the wellbore just goes through the lime one time in one place. These things reach out and finger throughout the lime. They --

Q. They -- excuse me, go ahead.

A. There can be portions of the limestone where the porosity varies considerably. The Cone Butte Well I know is a good example, shows very good porosity; of course, it's below the water so it wasn't tested, but that well may well have been an example of a well that had all limestone and could have delivered something.

Q. In your opinion, if we'd find a dolomite stringer in the northern half of Section 23 that fingered into this limestone that you just described, much greater than the vertical wellbore, but yet it wasn't connected to the dolomite to the north, the massive dolomite to the north, in your opinion could it be enough of a straw from the limestone to sustain commercial production?

A. It would for awhile, I'm sure, but again it would depend on how much dolomite and the porosity there. This is part of the risk, of course, of the oil business in drilling, that you don't know what you'll find until you drill and see.

Q. All right, sir, what evidence to you have to present here today, other than that you've already presented,

that shows you that you have dolomite east and southeast of the Texas Oil and Gas dry hole?

A. Well, I've presented all the evidence I have; essentially the Exhibit Four, the cross section, and Exhibit Two, the Isopach of the Cisco-Indian Basin Zone, where the thicker the section the greater possibility you have of encountering the dolomite. Again, it's not a uniform thing.

I can go back to the Hanagan well with only 92 feet of section, which did have dolomite, so there's not just one number or formula you can apply along the fringe edge of this that will tell you just how much dolomite, or how productive the well will be.

Q. You really have no specific data on the north half of Section 23, do you, Mr. Lattu?

A. No more specific than what I've already presented.

Q. The only specific data you have in Section 23 are what you and I agreed were as dry holes -- were as dry dry holes as we'll ever see.

A. Well, there are two dry holes in Section 23.

Q. All right, sir. I'm going to touch on a question that Mr. Carr asked you, because I really didn't understand your explanation.

Tell me what data you have that tells you as a professional geologist that through the 125 foot contour,

north of it is productive and south of it is not productive.

A. I feel that's a conservative estimate of the acreage and the thickness of section that will contribute gas. The dolomite is not developed uniformly, as shown by the wells on the south fringe, and because there was no gas recovered from the well in the north half of Section 23, I felt the 125 foot contour to be a conservative estimate.

Now there could be sections of Section 23 in which you have thinner than the 125 foot that could possibly have dolomite, but you don't know where it is. That's why we want to drill the unorthodox location, to minimize our risk of not encountering the dolomite.

Q. It could possibly, you said; most anything's possible, isn't it?

Let me ask you this. In all of your geological experience have you ever seen any contour line like your 125 foot contour line that goes through that dry, dry Texas Oil and Gas dry hole, that one foot down from that 125 foot contour it was dry; there was no commercial production; one foot above it there was gas that could be produced?

A. I don't know that you can say one foot either way. I have seen wells that were very close to very dry holes that made very good wells. Our own experience in drilling in New Mexico has done that --

Q. Yes, sir.

A. -- in the Strawn section.

Q. The truth of the matter is that there's not anybody in this room or anybody in New Mexico or anybody in the world that knows where there is acreage that will contribute gas to a well in the north half of 23, where that acreage is north of that dry hole, isn't that correct?

A. That would be correct in the sense no one knows for sure. I think -- I feel confident that geologic estimates will be at least correct over the long run.

Q. Thank you, Mr. Lattu.

MR. BUELL: That's all I have, Mr. Ramey.

MR. RAMEY: Any other questions of the witness? Mr. Carr?

RECROSS EXAMINATION

BY MR. CARR:

Q. Just one simple question; you may have answered this.

Do you have -- could you tell us what was the percentage of porosity in the two dry holes that were drilled in this Section 23?

A. I only gave what was in excess of two percent, which is generally considered the productive limit in the Indian Basin-Cisco Zone.

Q. Do you have any more precise figures than that?

A. Well, I have the Monsanto Ralph Lowe Estate had eleven foot in excess of two percent, and the Texas Oil and Gas Lowe Federal had seven feet in excess of two percent.

MR. CARR: I have no further questions.

MR. RAMEY: Mr. Stamets?

CROSS EXAMINATION

BY MR. STAMETS:

Q. You've talked about excellent porosity and I presume that excellent porosity would be in the dolomite in your wells two and three on the cross section, is that correct?

A. Our wells two and three on the cross section are both commercial wells. I believe I was probably referring to permeability.

Q. You didn't use the term excellent porosity? Well, be that as it may, let's presume that you did say excellent --

A. Okay.

Q. -- permeability. Are you talking about porosity of two and a half percent or better? It seems to me that I've seen many, many logs in the Indian Basin where porosity is like five percent. Does that pretty well square

with what you've observed in the Indian Basin Pool?

A. Well, some of the Indian Basin wells, of course, have porosity much higher than even five percent. Two percent has been the cutoff, at least as far as what would be contributing porosity in the Indian Basin.

Q. Is two percent good porosity?

A. Greater than two percent in the Indian Basin Pool is considered to be good porosity. It varies, of course, from unit to unit but --

Q. But if you're just talking about porosity in general, is two and a half percent good porosity?

A. No, not as porosity in general. The experience in the Indian Basin Pool, though, has been porosity greater than two percent is significant or contributing porosity. This can vary, you know, with different reservoirs and different areas.

Q. Okay. Now, is the factor that contributes most to production in the Indian Basin Pool the permeability in this dolomite or -- talking about inter-crystalline permeability -- or is it primarily through vugs and fractures in the formation?

A. The producability you're asking about is done by the permeability of the dolomite. In other words, it's capability to deliver gas to the wellbore.

Q. Okay, so vugs and fractures are not a factor

in the Indian Basin production?

A. Well, they're a factor, but not in a sense of the producability of the wells. It's how much gas you can deliver to the wellbore itself that's the significant factor. There are certainly vugs and fractures through there.

Q. But they're not a significant factor in the producability of the wells in the Indian Basin?

A. No, you need the permeability.

Q. All right.

A. These -- they're all inter-related. I mean you can't -- you can't say one of them isn't significant. Certainly the connection of vugs through fractures or through leeching of fluids, that was both part of the dolomitization process and the fluids when it was a bank in its early depositional history. They're all inter-related, but the permeability is what you need.

Q. Yeah, it was my understanding that vugs and fracs in the Indian Basin Pool was the primary contributor to the high rates of production on these wells and the good communication between wells, but this is not your understanding, is that correct?

A. Well, like I say, they're related. The vugs are connected by permeability. The vug itself is just an empty chamber or chamber of gas in this case.

Q. Right.

A. But it needs the permeability to do it, and of course, the size of them and the --

Q. Well, but you haven't answered my question.

A. Well, I've tried to in the sense that --

Q. Well, but let me ask it --

A. Okay.

Q. Just yes or no. Are -- then is the vugular nature of the formation, the fractured nature of the formation, in the Indian Basin Pool, the primary cause for good permeability, good production characteristics, and good communication between wells?

A. I think they're both related. I just -- I couldn't --

Q. So your answer is no?

A. Well, that's not really correct.

Q. Then your answer is yes?

A. They're related. The permeability is affected by this, yes.

Q. Can you answer the question yes or no?

A. It's -- it's a hard one to say yes and no. I would say it's essentially yes, that your -- your statement is essentially correct.

Q. Okay. Very good. Thank you. I appreciate that. Then to go on to the next question, if vugs and fracs

are a prime consideration in production in this pool, can you read vugs and fracs off the logs?

A. To some extent you get indications of vuginess and fractures are present by looking at logs, but it's only an indication. You can't actually see them.

Q. Can you do it in every well?

A. It varies.

Q. Can you have vugs and fracs without reading them on the logs?

A. Yes, you can.

Q. Okay. So if you have this situation could you encounter a well just a short distance north of the Texas Oil and Gas Lowe Well that was in a very vuggy zone and a highly fractured zone and one that could communicate over a pretty wide distance with a porous zone?

A. Now, which well, now?

Q. We're going to refer ourselves to the Texas Oil and Gas Lowe State Well in Section 23 in the northwest quarter.

A. Okay, Texas Oil and Gas Lowe Federal.

Q. Okay. Now, if you move just north of there a very short distance is it possible that you could encounter a highly vugular, very fractured section in the Indian Basin Pool that would communicate with productive zones over a wide area?

A. It is possible, yes.

Q. Do you think it's likely?

A. I'd say it would be very risky. I mean it's a matter of risk as to the closer you are to it -- I mean it's possible that it could happen but it's --

Q. You're not looking for it?

A. No, I wouldn't. I think the amount of money you'd risk looking for it wouldn't be valid risk.

Q. So you'd expect all of the gas that's produced out of the north half of Section 23 is going to come through the porosity in the dolomite and not through vugs and fracs?

A. Well, through the permeability of the dolomite The dolomite has the vugs and fracs but it's connected by permeability, getting back to your other question there. They affect each other; you can't ignore them.

MR. STAMETS: No more questions.

MR. RAMEY: Any other questions of the witness?

MR. LOSEE: I have no further questions, Mr. Ramey.

MR. RAMEY: The witness may be excused and we'll have about a fifteen minute recess.

(Thereupon a recess was taken.)

MR. RAMEY: The hearing will come to order.

Mr. Losee, would you -- are you through or --

MR. LOSEE: Yes, sir, Mr. Ramey, that's all of our direct testimony at this point. We may have some on redirect.

MR. RAMEY: Mr. Buell?

MR. BUELL: Mr. Ramey, I'd like to call as our first witness, Mr. Loomis.

EDWARD C. LOOMIS

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. BUELL:

Q. Mr. Loomis, state your complete name, by whom you're employed and in what capacity and in what location, please.

A. My name is Edward Loomis. I am employed as a petroleum geologist by Amoco Production Company in Houston, Texas.

Q. What is your educational background in the field of geology?

A. I have a Bachelor of Science degree from Furman University in South Carolina. I graduated in 1975. I'm presently a candidate for Master of Science degree from

Southern Illinois University.

Q. Have you done any publishing in the geological field?

A. Yes, I have. I have a number of articles published by the Geologic Society of America. The research was funded by the National Science Foundation and by private industry.

Q. How long have you been with Amoco Production Company?

A. One year.

Q. How long have you been doing geological work in southeast New Mexico?

A. One year.

Q. In connection with this hearing here today let me ask you this. Have you made any study of the Indian Basin Gas Pool with particular emphasis around Section 23, our area of interest here today?

A. I have.

MR. BUELL: Any questions as to his qualifications, Mr. Ramey?

MR. RAMEY: No, we consider the witness qualified, Mr. Buell.

MR. BUELL: Thank you, sir.

Q. (Mr. Buell continuing.) Turn your attention first, if you would, to what has been identified as our Ex-

hibit DN-1. What is that exhibit?

A. Okay, Exhibit DN-1 is a structure map on the top of the Cisco potential pay interval. It shows most of the structure concerns Township 22, Range 23; some in Township 22, Range 24. It shows that the structure is high to the northwest and low to the southeast.

Q. All right, sir, how have you identified the immediate or the nearby producing wells, the wells that produce from the Indian Basin Gas Pool?

A. Okay, producers are marked with yellow and the dry holes are marked with conventional dry hole symbols.

Q. Kind of in black?

A. Yes, sir.

Q. And how have you shown your approximate location of Harvey Yates Company's proposed unorthodox well?

A. With an orange dot.

Q. All right, sir, looking at that structure map, how would you predict that a well in the northeast corner of Section 23 would come in structurally with, say, regard to the Amoco well in Section 13?

A. A well in Section 23 drilled at the -- either of the proposed locations, would be structurally higher than almost all of the area in Section 23, and specifically higher than Amoco's well in Section 13. I'm sorry.

Q. All right, sir, do you have any other comments

on the Exhibit Number One?

A. No, I don't.

Q. Turn then, if you would, to what has been identified as Amoco's Exhibit DN-2. What is that exhibit?

A. This is an isopachous map made of the Cisco potential pay interval in Township 22, Range 23.

Q. But this is the same base map as our Exhibit One, is it not?

A. That's correct.

Q. What are your contour intervals in this isopachous?

A. This would be 100 foot contour intervals. The producers are marked in yellow again and the dry holes are marked with conventional dry hole symbols.

The prospective drilling location is marked with an orange dot.

Q. In the northeast corner of Section 23?

A. That's correct.

Q. All right, sir, what is the significance of the line generally going -- starting on the west and running east/northeast? What is the significance of that?

A. This is where I interpret the extent of the reservoir in the Indian Basin Field, the southern extent. North of this line I would expect to find production from the Cisco interval; south of this line I would expect to find a

nonproductive interval.

Q. Mr. Loomis, let me ask you the same question I asked Mr. Lattu, and I was speaking with regard to the two wells, the two wells in Section 23, in your opinion are those as dry dry holes as you've ever seen?

A. Yes, they are.

Q. All right, sir, let me ask you this. I see you have your productive limits line falling a little north of the Texas Oil and Gas dry hole?

A. That's correct.

Q. Do you feel that that's the proper position for it to be in view of the fact that the Texas Oil and Gas Well is just as dry as any well you've ever seen?

A. Well, that's the most liberal interpretation I could give it. From the reports that I've read and from the work that I've done in the Indian Basin Field, apparently the production is from not only the dolomite but the vugs and the fractures, specifically the fractures within the dolomitic zone.

So I've extended this line as far into Section 23 and into Section 22 and 21 as I can possibly make it.

Q. All right, let me ask you this. If there should be some isolated dolomite stringers south of this line, in your opinion would they contribute any gas to the production from a well located in the northeast corner of

Section 23?

A. No, there would not.

Q. Do you have anything else you'd care to add to Amoco's Exhibit DN-2?

A. No, I don't.

Q. Do you have anything else you'd care to add at all?

A. No, sir.

MR. BUELL: May it please, Mr. Ramey, that's all we have by way of direct, and I would like to formally offer our Exhibits One and Two, inclusive.

MR. RAMEY: These exhibits were prepared by you, Mr. Loomis?

A. Yes, sir.

MR. RAMEY: They will be admitted.

Any questions of the witness?

MR. LOSEE: Yes, sir, Mr. Ramey.

MR. RAMEY: Mr. Losee.

CROSS EXAMINATION

BY MR. LOSEE:

Q. Mr. Loomis, referring to your Exhibit Number One, do you have the datum at which the top of the Cisco interval occurred on the Southwest Natural Gas well in Section 21; I notice it's not colored in as a producer.

A. That's correct. There are two producers left off of this map. This is a drafting error.

Section 21 in the northeast corner there's a producer left off and in the northwest corner of Section 22 there's a producer left off there.

There are some other wells left off the diagram as well. I didn't specifically design to leave those particular wells off.

Q. Now those are both producers, Southwest Natural Gas in 21 and Texas Oil and Gas in Section 22, are they not?

A. That's correct.

Q. And they're both at, what, 990 locations out of the corner?

A. I don't know. It appears that way from the map.

Q. Now I believe your testimony was that nothing south of this red line would contribute gas.

A. That's my interpretation.

Q. Mr. Loomis, I notice your red line in Section 21 runs almost directly through the Southwest Natural Gas Well that's producing.

A. Well, almost runs through it, but it runs to the south. It's an empirical fit line. There is production from the Cisco Zone in that well, and so I would have to describe that interval north of that line, then, as being

productive.

Q. And your testimony is nothing south of that line is contributing to production in that Southwest Natural Gas well?

A. That's my interpretation.

Q. Do you know what the cumulative production has been on that well at this time?

A. No, I don't. No, sir, I don't.

Q. And then moving over to Section 22, Mr. Loomis, you draw your red line directly through the Texas Oil and Gas well.

A. Well, I'm sorry if on your diagram it's drawn through it. It shouldn't be. It should be to the south, and the diagram that I have it is drawn to the south, and that is my interpretation.

Q. How far south?

A. I don't have a specific number of feet that I can give you. It's an interpretive line and therefore the position of it is, I can't exact the position of it.

Q. And it's your testimony that nothing in Section 22 south of your red line is contributing gas to that Texas Oil and Gas well?

A. Effectively, that's correct.

Q. If I were to tell you that the cumulative production from the Southwest Natural Gas well, which was

completed in 1969, was 6.4 billion cubic feet, would your testimony be the same, that there is nothing south of your red line in Section 21 contributing to the wellbore?

A. That's yes, it would still be the same. In other words, I would not propose to Amoco or anybody else to go ahead and drill south of that line with the hopes of encountering a productive interval.

Q. My question is, is there any -- any acreage south of that line that's contributing gas to the wellbore?

A. Not in my interpretation, there's no effective contribution.

Q. No contribution at all?

A. There's no effective contribution. That's my interpretation.

Q. Well, let's define what you mean by "effective" is that none of that acreage south of that red line contributing any gas to the Southwest Natural Gas well?

A. There's no acreage south of that line that effectively contributes to the production from that well.

Q. Well, now my question is contributes any gas to the well.

MR. BUELL: He's worried about your word "effective".

A. Uh-huh.

MR. BUELL: He's not including that in his

question, so answer the question with that exclusion.

A. Okay. There could be; there could be. There could be productive intervals transgressing that line.

Q. And the same thing is true in Section 22 with respect to the Texas Oil and Gas well?

A. Uh-huh, yes.

Q. The Hanagan well in Section 21, which is south of your line, do you know whether it reported any gas on the drill stem test?

A. Yes, they did report gas.

Q. And in Section 22 the Gulf well south of your red line, did they report any gas on drill stem test?

A. I'm not sure. I believe so, a small amount.

Q. Was the problem with completion of that well water communication?

A. I don't know. I haven't made a study of that particular well.

Q. Now, are you familiar with the pressures that were encountered in this Hanagan well in Section 21?

A. No, I'm not.

Q. Your map, as far as Section 23 is concerned, differs from Mr. Lattu's in that he shows this buildup across Sections 13, 14, the corner of 23 and 24.

MR. BUELL: Which map?

Q. I'm sorry, his Exhibit Two.

MR. BUELL: Did you hear the question?

A. Yes. That's correct.

Q. Is it possible that Mr. Lattu's map is correct and yours is incorrect?

A. There's a slim possibility, yes.

Q. And they're both really interpretive geology?

A. Yes, they are.

MR. LOSEE: I think that's all.

MR. RAMEY: Any other questions of the witness? Mr. Stamets?

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Loomis, I notice you have used a different contour on your Exhibit Number One than Mr. Lattu did on his Exhibit Three.

A. Uh-huh.

Q. I think these two are basically the same information. Does the wider contour interval which you used tend to mask smaller features, such as this little nosing that Mr. Lattu has placed in, say, Sections 14 and the northwest of 23?

MR. BUELL: Which one of Mr. Lattu's exhibits are you referring to?

MR. STAMETS: Exhibit Three.

MR. BUELL: The Isopach?

MR. STAMETS: No, structure.

MR. BUELL: We have it, Mr. Stamets.

A. Not in my interpretation, it doesn't mask it. I found no evidence for that particular feature to be there, and consequently, I selected the contour interval that would best describe my data, and I feel that the 200 foot contour interval here describes it adequately.

Q. Don't you have a change in the rate of slope between -- there's one rate of slope in Section 16, 15, and 22.

A. Uh-huh.

Q. Of 22, 23, and then a different rate of slope from the southeast of 22 on through Sections 23 and 24. Now wouldn't that indicate that there's some sort of a buildup in 22, 23, and 24?

A. This is on the structural --

Q. Yes.

A. Structure map.

Q. A buildup or some sort of a high in 22, 23, 24?

A. Well, it's more or less just a change in slope exactly as you've described it. I don't see any evidence for any buildup or any thickening of the section there or any anomolous structural feature.

Q. Well, now, let's go just a shade north of there.

A. Uh-huh.

Q. What about the change in your 3600 foot contour line as it comes through Section 13? When you compare that line to your 3400 line then that can't show a bit of a buildup in Section 23?

A. Well, I can't see a buildup there, no. I can see a change in slope and that's what I've reflected on the map.

Q. Okay, could that change in slope be the result of a buildup in the formation or is that some sort of a structural change in there?

A. Yeah, it could be. If you'll look at the Isopach map you see that -- well, let's concern ourselves with Section 13.

On the structure map apparently the slope changes and it begins to go deeper at a lot less rate, but on the Isopach map you see that the section actually thins rapidly through that section. It drops off. So the feature could be the function of imagination.

Q. Okay, let's -- let's go to your Exhibit Number Two and compare that with Mr. Lattu's Exhibit -- is it Number One?

MR. BUELL: Number Two.

A. Number Two.

Q. Okay. So we're comparing Two with Two now. Looking at Mr. Lattu's exhibit, it seems much more detailed than yours does, is that correct?

A. Well, he's got more contour lines in there than I do, that's correct.

Q. Okay.

A. His contour interval is 50 feet and mine's 100 feet.

Q. All right. What about the buildup there in Section 15? Mr. Lattu shows a high, closed high, in Section 15 extending over into the section on each side.

A. Uh-huh.

Q. And your exhibit does not show that at all.

A. That's correct.

Q. Do you think that that buildup is not there or that little dome is not there?

A. Well, if you look at the values of the -- of the wells on either side of it to the east or the west, that is, Section 16 and Section 14, Section 15 does have a little thicker section, but I don't see this larger thickening at all.

Q. You don't feel that the thinner section that both of you show in the northwest of Section 16 there is indicating that Mr. Lattu has drawn his map correctly; that

that high is actually in Section 15?

A. I didn't find any evidence of it, no.

Q. Why is -- why is the zone thinner then in Section 16?

A. There's simply less section. Now, my Isopach map is on the potential pay interval. That's what I've correlated from the -- from the north and coming down to the south, and apparently, by looking and by comparing both of these diagrams, they differ on what is potential pay.

Q. Okay. Well, let's go on from that. Apparently, then, what you're saying is that the difference in the two maps is just what you have selected to contour on.

A. That's correct.

Q. Okay. Now, if Mr. Lattu's interpretation is correct, and there is indeed a high or a thick section in Section 24, would that change the position of your orange line on your exhibit Number Two?

A. If the structural high Mr. Lattu has put into Section 24 were in fact to be there, would it change the position of my --

Q. Not just the structural high but the --

A. Isopach.

Q. -- thickness of pay, that he's supposed.

A. Not -- the thickness of potential pay --

MR. BUELL: He can't hear you, Mr. Loomis.

A. It might. It might. I'd have to sit down and take a look at the samples and go over it. It might, though.

Q. These are factors that you would consider if you were working up the geology in the area?

A. Oh, yeah. Yes.

Q. And seeing a high in Section 24 would cause you to examine all the rest of the data to determine if indeed it looked to you like Section 23 would be a good prospect?

A. That's correct.

MR. STAMETS: No other questions.

CROSS EXAMINATION

BY MR. RAMEY:

Q. Mr. Loomis, on these two wells you left out in Section 21 and 22 --

A. Uh-huh.

Q. -- I note that on checking your Exhibit One and the Yates Exhibit Three that your picks are reasonably similar.

A. Okay.

Q. Now what would be the effect of, say, using the Yates top of 3196 for the well in 21 and 3261 for the well in 22, what would the effect be of your contour line there, if you had those?

A. Okay, 3196?

MR. BUELL: 3196.

A. All right.

Q. And 3261.

A. Well, it wouldn't change the 3200 contour interval very much. I would move it -- I would move it probably to the west of the well in the northwest corner of Section 22.

Q. So in this particular area you would have reasonably the same difference between your 3032 and 3400 contours?

A. That's correct, uh-huh.

MR. RAMEY: Any other questions of the witness? He may be excused.

MR. BUELL: I'd like to call Mr. Allen, Mr. Ramey.

J. C. ALLEN

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. BUELL:

Q. Mr. Allen, would you state your complete name, by whom you are employed, in what location and what capacity, please?

A. My name is James C. Allen. I'm employed by Amoco Production Company in Houston, Texas, as a staff engineer.

Q. Mr. Allen, you've testified before this body on many occasions and your qualifications as a petroleum engineer are a matter of public record in their archives, are they not?

A. Yes, sir.

MR. BUELL: Any questions, Mr. Ramey?

MR. RAMEY: No, we consider the witness qualified.

Q. (Mr. Buell continuing.) Mr. Allen, in connection with your testimony here today, look at what has been identified as Amoco DN-3. What is that Exhibit?

A. This exhibit is a portion showing the southern part of the Indian Basin-Upper Penn Field. The producing wells are highlighted by orange dots; the dry holes by conventional dry hole symbols. The two proposed locations by the Applicant by red dots, highlighted by a red arrow.

Q. All right, sir, and I assume the acreage shaded in yellow is Amoco's interest acreage?

A. Yes, sir.

Q. All right, sir. What is the significance of the black line that traverses your exhibit starting over in Section 21 in a west to east to northeast direction?

A. Based upon drill stem data and/or well test data, this is my most optimistic estimate of the productive limits of the reef, although I do not know the exact limit of the reef itself.

Q. All right, sir, I want to ask you the same question I've asked the previous two witnesses with regard to the two dry holes in Section 23.

Have you ever seen any dry holes that were any dryer than those two?

A. No, sir, there's no permeability indicated by drill stem test at all.

Q. All right, sir. And you feel that this is a liberal interpretation from showing the maximum amount of productive acreage that could be found in the north half of the north half of Section 23?

A. Yes, sir, I do.

Q. All right, sir. How much acreage is north of your line in the north half of the north half of Section 23?

A. Approximately 160 acres that could reasonably be considered productive.

Q. All right, sir. I'm going to direct your attention back to Mr. Loomis' Exhibit Number Two and ask you whether or not you have made a calculation to determine the amount of acreage in the north half of the north half of 23

that is north of his productive limit line?

A. That's approximately 100 acres.

Q. Yours is how much now?

A. 160.

Q. And his is 120?

A. His is 100.

Q. 100.

A. Yes.

Q. All right, sir, let me ask you this. Have you made a performance determination of the remaining reserves for the Marathon well located in Section 14 immediately north of this proposed unorthodox location?

A. Yes, sir, I have. The current remaining reserves, based on performance data in Section 13, which is Amoco's HOC, is 2.4 Bcf. In Section 14 it's 17.6 Bcf.

Q. You elaborated on my question by adding Section 13, didn't you?

A. Yes, sir, I did.

Q. All right, what is the total of those two? Since you've already put it in.

A. It's 20 Bcf.

Q. All right, sir. Let me ask you this. If in truth and in fact there is some productive acreage in the north half of the north half of 23, wouldn't those reserves be -- make themselves known on the two remaining reserve

determinations you've made in Section 13 and 14?

A. Yes, sir, I believe they would.

Q. All right, sir, and let me ask you this. Have you made an effort to determine what in your opinion are the remaining reserves in the north half of the north half of 23 as shown by your Exhibit Three?

A. Yes, sir, I have.

Q. What assumption did you make in performing that calculation?

A. Since the structure map indicates that these wells should be on strike with Amoco's HOC Well in Section 13, I've assumed that if in fact the north half of Section 23 is productive, it will encounter a well comparable to Amoco's well in Section 13; therefore I arbitrarily assigned 72 feet of three percent porosity, which is what our well exhibits, to the 160 acres in Section 23.

Q. When you look at that Texas Oil and Gas well immediately to the southwest of their proposed location dry as a bone, do you think your assumptions are fair and reasonable?

A. I think they're more than fair and reasonable, yes, sir.

Q. All right, sir, what did you come up with with remaining reserves, assuming the acreage as shown on your Exhibit Three is productive, and all the other assumptions

you made, what remaining reserves did you come up with for the north half of the north half of 23?

A. The remaining gas in place would be 1.65 Bcf.

Q. 1.65. All right, to find out their share of the remaining reserves you need to put 1.65 Bcf over 20 Bcf, which is what you get for the Amoco well and the Marathon well, is that correct?

A. Yes, sir.

Q. You have a little doubt, did I put it in the wrong way?

A. I wasn't sure of your question for a minute.

Q. All right, sir, what I'm trying to do is to get you to come up with a percent of reserves under the north half of the north half of 23, comparing it with Section 13 and Section 14.

A. That would be 8-1/4 percent of the remaining reserves in those two sections.

Q. So if the Commission wanted to apply a penalty on a reserve basis, they would give this unorthodox location a little over 8 percent of a normal allowable.

A. That's correct.

Q. If your productive acreage determination is correct and they wanted to place the penalty on a productive acreage basis, this well would receive roughly 25 percent allowable?

A. Yes, sir.

Q. You still look quizzical. Am I not --

A. On a straight acreage basis, it would be 25 percent.

Q. All right, sir, what is your recommendation to this body with regards to a penalty for an unorthodox well at this location?

A. I don't think it should be any higher than 25 percent of that of the --

Q. Do you think it should be any more than 8 percent?

A. No, sir.

Q. Do you think the record would support either one of those penalties?

A. Yes, sir, I believe it would.

Q. Do you have anything else you'd care to add at this time?

A. No, sir.

MR. BUELL: Mr. Ramey, may I at this time please offer our third exhibit presented by Mr. Allen?

MR. RAMEY: Yes, Exhibit DN-3 will be acceptable. Any further questions of the witness?

MR. LOSEE: Yes, sir, Mr. Ramey.

CROSS EXAMINATION

BY MR. LOSEE:

Q. Mr. Allen, Mr. Lattu, on his Exhibit Two, portrays a high or a buildup in the Indian Basin-Cisco Zone across Sections 13, 14, 23, and 24.

A. Yes.

Q. If that buildup, in fact, exists would it not move your line drawn on Exhibit Three down to the southeast in Section 23?

A. If that high --

Q. In 24?

A. If that high, in fact, existed?

Q. Yes.

A. Yes, it would shift it some, although we do have a dry hole in Section 19, also, so it still wouldn't shift it more than a few acres.

Q. Well, if --

A. But yes, it would shift it, yes.

Q. And it would actually materially shift it?

A. Yes, sir.

Q. And so if that high is actually there, it would be more than 160 acres productive in Section 23, wouldn't it?

A. That would be somewhat difficult to answer in that I feel that the dry hole in the north half of Section 23 is definitely a zero line for productivity; therefore, that

line in all probability is north of that well. So it would shift it, yes, sir, but to say it would be significantly higher than 160,would be very difficult to say that.

Q. Mr. Allen, how many acres in Section 22 to the north of your line?

A. I didn't calculate it; however, I'd estimate that there would probably be in the order of 200 to 250 acres.

Q. Are you aware that the allowable for that Texas Oil and Gas well in Section 22 is 55 percent?

A. Yes, sir, I am.

Q. Do you think that's a proper allowable for that well?

A. Based on productive acreage I'd have to say it probably should be closer to 25 percent, 30 percent.

Q. How much of Section 21 lies north of your line in acres, approximately?

A. In 21?

Q. Yes, sir.

A. Slightly less than 320 acres; probably in the order of 250, 280. I mean, excuse me, 360; slightly less than 360.

Q. Are you aware --

A. 320, excuse me, right.

Q. -- of the allowable for that Southwest Natural

Gas well is56, whatever, percent?

A. Yes, sir, I am.

Q. Do you think that's a fair allowable?

A. Since the well in the northwest quarter actually flowed gas on drill stem test, I feel it should probably receive an allowable somewhat higher than 23, but probably not 55 percent; somewhat less; or 56.

Q. Do you think the -- or not do you think, I assume from your testimony with respect to recoverable reserves in Amoco and Marathon wells in Sections 13 and 14, you feel that those wells are draining Section 23 in the Cisco?

A. As I testified earlier, I believe if, in fact, 23 had any productive acreage in it, it would be in communication with 13 and 14.

Q. Well, I thought you said that you calculated the production as recoverable reserves of 1.65 Bcf.

A. That is correct, based on the assumption that 160 acres with 70 feet deep pay and 3 percent porosity is in fact there. Assumption basis.

MR. LOSEE: I believe that's all.

MR. RAMEY: Any other questions of the witness? He may be excused.

MR. BUELL: That's all we have by way of direct, Mr. Ramey.

MR. RAMEY: Thank you, Mr. Buell.

Mr. Carr?

AL KOLLAJA

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q. Will you state your full name for the record, please?

A. My name is Al Kollaja.

Q. Would you spell your last name?

A. K-O-L-L-A-J-A.

Q. Mr. Kollaja, by whom are you employed and in what position?

A. I'm a geologist for Marathon Oil Company and I live in Midland.

Q. Have you previously testified before this Commission and had your credentials as a geologist accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the Indian Basin area?

A. Yes, I am.

MR. CARR: Are the witness' qualifications

acceptable?

MR. RAMEY: The witness is qualified.

Q. (Mr. Carr continuing.) I believe, Mr. Kollaja, to start it would be -- facilitate our testimony if you would provide some general data on the Indian Basin-Canyon reef.

A. Yes. I made two maps and a cross section to illustrate the entire field and I felt it was in keeping with this hearing.

The Indian Basin is a part of a major Canyon shelf edge carbonate development which developed along the margin of the Delaware Basin in the Middle Pennsylvanian time.

This major part of the shelf edge entered from the north and passed through the Township 21 South and Range 23 East, and into the northern -- northwestern part of Township 22 South, Range 23 East, and continued to the southwest.

Because of a prominent underlying deep structure in Township 21 South, Range 24 East, and north part of Township 22 South, Range 24 East, the reef built out basinward and consequently the productive Indian Basin was extended over what was known as the Indian Hills area; however, in the area of, and in Section 23, Township 22 South, 23 East, there is no evidence of a deep underlying structure and

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therefore it is unreasonable to expect any buildup away from the main body of the shelf edge, or as we are now calling the reef.

The main body of the reef was filamentized and turned into a limestone shelfward, but also basinward. It is not possible to say whether dolomite turns into a limestone except between wells where the dolomite is present and where it is not present.

In the area of Section 23, 22 South, 23 East, the best that can be assumed is a line drawn equidistant between the wells that have dolomite and wells that do not. This line drawn -- you can see it on one of the exhibits that I will show later, and it passes between the dry holes to the south and of course to productive wells to the north. This line continues eastward and between the wells that were marked that are known by now which have dolomite and which do not. This is essentially the essence of my presentation for the -- for the outline of the Indian Basin Field.

Q. Now, would you direct your attention to the Isopach map which has been marked for identification as Exhibit Number One, and explain to the Commission what it is and what it shows?

Q. Yes. This is an Isopach of the total reef, both limestone and dolomite, and as you will notice, it -- the main body of the reef occurs on the eastern -- or excuse me,

the western part of the map, which includes Township 21 South, 24 East, and Of course, the western part of 22 South, 23 East, but there is also the pullout that I've mentioned before in the Indian Hills area, which is in 21 South, 24 East, and somewhat in the 22 South, 22 -- excuse me, 24 East.

The buildup continues somewhat eastward from that position; however, I don't think that would be of any significance insofar as the field is concerned. It both -- it dips off rather abruptly, dips off -- excuse me, thins abruptly to the southeast, as well as on the north end it dips off and thins in a northeasterly direction.

I think that simply defines somewhat the limits of the total thickness of the -- of the Indian Basin or the Cisco Reef.

Q. Now, your Isopach is contoured on 50-foot intervals, is that correct?

A. That is correct.

Q. Did your research indicate any buildup in Section 15?

A. In 22, 23, Section --

Q. Yes.

A. -- 15? No.

Q. Did you likewise encounter any sort of a build-up in Sections 23 and 24?

A. No.

Q. Did you encounter any evidence that would suggest to you a change in strike from the general east/west trend to a northwest/southeast strike in Sections 23 and 24?

A. No. Sections 23 and 24, no.

Q. And how would you compare the conclusions you have reached with those that were reached by Mr. Loomis for Amoco?

A. I think essentially we agree on the contouring of the general outline of our maps.

Q. Now I would like to direct your attention to what has been marked for identification as Number Two, which is your structure map, and ask you to explain to the Commission what it shows.

A. This map essentially shows the total outline of the field. It was contoured on top of the Cisco Canyon-Indian Basin Reef, and also shows the total limits of the field. It is defined on the west side by a fault and, of course, to the northeast -- excuse me, northwest, it changes from dolomite to limestone and therefore becomes ineffective as far as any entrapment, and, of course, to the east it is water-bearing and consequently not productive there.

To the south there is a change from dolomite to limestone and that cuts off the production.

Q. Looking at the line you've drawn on Exhibit Number Two, showing that the dolomite/limestone cutoff, and

then taking that line as it applies in Section 23, how many productive acres would you estimate are there in Section 23?

A. Well, to be generous, I think I would say maybe, oh, 40 acres. I have not actually measured it, but --

Q. You said that would be 40 acres?

A. At the most. I think that would probably be the maximum.

Q. Would you speak up, please?

A. Possibly as much as 40 acres and perhaps that would be generous.

Q. So that is not a conservative estimate in your opinion?

A. No, that's a very liberal estimate.

Q. Now I'd like for you to refer to what has been marked for identification as Exhibit Number Three, which is your cross section, and explain to the Commission what this shows.

A. The cross section -- sorry for the size of it. I apologize for the length of it; however, I felt it was necessary to show the extent of that reef. You will note that these -- that the legend shows the trace of the cross section, which starts with the Hanagan well and ends with the Superior Cone Butte, and the wells do go through the two key wells in Section 23. In this case those wells are No. 5 and 6, and it shows a total thickness of the -- of the

reef.

One of the interesting points on this cross section, of course, that was primarily the reason why this cross section was built, to show that the tapering or the thinning of the reef into the -- into somewhat of a basinal position. It shows how it gently thins.

The point of that was to show that there will be some minor thinning as you leave the reef; as the reef, from the point of the reef basinward, you will continue having some limestone of the reef. Now, if maps were contoured on that with very closed contour intervals, like 10, 20, 25 feet, it would certainly show pullouts, but it would be -- I don't think it would be in keeping with good geology to maintain a close -- such close contour intervals; therefore, a 50 or 100 feet better illustrates the outline of the reef, and this is essentially why the cross section was made.

Q. In your opinion would granting the application of Harvey Yates in this case, without imposing a severe penalty, impair the correlative rights of other interest owners in the Indian Basin?

A. Yes.

Q. Do you have anything further you'd like to add to your testimony?

A. No, I don't.

Q. Were Exhibits One through Three prepared either by you or under your direction and supervision?

A. Yes, they were prepared by me.

MR. CARR: May it please the Commission, we would offer into evidence Exhibits One through Three.

MR. RAMEY: Exhibits One through Three will be admitted.

MR. CARR: That's all I have on direct.

MR. RAMEY: Any questions of the witness?

MR. LOSEE: Yes.

MR. RAMEY: Mr. Losee.

CROSS EXAMINATION

BY MR. LOSEE:

Q. Mr. Kollaja, does your Exhibit One, which is your Isopach, total reef, show some buildup in Sections 21 and 22 in the southern end of the field? Township 22 South, Range 23 East?

A. No, I don't think it does.

Q. When your contours drop down to the southeast with a larger interval in both of those sections, which from a layman's standpoint looks like a buildup to me, are you telling me that's not a buildup?

A. No, sir, I don't think that's a buildup. I think that's a gentle change in slope and because of the

abrupt change earlier, up closer to the reef, as you come off the reef, then you have a very, rather gentle slope that gently thins basinward, and therefore, I would assume if it were taken any further, that spread in contour would get wider and wider.

Q. From looking at your Exhibit One, in Section 21, do you have an opinion from that exhibit as to how many acres are productive in that section and contribute gas to the Southwest Natural Gas well?

A. No, no, sir, I don't. I feel like that's more or less an engineering problem and I don't feel like I could say how much gas in contributed to that.

Q. How many acres are? No, my question is how many acres within that section are contributing gas to that well.

A. I don't know. In Section 21, is that what you're asking?

Q. Yes, in Section 21.

A. I don't know. I don't know how much gas -- I mean how many acres would be -- would contribute to that production on that well.

Q. All right, in Section 23 did I understand you to -- how many acres you said Section 23 would contribute gas to a well at the unorthodox location?

A. Yes, I did say approximately -- possibly as

much as 40 acres to be deliverable, right.

Q. How do you arrive at that opinion as to number of productive acres in Section 23 when you are not able to offer an opinion on the productive acres in Section 21?

A. Because the Hanagan well did have dolomite and it does not provide information. It is -- this line is at dolomite limestone and for whatever reason that well had dolomite and is nonproductive.

Q. All right, let's look at Section 22, which has the Texas Oil and Gas producer in the northeast -- northwest corner. Do you know how many acres from looking at either of your Exhibits One and Two are productive?

A. Well, I didn't measure the amount; however, I would say that it's possibly 100, 200 acres; maybe approximately 200 acres, maybe.

Q. Did you have an opinion for the Commission as to the allowable which ought to be assigned if the unorthodox location of Harvey Yates Company is approved in Section 23? Did you have a recommendation?

A. No.

Q. Turning to Section 22 and really looking at your Exhibit Two, at your line that runs across 21, 22, and barely across 23, is that where the dolomite disappears?

A. Sir, I may -- I may explain, that if you connect all of the wells that have dolomite, which includes the

two producing wells in 21 and 22 and then the Marathon well and the PanAm and the well in Section 17, well, 18 and 17, then draw a line between the Superior well in 19 and 23 and 22, the dry holes, I mean, and draw those two lines and then take an equidistant position, that is the best that can be had, you cannot say that the dolomite will end at those dry holes and you cannot say the dolomite will end at those that have the dolomite; therefore, an equidistant position is the most likely position that you can assume where the dolomite ends.

Q. In your study of --

A. And this is the line.

Q. This is the line. In your study of this field, did you examine the logs run on the Gulf well in Section 22 that was plugged and abandoned?

Or did you -- did you examine the logs?

A. I've examined the logs, yes, sir.

Q. Did you examine the sample?

A. No, sir, I did not.

Q. Did you see the analysis of the sample?

A. Yes, I have a sample log on that well.

Q. Did you find any dolomite on that sample?

A. You are speaking of Well No. 2 here?

Q. Yes, in Section 22, the Gulf well.

A. No.

Q. Would your answer be the same if Gulf's report on the well shows 75 feet of dolomite?

A. Well, I'm sure it wouldn't.

Q. Do you know why that well was not completed as a producer?

A. No, sir, I don't. No, I do not know why it was not completed.

Q. If a study of that well reflected that they had a communication problem, that they couldn't shut off the water, would that tend -- and did have, in fact, 75 feet of dolomite, would that tend to move your line, your dolomite/limestone line, to the south in Section 22?

A. Yes, it would, uh-huh.

Q. And would that also tend to move your dolomite/limestone cutoff, or line, in Section 23 to the south to accommodate it?

A. To accommodate it? If that was the case, then again that line would be drawn equidistant between those that do not and those that do.

Q. All right.

MR. LOSEE: That's all.

MR. RAMEY: Any other questions of the witness? Mr. Stamets?

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Kollaja, if -- I hope, maybe, to clear up what we're talking about in these build up and change in slope, I think we're probably talking about the same thing, but it could confuse the record, is a buildup in formation when you encounter more thickness than you would expect?

A. That is correct, yes.

Q. All right. Now, referring back to your Exhibit Number One, if we look at the contour lines in the general vicinity of the well in question here today, between 150 feet and 350 feet --

A. Uh-huh.

Q. -- those are pretty regular, aren't they?

A. Yes, sir, they are.

Q. All right. Now, when we go from 150 to 100 --

A. Yes, sir.

Q. -- that changes.

A. Yes, sir.

Q. There's more distance between the 150 line and the 100 line than between the 150 and 200.

A. Yes, that's correct.

Q. And that represents what you call the change in slope.

A. That's right, yes.

Q. All right, does that also show that we encounter the formation a little thicker here than you would expect?

A. At the 150 foot line is what you're asking?

Q. Well, between 150 and 100.

A. Yes, sir.

Q. Okay, so really we're talking about generally the same thing when we're talking about buildup and change in slope in this area?

A. Yes, sir, that's right, yes.

Q. And as to your limestone/dolomite line, you say you just simply draw that line halfway between wells that have dolomite and wells that don't have dolomite.

A. That's correct.

Q. And could the position of this line be changed by just simply choosing which wells you want to draw the line between?

A. Well, of course, you choose the nearest wells. You can understand that you could pick a well two miles south and it would also not have any dolomite, you wouldn't very well choose that well as also a well without dolomite, see. So you'll have to choose those wells that are close proximity to this change, where you know the change takes place.

Q. Okay. How did you establish the limestone/

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dolomite line that runs through the southwest corner of Section 18? Of 22 South, 24 East?

A. Section 18, well, actually, the nearest well, I think was what you'd call the nearest south well, would be that in Section 17, and then of course the Superior well, and if you divided that distance between those two wells, an equidistance would be a point at which that line, lime/dolomite line, would -- would cross. That is essentially how it was arrived at.

Q. Why didn't you draw the line between that well and the well in Section 13 in the northwest?

A. Section 13? Well, you could draw the line closer to Section 13, that's true, but because there's a well that I felt was further south in 17, I used it as the most southerly well.

Q. But again, if -- if the Commission authorized this well to be drilled in Section 23, and it's drilled in 23, and they get a dolomite section, that's going to change the line. You've simply drawn an estimate on it?

A. Yes, yes, of course.

MR. STAMETS: No further questions.

MR. RAMEY: Any other questions of the witness? He may be excused.

MR. CARR: I have one.

MR. RAMEY: Oh, Mr. Carr.

MR. CARR: One or two.

REDIRECT EXAMINATION

BY MR. CARR:

Q. One concluding question. Does your Exhibit Two in your opinion properly show the dolomite/limestone cutoff line in Section 23?

A. I think so.

MR. CARR: Okay, no further questions.

MR. RAMEY: Any other questions?

RECROSS EXAMINATION

BY MR. LOSEE:

Q. Your map, your Exhibit Two with the dolomite/limestone cutoff, would show that the well proposed by the Harvey Yates Company at either location would be dry, would it not?

A. Yes, sir.

Q. The answer is yes?

That's all.

MR. RAMEY: The witness may be excused.

MR. CARR: We have nothing further.

MR. RAMEY: You have nothing further?

MR. CARR: We have nothing further.

MR. RAMEY: I have one question of Mr. Lattu

on redirect.

ANDREW LATTU

resuming the stand, having been previously sworn, testified as follows, to-wit:

REDIRECT EXAMINATION

BY MR. LOSEE:

Q. Have you examined the sample analysis log prepared by Gulf Oil Corporation on their No. 2 Well drilled in Section 22, Township 22 South, Range 23 East?

A. Yes, I have. There are two sample logs available on this well; one is prepared by a commercial sample laboratory, and the other one I examined was prepared by Gulf, who is the operator of the well, and Gulf reported 75 feet of dolomite in the section of the Cisco Canyon-Indian Basin Reef. And this was also the section that was included in their perforations, and of course they had communication with water from another carbonate below the Cisco Canyon Zone, so it was a dry hole, or at least not a commercial well.

Q. Now, Mr. Lattu, with that knowledge and looking at Marathon's Exhibit Two, would that cause you as a geologist to move the dolomite/limestone line south in Sections 22 and 23 to accommodate that 75 feet of dolomite?

A. Yes, it would.

MR. LOSEE: That's all.

MR. RAMEY: Any questions? Mr. Buell?

RECROSS EXAMINATION

BY MR. BUELL:

Q. Mr. Buell, looking at this Gulf sample log that you just referred to, what percentage of dolomite per foot does that log reveal?

A. The log reveals dolomite as the predominate mineral through -- starting at a depth of 7612 on down to approximately 76 -- well, getting close to 7690; somewhere in there, and varied from 30 to 50 percent.

Q. Could I look at it?

A. Well, it's not -- I don't have Gulf's log with me. This is notes I made.

Q. You don't have the Gulf log with you?

A. No, I do not.

MR. BUELL: That's all, Mr. Ramey.

MR. RAMEY: Any other questions?

I would like to have some additional information. I would like all three of the geologists, Mr. Lattu, Mr. Loomis, and Mr. Kollaja, to furnish me maybe a Xeroxed copy of the pay zones and show how they made their determinations for these isopachous maps on -- oh, I'll just pick

two wells that seem to differ quite a bit, I think the Superior well in Section 19 and perhaps the Gulf well in Section 15.

MR. BUELL: You went a little too fast for me, Mr. Ramey. What was the second well?

MR. RAMEY: The Gulf well in Section 15. That's the one Mr. Lattu picks the buildup on and none of the rest of you have a buildup, and there seems to be quite a difference on the Superior well as to from the Isopachs, and I would request the three geologists to send me a --

MR. BUELL: As I understand your request, you simply want to be shown on the logs the determination foot by foot that they made on that log that went in their total figure of feet of whatever they were mapping on their Isopachs?

MR. RAMEY: Right.

And also, Mr. Lattu, if you would send me what information you have on the Gulf well.

Now, do we have any statements?

MR. LOSEE: Yes, sir.

MR. RAMEY: Yes, Mr. Losee. Mr. Carr?

MR. CARR: Just a very brief statement. I would like to point out that we've been authorized -- Gulf and Ralph Lowe Estate also concur in the statement which I'm about to make.

We simply have a question before the Commission of how many productive acres we have in Section 23, and a question of when the Commission authorizes the drilling of a well with an unorthodox location in this section, how much of a penalty should be imposed.

It appears to us that the burden is on Yates to show the number of productive acres in Section 23, and to do this they have hypothesized a structural high in Sections 23 and 24, and also have given limited consideration to the data which is available from the dry holes which have been drilled in that section.

We would submit to you that correct analysis of the evidence will show that there is little, if any, productive acreage in Section 23; there is not a structural high; that it's been pointed out here today, you can drill and see if there is a high, but we would like to point out that there's already been drilling in Section 23 which shows that there is limited dolomite in the area, therefore, there is limited permeability and the only conclusion that we can reach is there are approximately 40 productive acres in Section 23.

We would like to emphasize that if Yates is not severely penalized in the order authorizing it to drill at an unorthodox location the Commission will be authorizing drainage of adjoining properties and will impair the correla-

tive rights of other interest owners in the Indian Basin Field.

MR. RAMEY: Thank you, Mr. Carr. Mr. Buell?

MR. BUELL: Mr. Ramey, for Amoco, let me briefly say this.

We've been wrestling here today, all morning, with what I think is one of the thorniest and most difficult problems that you all have to face in making a decision, and I can say that with confidence because I have been on both sides.

I have been an applicant for an unorthodox location. I have also opposed an unorthodox location.

Normally, it is difficult for you decision-makers because we're dealing generally with a gray area. Usually, in the area in question we have no data, or will have a well that was not completed, a dry hole, but yet had some show of gas.

Now you all have an easier time of it here in this case. We have two wells in this same section in which the applicant wants to drill, and every witness here today has agreed those were just as bone dry as any well could be.

So I think in that regard you're not dealing here with a gray area; rather you're dealing with what more or less amounts to a white and black area. I think the white

area is that there is very little, if any, productive acreage in the north half of the north half of 23. I appreciate the problem Mr. Lattu had, and I say this sincerely and seriously, I thought he handled the matter of two dry, dry holes as well as any witness I've ever seen.

But even regardless of that, the evidence has compelled you all to mandate a penalty that will be fair. I know you always want to give an applicant the opportunity to drill a well to protect his correlative rights, but you shouldn't let that consideration override your statutory duty to also protect the correlative rights of the offset owners of interest.

I think this case is crystal clear that the only fair penalty would be a 75 percent penalty or a 25 percent allowable.

Now we can look to the west in Sections 21, and 22, where in my opinion the Commission did not set a fair penalty. I think they gave those two wells, those unorthodox wells, away too high an allowable, but let me point this out. Two wrongs shouldn't be used to perpetuate another wrong. I think if you permit this well with any allowable greater than 25 percent it will grossly violate the correlative rights of Marathon and Amoco.

I strongly recommend a penalty of at least 75 percent or an allowable no greater than 25 percent of

allowable.

MR. RAMEY: Thank you, Mr. Buell.

Mr. Losee.

MR. LOSEE: Mr. Ramey, I'd like to first comment on the testimony of Marathon, which I believe on the number of productive acres is 40, and that if we drill a well at either location it will be a dry hole. Under those circumstances the only way to answer it is to let the well be drilled and it should not be of concern to Marathon, if they believe their geology.

Now, the question was asked of Mr. Lattu as to whether if he was an offset operator, such as Marathon and Amoco, would he prefer the well drilled at 660 or 990. And I would ask the question -- or answer the question for Marathon and Amoco that to the extent there's gas in Section 23, they're draining it and they'd just as soon no well was drilled in Section 23.

But that defeats the correlative rights of the owners of that tract in Section 23 to do so.

Now, Amoco, Mr. Allen testified that a fair allowable would be 25 percent. He also testified that a fair allowable for the Texas Oil and Gas well would be 25, when in fact it's 55 percent. He testified that the allowable for the Southwest Natural Gas ought to be slightly more than 25 but not 56-1/4, which is what it is.

And that brings me to partially a legal argument. I realize this is a -- as Mr. Buell says -- this is a tough decision for the Commission. Obviously, the people in 23 are entitled to, if there's gas under there, to get their fair share of it.

The people to the north of them are are entitled to be protected. As a matter of fact, your Rule 104G says you can take such action as will offset an advantage obtained by the unorthodox location.

Now, we don't question the authority of the Commission to establish an allowable formula, or a different allowable formula for different fields, but I do question the authority of the Commission to establish a different allowable formula within the same field, and that was accomplished by the order entered after the hearing before Mr. Nutter. Let me explain.

That formula had two factors built in it, and I'm looking solely at the 990 location. The first factor was the assumed radial drainage and found that at an orthodox location in the north corner of Section 23 this well at 990 feet, where at an orthodox would drain 200 acres out of surrounding lands, at a 990 location it would drain 325.3 acres, so that formula took 200 over 325, which is really 61 percent, and then it multiplied that 61 percent by the number of productive acres, and I assume this was planimetered because the

testimony was 350 in the original hearing. 331.6 over 640, which gives 51.8 percent.

By multiplying the two together you came up with an allowable factor of 32, and I don't question the authority of the Commission whether that is or is not a proper formula, but I do question the authority of the Commission to apply that formula to Section 23 and apply a different formula to the two other unorthodox wells on the adjoining sections, 21 and 22.

Then in the Southwest Natural Gas case the Commission found 360 possible productive acres and applied 360 over 640 to come up with a 56-1/4 percent allowable.

In the Texas Oil and Gas case the Commission found 350 possibly productive acres and came up with an allowable of 55, which you take 350 over 640 and you come up with a 55.

What I am urging is that the penalty on Section 23 should be calculated the same way the penalty was in Section 21 or 22 because if it doesn't, it violates that portion of the New Mexico Constitution and the Federal Constitution which says that no person can be denied the equal protection of the law.

The formula has already been established for unorthodox locations in this pool and I would hope in assessing the penalty which we acknowledge should be assessed, that the

Commission will use the same formula that was assessed in the two offsetting wells.

And as you will note from the testimony, neither Amoco nor Marathon thinks those wells were penalized enough, and their maps would justify a greater penalty, but the fact is those wells were drilled with a greater allowable than either Marathon or Amoco would now say they're entitled to, and in order to protect the rights of the people under Section 23, you're going to have to have a similar type of allowable.

We think our testimony, and it is interpretive geology till somebody digs a well. We're not going to know whether there is this buildup. There is surely support for it, and Mr. Lattu's testimony is that approximately 350 acres are north of the 125-foot line. He did not planimeter it but he did it by squares. I assume that the planimeter will be reasonably accurate.

Thank you, Mr. Ramey.

MR. BUELL: Mr. Ramey, I didn't interrupt Mr. Losee in his statement, but when he went into the Nutter formula it was completely outside the record of this hearing. At the outset he offered the record of the hearing before Examiner Nutter and you refused to admit it; so therefore, in our testimony and our closing statement we made no reference whatsoever to Examiner Nutter's formula, and I didn't

want to interrupt him. He's always courteous to me and I wanted to show him the same courtesy, but he was completely outside the record.

MR. RAMEY: Thank you. We'll keep that in mind, Mr. Buell.

Mr. Losee, perhaps, you know, a solution would be to add up all three figures of productive acres and divide it by three and apply that.

MR. LOSEE: Well, Mr. Ramey, of course, I think you have to take, and I realize it's tough because I agree with Mr. Buell when he says nobody in this room or in the state or anywhere knows what is down there.

MR. RAMEY: Maybe we can make that determination, Mr. Losee.

Thank you. Anything further in this case? Mr. Nutter?

MR. NUTTER: Yes. We have received correspondence from Mr. Hugh Hanagan, representing Hanagan Petroleum Corporation. He says in his letter that based on his studies there's less than 160 productive acres and that the allowable if the location is granted should not be more than 25 percent.

MR. RAMEY: Thank you. Anything further?

The Commission will take the case under advisement. (Hearing concluded.)

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
3010 Plaza Blanca (505) 471-2462
Santa Fe, New Mexico 87501

REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd CSR

Sally W. Boyd, C.S.R.

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
3038 Plaza Blanca (505) 471-2462
Santa Fe, New Mexico 87501

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

DIRECTOR
JOE D. RAMEY

LAND COMMISSIONER
PHIL R. LUCERO

STATE GEOLOGIST
EMERY C. ARNOLD

December 26, 1978

Re: CASE NO. 6266
ORDER NO. R-5802-A

Mr. Jerry Losee
Losee & Carson
Attorneys at Law
Post Office Box 239
Artesia, New Mexico 88210

Applicant:

Harvey E. Yates Company

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other Guy Buell, William F. Carr, Robert Pickens

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 6266 DE NOVO
Order No. R-5802-A

APPLICATION OF HARVEY E. YATES COMPANY
FOR AN UNORTHODOX GAS WELL LOCATION,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on July 6, 1978, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter, and on November 7, 1978, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 20th day of December, 1978, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, 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, Harvey E. Yates Company, seeks approval of an unorthodox gas well location for an Upper Pennsylvanian test well to be drilled at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, or in the alternative, an unorthodox location for said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23.

(3) That the special pool rules for said Indian Basin-Upper Pennsylvanian Gas Pool, as promulgated by Order No. R-2440 and made permanent by Order No. R-2440-A, provide for 640-acre (one section) spacing and proration units in said pool with wells to be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

(4) That according to evidence presented at the hearing at least 448 acres of the subject Section 23 is probably non-productive of gas from the Indian Basin-Upper Pennsylvanian Gas Pool, leaving a maximum of 192 acres as contributory of gas from said pool.

(5) That according to the evidence presented at the hearing, applicant is the owner of probable gas reserves underlying a portion of Section 23, Township 22 South, Range 23 East, NMPM, and should be permitted to develop and produce said reserves in order to prevent waste.

(6) That to permit a well to be drilled and produced at either of the proposed non-standard locations without imposing a compensatory production penalty against such well would violate the correlative rights of owners of offsetting acreage.

(7) That a reasonable penalty to be imposed on a well drilled at either of the proposed unorthodox locations should take into consideration the non-productive lands included in the spacing and proration unit.

(8) That the penalized allowable factor for a well drilled at a non-standard location should be arrived at by the application of the following formula:

$$\text{Allowable Factor} = \frac{\text{No. of productive acres in proposed proration unit}}{\text{No. of acres in standard proration unit}}$$

(9) That the allowable factor for a well drilled at either of the proposed non-standard locations described in Finding No. (2) above should be calculated as follows:

$$\text{Allowable Factor} = \frac{192 \text{ (Finding 4)}}{640 \text{ (Finding 3)}} = 0.30$$

(10) That the assignment of an allowable factor as described in Finding No. (9) above will permit the applicant to produce its just and equitable share of the gas in the Indian Basin-Upper Pennsylvanian Gas Pool, will protect applicant's correlative rights and prevent waste, and will protect the correlative rights of offset operators in the pool.

(11) That each of the two proposed locations, as described in Finding No. (2) above, should be approved, subject to the allowable restriction described in Finding No. (9) above.

IT IS THEREFORE ORDERED:

(1) That the applicant, Harvey E. Yates Company, is hereby authorized to drill an Upper Pennsylvanian gas test well at a point 660 feet from the North line and 660 feet from the East line or at a point 990 feet from the North line and 990 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, provided however, that such well upon completion in said pool shall have an allowable factor for gas proration purposes of 0.30.

(2) That all of said Section 23 shall be dedicated to a well completed in the Indian Basin-Upper Pennsylvanian Gas Pool at either of the aforesaid locations.

(3) 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

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Secretary

S E A L

fd/

Houston Division
Production Exploration, U.S. & Canada

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

November 27, 1978

Mr. William F. Carr
Catron, Catron & Sawtell
P. O. Box 788
Sante Fe, New Mexico 87501

Dear Bill:

Enclosed are some of the logs of the Indian Basin Field as per your request of 11-20-78. I am sending copies of all the logs in the two southern tiers of sections along the southern border of the field. A copy of the Reef map is also included to show the wells of these logs, and appropriately marked.

I Xeroxed only the heading and the reef portion for convenience, but if Mr. Ramey wants the whole log I will run them off and forward same. Also, if he wants additional logs of other wells in the field, I will forward them.

If I can be of further help just let me know.

Yours very truly,

A. A. Kollaja

AAK/jm
Encls.

cc: Mr. Robert J. Pickens

G-17-22-23

SCHLUMBERGER — DUAL IND … EROLOG
SCHLUMBERGER W… …ORPORATION

COUNTY EDDY
FIELD or LOCATION INDIAN BASIN
WELL BOGLE FLATS UNIT #9
COMPANY SOCONY MOBIL OIL

COMPANY SOCONY MOBIL O…
WELL BOGLE FLATS UN…
FIELD INDIAN BASIN
COUNTY EDDY STATE NEW MEXICO
LOCATION 2035' FROM N/L
1650' FROM E/L
Sec. 17 Twp. 22S Rge. 23E

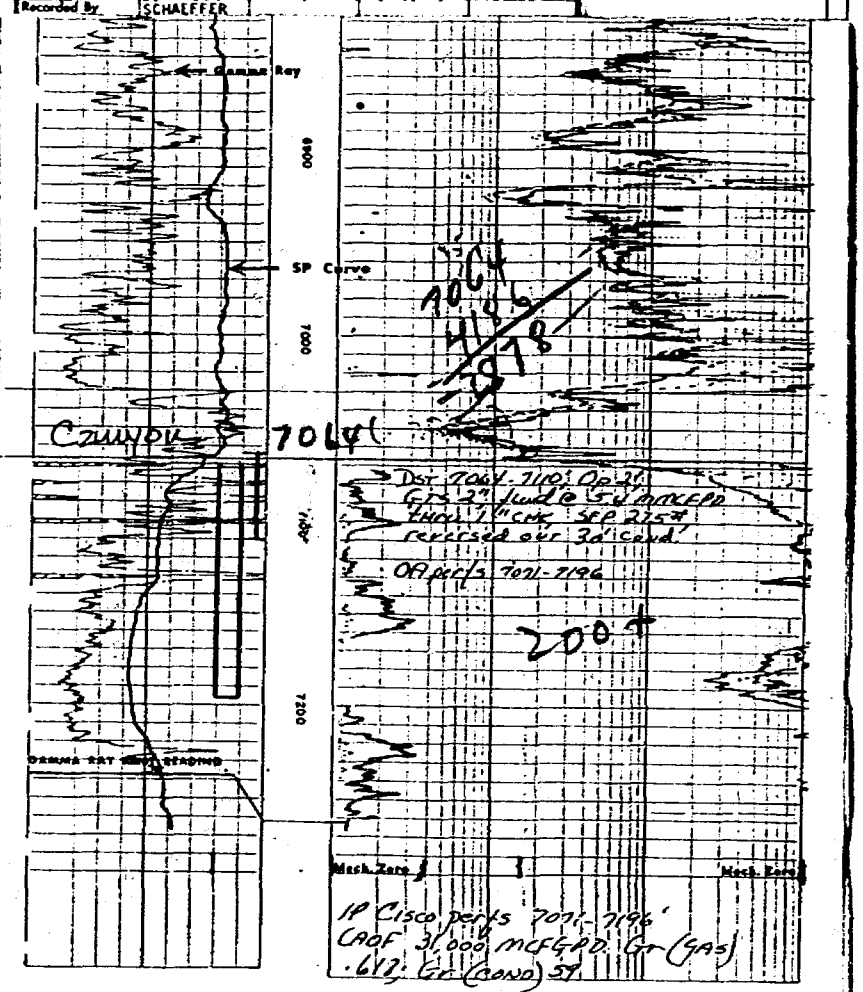
Other Services: BSGR, FDC, SNP

Permanent Datum: GL Elev. 4157
Log Measured From KB 13.9 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4170.9
D.F.
G.L. 4157

Date	3-16-66
Run No.	ONE
Depth – Driller	7263
Depth – Logger	7266
Btm. Log Interval	7263
Top Log Interval	2281
Casing – Driller	8 5/8@ 2280 @ @ @
Casing – Logger	2281
Bit Size	7 7/8
Type Fluid in Hole	GEL.CAUSTIC OIL, CMC, SUPERBEN
Dens. / Visc.	8.6 / 64
pH / Fluid Loss	10 / 4.8 ml ml ml
Source of Sample	CIRCULATED
R_m @ Meas. Temp.	2.49 @ 80 °F @ °F @ °F @ °F
R_{mf} @ Meas. Temp.	.54 @ 80 °F @ °F @ °F @ °F
R_{mc} @ Meas. Temp.	2.96 @ 80 °F @ °F @ °F @ °F
Source R_m / R_{mf}	M / M — — —
R_m @ BHT	1.6 @123 °F @ °F @ °F @ °F
Time Since Circ.	7 HOURS
Max. Rec. Temp.	123 °F °F °F °F
Equip. / Location	3701 / HOBBS
Recorded By	SCHAEFFER

DEPTH DATUM



DST 7064-7101 Op 2h
GTS 2" fluid @ GTS MEASED
THRU 1" CHK SIP 275#
reversed out 3a cond
OA perfs 7071-7196

200+

IP Cisco perfs 7071-7196'
CAOF 31,000 MCFGPD Gr (GAS)
.672 Gr (COND) 57

Comp 3-26-66

7196
4171
3025

2

G-17-22-23

0 100 100 200	GAMMA RAY API units	LATEROLOG – 8 1 10 100 1000 1000 10000
		MEDIUM INDUCTION LOG 1 10 100 1000 1000 10000
20		DEEP INDUCTION LOG 1 10 100 1000 1000 10000
SPONTANEOUS-POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms – m²/m

COMPANY SOCONY MOBIL OIL COMPANY"
WELL BOGLE FLATS UNIT # 9

SWSC FR 7263
SWSC TO 7266
DRLR TO 7263
Elev.

DEEP TOPS

2

F-16-22-23

SCHLUMBERGER — DUAL-INDUCTION-L

SCHLUMBERGER WELL SURVEYING — Houston, Texas

COMPANY STANDARD OIL COMPANY OF TEXAS

WELL BOGLE FLATS UNIT # 5

FIELD INDIAN BASIN

COUNTY EDDY STATE NEW MEXICO

LOCATION 1650' FROM N/L
1980' FROM W/L

Other Services: FDC, SNP, ISL

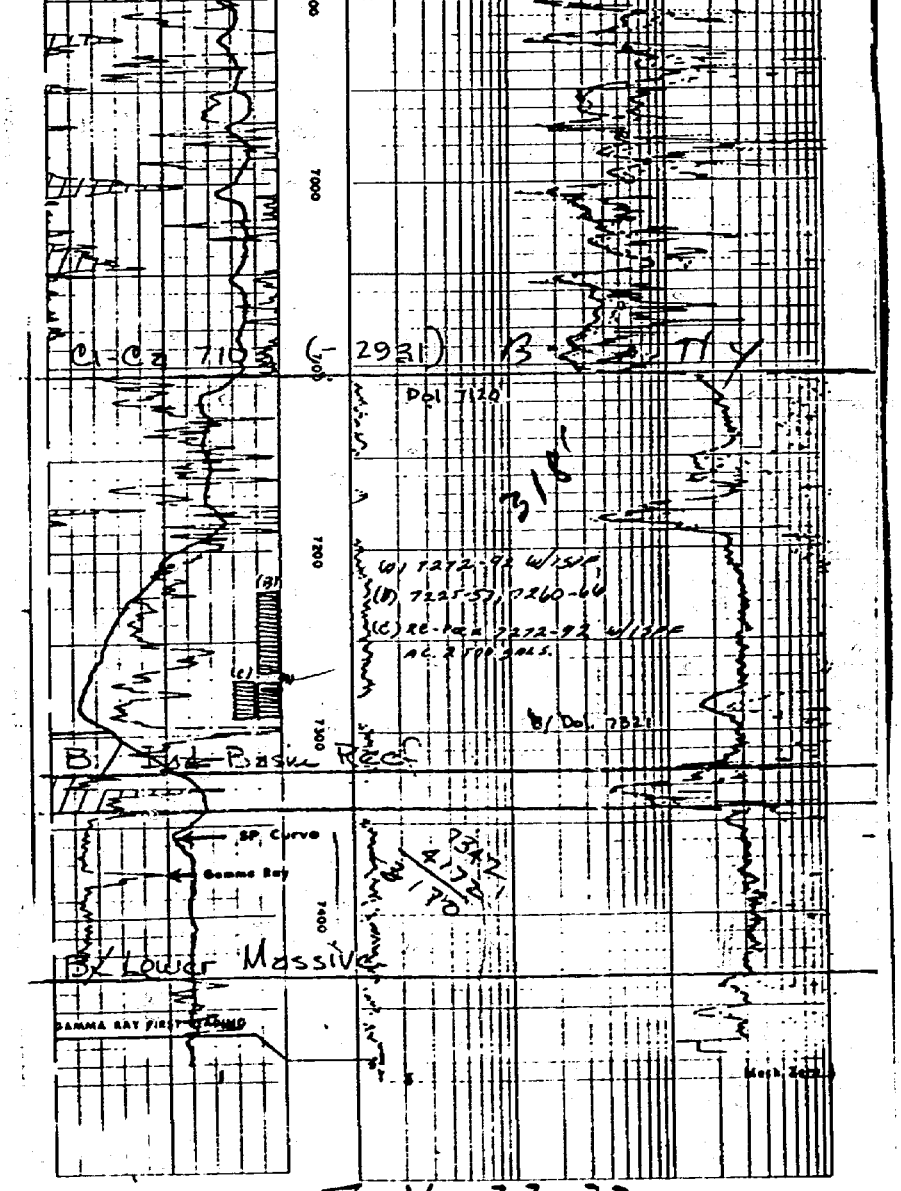
Sec. 16 Twp. 22S Rge. 23E

COUNTY EDDY
FIELD or LOCATION INDIAN BASIN
WELL BOGLE FLATS UNIT #5
COMPANY STANDARD OIL CO.

Permanent Datum GL , Elev. 4159
Log Measured From KB 13.25 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4172.25
D.F. 4171
G.L. 4159

Date	9-6-65
Run No.	ONE
Depth – Driller	7480
Depth – Logger	7481
Btm. Log Interval	7477
Top Log Interval	2250
Casing – Driller	8⅝ @ 2250
Casing – Logger	2250
Bit Size	7 7/8
Type Fluid in Hole	GEL. CAUSTIC CMC. OIL
Dens. / Visc.	8.8 / 46
pH / Fluid Loss	10 / 5.4 ml
Source of Sample	PIT
R_m @ Meas. Temp.	1.82 @ 84 °F
R_{mf} @ Meas. Temp.	.43 @ 74 °F
R_{mc} @ Meas. Temp.	2.29 @ 78 °F
Source R_m R_{mf}	M / M
R_m @ BHT	1.15 @ 132 °F
Time Since Circ.	203 HOURS
Max. Rec. Temp.	132 °F
Equip. / Location	3701 / HOBBS
Recorded By	LEFLER
Witnessed By	MR. DRYDEN



F-16-22-23

7320
7123

GULF OIL CORPORATION
Helbing Federal No. 1
Eddy Co., New Mexico

INDIAN BASIN

F

3

15-22-23

F-15-225-23E 715

SCHLUMBERGER

BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY EDDY
FIELD or LOCATION INDIAN BASIN
WELL HELBING FEDERAL #1
COMPANY GULF OIL CORP.

COMPANY GULF OIL CORPORATION

WELL HELBING FEDERAL #1

FIELD INDIAN BASIN

COUNTY EDDY STATE NEW MEXICO

LOCATION 1850' FNL ✓
1700' FWL

Other Services:
NONE

Sec. 15 Twp. 22-S Rge. 23-E

Permanent Datum: GROUND LEVEL Elev. 4101
Log Measured From K.B. 14 Ft. Above Perm. Datum
Drilling Measured From K.B.

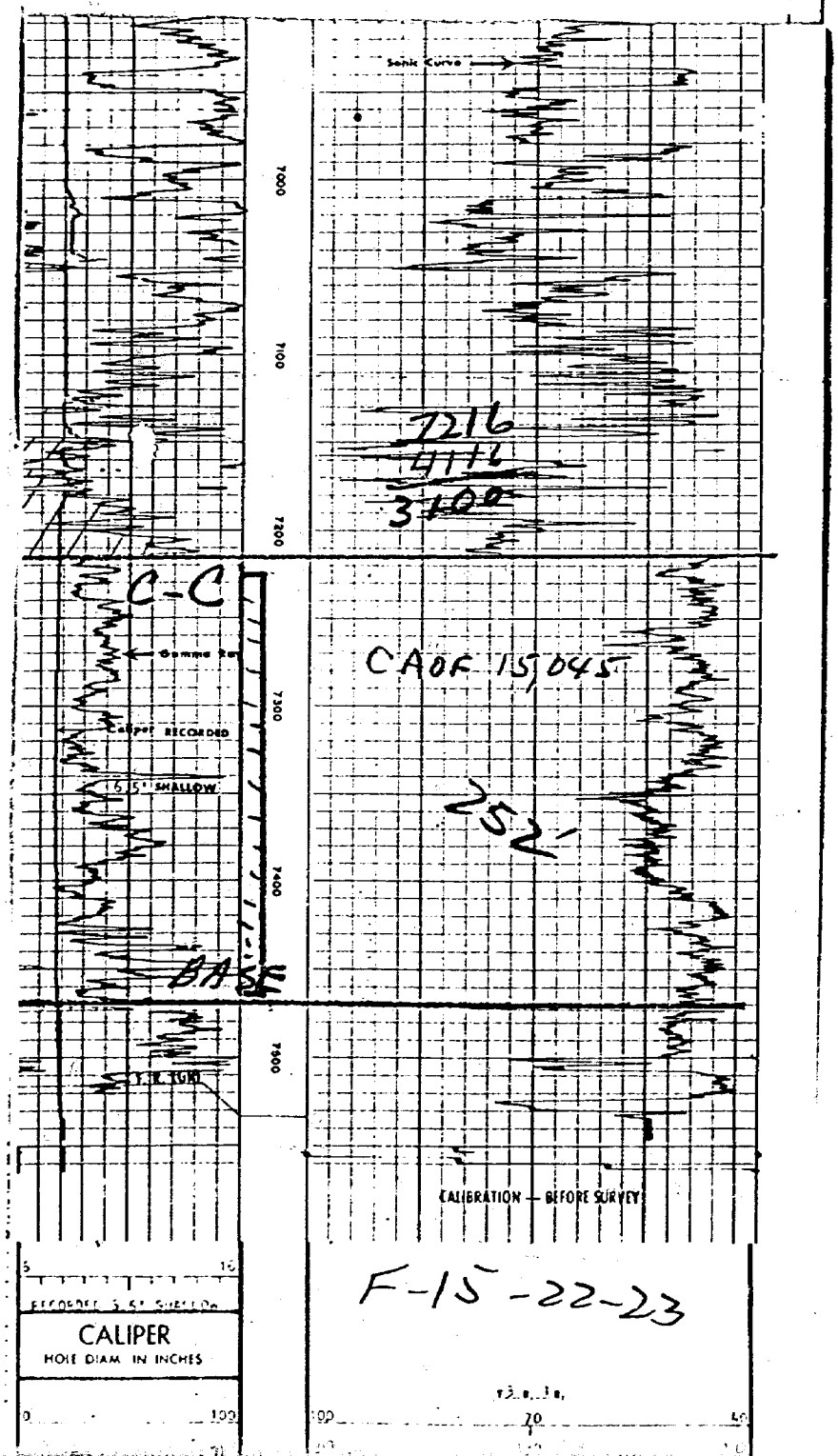
Elev.: K.B. 4115
D.F. 4114
G.L. 4101

Date	1-5-66			
Run No.	ONE			
Depth—Driller	7542			
Depth—Logger	7542			
Btm. Log Interval	7534			
Top Log Interval	0			
Casing—Driller	8-5/8"@2235	@	@	@
Casing—Logger	2231			
Bit Size	7-7/8"			
Type Fluid in Hole	GEL-CHC			
Dens. / Visc.	8.8 39			
pH / Fluid Loss	9.5 14.8 ml	ml	ml	ml
Source of Sample	--			
R_m @ Meas. Temp.	-- @ -- °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	-- @ -- °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	-- @ -- °F	@ °F	@ °F	@ °F
Source R_{mf} R_{mc}	-- --			
R_m @ BHT	-- @ -- °F	@ °F	@ °F	@ °F
Time Since Circ.	4 HOUR.			
Max. Rec. Temp.	138 °F	°F	°F	°F
Equip. / Location	4555 / ART			
Recorded By	TARRALL			
Witnessed By	BRUCE			

F

4115
3500
7615

✓ 4116 D.F.



USE THIS LOG
FOR DEEP TOPS

F-14-22-23

SCHLUMBERGER INDUCTION ELECTRICAL LOG

COMPANY MARATHON OIL CO

WELL FEDERAL "18B" Com. 1

FIELD INDIAN BASIN

COUNTY EDDY STATE NEW MEXICO

COUNTY EDDY
FIELD or LOCATION INDIAN BASIN
WELL FEDERAL "18B"
COMPANY MARATHON OIL CO.

LOCATION 1650' FROM N/L
1650' FROM W/L

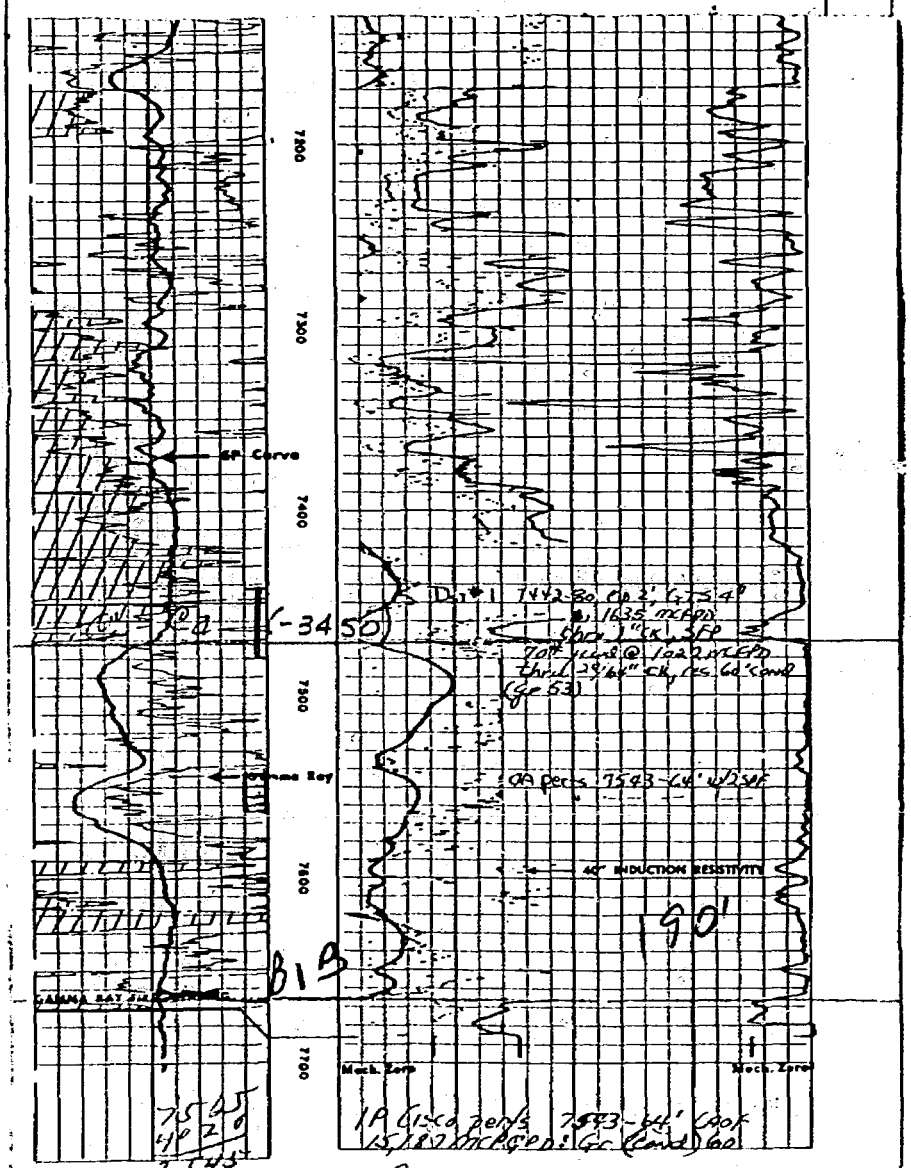
Sec. 14 Twp. 22S Rge. 23E

Other Services
FDC-GR, SNP, BHC

Permanent Datum: GL Elev. 4004
Log Measured From KB 16 Ft. Above Perm. Datum
Drilling Measured From KB

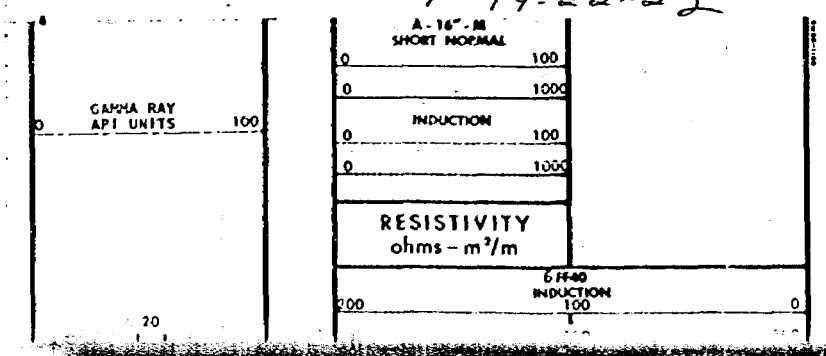
Elev.: K.B. 4020
D.F. 4019
G.L. 4004

Date	4-1-66			
Run No.	ONE			
Depth—Driller	7680			
Depth—Logger	7687			
Btm. Log Interval	7686			
Top Log Interval	2127			
Casing—Driller	8 5/8" @ 2123	@	@	@
Casing—Logger	2127			
Bit Size	7 7/8"			
Type Fluid in Hole	CAUSTIC, SODA ASH, CMC, OIL, SUPERCOL			
Dens. / Visc.	8.8 / 44			
pH / Fluid Loss	8.5 / 8.0ml	ml	ml	ml
Source of Sample	CIRCULATED			
R_m @ Meas. Temp.	1.22 @ 90°F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	1.14 @ 78°F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	2.47 @ 78°F	@ °F	@ °F	@ °F
Source R_{mf} R_{mc}	M / M			
R_m @ BHT	1.10 @ 146°F	@ °F	@ °F	@ °F
Time Since Circ.	16 HOURS			
Max. Rec. Temp.	146 °F	°F	°F	°F
Equip. / Location	1722 / HOBBS			
Recorded By	LEELER			
Witnessed By	MR. GENZER, MR. BARBER & MR. HOLLINGSHEAD			



Comp 4-13-66

F-14-22-23



DEEP

TOPS 5

SCHLUMBERGER

DUAL INDUCTION - LATEROLOG

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COMPANY PAN AMERICAN PETROLEUM CORPORATION

WELL H O C GAS U

FIELD INDIAN BASIN

COUNTY EDDY

LOCATION 1650' FNL
1650' FWL

Sec. 13 Twp 22 S Rge 23 E

COUNTY EDDY
FIELD & LOCATION INDIAN BASIN
H O C GAS UNIT
WELL #1
COMPANY PAN AMERICAN PETROLEUM CORP

EXLCO
Services:
DHC

Permanent Datum GROUND LEVEL Elev.
Log Measured From K.B. 13.90 Ft. Above
Drilling Measured From K.B.

K.B. 4054
D.F.
G.L. 4040

Date	12 10 55
Run No.	ONE
Depth—Driller	7896
Depth—Logger	7890
Btm. Log Interval	7886
Top Log Interval	2294
Casing—Driller	8-5/8"@2294
Casing—Logger	2294
Bit Size	7-7/8"
Type Fluid in Hole	CHEM OIL
Dens. Visc.	8.6 40
pH Fluid Loss	16.4 cc
Source of Sample	PIT
Rm @ Meas Temp	1.65 @ 82°F
Rmf @ Meas Temp	1.1 @ 77°F
Rmc @ Meas Temp	@ °F
Source Rmf Rmc	M
Rm @ BHT	1.1 @ 131°F
Time Since Circ.	
Max. Rec. Temp.	131 °F
Equip. Location	4556 ; ART
Recorded By	WENDLAND
Witnessed By	KLAAK & ARTHUR

F-13-22-23

4054

4051 K

7700
7800
7900

Cisco-Canyon 7703 (-3649)

IPF 1700 MCF 2-1/4" ck
FTP 600#

80

7880 (-3826)

F-13-22-23

7900
4054
3746

0 100
100 200

GAMMA RAY
API units

20

SPONTANEOUS-POTENTIAL
millivolts

DEPTHS

LATEROLOG - R
1 10 100 1000
1000 10000

MEDIUM INDUCTION LOG
1 10 100 1000

6FF40 INDUCTION LOG
1 10 100 1000

RESISTIVITY
ohms - m²/m

COMPANY PAN AMERICAN PETROLEUM CORPORATION
WELL H O C GAS UNIT WELL #1
FIELD INDIAN BASIN
COUNTY EDDY STATE NEW MEXICO

SWSC #R 7886
SWSC TD 7890
DRLR TD 7896
Elev.
KB 4054
DF

6
O-18-6

D-18-22-24

(7)

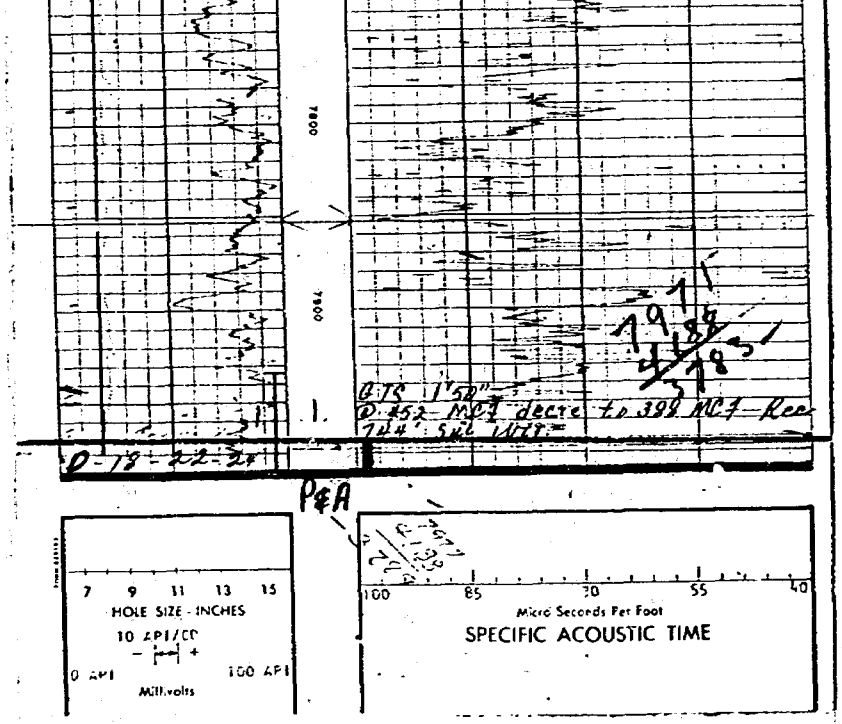
Dresser Atlas — Acoustilog

FILE NO	
COMPANY	PAN AMERICAN PETROLEUM CORPORATION
WELL	DUNCAN FEDERAL GAS COMM. NO. 1
FIELD	INDIAN BASIN (UPPER PENN)
COUNTY	EDDY STATE NEW MEXICO
LOCATION	950' FNL & 950' FWL SEC 18 TWP 22-S RGE 24-E
Other Services	

Elevations: KB 4187 · DF 4186 · GL 4172

Permanent Datum: GROUND LEVEL Elev. 4172
Log Measured From: K. B. 15 Ft. Above Permanent Datum
Drilling Measured From: K. B.

Date	10-26-68			
Run No	ONE			
Depth—Driller	7991			
Depth—Logger	7979			
Bottom Logged Interval	7973			
Top Logged Interval	100			
Casing—Driller	8 5/8 @ 2301	@	@	@
Casing—Logger				
Bit Size	7 7/8"			
Type Fluid in Hole	CHEMICALS			
Density and Viscosity	8.8 56			
pH and Fluid Loss	6.5 18 cc	cc	cc	cc
Source of Sample	PIT			
Rm @ Meas Temp	2.0 @ 75 °F	@ °F	@ °F	@ °F
Rmf @ Meas Temp	1.63 @ 75 °F	@ °F	@ °F	@ °F
Rmc @ Meas Temp	2.4 @ 75 °F	@ °F	@ °F	@ °F
Source of Rmf and Rmc	MEAS MEAS			
Rm @ BHT	1.2 @ 135 °F	@ °F	@ °F	@ °F
Time Since Circ	7 HOURS			
Max Rec Temp Deg F	135 °F	°F	°F	°F
Equip No and Location	1222 HOBBS			
Recorded By	JONIETZ			
Witnessed By	MR. LANCE			



7 9 11 13 15
HOLE SIZE - INCHES
10 API/CC
0 API 100 API
Millivolts

100 85 70 55 40
Micro Seconds Per Foot
SPECIFIC ACOUSTIC TIME

7

SCHLUMBERGER — DUAL INDUCTION-LATEROLOG

SCHLUMBERGER WELL SURVEYING CORPORATION — Houston, Texas

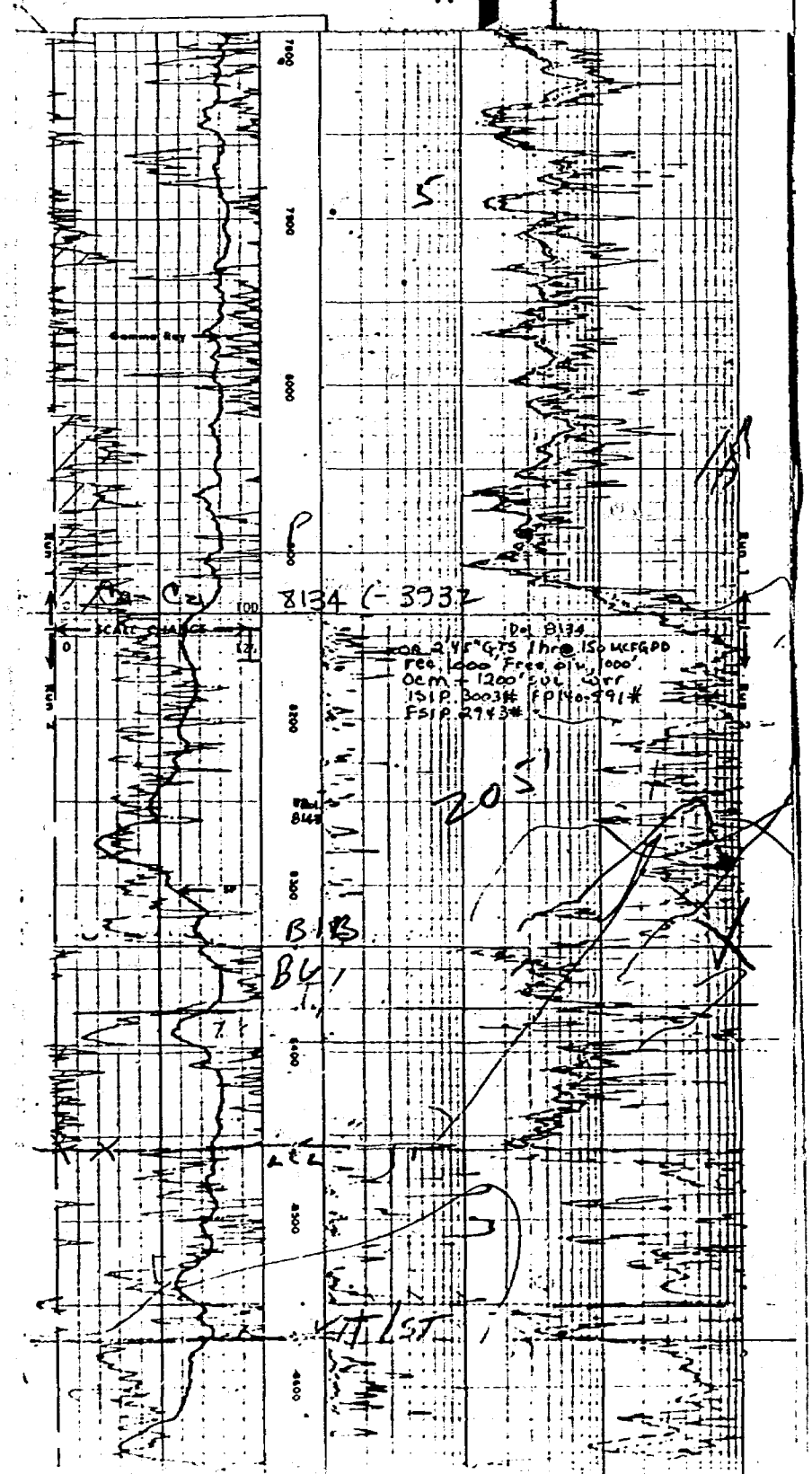
COUNTY — EDDY — FIELD or LOCATION — INDIAN BASIN — WELL — [illegible] — COMPANY — [illegible]

COMPANY	[illegible] PETROLEUM CORPORATION
WELL	[illegible] J. J. HOLLOWELL "AN" #1
FIELD	INDIAN BASIN
COUNTY	EDDY STATE NEW MEXICO
LOCATION	1650' FNL & 1650' FWL — Other Services: BHC, GR
Sec 17	Twp 22-S Rge 24-E

Permanent Datum	GROUND LEVEL	Elev. 4189	Elev.: K.B. 4202
Log Measured From	K.B.	13 Ft. Above Perm. Datum	D.F. 4201
Drilling Measured From	K.B.		G.L. 4189

4,000 $

Date	9-25-65	10-17-65	DEPTH DATUM
Run No.	ONE	TWO	
Depth Driller	8165	10210	
Depth Logger	8150	10214	
Btm. Log Interval	8147	10209	
Top Log Interval	2547	8147	
Casing Driller	8-5/8" @ 2547	8-5/8" @ 2547	
Casing Logger	2547	2547 FOR 1	
Bit Size	7-7/8"	7-7/8"	
Type Fluid in Hole	OIL EMUL.	CHEM GEL	
Dens. Visc.	8.6 65	9.0 [illegible]	
pH Fluid Loss	8.4 4.8 ml	9.7 [illegible] 2 ml	ml ml
Source of Sample	CIRCULATED	CIRCULATED	
R_m @ Meas. Temp.	3.1 @ 67°F	2.16 @ 70°F	@ °F @ °F
R_{mf} @ Meas. Temp.	2.75 @ 70°F	1.95 @ 78°F	@ °F @ °F
R_{mc} @ Meas. Temp.	3.4 @ 70°F	@ °F	@ °F @ °F
Source R_{mf} R_{mc}	M M	M	
R_m @ BHT	1.5 @ 140°F	0.83 @ 165°F	@ °F @ °F
Time Since Circ.	4 HOURS	36 HOURS	
Max. Rec. Temp.	140	165	
Equip. Location	4549 ARTESIA	4556 ARTESIA	
Recorded By	EASLEY	TAPPMEL	
Witnessed By	KLAAK	WHITWELL	



F - 28 - 22 - 23

SCHLUMBERGER — DUAL INDUCTIO
SCHLUMBERGER WELL SUR
Houston

COMPANY RALPH LOWE

WELL MARATHON FEDERAL #1

FIELD WILDCAT

COUNTY EDDY STATE NEW MEXICO

COUNTY EDDY
FIELD & LOCATION WILDCAT
WELL MARATHON FED. #1
COMPANY RALPH LOWE

LOCATION 1650' FNL
1775' FWL
Sec. 28 Twp. 22S Rge. 23E

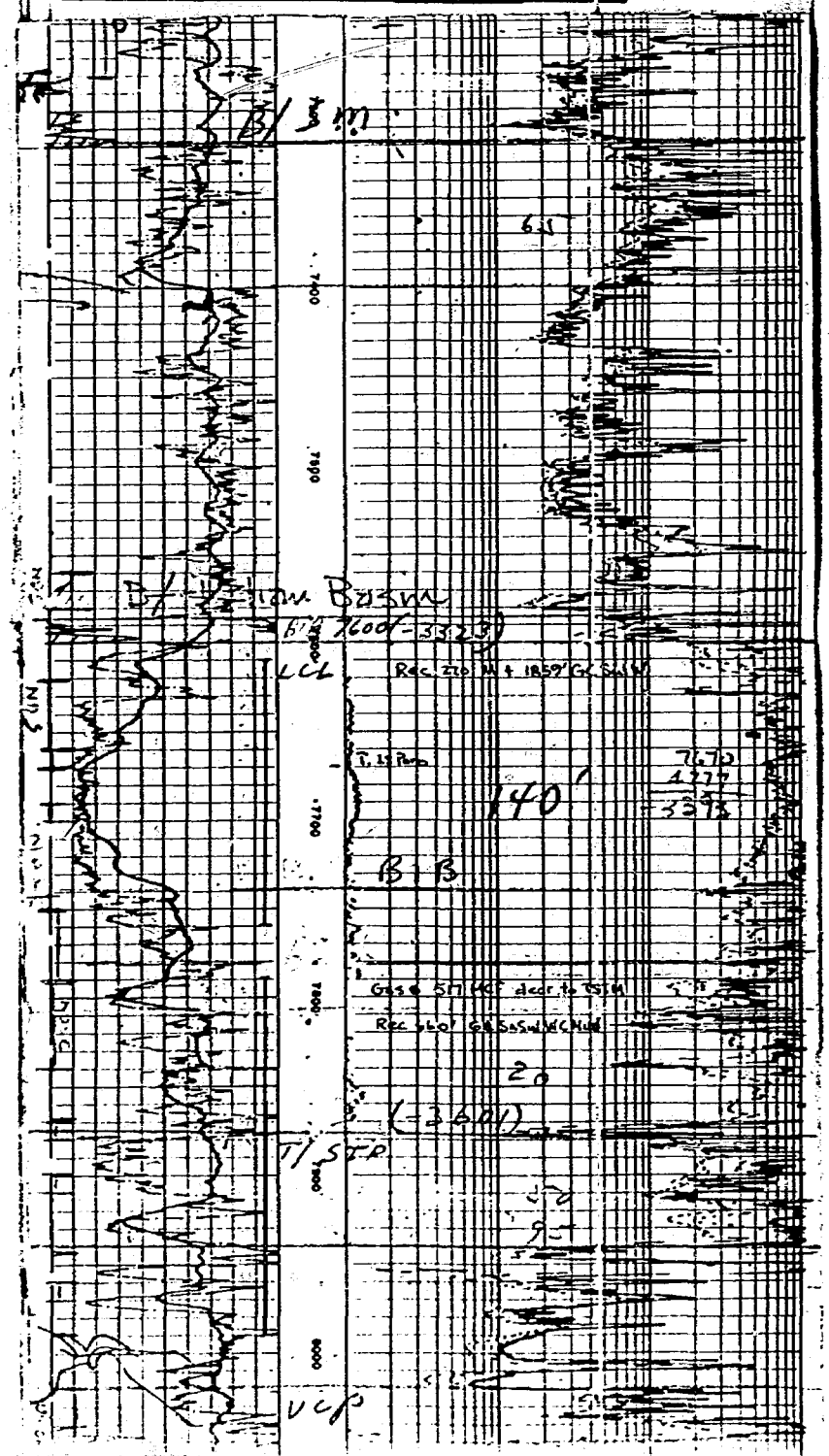
Other Services:
SGR
E-4376

Permanent Datum: GROUN LEVEL Elev. 4266
Log Measured From KB 12 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4278
D.F. 4277
G.L. 4266

Date	2-27-64			
Run No.	ONE			
Depth—Driller	10165			
Depth—Logger	10140			
Btm. Log Interval	10138			
Top Log Interval	1465			
Casing—Driller	9-5/8@1465	@	@	@
Casing—Logger				
Bit Size	8-3/4"			
Type Fluid in Hole	CAUSTIC QUEBRACHO GEL OIL			
Dens. / Visc.	8.7 / 65			
pH / Fluid Loss	12.8 cc	cc	cc	cc
Source of Sample	CIRCULATED			
R_m @ Meas. Temp.	2.70 @ 75 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	1.87 @ 75 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	3.1 @ 75 °F	@ °F	@ °F	@ °F
Source R_{mf} R_{mc}	M / M			
R_m @ BHT	1.35 @ 151°F	@ °F	@ °F	@ °F
Time Since Circ.	-----			
Max. Rec. Temp.	151 °F	°F	°F	°F
Equip. / Location	2524 / ARTESIA			
Recorded By	MENDLAND			
Witnessed By	AMMENTORP			

KELLY BUSHING DATUM 4277



SCHLUMBERGER

COMPENSA FORMATION DEN

F-21-22-23

COMPANY HANAGAN PETROLEUM COR

WELL INDIAN FEDERAL #1

FIELD INDIAN BASIN

COUNTY EDDY STATE NEW MEXICO

Location: 1650' FROM N/L, 1980' FROM W/L
Sec. 21 Twp. 22S Rge. 23E

Other Services: SNP, ML, CDR

COUNTY EDDY
FIELD or LOCATION INDIAN BASIN
WELL INDIAN FEDERAL #1
COMPANY HANAGAN PET. CORP.

Permanent Datum: GL ; Elev.: 4256.6
Log Measured From KB 17.4 Ft. Above Perm. Datum
Drilling Measured From KB

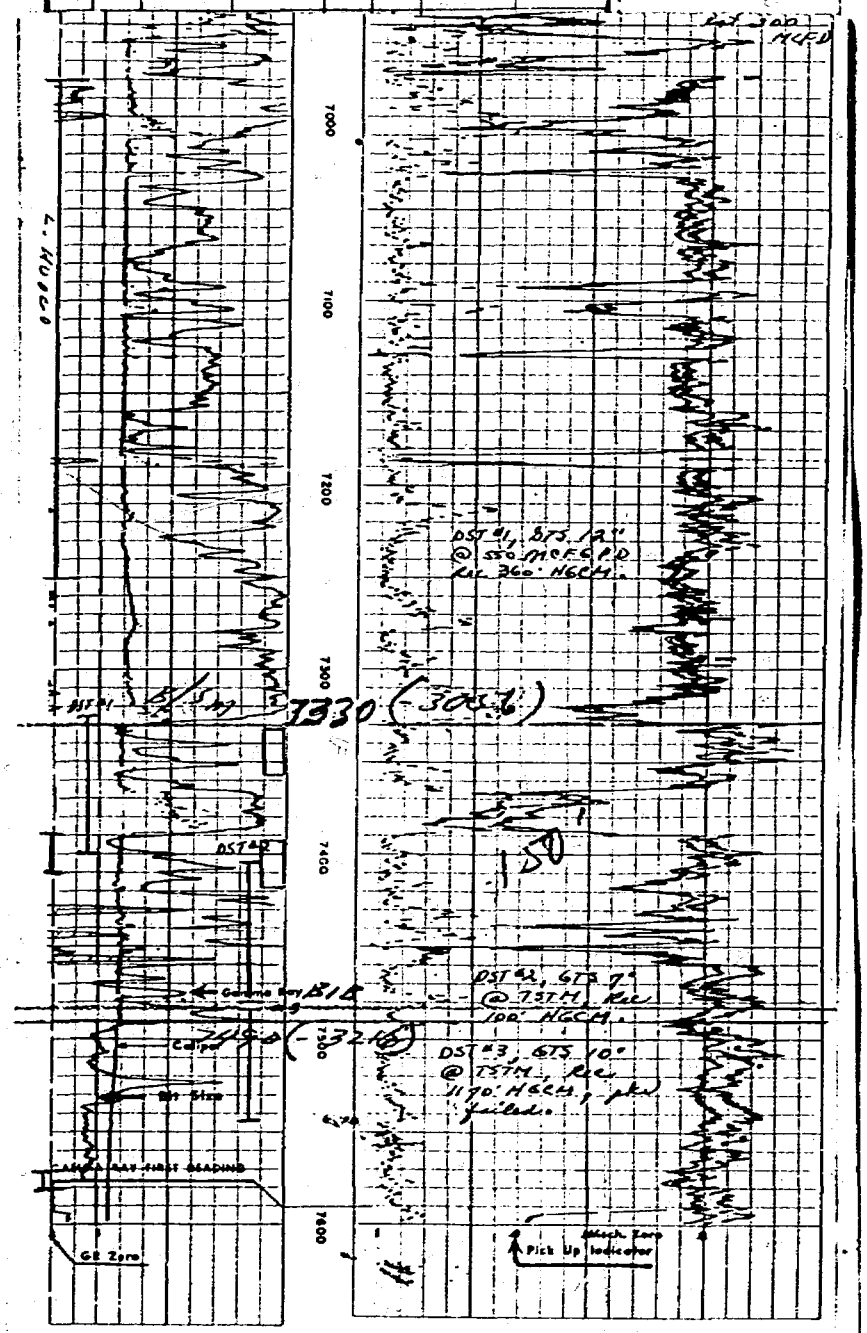
Elev.: K.B. 4274
D.F. 4273
G.L. 4256.6

Date	12-9-66
Run No.	ONE
Type Log	FDC+GR
Depth—Driller	7585
Depth—Logger	7592
Bottom logged interval	7591
Top logged interval	0
Type fluid in hole	CHEM GEL
Salinity, PPM Cl.	2200
Density	8.7
Level	FULL
Max rec. temp., deg F.	148
Operating rig time	5 HOURS
Recorded by	TARRALL
Witnessed by	MR. HANAGAN

DEPTH DR.-LM

RUN No.	BIT	BORE HOLE RECORD From	To	CASING RECORD Size	Wgt	From	To
1	P	7 7/8	CASING	TD	8 5/8	SURFACE	2101

The well name, location and borehole data are from information furnished by the customer.



0	100	200
CAMMA RAY API UNITS		
6"		16"

2.0	2.5	3.0
1.0	1.5	2.0
BULK DENSITY GRAMS CC.		
POROSITY X	ρ_C=2.71	ρ_F=1.00
30	20	10

Incl. 10 A-21-22-23

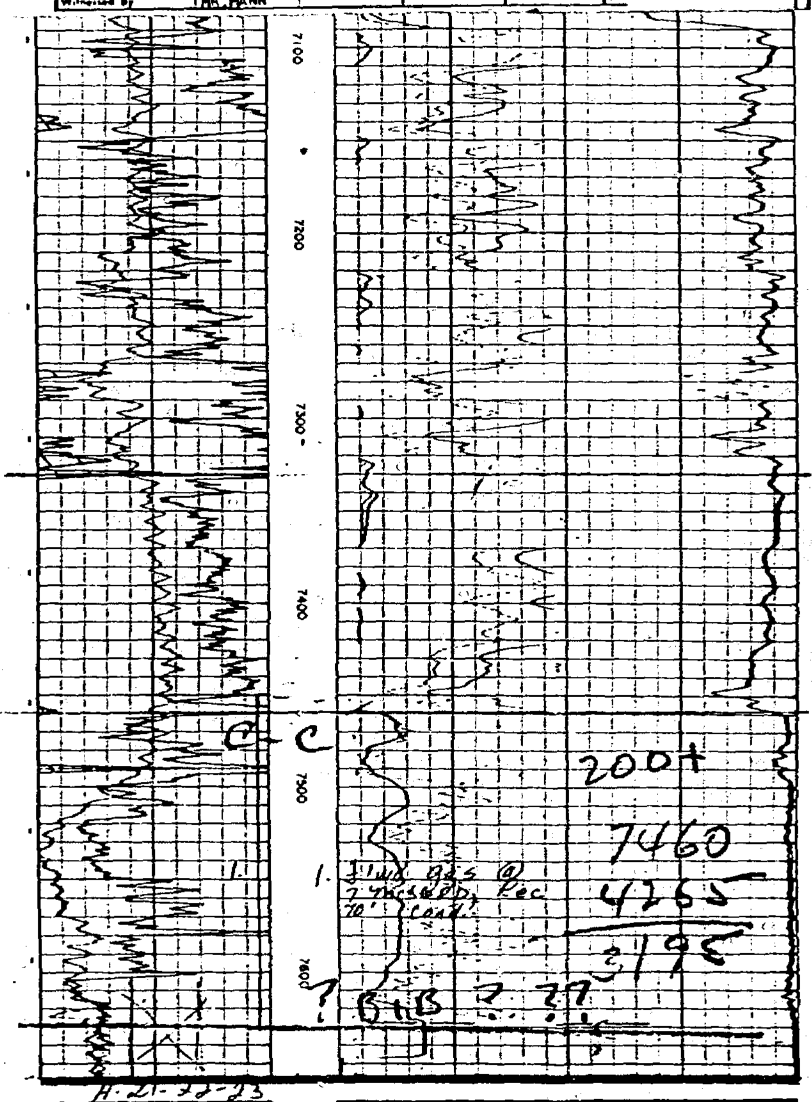
A-21-22-23

Dresser Atlas

COMPANY	SOUTHWESTERN NATURAL GAS, INC.
WELL	MERSHON GAS COMPANY NO. 1
FIELD	INDIAN BASIN
COUNTY	EDDY — STATE NEW MEXICO
LOCATION	990' FNL & 990' FEL
SEC 21	TWP 22-S — RGE 23-E
Other Services	ML/C, GR/N/AL, VOLUME COMP

Permanent Datum	G.L.	Elev. 4255'	KB 4263.5'
Log Measured from	K.B.	8.5 Ft. Above Permanent Datum	DF 4262.5'
Drilling Measured from	K.B.		GL 4255'

Date	8-22-69			
Run No.	ONE			
Depth—Driller	7631			
Depth—Logger	7631			
Bottom Logged Interval	7627			
Top Logged Interval	2160			
Casing—Driller	8 5/8 2160	@	@	@
Casing—Logger	2160			
Bit Size	7 7/8			
Type Fluid in Hole	FRESH MUD 5% OIL			
Density and Viscosity	8.6 | 36			
pH and Fluid Loss	11.5 | 9.0 cc	cc	cc	cc
Source of Sample	PIT			
Rm @ Meas. Temp.	1.04 @ 72 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.45 @ 77 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	1.3 @ 72 °F	@ °F	@ °F	@ °F
Source of Rmf and Rmc	MEASURED			
Rm @ BHT	.6 @ 130 °F	@ °F	@ °F	@ °F
Time Since Circ.	4 HRS.			
Max. Rec. Temp. Deg. F.	130 °F	°F	°F	°F
Equip. No. and Location	6040 HOBBS			
Recorded By	ELMORE-HOWE			
Witnessed By	MR. MANN			



A-21-22-23

3

SPONTANEOUS POTENTIAL Millivolts	DEPTH	RESISTIVITY Ohms m²/m	CONDUCTIVITY Millimhos/m
10 API/CD; 0 API — 100 API; − 10 +		INDUCTION RESISTIVITY 40" SPACING (0–500; 0–50); 16" NORMAL (0–500; 0–50)	INDUCTION CONDUCTIVITY 40" SPACING (400–0)

Company	SOUTHWESTERN NATURAL GAS, INC.	Drillers T.D.	7631'
Well	MERSHON GAS COMPANY NO. 1	Log F.R.	7627'
Field	INDIAN BASIN	Log T.D.	7631'
County	EDDY	Elevations:	
State	NEW MEXICO	K.B. 4263.5' D.F.	G.L. 4255'

SPONTANEOUS POTENTIAL Millivolts | DEPTH | CONDUCTIVITY Millimhos/m

C

11

D-22-22-23

D-22-22-23

Welex

N • ELECTRIC LOG

COMPANY Texas Oil & Gas Corporation
WELL Holbing - Federal #1
FIELD Indian Basin
County EDDY State N.M.

COMPANY TEXAS OIL & GAS CORPORATION

WELL HELBING - FEDERAL # 1

FIELD INDIAN BASIN (UPPER PENN)

COUNTY EDDY STATE NEW MEXICO

Location: 990' FNL & 990' FWL

Other Services: G/R - AVL

Sec 22 Twp 22-S Rge 23-E

Permanent Datum: Ground Level Elev. 4194'

Log Measured From: K. B. - 11 Ft Above Perm. Datum

Drilling Measured From: Kelly Bushing

Elev.: K.B. 4205'
D.F. 4204'
G.L. 4194'

Date	11/6/71			
Run No	- One -			
Depth-Driller	7700			
Depth-Welex	7701			
Btm. Log Inter.	7697			
Top Log Inter.	2176			
Casing-Driller	8-5/8" @ 2200	@	@	@
Casing-Welex	2176			
Bit Size	7-7/8"			
Type Fluid in Hole	Mud			
Dens. / Visc.	9.2 / 42	- /	- /	- /
pH / Fluid Loss	10.5 / 9.2ml	- / ml	- / ml	- / ml
Source of Sample	Circulated			
R_m @ Meas Temp	1.20 @ 80 °F	@ °F	@ °F	@ °F
R_mf @ Meas Temp	0.85 @ 60 °F	@ °F	@ °F	@ °F
R_mc @ Meas Temp	@ °F	@ °F	@ °F	@ °F
Source R_mf R_mc	Measured	-	-	-
R_m @ BHT	0.75 @ 120°	@ °F	@ °F	@ °F
Time Since Circ.				
Max Rec Temp	120° @ B.H.	°F @	°F @	°F @
Equip. Location	80421 Hobbs	-	-	-
Recorded By	G.E. Ayres			
Witnessed By	Mr. Bird			

100
7200
7300
7400
7500
7600
7700

ONE MINUTE INTERVAL MARKER

746
420
326

40" IND. RESISTIVITY

1681

40" IND. CONDUCTIVITY

16" NORMAL

D-22-22-23

1 P CADF AA 26,748 MCFGPD

Rmf .45 at 120 °F.

POTENTIAL MILLIVOLTS

Induction
0 100
0 1000

18" Normal
0 100
0 1000

RESISTIVITY OHMS M²/M

Induction
200 0
500 200

CONDUCTIVITY M MHOS/M

Texas Oil & Gas Corporation
Holbing - Federal # 1

TD 7700 7697'

④ 12

G-22-22-23

SCHLUMBERGER — BORE[HOLE COM]PENSATED SONI[C LOG] — [G]AMMA RAY

SCHLUMB[ERGER WELL SURVEY]ING CORPORATION

COMPANY	GULF OI[L]
WELL	HELBING FEDERAL #2
FIELD	INDIAN BASIN
COUNTY	EDDY
STATE	NEW MEXICO
LOCATION	1650' FNL 1650' FEL
Sec.	22
Twp.	22-S
Rge.	23-E
Other Services:	NONE

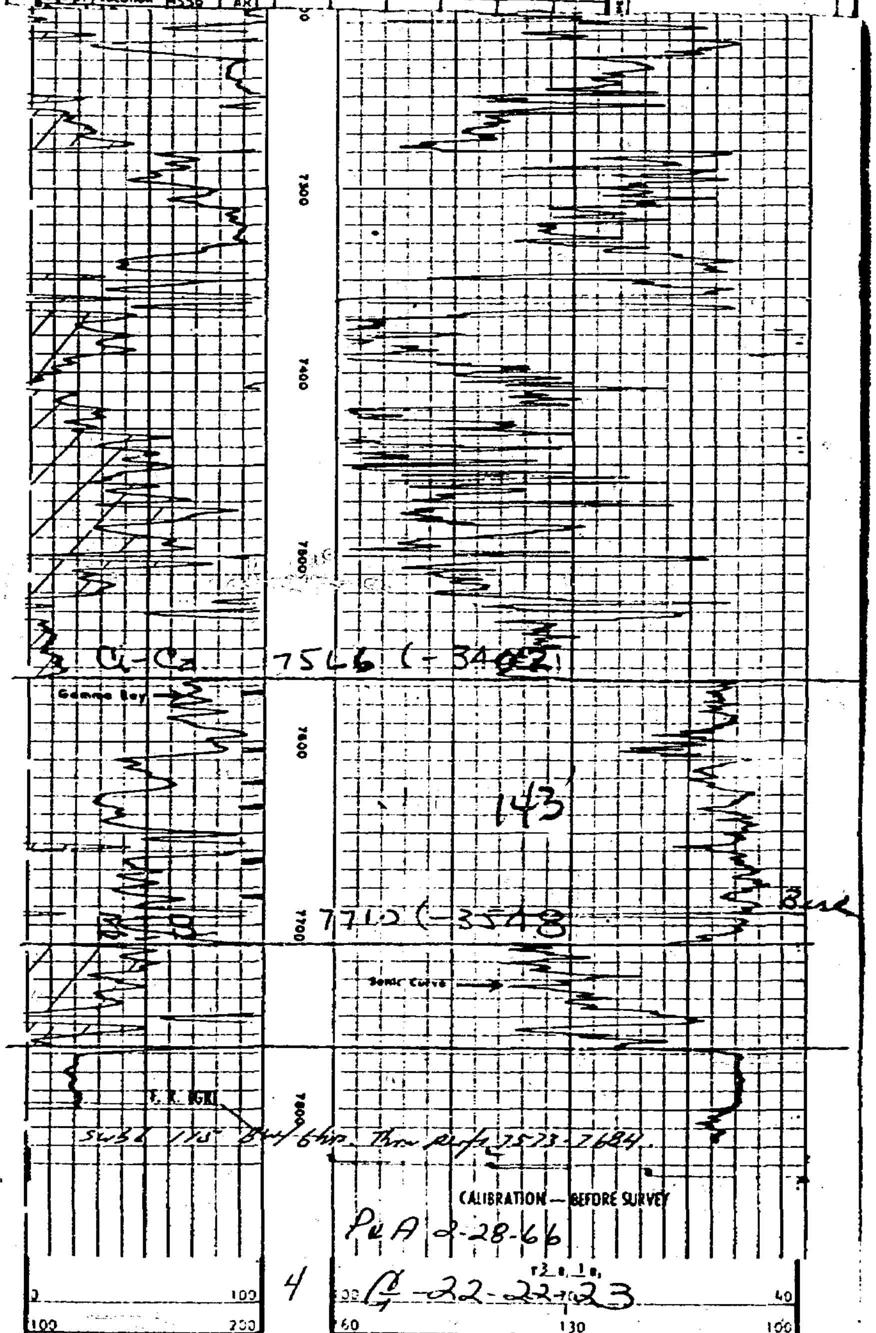
COUNTY EDDY · FIELD or LOCATION INDIAN BASIN · WELL HELBING FED. #2 · COMPANY GULF OIL CORP.

Permanent Datum: GROUND LEVEL, Elev. 4150
Log Measured From K.B., 14 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 4164, D.F. 4163, G.L. 4150

DEPTH DATUM 4162

Date	2-8-66			
Run No.	ONE			
Depth—Driller	7823			
Depth—Logger	7823			
Btm. Log Interval	7814			
Top Log Interval	0			
Casing—Driller	8-5/8" @ 2200	@	@	@
Casing—Logger	2205			
Bit Size	7-7/8"			
Type Fluid in Hole	GEL, CMC SPERSENE			
Dens. / Visc.	9.0 / 46			
pH / Fluid Loss	8.0 / 3 ml	ml	ml	ml
Source of Sample	--			
R_m @ Meas. Temp.	-- @ -- °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	-- @ -- °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	-- @ -- °F	@ °F	@ °F	@ °F
Source R_{mf} / R_{mc}	-- / --			
R_m @ BHT	-- @ -- °F	@ °F	@ °F	@ °F
Time Since Circ.	5-HOURS			
Max. Rec. Temp.	131 °F	°F	°F	°F
Equip. / Location	4556 / ART			



GAMMA RAY
API UNITS

DEPTHS

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT

COMPANY	GULF OIL CORPORATION	SWSC FR	2814
WELL	HELBING FEDERAL #2	SWSC TD	7823
FIELD	INDIAN BASIN	DRLR TD	7823
COUNTY	EDDY	STATE	NEW MEXICO
Elev. KB	4164	DF	4163
GL	4150		

13

F-23-22-23

3-22-23

Schlumberger

COMPENSATED NEUTRON-FORMATION DENSITY LOG
Gamma

COUNTY EDDY
FIELD or LOCATION INDIAN BASIN
WELL LOWE-FEDERAL #1
COMPANY TEXAS OIL & GAS

COMPANY TEXAS OIL & GAS CORPORATION

WELL LOWE-FEDERAL #1

FIELD INDIAN BASIN (UPPER PENN)

COUNTY EDDY STATE NEW MEXICO

Location: 1650' FNL & 2310' FWL of NMPM SURVEY

Sec. 23 Twp. 22-S Rge. 23-S

Other Services: BHC, DFL

Permanent Datum: G.L. Elev.: 4106

Log Measured From K.B., 11 Ft. Above Perm. Datum

Drilling Measured From K.B.

Elev.: K.B. 4117
D.F. 4116
G.L. 4106

4129

Date	3-31-22
Run No.	ONE
Type Log	GAMMA-GAMMA
Depth—Driller	7850
Depth—Logger	7852
Bottom logged interval	7850
Top logged interval	6350
Type fluid in hole	FRESH MUD GEL
Salinity, PPM Cl.	1700
Density	9.1
Level	FULL
Max rec. temp., deg F.	130
Operating rig time	2 HOURS
Recorded by	YEAGER
Witnessed by	COLTER

RUN No.	BOREHOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
1	7 7/8	TD	6350	8 5/8		SURF	2195

7500

7600

7700

7800

7900

0 100
100 200

2.0 2.5 3.0
1.0 1.5 2.0

GAMMA RAY
API UNITS

BULK DENSITY
GRAMS/CC

6 16

20 10 0 -10
POROSITY

0 +.25

CALIPER
HOLE DIAM. IN INCHES

DEPTHS

CORRECTION
GRAMS/CC

COMPANY TEXAS OIL & GAS CORPORATION

WELL LOWE-FEDERAL - 1

FIELD INDIAN BASIN (UPPER PENN)

COUNTY EDDY STATE NEW MEXICO

SCHL. FR 7850
SCHL. TO 7852
DRLR TD 7850
Elev:
KB 4117
DF 4116
GL 4106

4106 12-NOV-22

Dresser Atlas

Dual Induction Focused Log

(6)

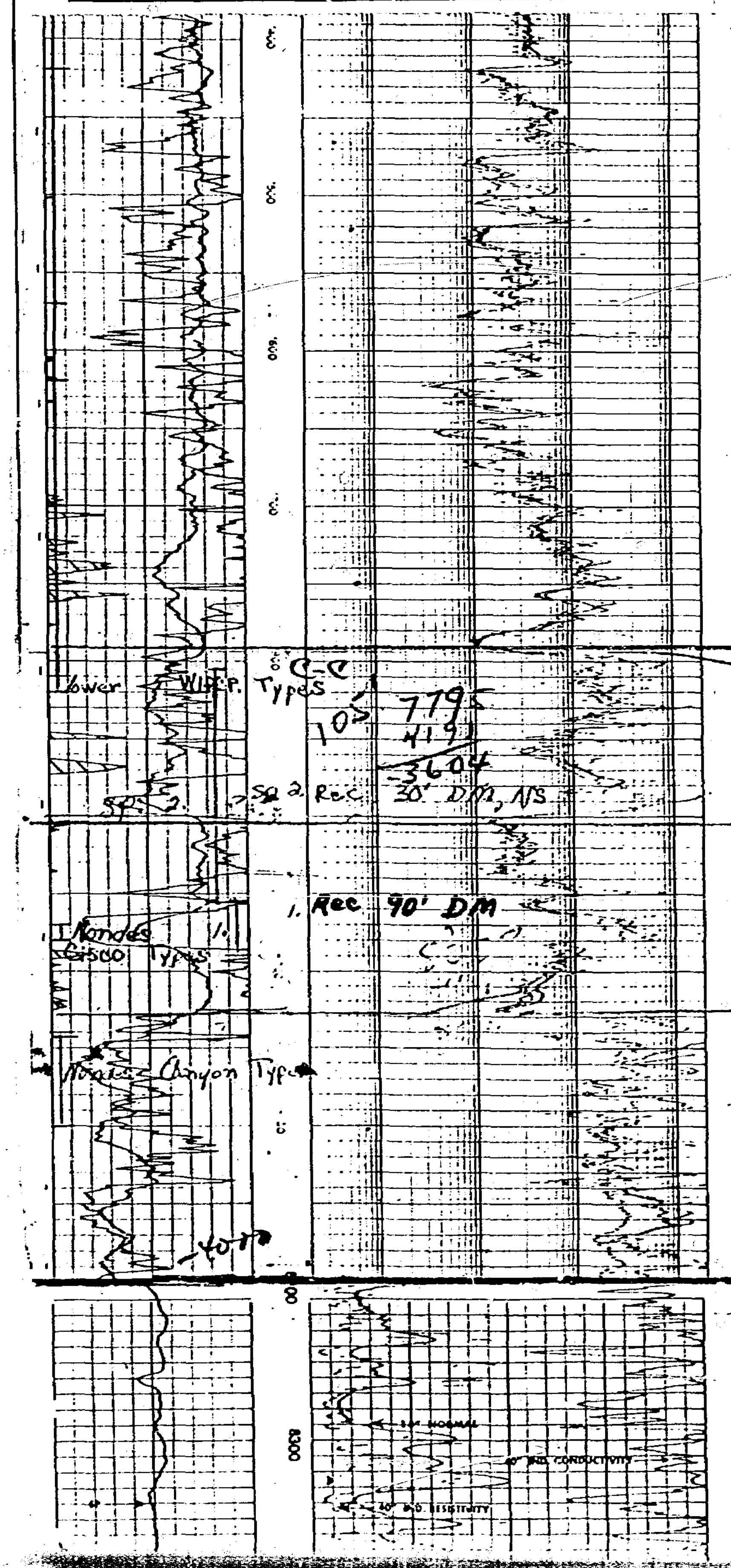
FILE NO	
COMPANY	~~MONSANTO COMPANY~~ Adobe
WELL	RALPH LOWE ESTATE NO. 1
FIELD	S. INDIAN BASIN
COUNTY	EDDY
STATE	NEW MEXICO
LOCATION	1650'FSL & 1850'FEL ✓
SEC	23
TWP	22-S
RGE	23-E
Other Services	BHC/AL/GR/C

Permanent Datum	GROUND LEVEL	Elev.	4179.4
Log Measured from	K. B.	11.6 Ft. Above Permanent Datum	
Drilling Measured from	K. B.		

Elevations: KB 4191; DF 4190; GL 4179.4

J-23-22-23

Date	5-4-71
Run No	ONE
Depth—Driller	8300
Depth—Logger	8294
Bottom Logged Interval	8292
Top Logged Interval	2309
Casing—Driller	8 5/8" @ 2306
Casing—Logger	2309
Bit Size	7 7/8"
Type Fluid in Hole	FRESH MUD 6% OIL
Density and Viscosity	8.9 / 40
pH and Fluid Loss	8.5 / 10 cc
Source of Sample	PIT
Rm @ Meas. Temp	1.9 @ 80 °F
Rmf @ Meas. Temp	1.25 @ 80 °F
Rmc @ Meas. Temp	- @ °F
Source of Rmf and Rmc	MEAS.
Rm @ BHT	1.0 @ 148 °F
Time Since Circ.	9 HOURS
Max. Rec. Temp. Deg. F.	148 °F
Equip. No. and Location	6028 / H. BBS
Recorded By	MC ATEE
Witnessed By	MR. GUNN & MR. WEIGEL



15

1 1 2 3 4 5 6 7

(8)

SCHLUMBERGER

DUAL INDUCTION

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COMPANY THE SUPERIOR OIL CO.
WELL CONE BUTTE #1
FIELD WILDCAT
COUNTY EDDY

COMPANY THE SUPERIOR OIL COMPANY

WELL CONE BUTTE UNIT #1

FIELD WILDCAT

COUNTY EDDY STATE NEW MEXICO

LOCATION 400' FNL 440' FWL
400' FNL 440' FWL

Other Services:
SGR PML
GRN- FDL

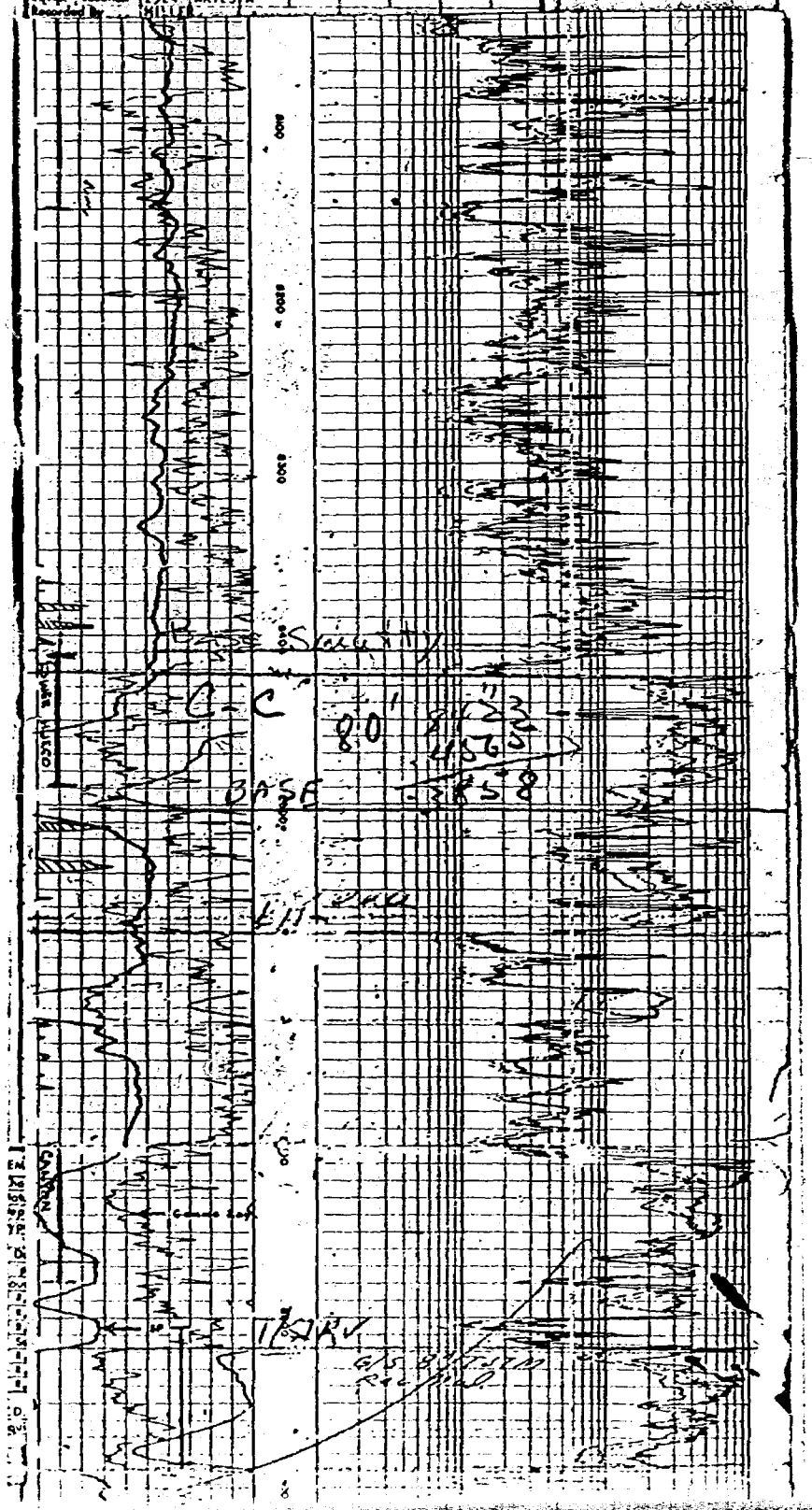
Sec. 19 Twp. 22-S Rge. 24-E

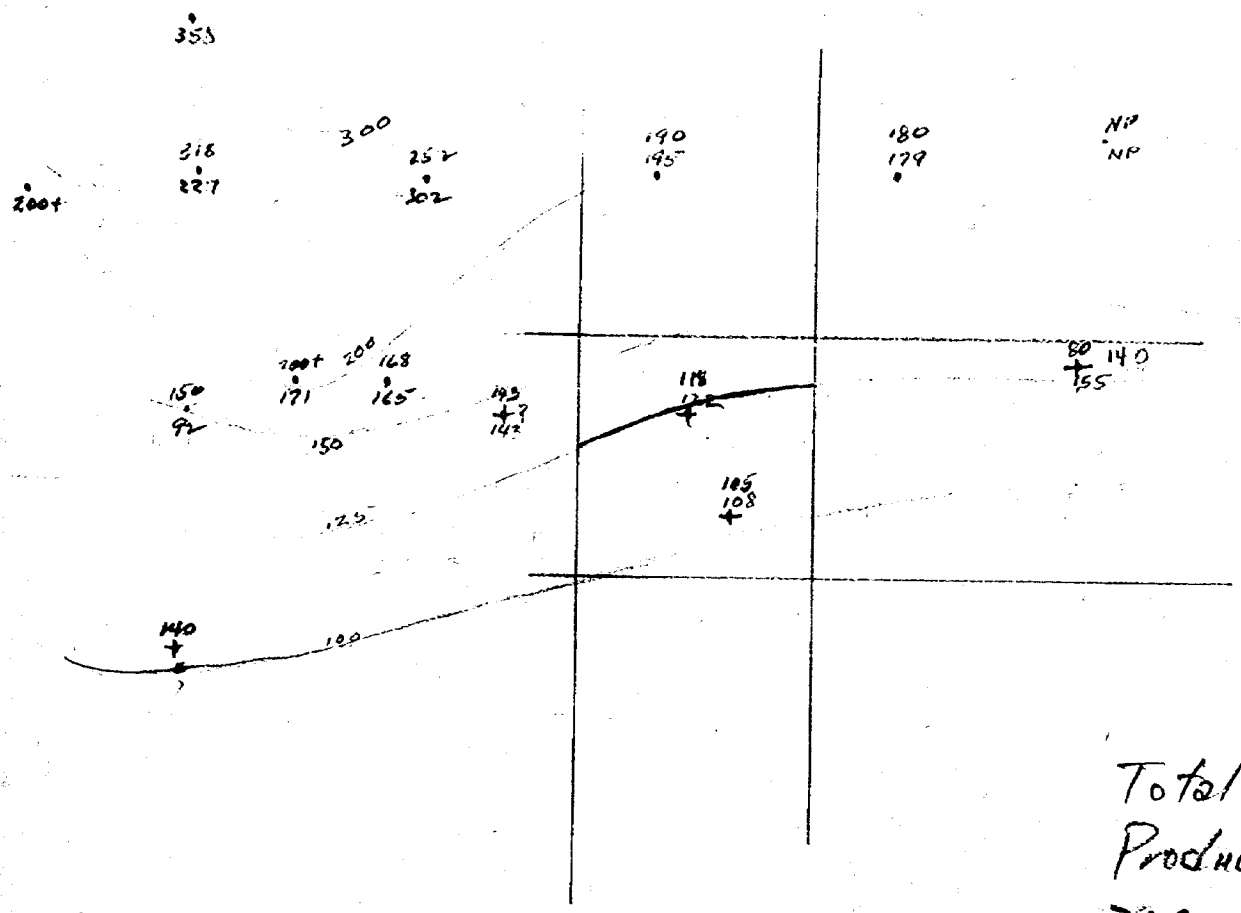
DF 4562

Permanent Datum GL Elev. 4562
Log Measured From KB 16 Ft. Above Perm. Datum
Drilling Measured From KB

Elevs. K.B. 4578
D.F. 4525
G.L. 4562

		DEPTH DATUM 4576
Date	9-2-63	
Run No.	ONE	
Depth – Driller	10803	
Depth – Logger	10803'	
Btm. Log Interval	10800	
Top Log Interval	3001	
Casing – Driller	9-5/8@2995	@ @ @ @
Casing – Logger	---	
Bit Size	8-3/4	
Type Fluid in Hole	Q-BROXIN EMULSION GEL-OIL	
Dens. / Visc.	10 / 41	
pH / Fluid Loss	9.5 / 6.9 ml	ml ml ml
Source of Sample	CIRC.	
R_m @ Meas. Temp.	1.30 @ 92 °F	@ °F @ °F @ °F
R_{mf} @ Meas. Temp.	.95 @ 86 °F	@ °F @ °F @ °F
R_{mc} @ Meas. Temp.	2.08 @ 86 °F	@ °F @ °F @ °F
Source R_m / R_{mf}	M / M	
R_m @ BHT	.77 @ 158 °F	@ °F @ °F @ °F
Time Since Circ.	---	
Max. Rec. Temp.	158 °F	°F °F °F
Equip. / Location	2524 / ARTESIA	
Recorded By	MILLER	





Total Area 1.69

Productive .151

.309 x 640 = 192 Acres

HARVEY E. YATES CO., INC.

ROSWELL, NEW MEXICO

SE INDIAN BASIN EDDY COUNTY, NM

Scale 1"=4000' 6/21/78

PROPOSED LOCATION

WALT CANYON UNIT

McKITT

Houston Division
Production Exploration, U.S. & Canada

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

November 15, 1978

William F. Carr
53 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Dear Bill:

Enclosed are copies of the logs the commissioner asked for at the hearing.

1. Pan Am #1 Hollowell "A" USA
   Sec. 17-22S-24E

2. Gulf #2 Helling Fed.
   Sec. 22-22S-23E

3. The Superior Oil #1 Cone Butte Unit
   See 19-22-24

There is some confusion, my note says that they asked for a well in Sec. 15-22-24, where no well exists so I am assuming they meant it to be the well in Sec. 17-22-24. Hopefully this satisfies the request.

Good luck on your move to your new office.

Yours truly,

Al Laczja

Al

Harvey E. Yates Company
401 North Colorado
Midland, Texas 79701
November 15, 1978

Secretary Director, O. C. D.
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

Enclosed are the data you requested at the hearing of case number 6266 DeNovo, 14, November 1978.

1. Xerox of Isopach Interval, Indian Basin Carbonate.
   Gulf Helbing Federal Comm Unit "F", (Section 15, T-22S, R-23E.)
   Superior Cone Butte Unit, (Section 19, T-22S, R-24E.)

2. Sample analysis of Indian Basin Carbonate Zone.
   Gulf Helbing Federal Number 2, (Section 22, T-22S, R-23E.)

The Superior Cone Butte Unit test is included on my cross section A-A, Exihibit number 4, an extra copy of which is included with this letter.

Respectfully yours,

Andrew Lattu

ALwm
enclosure

Sh. blue gray-dark gray

Sh. gray-green gray & green

68

Sh. dark gray

69

Sh. light green gray-dark gray

Sh. dark gray-green gray

70

Sh. dark brown gray

L. buff-brown, fine-dense Xl, microfossiliferous, cherty (gray, smooth)

71

L. buff-brown-dark gray, fine-dense Xl, microfossiliferous, cherty (gray white, smooth)

Sh. dark gray

L. tan-brown gray, fine-dense Xl, microfossiliferous

7

Sh. dark gray

L. gray brown, dense Xl, silty, shaly, pyritic

L. tan-brown-gray, fine-dense Xl, microfossiliferous

7

L. gray-tan, dense-fine Xl, microfossiliferous

L. tan-brown-gray, dense-fine Xl, microfossiliferous, cherty (gray white, smooth)

7

L. tan-brown-gray, fine-dense Xl, microfossiliferous

Ss. gray, very fine-fine grained, pyritic

75

Sh. dark gray & brown

Ss. gray, very fine grained, shaly

TOP CISCO LIMESTONE AT 7580' BY SPLS.

L. tan-brown, fine-dense Xl

76

D. tan-brown, medium-coarse Xl

Por. interstitial

D. white-tan, coarse Xl

77

L. tan white-brown, fine-dense Xl, fusulinid

Ss. gray, very fine grained

D. tan-white, coarse Xl (Spls. in place?)

Ss. white, coarse grained-conglomeratic, pebbles colorless quartz, arkosic

78

L. white-tan, fine Xl, chalky, tr sparry calcite, few embedded white, coarse dolomite crystals

522

7877'

SEC. 22 NEW MEXICO EDDY

22S 23E

CORRELATED

1-16-06

2 1650' FNL & 1650' FEL, SEC. 22-22S-23E

HEBBING FEDERAL

GULF OIL CORP.

4121 13-3/8" 266' 240 sx; 8-5/8" 2207' 1150 sx; 5-1/2" 7822' /300 sx

DRA

TD: 7823' DESC. BY BILL WRIGHT

THIS LOG IS ISSUED TO GULF OIL CORP. FOR ITS EXCLUSIVE AND CONFIDENTIAL USE ONLY

PERMIAN BASIN SAMPLE LABORATORY MIDLAND, TEXAS

3

13/8

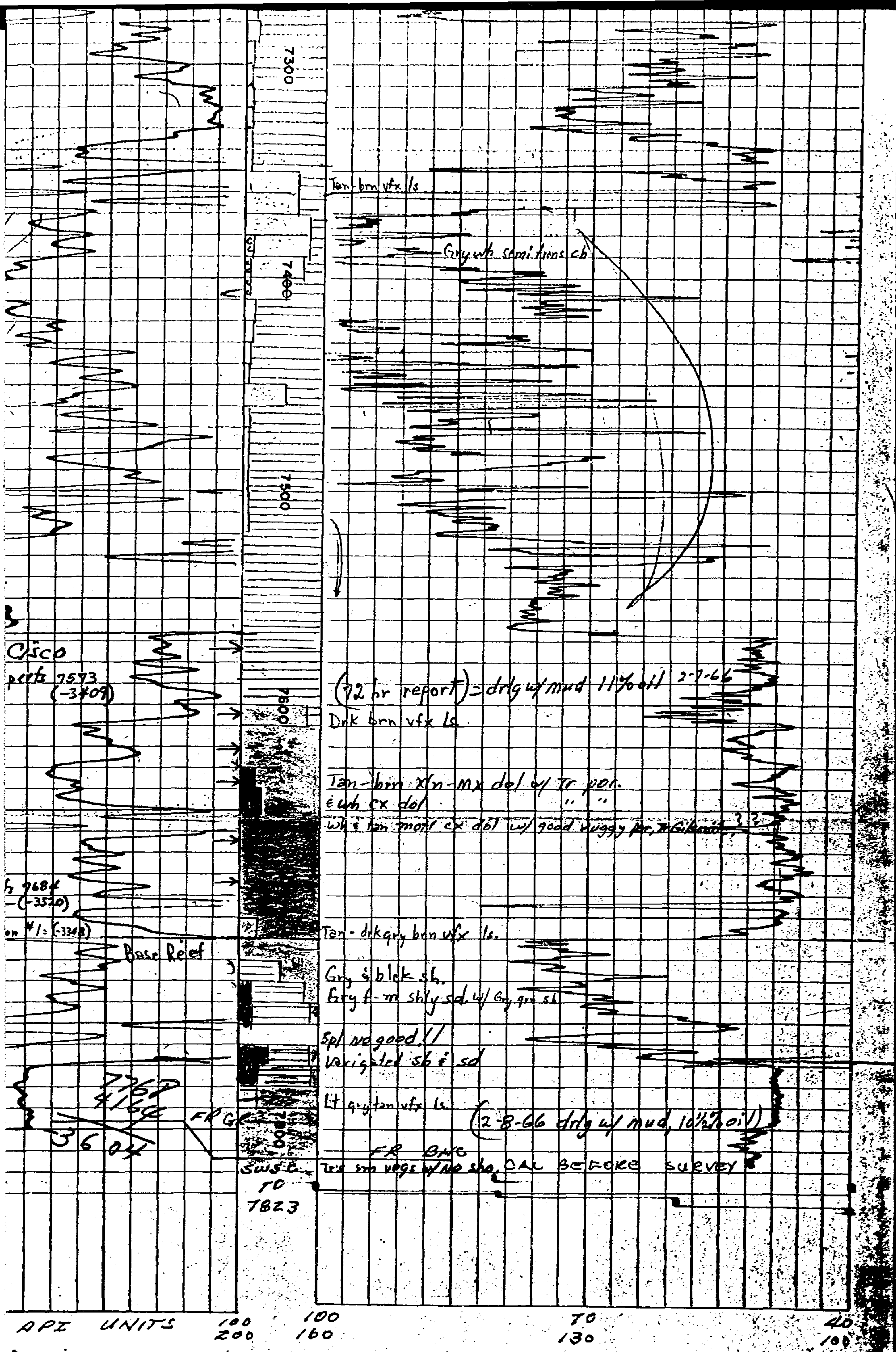
266

/240

SPLS. START AT 5500' IN BONE SPRING; E-L NOT AVAILABLE

NOTICE TO CUSTOMERS

When available, drilling time, drill stem test data, core data, etc. are being plotted on our graphic logs. This data is secured from sources believed to be reliable, but we cannot guarantee its accuracy.


7300
Tan-brn vfx ls
Gry wh semi trans ch
7400
7500
Cisco
perfs 7593
(-3409)
(72 hr report) = drlg w/ mud 11% oil 2-7-66
7600
Drk brn vfx Ls.
Tan-brn xln-mx dol w/ Tr por.
ē wh cx dol
Wh ē tan motl cx dol w/ good vuggy por.
7684
(-3520)
Base Reef
Tan - drkgry brn vfx ls.
Gry ē blck sh.
Gry f-m sh/y sd w/ Gry grn sh
Spl no good!!
Varigated sh ē sd
Lt gry tan vfx ls.
7767
4164
3604
(2-8-66 drlg w/ mud, 10½% oil)
FR GR
FR BHC
7800
SWSE
Tr's sm vugs w/ no sho.
CAL BEFORE SURVEY
TD
7823
API UNITS
100
200
100
160
TO
130
40
100

23
RGE.
22
TWP.
22
SEC.

Eddy N.MEX
COUNTY STATE
Gulf Oil
OPERATOR
2
WELL NO.
Helbing Fed
FEE
1650 FN + E
TOTAL DEPTH
COMPLETION DATE

ELEV. 4164 KB
INITIAL PROD'N.
PLOTTED BY DATE

NEW MEXICO LOG

500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800

100
200
300
400
500
600
700
800
900
1000

COUNTY EDDY, N. M. FIELD INDIAN BASIN (U/PENN)
OPR GULF OIL CORPORATION
LSE HELBING FEDERAL WELL NO. 2
LOC Sec 22, T-22-S, R-23-E, 1650' FNL & FEL of Sec.

MAPS CO-ORD
F. R. 1-20-66 OBJ 7600' METHOD RT SPUD 1-16-66
CTR Lowe C. R. ELEV D. F. 4161
LOGS SPLS GL
TD 7823' Lm PBD 7794 ABD LOC. P & A 3-1-66

PAY ZONE	TOP PAY	PRODUCING INTERVAL	IP	BO	W	BS&W	HRS	TEST BASIS
		PLUGGED & ABANDONED						

CHOKE	GOR	GTY	CP	TP	POT DATE	TREATMENT

CSG-TBG-PKR RECORD	
13-3/8" 266/140	5-1/2" 7823/300
8-5/8" 2207/275	

COUNTY EDDY, N. M. FIELD INDIAN BASIN (U/PENN)
WELL: GULF #2 HELBING FEDERAL ELEV DF 4161

DATE	WELL RECORD	SPL (LOG) MARKERS
	TD 7823' Lm, PBD 7794'	SA (590)
	Perf 2 @ 7563, 7605, 7621, 7637, 7665, 7684.	Glor (2036)
		Wlfc (6161)
	A/1000	Cisco Reef
	Swbd 115 BW (7563-7684) 6 hrs	(7567)
	Shot csg off @ 5200'	Cisco Dolo
		(7608)
		B/Cisco Dolo
		(7704)
	Jerry Savage 694-1039	Sample Top:
	Bob Hollis	Reef 7565
		T Dol 7608
		B/Dol 7698
	The Subsurface Library P. O. Box 912 Midland, Texas	L Ls 7870
		B/B 7720
		B/Sm 7566

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6266
Order No. R-5802

APPLICATION OF HARVEY E. YATES COMPANY
FOR AN UNORTHODOX GAS WELL LOCATION,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 6, 1978, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter

NOW, on this 20th day of September, 1978, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Harvey E. Yates Company, seeks approval of an unorthodox gas well location for an Upper Pennsylvanian test well to be drilled at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, or in the alternative, an unorthodox location for said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23.

(3) That the special pool rules for said Indian Basin-Upper Pennsylvanian Gas Pool, as promulgated by Order No. R-2440 and made permanent by Order No. R-2440-A, provide for 640-acre (one section) spacing and proration units in said pool with wells to be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

(4) That the applicant, by its Exhibit No. 2 in this case, has shown that at least 308.4 acres of the subject Section 23 is probably non-productive of gas from the Indian Basin-Upper Pennsylvanian Gas Pool, leaving a maximum of 331.6 acres as contributory of gas from said pool.

(5) That a well drilled at the closest permissable distance from the outer boundaries of a standard gas spacing and proration unit, i.e., 1650 feet from each of the nearest outer boundaries, assuming radial drainage of 640 acres, has a drainage pattern that extends 200.2 acres beyond the boundaries of its unit.

(6) That a well drilled at the location sought by the applicant in this case, i.e., 660 feet from each of the nearest outer boundaries of the unit, assuming radial drainage of 640 acres, has a drainage pattern that extends 357.1 acres beyond the boundaries of its unit, leaving but 282.9 acres of drainage pattern within the unit.

(7) That a well drilled at the alternative location sought by the applicant in this case, i.e., 990 feet from each of the nearest outer boundaries of the unit, assuming radial drainage of 640 acres, has a drainage pattern that extends 325.3 acres beyond the boundaries of its unit, leaving but 314.7 acres of drainage pattern within the unit.

(8) That according to the evidence presented at the hearing, applicant is the owner of probable gas reserves underlying a portion of Section 23, Township 22 South, Range 23 East, NMPM, and should be permitted to develop and produce said reserves in order to prevent waste.

(9) That to permit a well to be drilled and produced at either of the proposed non-standard locations without imposing a compensatory production penalty against such well would violate the correlative rights of owners of offsetting acreage.

(10) That a reasonable penalty to be imposed on a well drilled at either of the proposed unorthodox locations should take into consideration both the non-productive lands included in the spacing and proration unit and the extent to which the well's radius of drainage impinges upon neighboring properties beyond the radius of drainage for a standard location.

(11) That the penalized allowable factor for a well drilled at a non-standard location should be arrived at by the application of the following formula:

$$\text{Allowable Factor} = \frac{\text{No. of acres outside unit that are drained by standard location}}{\text{No. of acres outside unit that would be drained by proposed location}} \times \frac{\text{No. of productive acres in proposed proration unit}}{\text{No. of acres in standard proration unit}}$$

(12) That the allowable factor for a well drilled at the proposed 660/660 non-standard location described in Finding No. (2) above should be calculated as follows:

$$\text{Allowable Factor} = \frac{200.2 \text{ (Finding 5)}}{357.1 \text{ (Finding 6)}} \times \frac{331.6 \text{ (Finding 4)}}{640 \text{ (Finding 3)}} = 0.29$$

(13) That the allowable factor for a well drilled at the proposed alternative 990/990 non-standard location described in Finding No. (2) above should be calculated as follows:

$$\text{Allowable Factor} = \frac{200.2 \text{ (Finding 5)}}{325.3 \text{ (Finding 7)}} \times \frac{331.6 \text{ (Finding 4)}}{640 \text{ (Finding 3)}} = 0.32$$

(14) That the assignment of an allowable factor as described in Findings Nos. (12) and (13) above to the locations proposed by applicant will permit the applicant to produce its just and equitable share of the gas in the Indian Basin-Upper Pennsylvanian Gas Pool, will protect applicant's correlative rights and prevent waste, and will protect the correlative rights of offset operators in the pool.

(15) That each of the two proposed locations, as described in Finding No. (2) above, should be approved, subject to the allowable restrictions described in Findings Nos. (12) and (13) above.

IT IS THEREFORE ORDERED:

(1) That the applicant, Harvey E. Yates Company, is hereby authorized to drill an Upper Pennsylvanian gas test well at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, provided however, that such well upon completion in said pool shall have an allowable factor for gas proration purposes of 0.29.

In the alternative, applicant is hereby authorized to drill said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23, provided however,

that the well at this location upon completion in said pool shall have an allowable factor for gas proration purposes of 0.32.

(2) That all of said Section 23 shall be dedicated to a well completed in the Indian Basin-Upper Pennsylvanian Gas Pool at either of the aforesaid locations.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

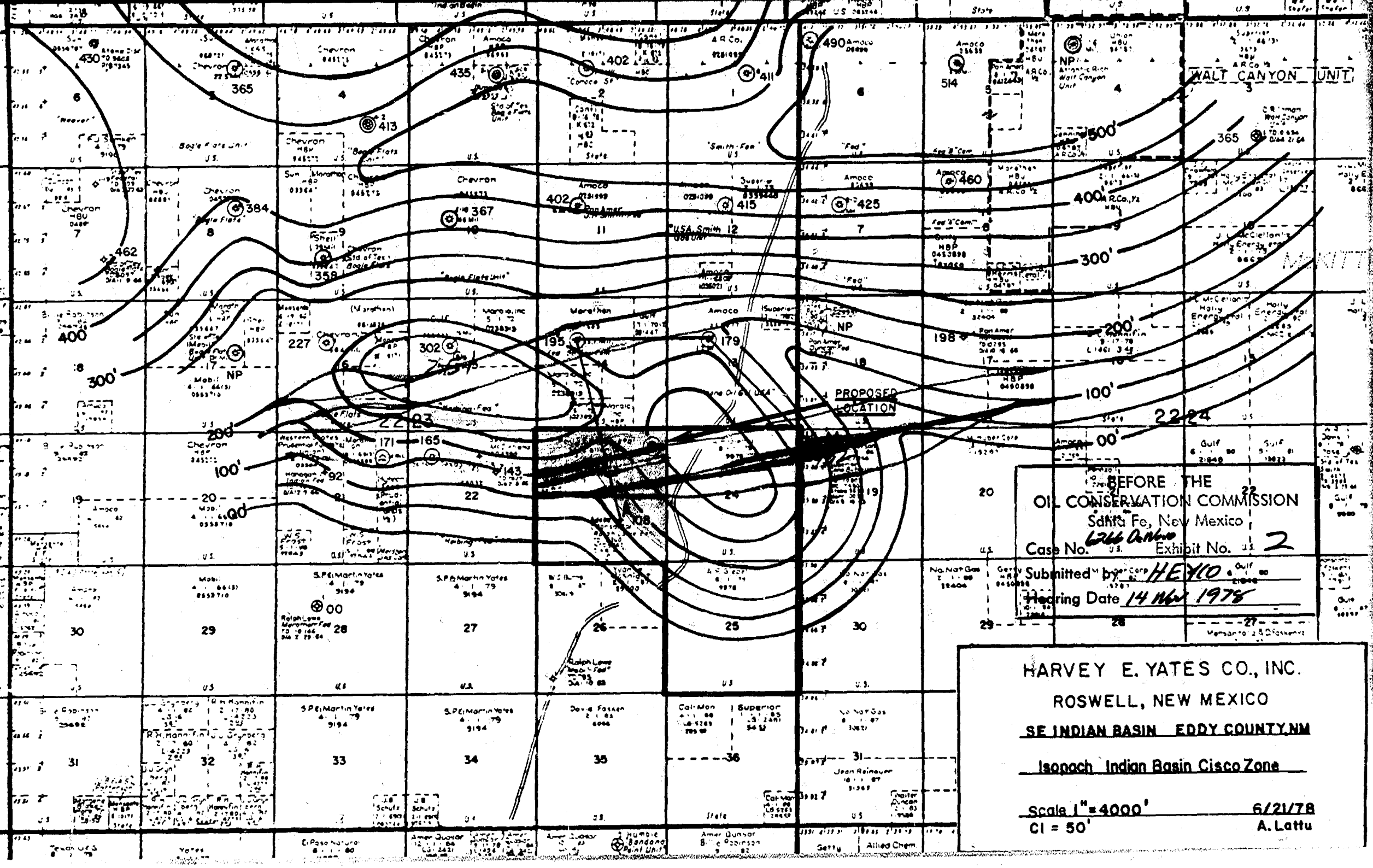
fd/

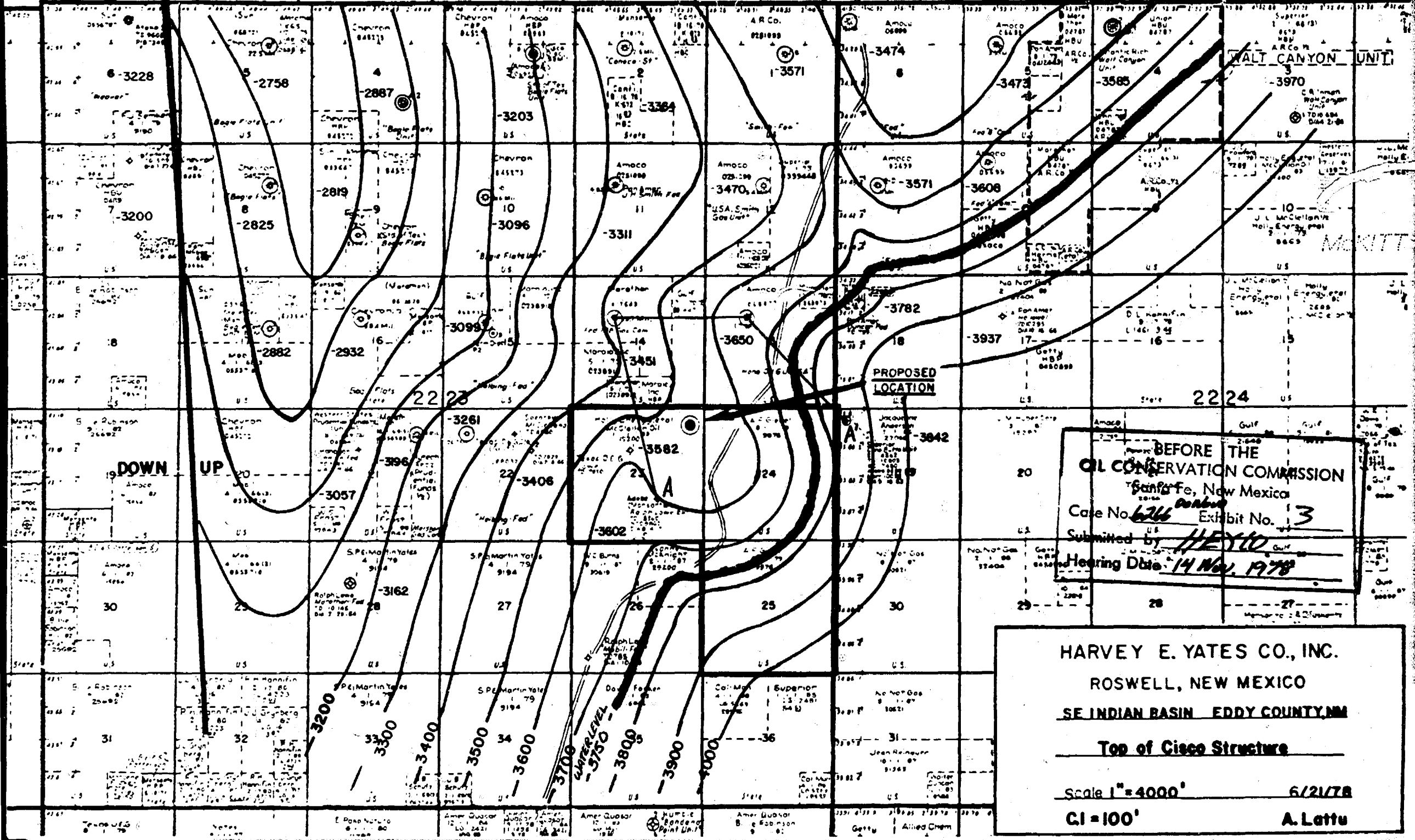
WALT CANYON UNIT

PROPOSED LOCATION

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6266 De Novo Exhibit No. 1
Submitted by HEYCO
Hearing Date 14 Feb. 1978

HARVEY E. YATES CO., INC.
ROSWELL, NEW MEXICO
SE INDIAN BASIN EDDY COUNTY, NM
Land Plat
Scale 1" = 4000' 6/21/78


WALT CANYON UNIT
PROPOSED LOCATION
500'
400'
300'
200'
100'
BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6266 Exhibit No. 2
Submitted by HEYCO
Hearing Date 14 Nov 1978
HARVEY E. YATES CO., INC.
ROSWELL, NEW MEXICO
SE INDIAN BASIN EDDY COUNTY, NM
Isopach Indian Basin Cisco Zone
Scale 1"=4000'
CI = 50'
6/21/78
A. Lattu


WALT CANYON UNIT
PROPOSED LOCATION
DOWN
UP
2223
2224
-3200
-3300
-3400
-3500
-3600
-3700
WATER LEVEL -3750
-3800
-3900
-4000
BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6246 (reheard)
Exhibit No. 3
Submitted by HEYCO
Hearing Date 14 Nov. 1978
HARVEY E. YATES CO., INC.
ROSWELL, NEW MEXICO
SE INDIAN BASIN EDDY COUNTY, NM
Top of Cisco Structure
Scale 1"=4000'
6/21/78
CI = 100'
A. Lattu

Cumulative Totals

SE Completions

	Oil		Gas		P&A	
	1977	1978	1977	1978	1977	1978
Jan	40	33	13	22	12	23
Feb	62	63	30	46	27	36
Mar	105	101	48	74	36	54
Apr	142	134	66	91	57	59
May	178	171	87	113	72	95
June	208	228	111	129	80	89
July	240	268	133	213	93	111
Aug	263	305	150	179	108	129
Sept	302	364	176	215	124	157
Oct	338	401	199	232	139	178
Nov	371		212		153	
Dec	419		243		169	

NW Completions

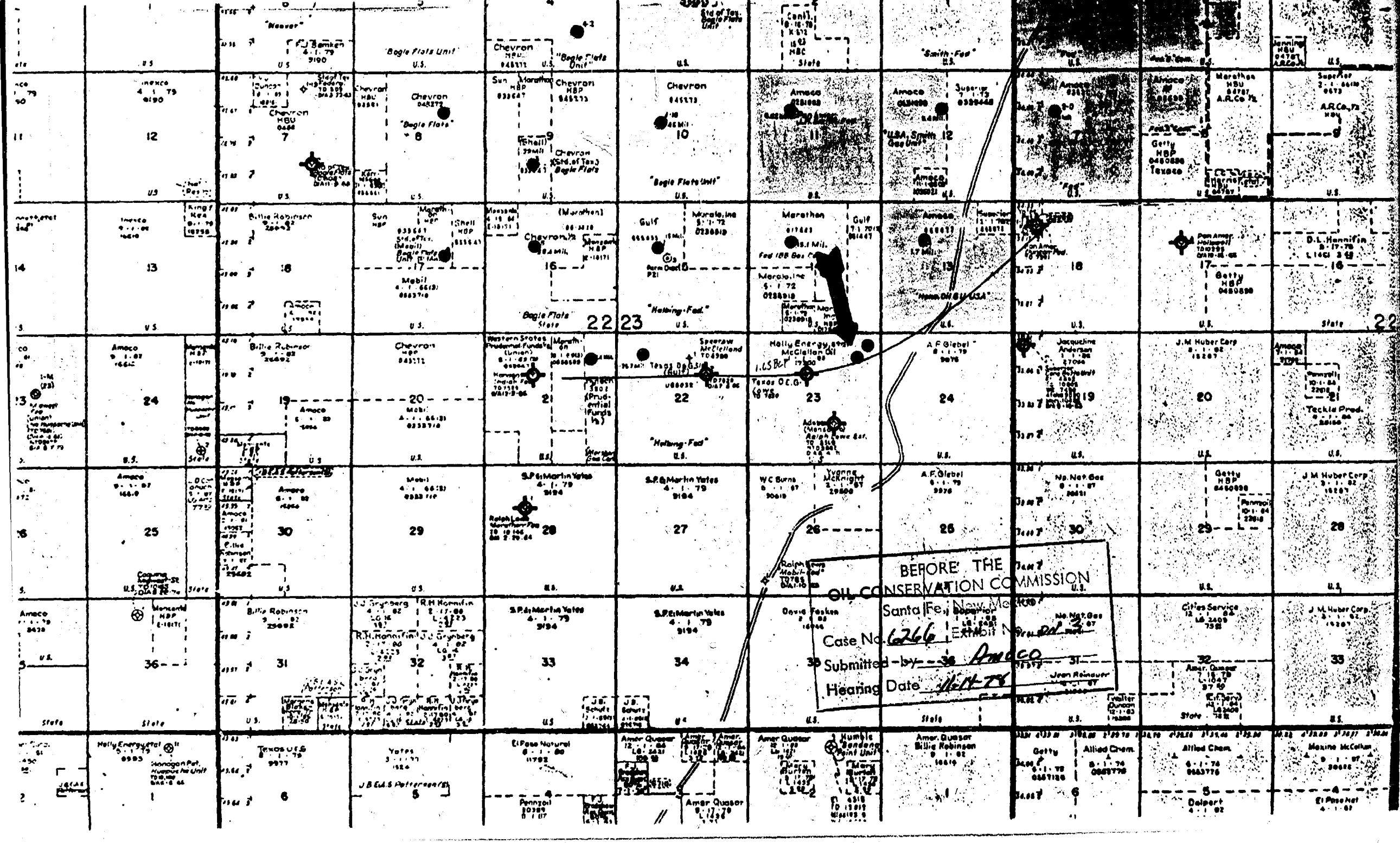
	Oil		Gas		P&A	
	1977	1978	1977	1978	1977	1978
Jan	8	5	56	52	6	4
Feb	10	6	89	94	10	10
Mar	17	11	124	135	13	14
Apr	21	17	179	188	17	16
May	24	23	219	253	20	20
June	28	33	262	321	24	25
July	30	38	321	377	25	34
Aug	32	44	369	451	29	44
Sept	37	55	419	534	42	58
Oct	47	56	465	573	50	62
Nov	52		515		54	
Dec	58		587		62	

New Locations

	SE		NW	
	1977	1978	1977	1978
Jan	62	70	44	95
Feb	121	155	73	140
Mar	179	271	153	207
Apr	291	357	337	376
May	368	462	441	424
June	444	548	486	558
July	536	656	577	608
Aug	617	777	644	702
Sept	711	874	709	808
Oct	762	893	779	870
Nov	865		813	
Dec	964		939	

Statewide Totals

	Oil		Gas		P&A		TOTAL		Change	%	Footage Drilled x 1000		New Locations			Monthly
	1977	1978	1977	1978	1977	1978	1977	1978			1977	1978	1977	Quarter	1978	Quarter	Change %
JAN	48	38	69	74	18	27	135	139	+4	3.0%	622	648	106		185		+ 74.5
FEB	72	69	119	140	37	46	228	255	+27	12.2%	1115	1296	194		295		+ 52.1
MAR	122	112	172	209	49	68	343	389	+46	13.4%	1617	2043	332	332	478	478	+ 44.0
APR	163	151	245	279	74	75	422	505	+23	4.8%	2201	2590	628		673		+ 7.2
MAY	202	194	306	366	92	95	600	655	+55	9.2%	2774	3348	769		886		+ 15.2
JUNE	236	261	373	450	104	114	713	825	+112	15.7%	3365	4184	930	598	1107	629	+ 19.0
JULY	270	306	454	531	118	145	842	982	+140	16.6%	3951	4819	1113		1264		+ 13.5
AUG	295	349	519	630	137	173	951	1152	+201	21.1%	4410	5605	1261		1429		+ 13.3
SEPT	339	419	595	749	166	215	1100	1383	+283	25.7%	5065	6724	1420	490	1632	525	+ 14.9
OCT	385	457	664	805	179	240	1238	1502	+264	21.3%	5788	7238	1541		1763		+ 14.4
NOV	423		727		207		1357				6320		1678				
DEC	477		830		231		1538				7194		1893	473			


BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6266
Submitted by Amoco
Hearing Date 11-14-78
Exhibit No. 2

ATWOOD, MALONE, MANN & COOTER
A PROFESSIONAL ASSOCIATION
LAWYERS

JEFF D. ATWOOD [1883-1960]
ROSS L. MALONE [1910-1974]

P. O. DRAWER 700
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO 88201
[505] 622-6221

CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER
ROBERT A. JOHNSON
JOHN W. BASSETT
ROBERT E. SABIN
BRIAN W. COPPLE

RANDAL W. ROBERTS

November 9, 1978

Mr. Joe Ramey
Secretary-Director
Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

RE: Examiner Hearing November 14, 1978
Case No. 6266 (DE NOVO)

Dear Mr. Ramey:

We would appreciate your filing the enclosed Entry of Appearance for Amoco Production Company in Case No. 6266 (De Novo).

Thank you and with regards, I am,

Very truly yours,

Brian W. Copple

BWC:sgs
Enc.

cc: Guy Buell, Esquire
w/enc.

BEFORE THE OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR UNORTHODOX LOCATION, SECTION 23 TOWNSHIP 22 SOUTH, RANGE 23 EAST, INDIAN BASIN-UPPER PENNYSLVANIAN GAS POOL, EDDY COUNTY, NEW MEXICO.)	Case No. 6266 DE NOVO

ENTRY OF APPEARANCE

The undersigned hereby enter their appearance on behalf of Amoco Production Company with Guy Buell of Houston, Texas.

ATTWOOD, MALONE, MANN & COOTER, P.A.

By _____
Post Office Drawer 700
Roswell, New Mexico 88201

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 7, 1978

COMMISSION HEARING

IN THE MATTER OF:	
Application of Jerome P. McHugh for downhole commingling, Rio Arriba County, New Mexico.	CASE 6146 (DE NOVO)
Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico.	CASE 6266 (DE NOVO)
Application of Durham, Inc., for compulsory pooling, Eddy County, New Mexico.	CASE 6377
In the matter of the hearing called by the Oil Conservation Division on the motion of Shell Oil Company to permit Corinne Grace and all other interested parties to appear and show cause why Division Order No. R-3713 should not be declared null and void.	CASE 6378
Application of Shell Oil Company for pool contraction and pool extension, Eddy County, New Mexico.	CASE 6379

BEFORE: Joe D. Ramey, Director

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: Lynn Teschendorf
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

MR. RAMEY: Call Cases 6146, 6266, 6377, 6378, and 6379.

MS. TESCHENDORF: Case 6146, application of Jerome P. McHugh for downhole commingling Rio Arriba County, New Mexico. Upon application of Jerome P. McHugh this case will be heard De Novo.

Case 6266, application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico. Upon application of Harvey E. Yates Company this case will be heard De Novo.

Case 6377, application of Durham, Inc., for compulsory pooling, Eddy County, New Mexico.

Case 6378, in the matter of the hearing called by the Oil Conservation Division on the motion of Shell Oil Company to permit Corinne Grace and all other interested parties to appear and show cause why Division Order No. R-3713 should not be declared null and void.

Case 6379, application of Shell Oil Company for pool contraction and pool extension, Eddy County, New Mexico.

It is requested that these cases be continued until November 14, 1978.

MR. RAMEY: This hearing is hereby continued until November 14, 1978, 9 o'clock a.m., Oil Conservation Commission Conference Room, State Land Office Building, Santa Fe, New Mexico. The hearing is adjourned.

HANAGAN PETROLEUM CORPORATION

PHONE 505 - 623-5053
J. P. WHITE BUILDING
POST OFFICE BOX 1737
ROSWELL, NEW MEXICO
88201

RECEIVED
NOV 6 1978
Oil Conservation Commission

November 2, 1978

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Subject: Unorthodox Gas Well Location
Indian Basin Field
Eddy County, New Mexico
Case No. 6266 (De Novo)
November 7, 1978 Hearing
(Continued to November 14, 1978)

Gentlemen:

Hanagan Petroleum Corporation as an operator, working interest owner, and overriding royalty owner in several Upper Penn. gas wells in the Indian Basin Field, again for the record objects to the proposed unorthodox gas well location in Section 23, T22S, R23E, Eddy County, New Mexico. The objection includes the proposed surface location, particularly the 660' FN & EL location, the dedication of 640 acres to the proposed gas well, and the producing of this well without a drastic cut in its gas allowable from the Upper Penn. Field gas pay.

The decision of the Oil Conservation Division's on this matter contained in their Order R-5802 after the July 6, 1978 hearing on this case was that all of the requests were granted for the drilling of the unorthodox location with only one exception, i.e., a penalized gas allowable. In our opinion, the Oil Conservation Division Order R-5802 was very favorable to the party requesting this unorthodox location.

This decision could result in the drilling of an Upper Penn. gas well in the Indian Field at a crowded-in 660' from leaseline location (nearly 1,000' beyond normal spacing), marks the first well drilled in the field with a 640 acre dedication even though it already has not one but two Upper Penn. dry holes on it.

As to the allowable penalty imposed, it should be readily apparent that one should be applied and in this case the one given was certainly more than we would have expected under the circumstances. The actual location of the two dry holes in the section plus an additional direct west offset dry hole in Section 22 along with the drillstem tests and presence of tight limestone, in our opinion, indicates that less than 160 acres of the NE¼ is possibly gas productive.

Any gas produced by this well due to an increase in allowable above that granted in Order R-5802 must come from outside this proration unit, thus adversely affecting the correlative rights of other parties producing gas from this reservoir. Therefore, no additional allowable should be granted this proposed well.

Yours truly,

Hugh E. Hanagan

Hugh E. Hanagan
Vice President
Hanagan Petroleum Corporation

HEH/pjt

Docket No. 35-78

Dockets Nos. 37-78 and 38-78 are tentatively set for hearing on November 21 and December 6, 1978. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - NOVEMBER 7, 1978

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 6146: (DE NOVO) (Continued and Readvertised)

Application of Jerome P. McHugh for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Tapacito-Gallup and Basin-Dakota production within the wellbore of his Jicarilla Well No. 5 located in Unit D of Section 29, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

Upon application of Jerome P. McHugh this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6266: (DE NOVO)

Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of an Upper Pennsylvanian test well to be located 660 feet from the North and East lines or, in the alternative, 990 feet from the North and East lines of Section 23, Township 22 South, Range 23 East, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, all of said Section 23 to be dedicated to the well.

Upon application of Harvey E. Yates Company this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6377: Application of Durham, Inc., for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying Section 8, Township 21 South, Range 24 East, Indian Basin-Morrow Gas Pool, Eddy County, New Mexico, to be dedicated to a well to be drilled 1650 feet from the North and East lines of said Section 8. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6378: In the matter of the hearing called by the Oil Conservation Division on the motion of Shell Oil Company to permit Corinne Grace and all other interested parties to appear and show cause why Division Order No. R-3713, which pooled all of Section 8, Township 21 South, Range 24 East, Eddy County, New Mexico, should not be declared null and void, if said pooling order has not already automatically expired due to non-production.

CASE 6379: Application of Shell Oil Company for pool contraction and pool extension, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the contraction of the Indian Basin-Morrow Gas Pool by the deletion therefrom of the N/2 of Section 8, Township 21 South, Range 24 East, Eddy County, New Mexico, or in the alternative, all of said Section 8, and the extension of the Cemetery-Morrow Gas Pool to include the aforesaid N/2 or all of said Section 8.

****

Docket No. 36-78

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 8, 1978

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

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 6369: Application of Amoco Production Company for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its DR Well No. 3 to be drilled 660 feet from the North and East lines of Section 16, Township 19 South, Range 32 East, Lea County, New Mexico, to be simultaneously dedicated with its Well No. 1 located in Unit E to the present 320-acre unit comprising the N/2 of said Section 16.

LAW OFFICES
LOSEE & CARSON, P.A.
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ARTESIA, NEW MEXICO 88210

A. J. LOSEE
JOEL M. CARSON
CHAD DICKERSON

AREA CODE 505
746-3508

OCT 13 1978

11 October 1978

Mr. Joe D. Ramey, Director
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Application of Harvey E. Yates Company for Unorthodox Gas Well Location, Case No. 6266, Order No. R-5802

Dear Mr. Ramey:

Enclosed, you will please find three copies of application for a de novo hearing on the above unorthodox gas well location application. Please let us know when this matter has been set for hearing before the Commission.

Very truly yours,

LOSEE, CARSON & DICKERSON, P.A.

A. J. Losee

AJL:jcb
Enclosures

cc w/enclosure: Mr. George M. Yates
Mr. William F. Carr
Mr. K. M. Nolen

BEFORE THE OIL CONSERVATION DIVISION
ENERGY AND MINERALS DEPARTMENT
STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, INDIAN BASIN-UPPER PENNSYLVANIAN GAS POOL, EDDY COUNTY, NEW MEXICO	:	CASE NO. 6266

APPLICATION FOR DE NOVO HEARING

COMES NOW HARVEY E. YATES COMPANY, by its attorneys, and in support hereof respectfully states:

1. On June 6, 1978 Harvey E. Yates Company filed its application for an unorthodox gas well location 660 feet from the North and East lines of Section 23, Township 22 South, Range 23 East, N.M.P.M. or, in the alternative, 990 feet from the North and East lines of said Section 23, and all of the allegations of said application are incorporated herein by reference.

2. The application was heard on July 6, 1978 before Daniel S. Nutter, the examiner duly appointed by the Division to hear the matter.

3. On September 20, 1978 the Division Director issued Order No. R-5802 approving the unorthodox gas well locations and establishing an allowable factor of 0.29 for the location 660 feet from the North and East lines of said Section 23, and an allowable factor of 0.32 for the location 990 from the North and East lines of said Section 23.

4. Applicant is adversely affected by the allowable factors assigned to each unorthodox location, and not more than 30 days have elapsed since the order was entered.

WHEREFORE, applicant prays:

A. That this application be set for hearing de novo before the Oil Conservation Commission, and that notice of said hearing be given as required by law.

B. That upon hearing the Commission enter its order granting applicant permission to drill its proposed gas well 660 feet from the North and East lines of said Section 23 or, in the alternative, 990 feet from the North and East lines of said Section 23, and to establish a just and reasonable allowable factor for each of said locations.

C. And for such other relief as may be just in the premises.

HARVEY E. YATES COMPANY

By: _____
A. J. Losee

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

BEFORE THE OIL CONSERVATION DIVISION
ENERGY AND MINERALS DEPARTMENT
STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, INDIAN BASIN-UPPER PENNSYLVANIAN GAS POOL, EDDY COUNTY, NEW MEXICO	:	CASE NO. 6266

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C. And for such other relief as may be just in the premises.

HARVEY E. YATES COMPANY

By: A. J. Losee

A. J. Losee

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
~~DIVISION~~ COMMISSION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6266 DE NOVO
Order No. R-5802-A

APPLICATION OF HARVEY E. YATES COMPANY
FOR AN UNORTHODOX GAS WELL LOCATION,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE ~~DIVISION~~ COMMISSION

BY THE ~~DIVISION~~ COMMISSION:

This cause came on for hearing at 9 a.m. on July 6, 1978, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter, ~~and on November 7, 1978 before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."~~

NOW, on this 20th day of September, 1978, the ~~Division~~ COMMISSION a quorum being present, ~~Director~~, having considered the testimony, ~~the record, and the recommendations of the Examiner~~, and being fully advised in the premises, and the exhibits received at said hearing,

FINDS:

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

(2) That the applicant, Harvey E. Yates Company, seeks approval of an unorthodox gas well location for an Upper Pennsylvanian test well to be drilled at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, or in the alternative, an unorthodox location for said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23.

(3) That the special pool rules for said Indian Basin-Upper Pennsylvanian Gas Pool, as promulgated by Order No. R-2440 and made permanent by Order No. R-2440-A, provide for 640-acre (one section) spacing and proration units in said pool with wells to be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

according to evidence presented at the hearing

(4) That ~~the applicant, by its Exhibit No. 2 in this case, has shown that~~ at least ~~300.4~~ 192 acres of the subject Section 23 is probably non-productive of gas from the Indian Basin-Upper Pennsylvanian Gas Pool, leaving a maximum of ~~331.6~~ 192 acres as contributory of gas from said pool.

~~(5) That a well drilled at the closest permissable distance from the outer boundaries of a standard gas spacing and proration unit, i.e., 1650 feet from each of the nearest outer boundaries, assuming radial drainage of 640 acres, has a drainage pattern that extends 200.2 acres beyond the boundaries of its unit.~~

~~(6) That a well drilled at the location sought by the applicant in this case, i.e., 660 feet from each of the nearest outer boundaries of the unit, assuming radial drainage of 640 acres, has a drainage pattern that extends 357.1 acres beyond the boundaries of its unit, leaving but 282.9 acres of drainage pattern within the unit.~~

~~(7) That a well drilled at the alternative location sought by the applicant in this case, i.e., 990 feet from each of the nearest outer boundaries of the unit, assuming radial drainage of 640 acres, has a drainage pattern that extends 325.3 acres beyond the boundaries of its unit, leaving but 314.7 acres of drainage pattern within the unit.~~

5 (~~4~~) That according to the evidence presented at the hearing, applicant is the owner of probable gas reserves underlying a portion of Section 23, Township 22 South, Range 23 East, NMPM, and should be permitted to develop and produce said reserves in order to prevent waste.

6 (~~5~~) That to permit a well to be drilled and produced at either of the proposed non-standard locations without imposing a compensatory production penalty against such well would violate the correlative rights of owners of offsetting acreage.

7 (~~6~~) That a reasonable penalty to be imposed on a well drilled at either of the proposed unorthodox locations should take into consideration ~~both~~ the non-productive lands included in the spacing and proration unit, ~~and the extent to which the well's radius of drainage impinges upon neighboring properties beyond the radius of drainage for a standard location.~~

8 (~~7~~) That the penalized allowable factor for a well drilled at a non-standard location should be arrived at by the application of the following formula:

Allowable Factor = ~~No. of acres outside unit that are drained by standard location~~ / ~~No. of acres outside unit that would be drained by proposed location~~ = No. of productive acres in proposed proration unit / No. of acres in standard proration unit

9 ~~(10)~~ That the allowable factor for a well drilled at either of the proposed ~~alternative~~ non-standard locations described in Finding No. (2) above should be calculated as follows:

Allowable Factor = ~~200.2 (Finding 5) / 331.6 (Finding 6)~~ 192 (Finding 4) / 640 (Finding 3) = 0.30

~~(13) That the allowable factor for a well drilled at the proposed alternative 330/990 non-standard location described in Finding No. (2) above should be calculated as follows:~~

~~Allowable Factor = 200.2 (Finding 5) / 325.3 (Finding 7) x 331.6 (Finding 4) / 640 (Finding 3)~~

(14) That the assignment of an allowable factor as described in Finding No. ~~(12) and (13)~~ (9) above ~~to the locations proposed by applicant~~ will permit the applicant to produce its just and equitable share of the gas in the Indian Basin-Upper Pennsylvanian Gas Pool, will protect applicant's correlative rights and prevent waste, and will protect the correlative rights of offset operators in the pool.

(15) That each of the two proposed locations, as described in Finding No. (2) above, should be approved, subject to the allowable restrictions described in Findings No. ~~(12) and (13)~~ (9) above.

IT IS THEREFORE ORDERED:

(1) That the applicant, Harvey E. Yates Company, is hereby authorized to drill an Upper Pennsylvanian gas test well at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, provided however, that such well upon completion in said pool shall have an allowable factor for gas proration purposes of ~~0.29~~ 0.30,

~~In the alternative, applicant is hereby authorized to drill said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23, provided however,~~

or at a point 990 feet from the North line and ~~660~~ 990 feet from the East line.

~~that the well at this location upon completion in said pool shall have an allowable factor for gas proration purposes of 0.32.~~

(2) That all of said Section 23 shall be dedicated to a well completed in the Indian Basin-Upper Pennsylvanian Gas Pool at either of the aforesaid locations.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

Lucero

Arnold

fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
6 July 1978

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico. CASE 6266

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Lynn Teschendorf, Esq.
Legal Counsel for the Division
State Land Office Building
Santa Fe, New Mexico 87501

For the Applicant: A. J. Losee, Esq.
LOSEE, CARSON & DICKERSON
Artesia, New Mexico 88210

For Amoco Production: K. M. Nolen, Esq.
Amoco Production Company
Post Office Box 3092
Houston, Texas 77001

A P P E A R A N C E S CONT'D

For Marathon Oil Company:

William F. Carr, Esq.
CATRON, CATRON & SAWTELL
Old Santa Fe Trail
Santa Fe, New Mexico 87501

and

Robert J. Pickens, Esq.
P. O. Box 3128
Houston, Texas 77001

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 988-3404
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. NUTTER: We'll call now Case Number 6266.

MS. TESCHENDORF: Case 6266. Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico.

MR. LOSEE: A. J. Losee, appearing on behalf of the Applicant, Losee, Carson and Dickerson -- not the Applicant -- law firm. I have one witness, Mr. Andy Lattu.

(Witness sworn.)

MR. NUTTER: Are there any other appearances in Case Number 6266?

MR. NOLEN: K. M. Nolen, appearing on behalf of Amoco Production Company. I have one witness, Mr. Jim Allen.

MR. CARR: William F. Carr, Catron, Catron, and Sawtell, Santa Fe, appearing on behalf of Marathon Oil, and I am associated today with Mr. Robert J. Pickens, attorney for Marathon from Houston.

MR. NUTTER: Sir, what was your name again, please?

MR. NOLEN: K. M. Nolen.

ANDREW LATTU

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. LOSEE:

Q. Would you state your name, residence, and occupation?

A. Andrew Lattu. I live in Midland, Texas. I'm a geologist for Harvey Yates Company.

MR. NUTTER: Will you spell your last name, please, Mr. Lattu?

A. L-A-T-T-U.

MR. NUTTER: Thank you.

Q. Have you previously testified before this Commission and have your qualifications as a geologist been made a part of the record?

A. Yes, I have and they are.

MR. LOSEE: Are Mr. Lattu's qualifications acceptazble, Mr. Examiner?

MR. NUTTER: I'm sure they are.

Q. (Mr. Losee continuing.) Would you state the purpose of the application of Harvey E. Yates Company in this case, Number 6266?

A. Yes. This is a request for an unorthodox location for a Pennsylvanian test in Section 23 of Township 22 South, Range 23 East, in Eddy County, to test the Cisco Canyon-Indian Basin Zone.

Indian Basin field rules are 1650 feet from

the section lines. We are requesting 660 feet from the north and east of Section 23 or an alternate location of 990 feet from the north and east of Section 23.

A. Your Section 23 adjoins the Indian Basin-Upper Pennsylvanian Gas Pool, does it not?

A. Yes, it does.

Q. Would you please turn to what has been marked as Exhibit One and explain what is shown on this exhibit?

A. Exhibit One is a land plat which shows the relationship of our acreage and the proposed location to the surrounding acreage, offset operators and offset gas wells.

It will be noted that this proposed location is approximately 5000 feet or more from the nearest two gas wells, located in Sections 13 and 14.

Q. And the field lies to the north of your proposed location?

A. Yes, the field is north of the proposed location.

Q. Please turn to what has been marked as Exhibit Two and explain what is portrayed by this exhibit?

A. Exhibit Two is an isopach of the Indian Basin Cisco Canyon Zone. This is an essentially carbonate bank which was developed in Cisco Canyon times. This isopach shows the massive bank development to the north,

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which trends essentially east-west. It shows how the bank thins quite rapidly to the south. For example, in Section 3 of Township 22, 23, you go from a thickness of 500 feet in Section 3 to a thickness of zero feet in Section 28, which is at a distance of approximately three miles or less.

This isopach also shows a small buildup in Section 15, which is in front of the bank, the principal well there being the Gulf Helbing Federal Communitization Unit "F".

This well encountered approximately 302 feet of this Indian Basin Zone, is offset by two thinner wells, and therefore is an additional small buildup in front of this carbonate bank.

MR. NUTTER: Which well were you talking about there?

A. In Section 15 of Township 22 South, Range 23 East, the Gulf Helbing Federal Communitization Unit.

MR. NUTTER: Okay, with its 302 feet and then the two wells that you were talking about that had the thinner section are the ones in 21 and 42?

A. No, in Section 16 Chevron has a well which penetrated approximately 227 feet.

MR. NUTTER: Okay.

A. And Marathon's well in Section 14 has 195 feet.

MR. NUTTER: Okay, east and west offsets, then, is that right?

A. Yes. There is additional buildup in Sections 23 and 24, essentially on trend with this buildup in Section 15. The control for this buildup is the Pan Am HOC Federal Gas Com. in Section 13 to the Superior Cone Butte in Section 19 of 22, 24.

This shows a change in strike from essentially east-west to northwest-southeast. Coming back to Township 22 South, Range 23 East, the Texas Oil and Gas Lowe Federal in the northwest quarter of the section and the Monsanto Ralph Lowe Estate in the southeast quarter of the section, again change of strike from east-west to approximately northwest to southeast.

MR. NUTTER: Now I didn't find the Monsanto well. Where is that?

A. All right, it's -- on the map there's also a cross section outlined and it's right at "A" or "1", which is a future exhibit.

MR. LOSEE: They're both in Section 23, aren't they?

A. Yes. It's located 16 -- the Monsanto well is 1650 from the south line and 1980 from the east line.

It had been re-entered by Adobe and drilled deeper to the Morrow after Monsanto had abandoned it as

a Pennsylvanian test.

These two changes of strike are the basis for the interpretation of an additional buildup similar to what we have found in Section 15. These two buildups can either be a pre-Indian Basin banking before the massive bank developed to the north, or it might be a rubble zone and detritus that has sloughed off the bank.

Q. What relation does this buildup have with respect to your application for this unorthodox location?

A. Our unorthodox location is an attempt to penetrate as thick a section in this Indian Basin Zone as possible. The zone consists of a mixture of limes and dolomites. Wells have encountered dolomite, which is believed to furnish the permeability and gives the field its production. This dolomite is straw, so to say, reaching into limestone and producing gas from the porosity there.

Wells that encounter only limestone section without any dolomite have been commercial failures. They have shown porosity on log analysis, but they have not had any permeability, which would make them commercially productive.

Q. Now, you show one location on your map here. Is that a 660 location?

A. Yes, that is the 660 from the north and east

location.

Q. The application also asks for the alternative location of 990 out of the northeast corner, does it not?

A. Yes, it does.

Q. According to this map, could you expect to complete a well at a standard location 1650 feet from the north and east corner?

A. The standard location of 1650 from the north and east would be a much higher risk location, the risk being you would encounter porous limestone as other wells in the section have, which could contain gas, but without encountering sufficient thickness of dolomite to drain the limestone, it would not be a commercially productive well.

Q. Is the communication in this Indian Basin Field good communication between the wells?

A. Yes, the communication throughout the field is very good. Examples of these are pressures that have been recorded throughout the history of the field. Hanagan drilled his well on Section 21, which is the Hanagan Indian Federal, which is located 1650 from the north and 1980 from the west in Section 21, Township 22 South, Range 23 East. He drilled this well in 1966 and encountered a bottom hole pressure of 28 35 pounds.

The Indian Basin Field pressure at that time

was 2879 pounds. These two pressures are very close to each other and show communication throughout the Indian Basin Zone.

Q. What about the Southwest Natural Gas Well drilled in the same section in 1969?

A. Southwest Natural Gas drilled their well in 1969. They encountered a bottom hole pressure of 2627 pounds. The Indian Basin Field pressure at that time was approximately 2790 pounds.

Moving over to Section 22, Texas Oil and Gas drilled their Helbing Federal No. 2 -- no, their No. 1, excuse me, in 1972. They encountered bottom hole pressures of 2335 pounds. Indian Basin Field at that time had pressures of 2370 pounds.

These pressures in the south end of the field of these wells being very close to the Indian Basin Field pressures, show excellent communication throughout the field. They also show that the southern acreage is being drained from the wells that are already completed to the north.

Q. Does that also show that if the productive interval is present in Section 23, it's being drained to the north by the northern wells?

A. Yes, it does.

Q. What percentage is the state of depletion is

this Indian Basin Field in now, if you know?

A. The field has projected ultimate reserves of 2.2 trillion cubic feet of gas. It has now produced 755 billion cubic feet of gas, which is approximately 33 percent depleted.

Q. Please turn to what has been marked Exhibit Three and explain what is portrayed by this exhibit.

A. Exhibit Three is a structure map contoured on the top of the Indian Basin -Cisco structure, or Indian Basin pay zone. This shows the field water level at approximately 37 -- or minus 3750 feet. There is a nosing across Sections 23 and 24. This is partially controlled by the strike from Texas Oil and Gas well in Section 23 and the Monsanto well in 23, and is also influenced by the buildup that's contoured on the isopach map that we have just previously looked at on Exhibit Two.

Of the 58 producing wells within the Indian Basin Field, 19 were drilled on unorthodox locations, 7 of them were grandfathers; 10 of them are drilled for topographic reasons, and 2 were drilled for geologic reasons. These 2 wells are located in the south end of the field in Sections 21 and 22.

Q. Were those 10 drilled for topography reasons drilled up-structure?

A. Yes, they were.

Q. Now you said 3750 feet is the gas-water contact. How do you establish that?

A. Well, wells located where the top of this Cisco Canyon Zone or below that zone are water-wet. The best -- the closest example of this is the Superior No. 1 Cone Butte in Section 19, Township 22 South, Range 24 East.

Q. Is that generally recognized as the gas-water contact in the field?

A. Yes, it is.

Q. Please turn to what has been marked Exhibit Four, being your cross section, and explain what is shown by this exhibit.

Q. This is a stratigraphic cross section and the line of it is spotted on here on Exhibit Number Two, if you want to refer across to it.

The first well, Well No. 1, is located in Section 23. It is the Monsanto well in the southeast quarter of 23. This would be the Monsanto Ralph Lowe Estate.

The second well is the well up in Section 14 of 22, 23. This is the Marathon Federal IBB Gas Com.

Well No. 3 is located in Section 13, 22 South, Range 23 East, and this is the Pan Am HOC Federal Gas Com.

And the fourth well on the righthand side of this cross section is the Superior Cone Butte, which is

located in Section 19 of 22 South, Range 24 East.

MR. NUTTER: Now, Mr. Lattu, before you get too far, the fourth well there is the Superior well and that's the one that you mentioned was water-wet and established -- part of the reason you established the water-gas contact at minus 3750?

A. Yes, that's correct.

MR. NUTTER: How about this first well on the exhibit, the old Monsanto well? Was it water-wet, too?

A. It was tight. It -- referring to the structural map, which is Exhibit Number Three, if it had permeability, it would have been productive as far as it's well above the water contact for the field.

MR. NUTTER: It was too tight to produce, though?

A. Well, it had some porosity by logs but no permeability by DST.

Q. (Mr. Losee continuing.) From looking at this, will you explain the relation of the dolomite and limestone as they contribute, if they do, to gas production in this field?

A. Yes. The two wells, Well No. 2 and Well No. 3, both contain dolomite, that is by sample log, and both are producing wells.

The number -- the well on Section 14 contains

a much thicker section of dolomite and is also a much better gas well.

The well on Section 13 contains a little bit of dolomite and is a somewhat tighter well.

When you come down to Well No. 1 here, you see the section is still present. There's approximately 11 feet of log porosity in excess of 2 percent, but by DST the two-hour final shut-in pressure is 127 pounds, which shows a lack of permeability. There is also no dolomite in that well.

The dolomitization process as it can change from limestone to dolomite, the dolomite fingers out in very thin stringers that will be mixed in with the lime; therefore you can have stringers of dolomite a foot or less in thickness which have permeability and these penetrate through limestones that have porosity and contain gas but themselves would not be productive without this permeable straw going through them furnished by the dolomite.

Our proposed location would be between Wells Nos. 1 and 2 on this cross section, with our intent to encounter enough dolomite to drain the porous limestone in Section 23.

Q. Would you refer back to your Exhibits Two and state whether or not you have an opinion as to the number

of acres, surface acres, in Section 23 which contain gas which could be produced from the well at either of your unorthodox locations?

A. All right, I have shaded in in blue a zone going from the section lines, north section lines of Sections 21, 22, and 23, down to the 100 foot isopach of the Indian Basin Zone.

I feel that this is a contributory acreage towards gas production in these sections. This is based principally on the Hanagan well in Section 21, which had 92 feet of section but he had a little bit of dolomite in the top of his well and he by DST had bottom hole pressures that approximated the Indian Basin field pressure at that time.

I feel therefore that with the presence of dolomite, which would give you your productive permeability, the Indian Basin section to a thickness of 100 feet would be contributing gas to the Indian Basin Field.

Q. How many surface acres does that approximate in Section 23?

A. This is approximately 400 acres in Section 23.

Q. Now, let me ask to explain the Gulf well in Section 22, which shows a 143 feet of section. Was that completed as a producer or plugged and abandoned?

A. No, it was plugged and abandoned. It had 75

feet of dolomite, which is -- should have been more than adequate to make a gas well. It had approximately 35 feet of porosity in excess of 2 percent, but it was drilled down to a lower zone below the Indian Basin pay zone, which is a carbonate zone that is completely saturated and charged with water. This is a zone that is present throughout the field area, and by communication from this water zone the well was not able to be completed as a productive gas well.

Q. Was the gist of the testimony in the application of Texas Oil and Gas Corporation for an unorthodox location in Section 22 that the Gulf well had communication?

A. Yes.

Q. Now, if the 100 foot interval will contribute gas, do you have any statement with respect to whether the 125 foot interval will also contribute gas?

A. Yes, it's -- I have dashed in 125 foot isopach line here and it's very difficult to put a specific line as to where gas can be produced and cannot be produced. The Texas Oil and Gas well in Section 23 had 122 feet of section but it had no dolomite. The DST in that well was -- bottom hole pressure was so low that apparently there was no permeability whatsoever in contact with the wellbore, so therefore, a conservative line of 125 feet of Indian Basin section could be interpreted as -- it would be --

this well would be on the other side of it and that would then be the most conservative interpretation of acreage that would be contributive towards production.

Q. Well, now if that well at 122 feet was plugged and abandoned, do you have an opinion as to whether the area around the wellbore would contribute -- could contribute gas to a well drilled at your unorthodox location?

A. Yes, I feel it would if we can encounter dolomite at our unorthodox location. The dolomite was -- we discussed the interfingering of the dolomite with the limestones. Log analysis of both the previous two dry holes in Section 23 has shown porosity and low water saturation on the logs, which would indicate that there's porous limestone there at the locations these two wells are drilled not encountering dolomite. They were unable to produce gas in any commercial quantity. If we can encounter dolomite in our location, as this dolomite fingers out into these wells, or into the area and acreage surrounding these wells, it would be able to drain the gas to our location. If I could use an analogy of two straws in a glass of Coke, you pinch one straw and you can draw through the other.

Q. Now how many acres are approximately within your 125 foot contour line?

A. There --

Q. That would produce gas to your well at the

unorthodox location?

A. There are approximately 350 acres within the 125 foot isopach as contoured.

Q. And 400 acres approximately in your 100 foot contour?

A. Yes.

Q. Now, the Commission rules provide that the Commission can take such action as is necessary if you seek an unorthodox location to offset the advantage gained by that location.

Do you have an opinion as to whether or not the 660 location is any greater disadvantage to the offset operators than the 990 foot location?

A. If the Commission were to assign an allowable equal to recoverable gas under Section 23, the 660 location should have no greater advantage over offset operators than the 990 location. It would only minimize the risk of the operator drilling the well.

Q. Now is that because of the excellent communication that is in this field?

A. Yes, it is.

Q. In your opinion will the approval of this application prevent waste and protect the correlative rights of the parties owning Section 23?

A. Yes, it will.

MR. LOSEE: I move the introduction of -- strike that.

Q. Were Exhibits One through Four prepared by you?

A. Yes, they were.

MR. LOSEE: I move the introduction of Exhibits One through Four.

MR. NUTTER: Applicant's Exhibits One through Four will be admitted in evidence.

MR. LOSEE: Mr. Examiner, at this time I would ask the Commission to take administrative notice of the testimony and exhibits in Case Numbers 4089, which was the application of Paul M. Marchand for an unorthodox location in Section 21. The well is now operated by Southwest Natural Gas. And Case Number 4562, being the application of Texas Oil and Gas Corporation for an unorthodox location in Section 22.

Those cases resulted, if I may take a moment, in the Marchand case in Order R-3737-A, which was de novo order, which found that there were 360 acres out of 640 of recoverable gas, assigned an allowable of 56-1/4 percent.

The Texas Oil and Gas order was Order R-4172. It found that in Section 22 there were 350 acres and assigned an allowable of 55 percent.

MR. NUTTER: We will take administrative notice of those two cases and the orders entered therein.

MR. LOSEE: That's all my direct examination, Mr. Examiner.

MR. NUTTER: Are there any questions of the witness? Mr. Carr?

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Lattu, how many acres did you finally conclude were contributory acres in Section 23?

A. I feel that 400 acres would be contributory, which is based on the amount of section thicker than 100 feet of the Indian Basin zone in that section.

Q. Now, in reaching this conclusion you are analogizing from the Hanagan well, which is located in, I believe, Section 21, is that correct?

A. Yes.

Q. You're placing weight on this but you're somehow discounting the fact that you have two dry holes in Section 23?

A. Yes. Neither of these wells encountered dolomite, which is essential to drain.

Q. If there is no dolomite around the wells and that's what they indicate, would you expect to be able to

drain this acreage?

A. Yes, I feel you could, that you can have a thin bed of dolomite that even these wells may have penetrated and which was only a few inches thick, was the analogy I gave of a pinched straw, but you couldn't really draw very much through it, but that a well drilled where the dolomite was thicker due to the excellent permeability exhibited by the dolomite of the Indian Basin Field, it would be able to draw the gas towards it.

Q. How much dolomite did you encounter in the Texas Oil and Gas well?

A. The one in Section 23 or --

Q. Yes, sir.

A. Okay, the Texas Oil and Gas well in Section 23 reported no dolomite.

Q. So if there is no dolomite there do you believe it will contribute still?

A. I believe that the porous limestone there could be drained by dolomite.

Q. Didn't you say that dolomite was what was required to drain the acreage?

A. Yes, to make a commercially productive well the presence of dolomite is required to drain even -- it will reach even into the limestone. This is exhibited by Hanagan's well, I believe. He had less than 100 feet

but he did have some dolomite.

Q. And there was none present in the Texas Oil and Gas well on the northwest quarter of 22?

A. No, there was not.

Q. Okay, thank you. Now, I believe you've indicated there's excellent communication in the Indian Basin, is that correct?

A. Yes.

Q. And assuming you have 640 productive acres in Section 23, I assume a well would drain that many acres.

A. Yes.

Q. Do you know what the radius of drainage is in feet for a well drilled in the Indian Basin?

A. I'm not familiar with that, no.

Q. If you were drilling at a 990 location, or if you moved a proposed location from 990 from the north and east lines of the section to a 660 location, wouldn't it make sense you would be extending the area of drainage by 330 feet into the offsetting acreage?

A. The purpose of the 660 over the 990 would be to try to encounter a thick enough dolomite section to drain your acreage at a commercial rate.

Q. But my question is, if you move 330 feet toward an offsetting property, doesn't it make sense that

you would extend the drainage by 330 feet into that offsetting property?

A. That would be more of an engineering question. I really decline to answer.

Q. I believe you stated that this acreage was experiencing drainage from the well located -- from wells located north of it that were approximately 5000 feet away.

A. Yes, I believe the acreage is being drained by all the wells to the north.

Q. Thank you. Do you believe then that it might be possible that the radius of drainage could be 5000 feet?

A. Well, I'm not familiar with what a radius of drainage is.

MR. CARR: I don't believe I have any further questions.

MR. NUTTER: Are there any questions of the witness? Mr. Nolen?

CROSS EXAMINATION

BY MR. NOLEN:

Q. Mr. Lattu, would you refer to what has been marked as your Exhibit Two and explain to me what the area shaded in blue thereon indicates?

A. All right. I shaded an area in blue from the north section line of Sections 21, 22, and 23 to the 100-foot isopach line of the Indian Basin Zone.

This, I feel, is approximately the boundary of the limestone buildup of the Indian Basin Zone that would be contributing gas to the Indian Basin Field.

Q. And what do the red hatch marks --

A. That was the earlier effort I was -- most of the maps don't have it. Yours is the only one that has that. That was a practice effort of enhancing that 100-foot isopach line.

The rest of the maps are blue.

Q. Well, aren't the chances of productivity equally as great in the -- any of the areas which you have shaded in blue?

A. If you encounter porous dolomite, I believe. That seems to be the -- if you don't have the dolomite to drain the porosity of the area, you don't have a commercial well.

The two wells drilled there in Section 23 are both -- both have thicker than 100 feet in the Indian Basin Zone but neither of them encountered dolomite, so they have no permeability to drin any gas that may be present around the wellbore.

Q. Well then what is your reason again for saying

that a well drilled at either of your unorthodox locations would better enhance your prosects than one drilled in the blue area further to the south?

A. I feel that by trying to penetrate as thick a piece of this Indian Basin Zone as possible gives us a better chance of encountering porous dolomite.

Q. The thicker the dolomite the better your prospects?

A. Well, any dolomite at all is necessary but the more dolomite you encounter, definitely the better well you can expect.

Q. And, again, what is your basis for saying that the dolomite decreases the further south you go in your blue area?

A. Well, the cross section and the wells that have been drilled there show that.

The dolomite is much thinner on your fringe wells to the south.

MR. NOLEN: That's all.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Lattu, I take it that the basic premise is that the thicker the limestone, or the thicker the Indian Basin limestone, the more chance you have of en-

countering dolomite in that limestone, is that it? Is that --

A. Yes.

Q. -- the first basic premise?

A. Yes, that's correct.

Q. And then, of course, the more dolomite that you get, the better your chances of a good well?

A. Yes.

Q. So we have the Texas Oil and Gas well there in Section 23 that encountered 122 feet gross limestone but no dolomite, is that it?

A. Yes, that's correct.

Q. And, of course, the other well 108 feet of gross limestone and no dolomite.

Now, have you made any estimate as to how much or where the dolomite would start as to productive thickness of limestone?

A. It's not really a specific line you can draw. The Hanagan well only had 92 feet of section but he had dolomite in that 92 feet.

The Mobil well in Section 22 there had a very thin, if any, dolomite section.

Q. The Gulf well?

A. The Gulf well, I'm sorry. But it had 143 feet of section. Then you come to the Texas Oil and Gas --

Q. But no dolomite.

A. It had -- let me refer to my notes here and see.

Yes, that well had 75 feet of dolomite with 143 feet of section.

Q. Why didn't it produce, then?

A. Well, it had water communicating from a water-wet zone --

Q. Oh, that's the one that --

A. -- below the Indian Basin.

Q. -- drilled down into the Morrow, I guess, or some place else, and the water came back up, did it?

A. Yes, that's correct.

Q. Okay.

A. The thickest well that didn't have any dolomite would be the Texas Oil and Gas well in Section 23 that had 122 feet but no dolomite.

The dolomitization process isn't a uniform thing that takes place with just regard to thickness of the section. It has to do with the movement of fluids through the lime.

Q. Now you've drawn your blue-shaded area as being 100 feet or more of gross section and being contributory to the gas, but you haven't determined whether there's any dolomite present in that 100 feet of pay.

A. Well, that could only be found by drilling. If you're asking do I know for sure that there's any dolomite in the section, you can only find out by drilling.

Q. But you're assuming you've got 100 productive acres -- or 400 productive acres that's shaded in blue because it's all above the 100-foot contour there, but yet the Texas Oil and Gas well that has 122 feet of section and didn't produce, so that --

A. That's correct.

Q. -- haven't you added some acreage there, at least up to the 122-foot line, that is nonproductive?

A. I don't necessarily feel that that is a good cut-off. I think if the dolomite reaches out into a section where -- all you know is that there is no dolomite at the Texas Oil and Gas well. There could be dolomite around it reaching down into zones thinner than 100 feet, but based on the Hanagan well and its pressures, I felt 100 feet was a good cut-off. The only problem being in Section 23 the two wells there did not encounter dolomite.

Q. And they're living proof that a 100 feet is not necessarily productive.

A. Well, they show that --

Q. Right in the same section.

A. They show that having 100 feet doesn't guarantee you'll find dolomite. I feel both wells show porosity

on log analysis.

Q. Well, don't you think, then, that your more conservative estimate of 125 feet is more realistic than your liberal estimate of 100 feet of pay?

A. Well, that's a conservative interpretation but I feel for the section as a whole it's the most conservative.

I think when you come down closer to your Monsanto well to the south, you might have dolomite there in a thickness as much as, say, 110, 112.

Q. But yet your two locations, your 660-foot location and your alternative 990-foot location are both inside the 200-foot contour line.

A. I believe that's within the 150-foot contour line.

Q. I believe it's 200 feet.

A. The 660 sits right on the 200, and this is -- the 200-foot contour there is interpretive.

Until we drill a well we really don't know that we'll encounter sufficient porous dolomite.

Q. Well, until you drill the well you don't know whether the idea of the buildup to the southeast here is even present or not, actually.

A. That's correct.

Q. It's all interpretive geology, I think.

Do you have a preference as to the 660 or the 990?

A. I feel the 660 is lower risk to the operator, based on the fact, the thicker section you penetrate the bigger chance you have of encountering porous dolomite with permeability.

Q. And what is the thickness of that lime, that closed-in circle there? Would that be 250 feet at the 660 location?

A. Yes, it would be.

Q. So you want to drill on 200 feet of pay but you presume that 100 feet of pay is productive?

A. I feel that 100 feet of the zone, the Indian Basin Zone, could be contributing gas to production.

MR. NUTTER: Are there any further questions of Mr. Lattu? He may be excused.

MR. NUTTER: Mr. Nolen, your witness will have to be sworn, please.

(Witness sworn.)

J. C. ALLEN

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. NOLEN:

Q. Would you state your name, please?

A. My name is James C. Allen. I am a staff engineer with Amoco Production Company in Houston, Texas.

Q. And how long have you been so employed? By Amoco Production Company?

A. I've been with Amoco for sixteen years.

Q. Where did you attend college?

A. I attended the University of Tulsa and graduated in 1959, spent three years in the Air Force, and have been Amoco since 1962.

Q. And what degree did you get?

A. Petroleum Engineer.

Q. And have you testified before the Commission before?

A. Yes, sir, I have.

Q. And have your professional qualifications as a petroleum production engineer been accepted by this Commission?

A. Yes, sir, they have.

Q. You're familiar, of course, with the proposed unorthodox well location concerning which Mr. Lattu has just testified, to be located in Section 23?

A. Yes, sir.

Q. In the Indian Basin Field? Let's see, would

you refer to what has been marked as Amoco Exhibit Number One and refer to Section Number 13.

What is the well which is located in Section Number 13?

A. The well located in Section 13 is Amoco's HOC Well No. 1.

Q. And describe the relation here of Section Number 13 to Section Number 23.

A. Section Number 13, or Amoco's well, is similar to the well that we could expect to be encountered in 23 in that it is on the edge of the productive reef.

I did make some calculations, I think, of interest, though, in drainage, that if a well comparable to Amoco's HOC is encountered in 23, what we could expect in the way of, well, drainage from that well.

Q. Well, could you give us those calculations, please?

A. Yes, I can. This is based on a volumetric original gas in place calculation which indicates that the Amoco -- excuse me, let me correct it.

The original gas in place from a P/Z plot indicates that the gas in Section 13 is 11 Bcf, of which we will recover 8Bcf at 1000 pounds P/C abandonment pressure.

Using the original gas in place formula, we

can calculate that based on a net pay of 72 feet, which was encountered in Amoco's well in Section 32 -- 13, of average porosity of 3 percent, that some 516 acres will be drained to recover the 8 Bcf.

So, therefore, should a well comparable to our well be encountered at either one of the unorthodox locations in Section 23, drainage will occur both from Amoco's well, or Amoco's Section 13, and Marathon's well in Section 14.

Q. Do you have any opinion as to whether a well located at the proposed 660-foot location would provide greater drainage than the one located at the alternate 990-foot proposed location?

A. Yes, sir, as has been presented, both the two dry holes exhibited no permeability when drilled; therefore we feel they are bona fide nonproductive wells.

Any location closer to the northeast corner would increase drainage from the acreage to the north.

Q. Do you have any idea as to how much degree that would be as between the 990-foot location and the 660-foot location?

A. No, sir, I don't think any of us know exactly where the end of that reef is; however, just -- just basically you would have to assume that since it is some 300 feet closer that the drainage radius would have to be

increased by that much.

MR. NOLEN: That's all the questions that I have at this time.

MR. NUTTER: Are there any questions of the witness? Mr. Losee?

CROSS EXAMINATION

BY MR. LOSEE:

Q. Mr. Allen, did I understand you were stating that you would expect Harvey Yates Company in drilling at either of these unorthodox locations in Section 23 to obtain a well comparable to Amoco's well in Section 13?

A. No, sir, I did not mean that, if I said it. I assume I was using this as an example for drainage, if a well comparable to ours were encountered in Section 23.

Q. Do you have an opinion as to whether if they would drill a well, it would be comparable to yours if they drilled in these locations in Section 23?

A. Based on productive performance of the wells in Section 21, 22, and 13, I would assume that it would be comparable, yes, sir.

Q. Do you have an opinion as to whether your well in 13 and the Marathon well in 14 are draining that acreage in Section 23?

A. No, sir, I do not believe that our well in

Section 13 is, since the performance data indicates that we're draining slightly less than the 640 acres assigned, unless -- assuming that the net feet -- net wellbore feet of pay extends over the entire section.

Q. Do you think the Marathon well in Section 14 is draining some in Section 23?

A. I did not make any drainage calculations on Marathon's well.

Q. Well, considering the performance of your well in relation to Marathon's, wouldn't you expect it would be draining gas out of Section 23?

A. There is that possibility; however, if -- if we compare the cumulative productions of all wells in the better part of the field, for example, if we went from west to east from Section 17 -- I can't read the section lines -- 17, 16, 15, and 14, we would see that the cumulative production on all four of those wells are in the order of between 16.2 to 16.8 Bcf, which would indicate that the proration factors in effect in these are accomplishing what they are designed to do.

Q. But it would also indicate that prior to the drilling of those wells on the south side in 21, 22, and 23, that -- and the proposed well in 23 -- that they were draining that acreage in those sections.

A. Well, not necessarily. The wells north of

there also have the same cumulative production, slightly greater, around 16.5 starting in Section 8, 9, 10, 11, and 12, to 16.8, 16.9, 16.9, 17.1, and on across, which again shows essentially equal withdrawals from all the wells in the field.

Q. Isn't it true that communication throughout this field is excellent?

A. It is excellent, yes, sir.

Q. And if those wells hadn't been drilled in 21 and 22, then in time the wells to the north of them would have drained it, isn't that correct?

A. That is possible, yes, sir.

Q. Isn't that also true that would have happened to the wells in Section 23, that if it isn't drilled, the wells to the north of it will drain gas from that section?

A. If there is productive acreage under that section, that is correct, yes, sir.

MR. LOSEE: I think that's all.

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Allen, the closer you drill to a lease -- is it correct that the closer to a lease line you drill, the greater the drainage would be on adjoining property?

A. That is correct, yes, sir.

Q. Given a location, the proposed location of the Yates well and, say, for example, the Marathon well in Section 14, which well would drain more from the adjoining property?

The question is, would the Marathon well in 14 be -- in all probability drain more from 23 or would the Yates well in 23 drain more off Section 14?

A. Assuming that a commercial well is obtained in 23, the well in 23, I would think, would drain more than the well in 14 would because of its location.

MR. CARR: Thank you.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Allen, you heard Mr. Lattu discussing what his productive acreage is estimated to be, either 400 acres, if you go by the blue-shaded area, or 350 acres, if you confine productive acreage to the north of the red line he's drawn there.

You also heard Mr. Losee ask that we take administrative notice of two cases in which orders were entered authorizing unorthodox locations, being those two yellow dots in Sections 21 and 22.

Now, the one in Section 21 was given an acreage

factor for allowable purposes of 360 acres over 640 for some, what was it, 57 percent -- 56.25 percent acreage allowable factor.

The well in Section 22 was allowed 350 acres over 640, or 55 percent, I think it was.

Now, have you considered what the effect of a penalty applied to either of these two proposed locations would do? Would that alleviate some of the drainage problem that you're discussing, if the Commission were to approve the location and impose a penalty based either on 350 acres over 640 or 400 acres over 640?

A. Yes, sir, I believe it would alleviate it somewhat; however, with the two dry holes, I do not believe there are 400 or even 360 productive acres in that section.

Q. Do you have an idea how many productive acres there are in that section?

A. I believe that I would have to honor the two dry holes and it would be somewhere in the order of 160 to 200 acres that could reasonably be expected to be productive in that secion.

Q. Well, now if we're talking about 160 acres and we take your exhibit, which it's easy to identify the dry holes on, and also the productive wells, and we draw a line north of the dry holes in Section 21 and 22, but south of the productive wells, and then swing it around

to the northwest inside this dry hole in Section 7 and across over here north of the northernmost dry hole in Section 23, and then back across to the northeast, cutting out, by the way, some of the acreage in Amoco's Section 13, it would appear that those three sections may have just about 160 productive acres in them, is that correct?

A. Which sections are we talking about now?

Q. Well, I've drawn my line of that section, Mr. Allen. Can you see the red line I've drawn on my exhibit, my copy of your exhibit, where I've started to the northwest, drawn the red line inside the dry holes here.

A. Okay.

Q. But outside the productive wells and then around to Section 21, where I drew the line north of the dry hole there in Section 21 but south of the productive well; in Section 22 I extended the line south of the productive well but north of the dry hole; in Section 23 I just crossed right over north of the uppermost dry hole there and then cut back to the northeast, and as I mentioned eliminating part of the acreage that Amoco has dedicated as being nonproductive, also, and cutting inside of the well in Section 18, which is a dry hole.

Then it would appear that these three sections, being Sections 21, 22, and 23, all have above 160 productive acres, wouldn't that be?

A. Drawing a line like that, yes, sir. Again, I agree with some of the earlier testimony in that we do not know the exact limits, since this is the edge of a reef, so this would be really difficult to, I think, extrapolate a line very meaningful in that area. I was kind of just taking the production limits on this side and just coming through them, very similar to what you did, but I was honoring the well to the south a little more.

I believe that the well in Section 18 did recover on drill stem test some gas but it was also low, and did recover some water, which probably --

Q. That was the Pan American Well there in Section 18, was it not?

A. Yes, sir, with gas flows between 450 to 380 Mcf a day, but we also had 700 -- recovered 700 feet of sulphur water.

Q. I see. So a well --

A. There was some show of gas there. For that reason I'd swing the line a little further to the south.

Q. So it would be structurally low, then, and I believe that Mr. Lattu has indicated the structure dipping in Section 18 there on his Exhibit Number Three.

But you don't really know just how much productive acreage the Commission, or the Division, should assign to the location here, if they should approve?

A. No, sir, I don't, other than I believe that we should honor both the dry holes as bona fide nonproductive acreage.

MR. NUTTER: Are there any other questions of Mr. Allen? He may be excused.

Do you have anything further, Mr. Nolen?

MR. NOLEN: We'd like to move the introduction of Amoco's Exhibit Number One.

MR. NUTTER: Amoco's Exhibit Number One will be admitted in evidence.

Do you have anything further, Mr. Carr?

MR. CARR: Just a brief statement.

MR. LOSEE: I believe that's all, except I will have a statement.

MR. NUTTER: Will you proceed with that statement, Mr. Losee, please?

MR. LOSEE: Did you want to go ahead?

MR. NUTTER: Oh, did you want to go ahead, Mr. Carr? Okay.

MR. CARR: I'd just like to state that Gulf and the Ralph Lowe Estate have authorized Marathon, the operator, to concur for them in the position taken here today by Amoco.

By way of closing we'd simply like to state that even Yates' witness, Mr. Lattu, has stated that they

don't know where the dolomite begins and they, therefore, obviously don't know how many productive acres they may have under this acreage. And we submit that if all the acreage that they indicate on their Exhibit Two as being contributory acreage was in fact productive, that they would not be unwilling to drill at a standard location. We feel that at the outset there are 160 productive acres in Section 23. We feel that based on the evidence presented here today by Yates, it's very difficult to determine what sort of a penalty should be assessed based on a straight acreage factor, because we feel that there may be very few productive acres in the northeast corner of Section 23, and with the excellent communication which exists in the Indian Basin, what in fact we may have here is a well producing in an unorthodox location, producing primarily from adjoining properties.

MR. NUTTER: Do you have anything, Ms. Teschendorf?

MS. TESCHENDORF: We received a letter of objection from Hanagan Petrcleum Corporation opposing not only the proposed unorthodox locations, either the 660 or 990 location, but also the dedication of all of Section 23 to the well.

MR. NUTTER: I might also add that this correspondence from Hanagan Petroleum Corporation closes

with the following:

"If the Oil Conservation Division does approve the drilling of the proposed well at either of the requested locations, and in the event the well is productive in the Upper Penn Gas Field pay, a penalty on its allowable should be imposed, due to its limited productive areal extent. We believe that this penalty should amount to at least 75 percent of its normal full allowable, or 25 percent allowable, in order to protect the correlative rights of all parties involved in this Indian Basin Field."

Now, Mr. Losee.

MR. LOSEE: Mr. Examiner, I think our testimony shows, and as the Examiner pointed out, the true test of how much dolomite we're going to encounter is the interpretive high, or nose, running off to the southeast.

I think Mr. Lattu's testimony shows that the dolomite fingers at the south end of this reef, where they extend into the limestone, serve as the communications between the limestone and the productive wells.

We obviously don't know where it ends. There may be in the Texas Oil and Gas well in 23 fingers of that dolomite too small to record on the log, on the samples.

I think his testimony shows that as long as there are some fingers extending into the area that will serve as drainage. He uses the conservative figure of

350 acres, which is the inside of his 125-foot section, and a maximum of 100 -- the 100-foot contour of 400 acres.

This Section 23 is not dissimilar to the Sections 21, which Paul Marchand drilled on; Section 22, which Texas Oil and Gas drilled on. They both have wells that were plugged and abandoned in them, lying, incidentally, no further north in the section than the Texas Oil and Gas well in Section 23.

Those wells were both given 56 -- in the Marchand, 56-1/4 percent allowable, and 55 in the Texas Oil and Gas.

I think the testimony shows that if we're not allowed to -- and by Mr. Allen, even -- to drill the well at this location, or drill a well in Section 23, that gas will be drained if it's present there by the wells to the north of it.

We think -- recongize that the Commission should take such allowable provisions as are necessary to offset the advantage we obtain, but I think because of the excellent communication throughout this field that as far as an advantage is concerned, drainage at 660 or 990 will be substantially the same.

We respectfully ask approval of the application and that the Commission take such action as may be necessary to offset an advantage by the unorthodox location.

We think the only testimony supporting that is 350 or 400 acres over 640.

MR. NUTTER: Mr. Losee, I would like to make one observation. You mentioned that your location i s no further north than the Texas Oil and Gas and the Marchand wells. I believe from inspection of the exhibits, they look like they're probably 990 locations, at least.

MR. LOSEE: I didn't -- if that was my statement, my statement really should have been that this section 23 is no different in that the dry holes, which the Hanagan's in Section 21, and I think you're right in answering the question, they are both 990 locations, but the Hanagan well in Section 21, which was plugged and abandoned, the Gulf well in Section 22, which was plugged and abandoned, and the Texas Oil and Gas in Section 23 are on a dead line 1650 feet from the north line of the sections.

MR. NUTTER: They're all 1650 locations?

MR. LOSEE: Yes. I pointed that out to show that 23 is really comparable to 21 and 22.

MR. NUTTER: Thank you. Does anyone else have anything they wish to offer in Case Number 6266?

We'll take the case under advisement.

(Hearing concluded.)

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REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the forgoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript if a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill from my notes taken at the time of the hearing.

Sally Walton Boyd, CSR
Sally Walton Boyd, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6266 heard by me on 7/6, 1978

Examiner
New Mexico Oil Conservation Commission

HANAGAN PETROLEUM CORPORATION

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J. P. WHITE BUILDING
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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Objection
Case 6266

Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Subject: Unorthodox Gas Well Location
Case No. 6266
July 6, 1978 Hearing
Eddy County, New Mexico

Gentlemen:

Hanagan Petroleum Corporation as an operator in the Indian Basin Upper Penn. Gas Field, and Hanagan as an overriding royalty interest owner in the gas producer directly north (in Sec. 14), objects to the proposed Upper Pennsylvanian well to be drilled in Section 23, T22S, R23E, Eddy County, New Mexico, both at the 660' FN & EL or the alternate 990' FN & EL location. We further oppose the dedication of all of Section 23 to this well due to the presence of two Upper Pennsylvanian dry holes in this section, thus limiting considerably the productive limits of the subject section.

The two dry holes in Section 23, which penetrated the Upper Penn. gas pay, are so situated as to condemn all but perhaps the NE¼ of Section 23. The two wells were drilled by very knowledgable operators, e.g., Texas Oil and Gas Corp., Monsanto Co., and one was later re-entered and drilled deeper to the Morrow by Adobe Oil Co., and all three operators elected to plug and abandoned the two wells as dry holes. To lend even more credence as to status of being dry holes, both wells were drilled on farmouts from Ralph Lowe who was the founder and one of the major developers of the Indian Basin Field. Apparently, Lowe also thought them to be dry holes as they also did not elect to attempt a completion in either one of the dry holes.

If the Oil Conservation Division does approve the drilling of the proposed well at either of the requested locations and in the event the well is productive in the Upper Penn. gas field pay, a penalty on its allowable should be imposed due to its limited productive areal extent. We believe that this penalty should amount to at least 75% of its normal full allowable (25% allowable) in order to protect the correlative rights of all parties involved in the Indian Basin Field.

Yours truly,

Hugh E. Hanagan

Hugh E. Hanagan
Vice President
Hanagan Petroleum Corporation

HEH/pjt

ATWOOD, MALONE, MANN & COOTER
A PROFESSIONAL ASSOCIATION
LAWYERS

JEFF D. ATWOOD [1883-1960]
ROSS L. MALONE [1910-1974]

P. O. DRAWER 700
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO 88201
[505] 622-6221

CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER
ROBERT A. JOHNSON
JOHN W. BASSETT
ROBERT E. SABIN
BRIAN W. COPPLE

RANDAL W. ROBERTS

June 30, 1978

Mr. Joe D. Ramey
Secretary-Director
Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

RE: Examiner Hearing July 6, 1978

Dear Joe:

We would appreciate your filing the enclosed Entry of Appearance for Amoco Production Company in Case No. 6266.

Thank you and with regards, I am,

Very truly yours,

Charles F. Malone

CFM:sgs
Enc.

cc: Guy Buell, Esquire

inc.

July 6, 1978

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

RE: Unorthodox Gas Well Location
Case #6266
July 6, 1978 hearing
Eddy County, New Mexico

Gentlemen:

Maralo, Inc. (Ralph Lowe Interests) as a working interest owner in the Indian Basin Upper Penn gas field, in both sections 14 and 15, T22S, R23E, Eddy County, New Mexico, object to the unorthodox gas well location and the alternate unorthodox gas well location proposed by Harvey E. Yates Co. for section 23, T22S, R23E, Eddy County, New Mexico.

Maralo, Inc. objects to dedication of any acreage to a Upper Penn gas well, to be located in section 23, T22S, R23E, Eddy County, New Mexico, which may not reasonably be considered to be productive of hydrocarbons from the Upper Penn reservoir. Maralo, Inc. is in agreement with those reasons as set forth in the second paragraph of Hanagan Petroleum Corp.'s letter to the Oil Conservation Division with regard to the referenced hearing (Case #6266).

Maralo, Inc. believes that correlative rights of all parties should be protected.

Sincerely,

Jack D. Semon

JDS/ls

BEFORE THE OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR UNORTHODOX LOCATION, SECTION 23 TOWNSHIP 22 SOUTH, RANGE 23 EAST, INDIAN BASIN-UPPER PENNSYLVANIAN GAS POOL, EDDY COUNTY, NEW MEXICO	Case No. 6266

ENTRY OF APPEARANCE

The undersigned hereby enter their appearance on behalf of Amoco Production Company with K. M. Nolen, Esquire, of Houston, Texas.

ATWOOD, MALONE, MANN & COOTER, P.A.

By Charles D. Malone

Post Office Drawer 700
Roswell, New Mexico 88201

Attorneys for Amoco Production Company

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JERRY APODACA
GOVERNOR

NICK FRANKLIN
SECRETARY

September 22, 1978

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Re: CASE NO. 6266
ORDER NO. R-5802

Mr. A. J. Losee
Losee, Carson & Dickerson
Attorneys at Law
Post Office Box 239
Artesia, New Mexico 88210

Applicant:

Harvey E. Yates Company

Dear Sir:

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

Yours very truly,

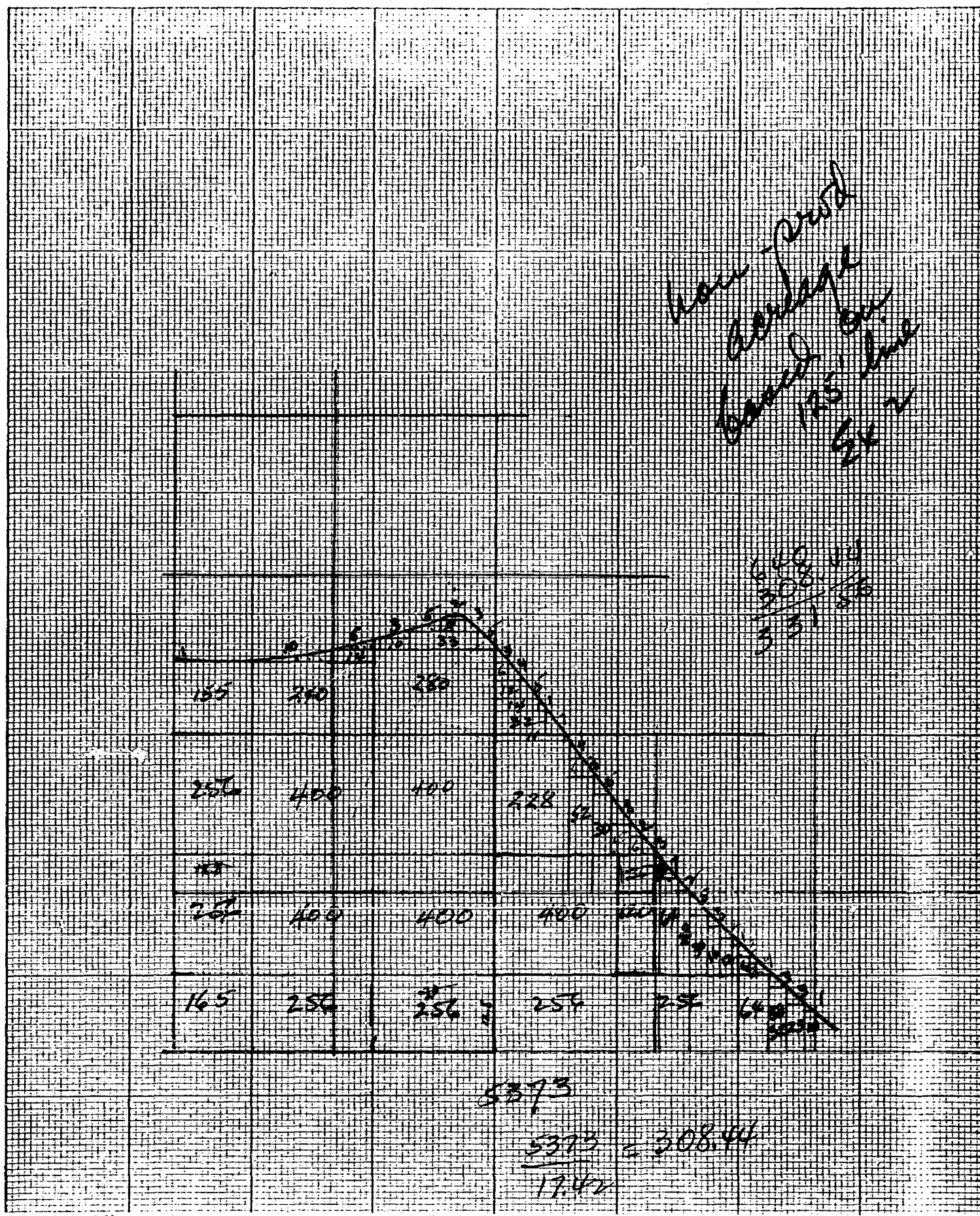
JOE D. RAMEY
Director

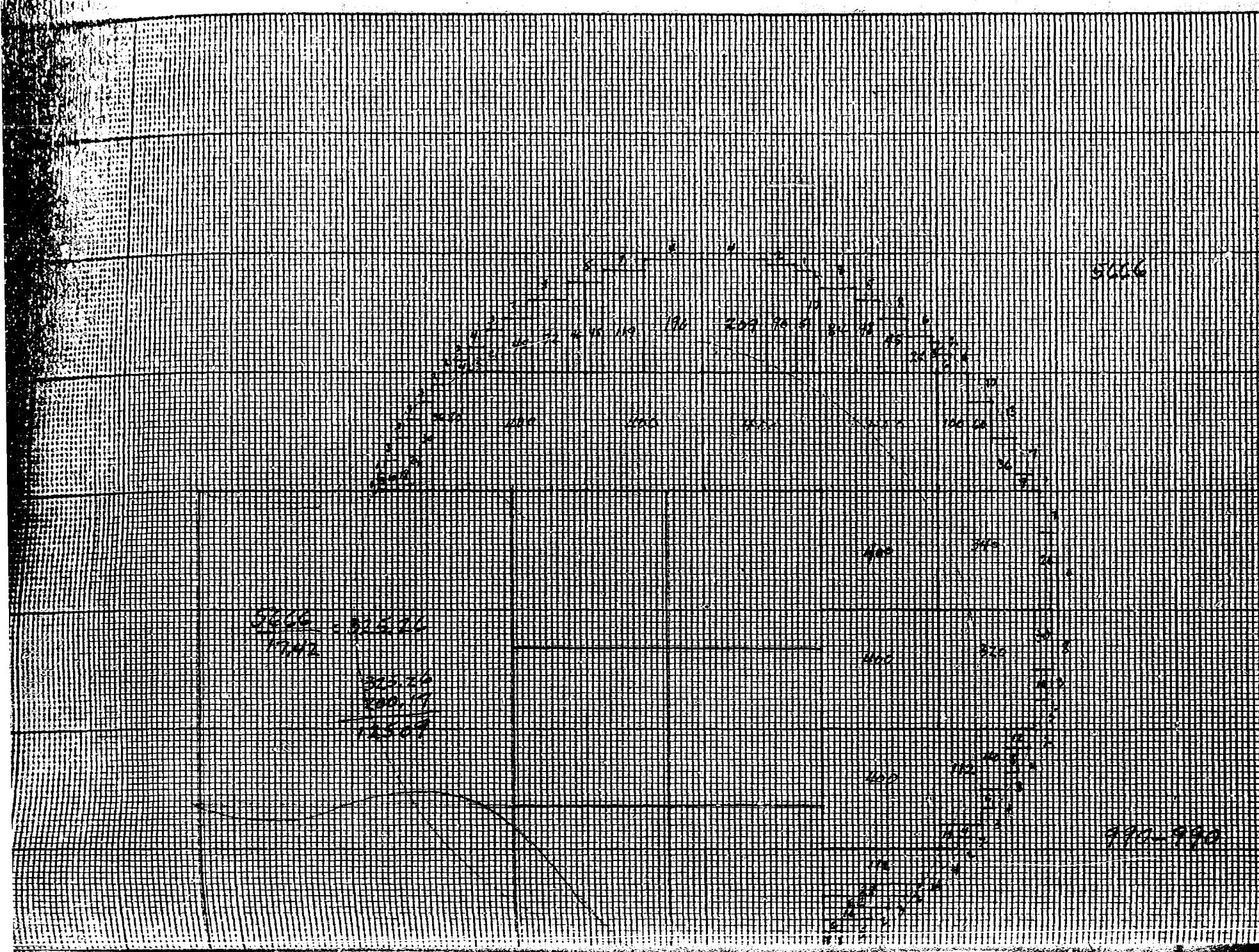
JDR/fd

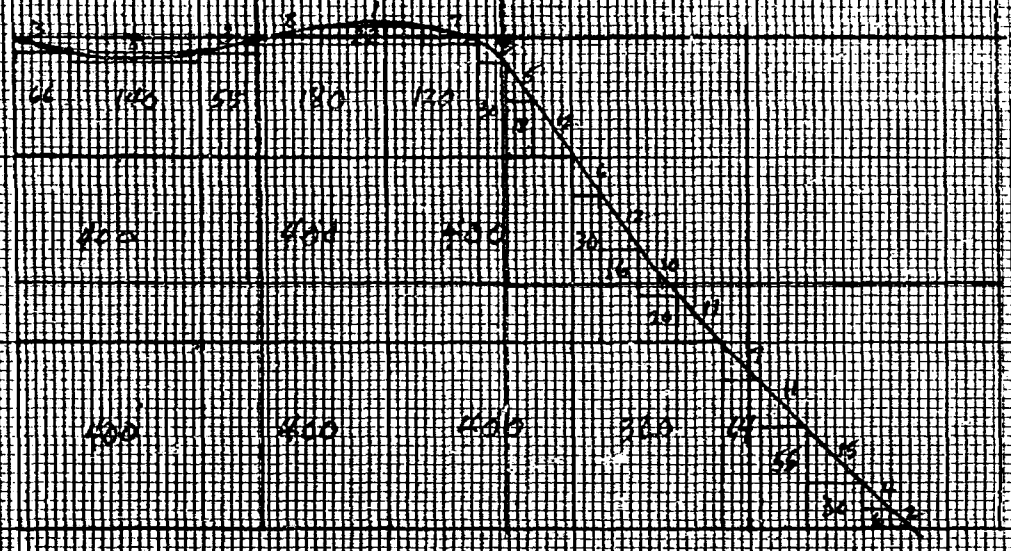
Copy of order also sent to:

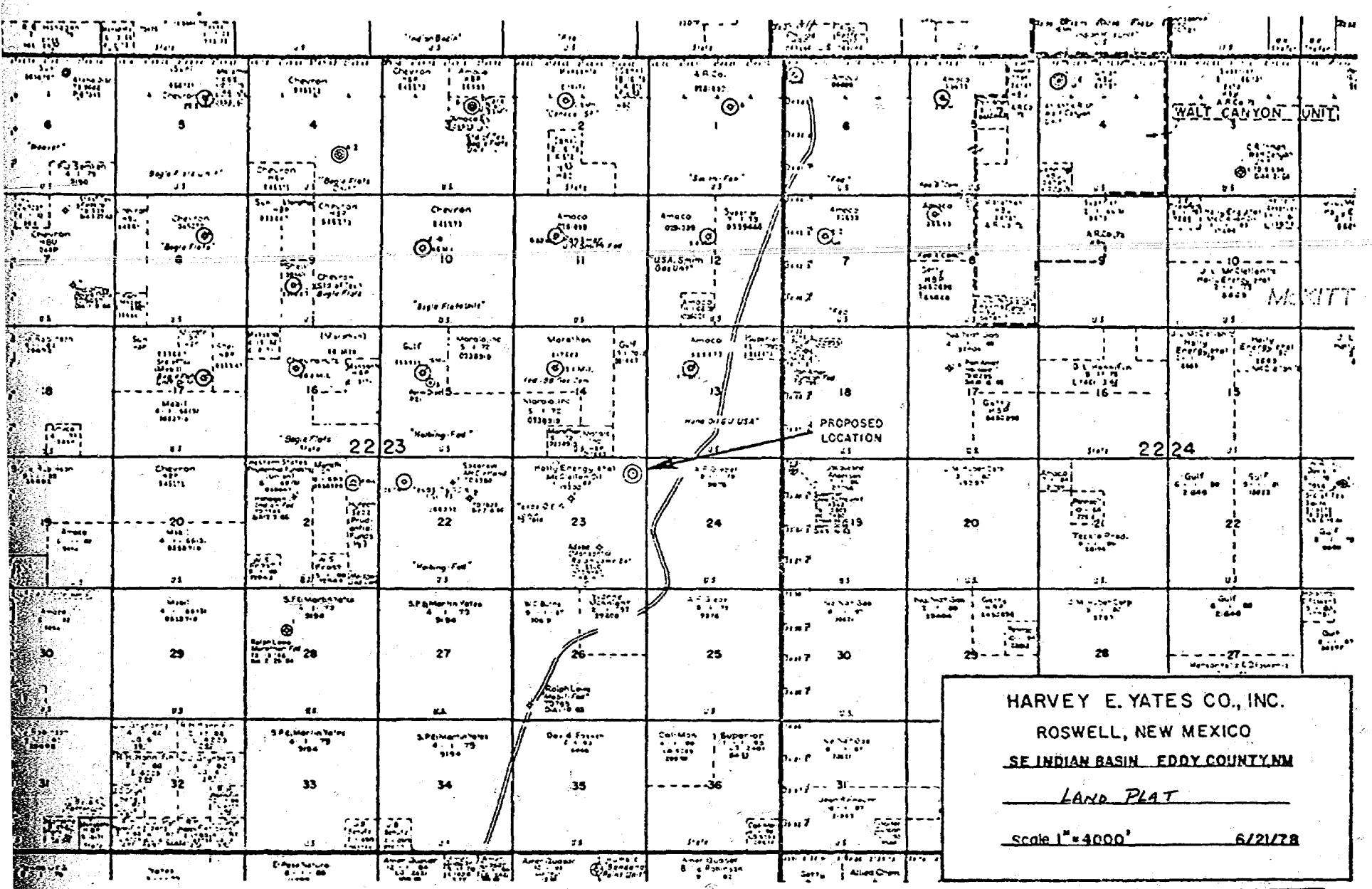
Hobbs OCC x
Artesia OCC x
Aztec OCC

Other William F. Carr, K. M. Nolen


5373
5373 ÷ 308.44
17.42







HARVEY E. YATES CO., INC.

ROSWELL, NEW MEXICO

SE INDIAN BASIN EDDY COUNTY, NM

LAND PLAT

Scale 1" = 4000' 6/21/78

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 6266

Dockets Nos. 23-78 and 24-78 are tentatively set for hearing on July 19 and August 2, 1978. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - THURSDAY - JULY 6, 1978

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

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

CASE 6265: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Beck Producing Co. and all other interested parties to appear and show cause why the Cain State Well No. 1 located in Unit B of Section 16, Township 15 North, Range 33 East, Harding County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 6266: Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of an Upper Pennsylvanian test well to be located 660 feet from the North and East lines or, in the alternative, 990 feet from the North and East lines of Section 23, Township 22 South, Range 23 East, Indian Basin-Upper Pennsylvanian Gas Field, Eddy County, New Mexico, all of said Section 23 to be dedicated to the well.

CASE 6267: Application of Yates Petroleum Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp and Pennsylvanian formations underlying the E/2 of Section 28, Township 17 South, Range 26 East, Kennedy Farms Field, Eddy County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6268: Application of Southland Royalty Company for an unorthodox gas well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Reid Well No. 25 to be drilled in the SE/4 of Section 19, Township 28 North, Range 9 West, Blanco Mesaverde Pool, San Juan County, New Mexico, said well being off-pattern for the first well on the proration unit, the S/2 of Section 19.

CASE 6269: Application of Marathon Oil Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in all formations from the top of the San Andres thru the Abo underlying the NE/4 NW/4 of Section 25, Township 16 South, Range 38 East, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6270: Application of Enserch Exploration, Inc., for pool creation and special pool rules, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks an order creating a new oil pool in the Fussleman formation for its Lambirth Well No. 1 located in Unit K of Section 31, Township 5 South, Range 33 East, Roosevelt County, New Mexico, and for promulgation of special pool rules, including provision for 80-acre spacing, a gas-oil ratio limitation of 3,000 to 1, and special well location requirements.

CASE 6258: (Continued from June 21, 1978, Examiner Hearing)

Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Devonian, McKee, and Ellenburger formations underlying the S/2 of Section 21, Township 22 South, Range 36 East, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6262: (Continued from June 21, 1978, Examiner Hearing)

Application of Adobe Oil & Gas Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mississippian formation underlying the SE/4 of Section 17, Township 14 South, Range 36 East, Austin Field, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

26 5280 2310 2970

LAW OFFICES
LOSEE & CARSON, P.A.
300 AMERICAN HOME BUILDING
P. O. DRAWER 239
ARTESIA, NEW MEXICO 88210

A. J. LOSEE
JOEL M. CARSON
CHAD DICKERSON

AREA CODE 505
746-3508

JUL -6 1978

5 June 1978

Mr. Joe D. Ramey, Director
New Mexico Oil Conservation Division
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

Enclosed for filing, please find three copies of Application of Harvey E. Yates Company for an unorthodox gas well location for a well in Eddy County, New Mexico.

We ask that this case be set for hearing before an examiner and that we be furnished with a copy of the docket for said hearing.

Very truly yours,

LOSEE, CARSON & DICKERSON, P.A.

A. J. Losee

AJL:jw

Enclosures

cc w/enclosure: Harvey E. Yates Company

JAN -6 1978

BEFORE THE OIL CONSERVATION DIVISION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO

CASE NO. 6266

APPLICATION

COMES NOW HARVEY E. YATES COMPANY, by its attorneys, and in support hereof, respectfully states:

1. Applicant is the operator of the Upper Pennsylvanian formation underlying:

Township 22 South, Range 23 East, N.M.P.M.

Section 23: All

and proposes to drill a well for gas at a point located 660 feet from the North and East lines of said Section 23 or, in the alternative, at a point 990 feet from the North and East lines of said Section 23.

2. That the proposed well is located within one mile of the Indian ~~Hills~~ Basin Upper Pennsylvanian Gas Field, with special pool rules providing for 640-acre spacing and proration units and well locations 1,650 feet from the side boundary lines.

3. Applicant seeks an exception to the well location requirements of the special pool rules of the Indian ~~Hills~~ Basin Upper Pennsylvanian Gas Field to permit the drilling of the well at either of the above mentioned unorthodox locations to a depth sufficient to adequately test the Upper Pennsylvanian formation and to dedicate all of Section 23 as a standard gas proration unit for said well.

4. The approval of this application will afford applicant the opportunity to produce its just and equitable share of gas, will prevent economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order granting applicant permission to drill a well 660 feet from the North and East lines of said Section 23 or, in the alternative, 990 feet from the North and East lines of said Section 23, and to dedicate all of Section 23 to the well.

C. And for such other relief as may be just in the premises.

HARVEY E. YATES COMPANY

By: A. J. Losee

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

BEFORE THE OIL CONSERVATION DIVISION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO	:	CASE NO. 6266

APPLICATION

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Township 22 South, Range 23 East, N.M.P.M.

Section 23: All

and proposes to drill a well for gas at a point located 660 feet from the North and East lines of said Section 23 or, in the alternative, at a point 990 feet from the North and East lines of said Section 23.

2. That the proposed well is located within one mile of the Indian Hills Upper Pennsylvanian Gas Field, with special pool rules providing for 640-acre spacing and proration units and well locations 1,650 feet from the side boundary lines.

3. Applicant seeks an exception to the well location requirements of the special pool rules of the Indian Hills Upper Pennsylvanian Gas Field to permit the drilling of the well at either of the above mentioned unorthodox locations to a depth sufficient to adequately test the Upper Pennsylvanian formation and to dedicate all of Section 23 as a standard gas proration unit for said well.

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WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order granting applicant permission to drill a well 660 feet from the North and East lines of said Section 23 or, in the alternative, 990 feet from the North and East lines of said Section 23, and to dedicate all of Section 23 to the well.

C. And for such other relief as may be just in the premises.

HARVEY E. YATES COMPANY

By: _____
A. J. Losee

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

BEFORE THE OIL CONSERVATION DIVISION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF HARVEY E. YATES COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO	:	CASE NO. 6266

APPLICATION

COMES NOW HARVEY E. YATES COMPANY, by its attorneys, and in support hereof, respectfully states:

1. Applicant is the operator of the Upper Pennsylvanian formation underlying:

Township 22 South, Range 23 East, N.M.P.M.

Section 23: All

and proposes to drill a well for gas at a point located 660 feet from the North and East lines of said Section 23 or, in the alternative, at a point 990 feet from the North and East lines of said Section 23.

2. That the proposed well is located within one mile of the Indian Hills Upper Pennsylvanian Gas Field, with special pool rules providing for 640-acre spacing and proration units and well locations 1,650 feet from the side boundary lines.

3. Applicant seeks an exception to the well location requirements of the special pool rules of the Indian Hills Upper Pennsylvanian Gas Field to permit the drilling of the well at either of the above mentioned unorthodox locations to a depth sufficient to adequately test the Upper Pennsylvanian formation and to dedicate all of Section 23 as a standard gas proration unit for said well.

4. The approval of this application will afford applicant the opportunity to produce its just and equitable share of gas, will prevent economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order granting applicant permission to drill a well 660 feet from the North and East lines of said Section 23 or, in the alternative, 990 feet from the North and East lines of said Section 23, and to dedicate all of Section 23 to the well.

C. And for such other relief as may be just in the premises.

HARVEY E. YATES COMPANY

By: A. J. Losee

A. J. Losee

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

LAW OFFICES
LOSEE & CARSON, P.A.
300 AMERICAN HOME BUILDING
P. O. DRAWER 239
ARTESIA, NEW MEXICO 88210

A. J. LOSEE
JOEL M. CARSON
CHAD DICKERSON

AREA CODE 505
746-3508

6 June 1978

Ms. Lynn Teschendorf
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Ms. Teschendorf:

This will confirm our telephone authorization of this morning, for you to correct by interlineation the application of Harvey E. Yates Company for an unorthodox gas well location in the Indian Basin, rather than in the Indian Hills.

Thank you for your assistance in this matter.

Very truly yours,

LOSEE, CARSON & DICKERSON, P.A.

Jerry

A. J. Losee

AJL:jw

cc: Mr. George Yates

DRAFT

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 6266

ORDER NO. R- 5802

APPLICATION OF HARVEY E. YATES COMPANY

FOR AN UNORTHODOX GAS WELL LOCATION,

EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 6, 19 78, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of ~~July~~, 19 78, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Harvey E. Yates Company, seeks approval of an unorthodox gas well location for an Upper Pennsylvanian test well to be drilled at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, or in the alternative, an unorthodox location for said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23.

(3) That the special pool rules for said Indian Basin-Upper Pennsylvanian Gas Pool, as promulgated by Order No. R-2440 and made permanent by Order No. R-2440-A, provide for 640-acre (one section) spacing and proration units in said pool with wells to be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

(4) That the applicant, by its Exhibit No. 2 in this case, has shown that at least 308.4 acres of the subject Section 23 is probably non-productive of gas from the Indian Basin-Upper Pennsylvanian Gas Pool, leaving a maximum of 331.6 acres as contributory of gas from said pool.

(5) That a well drilled at the closest permissable distance from the outer boundaries of a standard gas spacing and proration unit, i.e., 1650 feet from each of the nearest outer boundaries, assuming radial drainage of 640 acres, has a drainage pattern that extends 200.2 acres beyond the boundaries of its unit.

(6) That a well drilled at the location sought by the applicant in this case, i.e., 660 feet from each of the nearest outer boundaries of the unit, assuming radial drainage of 640 acres, has a drainage pattern that extends 357.1 acres beyond the boundaries of its unit, leaving but 282.9 acres of drainage pattern within the unit.

(7) That a well drilled at the alternative location sought by the applicant in this case, i.e., 990 feet from each of the nearest outer boundaries of the unit, assuming radial drainage of 640 acres, has a drainage pattern that extends 325.3 acres beyond the boundaries of its unit, leaving but 314.7 acres of drainage pattern within the unit.

(8) That according to the evidence presented at the hearing, applicant is the owner of probable gas reserves underlying a portion of Section 23, Township 22 South, Range 23 East, NMPM, and should be permitted to develop and produce said reserves in order to prevent waste.

(9) That to permit a well to be drilled and produced at either of the proposed non-standard locations without imposing a compensatory production penalty against such well would violate the correlative rights of owners of offsetting acreage.

(10) That a reasonable penalty to be imposed on a well drilled at either of the proposed unorthodox locations should take into consideration both the non-productive lands included in the spacing and proration unit and the extent to which the well's radius of drainage impinges upon neighboring properties beyond the radius of drainage for a standard location.

(11) That the penalized allowable factor for a well drilled

at a non-standard location should be arrived at by the application of the following formula:

$$\text{Allowable Factor} = \frac{\text{No. of acres outside unit that are drained by standard location}}{\text{No. of acres outside unit that would be drained by proposed location}} \times \frac{\text{No. of productive acres in proposed proration unit}}{\text{No. of acres in standard proration unit}}$$

(12) That the allowable factor for a well drilled at the proposed 660/660 non-standard location described in Finding No. (2) above should be calculated as follows:

$$\text{Allowable Factor} = \frac{200.2 \text{ (Finding 5)}}{357.1 \text{ (Finding 6)}} \times \frac{331.6 \text{ (Finding 4)}}{640 \text{ (Finding 3)}} = 0.29$$

(13) That the allowable factor for a well drilled at the proposed alternative 990/990 non-standard location described in Finding No. (2) above should be calculated as follows:

$$\text{Allowable Factor} = \frac{200.2 \text{ (Finding 5)}}{325.3 \text{ (Finding 7)}} \times \frac{331.6 \text{ (Finding 4)}}{640 \text{ (Finding 3)}} = 0.32$$

(14) That the assignment of an allowable factor as described in Findings Nos. (12) and (13) above to the locations proposed by applicant will permit the applicant to produce its just and equitable share of the gas in the Indian Basin-Upper Pennsylvanian Gas Pool, will protect applicant's correlative rights and prevent waste, and will protect the correlative rights of offset operators in the pool.

(15) That each of the two proposed locations, as described in Finding No. (2) above, should be approved, subject to the allowable restrictions described in Findings Nos. (12) and (13) above.

IT IS THEREFORE ORDERED:

(1) That the applicant, Harvey E. Yates Company, is hereby authorized to drill an Upper Pennsylvanian gas test well at a point 660 feet from the North line and 660 feet from the East line of Section 23, Township 22 South, Range 23 East, NMPM, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, provided however, that such well upon completion in said pool shall have an allowable factor for gas proration purposes of 0.29.

In the alternative, applicant is hereby authorized to drill said well at a point 990 feet from the North line and 990 feet from the East line of said Section 23, provided however, that the well at this location upon completion in said pool shall have an allowable factor for gas proration purposes of 0.32.

(2) That all of said Section 23 shall be dedicated to a well completed in the Indian Basin-Upper Pennsylvanian Gas Pool at either of the aforesaid locations.

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

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