CASE 3645: Application of SKELLY OIL CO. for special rules for the LAZY "J" PENNSYLVANIAN POOL.

Case No.

3645

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 6, 1967

EXAMINER HEARING

IN THE MATTER OF:

Application of Skelly Oil Company for special pool rules, Lea County, New Mexico. Case No. 3645

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We will call next Case 3645.

MR. HATCH: Application of Skelly Oil Company for special pool rules, Lea County, New Mexico.

MR. SELINGER: George W. Selinger, J. W. Grant of Tulsa, Oklahoma;and Booker Kelly of White, Gilbert, Koch and Kelly of Santa Fe for Skelly Oil Company. I have two witnesses, Mr. Examiner.

(Witnesses sworn.)

MR. GRANT: While the exhibits are being hung, Mr. Examiner, I might state that Skelly's application concerns well spacing in the Lazy J-Penn field in Lea County. This field has heretofore been controlled by statewide rules permitting one well to each 40-acre tract, but recent development in the area in the east and south, that's east of a line through the center of Sections 26 and 35 and south through a line on the south line of Sections 33, 34 and 35 in 13 South, 33 East,has been,of necessity,as one of our witnesses will show, on 80-acre development. Our witness will also show that one well will efficiently and adequately drain 80 acres in this particular reservoir and that an 80-acre spacing order should issue from the Commission for that new portion of the field. We feel that this is absolutely necessary in order

to assure complete development of this field and to assure its orderly development.

BEN ANDERSON

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

DIRECT EXAMINATION

BY MR. GRANT:

Q What is your name and place of residence, please?

A Ben Anderson, Midland, Texas.

Q By whom are you employed and in what capacity?

A By Skelly Oil Company as a senior geologist.

Q Have you testified before the New Mexico Commission before?

A Yes, sir, in January of 1955.

MR. GRANT: Would the Examiner desire to have this witness's qualifications brought up to date?

MR. NUTTER: Let's hear what he has been doing since '55.

Q (By Mr. Grant) Let's find out what you have been doing since 1955.

A Well, since 1955 I was a geologist in the production office in Hobbs, New Mexico until 1962 and from 1962 until the present date I have been in the exploration

office in Midland, Texas, and the reason I haven't been before the Commission is simply that we haven't had any need for my services before this date.

MR. NUTTER: But you have been with Skelly all this time?

THE WITNESS: But I have been with Skelly all the time.

MR. NUTTER: Good. Go ahead, Mr. Grant.

Q (By Mr. Grant) Now, Mr. Anderson, to begin with, would you give the Examiner a brief history of the development of the Lazy J-Penn Pool in Lea County?

A The Lazy J Pool was discovered in 1952 with the completion of the Gulf No. 1 State "AN", located in the Northeast Quarter of the Southwest Quarter of Section 27, Township 13 South, Range 33 East, Lea County, New Mexico. This location is designated by a red arrow on Exhibit A, in the Northwest quadrant of the field. It was drilled to the Devonian and plugged back to the Wolfcamp and completed at a depth of 9588 to 9625 in what is referred to as the Bough "A" zone in the following testimony. Initial development occurred over a period of two years from 1952 to 1954, during which time 32 producing wells were drilled. Little activity took place until 1966 at which time the

recent drilling occurred in the eastern area. The area we're referring to is east of the heavy line with the little arrow, east and south of that. There have been 18 new wells added to the pool in the past one and a half years.

Q Have you prepared geological exhibits and testimony to present to the Commission in this hearing at this time?

A Yes, sir, I have.

Q Of what does that testimony consist?

A The geological testimony consists of a discussion of the general geological configuration of the Lazy J Field, two, the oil trapping mechanism, and three, the continuity of the oil productive fluid zones. In order to show these various geological features, the following exhibits have been prepared.

(Whereupon, Skelly's Exhibits A through D were marked for identification.)

A Exhibit A is a structure map on top of the Bough "C" Limestone. Exhibit B is an isopachous map of the "Pay Lime" Porosity, the Pay Lime consisting of the combined Bough "A" and Bough "B" Zones. And Exhibit C is an isopachous map of the Bough "C" Porosity. And Exhibit D is a cross section A-A1, extending southeast across the field

from the Amerada No. 1 State "SHA" in the Southeast Quarter of the Northwest Quarter of Section 27, Township 13 South, Range 33 East to Skelly's Sanders No. 1 in the Northwest Quarter of the Northwest Quarter, Section 1, Township 14 South, Range 33 East.

Q Were these exhibits prepared by you or under your supervision?

A Yes, they were.

Q Would you please describe Exhibit A?

A Referring to Exhibit A, the structure map on top of the Bough "C" limestone, it may be seen that the Lazy J structure in the Northwest quadrant of the exhibit is a south plunging structural nose. It is in trend with the Saunders Field to the south, the northernmost wells of which may be seen in the extreme southwest corner of the plat. Other oil fields in the area are the East Saunders Field located approximately where the title block is in the southeast corner of the plat, and the Nonombre Field located in Section 32, Township 13 South, Range 34 East, about where the type log section is seen on the eastern edge of the plat.

This broad Lazy J nose has several very minor closures that are near the south end of the structure, and a North-South trending subsidiary fold on the east flank.

This subsidiary fold, whose axis lies along the east lines of Sections 26 and 35, Township 13 South, Range 33 East, is the area we are interested in today. Included is also the south flank of the broader nose in Sections 2 and 3, Township 14 South, Range 33 East. These flank positions are the area in which most of the recent development drilling has taken place.

Q I notice that some of your wells are circled in blue and some in orange and some both. Would you explain what that means?

A These colors denote the productive perforated horizon for each well, the orange representing the "Pay Lime" or the combined Bough "A" and Bough "B" zones, while the light blue denotes the Bough "C" zone. The stratigraphic location of these zones is noted on the columnar section located at the right-hand margin of the exhibit. This columnar section is a combination sample and electric log representation of the formations in the area. You'll note that the formation at 9136 is called "Hueco of the East". This is a name used by Skelly and is known to other operators as the Wolfcamp Double-X or Penn Double-X formation.

The Bough "A" and Bough "B" zones are lumped

together for the purposes of mapping porosity because the shale bed separating them is extremely thin in places, even to the point of being difficult to recognize. Conversely, the Bough "C" top is readily recognizable and constitutes part of the pay interval, and therefore, was used as the mapping datum. The pay lime beds are clean, white, buff, or light gray, fine to medium crystalline limestone with vuggy porosity. The pay limes are interbedded with tan to brown, dense, shaly limestones, and green-gray to dark brown shales. The pay zones are characteristically fossiliferous with an apparent direct relationship between the amount of porosity and the amount of fossil material present, especially the calcareous algae.

Referring to Exhibit A again, it will be noted that the productive wells are limited to the south end of the nose and the subsidiary paralleling fold on the east side. This is due to lack of porosity and permeability to the north, which in effect, constitutes the trapping mechanism.

Q Would you please refer to Exhibits B and C and explain those, please?

A Well, the porosity trap, or the continuity of porosity, is best seen on Exhibits B and C, thickness maps

of the Pay Lime and Bough "C" total porosity. There is enough similarity between the two exhibits to indicate similar conditions were present when the porosity-prone beds were deposited. In other words, the areas of thickest porosity development in the Bough "C" beds are also the areas of thickest porosity development in the Pay Lime beds. These thicker porosity zones occur in a crescent around the south end of the structural nose and overlie the subsidiary closure on the east flank. Many of the wells on the west side of the field did not penetrate the Bough "C" zone and consequently the control is weak in the area of the Northeast Quarter of Section 33, Township 13 South, Range 33 East on Exhibit C.

Q Whose wells penetrated the similarity between the two isopachous maps might even be greater, right?

A Might even be greater, that is true. Those two thick zones of thicker porosity could conceivably be connected through the area of least control.

Q All right.

A Although the porosity thickens and thins, there is no extensive area in which it is entirely absent south of the general pinch out to the north. Therefore, it can be said that there is relatively good continuity of porosity

across the productive area. This continuity is probably best visualized in the cross section, Exhibit D.

The cross section extends southeastward across the field from the Amerada No. 1 State "SHA" in the Southeast Quarter, Northwest Quarter, Section 27, Township 13 South, Range 33 East to the Skelly No. 1 Sanders in the Northwest Quarter, Northwest Quarter, Section 1, Township 14 South, Range 33 East, as shown by the line of cross section A-A^{1} on the other exhibits. The three western wells of the cross section are in the old part of the field, having been drilled in 1952 to 1954, while the remainder are recent developments during the past year. The only porosity logs available on the older wells are micrologs, which by modern standards are not as efficient in evaluating vuggy porosity as some of the newer logs such as the sonic or density logs.

Despite the inefficiency of the micrologs and the extremely thin fluid zones, there is remarkable continuity of porous zones indicated. But, as is the case in all earthly things, nothing is perfect, and complete continuity cannot be shown. For example, the uppermost two fluid zones are somewhat discontinuous. The slight discontinuity of the upper fluid zones of the Bough "A" is not a serious problem

because since both zones are within the same massive lime sequence they are probably connected vertically. This vertical connection of vuggy zones within a lime bed is not demonstrated on this particular cross section for the Bough "A" zone, but a good example exists in the Bough "B" bed.

MR. NUTTER: Excuse me. I would like to ask one question here, Mr. Anderson. Now you mentioned that you have a certain amount of discontinuity between the pay zones from one well to the other, but you do have the separation by this gray and green limestone vertically, I mean the gray and green shales. Are these also discontinuous?

THE WITNESS: The shales are also discontinuous, yes, sir.

MR. NUTTER: So you could have the vertical communication?

THE WITNESS: Yes, sir. If the cross section were looked at closely, I think we could show an example of that where the shale, one shale pinches out and another one comes in another place, so they are, the shales are discontinuous.

MR. NUTTER: Just as the pays are?

THE WITNESS: The pays are more continuous than the shales are, actually.

Q (By Mr. Grant) The only discontinuity shown is in Bough "A" and Bough "B" and "C" they become more continuous throughout.

A As I was going to state later on, that Bough "B" is the most continuous pay zone, porosity zone. There is some discontinuity in the Bough "C" zone too, but due to the vertical connection I believe that they are all parts of the Bough "C" zone, are interconnected.

MR. NUTTER: Thank you.

A In Well No. 5, you will note that there is nearly continuous vuggy porosity in the top 24 feet of the Bough "B". In Well No. 4, only the lower ten feet of this zone is porous while in Well No. 6 only the upper ten feet is porous. Therefore, we have complete vertical, as well as horizontal, continuity of the Bough "B" reservoir although in some places there may be only a few feet of porosity developed. This is the case in Well No. 2 where the fluids or the fluid zones may be separated by a dense interval as in Well No. 7. There's a little dense interval in there but they are still connected vertically by instances such as in Well No. 5. Therefore, the Bough "B", I believe

exhibits the best continuity of fluid zones in this area.

The Bough "C" may be divided into an upper and lower bed by a poorly developed shale that is present about 50 feet below the top. In general, there are two fluid zones in the Upper Bough "C" and one in the lower bed. Only in rare instances, such as Well No. 7, is there a shale separation between the fluid zones of the upper bed, and therefore, it is believed there is vertical communication between parts of this bed just as there is in the Bough "B" bed. The porosity in the lower Bough "C" bed is not quite as continuous, especially in the higher wells to the northwest. It is quite well developed and continuous, however, in the last three wells of the cross section that are in the area under proposal for 80-acre spacing.

In conclusion, it has been shown by isopachous maps of the pay zones and by cross section that the fluid zones in the eastern portion of the Lazy J Field are remarkably continuous. If the usual amount of good permeability is present here that is characteristic of the Bough zones in other areas, there is every indication that one well will effectively drain 80 acres.

Q So there's no question in your mind, then, that there is vertical communication throughout these zones and

that this is one common source of supply?

A Within each separate limestone bed I am convinced from this, the way the Bough "B" plots out that there is vertical communication within those separate beds.

Q And, as a matter of fact, the Commission has found this to be a single reservoir for the purposes of proration?

A Yes, that is correct.

Q The Lazy J-Penn, the top and bottom are found generally through what interval?

A The Lazy J-Penn Pool produces through these Bough zones that I have designated Bough "A", "B" and "C" zones.

Q Actually it exists from the top of the Wolfcamp to the top of the Penn, isn't that true?

A Yes.

Q Do you have anything further to add at this time?

A That concludes my testimony that I have prepared.

MR. GRANT: We tender the witness for cross examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q You stated that you had a porosity and

permeability pinchout probably up on the northwest end and this is what defined the upper limits or the northwestern limits of the pool. What do you think defines the southeastern limits of the pool?

A The southeastern limits are probably defined by an oil, indefinite oil-water contact. We know that the wells on the southeastern end of the pool are increasing in water saturation from electric logs.

Q From here I can't see the elevation depicted on that contour map, but evidently you have a rather steep dip to the southeast there, is that right?

A That's correct. It dips off rapidly to the east. Of course, all of that east dip is controlled primarily by one well way over here on the east side of the exhibit.

Q That's what I was going to ask you, what control you had for that. But the one well there in Section 30 of the next township --

A Section 30.

Q -- is the only control that you have for the east or for the south?

A Well, however, there is another well off of the map to the south in Section, it would be in Section 13 off the south edge of the map that controls, I didn't put it

on there because it fell off the, out of the section, but there's a dry hole in there which helps control that eastern dip.

Q That shows the dip to the south, then?

A To the southeast, yes,sir.

Q Now, is it your opinion, Mr. Anderson, that the area south and east of the line with the little arrows on it is in communication horizontally and vertically with the area north and west of the line with the arrows?

A Yes. It's in communication with the old area. As I stated before, those isopachous maps of the porosity zones indicate that there is communication between the two areas although there are areas where the porosity is thicker than it is in other places. Those thicker zones are around, seem to rim the end of that structural nose and overlie the eastern, that eastern closure on the east side of the nose.

Q There are no wells that are perforated up as high as that interval that you were speaking of being the Wolfcamp or the Hueco East, or whatever you want to designate it?

A No, there are some fluid zones above these Bough zones but in all instances in the intermediate area those have been water-productive where tested.

Q Is any activity going on at the present time as far as new wells are concerned?

A We have one well proposed. It's approved for drilling and I guess they are moving in on it now. It's the No. 2 well on the Sanders lease.

Q It would be the southeast of the northwest --

A Southeast of the northwest of Section 1 of Township 14 South, Range 33 East.

Q The Commission has designated the entire Pennsylvanian formation to be the pool limits, in this case it's the Lazy J-Pennsylvanian?

A Lazy J-Pennsylvanian is the designation, yes, sir.

MR. NUTTER: Are there any other questions of Mr. Anderson? He may be excused.

(Witness excused.)

JAY T. COX

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

DIRECT EXAMINATION

BY MR. GRANT:

Q Please state your name and place of residence.

A My name is Jay T. Cox. I am senior reservoir engineer for Skelly Oil Company in Hobbs, New Mexico.

Q Have you had occasion to testify before this Commission on previous occasions?

A Yes, sir, I have.

MR. NUTTER: Since 1955?

THE WITNESS: Since 1955.

Q (By Mr. Grant) As a matter of fact, just within the last month or two?

A Within the last six months for sure.

MR. GRANT: Does the Examiner waive further qualification of the witness?

MR. NUTTER: Yes, sir.

Q (By Mr. Grant) Have you prepared certain testimony and exhibits for presentation to the Examiner in connection with this application of Skelly Oil Company?

A Yes, I have.

(Whereupon, Skelly's Exhibits E through I were marked for identification.)

Q I refer you to what has been marked as Exhibit E and ask you to state what that is.

A Shown on Exhibit E are pressure data observed from drillstem tests conducted on wells drilled during the pool's recent development. The area outlined by blue on the map includes 16 of the 18 wells drilled in the area since

April 1966. The two wells are not shown within this blue line and are located in the South half of Section 3, Township 14 South, Range 33 East, which would be just to the left of this map. Also shown on the map is completion date for each of the wells. It may be noted that for the exception of Skelly's Beaty No. 2, the location of which would be in the Southeast of the Northeast, pressures have ranged from approximately 2260 to 3600 psi in the various intervals tested. The areal distribution of pressures indicated in the recent development program that some drainage of the area had been experienced. Cumulative recovery from the three older wells located in the Northwest Quarter of Section 35, also shown as being completed in the Pay Lime and Bouch "C" zones --

Q That would be outside the blue line?

A Which would be outside the blue line, the total production from these wells have exceeded 880,000 stock tank barrels as of January 1st, 1967. DST pressures in the Beaty No. 1 were 3105 psi in the Bough "A" and 3115 in the Bough "B". The upper portion of porosity in the Bough "C" could have been included in the test interval that recorded the 3115 psi pressure. Close observation of the structure or of the cross section, Exhibit D, will show that the bottom

of the hole at the time of the drillstem test --

MR. NUTTER: Which well is that?

THE WITNESS: That would be Well No. 3, Mr. Nutter. A close examination would show that the lower portion of the DST interval was right at the porous zone within the Bough "C". Comparison of drillstem pressures in the Beaty No. 1 with DST pressures from the Beaty Nos. 2 and 3 show a drop of approximately 1600 psi between No. 1 and No. 2 in the Bough "B" zone and about 600 psi between the Nc. 1 and No. 3 in the Bough "B" zone. The apparent pressure sink in the Bough "B" in the area of the Beaty No. 1 well may also be noted by the higher pressures recorded in the Texaco BY 2 No. 1 well.

Q Where is that located?

A That's located just due south of the Beaty No. 3. Also the higher pressures may be noted in the Beaty No. 4.

MR. NUTTER: How about that Gillespie well, Mr. Cox, what were the pressures on it?

THE WITNESS: I do not have available the pressures observed in the Gillespie well.

Q (By Mr. Grant) What do these DST pressures in the Bough "C" interval around Beaty No. 1 indicate to you?

A Indicate in the Bough "C" interval of the Beaty No. 1?

Q Yes.

A The interval shown as Bough "C" on this exhibit shows a pressure of 475 psi. I believe that this particular test interval was in a tight zone and did not actually represent the Bough "C". The pressure reflected as the Bough "B" plus Bough "C" of 3115 reflects, I believe, the pressure within the Bough "B" and Bough "C" both.

Q Please continue.

A These pressures in the Bough "C" indicate that there has been drainage between the Beaty No. 1 and the Beaty No. 2 wells. The Bough "C" pressures in other wells do not reflect the pressure differential trend that was noted in the Bough "B" zone. Although there is no definite trend indicated, pressures in Texaco's BV-1 No. 1, located in Section 36 and in Skelly's Childress A-1, located in Section 1, were 3600 and 3000 psi, respectively. Other wells within Section 35 indicated pressures being lower by about 500 psi. Because of the apparent drainage in the Bough zones, the additional drilling has been more or less on a density of one well per 80 acres.

Q Would you please refer to Exhibit F and compare

the DST pressure data with bottomhole pressure?

A Comparison of DST pressure data with the bottomhole pressures shown on Exhibit F reveal that a rapid decline of pressure has been noted on the recently completed wells. The pressure data presented on this exhibit allows comparison with the pressure initially observed in Skelly's Beaty No. 1 well that was measured in December 1954. Comparing this well's original completion bottomhole pressure of 3418 psi to that reported for the Beaty No. 2 shows the No. 2 well's pressure lower by some 1700 psi. The pressures recorded for the Beaty No. 4 well was lower than the Beaty No. 1 pressure by approximately 700 psi. Beaty wells Nos. 3 and 5 were completed only in the Bough "C" interval and are not comparable. A substantial drop in pressure of 1100 psi was noted in the No. 3 DST and BHP data taken five months apart. Well No. 4 bottomhole pressure and drillstem test data were taken in the same month.

On the basis of the observed pressure distribution in the area and recovery of oil from the Beaty No. 1 well, Skelly is of the opinion that sufficient permeability exists in the various zones such that one well can efficiently drain 80 acres.

Initial potential tests are also shown on Exhibit F and give cause for the rather rapid development

that occurred in the pool's extension. Most wells were initially capable of flowing their top allowable. A well status based on these initial potentials showed that 15 wells were flowing, two wells were on pump and one well was temporarily abandoned. As of August 1st there were six wells flowing, eight on the pump and four had been abandoned. Operators of these flowing wells have stated that artificial lift will have to be installed in the near future. During the month of July only two wells produced their top allowable, which was approximately 180 barrels per day.

MR. NUTTER: Which are the four wells that have been temporarily abandoned?

A The temporarily abandoned wells would be Gulf's State IV shown at the top of the plat, Texas Pacific's State "F" No. 2 in Section 35 would be the Northwest of the Southwest, in Section 36 Texaco's State BV No. 4; in the lower portion of the map, Section 2, the Huber Corporation State "A" No. 1.

Q (By Mr. Grant) Do you have any further testimony concerning Exhibit F?

A None concerning Exhibit F.

Q Please refer to Exhibit G and explain what it

tends tends to depict.

A Exhibit G is a plot of producing history for the wells included in the recent development. Shown on the exhibit is total monthly oil production, the average well monthly production and the number of producing wells. As may be noted throughout the period, new wells were drilled that contributed to the production. In an effort to show the decline in production suffered by the wells, a graph was developed to reflect the average well producing performance. In essence this is the total monthly oil production divided by the number of producing wells. The plot shows that production for the average well declined approximately 2400 barrels of oil per month from January through June of 1967. Geologic data reflects that net pay in this newly developed area is comparable to that in the area of older development; but, performance indicates a rapid decline in producing capability. It is anticipated from the performance in the new area that recoverable reserves will be less than in the earlier developed area. The average ultimate recovery in the older portion of the pool has been estimated to be 91,500 barrels per well.

Q Please refer to Exhibit H and explain its purpose and what it tends to show.

A Exhibit H is a production history curve from which a constant percentage decline method was used to determine the reserves. These reserves, in comparison with economics, indicate that a recovery of this magnitude of 91,500 barrels per well will result in a marginal operation, and have indicated that 40-acre development in the remaining area of the pool may not result in pay out of the wells. Consequently, development in the area of recent drilling activity appears to best be on a well spacing greater than one well per forty acres.

Q Please refer to Exhibit I and explain its purpose to the Examiner and show what it tends to depict.

A Exhibit I is a table comparing the development of an 80-acre tract for 40 and 80-acre spacing. The recoverable reserves used in the calculations were the 91,500 barrels per well that was ascertained from a decline analysis of the data shown on Exhibit H. It was assumed that 183,000 barrels could be recovered for both cases and that life for the one well per 80 acres would be four years longer than for the two-well density case. Basic items used in the economics are footnoted on the bottom of the table. Net revenue for the 40-acre case would be $95,000 and indicates a marginal return of 0.27 dollars of net

profit per dollar invested. The 80-acre spacing case would result in a net revenue of $290,000, a more reasonable return of 1.65 dollars of net profit per dollar invested.

Q Is it your testimony that this 91,500 barrels per well is, could possibly be somewhat optimistic as far as recoverable reserve is concerned?

A That's correct. Performance indicates that wells in this newly developed area will recover less than that.

Q That being the case, then the economics shown on your Exhibit I would tend to be somewhat optimistic also, would they not?

A Yes.

Q Do you consider twenty-seven cents return on an invested dollar a satisfactory return considering the risk involved in operations of this nature?

A No, it is not.

Q As a matter of fact, do you consider a dollar sixty-five return on the dollar invested a good risk and a sound investment considering the industry in the area as a whole?

A No, I would not consider it a good return; far below average.

Q It is far below average?

A Yes.

Q If your 91,500 barrel figure is optimistic, then the one dollar sixty-five would be reduced accordingly, would it not?

A Yes.

Q Are you in a position as an expert, and based on sound engineering evidence at your disposal, are you in a position to recommend to the management of your company that they continue drilling in this field on 40-acre spacing?

A I would not recommend to my management to drill in this field on 40-acre spacing.

Q If this order which Skelly seeks is not forthcoming and the pool remains on 40-acre spacing, what do you anticipate,as an engineer,would be the result?

A The wells would not be drilled.

Q Do you think this would be,in essence,the end of further development in the Lazy J-Penn?

A Yes, I believe it would be.

Q Would this tend to leave oil trapped in the ground that might otherwise be recovered?

A Yes, it would.

Q And as an engineer do you consider this waste?

A Yes, it would be waste.

Q As to some of the oil along the lease lines, would that oil be drained from under those leases and produced through adjacent bore holes on offset wells which have been drilled?

A Yes.

Q So there would be some drainage across lease lines, assuming that there was no further development?

A Yes, there would be possible drainage.

Q As an engineer, do you consider this a violation of correlative rights?

A This would be a violation of correlative rights.

Q Is it your recommendation then that in order to prevent waste and to protect correlative rights and to insure the further complete and orderly development of the Lazy J-Penn, that the Commission grant an 80-acre spacing order for that area lying east of the line through the centers of Sections 26 and 35 and south of the line across the south line of Sections 33, 34 and 35?

A Yes.

Q What would you recommend to constitute an 80-acre unit?

A I would recommend that 80-acre tracts be formed

either by the north-south or east-west or any combination thereof within each governmental quarter section.

Q Any stand-up or lay-down 80-acre unit then --

A Yes.

Q -- is what you are referring to? Do you have a recommendation to make as to the well location restriction within that 80-acre unit or tract?

A I would recommend that the wells be drilled within the center of each 40 acres with a tolerance of 100 feet from the center line.

Q Within 100 feet of the center of either quarter quarter section constituting a half of the 80-acre tract?

A That is correct.

Q Do you have any further testimony you wish to give at this time?

A No, sir.

MR. GRANT: I tender the witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Cox, you arrived at your 183,000 barrels of reserves by using twenty per cent constant decline, is that it?

A Yes, sir, extrapolation of the curve shown in Exhibit H using the cumulative recovery as of 1-1-66 and

extrapolating this curve at a twenty percent decline, I developed the ultimate primary recovery for the wells completed prior to this recent development.

Q What is this economic limit? I can't read it very well. Six barrels of oil per day per well?

A Yes, sir.

Q And the twenty percent decline then is based on this decline which has been uniform and constant, apparently, from 1961 through 1965 and prior to the time that the new activity started?

A Yes, sir, that is correct.

Q And you do not have any decline yet for the new area?

A No, sir, it's too early in the life to decline the recently developed wells just about, no less than a thirty percent decline could be drawn through the five to six months' history.

Q What have been the cumulative recoveries from typical wells in the old area?

A They have ranged rather widely. The cumulative recovery for the field is 3.5 million stock tank barrels.

Q That's through when?

A That would be through January 1st of this year.

Q So that would include recovery from the new wells as well as the old pool?

A Yes, sir, that value.

Q Quite a number of them were drilled in '66?

A Yes, sir, there were.

Q And you don't know the individual well recoveries then for the old area and how it would compare with 183,000 barrels?

A No, sir, I don't.

Q Actually the 183,000 barrels that you are talking about is an 80-acre recovery, right?

A Yes, sir, that would be an 80-acre recovery.

Q Well, now, Mr. Cox, you stated that if the order weren't granted and the wells weren't drilled, that there would be some drainage across these lease lines and correlative rights would be affected. What about if the order were granted and 80-acre allowable factors were assigned to the area to the east and south of the line, would there be any damage to correlative rights in that event?

A No, sir, not in my opinion. All of the wells that have been drilled in the new area of activity are not capable of producing their allowable under 40 acres.

Q So although these potentials here are in the

range of four to five hundred barrels, they decline rather rapidly and they are all marginal wells at this time?

A Yes, sir, there are only two wells which produced their allowable in the month of June. As I understand it, for the month of July one of these wells didn't, so there's only one of the 18 wells that produced their allowables in July.

Q What's the necessity for the 80-acre spacing to keep some neophyte from coming in here and drilling a 40-acre well when economics show it shouldn't be done and he might cause you to drill an offset then, or what?

A Yes, sir, that would be the reason to give protection for the area under consideration. The Skelly Oil Company is presently drilling their Sanders No. 2 as mentioned earlier. This well is being drilled on an 80-acre type spacing program.

Q That's a diagonal offset to the No. 1 well?

A Yes, sir, that's a southeast diagonal to the No. 1. At best, on the basis of the isopach maps shown in the hearing, there would be no more than ten additional wells that could be drilled in the area.

Q Well, if all of these wells are marginal, it wouldn't hurt if the Commission should enter an order

approving this spacing to assign a 40-acre allowable to the 80-acre units, then the top allowable in all the wells would be the same?

A Yes, sir, that is correct. I don't believe that any of the operators would take offense to this particular application in that the wells would drop off, in my opinion, within three to six months to being less than an allowable allowed for 40 acres.

MR. GRANT: Skelly would have no objection to such a restriction.

Q You did mention that one of the four temporarily abandoned wells was this Huber well and yet we have a pressure for it in August of '67. Was this well just very recently abandoned?

A Yes, just very recently abandoned. As you note, it's completed in the Bough "C" interval, the casing collapsed in the well. The well started making volumes of water, they went in to work the well over and found the casing collapsed. At the present time, why they are, the well is temporarily abandoned waiting on their decision to re-enter.

Q So this is a mechanical problem that is involved in this particular one?

A Yes, sir, this would be a mechanical problem.

Q The Texaco well was obviously abandoned because it was only making seven barrels of oil and ninety percent water?

A Yes.

Q How about the Texas Pacific well?

A It produced small volumes of oil. They seemed to have a problem with communications behind the pipe and the well is making large volumes of water. It's temporarily shut-in awaiting orders and a decision from their management.

MR. NUTTER: Are there any other questions of Mr. Cox?

REDIRECT EXAMINATION

BY MR. GRANT:

Q Mr. Cox, were Exhibits E through I prepared by you or under your supervision?

A Yes, sir, they were.

MR. GRANT: We offer Exhibits A through I.

MR. NUTTER: Skelly's Exhibits A through I will be admitted in evidence.

(Whereupon, Skelly's Exhibits A through I were offered and admitted in evidence.)

MR. NUTTER: If there are no further questions

of Mr. Cox he may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Grant?

MR. GRANT: Nothing further.

MR. NUTTER: Does anyone have anything further they wish to offer in Case 3645? We will take the case under advisement.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 25th day of September, 1967.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1971.

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 3645
heard by me on 9/6, 1967.
[illegible]
New Mexico Oil Conservation Commission

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3645
Order No. R-3328

APPLICATION OF SKELLY OIL COMPANY
FOR SPECIAL POOL RULES, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 6, 1967, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 11th day of October, 1967, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Skelly Oil Company, seeks the promulgation of special rules and regulations for the Lazy "J" Pennsylvanian Pool, including a provision for 80-acre spacing units for that area east of a line drawn through the centers of Sections 26 and 35, and south of a line drawn along the south line of Sections 33, 34, and 35, all in Township 13 South, Range 33 East, NMPM, Lea County, New Mexico.

(3) That the applicant has not established that the wells in the Lazy "J" Pennsylvanian Pool can efficiently and economically drain and develop 80 acres or that the establishment of 80-acre spacing units for that area east of a line drawn through the centers of Sections 26 and 35, and south of a line drawn along the south

line of Sections 33, 34, and 35, would prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risks arising from the drilling of an excessive number of wells, prevent reduced recovery which might result from the drilling of too few wells, or otherwise prevent waste and adequately protect correlative rights, including those of royalty owners.

(4) That the subject application should be denied.

IT IS THEREFORE ORDERED:

(1) That the subject application is hereby denied.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

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

esr/

WHITE, GILBERT, KOCH & KELLY
(GILBERT, WHITE AND GILBERT)
ATTORNEYS AND COUNSELORS AT LAW
LINCOLN BUILDING
SANTA FE, NEW MEXICO 87501

CARL H. GILBERT (1891-1963)
L. C. WHITE
WILLIAM W. GILBERT
SUMNER S. KOCH
WILLIAM BOOKER KELLY
JOHN F. McCARTHY, JR.

POST OFFICE BOX 787
TELEPHONE 982-4301
(AREA CODE 505)

August 7, 1967

Case 3645

New Mexico Oil Conservation Commission
State Capitol
Santa Fe, New Mexico

Re: Skelly Oil Company's Application for 80 Acre Units for Lazy "J" Field, Lea County, New Mexico

Gentlemen:

Please enter my appearance as resident counsel for Skelly Oil Company in the above captioned matter.

Very truly yours,

L. C. WHITE

LCW:el
CC: Mr. George W. Selinger
Skelly Oil Company
P. O. Box 1650
Tulsa, Oklahoma 74102

DOCKET NO. 26-67

DOCKET: SPECIAL HEARING - WEDNESDAY - AUGUST 30, 1967

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

CASE 3644: In the matter of the hearing called by the Oil Conservation Commission upon its own motion to consider the revision of Paragraph (1) of Order No. R-3221, to provide that the effective date for the prohibition of surface disposal of produced water from the North Bagley-Upper Pennsylvanian, North Bagley-Middle Pennsylvanian, North Bagley-Lower Pennsylvanian, North Bagley-Wolfcamp, and Northeast Bagley-Wolfcamp Pools, Lea County, New Mexico, or within one mile thereof, be changed from November 1, 1967, to some earlier date.

NOTE: A COPY OF THIS DOCKET WAS MAILED TO ALL PRODUCERS IN THE ABOVE-MENTIONED POOLS ON AUGUST 11, 1967.

DOCKET NO. 27-67

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 6, 1967

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

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

CASE 3431 (Reopened and continued from the August 9, 1967 Examiner Hearing)

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

CASE 3645: Application of Skelly Oil Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Lazy "J" Pennsylvanian Pool, including a provision for 80-acre spacing units for that area east of a line drawn through the centers of Sections 26 and 35, and south of a line drawn along the south line of Sections 33, 34, and 35, all in Township 13 South, Range 33 East, Lea County, New Mexico.

CASE 3646: Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Delaware Sand through 12 wells in the Cotton Draw Unit Participating Area and through 3 wells on off-setting leases in Sections 10, and 28, Township 25 South, Range 32 East, Paduca-Delaware Pool, Lea County, New Mexico.

CASE 3647: Application of Tenneco Oil Company for two waterflood projects, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute two waterflood projects by the injection of water into the Delaware Sand through two wells on its State Monsanto Lease, in Section 16, and through one well on its J. D. Sena, Jr. Lease, in Section 28, both in Township 25 South, Range 32 East, Paduca-Delaware Pool, Lea County, New Mexico.

CASE 3648: Application of Tenneco Oil Company for a dual completion, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Jicarilla "A" Well No. 8 located in Unit H of Section 17, Township 26 North, Range 5 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of Tapacito-Gallup oil and Basin-Dakota gas through tubing, and the casing-tubing annulus, respectively, by means of a cross-over assembly.

CASE 3649: Application of Texas Pacific Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Ella Drinkard Well No. 2 located in Unit E of Section 25, Township 22 South, Range 37 East, Lea County, New Mexico, in such a manner as to produce oil from an undesignated Ellenburger pool and from another undesignated pool, either pre-Ellenburger or Granite Wash, through parallel strings of tubing.

CASE 3650: Application of Albert Gackle for down-hole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Jalmat and South Eunice Pools in the well-bore of his Esmond "B" Well No. 3 located in Unit K of Section 33, Township 22 South, Range 36 East, Lea County, New Mexico, with the assignment of a single allowable to said commingled production.

CASE 3635 (Corrected Notice):

Case 3635, Application of Cities Service Oil Company for an Exception to Order No. R-3221, Chaves County, New Mexico, was heard by the Commission on August 16, 1967. This notice is being given and the case will be re-opened to correct the location of one of the surface pits which were the subject of the hearing. The correct location of said pit is Unit E of Section 2, Township 14 South, Range 31 East, Chaves County, New Mexico, rather than Unit L of Section 2 as previously advertised.

CASE 3651: Application of Olen F. Featherstone for the creation of a new pool and special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Permo-Pennsylvanian pool for his Mobil-State Well No. 1 located in Unit E of Section 32, Township 14 South, Range 35 East, Lea County, New Mexico, and for the promulgation of special rules therefor including a provision for 80-acre proration units.

CASE 3652: Application of Depco, Inc. for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Artesia Unit Area comprising 2400 acres, more or less, of State lands in Townships 17 and 18 South, Range 28 East, Eddy County, New Mexico.

CASE 3653: Application of Depco, Inc. for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Artesia Unit Area by the injection of water into the Grayburg formation through 15 wells, Artesia Pool, Eddy County, New Mexico.

CASE 3654: Application of Mobil Oil Corporation for a waterflood expansion and for an amendment of Order No. R-1244, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its Bridges-State Waterflood Project by the conversion to water injection of its Bridges-State Wells Nos. 63 and 73 in Units K and G of Section 13; Wells Nos. 3 and 6 in Units O and E of Section 23; Well No. 47 in Unit K of Section 24; Well No. 5 in Unit C of Section 26, and Well No. 52 in Unit A of Section 27; its State G Well No. 3 in Unit G of Section 24 and State J Wells Nos. 1 and 4 in Units I and A of Section 22, all in Township 17 South, Range 34 East, Vacuum Pool, Lea County, New Mexico.

Applicant further seeks the amendment of Order No. R-1244 to provide that future operation and expansion of said project would be subject to the provisions of Rule 701-E of the Commission Rules and Regulations.

ir/

SKELLY OIL COMPANY

P. O. BOX 1650

TULSA, OKLAHOMA 74102

August 4, 1967

Re: Lazy "J" (Penn) Field
Lea County, New Mexico

Case 3645

Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. A. L. Porter, Jr., Secretary-Director

Gentlemen:

We are attaching original and four copies of our application for establishment of 80-acre spacing for a portion of the Lazy "J" (Penn) Field, Lea County, New Mexico.

Please set this matter down for hearing at the next Examiner Hearing.

Yours very truly,

George W. Selinger

RJJ:br
Attach. (5)

cc-Texaco, Inc., P. O. Box 3109, Midland, Texas, Attn: Mr. V. F. Dullnig
J. M. Huber Corp., Suite 922 Vaughn Bldg., Midland, Texas 79704,
Attn: Mr. Floyd L. Meade
Gulf Oil Corp., P. O. Drawer 1938, Roswell, New Mexico 88201,
Attn: Mr. M. I. Taylor
w/ attach. (1)

STATE OF NEW MEXICO

'67 AUG 7 AM 8 16

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF SKELLY OIL COMPANY FOR AN ORDER ESTABLISHING 80-ACRE UNITS FOR THE LAZY "J" (PENN) FIELD, LEA COUNTY, NEW MEXICO.

CASE NO. 3645

A P P L I C A T I O N

Comes now Skelly Oil Company and alleges and states:

1. That it is an operator of oil wells in the Lazy "J" (Penn) Field, located in portions of Township 13 South, Range 33 East, and Township 14 South, Range 33 East, Lea County, New Mexico.

2. That at the present time development in this field is on a statewide basis, but that the most recent development has been on a density of one well per 80 acres within certain areas of said pool.

3. That applicant believes that one well will efficiently and economically drain an area of at least 80 acres, and that the Commission should establish 80-acre spacing for portions of the pool where it is practical; and that applicant would recommend that 80-acre spacing units be established for the area east of a line drawn through the centers of Sections 26 and 35, and south of a line drawn along the south line of Sections 33, 34 and 35, all in Township 13 South, Range 33 East, Lea County, New Mexico.

4. That 80-acre units be formed by the E/2, W/2, N/2, or S/2 of each governmental quarter section, and that the permitted well be located within a reasonable tolerance of the center of either quarter quarter section comprising the unit.

WHEREFORE, PREMISES CONSIDERED, applicant prays that this Commission set this matter down for hearing, that notice hereof be given as required by law, and that at the conclusion of said hearing based on the evidence adduced enter its order establishing 80-acre spacing units for a portion of the Lazy "J" (Penn) Field, and for such other orders, rules and regulations as may be necessary in the premises.

Respectfully submitted,

SKELLY OIL COMPANY

George W. Selinger
Ronald J. Jacobs
James B. Grant
Its Attorneys

By George W. Selinger

P. O. Box 1650
Tulsa, Oklahoma 74102

Of Counsel:
Mr. L. C. White
White, Gilbert, Koch & Kelly
P. O. Box 787
Santa Fe, New Mexico 87501

'67 AUG 7 AM 8 16

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

October 11, 1967

Mr. Booker Kelly
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

Re: Case No. 3645
Order No. R-3328
Applicant:
Skelly Oil Company

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

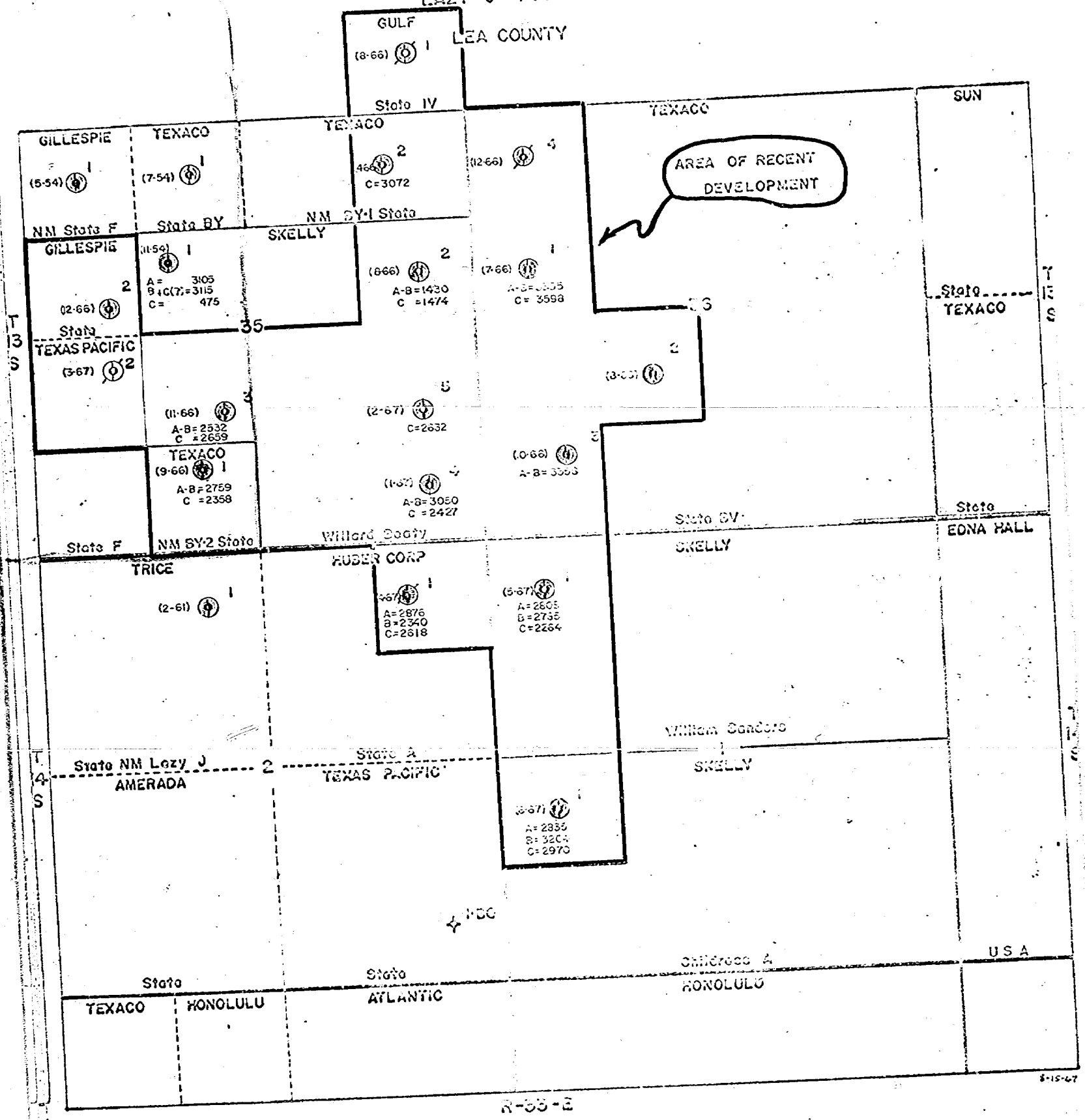
Hobbs OCC x
Artesia OCC
Aztec OCC
Other Mr. J. B. Grant, Skelly Oil Company, Tulsa, Oklahoma

SKELLY OIL COMPANY

NEW MEXICO DISTRICT

LAZY "J" POOL

LEA COUNTY



- o Location
- o Oil Well
- ø Temporary Abandoned
- ✧ Plugged Abandoned
- ⓪ Pay Lime Completion
- ⓪ Bough "C" Completion
- (1-67) Completion Date
- ABC DST Intervals (Bough Zones)

D. S. T. PRESSURES

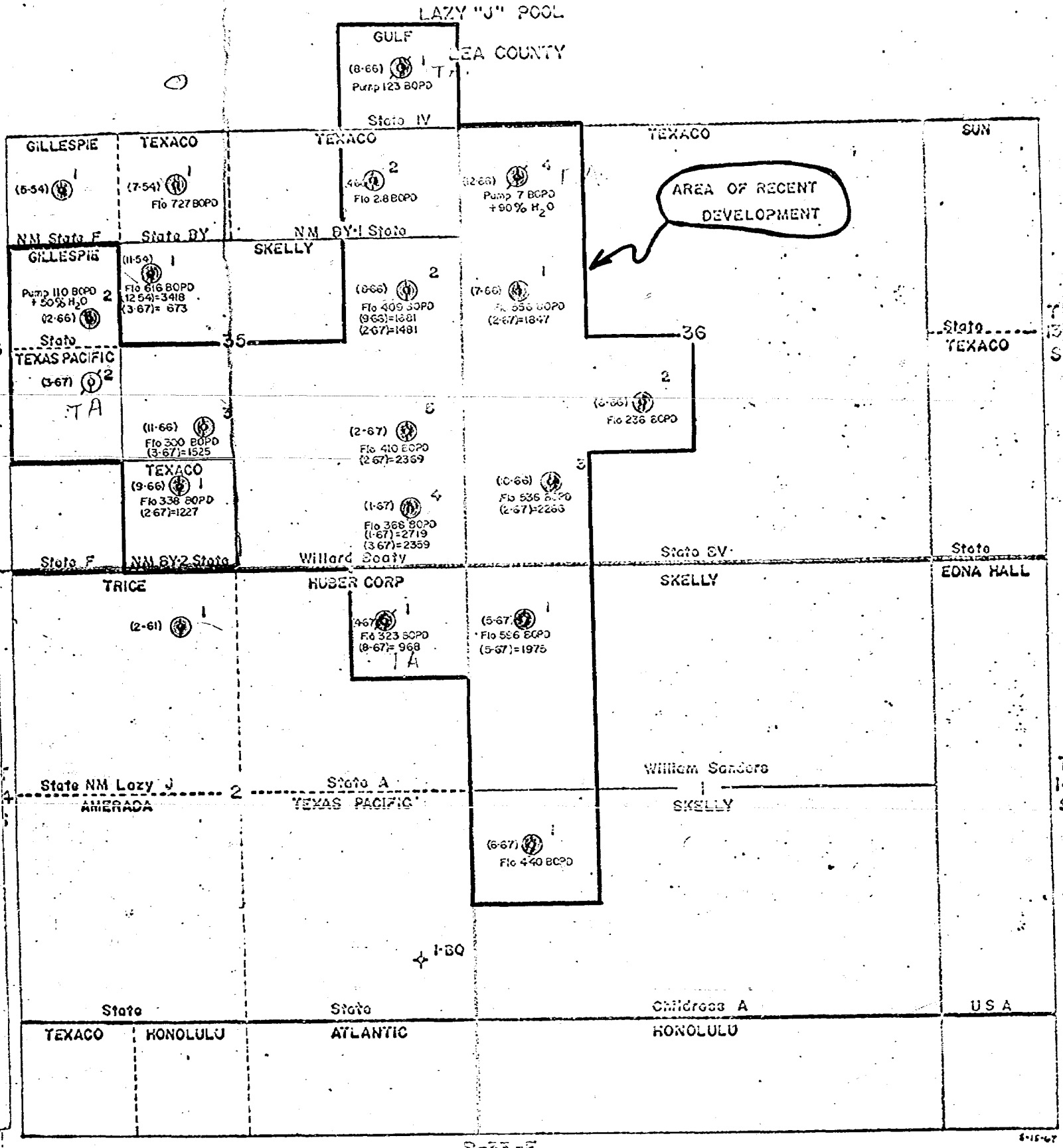
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
9/6/67 EXHIBIT NO. E
CASE NO. 3645

SKELLY OIL COMPANY

NEW MEXICO DISTRICT

LAZY "J" POOL

LEA COUNTY



- o Location
- o Oil Well
- ø Temporary Abandoned
- ✧ Plugged Abandoned
- ⊛ Pay Lime Completion
- ⊛ Bough "C" Completion
- (1-67) Completion Date
- (9-66) Date of BHP Survey

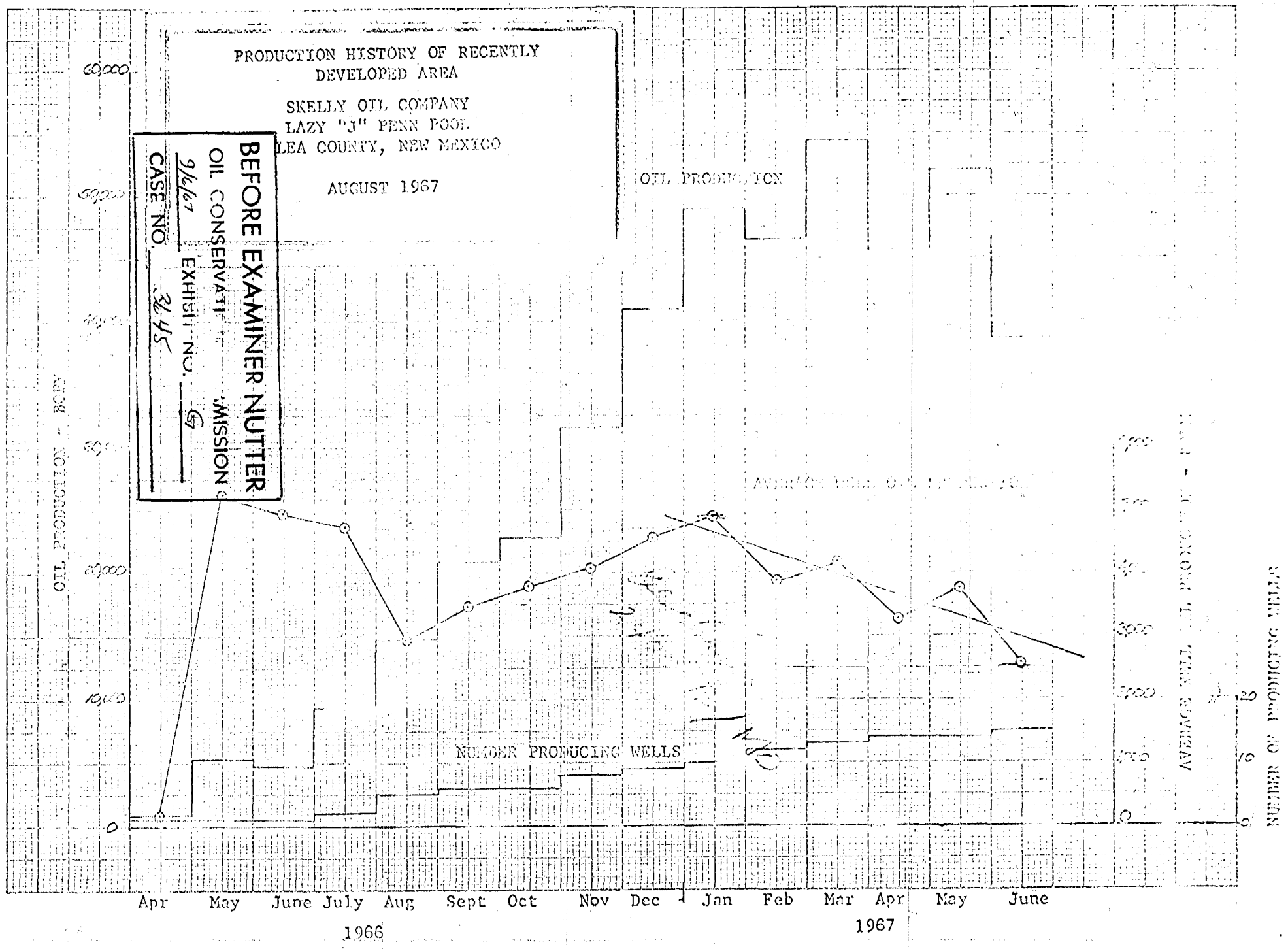
INITIAL POTENTIAL & BOTTOMHOLE PRESSURE

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
9/6/67 EXHIBIT NO. F
CASE NO. 3645

PRODUCTION HISTORY OF RECENTLY DEVELOPED AREA

SKELLY OIL COMPANY
LAZY "J" PENN POOL
LEA COUNTY, NEW MEXICO

AUGUST 1967



LAZY "J" PENN POOL

ECONOMICS COMPARING 40-ACRE SPACING TO 80-ACRE SPACING

ITEM	PROFIT INDICATORS 40-ACRE SPACING	80-ACRE SPACING
Number of Wells	2	1
Gross Oil Production (M-Bbls.)	183	183
Life (Years)	11	15
N.W.I. Oil Production (M-Bbls.)	160	160
Gross Revenue (M-$)	506	506
Investment (M-$)	352	176
Expenses, Includes Pdn. Taxes (M-$)	59	40
Net Revenue After Costs (M-$)	95	290
Net Profit Per $ Invested ($)	0.27	1.65

Note: A. Gross W.I. = 100%, Net W.I.=87.5%
B. Gross Revenue=$3.16/Net Bbl.
C. Expenses are estimated @ $225/Well-Month
D. Investment (Cost to Drill Well & Install PU)

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
9/6/67 EXHIBIT NO. I
CASE NO. 3645

I