

CASE NO.
2935

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

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Exhibit 1

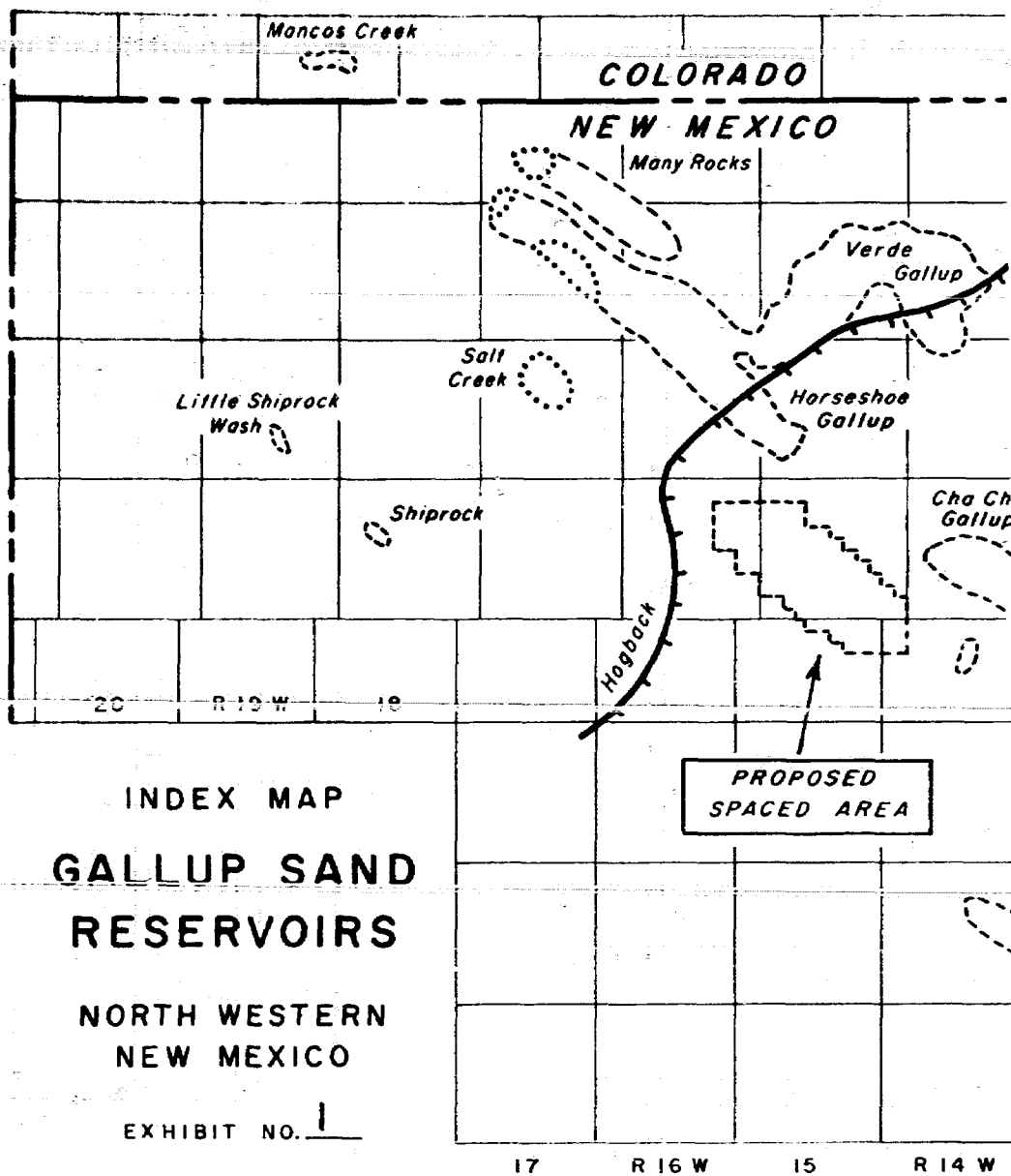


EXHIBIT NO. 5
HUMBLE OIL & REFINING COMPANY
WELL STATUS SUMMARY
SOUTH WATERFLOW AREA
SAN JUAN COUNTY, NEW MEXICO

OPERATOR LEASE NAME WELL NUMBER	Humble Navajo Tr 2 No. 1	Humble Navajo Tr 12 No. 1	Pickett Fruitland-Amarillo No. 1	Humble Navajo Tr 12 No. 2	Humble Navajo Tr 120 No. 1
Depth - Total	11,165'	4,351'	4,678'	4,298'	
- Plug Back	4,247'	4,318'	4,661'		
Production Csg - Size	7"	4-1/2"	4-1/2"		
- Depth Set	4,279'	4,351'	4,669'		
Top of Cement (Est)	2,900'	3,800'	4,100'		
Perforated Interval(s)	4109'-14'	4213'-20'	4586-90' 4609-12' 4623-29'		
Completion Date	11-1-63	9-11-63	6-1-63		
Initial Potential - BOPD	F 15 BO & 5 BW 24/64" Ck	F 144 & No Wtr 8/64" Ck	P 15		
- GOR	59,500/1	No Test	TSTM		
Cum. Oil Production to 11-1-63	322 Bbls	3563 Bbls	160 Bbls		
Current Well Status	Testing	Producing	SI since 7-15-63	Testing	Drilling
Test Potential on 10-25-63					
BOPD		F 110 BO & No Wtr, 13/64" Ck			
GOR (SCF/Bbl)		1301/1			
Wellhead Pressures		Tbg 720#; Csg 1120#	NA		

Exhibit 5

EXHIBIT NO. 8
HUMBLE OIL & REFINING COMPANY
VOLUMETRIC CALCULATIONS OF PRIMARY OIL RESERVES
SOUTH WATERFLOW, NW CHA CHA AND EAST BISTI AREAS
SAN JUAN COUNTY, NEW MEXICO

	<u>South Waterflow</u>	<u>NW Cha Cha</u>	<u>East Bisti</u>
Porosity - %	11.7	14.7	12.4
Pore Volume - Bbls/Acre-foot	908	1140	962
Permeability - Md	70	57	28
Connate Water - %	33	35	37.5
Formation Volume Factor, Original	1.40	1.39	1.28
Original Oil in Place - ST Bbls/Acre-foot	434	533	470
Primary Recovery - % Original Oil in Place	15	14	14
Average Net Pay - Feet	7	6.5	7
Primary Recovery - ST Bbls/Acre-foot	65	75	66
- ST Bbls/Acre	455	488	462

Exhibit 8

EXHIBIT NO. 09
HUMBLE OIL & REFINING COMPANY
WELL ECONOMICS: 40, 80, and 160-ACRE SPACING
SOUTH WATERFLOW AREA
SAN JUAN COUNTY, NEW MEXICO

SPACING - ACRES PER WELL	40	80	160
Primary Recovery			
Estimated Ultimate Production - Bbls/Acre	500	500	500
- Total Gross Bbls	20,000	40,000	80,000
- Net Bbls after Royalty (0.833)	16,660	33,320	66,640
Earnings Less Production Taxes \$2.75 - \$0.16 = \$2.59 per net bbl	\$ 43,200	\$ 86,300	\$172,600
Operating Expense			
Lease and Well Expense	16,500	21,600	28,900
40 Ac \$250/W-M & 5.5 Yr Life			
80 Ac \$300/W-M & 6.0 Yr Life			
160 Ac \$370/W-M & 6.5 Yr Life			
Operating Profit Before Overhead	26,700	64,700	143,700
Overhead @ \$0.15 per net bbl	2,500	5,000	10,000
Operating Profit After Overhead	24,200	59,700	133,700
Investment			
Drilling & Completion	42,000	44,000	47,000
Pumping Equipment	12,000	13,000	14,000
Lease Equipment	5,000	6,000	7,000
Total Investment	59,000	63,000	68,000
Ultimate Status	(\$ 34,800)	(\$ 3,300)	\$ 65,700

Exhibit 9

EXHIBIT NO. 10
HUMBLE OIL & REFINING COMPANY
COMPARATIVE RESERVOIR DATA
CHA CHA GALLUP FIELD AND SOUTH WATERFLOW AREA
SAN JUAN COUNTY, NEW MEXICO

	CHA CHA	SOUTH WATERFLOW
Reservoir Structural and Stratigraphic Features		
Producing Formation	Gallup Sand	Gallup Sand
Structure	Monocline	Nose & Monocline
Gas-Oil or Wtr-Oil Contact	None Indicated	Present; Not Defined
Type Accumulation	Stratigraphic Trap; Sand Bar	Stratigraphic Trap; Sand Bar
Producing Depth	4600'-5600'; Avg 5400'	4200'-4700'; Avg 4400'
Average Net Thickness - "A" Sand	6.5'	7'
- "B" Sand	6.0'	
Reservoir Rock Properties		
Average Porosity	"A" Sand 14.7%	Upper Sand 11.7%
Average Permeability (Air)	57.0 Md	70.2 Md
Connate Water Saturation	35.0 %	33.0 % (Est)
Formation Temperature	158°F.	128°F.
Initial Reservoir Pressure	1560 psig @ / 400' Datum	1603 psig @ / 1200' Datum
Reservoir Fluid Properties		
API Gravity - Average	43°	41°
Formation Volume Factor @ Orig Press	1.392	No Test
Gas-Oil Ratio @ Orig Press (SCF/Bbl)	649	No Test
Oil Viscosity @ Saturation Pressure and 158° F. - Cp	0.415	No Test

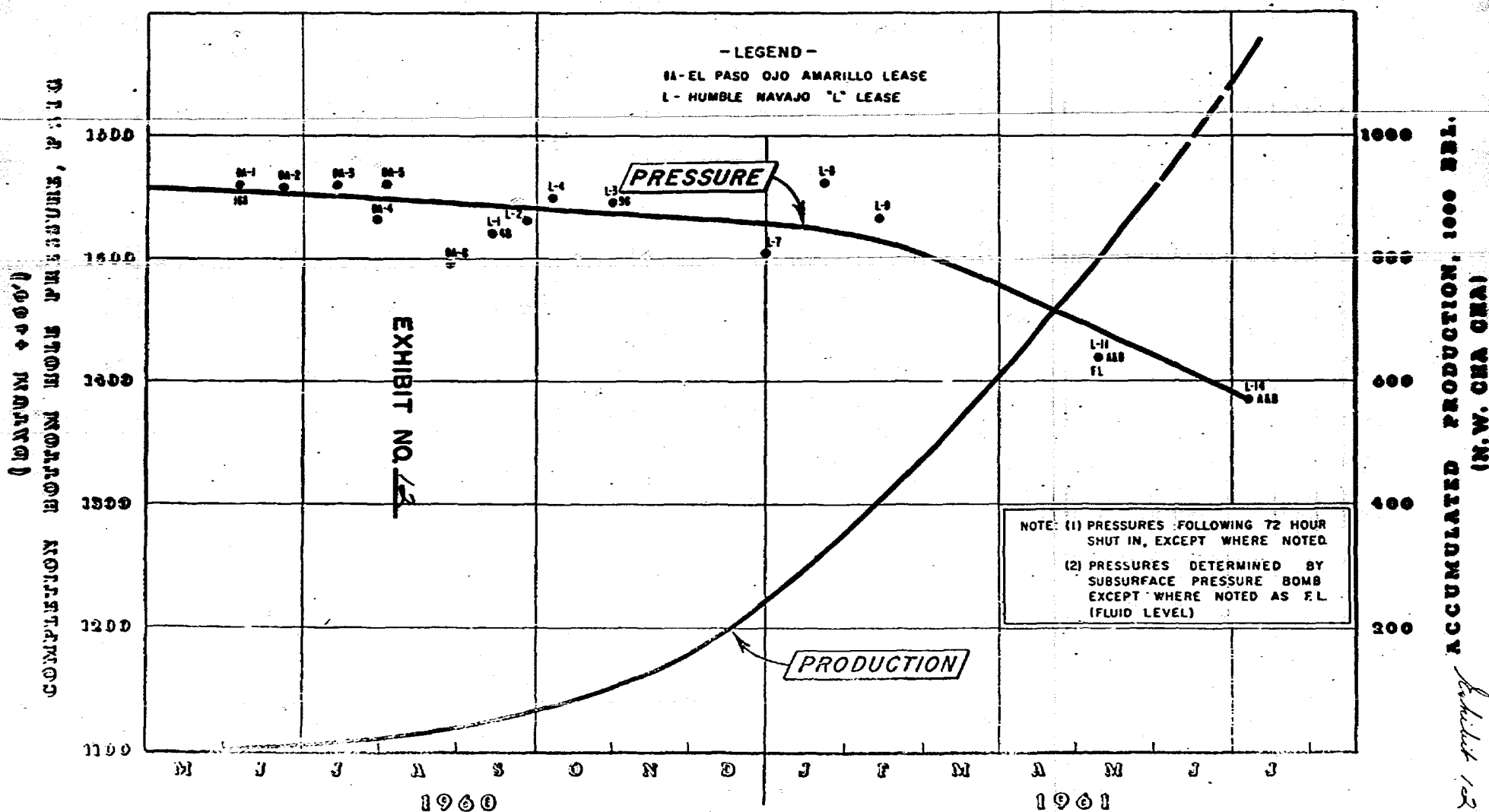
Exhibit 10

COMPLETION BOTTOM HOLE PRESSURES vs. TIME

ACCUMULATED OIL PRODUCTION vs. TIME

CHA CHA GALLUP FIELD

SAN JUAN COUNTY, NEW MEXICO



PRESSURE INTERFERENCE DATA

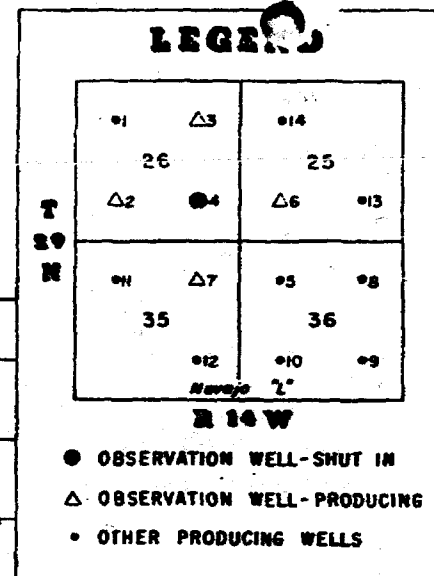
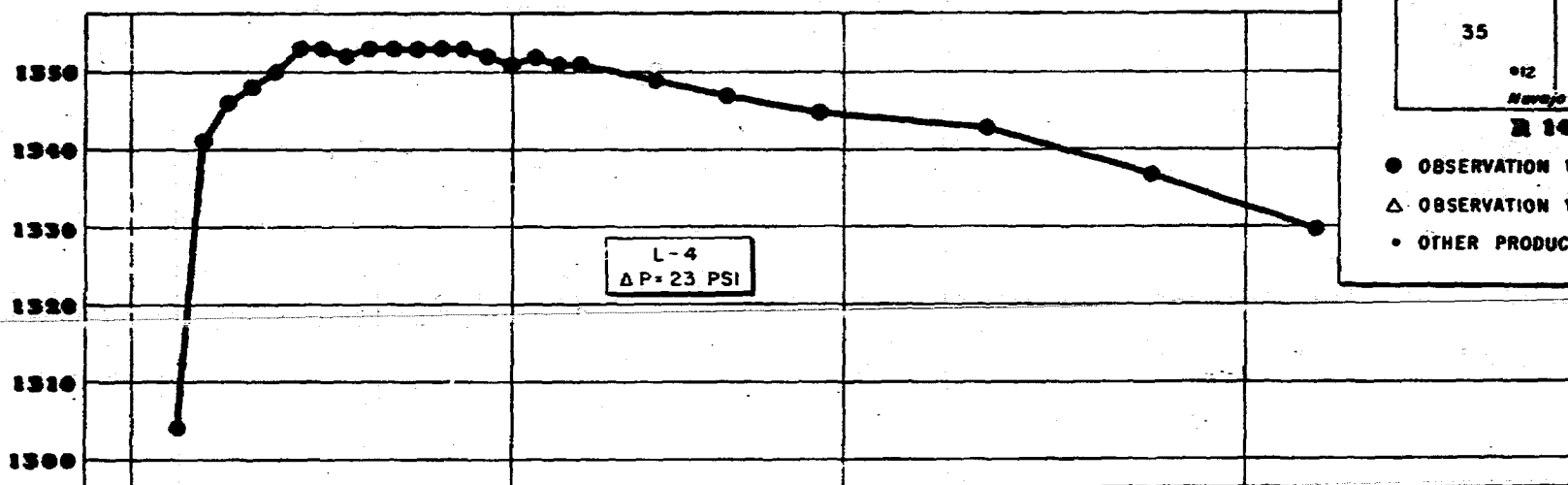
NAVAJO "L" LEASE

CHA CHA GALLUP FIELD

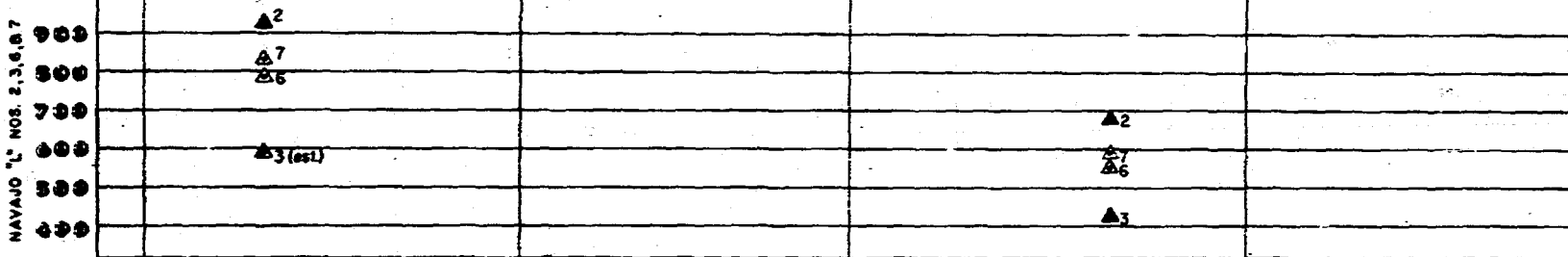
SAN JUAN COUNTY, NEW MEXICO

JUNE 16 - AUG. 4, 1961

NAVAJO "L" NO. 4 STATIC BHP
PSIG - 5400' (4500')



FLOWING BHP
PSIG (4500')



AVG. MONTHLY
OIL PROD., BPD

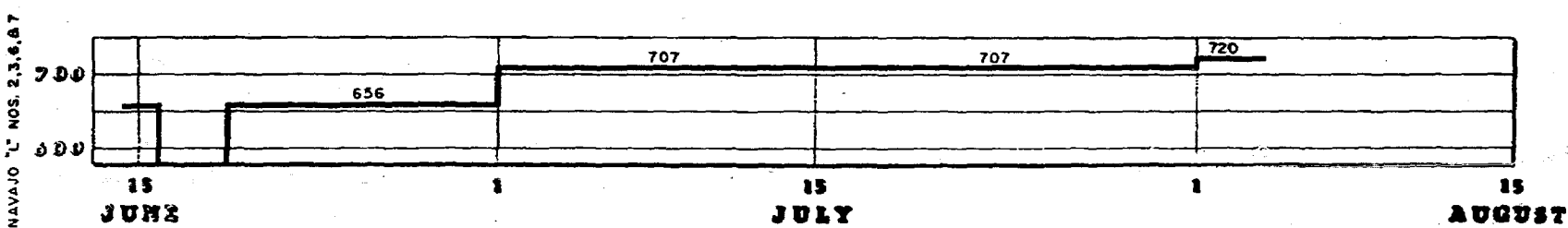


EXHIBIT NO. 13

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 13, 1963

REGULAR HEARING

IN THE MATTER OF:

Application of Humble Oil & Refg. Co.
for the creation of a new pool, for
special pool rules, and for interference
tests, San Juan County, New Mexico.

Case No. 2935

BEFORE:

HONORABLE JACK M. CAMPBELL, GOVERNOR
E. S. (JOHNNIE) WALKER, LAND COMMISSIONER
A. L. (PETE) PORTER, SECRETARY-DIRECTOR

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

SANTA FE, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 325-3971

ALBUQUERQUE, N. M.
PHONE 243-8591

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 13, 1963

REGULAR HEARING

IN THE MATTER OF:

Application of Humble Oil & Refg. Co.
for the creation of a new pool, for
special pool rules, and for interference
tests, San Juan County, New Mexico.

CASE NO. 2935

BEFORE: Honorable Jack M. Campbell, Governor
E. S. (Johnnie) Walker, Land Commissioner
A. L. (Pete) Porter, Secretary-Director

TRANSCRIPT OF HEARING

MR. PORTER: The Commission will take up next, Case 2935.

MR. DURRETT: Application of Humble Oil & Refinishing
Company for the creation of a new pool, special pool rules, and
for interference tests, San Juan County, New Mexico.

MR. BRATTON: Howard Bratton on behalf of the Applicant.
We would request about a five minute recess so we could put some
large exhibits on the board, please.

(Recess)

MR. PORTER: Hearing will come to order, please. The
Commission will take up Case No. 2935, and recognize Mr. Bratton.

MR. BRATTON: Howard Bratton on behalf of the Applicant.

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Humble Oil & Refining Company. I have associated with me, Mr. John Knodell, attorney on the Bar of the State of Colorado. Before we proceed, does the Commission want to ask for appearances?

MR. PORTER: Yes. The Commission will call for appearances in Case 2935.

MR. WOLF: Walter Wolf, Navajo Tribe of Indians.

MR. MORRIS: Richard Morris, Seth, Montgomery, Federici and Andrews of Santa Fe, appearing on behalf of the Pure Oil Company and Sun Oil Company.

MR. PORTER: Are there any other appearances?

MR. HOWARD: If the Commission please, before we proceed, I would like to make a brief statement for several reasons. One, to outline what we are applying for here, two, I would like to give an explanation of what we intend to show so that I won't have to testify so much during the hearing. Basically, if the Commission please, this is an application for 160 acre oil spacing in a Gallup reservoir in Northwest New Mexico. We do not consider that this is a major precedent type of application. We think this application is consistent with the policy which has been developed by the Commission over a number of years of reducing the cost of producing oil and gas in this country and this State. We do have one particular problem in this pool, which particularly seems to indicate 160 acre spacing. I am sure the Commission is all very well familiar with the coal corridor of Utah Construction Company, and the power dam of the Arizona Public Service



Company. This pool appears to run right through that area, and as we will develop, this lends some peculiar problems to the particular application. However, basically, we are attempting to prove that one well will efficiently and economically drain 160 acres in this pool.

Recently, one of the Governors attending the Interstate Oil Compact Commission said our job is to make it clear that the State, working through the Compact, have done much, and that we intend to do more to establish by State law rule and regulation proceeding, will conserve our oil resources by producing them efficiently so that those in the industry will be in a position to compete with each other, at home and compete with foreign production from abroad. That was an excellent, not address, but response to the address of welcome, delivered by the Hon. Jack M. Campbell of New Mexico and well received.

GOVERNOR CAMPBELL: That is dirty pool, isn't it, Bratton?

MR. BRATTON: If the Commission please, we are here only in the spirit of cooperation. But, seriously, that is exactly what we are here for. This is just a plain matter of efficiency. I think, to demonstrate, that it will serve no useful purpose to stick four pipes of steel in the ground where one will do it.

Outlining what we will prove, we will put on a geologist, Mr. Ted Fautin. I believe we can show if the Commission will look at the map at the upper left, the green colored map, this is just

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the typical sand reservoir trending from Northwest to Southeast. Basically, what we intend to establish is that the Commission should establish a long line from Northwest to Southeast, for this proration, for this pool, because in all probability that is what will occur and what will develop. This was not done in the Cha-Cha Gallup Pool immediately to the east and as a result, you had two pools which, of course, ultimately connected into the one. You wound up with two different proration patterns.

I think that will be the gist of the testimony by our geologist. Our engineer, Mr. Don Emery, will, of course, produce the well information, which has been developed to the wells which have been drilled to date. We have one factor here that has not been present in the Gallup reservoir and that is, apparently, we have water in the lower benches of the Gallup here, and therefore, it appears we are, in all probability, going to be limited to just the upper little stringer of this pool. I think we can show by the economics of this situation that it will be no bonanza, on 160 acres.

This is not a major oil pool and it is not a matter of reaping a tremendous fortune. It is not going to be great, even on 160 acres. I believe we can show by comparison to the Cha-Cha Gallup Pool immediately to the east that these reservoirs appearing substantially similar in all of their characteristics, that one well will, in all probability, efficiently and economically drain 160 acres. Interference tests were run in the Cha-Cha Gallup Pool



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We will put them in. Interference tests were run on wells drilled on 80 acre patterns and wells drilled on 160 acre patterns. And we will- - we believe that we can communicate or have communication from those, and with the similarities of reservoirs, we think that we should be afforded the opportunity of a one year order and an opportunity to run interference tests in this reservoir.

Now, to the order that we are asking, we are asking, one, an order for temporary 160 acre spacing- - proration unit for a one year period. Two, we are asking for flexible locations, but still they are restricted as we will develop. They are not completely flexible where you can congregate four wells in the corner. We are trying to keep them reasonably within the center of the 160, but at the same time, allow enough flexibility for coal corridor problems and other problems in this area.

Next, we are asking that a well drilled on 160 acres be allowed four times the normal unit allowable. In this connection, we are also asking that while the 160 acre proration unit be established, that the order provide that more than one well can be drilled on 160 acres. We had originally thought and intended to propose to this Commission that the order limit one proration unit to where one well could be drilled on it. Similar or identical to the order recently issued by the Commission in the Puerto-Chichita case. However, we have consulted with the Navajo Tribe of Indians, at their request, we are changing that request to provide for this possibility of drilling more than one well on 160 acres.



As we will develop, the coal corridor runs right through the center of this thing. It is as yet unleased. The Navajo Tribe intends to lease it. They, and we, would anticipate operational problems in there and we anticipate that you might have lease problems unless this flexibility were permitted.

Now, in our order, we propose what the Commission has, and I assume half of the orders, which is that more than one well can be drilled on the proration unit, and we would like to - - like that specifically understood that the order would provide that more than well could be drilled on 160 acres. And that it would not be limited to one operator on the 160 acres. In other words, the Navajos contemplate if somebody else were to get the coal corridor and with your operational and leasing problems, somebody might want to drill on 80, or it might be dictated, and we want to cooperate with them in that regard.

Is that a fair position of what the Tribe wants, Mr. Wolf?

MR. WOLF: Yes, sir, Mr. Bratton, with the one exception that we are concerned with the dual operators within a particular proration unit.

MR. BRATTON: You want it specific that there can be.

MR. WOLF: That is right. The Commission understands that if the future leasing of the corridor turns out that there are two lessees within that particular unit, that there may be an exception granted within that particular unit for two operators and

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two wells.

MR. BRATTON: And I think that is what this order provides. It is your standard order. If it doesn't, we are agreeable to whatever spelling out is necessary to accomplish that.

GOVERNOR CAMPBELL: You are not disturbed about the possibility of clustering of wells?

MR. BRATTON: If an operator were to drill on less than the 160, his allowable, of course, would be proportionately reduced. That would be his economic loss and his economic choice. I think the economics will demonstrate this is going to perform no better than and possibly worse. If the Commission please, with that brief statement and explanation, I would like to call our first witness. Mr. Fautin.

(Witness sworn)

TED FAUTIN,

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, by whom you are employed, and in what capacity?

A My name is Ted Fautin. I am employed by the Humble Oil and Refining Company as a Production Geologist.

MR. PORTER: Ted Fautin?

A That is correct. F-a-u-t-i-n.

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Q (By Mr. Bratton) Where are you located, Mr. Fautin?

A Durango, Colorado.

Q Do you operate the South Waterflow area and are you familiar with the matters that are contained in this application?

A Yes.

Q Have you previously testified before an examiner of this Commission as an expert witness, and have your qualifications be accepted?

A Yes.

Q The witness is qualified?

MR. PORTER: The witness' qualifications are accepted.

Q (By Mr. Bratton) Mr. Fautin, will you go over to your large exhibit and turn to your exhibit, Exhibit Number One there, and explain what it is and what it shows?

A Exhibit Number One is the orientation map of the Northwestern part of New Mexico. This is the Four Corners here. The Gallup Sand Reservoirs are outlined by this heavy dashed line. The oil producing areas are colored green and the areas that produce gas are colored red. The prominent black line trending through here labeled "Hogback", is the approximate outcrop of the Mesa Verde formation. This outcrop forms a prominent lithographic feature in the Northwestern part of the San Juan Basin. The proposed spaced area is located just east of the "Hogback", and about three to six miles west of the Cha-Cha Gallup field. This past area is outlined in blue.



Q Does that indicate, Mr. Fautin, that apparently we are looking at a typical Northwest-Southeast trending Gallup Reservoir?

A It does. We have purposely oriented this to parallel the typical Gallup Sand Bars. They are common in this area.

Q Is there anything else you care to point out in connection with that map?

A No.

Q All right, sir. Turn then to your lease ownership map, Mr. Fautin, and what does it reflect basically?

A Exhibit Number Two is the lease ownership map. The proposed area is shown by this heavy dashed line. All the acreage within this area is Navajo Tribal lands with the exception of these small tracts in the northern part of the Section 8, north of the San Juan River.

Q The coal corridor is in this general area here?

A Yes.

Q And all of that acreage is Navajo Tribal Lands and it is all leased except the coal corridor area?

A That is correct.

MR. PORTER: Coal corridor then would be the approximate center of the pool?

A That is correct. You can see it a little more clearly on this exhibit here.

Q (By Mr. Bratton) All right, sir. Turn then to your structure map then, Mr. Fautin.

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A Exhibit Number Three is a structure map on top of the Sanostee, which is a correlation point, which occurred about 30 to 40 points below the Gallup Sand interval. Recent wells that have been drilled in the area, the discovery well, which is located in the Southwest of the Section 18, the 12-No. 1 Well has been completed as an oil well. This well Number Two in the Northwest Northwest of Section Two, is presently being completed and the well in Section 13 is drilling at this time. The contour interval for the structure map is 100 feet. The dip in this area is generally in an easterly direction running from three quarters of a degree to approximately one degree. In the proposed spaced area, as outlined again by the heavy dashed line, near the center of this proposed area we have evidence of a Southeast plunging nose. It is quite prominent in the Northwestern part of the proposed area and decreases in the Southeasterly direction in the vicinity of the Pickettwell, which is drilled right here.

The coal corridor is outlined by this heavy dashed line and the Utah Construction Company Coal lease is outlined by this lighter dashed line. There is good possibility that wells located high on this structural nose will be primarily gas wells.

Q So, Mr. Fautin, you have two completed wells and two drilling wells north and west of the Coal Corridor and then, you have the Pickett well south and east of the Coal Corridor; is that correct?

A This well is drilling. This well is presently completing.



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has reached total depth, and has pipe set, in the process of being completed.

Q Now, turn to your cross section, Mr. Fautin.

A Exhibit Number Four is a stratigraphic cross section that trends from the Northwest to the Southeast, as shown on this small index map. The Northwestern most well is located, and the next well, the well in Section 19; we do not have well 12 Number Two on this cross section, because it - - the cross section was prepared before the well was logged. The Southeastern most well is the Pickett well, is located here.

MR. WALKER: I think if you will give the location instead of saying here, doesn't mean anything in the record. Be better if you would give the location.

A Northwestern most well as shown on the cross section is located in the Southwest-Southwest of Section 18. The second well is located in the Northwest of the Northeast of Section 19. And the Pickett well, the Southeastern most well shown on the cross section, is located in the Southwest-Southwest of Section 26.

Q (By Mr. Bratton) Now, Mr. Fautin, before we go further, those are the three wells on the left of your cross section; is that correct?

A That is correct.

Q Now, we will go into those first, but we do have a 4th well, a Cha-Cha well on this cross section, which you will go into later just to show the similarity of the formations; is that correct?



A That is correct.

Q For the purposes of the later comparison, which will be made by the engineering witness?

A Yes.

Q Now, turn to your - - turn your attention to the first three wells on the cross section in the South Waterflow area and explain what they show?

A This cross section was constructed by the use of the induction-electric log. The upper-most correlation points here, shown here, are approximately 75 feet above it. Lower correlation occur 30 to 40 feet below the Sand interval. On this point that the structure map was constructed. The well located here to the right is Humble's L-7 well, located in Section 35, 29 North, Range 14 West, in the Cha-Cha field. It is a fairly typical well for that area.

As you will notice, the sand development in the South Waterflow area occurs in the- - approximately the same stratigraphic position as the sand development in the Cha-Cha area. The upper sand in the South Waterflow area, although not as well developed in the Pickett well, is still present, and we can see that these sands are continuous along this line of the cross section. The sand characteristics in the South Waterflow area are typical for the Gallup Sand Bars that are common in this area. We have plugs from cores from the upper sand here and also plugs from two wells in this Cha-Cha field, if you would care to examine

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them. The average permeability for the sand in this well- -

Q Which well is that?

A This well is the Navajo Tract 2, Number One. The permeability averages 70 millidarcys. Porosity averages 11.7 percent. In the Cha-Cha field, the permeability averages 57 millidarcys, and the porosity 14.7 percent. A more detailed exhibit will be shown outlining the porosity and permeability on this total sand interval.

Q Mr. Fautin, from your cross section, from your geologic examination, do you conclude that you have a continuous Gallup Sand Bar running Northwest-Southeast through the area proposed to be spaced here?

A Yes, I do.

Q Do you conclude that the characteristics of the South Waterflow area are substantially similar to those of the Cha-Cha Gallup area?

A They are very similar to the Cha-Cha Gallup.

Q At this time, can you tell precisely where this South Waterflow Sand Bar is going to go?

A No. We can't tell precisely. But, we feel that it will be elongated in a Northwest-Southeast direction.

Q And it is along that axis that you have drawn a suggested proposed spaced area?

A That is correct.

Q Is there anything further you care to testify to in



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connection with any of your exhibits, Mr. Fautin?

A No, I don't believe so. We would like to enter the well Navajo Tract 12 Number Two, located in the Northwest-Northwest of Section 20 as Exhibit Four-A.

Q You have the log of that separate from the booklet?

A That is correct.

Q Does that, or what does that log reflect?

A The sand- -

Q Is it identical to the Number One?

A - -development in the 12 Number Two well- - 2 Number 12 well is almost identical to the sand development in the 1-12.

Q Were Exhibits One through 4-A prepared by you or under your supervision?

A They were.

Q In connection with the plugs you mentioned, one from this pool and two from the Cha-Cha Gallup, do you have those present with you?

A Yes, I do.

Q All right.

MR. BRATTON: We would like to offer in evidence Applicant's Exhibits 1 through 4-A, and we will not offer in evidence these plugs, but we will show them for the Commission's information just as visual evidence of the similarity of the reservoirs and the similarity of the sand. We have no further questions of Mr. Fautin.



MR. PORTER: What is this Exhibit 4-A, Mr. Bratton?

MR. BRATTON: That is a log of the Number Two well, which is just immediately east of the Number One well. We did not have the logs in time to put it on the cross section, but it is a separate log, which we introduce.

A This is the type of log that we have used on our cross section and in addition to this, there are the full compliment of logs on this well.

MR. PORTER: Are there any objections to the admission of Exhibits by the applicant? Will be admitted to the record.

MR. WOLF: Mr. Commissioner, I would have a question concerning this Exhibit Number Three. I believe Mr. Fautin, can you tell me as to whether, or not your structural map was prepared with the 1100 foot contouring interval as shown there, taking into account the information received from the well, 12-1?

A No, it was not. However, the structural position of the 12-2 fits the contour map fairly well. It is approximately 11 feet structurally lower than the 12-1 well, located in Section 19.

MR. WOLF: I am sorry, sir. How many feet?

A Approximately 11 feet.

MR. WOLF: Mr. Fautin, if it is 11 feet lower than the 12-1 well, do you feel that the contour, 1100 foot contour line is accurately reflected on this exhibit?

A Could possibly be moved out here slightly. These exhibits were prepared before we had the logs on the well.

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GOVERNOR CAMPBELL: Out where slightly, which direction?

A Could possibly be moved to the Southeast.

MR. WOLF: Slightly or quite a bit?

A Well, I would say less than a quarter of a mile.

MR. WOLF: That is all I have, Mr. Commissioner.

MR. PORTER: You don't wish to offer an objection to the admission of the Exhibit, Mr. Wolf?

MR. WOLF: I don't want to enter an objection, sir.

MR. PORTER: The exhibits will be admitted to the record. Does anyone else have a question of Mr. Fautin?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Fautin, is it your opinion at this present time that this pool will extend from the Northwest corner of Section 11 Township 29 North, 16 West, to the Southeast corner of Section 18, 28-14?

A I would say that it would be very close to this. This well was abandoned. There is sand present there and I have no idea if it is capable of production or not.

Q Who drilled that well up in the Northwest-Northwest of 11?

A Pure Oil Company.

Q Did it have any shows in the Gallup as far as oil is concerned?



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A None that I am aware of.

Q Now, what did your well in the Southwest-Southwest of 18 make? I notice that you indicated gas symbol there for that well.

A This will be gone into in detail in the later testimony. However, it was completed primarily for gas well, approximately a million cubic feet a day.

Q You attributed this gas production to being structurally high, going up the strike of this nose, or would it be due to its position on the southern flank of the nose or the southwest flank of the nose?

A I would assume that it is due to the structurally high position on the nose, going up the nose.

Q Now, you mentioned this well in Section 13 is drilling. To what depth has that well penetrated?

A Approximately 4,000 feet.

Q So, you don't know if it will be a gas well or an oil well?

A We do not.

Q Now, in the well in Section 23 of 29-15, is indicated as a dry hole. What is the story as far as that well is concerned?

A This well was drilled by Continental Oil Company, and the sand in this well was poorly developed and as I recall, very tight. And our assumption that it is probably located north, on the north edge of this Northwest-Southeast trending sand bar.



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Q You have no evidence as yet one way or the other as to the width of the sand bar?

A We do not.

Q What is the potential on your Number One well in Section 19?

A It was completed for 144 barrels of oil per day, as I recall, on a 10/64ths choke.

Q Did you have any test at all on the well in Section 20, drillstem tests?

A No, sir, we do not. They are moving in completion tools on that this morning.

Q Do you have a drillstem test on it?

A We have wire line tests.

Q The well hadn't been fraced yet, I presume?

A That is correct.

Q What is the potential on the Pickett well?

A The Pickett well was completed for initial potential pump of 15 barrels of oil per day.

Q Is that well still producing?

A It is not producing. It was shut in July 15th of this year.

Q How much production was obtained from that well prior to being shut in?

A It is or has accumulated approximately 160 barrels of oil.



Q Total production?

A That is right.

MR. NUTTER: Thank you.

* * * * *

MR. ARNOLD: Mr. Fautin, you or Mr. Bratton mentioned that you have a water problem in the lower part of the formation. Have you fixed the oil-water contact?

A No, we haven't. We haven't defined that definitely as yet. We know the problem exists, and this will be discussed in detail by Mr. Emery on the later exhibits showing the detail tests of these various sand intervals. We do not have the definite oil-water contact established as yet.

MR. PORTER: Does anyone else have a question of the witness? He may be excused.

DONALD EMERY,

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name and by whom you are employed and in what capacity?

A Donald Emery, Humble Oil & Refinning Company, I am District Engineer.

Q Are you familiar with the matters under consideration in

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connection with the South Waterflow area?

A Yes, I am.

Q All right. Does that area come under your jurisdiction?

A Yes, sir. The Northwest New Mexico area comes under my jurisdiction.

Q Have you previously testified before an examiner of this commission as an expert witness?

A I have.

Q Have your qualifications been accepted?

A They have.

MR. BRATTON: The witness' qualifications acceptable?

MR. PORTER: Commission will accept the qualifications of the witness.

Q (By Mr. Bratton) Mr. Emery, if you will turn to the booklet which has been passed out. I believe you have several small exhibits in there that you want to testify to before going to the big exhibits on the board; is that correct?

A That is correct.

Q All right, sir. Then, turn to Humble's Number Five, which is a well status summary on the South Waterflow area and explain briefly the significant factors reflected therein?

A The Exhibit Number Five reviews the well status as to date of development of the South Waterflow, operator, lease name and well number, as shown. Also, depth, production casing, top of cement. I will review the perforated intervals and completion

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date and initial potential and the accumulative production for each one of these wells. The Humble Navajo Tract 2 Number One was perforated and is producing from 4109 to 14. Previous perforations were squeezed off. The well was completed November 1, '63, for 15 barrels of oil and five barrels of water, flowing on a 24/64ths choke, with a gas-oil ratio of 59,500 to one. Accumulative production through the testing period was 322 barrels. The Humble Tract 12 No. 1 was perforated at 4213 to 20, was completed September 11th for a flow of 144 barrels of oil and no water. The accumulative production through November 1st was 3563 barrels of oil. It is currently producing.

The Pickett Fruitland-Amarillo well has been perforated in three sections in the Gallup. It was completed in June, June 1, '63, for a pumping potential of 15 barrels of oil. It is - - its accumulative production is 160 barrels of oil and has been shut in since July 15th, 1963.

The Humble Tract 12 Number 2 has been drilled to a total depth of 4298 at present, this morning. We are commencing the test program on the well after pipe has been set.

The Humble Tract 120 No. 1 is drilling at 4,070 feet this morning.

Q How many of these wells have been cored, Mr. Emery?

A The well which- - One well has been cored, the Humble Navajo Tract 2 Number 1.

Q Turn to your Exhibit Number Six. Does it reflect the



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permeability and porosity from that core?

A Yes. Exhibit Six presents graphically the permeability and the core porosity as determined by a core analysis in drilling the interval, the Gallup interval, in the Navajo Tract 2 Number One well. As shown on the exhibit, permeability has been plotted on the left-hand side. Porosity on the right-hand side. First interval has an average permeability of 70.2 millidarcys, porosity of 11.7 percent. The other perimeters are given for each zone and we have marked it zone two and zone three. Averaging the total sand present, the average permeability was 34.3. The porosity 11.4 percent.

Q Now, while you have averaged the permeability from all of those zones, as a practical matter, zone Number One is the only one that we are really concerned with because the other two look like they are probably going to be under water, don't they?

A That is correct.

Q All right, sir. And that is reflected on your next exhibit; is that correct, Number Seven?

A Yes.

Q That is a large one on the board, I believe, isn't it?

A Well, I don't know- -

Q I don't know if it can be read. Maybe you had just better go through it from the small one, Mr. Emery, and explain what that is, and what it shows?

A Exhibit Seven is a structural cross section showing the



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two wells, which have been completed and tested. The well to the left is the Navajo Tract 2 Number One well, located in Section 18, Township 29 North, Range 15 West. ~~The Humble Number One Navajo~~ Tract Number 12, located in the Northwest of the Northwest of Section 19, Township 29 North, Range 15 West. By this exhibit we are illustrating the work which has been done and completed on these wells. I would like to review these on the large exhibit.

The Humble Number One, Tract 12 well, has been perforated in this interval.

Q That is the upper interval?

A That is the upper sand, fractured, treated and completed for an initial flow of 144 barrels of oil per day on an eight inch choke and correlative zones, correlative as displayed by this log, were tested. The Navajo Tract 2 Number 1 well, the - - chronologically and going up hole, the lower most section was perforated and on a natural test was dry. The well was fraced, the last was for seven hours, recovered seven barrels of load oil and 18 barrels of water. We still had 11 barrels of load oil to recover. We squeezed that with 25 sax. We interpreted that particular zone as water from what test.

Going up still in the lower most section, we perforated the top of the lower most section. In this case we treated with 250 gallons of mud cleanout acid. After considerable testing, our last swab test recovered in an eight hour period 15 barrels of new oil, 67 barrels of water and our interpretation was that we had



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more water, quite a bit more water than oil, and that basically this was a water zone. So, that the lower zone was interpreted as water with a slight amount of oil. Coming into the middle zone, we perforated that interval, treated with 250 gallons mud cleanout acid, and after testing, our last swab test reported prior to treating the well, with a sand-oil frac, was two barrels of oil and 26 barrels of water in eight hours. We fractured this well, and tested, the last test was flowing for ten hours. We recovered 12 barrels of load oil and two barrels of new oil and 20 barrels of water. Gas at the rate of 2 million per day. We squeezed this zone. Our interpretation was that we had no commercial recoverable hydrocarbons in that zone. The upper zone, which is the correlative to the one producing oil from the Tract 12 Number One, was treated with 250 gallons of mud cleanout acid, and swabbed - - swab tested. The last three hour test, we had one-half barrels of oil, no water, and small amount of gas. We treated that with a sand-oil frac treatment and our completion on November 1, '63 was an initial flowing potential of 894 MCF of gas per day and 15 barrels of oil per day with five barrels of water per day on a 24/64ths choke.

In the review of the overall testing, which we proceeded on on Tract 2 Number 1 well, we concluded that basically the lower two zones were not capable of producing any oil or gas in commercial quantities. And furthermore, that the upper zone was the only zone which appears to be commercially productive. Now, in the Tract 2 Number One, we considered this as a gas well. In the



Tract 12, Number One, it is an oil well. Therefore, we interpret that we do have a gas cap on this upper sand. Now, this upper sand has only seven feet net pay, and it is a sand which I pointed out in our core analysis, which has seventy millidarceys and 11.7 percent porosity.

Q I believe in talking about your next to the uppermost sand, you recovered a million MCF. You meant a thousand, didn't you?

A I meant a million MCF per day.

Q A million?

A Correction. You are right.

Q That would be commercial. Your basic conclusion is you have an upper stringer of seven feet here that looks productive down, down depth, probably gas cap, up depth, two lower benches are all indications of too full of water to be commercial?

A That is correct.

Q Would you turn to your Exhibit Number Eight, Mr. Emery? Turn to your volumetric calculations of oil reserves. Now, go through first your South Waterflow area and then explain why you have Cha-Cha and - -

A Exhibit Eight where the volumetric calculations are shown, I have listed the perimeters utilized in the calculations at that time, primary recovery of the South Waterflow. The porosity is 11.7 percent. Permeability is 70 millidarceys. The Connate water estimated is 33 percent. The estimated formation

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volume factor at this present initial pressure is 1.40. The original oil in place, utilizing the above perimeters, yield a calculation of a total of 434 stock tank barrels per acre foot. With my conclusion at the present time that this pool would produce under a solution gas drive, I have utilized a recovery factor of 15 percent, and employing the average net pay found to date in this pool of seven feet, primary recovery calculated at 65 barrels per acre foot and 455 barrels per acre.

Q Now, doesn't this correspond to the Northwest Cha-Cha and the East Bisti, information from those pools?

A Yes. On our exhibit, the calculations for oil recovery for Northwest Cha-Cha and East Bisti are presented. In barrels per acre, Northwest Cha-Cha indicates a recovery of 488 barrels per acre and East Bisti 462, comparable with the South Waterflow of 455 barrels per acre.

Q Turn then to your Exhibit Number Nine, Mr. Emery. Those are your well economics; is that correct?

A Yes, sir.

Q Now, you have just demonstrated that your present calculation of 455 recoverable barrels per acre. We are utilizing here 500. Why is that, Mr. Emery?

A I believe that 500 is a fairly commonly accepted industry number for the type of Gallup sand that you are exploring for in the Northwest area.

Q Is that a rule of thumb that the industry uses in connection



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with these Gallup reservoirs?

A I believe it is.

Q Corresponds to the calculation, but actually, gives the benefit to recovery and indicates ten percent more recovery than your actual calculations indicate?

A Yes, sir, it does.

Q All right, sir. Using those economics, go through and explain how you arrived at your conclusions?

A In determining the well economics for 40, 80 and 160 acre spacing, we have presented by this exhibit the calculations of those economics. I would go through the 40 acre calculation, and then, briefly describe the results for 80 and 160. Utilizing a 40 acre spacing with a five hundred barrels preimary recovery, that well would have a total gross production--this is a typical well in this field--of 20,000 barrels. The earnings less production taxes are shown. The operating expense, which are basic lease and well expense, for the 40 acres, was assumed that the operating expense would be 250.00 per well month, and five and one half years as a productive life. Further down the table, we have the operating profit before overhead. Then, utilizing a figure of 15 percent net barrel charge, we subtract that from the operating profit to result in the operating profit after overhead of \$24,200.00. The investment is then listed showing the drilling and completion and pumping equipment, lease equipment, with a total investment for each 40 acres of \$59,000.00. The resulting



ultimate status was \$34,800.00 in the hole. On the spacing of 80 acres in the summary, the resulting ultimate loss of \$3,300.00.

On the 160 acre calculations, an ultimate status or profit was realized of \$65,700.00, which is less than a \$1.00 per dollar return on that total investment of \$68,000.00 for 160 acres.

Q Is there anything else you care to go into in connection with your economic analysis, Mr. Emery?

A I would point out that the royalty is based on a 16 2/3 factor; that the earnings assumed that you do have a pipeline connection; we did consider that there could possibly be some gas earnings. However, it has been our experience in this general area that the cost of the investment, cost for gathering system and other operation charges balance out with the price of gas, which you may get on such a gathering system. The operating expense on leasing a well is based on my experience in the Northwest New Mexico area.

Q Based on this, is it your conclusion that it would not be economic to drill this area on less than 160 acre spacing?

A Yes, sir. That would be my conclusion. As we know, we have seven feet of pay. We do not think we will end up with hardly any more pay, and that the recovery will average 500 barrels per acre. It would be my opinion that 160 acre spacing would be the best spacing to afford a proper economic development.

Q Now, as to efficiency of drainage, Mr. Emery, have you made a comparison of this area with the Cha-Cha area, which is

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immediately to the east, to determine whether they are similar reservoirs and whether tests run in the Cha-Cha could legitimately be considered applicable in the South Waterflow?

A Yes, sir.

Q Turning to your Exhibit Number Ten and explain what it shows in that regard?

A Exhibit Ten shows a comparison of reservoir data between the Cha-Cha area and the South Waterflow area. There are a number of striking similarities and I will review what has been prepared on this exhibit. The producing formations, they are both from the Gallup Sand. The structure at Cha-Cha is a Monocline. The South Waterflow has a nose and a Monocline structure. At Cha-Cha, there were no indicated gas-oil or water-oil contact. At South Flow, they are present. We have not specifically defined them as yet for lack of data at the present time. The type accumulation is a stratigraphic trap, sand bar, and in both Cha-Cha and South Waterflow, you have this. Cha-Cha produces from an average depth of 5400 feet. South Waterflow, 4400 feet. The average net thickness of main pay sand at Cha-Cha is 6.5 feet. South Waterflow is 7 feet. In reviewing a comparison of reservoir rock properties, the upper sand at Cha-Cha has 14.7 porosity. The upper sand at South Waterflow has 11.7 porosity. Cha-Cha permeability is 57 millidarceys in the upper sand and better sand, and the South Waterflow is 70.2 millidarceys. The Connate water saturation estimate for Cha-Cha was 35 percent. At South Waterflow was estimated

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33 percent. Formation temperatures, at Cha-Cha, 158 degrees.

At South Waterflow, 128. The initial measured reservoir pressure at Cha-Cha was 1560 psi gauged at plus 400 foot datum. Our initial reservoir pressure measured at South Waterflow was 1603 psig plus 1200 foot datum. The reservoir fluid properties at Cha-Cha, the comparative data, which I have, is that the API gravity is 43 at Cha-Cha, and 41 at South Waterflow. We have not been able to obtain a satisfactory bottom hole sample at South Waterflow.

Q Now, Mr. Emery, I believe you have on the board some exhibits which were introduced in the hearing on spacing in the Cha-Cha Gallup field. Would you explain those and what they reflect with regard to pressure communication in that field?

A Yes, sir. This is Exhibit 11, which is a plat of the Cha-Cha Gallup field in July, 1961. Therefore, it doesn't show the full development which has occurred subsequent to that date. This plat was prepared to be in conjunction with our Exhibit Number 12, and I will discuss Exhibit 12 and refer to locations on 11.

Q Now, does that exhibit show that the Northwest part of the Cha-Cha was developed on 160 acre spacing and the Southeast part of it on 80 acre spacing?

A Yes, it does.

Q All right, sir. Then, go to your pressure.

A On Exhibit 12, this exhibit will-- I will illustrate an overall reservoir connection and pressure decline with production. In this specific exhibit, we have depicted the reservoir

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pressure taken initially upon completion of the well, and each one as shown here showing an overall decline for specific wells with the time at which they were completed and showing the accumulative production from this area at the same time.

I will point out a few of these wells. The discovery well in this portion of Cha-Cha was the Ojo Amarillo Number One. It had an original pressure of 1560. Well, what has occurred here, as these wells were completed in sequence, we can see a definite drop in reservoir pressure in this general area. I will have to refer to this other exhibit. The Ojo Amarillo wells One through Six are located in this area. They were developed one right after the other. Then, as the Humble L-1, 2, 3, 4, and so on, wells were drilled, this is the significance we had. The L-4, L-3, L-7, that was an L-8 well drilled out here at that time. There was no development through that, so you would expect a higher pressure at that time. Finally, on the L-14, which is the last well shown by Exhibit 11, there was a pressure drop. There was approximately an initial pressure of 1390 pounds, which is a drop of 1700 pounds, indicating an overall reservoir continuity in this Gallup Sand.

Q Now, that is in the area where the field was developed on 160 acre spacing; is that correct?

A That is correct.

Q Now, did you take an interference test to confirm that information?

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A Yes. Humble conducted an interference test. This is shown by Exhibit 13. Now, on Exhibit 13, I would like to describe how the interference test was set up. Then, I will describe what we have. These wells are drilled on 160 acre spacing. The Number Four, the L-4, was shut in. The wells, L-2, L-3 and L-6 and L-7 were produced. And over a period of approximately 55 days, with the L-4 closed in, and the other wells producing, there was a definite decline in reservoir pressure of the L-4, indicating that you were drawing oil or draining out to this radius from six, three, two and seven. Now, the upper bar shows the static pressure and - - the Navajo L-4, indicating that all the wells were, as this well was shut in, it built up to approximately 1355, and then over the period of time, it declined a total of 23 PSI. Now, the second bar, the middle bar here, shows the flowing, measured flowing bottom pressure of the producing wells. The lower bar shows the rate at which these four wells were producing, as approximately 700 barrels a day from these four wells, and they in effect influenced the reservoir pressure and caused a decline in L-4.

Q I think it is apparent, isn't it, Mr. Emery, of course, when you conduct a test like that where the wells are already on 160 acre spacing, and shut in the center well, you are actually demonstrating communication over more than 160 acres, aren't you?

A You are demonstrating over more than 160 acres. However, I have not determined exactly how acreage was being drained



by that test.

Q Well, it is certainly in excess of 160 acres. Your interference test where your wells are developed on 80 acres would show 160 acre drainage, wouldn't it?

A That is correct. In a maximum case, you would have this draining in excess of 320 acres with the radius of drainage from each well being this distance.

Q Now, were other interference tests run in the Cha-Cha Gallup?

A Yes.

Q Would you explain what, briefly who ran them and what they demonstrated, and in that connection, all of these tests are and this evidence pertaining to interference tests in the Cha-Cha, were put in the hearing before the Commission; is that correct?

A Yes, sir. In the hearing before the Commission in the case of Cha-Cha. The Humble's testimony was presented and in addition, Pan American Petroleum Corporation presented an exhibit, testimony on that matter.

Q And I think Benson, Mote and Greer did, too?

A Yes.

Q Recognizing that the commission can take administrative notice of its own record, will you just state what the testimony of those two companies was in that hearing?

A Pan American set up an identical and quite similar interference test in the area surrounding their Navajo E Number 3, in a

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very similar manner to the method which I described the Humble interference test. They closed in the E-3 and produced the surrounding wells over an approximately seven month closed in period. It indicated pressure drop and the E-3 was 290 pounds per square inch. At this place, the spacing was 160 acres. It was estimated that the drainage area was 342 acres. Now, in the case of Benson, Montane and Greer, that testimony was presented at the same hearing. They ran an interference test located in the Southeast portion of Cha-Cha, wherein they closed their Jones Number Three well in, and produced the other wells on that lease. Over a seven month period, they noted a pressure drop of 225 pounds. That is from 1525 at the start of the shut in to 1300 at the end of this test, with the production of 188,000 barrels of oil from that lease. It was testified here that two hundred and fifty acres was indicated by this particular test, interference test.

Q Mr. Emery, from the permeability we have present in the South Waterflow and from the comparison which you have made with the Cha-Cha Gallup Pool, is it your opinion that based on present information, one well in the South Waterflow area will efficiently drain in excess of 160 acres?

A Yes, and I make my statement that it will efficiently drain 160 acres on the basis that the permeability at Waterflow in the upper sand is better than at Cha-Cha. Furthermore, the reservoir pressure is yet again somewhat higher at Waterflow than



at Cha-Cha, and it appears that there would be no doubt, there is no doubt in my mind that we could drain 160 acres at Waterflow.

Q Turn then to your next exhibit, Mr. Emery, and explain the coal corridor and its relation to our proposed rule on the locations in this area? First of all, Mr. Emery, do I understand that as to locations of wells within a 160 acre proration unit, we are suggesting that it can be located in any quarter-quarter section, no closer than 660 feet to the outer boundary, and no closer than 330 feet to the inner boundary; is that correct?

A That is correct.

Q Would you demonstrate on the board in connection with your Exhibit Number 14 how this would work and why you think it is necessary?

A Our Exhibit Number 14 shows first of all the proposed spaced area. The wells and each red section here. Each red square is a 160 acre tract. The deep brown is what is termed the coal corridor, upon which active mining, strip mining, is being carried out.

Q Is that shown in the photograph; refer to the photograph and what it shows about the actual situation there, Mr. Emery?

A First of all, this is north. Therefore, we will be looking at this like this. This deep brown-- dark line, which appears on the photograph is the actual stripping, the coal spoil, which I would estimate is about 60 foot in height, is on the western side of this. Now, this particular deep line, which shows the actual

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coal, actually where this line is right here, the deeply dashed line, next to around the deep brown on the exhibit. And you will note that this portion, the Southeast corner of 20, as shown here; further, to just go on with the photograph, this is the main road coming into the power plant. This is a portion of Morgan Lake. This area right here is the main hauling road to move the coal over to the power plant. Now, we have shown in blue only a partial portion of Morgan Lake here.

Now, we desire a flexible location and I would like to demonstrate the reason for a -- such a location. Especially in the area of the coal corridor in this case, in the Southeast of 29, I feel certain that it would be much better for us to drill a well in the Southeast Quarter of 29 as it would be almost impossible to get into this area where you have all the mining and all the industry in there. As another example, the alternate example, for a location in the Northwestern portion would be the Southwest of 29, as an example. You can also see here that a location in the Northeast portion of this quarter section would be in the lake and therefore, we would like to have the flexible or flexibility to move these locations. As another case in point, in developing a reservoir in that area, it appears we do have a gas-oil contact. We would like to drill a well here rather than be required, say, to drill a well at this point, or these others which would be further down the list. And it may be that as the reservoir develops, we will find other cases that allows us, with

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the flexible type of location, to properly develop a reservoir which has an oil-water contact and gas-oil contact.

Q Mr. Emery, put your overlay up there again, if you would, please. Just put it anywhere on there. The four black squares on the overlay, are the only permitted locations under this rule; is that correct?

A Yes, sir. And any point within that black square.

Q Within that black square. The net result of this is to keep the wells as close as you can towards the center of the proration unit and at the same time, allow flexibility for moving around within the 160 acres to avoid problems in the coal corridor, the lake, and gas-oil contact; is that correct?

A Yes.

Q And also it keeps from crowding wells around a common corner?

A That is correct.

Q And this pattern would also fit, would it not, with development on a smaller unit than one hundred sixty acres, too; isn't that correct?

A Yes, I believe it would fit well.

Q Is there anything further you care to explain in connection with your Exhibit 14, or in connection as to the coal corridor?

A No, sir.

Q Mr. Emery, then, turning to the proposed rules which we

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are suggesting, this is just a tentative suggestion, draft of the proposed rules; is that correct?

A Yes.

Q All right, sir. Now, turning to Page 2 of it, the first part of the order, designates the pool; is that correct?

A Yes, it does.

Q Now, in that connection, Mr. Emery, are we as seriously concerned about the width of the pool being established as that it run a sufficient distance in the Northwest-Southeast area, or line?

A Well, what our concern is, that it does have the length, as we have sufficient data by analogist reservoirs that these reservoirs do have this length. However, the breadth, we had not been adamant about this, that it have this breadth or width, as some of these pools are a mile and do range up to two and half miles in width.

Q Turning to the next portion, over on Page Three, on the special rules. Rule Number One is just the standard rule, is it not?

A Rule One is the standard rule, statewide.

Q Rule Two establishes the standard 160 acre proration unit?

A Yes, sir.

Q Consisting of a quarter section. Rule Three provides for the flexible locations which you have proposed and demonstrated; is that correct?

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A Yes.

Q And the latter portion of Rule Three, and Rule Five, we believe, provides for this drilling on less than 160 acres if an operator desires to do so, and as we have outlined before, if the Commission feels that is not specific enough, we are willing to have them amended in any way to make it specific, that one or more operators can drill on less than 160 acre proration unit?

A Yes.

Q Rule Four is your standard topography rule; is that correct?

A Yes, sir.

Q Rule Five provides for the assigning of allowable of four, or factor of four to a well for which 160 acres is dedicated?

A Yes, sir.

Q Proportional reduction, if the operators desires to drill on lesser acreage?

A That is right.

Q The next page, Rule One on the next page, provides for the allowance of interference tests; is that correct?

A It does.

Q Do we propose to run interference tests in this pool during the incoming year, if the Commission will grant us this application?

A We do.

Q The latter portion of Paragraph One provides for the



transfer of one top unit allowable to one well. Do we insist on that, or are we willing that that be reduced to where they can be transferred in some lesser amount?

A We do not insist on this. We have prepared this sample order and it was based on the previous type of transfer. However, I believe that is a fair provision as provided by the commission, what their desires would be would be acceptable to us.

Q As to how you allocate absolute wells production to the surrounding wells?

A Yes.

Q And then, rule, the second rule there, provides that this is a one year order?

A That is right.

Q All right, sir.

GOVERNOR CAMPBELL: Mr. Bratton, I note that the first page you have a blank for us to fill in here for November, 1963. Is there any significance in that?

MR. BRATTON: Optimism, if the Commission please, optimism.

Q (By Mr. Bratton) Mr. Emery, is there anything further you care to state in connection with your- - any of your exhibits?

A No, sir.

Q Were Exhibits Five through 15 prepared by you or under your supervision?

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A They were.

Q In your opinion, Mr. Emery, will the granting of this application be in the interest of conservation and the prevention of waste?

A Yes.

MR. BRATTON: We would offer in evidence Applicant's Exhibits Five through 15.

MR. PORTER: Are there any objections to the admission of these exhibits? They will be admitted. Anyone have any questions?

CROSS EXAMINATION

BY MR. WOLF:

Q Mr. Emery, turning to your Exhibit Number Seven, which shows a structural cross section between the Tract 2 Number One and Tract 12 Number One wells, do you know that the lower zones in the Tract 12 Number One well are not commercial from the data you have at hand?

A No, I do not know from actual and physical tests, because those were not conducted on the Tract 12 Number One well. However, considering the physical relationship, it would be fairly obvious that the greater portion of these lower sands in the 12 Number One would be water. At the present time, that would be my opinion.

Q Does Humble plan any further tests in your Tract 12 No.



One well, or in your Tract 12 Number Two, which you are completing at the present time?

A Yes. Humble does. If I may refer to the board here.

Q Would you explain them?

A Tract 12 Number Two well is this one we are moving on a completion rig at the present time, and we intend to test all three principle zones there, perforation treatment completion type tests on each individual zone.

Q Would it be your opinion that this information would be valuable to the Commission in connection with their decision in this hearing?

A I don't believe it would be of highly significance. I think it would add to our testimony, and add to our particular case as we, I believe, are a little further down dip on this Tract 12 Number Two well, and it would appear probably be wet in those lower zones. Our indication by log analysis is that we are going to be awful careful with water, probably water in some of them.

Q On your Exhibit Number Eight, this exhibit, as I understand your testimony, was prepared from information developed from your Tract 2 Number One - I am sorry. Yes, Tract 2 Number One well, as to permeability and porosity.

A The permeability and porosity would be the Tract 2 No. One well, correct. And the upper sand which we know is productive of oil down depth.

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Q Is it possible that the calculations shown on your Exhibit Number Eight could improve with the information that you are planning to secure from your Tract 12 Number Two well?

A Well, as I pointed out, my present feeling is that those lower zones will not be productive, and therefore, we are dealing with a typical Gallup Reservoir development, which would indicate seven or eight feet of pay and maybe five hundred barrels per acre primary recovery.

Q Well, is it possible that the permeability and porosity in this pool that you are speaking of today could vary from the Tract 2 Number One well to that which would be found under the coal corridor, or in the James Pickett well?

A Well, you will have a variation in the sand characteristics. However, I believe that the average of these characteristics will not deviate much more than ten to 15 percent on either side. By numbers, I would say the porosity might deviate down to ten percent or could go up to 12 to 14 percent; as you are referring to Exhibit Eight, you can see the variation porosity averages for Northwest Cha-Cha and East Bisti. Permeability is the same case, you will find higher and you will find lower, but I don't believe it will vary an awful lot and that variation is 10 to 15 percent either side.

Q Turning to your Exhibit Number Nine, concerning economics. Does this exhibit take into consideration or account any possibility of secondary recovery or pressure maintenance



operation in the South Waterflow?

A No, it does not. However, I have determined the incremental water fluid economic reserves.

Q Would you give us that on 40 acre spacing?

A Yes. On 40 acre spacing, as on 80, or 160, I would attribute additional recovery of five hundred barrels per acre, or let's phrase it, 100 percent increase over primary. Therefore, if we can look at Exhibit Nine at the same time, we would have the same reserves per acre per 40, per 80 and per 160 acre tract, as shown on Exhibit Nine. Earnings would be the same, I would assume. Now, for the specific case of 40 acres, I have calculated that the operating expense, and this would be incremental expense, the cost to produce this oil, the secondary oil would be \$150.00 per well month over eight years, which would be \$14,400.00 additional operating expense for these 20,000 gross barrels of oil. Further, in a similar economic calculation, as on Nine, we would have the overhead charge and my calculation at the point, operating profit after overhead is \$26,300.00. Now, the investigation I made and assumption that we had a ten section pool, and made calculations on investments and so on, on the basis of that size of field. On 40 acres, the investment per acre is \$300.00 per acre. That would be \$12,000.00. Your profit on additional recovery then I have at \$14,300.00. Now, if you combine this and I designed these economics so I could be additive, if you combine these economics of \$14,300.00 profit and your loss of

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\$34,800.00 on primary, you would be still in a loss position of \$20,500.00. I believe that is the correct amount. I have them on 80 and 160, if you would like me to give them to you.

Q No.. I do want to find out where you arrive at the \$14,300.00, I believe you mentioned, as operating profit before overhead?

A That is a product of \$150.00 per well month, times 96 well month, which is an eight year life projected for a 40 acre waterflood. I could give you some idea what would go into that in addition to your normal operating expenses. Would be the injection cost of water, the additional supervision, pumping, gauging, field supervision, and the additional lifting cost, which when you determine that you have to lift approximately - you have to inject ten barrels of water to get a barrel of this increased oil, we have considerable additional expenses. Not only in injecting it into the formation, but also lifting it eventually.

Q Could you tell me how many months again was that \$150.00 per well month, for how many months?

A 96 months for an eight year life.

Q Mr. Emery, I know that you do not prepare exhibits or prepare Exhibit Number Two, but perhaps you could tell us how many acres your proposed South Waterflow area is and of that total, how many acres are remaining unleased?

A I am unable to answer that question. Can this possibly be referred and later answered?



Q All right, sir.

MR. WOLF: That is all the questions I have, sir.

MR. PORTER: Mr. Bratton, do you have a witness that could answer that question?

MR. BRATTON: We could count them out. I believe they are reflected on there. I think the Exhibit Number Two reflects all of the unleased tribal acreage, which is in 15,16,17,20,21,22, 23,28,29 and 32, I guess. We will add it up and put those figures in the record and furnish them.

MR. PORTER: Thank you, Mr. Bratton. Does anyone else have a question of Mr. Emery?

EXAMINATION

BY MR. NUTTER:

Q I would like to ask Mr. Emery a number of questions about their coal mining operation, if he knows them, if he knows the answer to them. Do you know how much overburden, before the coal is accessible on the surface, you have?

A I believe this is correct. It is almost zero at this Western most line, and approximately 120 feet at this Eastern line you see. The heavy dark line surrounding the deep brown.

Q Now, to what depth can the coal itself be mined then, do you know?

A All I am aware is that the strip mine- - The Utah Construction people have volunteered that they can economically

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strip mine to 120 foot depth, whether that is the actual amount, or not, I don't know.

Q Do you know whether they plan to mine to that depth all at once in a given area, then proceed on up the strip, or would they just go in a case of - - series of stripping operations, take off the smaller area at a time throughout the small-

A Sir, I would just follow what they have done. I would guess what they are doing. They will mine the most shallow in a complete strip. You see they have gone approximately from this upper portion to this lower portion, about two miles. Now, I am not aware if they will go on down in this corner and continue on to the south and west, or if they will then move over to the east in that strip.

Q I am wondering if it is your opinion that an oil well location would be possible in the strip itself?

A Physically possible with enough money, but what we are trying to achieve here is that we also expect quite a bit of static from these people in that we would be in an area where they have certain blasting probably going on. Also, large heavy equipment always moving and it can be to Humble's preference to try to stay out of there also.

Q Do you know if it is anticipated that this strip will fill with water after the mining operation has been carried on?

A I do not know, sir.

MR. NUTTER: I believe that is all. Thank you.

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MR. PORTER: Does anyone else have a question of Mr. Emery?

EXAMINATION

BY MR. MORRIS:

Q Mr. Emery, refer if you would to the line that divides Ranges 15 West and 16 West there on your Exhibit 14. Is Humble's acreage primarily or entirely to the east of that line?

A It is primarily to the east.

Q Do you own any acreage to the west of that line, especially in the Northeast-Northwestern part of that- - of the pool boundary?

A I don't believe so, no.

Q Does your exhibit show to whom that acreage belongs or is under lease?

A Yes. I believe it reflects that that acreage belongs to Pure and Sun.

Q Along that line between those two townships, Mr. Emery, does Humble have any fixed intention concerning the locations of wells in proration units adjoining that line and to the east of it?

A I don't believe we have any fixed intention. However, we have filed for a permit to drill at this point, which would be the Southeast-Northwest. I say I can't tell you if I have fixed intention, because I don't make those type of decisions. And there is also one filed in the Southeast-Southeast- - South-west-Southwest. Yes.

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MR. BRATTON: Of what section, Seven?

A Of Section Seven, Township 29, Range 15 West.

Q (By Mr. Morris) If the Pure Oil Company and the Sun Oil Company should propose, as they will, some fixed well location requirements along that line dividing those two townships, in such a way as to eliminate a well being drilled in the Northwest Quarter of any proration unit, along the east side of that line, would that interfere with any of your present intentions?

A Not that I am aware of.

MR. MORRIS: That is all I have. Thank you.

* *** *

EXAMINATION

BY MR. ARNOLD:

Q Mr. Emery, have you entered into any negotiations for gas connections for casinghead gas in this field?

A No, sir, we haven't. We are awaiting development on the completion of the wells.

Q You would probably anticipate making negotiations as soon as you have enough gas developed?

A Yes. We will have to do something on that line I am sure.

Q One other thing, in the proposed pool rules, you have recommended that these rules be in effect within a mile of the pool boundary. Because of the fact that Cha-Cha and South Water-flow pools do approach each other and because of the fact that



there will be an allowable difference, and because of the possibility that there might be a well drilled between the two pools, don't you suppose that it might be preferable to restrict these rules to the pool boundary rather than the extended range of a mile beyond the pool boundary?

A I would say if the Commission saw fit, in that case, we would certainly accept such a decision. We feel that we may be just a little too wide in that effect. But, we would like to have some reasonable degree of length to this spaced area, as well as to have some width to it.

Q Well, the problem I was posing was the possibility of a well being drilled between Cha-Cha and the South Waterflow pool, and there will be a two to one allowable difference between Cha Cha and South Waterflow area. Don't you think it would be better to consider those wells individually to determine which pool the property should fall into?

A Well, I think that would be a reasonable method.

MR. BRATTON: If the Commission please, if I may answer, if the Commission were to establish the boundaries as outlined, we would have know objection to the elimination of Rule One; if the Commission were to bring the boundary widthwise in, then we think Rule One ought to stay in.

Q (By Mr. Arnold) Would you expect to be completing wells in this pool which would be capable of making a 280 barrel top allowable?

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A Yes, sir. If we could turn to Exhibit Five, on the Humble Navajo Tract 12, Number One well, this is the oil well with seven feet of pay. We had a test on the 25th of October, 110 barrels of oil and no water, flowing on a 13/64ths choke with a 1301 to one gas-oil ratio. You will notice our flowing tubing pressure was 720 and casing pressure was 1120. We initially completed the well, the well was capable of 30 barrels of oil per hour, flow, and I believe that these wells could be capable of producing this 280 barrel figure, which you mentioned.

Q Do you think that would be an efficient production rate in that type reservoir?

A Yes, I believe it would. Now, I am basing it that it is a solution gas drive type and it is my considered opinion that it is not sensitive to any rate. In other words, if you had the market, you could rip it wide open and it would not damage the reservoir.

Q I take it that you don't consider there is any connection between the lower producing zones and the upper producing zones?

A At present, I do not think they are connected. I do not think they are connected. I really can't absolutely answer you that they are, or are not connected, but from the correlation and sand continuity, I don't believe they are connected.

Q If they were connected, you could possibly have water drive as well as the solution gas drive, couldn't you?

A May I hear the question again?

Q I say if they are connected, and you have testified that



you do have water saturation in the lower sands, then, it would be possible that you also have a water drive?

A That is a, what I believe, a remote possibility. The indications of the water production, the amounts didn't indicate that that would be a dominant mechanism if they were connected.

Q Have you completely written off in your own mind if -- any production from these lower zones?

A No, sir. We are potentially looking, that this oil production could develop in another portion of the pool in maybe one of these other lower zones, and at the same time, maybe the top zone would be pinching out. You may encounter that sort of thing.

Q Wouldn't you ordinarily expect to find oil in those sands down structure, however?

A No, sir. And it is down structure to the southeast. That is right.

Q Is that right?

A Yes. That is right. That is why we believe that we are in all likelihood dealing with only the upper sand as being the dominant producing sand and on that basis, we have presented our testimony on the economics that we can operate a 460 acre spacing and in addition, that with 160 acre spacing with this type of sand, one well will adequately and efficiently drain a reservoir.

MR. ARNOLD: I believe that is all.

MR. PORTER: Does anyone have a question?

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GOVERNOR CAMPBELL: Mr. Emery, you said, as I understood it, you definitely would, if this order is issued, conduct interference tests between now and one year from now?

A Yes, sir, we will.

GOVERNOR CAMPBELL: Do you have any present plans as to the extent of those tests, or are you just saying that you plan to conduct tests if the Commission approves?

A Well, the extent or type of tests, if I may answer it that way, would be of a similar nature which we have presented for Cha-Cha, depending on development. We would try to set up a test wherein you would have a producing well shut in with four or more wells surrounding it producing and to which the pressure results at that well with the producing or production from the other wells.

GOVERNOR CAMPBELL: And do you also plan, if the order is granted, to continue your tests to determine the possible productive capacity of the lower zones that you mentioned in the wells that have been completed to date?

A Yes, sir. We will in this respect: If we definitely find out from, say, a test here and possibly a well down here, that we are just dealing with an entire water zone, we wouldn't go ahead and test every well, that we drilled, but within reason, yes, sir, we will evaluate the lower sands to determine what we have as an oil productive section.

MR. PORTER: Mr. Emery, does your company operate in the

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Cha-Cha?

A Yes. Humble Oil and Refining Company is the operator of the Northwest Cha-Cha Unit.

MR. PORTER: Then, you consider this a similar reservoir?

A I do.

MR. PORTER: You don't consider that the wells in the Cha-Cha are rate sensitive?

A No, sir. I don't consider them rate sensitive at all. Now, that operation now is under waterflood, as you are probably aware.

MR. PORTER: Yes, sir. Mr. Utz:

EXAMINATION

BY MR. UTZ:

Q Mr. Emery, I gather that it is Humble's intention to, in the instance where they can, complete these lower zones with the upper zones in the same well bore?

A Yes, if the lower zones are productive. We don't believe they are at the present time.

Q And if any of the lower zones should turn out to be water drive zones, then, this rate sensitive theory might become a valid argument, might it not?

A You are absolutely right. If you have got a water drive you look at this operation from the point of operating a water drive reservoir, and you have to consider water influx and what



would be a maximum efficient rate of production, yes, sir.

Q Have your rules provided any GOR limit for this recommended pool?

A Specifically?

MR. BRATTON: I don't believe so.

A I don't believe so. I don't believe they do.

MR. BRATTON: We are talking about State wide rules.

Q (By Mr. Utz) On Page Two of your recommended order, I note that you have described quite an area which I presume to be the area shown on your Exhibit Number 14?

A Yes.

Q Is that correct? You have stated that that is to be a new oil pool. Now, actually, what you are after here, is it not, is not to create a new oil pool, but to create a spacing area?

A Yes, sir.

Q Do you think it would be better to stipulate that we are creating a spacing area here and let the oil development take care of the oil pool delineation?

A I would think that would be reasonable.

Q In other words, you wouldn't argue, would you, that there is quite a number of 160 acre tracts in that area that would be dry?

A I wouldn't argue the point with you.

Q Having dry acreage within the horizontal limits of an oil pool is to be avoided, if possible.

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A I see your point.

MR. UTZ: That is all I have.

MR. PORTER: Any further questions?

MR. KENDRICK: Mr. Emery, I haven't seen your order, does your acreage pattern for 160 acres per well include recommendations for administrative approval, or automatic approval for quarter section, or partial section, such as those along the North edge of 28, which would be approved administratively, or automatically?

A Yes. I believe we have the - - have it on administrative approval for that. You mean a non-standard unit?

MR. KENDRICK: Non-standard unit, due to the size or shape of the subject division.

MR. BRATTON: Mr. Kendrick, probably that should be in there.

MR. KENDRICK: Would you have any objection to that being entered, if it is not so?

A No, I have no objection. I believe it is a matter of record that it is in the order.

MR. KENDRICK: That is all.

MR. PORTER: Does anyone else have a question? If there are no further questions, the witness may be excused.

Does that conclude the testimony of the Humble, Mr. Bratton?

MR. BRATTON: Yes, sir.

MR. PORTER: Does anyone desire to present testimony in



the case?

MR. MORRIS: Pure Oil Company will have some very brief testimony concerning the well location requirements, along the township line that I referred to in my cross examination. We would prefer that after the noon recess, if possible.

MR. WOLF: The Navajo Tribe would have some brief testimony concerning the unleased acreage that is in this pool, and Exhibit Number Nine, economics that has been presented by Humble.

MR. PORTER: Hearing will recess until 1:15.

* * * *

MR. PORTER: The hearing will come to order, and the Commission at this time will recognize Mr. Wolf.

MR. WOLF: May it please the Commission, I would like to present Mr. Henry Pohlmann, as a witness, and have him sworn.

MR. PORTER: You just have the one witness, Mr. Wolf?
(Witness sworn)

HENRY POHLMANN,

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

DIRECT EXAMINATION

BY MR. WOLF:

Q State your name and by whom you are employed?

A Henry Pohlmann. I am employed by the Navajo Tribe.

Q In what capacity?

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A As Oil & Gas Supervisor.

Q Mr. Pohlmann, would you state for the Commission a brief summary of your training and employment experience?

A Seven years with Long Beach Oil Development Company as roustabout, roughneck, engineer, production foreman, Chief Subsurface Engineer; seven years with Honolulu and two as Division Engineer, Western Division, five as Division Engineer and two as assistant manager the Wester Division in charge of production, drilling and engineering.

Q Would you state to the Commission what professional degrees you hold, sir?

A AA in Engineering, Bachelor's degree in Geology, and approximately 20 or 25 units of graduate work mainly in petroleum engineering.

Q Have you testified before the State Oil and Gas Regulatory Commission other than the New Mexico Commission, before?

A Yes, I have.

Q What state?

A In Montana.

Q I am sorry. What state?

A In Montana.

Q And on what occasions?

A It had to do with a spacing hearing.

Q All right, sir.

MR. WOLF: If the Commission please, the qualifications



of Mr. Pohlmann for policy testimony be acceptable?

MR. PORTER: The Commissions considers the witness qualified to testify.

Q (By Mr. Wolf) Mr. Pohlmann, would you state to the Commission the Navajo Tribe's policy with respect particularly to the unleased land lying within the area proposed by Humble Oil Company to be the subject of this spacing hearing?

A Yes. I think the philosophy we have expressed today, or we are trying to express at this time, is that it is a philosophy. I suppose, that the lessee, whomever he might be, has the right to drill, or we would like to be - it to be this way, that kind of spacing that is most economic to him. What we have said today, or what we would like to have seen said, and I think it was, that the lessee, whomever purchases the land basically that is in brown on the exhibit, Exhibit 14, up there, that is not exactly the open land, but it is pretty close, and whoever purchases that has to - the right to drill whichever spacing he so desires. In our minds, if this leeway is given, we will get maximum bonus for our land.

Q Mr. Pohlmann, would this policy be consistent with the requirements of the New Mexico law concerning prorationing?

A Yes. If this body determines that 40 acre spacing is good for 70 barrels a day on up with an increment with each 40, I think it would be fair to all concerned.

Q Can you state to the Commission the plans of the Navajo

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Tribe with respect to leasing of this open acreage within the area proposed by Humble to be spaced?

A Yes. We intend to lease this acreage probably sometime after the ruling of this Commission is given. We intend to have a bonus bid. We intend to lease all logical open acreage as a unit, one piece. We do not intend to break it up in 40, 80 or 160, nor any other such unit.

Q Would you feel that it would be the policy of the Navajo Tribe that the eventual successful bidder or lessee of the presently unleased acreage should have the opportunity to present his views to this Commission concerning spacing within that unleased area?

A Yes, I think that should be done. But, once again, under our system, whoever leases it, this has already been determined, this man has the prerogative to do as he so desires.

Q Now, turning to Humble's Exhibit Number Nine, Mr. Pohlmann, dealing with the economics of wells in the proposed South Waterflow area, do you have an opinion regarding the effect of secondary recovery, or pressure maintenance on economics as set forth in this Exhibit Nine?

A Yes, sir.

Q Would you give the Commission your opinion concerning this?

A Yes. This is the commercial part of any testimony, if you will excuse it, but Mr. Bratton started out with his summary, very detrimental to our open property, I have the feeling we couldn't

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hardly give it away. Subsequent testimony has proven him to be correct, verbally. I wish to point out that the sand thickness in that open area could very well be three times more than Humble estimates it is. I don't think anybody in this room can state that it is seven feet, or 21 or whatever it might be, but the main point I would like to make now is to point out that waterflood is probably going to be somewhat better than indicated here. I use as an authority for this, a report prepared by Humble Oil and dated May 19, 1961, concerned with the Northwest Cha-Cha, which we have used as a criterion. And this is one page from this report, it is a summary, of primary and waterflood economics from initial development. It says here, recovery in percent in the Northwest Cha-Cha now under primary operation is 13.7. Recovery in percent under secondary operation is 38.3. That is a factor of 2.8. It also says here that total investment on the primary is two million five hundred three thousand, one hundred dollars. It says, the total investment on the secondary operation, primary and secondary, of three million eighty-nine thousand, six hundred. As I understand it, the difference between the total investment between primary operations and secondary operations is five hundred eight-six thousand, five hundred dollars. This also says that the profit before federal income tax on a primary operation will be three million seven hundred forty-one thousand, five hundred dollars. It says here that the profit before federal income tax on secondary recovery- - operations plus primary will be



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twelve million one hundred twenty-one thousand, five hundred dollars. In other words, this statement says that secondary operations will result in a profit of eight million three hundred eighty thousand dollars, as I understand it. The man will get this eight million three hundred eighty thousand dollars for an additional investment of five hundred eighty-six thousand five hundred dollars. These numbers are considerably more optimistic than the ones that were previously presented here and I want them made public to counteract the detrimental aspects that was placed on this unleased land at the beginning.

Q So, in summary, it would by your opinion that it is the possibility of secondary recovery, it could improve the economics of operations over the testimony given this morning by Humble's witness considerably?

A Yes, sir. I don't say the Humble said it in May, 1961 on the Northwest Cha-Cha, the same party did this and did the testifying today. I point out there that is a diverse opinion. I think it should be added that this May, 1961 report was somewhat preliminary, but much more optimistic than was given today.

MR. WOLF: That is all I have for this witness.

* * * * *

CROSS EXAMINATION

BY GOVERNOR CAMPBELL:

Q Mr. Pohlmann, I am not sure I understand exactly what the position of the Navajo Tribe really is relative to this



application. You are not requesting that with regard to the un-leased acreage within the exterior boundary proposed here, that these be excluded from any order, are you?

A No, definitely not.

Q You are saying that the only factor that - - the question you are raising is that you do not want the order to limit the right of any future lessee to drill whatever wells he wishes to, within the interior boundary set out, and then, take the factor of the acreage to which he can attribute to that well for proration purposes. You have no objection to that kind of order; is that correct?

A No, sir, not at all. For example, if a company like Humble secures that lease, and they desire to drill 160 acre spacing, we say, fine. They are paying for this right to drill 160 acre spacing. We don't want them to do anything they don't want to do. But, on the other hand, if somebody purchases that land, who desires to, or has perhaps a different tax situation and desires 80 acre spacing, we would like him to be allowed to drill 80 acre spacing within that unit.

Q And take one-half the allowable?

A Right. No more than whatever he was due.

MR. WOLF: If it please the Commission, I think that the Navajo Tribe's position is in support of the Humble's application, provided that the matter which you have been discussing, Governor, and Mr. Bratton eluded to this morning, are adequately protected

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in the order the Commission will issue.

MR. PORTER: Does anyone else have a question of Mr. Pohlmann?

MR. BRATTON: As I stated, we concur in this. I tried to get at this this morning, but I didn't make it quite as clear as the conversation between the Governor and Mr. Pohlmann. I just wanted to point out, Mr. Pohlmann, we are not trying to run down your acreage. We hope you are right, because we have got a lot of acreage. We sure hope you are right.

MR. GOVERNOR CAMPBELL: I think that the testimony is in the record that these wells will make 280 barrels a day, sounded pretty good to me.

MR. BRATTON: I would like to just clear up one thing. Am I not right that the primary, and when we talk about the primary, and the secondary figures, in Cha-Cha, the secondary would be accumulative and include the primary?

A That is right.

MR. PORTER: Does anyone else have a question? The witness may be excused. Does that conclude your testimony, Mr. Wolf?

MR. WOLF: Yes, sir.

MR. MORRIS: If the Commission please, at the outset, I would like to make it clear that we are not trying to rock the boat at all. We are in complete accord with Humble in its application. And I say that on behalf of the Pure Oil Company and

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Sun Oil Company. We think there is one situation that deserves a little special attention as far as well location are concerned, and we would like to present a little bit of testimony in that regard. We have one witness.

(Witness sworn)

W. A. McMAHON,

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Please state your name and your position?

A W. A. McMahon, Senior Reservoir Engineer.

Q By whom are you employed and where?

A Pure Oil Company, Casper, Wyoming.

Q Have you previously testified before the Commission or any of its examiners?

A Not before New Mexico.

Q Would you briefly state your educational background and experience in the oil business?

A BA degree in General Engineering from the University of Wyoming, BA degree from the University of Oklahoma in Petroleum Engineering. Approximately ten years experience in reservoir reserves and production engineering work.

Q Are you familiar with Humble's application in this case

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today?

A Yes, sir, I am.

Q All right.

MR. MORRIS: The witness' qualifications acceptable?

MR. PORTER: Yes, sir, they are.

Q (By Mr. Morris) Mr. McMahon, what is the Pure Oil Company's interest in the proposed pool?

A Pure owns jointly with the Sun Oil Company leases on approximately 3440 acres in Township 29 North, 16 West.

Q Are all of your holdings in Range 16 West?

A Yes, that are within the confines of the area that they propose to space.

Q Yes. Do you have any holdings in this pool east of the dividing line between Ranges 15 West and 16 West?

A Not within the area that they propose to space.

Q Now, along that line that I have just referred to between those two townships, what company is the owner of interest to the east of you?

A Humble Oil and Refinining Company.

Q Could you point that line out up there on what I believe is Humble's Exhibit 14?

A This is the- - the dividing township line that we are referring to, Humble's acreage that is east of this township line.

Q And Pure and Sun own just about all of the balance of

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that acreage to the west?

A Yes. In these five sections.

Q Is there any problem that might occur concerning the well location requirements, I mean concerning the well locations along that dividing line?

A Well, we envision that there could be. We are not saying that there are yet, but it is possible along this township line where there are adjoining leases that there could be with the locations that they are requesting, there could be grouping of wells around a common section line, where that we would have as many as could be possible, as many as four wells within a physical 160 acres.

Q What is your proposal with respect to eliminating that possibility?

A We feel that in order to afford ordinary development that would be consistent with the spacing that Humble is asking for, that on the units east of this township line, that no well be permitted in the Northwest quarter of each proration unit, that would be here, that would be here, here, here, and here.

Likewise, on those proration units west of this line, no well be permitted in the Southeast Quarter of that proration unit. That would be here, here, here and here and so on.

Q Now, would that be no well be permitted, or would that restriction be only as to the initial well?

A This would apply to the initial well that would be

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drilled in that spacing or proration unit, initial well.

Q And would your proposal be limited just to those proration units adjoining that line dividing those two townships?

A Yes, sir. We only ask that this be applicable to these units that are common to this township line.

Q Do you have a proposal in writing that you would suggest as an additional rule, addition to the Rule Number Three, proposed in Humble's order?

A Yes, sir.

Q Would you read that into the record, please?

A Yes, sir. Under Rule Three, proceeding the last sentence of Rule Three, we would like to have that rule amended to read, additional sentence to state that, "in each proration unit adjoining and east of the line separating Range 15 West from Range 16 West, the initial well shall not be located in the Northwest Quarter of the unit. In proration units adjoining and west of said line, the initial well shall not be located in the Southeast Quarter of the unit."

Q Now, this would still provide a great deal of flexibility in the location of wells even in these proration units along this line that we are talking about or referring to, would it not?

A Yes, sir, they still would be permitted a choice of three other positions or possible areas to locate their well.

Q And the restrictions would only be a restriction as to the initial well?

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A That is correct.

Q There would be no interference at all with locations of wells in what has been referred to as the coal corridor?

A No, sir. No conflict at this time that we know of.

Q Do you feel that your proposal would have the effect of protesting the correlative rights of both Humble and Pure and Sun in this area?

A Yes, sir. I think it would be in the best interest of all operators involved.

Q Do you have anything further you would like to add to your testimony in this regard?

A No, sir. I think we made our position clear.

MR. MORRIS: That is all I have.

MR. PORTER: Any questions of the witness? Mr. Utz:

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. McMahon, as I understand your proposal, and you propose to develop your acreage on what we would call a rigid space or spacing pattern by drilling in the Northeast Quarter and the Southwest Quarter of a quarter section?

A No. We are in agreement with Humble's floating 40, so to speak, in that we be permitted to locate our well within 660 feet of the exterior boundary and 330 feet of the interior. But, in those proration units along and west of that township line, that

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we would not be able to drill a well in the Southwest Quarter - - Southeast, excuse me, the Southeast 40 acres of that proration unit; that that restriction would be placed on those units adjacent to that township line, and only those units that are adjoining the township line.

Q You would develop the rest of your acreage then on the pattern similar to their's?

A Yes, sir. We would develop our's in the same manner that they propose to do in their area.

Q Then, the only reason you have for this proposal then is to prevent direct offsets across the- - direct 40 acre offsets across that township line?

A Yes, sir. That is exactly our reason for this.

Q Then, I am correct and clear in what you would intend to do, is to develop your five sections in a non-rigid spacing pattern?

A That is right. We would restrict ourself from that Southeast Quarter of each quarter section.

MR. UTZ: That is all.

MR. PORTER: Anyone else have a question? The witness may be excused.

MR. MORRIS: That is all we have.

MR. PORTER: Does anyone else have any testimony to present in the case? If not, we will hear the closing statements at this time.

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MR. BRATTON: If the Commission please, I am not going to make a long closing statement. I think I made a long enough opening statement to include a closing statement. We will submit our case and we sincerely believe that we have presented a fair and a good case and we hope for favorable action. Thank you.

MR. PORTER: Anyone else like to make a statement?

GOVERNOR CAMPBELL: Mr. Morris, do you favor their application?

MR. MORRIS: Yes, sir. On behalf of the Pure and Sun and even individually, I favor it.

MR. PORTER: Mr. McGrath, did you have anything?

MR. WYATT: E. R. Wyatt, employed by the United States Geological Survey wishes to make the statement that in view of the testimony given and inasmuch as the land involved, the spaced area, is primarily Navajo Tribal lands, the Survey directly supervises oil and gas operations, that we are in favor of this application as a temporary one year measure for the designated area.

MR. HALEY: H. D. Haley, District Engineer for Continental, we have acreage within the proposed area, and we support Humble's application.

MR. PORTER: Does anyone else have anything further to offer in the case?

MR. BRATTON: We have a letter from Sunray which is on its way down from Denver and we would like to submit it. It is in support of the application.

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MR. PORTER: Mr. Durrett, do you have correspondence in the case?

MR. DURRETT: Yes, sir. The Commissioner received a letter from Skelly Oil Company stating that they support the application.

MR. PORTER: Nothing further to be offered in the case? The Commission will take it under advisement.

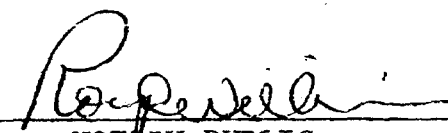
* * * * *

STATE OF NEW MEXICO I

COUNTY OF BERNALILLO I

I, ROY D. WILKINS, 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 of Office, this 30th day of December, 1963.


NOTARY PUBLIC

My Commission Expires:
September 6, 1967.

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OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date Jan 13, 1965

CASE 2935 (Reopened) Hearing Date Jan 6, 1965
DSN @ SF

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

Enter an order ^{voiding that portion of} ~~superceding~~ Order
No R 2612 which established the spacing
area in T 28 R 14, T 28 R 15 T 29 R 15
and T 29 R 16 and set out special
rules therefor. Also (Paragraphs 2
and 3 of It is Therefore) Also Supersede
or cancel the interference tests authorized
in "its further ordered" 1, 2, 3, 4. Provide
the pool shall revert to 40 acre spacing
inasmuch as applicant has failed to
show one well well drain in X5 of 40.
Provide a 40-acre ~~top~~ proportionate
factor of 1.00.

Redelineate the horizontal limits of
the pool to be as follows

T 29 N R 15 W

Sec 17: SW 1/4

Sec 18: S 1/2

Sec 19: N 1/2

Sec 20: W 1/2 & SE 1/4

T 29 N R 16 W

Sec 13: SE 1/4

Small Print

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. 2935
Order No. R-2612-A
NOMENCLATURE

APPLICATION OF HUMBLE OIL & REFINING
COMPANY FOR THE CREATION OF A NEW POOL,
FOR SPECIAL RULES, AND FOR INTERFERENCE
TESTS, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on January
9, 1965, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 25th day of January, 1965, 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 Order No. R-2612, dated December 10, 1963, created
the South Waterflow Oil Pool in San Juan County, New Mexico, created
a spacing area for Gallup production designated the South Waterflow
Spacing Area, established temporary Special Rules and Regulations
for said spacing area, and established an administrative procedure
for approval of interference tests and transfer of allowables in
said spacing area.

(3) That pursuant to the provisions of Order No. R-2612,
this case was reopened to allow the operators in the South Water-
flow Spacing Area to appear and show cause why said area or any

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CASE No. 2935

Order No. R-2612-A

portion thereof should not be developed on either 80-acre or 40-acre proration units.

(4) That the evidence concerning the reservoir characteristics of the Gallup formation underlying the South Waterflow Spacing Area and the effectiveness of the temporary Special Rules and Regulations promulgated by Order No. R-2612 does not establish that the spacing area can be efficiently and economically drained and developed on 160-acre or 80-acre proration units.

(5) That to afford to the owner of each property in the South Waterflow Spacing Area the opportunity to produce his just and equitable share of oil from the Gallup formation, to prevent reduced recovery which might result from the drilling of too few wells in said spacing area, and to otherwise prevent waste and protect correlative rights, the South Waterflow Spacing Area, the temporary Special Rules and Regulations for the South Waterflow Spacing Area, and the administrative procedure for approval of interference tests and transfer of allowables in said spacing area should be abolished, and the horizontal limits of the South Waterflow Oil Pool should be redesignated.

IT IS THEREFORE ORDERED:

(1) That the South Waterflow Spacing Area created by Order No. R-2612 is hereby abolished.

(2) That the Special Rules and Regulations for the South Waterflow Spacing Area promulgated by Order No. R-2612 are hereby abolished.

(3) That the administrative procedure established by Order No. R-2612 for approval of interference tests and transfer of allowables in the South Waterflow Spacing Area is hereby abolished.

(4) That the horizontal limits of the South Waterflow Oil Pool are hereby redesignated as follows:

NEW MEXICO PRINCIPAL MERIDIAN

**SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 29 NORTH, RANGE 15 WEST**

Section 17: SW/4

Section 18: S/2

Section 19: N/2

Section 20: W/2 and SE/4

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CASE No. 2935

Order No. R-2612-A

TOWNSHIP 29 NORTH, RANGE 16 WEST
Section 13: SE/4

(5) 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

Jack M. Campbell

JACK M. CAMPBELL, Chairman

Guston B. Hays

GUSTON B. HAYS, Member

A. L. Porter, Jr.

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

esr/

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. 2935
Order No. R-2612
NOMENCLATURE

APPLICATION OF HUMBLE OIL & REFINING
COMPANY FOR THE CREATION OF A NEW POOL,
FOR SPECIAL RULES, AND FOR INTERFERENCE
TESTS, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
November 13, 1963, at Santa Fe, New Mexico, before the Oil Con-
servation Commission of New Mexico, hereinafter referred to as
the "Commission."

NOW, on this 10th day of December, 1963, 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, Humble Oil & Refining Company, seeks
an order creating a new Gallup oil pool in San Juan County, New
Mexico, and promulgating special rules and regulations establish-
ing 160-acre spacing for Gallup oil wells completed in the vicinity
of said new oil pool for a temporary period of one (1) year.

(3) That the applicant also seeks authority to conduct inter-
ference tests in the subject area and to transfer allowables among
producing wells on the same lease while such tests are being con-
ducted.

(4) That a new Gallup oil pool should be created in San Juan
County, New Mexico, and designated the South Waterflow Oil Pool.

(5) That the South Waterflow Oil Pool was discovered by
the Humble Navajo Tract 12 Well No. 1 located in the NW/4 NE/4
of Section 19, Township 29 North, Range 15 West, NMPM, San Juan

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CASE No. 2935
Order No. R-2612

County, New Mexico; that the top of the perforations in the Gallup formation in said well is at 4213 feet.

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 160-acre spacing for Gallup wells should be promulgated for the proposed area.

(7) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(8) That the temporary special rules and regulations promulgated herein should be established for a one-year period in order to allow the operators in the spacing area created herein to gather reservoir information to establish the acreage that can be efficiently and economically drained and developed by one Gallup oil well.

(9) That an administrative procedure should be established whereby the operators in the spacing area created herein will be permitted to conduct interference tests and to transfer allowables among producing wells on the same lease during the temporary one-year period in order to facilitate the gathering of information pertaining to reservoir characteristics.

(10) That this case should be reopened in January, 1965, at which time the operators in the spacing area should appear and show cause why the spacing area created herein, or any portion thereof, should not be developed on either 80-acre or 40-acre spacing.

IT IS THEREFORE ORDERED:

(1) That a new oil pool in San Juan County, New Mexico, classified as an oil pool for Gallup production is hereby created and designated the South Waterflow Oil Pool, with vertical limits comprising the Gallup formation and horizontal limits consisting of the following-described area:

NEW MEXICO PRINCIPAL MERIDIAN

SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 29 NORTH, RANGE 15 WEST

Section 18: S/2
Section 19: N/2

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CASE No. 2935
Order No. R-2612

(2) That a spacing area for Gallup production is hereby created and designated the South Waterflow Spacing Area, consisting of the following-described area:

NEW MEXICO PRINCIPAL MERIDIAN

SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 28 NORTH, RANGE 14 WEST
Fractional Section 7: All
Section 18: All

TOWNSHIP 28 NORTH, RANGE 15 WEST
Fractional Section 10: All
Fractional Section 11: All
Fractional Section 12: All
Section 13: All
Section 14: N/2, SE/4

TOWNSHIP 29 NORTH, RANGE 15 WEST
Section 7: All
Section 8: All
Section 15: SW/4
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: All
Section 23: SW/4
Section 25: SW/4
Section 26: All
Section 27: All
Section 28: All
Section 29: All
Section 30: All
Section 32: N/2, SE/4
Section 33: All
Section 34: All
Section 35: All
Section 36: All

TOWNSHIP 29 NORTH, RANGE 16 WEST
Section 11: All
Section 12: All
Section 13: All
Section 14: All
Section 24: All

(3) That Special Rules and Regulations for the South Waterflow Spacing Area are hereby promulgated as follows, effective January 1, 1964.

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CASE No. 2935
Order No. R-2612

SPECIAL RULES AND REGULATIONS
FOR THE
SOUTH WATERFLOW SPACING AREA

RULE 1. Each well completed or recompleted in the Gallup formation in the South Waterflow Spacing Area shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Gallup formation in the South Waterflow Spacing Area shall be located as follows:

- (1) On a standard 160-acre unit comprising a single governmental quarter section; or
- (2) On a non-standard 120-acre unit comprising three governmental quarter-quarter sections lying within a governmental quarter section and contiguous by common bordering sides; or
- (3) On a non-standard 80-acre unit comprising two governmental quarter-quarter sections lying within a governmental quarter section and contiguous by a common bordering side; or
- (4) On a non-standard 40-acre unit comprising a single governmental quarter-quarter section.

RULE 3. Each well projected to or completed in the Gallup formation in the South Waterflow Spacing Area shall be located within 150 feet of the center of a governmental quarter-quarter section; provided, however, that no well shall be located in the NW/4 NW/4 or the NW/4 SW/4 of any section adjoining and east of the line separating Range 15 West from Range 16 West, and no well shall be located in the SE/4 NE/4 or the SE/4 SE/4 of any section adjoining and west of said line.

RULE 4. The Secretary-Director of the Commission may grant an exception to the footage requirements of Rule 3 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within twenty (20) days after the Secretary-Director has received the application.

RULE 5. No Gallup well in the South Waterflow Spacing Area shall be assigned an allowable until the operator files Form C-128

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CASE No. 2935
Order No. R-2612

with the Commission indicating the acreage to be dedicated to the well under the provisions of Rule 2.

A standard proration unit in the South Waterflow Spacing Area (158 through 162 acres) shall be assigned a 160-acre proportional factor of 4.00 for allowable purposes. Any proration unit comprising less than 158 acres or more than 162 acres shall be assigned a proportional factor in the same ratio to 4.00 as the acreage in the unit bears to 160.

IT IS FURTHER ORDERED:

(1) That the Secretary-Director of the Commission is hereby authorized to approve interference tests and the transfer of allowables to Gallup wells on the same lease or, if in a unitized area, to Gallup wells in the same participating area; provided, however, that any such authorization shall terminate no later than December 31, 1964. No transfer well shall be permitted to receive, in addition to its own allowable, more than one top unit allowable for the South Waterflow Spacing Area.

To obtain administrative approval for interference tests and the transfer of allowable, the operator shall submit in triplicate a request for such authority describing in detail the proposed method of conducting such tests and transferring the allowable. The application shall be accompanied by a plat showing thereon all Gallup wells with a radius of two (2) miles of the proposed shut-in well(s) and the transfer well(s). The plat shall also identify each lease or participating area as to ownership or operating rights. The application shall include evidence that all offset operators to the shut-in well(s) and the transfer well(s) have been furnished a complete copy of the application. It shall also be accompanied by Form C-116 for each shut-in well, showing the results of a pre-shut-in test to determine the amount of allowable to be transferred. The transferred allowable shall not exceed the volume of oil produced during the last 24 hours of a 72-hour period during which the well shall be produced at a constant rate. The Commission and offset operators to both the shut-in well(s) and the transfer well(s) may witness such tests if they so desire and shall be notified of the tests at least 48 hours prior to the commencement thereof.

The Secretary-Director of the Commission may grant approval of the interference tests and transfer of allowable upon receipt of waivers from all offset operators or upon expiration of a 20-day waiting period, provided no offset operator has objected to the proposed test and transfer.

(2) That any well drilling to or completed in the Gallup formation in the South Waterflow Spacing Area that will not comply with the well location requirements of Rule 3 is hereby granted an

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CASE No. 2935
Order No. R-2612

exception to said rule. The operator of any such well shall notify the Artec District Office of the Commission in writing of the name and location of the well on or before January 1, 1964.

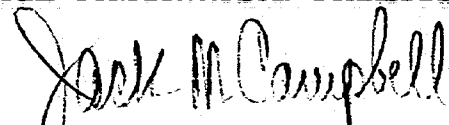
(3) That any operator desiring to dedicate more than 40 acres to a well presently drilling to or completed in the Gallup formation in the South Waterflow Spacing Area shall file a new Form C-128 with the Commission on or before January 1, 1964.

(4) That this case shall be reopened in January, 1965, at which time the operators in the subject pool may appear and show cause why the South Waterflow Spacing Area, or any portion thereof, should not be developed on either 80-acre or 40-acre proration units.

(5) 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



JACK M. CAMPBELL, Chairman



E. S. WALKER, Member



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



esr/

DOCKET: EXAMINER HEARING - WEDNESDAY - JANUARY 6, 1965

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 3187: Application of Tom L. Ingram for the creation of a new oil pool and for special pool rules, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Devonian production for his State Well No. 1 located in Unit C of Section 32, Township 8 South, Range 38 East, Roosevelt County, New Mexico, and the promulgation of special rules for said pool, including a provision for 80-acre spacing.

CASE 3188: Application of Maleta Y. Brimhall and Barbara Burnham for force-pooling, San Juan County, New Mexico. Applicants, in the above-styled cause, seek an order force-pooling all mineral interests in the Basin Dakota Pool underlying the W/2 of Section 7, Township 30 North, Range 11 West, San Juan County, New Mexico.

CASE 3189: Application of Continental 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 Apache 30 Well No. 2 located in Unit C of Section 28, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to produce gas from the Chacra formation and oil from the Gallup formation through the casing-tubing annulus and tubing, respectively.

CASE 3190: Application of Continental Oil Company for a triple completion, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (combination) of its Northeast Haynes Apache Well No. 1 located in Unit K of Section 9, Township 24 North, Range 5 West, Rio Arriba County, New Mexico, to produce gas from the Ballard-Pictured Cliffs Pool through 2 7/8-inch casing, and oil from the Otero-Gallup Pool and gas from the Basin-Dakota Pool through tubing installed in two separate 4 1/2-inch casing strings, all casing strings being cemented in a common wellbore.

CASE 2715: (Reopened)
In the matter of Case No. 2715 being reopened pursuant to the provisions of Order No. R-2401, which order established temporary 320-acre gas proration units for the Custer-Ellenburger Pool, Lea County, New Mexico, for a period of two years. The Commission will consider indefinite extension of Order No. R-2401 in the absence of evidence to the contrary.

CASE 2720: (Reopened)
In the matter of Case No. 2720 being reopened pursuant to the provisions of Order No. R-2397-A which continued the original order for an additional year, establishing special rules governing the production of oil and gas wells in the Double-X Delaware Pool, Lea County, New Mexico, including classification of wells as gas wells when the gas-liquid hydrocarbon ratio exceeds 30,000 to one.

January 6, 1965 Examiner Hearing

CASE 2935: (Reopened)

In the matter of Case No. 2935 being reopened pursuant to the provisions of Order No. R-2612, which order established temporary 160-acre spacing for the South Waterflow Oil Pool, San Juan County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on either 80-acre or 40-acre spacing.

CASE 3158: (Continued from the November 24th examiner hearing).

Application of The Pure Oil Company for the creation of a new gas pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Wolfcamp gas pool for its Red Hills Unit Well No. 1 located 330 feet from the South line and 2310 feet from the East line of Section 32, Township 25 South, Range 33 East, Lea County, New Mexico, and the promulgation of special pool rules including a provision for 640-acre spacing.

CASE 3159: (Continued from the November 24th examiner hearing).

Application of The Pure Oil Company for the creation of a new gas pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Pennsylvanian gas pool for its Red Hills Unit Well No. 1, located 330 feet from the South line and 2310 feet from the East line of Section 32, Township 25 South, Range 33 East, Lea County, New Mexico, and the promulgation of special pool rules including a provision for 640-acre spacing.

CASE 3173: (Continued from the December 15th examiner hearing).

Application of Pan American Petroleum Corporation for force-pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin Dakota Pool underlying the S/2 of Section 31, Township 30 North, Range 12 West, San Juan County, New Mexico.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

January 25, 1965

Mr. Sim Christy
Hinkle, Bondurant & Christy
Attorneys at Law
Post Office Box 10
Roswell, New Mexico

Re: Case No. 2935
Order No. A-2613-A
Applicant:

HUMBLE OIL & REFINING CO.

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

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC x

OTHER

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 6, 1965

EXAMINER HEARING

IN THE MATTER OF:

CASE NO. 2935 BEING REOPENED PURSUANT TO THE
PROVISIONS OF ORDER NO. R-2612, WHICH ORDER
ESTABLISHED TEMPORARY 160-ACRE SPACING FOR
THE SOUTH WATERFLOW OIL POOL, SAN JUAN
COUNTY, NEW MEXICO, FOR A PERIOD OF ONE YEAR

Case No. 2935
(Reopened)

BEFORE:

DANIEL S. NUTTER

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3871

ALBUQUERQUE, N. M.
PHONE 243-6551

dearnley-meier reporting service inc.

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MR. NUTTER: We will call Case Number 2935.

MR. DURRETT: Being reopened pursuant to the provisions of Order Number R-2612.

MR. CHRISTY: Sim Christy for Hinkle, Bondurant & Christy representing the applicant, Humble Oil and Refining Company. We have one witness, Mr. Examiner.

* * *

D O N A L D E M E R Y, the witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CHRISTY:

Q Would you state your name, address, occupation, by whom employed and in what capacity.

A Donald Emery, Denver, Colorado. I am area engineer for Humble Oil and Refining Company.

Q Now, sir, are you familiar with the previous hearings in Case Number 2935 and are you familiar with the wells in the South Waterflow Oil Pool in San Juan County?

A I am.

Q I believe you have testified at previous hearings here?

A I did.

Q At that time were your qualifications as a petroleum engineer accepted?

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A Yes.

MR. CHRISTY: Does the Commission have any questions concerning the qualifications of the witness?

MR. NUTTER: No, sir--please proceed.

MR. CHRISTY: I refer you to what has been marked Exhibit 1 and ask you to please identify that for us.

A Exhibit 1 is a lease ownership map indicating lease ownership as well as the spacing area as set out by Order 2612, and in addition well spots, showing the well number and cumulative production as well as oil and water production on a per-day rate are shown.

Q Now, sir, in the past year--last year we had a similar map. At that time I believe there were fewer wells than there are today?

A The Navajo Tract 2 Number 1 well in the southwest quarter of Section 18, Range 15 west, Township 29 was completed at that time. The Navajo Tract 12 Number 1 well in Section 19 of the same town and range was completed at that time. The Navajo Tract 12 Number 2 well in Section 20 was drilled and tested at that time, and the Navajo Tract 120 Number 1 well in Section 13, Range 16 West, Township 29 North, was drilled.

Q So it appears since the last hearing, according to Exhibit 1, that we have completed that last well you mentioned and we drilled about six more wells--something of that nature?

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A That is correct. A total of nine wells.

Q And one dry hole?

A That is correct.

Q That is dry and abandoned--that one well shown in Section 18?

A Temporarily abandoned, yes.

Q We will come back to Exhibit 1 in a moment. Going to Exhibit 2, would you briefly identify that for us, please.

A Exhibit 2 is a structure map of the South Waterflow area, contoured on top of the Senesty, which is a common geological marker below the Gallup sand interval, the contours showing the structure is relatively unchanged from prior testimony.

Q So the drilling of additional wells did not change your structure map?

A Not materially.

Q Exhibit 3 seems to be a stratigraphic cross-section. Would you identify it for us, please.

A In the South Waterflow area we constructed a stratigraphic cross-section showing the Gallup sand interval, using a Gallup point communication used by our geological staff. If you refer to Exhibit 1, the cross-section extends from Tract 120 Number 1 well in Section 13 through the Navajo Tract 2 Number 1, the Navajo 12 Number 1, Navajo 12 Number 2, Navajo

12 Number 4, and extending on down to the James R. Pickett Fruitland Amarillo Number 1 Well, which is located in the southwest quarter of Section 26, Township 29 North, Range 15 West.

Q The second well on Exhibit 3--Navajo Tract 2 Number 1 well--that is a gas well, is it?

A Yes.

Q Now, I believe also this exhibit would indicate that there is more than one interval, is there not, susceptible of producing from the Gallup?

A Yes, we defined further means of communication up the middle and lower zones in this Gallup sand, and basically the upper sand is the one we have been most involved in.

Q I believe at the last hearing mention was made of testing the other intermediate and lower zones; and I refer you to what has been marked Exhibit 4 and ask if you can give the Commission some information with respect to testing the other zones in the Gallup sand.

A Exhibit 4 is a producing well status summary which has been prepared covering the wells which the Humble Oil and Refining Company has drilled and completed. You will note that we have given the completion intervals for each well. These are the proved intervals. Of this group of nine wells, five wells were tested in all three intervals. Subsequent

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testing and completion in the other wells were dictated by the knowledge which we gained by these completion attempts in these other five, and that explains why we did not go into some of the middle and lower zones in the subsequent wells.

Q But we did test in the intermediate and lower zones and that proved to be non-productive, so we quit, is that basically it?

A That's basically right.

Q Is there any active water drive in this pool?

A No.

Q I refer you to Exhibit 5, which is pool production history, is that correct?

A Yes.

Q It seems to be dropping off rather markedly in 1964, doesn't it?

A That is correct.

Q We seem to be producing about 120 barrels for the whole pool at this time?

A Right.

Q Which was again detected by the well on Exhibit 4?

A Correct. There are seven wells contributing to the total of approximately 118 barrels of oil per day during the month of November.

Q Do you feel that all drilling that's going to be done,

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has been done, in this area?

A Yes, I do.

Q Tell us a little about the economics of drilling wells in this pool; and I refer you to what has been marked Exhibit 6, in this connection.

A Exhibit 6 has been prepared--we anticipate an estimated ultimate primary production of approximately 190,000 barrels. We arrive at this figure from an extrapolation of the curve as shown on Exhibit 5, and from this we have evaluated what we believe our income will be, and our ultimate status before Federal income taxes.

Q Exhibit 6 does not take into consideration taxes--does not include income tax?

A Yes.

Q Briefly going through, would you explain that exhibit.

A I will illustrate--we anticipate ultimate revenue of \$370,000.00, and our operating expenses will be \$135,000.00, and with overhead of \$24,000.00 our operating profit after overhead but before investment would be \$211,000.00. The Humble Oil and Refining Company has invested \$600,000.00 in the development of this oil pool. Therefore we anticipate the ultimate status of a loss of \$389,000.00.

Q I believe at one of the former hearings, mention was made of the possibility of secondary recovery in this pool.

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Have you considered that in connection with the economics of the situation?

A We have not introduced them in the economics as shown by Exhibit 6. However, this program is under consideration by our company. We do look at the possibility of secondary recovery as a marginal venture, and we would not anticipate recouping all the loss we indicate here, by additional recovery.

Q Do you think you could recoup in the neighborhood of \$100,000.00?

A Something on that order.

Q Do you presently feel that even if you undertake secondary recovery processes, your ultimate loss would not be less than about \$289,000.00?

A That is correct.

Q The present temporary rules call for 160-acre spacing. Now should the Commission decide on the permanent rules to have 80- or 40-acre spacing, thus forcing the drilling of additional wells, what would be your observation as to whether or not this would cause waste, including economic waste; and would it be prudent for the operator to drill additional wells?

A I believe it would cause economic waste, and would not be prudent to drill additional wells.

Q This is all Navajo land?

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A Yes.

Q In the vernacular, have you had any squawks from the royalty owners?

A No, sir.

Q At the last hearing we mentioned that we intended to run interference tests. I believe the truth of it is that we did not run interference tests. Would you tell me why we decided not to run interference tests as we had planned to do?

A The decision not to run interference tests was based upon performance of the reservoir basically. We drilled the wells and then observed the performance, and that indicated that we were definitely in a marginal economic venture, and only had one or possibly two wells which would pay out. Therefore Management decided that additional expenditures of this nature were not justified. Furthermore, we really did not have a geometrical setup by which we could conduct full-scale interference tests, and by observation of the performance of the one or two or three good wells we could determine to our satisfaction what type of drainage these wells were effecting.

Q I believe it was testified at the last hearing that one well would drain 160 acres. Do you have any reason to believe that that statement is not true?

A No.

Q That brings us to the question of whether or not we

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feel the pool is perhaps a little too large. I believe about a year ago we thought we were going to have a good pool. Do you still feel that the pool should be as shown on Exhibit 1 in the dashed line?

A No, the pool outline should not follow the spaced area.

Q What would be your recommendation with respect to the pool area in the San Juan County area?

A As to application of the rule?

Q No--as to what the pool should consist of, by sections.

A I'll read these off. Sections 13 and 24 in Township 29 North, Range 16 West. Sections 17, 18, 19 and 20 in Township 29 North, Range 15 West, all in San Juan County, New Mexico.

Q Do you feel that takes in the production limits of the pool?

A Yes, sir, and would allow us some flexibility for possible future orders if we were to go into additional recovery.

Q I notice you omitted the Pickett-Fruitland well in Section 26 from the proposed amendment to the pool. Do you feel that that is a separate pool or area?

A It isn't even a pool, in my definition. That well

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only accumulated a few hundred barrels, and it has been shut in since July, 1963. It is essentially a dry hole. I don't know its status--I think it was probably abandoned.

Q Do you have any recommendations to the Commission as to whether or not the temporary rules as previously promulgated in 1935 should be at this time made permanent?

A I would recommend that they be made permanent.

Q And that the pool be contracted to the area you just described?

A Yes.

Q And otherwise the pool rules to stay as they are presently--is that your recommendation?

A It is.

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

A They were.

Q Do you have anything further to offer in this case that I haven't asked you about, that you think would be of interest to the Examiner?

A No, sir.

MR. CHRISTY: I think that's all.

MR. NUTTER: Are there any questions of this witness?

MR. DURRETT: I have a question. I missed your name--

A Donald Emery.

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Q Mr. Emery, I see by your production figures here that --and I believe you testified on direct, that all wells were low producers. I'm sure they're not making the 160-acre allowable, and I believe you so testified. Are they making what would be a normal 40-acre allowable in this area, for the depth factor?

A No, sir, not at this time

Q None of them are?

A I refer you to Number 4, which shows production in November, 1964. Each well is shown there. For instance, Navajo Tract 12 Number 1, which is the best producer--50 barrels of oil per day and one barrel of water.

Q Is that about as good as it has done? It's dropped off, I guess, hasn't it? Do you have just a rough idea of what it was doing at its best?

A It was able to do actually better than the initial potential as shown on Exhibit 4. Actually I believe for a short time it was able to do in excess of 500 barrels of oil per day, but this was for a short period. The best monthly producing rate for the Navajo Tract 12 Number 1 was 130 barrels of oil per day for a full month, and this was in February. Previously to that we had restricted production voluntarily while we were developing the pool.

Q What would be a 40-acre allowable with your depth

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factor? Do you have that figure?

A I think it's 70 barrels. This is 42--41--4200 feet in depth.

Q So there wouldn't be any factor to be applied?

A Yes.

Q So it would be the normal unit allowable, which has been 70 for quite some time?

A Yes.

Q So if you went back to the normal 40-acre spacing it wouldn't affect anybody's allowable?

A No.

Q I think you testified that continuation of the rules would prevent waste. How do you feel that that would come about, or do you feel that way?

A It would prevent economic waste--it isn't necessary to drill on 40- or 80-acre spacing to effectively drill the reservoir.

MR. NUTTER: It's not economical to drill on 40, is it?

A No, sir.

MR. IRBY: You're talking about drilling provisions in the leases. You would have to go ahead for their development, if you went back on 40-acre spacing?

A (No reply.)

MR. CHRISTY: This also can cause abandonment, which

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would completely stop any secondary recovery--if we have to go back to 120, that just kills the waterflow, so we're going to lose secondary recovery on top of everything else. And we have had no squawks from the Indians.

MR. NUTTER: Did you ever discuss this with the Indians?

MR. CHRISTY: Yes. Initially they thought we were not being very fair with them, on the 160, but they've come around to our idea, now. This pool is just not what we thought it was--that's the truth of the matter.

MR. NUTTER: What about Sellereta 1 and 2, and Pure 2, in 124?

MR. CHRISTY: I'd like to correct that--that's "Zollar, et al, Number 1."

MR. NUTTER: Is that well any good?

MR. EMERY: It was--initial pump potential on November 30, 1964, the completion date, was 77 barrels of oil per day and 38 of water, from the Gallup at the interval 4101, 4106, that was.

Q So that's a recent completion?

A It is. We've had a couple completions of that nature which haven't been too good ultimately.

Q Do you know what the well is capable of producing now?

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A No, sir, I don't.

Q How about Pure Number 2? It's indicated shut in.

A Pure Number 2--this is based on the latest report I have, of December 31, 1964. It was spudded in February 27, 1964. It was drilled to total depth of 4242. It was perforated at 4127 to 31, and that interval was sand-oil bract. It was then perforated 4110 to 12, and 4115 to 18 in sand-oil bract. It doesn't give the date, but it says now it's shut in. I would judge that it isn't a good well at all.

Q Do you have any production data on the well?

A No, sir.

Q You don't know what it is potentialed for, or what its cumulative has been?

A No, sir.

Q I believe the Pickett-Fruitland well was shut in at the time of the hearing last year.

A That is correct. I have what I had before, if you'd like it. It was shut in on July 15, 1963. Our records indicated a total cumulative production of 160 barrels of oil. It was initially potentialed--I don't have the date it was potentialed, but for pumping 15 barrels of oil per day.

Q And the cumulative was 160?

A Correct.

Q Humble has drilled one dry hole in this pool--that

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would be Number 2 well, northwest-northeast of 18, is that correct?

A That is correct.

Q And the maximum cumulative any well has experienced is the 31,800 barrels of Tract 12, Number 1?

A That's right.

Q With regard to what Mr. Christy mentioned a minute ago, that if the spacing reverted to 40 acres the 120 would be taken away from the well and you couldn't have secondary recovery--are any of these wells located on a lease in which it's only 40 acres, and the 120 acres of it would expire?

A No, sir, I don't believe they are. I'm not qualified --Mr. Christy?

MR. CHRISTY: If I may answer, Mr. Examiner, you would lose the 120 acres on further development. There's no 40-acre lease in the pool.

MR. NUTTER: Are there any further questions of Mr. Emery? ... He may be excused.

MR. CHRISTY: We offer in evidence Applicant's Exhibits 1 through 6, inclusive.

MR. NUTTER: Applicant's Exhibits 1 through 6 will be admitted into evidence. Do you have anything further, Mr. Christy?

MR. CHRISTY: Mr. Examiner, for the record, we have

contacted Pure Oil Company, Sun Oil Company, Pan American Petroleum Corporation and Continental Oil Company, all of whom have authorized us to say that they concur in our recommendation for permanent rules contracting the field.

MR. NUTTER: Thank you. Does anyone have anything they want to offer in Case Number 2935? ... We will take the case under advisement. The hearing is adjourned.

* * *

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

I, Elizabeth K. Hale, Notary Public and Court Reporter, do hereby certify that the proceedings in Case Number 2935 were taken and transcribed by me, and that the foregoing is a true and correct transcript of proceedings to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF, my hand and seal of office this 17th day of January, 1965.

Elizabeth K. Hale
Notary Public

My commission expires
May 23, 1968.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2935 heard by me on 1-6, 1965.
[Signature] Examiner
New Mexico Oil Conservation Commission

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COPY OF ORDER HANDED TO MR. JOHN KNOELL ON DEC. 11, 1963

ir/

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
C. B. JENNEY WALKER
MEMBER

P. O. BOX 871
SANTA FE

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

December 10, 1963

Mr. Howard Bratton
Hervey, Dow & Hinkle
Attorneys at Law
Post Office Box 10
Roswell, New Mexico

Re: Case No. 2935

Order No. A-2612

Applicant:

HUMBLE OIL & MFG. COMPANY

DOCKET MAILED

Date 12-24-64

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

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Astec OCC x

OTHER Mr. Richard Morris

Mr. Walter Wolf - Navajo Tribe - Window Rock, Arizona

DOCKET MAILED

Date 12-24-64

A

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W. F. MARSHALL, President

SYMBOLS

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D FWB233 PD=FAX FORT WORTH TEX 11 219P CST=

1963 NOV 11 PM 1 35

NEW MEXICO OIL CONSERVATION COMMISSION=

HOBBS NMEX=

RE CASE NO. 2935 SCHEDULED 11/13/63, WHICH IS THE APPLICATION OF HUMBLE OIL & REFINING CO. FOR TEMPORARY POOL RULES FOR GALLUP PRODUCTION IN A SPECIFIED AREA OF SAN JUAN COUNTY. PAN AMERICAN PETROLEUM CORPORATION IS THE OWNER OF ACREAGE IN THIS AREA AND SUPPORTS THE REQUESTS OF HUMBLE AS SET OUT ON PAGE 6, 7 AND 8 OF THEIR APPLICATION=

W V GRISHAM, PAN AMERICAN PETROLEUM CORP
FORT WORTH TEXAS==

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE



HUMBLE OIL & REFINING COMPANY

DENVER 1, COLORADO MAIN OFFICE OCC

CENTRAL REGION

DENVER AREA

JOHN D. KNODELL, JR.
AREA ATTORNEY

November 14, 1963

1963 NOV 13 AM 8:01 O. BOX 120

Case file

AIR MAIL

Mr. James M. Durrett, Jr.
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Jim:

Re: Humble's South Waterflow Spacing Application

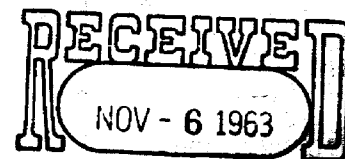
You will recall that during yesterday's hearing on our application described above, I requested permission to send you a letter from Sunray DX Oil Company expressing support for our application. You indicated that if I would send it to you you would see that it is included in the hearing file. I, therefore, enclose herewith the letter dated November 4, 1963, from Sunray DX Oil Company expressing support of our application. I will appreciate it if you will include this letter in your hearing file. Thanks very much for permitting us to hand you this letter in this way.

Very truly yours,

John D. Knodell
John D. Knodell, Jr.

JDK:CH





Sunray DX Oil Company

Tulsa 2, Oklahoma

1963 NOV 18 AM 8:02

DENVER AREA
LAW DEPARTMENT

OUR 50th YEAR
SUNRAY 



November 4, 1963

PG-6

Mr. John D. Knodell
Humble Oil and Refining Company
P. O. Box 120
Denver 1, Colorado

Dear John:

This will acknowledge your letter of October 14, 1963 requesting our support of Humble's application for 160-acre proration units in a pool in portions of Townships 28 and 29 North, Ranges 14, 15 and 16 West, San Juan County, New Mexico.

Sunray DX Oil Company has acreage in Section 11, Township 29 North, Range 16 West, acreage in Sections 8, 25, 26, 35 and 36, Township 29 North, Range 15 West, and acreage in Sections 12, 13 and 14, Township 28 North, Range 15 West. Sunray DX Oil Company concurs in your application for 160-acre proration units and we are enclosing an extra copy of this letter so that you may submit it to the New Mexico Oil Conservation Commission if you so desire.

We believe that you are taking the right approach in requesting 160-acre proration units for this area as did Benson-Montin-Greer in the Puerto Chiquito Field. I am sorry that I cannot be at the hearing in person to support you but unfortunately I have to be in Houston that week.

Best of luck in your application.

Yours very truly,

SUNRAY DX OIL COMPANY



William R. Loar
Superintendent of Proration

WRL aj

ENCO

HUMBLE OIL & REFINING COMPANY

DENVER 1, COLORADO

CENTRAL REGION

DENVER AREA

JOHN D. KNODELL, JR.
AREA ATTORNEY

October 1, 1963

1963 OCT 3 AM 8:00 BOX 120

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

Attention Mr. James Durrett

Gentlemen:

Re: Humble's Application for Temporary Special Field
Rules and Regulations in Newly Discovered Field in
South Waterflow Area, San Juan County, New Mexico

With our letter dated September 26, 1963, we transmitted three copies of our application for temporary special field rules and regulations for a newly discovered field in the South Waterflow Area, San Juan County, New Mexico. We have since discovered that we made a mistake in describing the area which we believe to be underlain by the newly discovered reservoir. Our application on page 3 describes the area in Township 28 North, Range 14 West as Fractional Section 6 and Section 7, whereas we intended to describe, in that Township and Range, only Fractional Section 7 and Section 18.

In order that our application may properly describe the lands which we believe are underlain by the newly discovered reservoir, I enclose revised page 3 for the application which is identical in all respects to the original page 3, except that the new page describes Fractional Section 7 and Section 18 in Township 28 North, Range 14 West, instead of Fractional Section 6 and Section 7. We will appreciate it if you and all those to whom copies of this letter are addressed will substitute the enclosed new page 3 for old page 3 in all copies of the application heretofore forwarded by us.

In addition, in our September 26 letter, we requested hearing on certain portions of our application at the regularly scheduled October hearing of the Commission which will be held October 16 in Hobbs. Since that time, I have talked by telephone with Mr. Durrett and explained to him that we would prefer that all portions of the application be heard at the same hearing. We will appreciate it, therefore, if you will remove the matter from the October hearing agenda and schedule our application for hearing of the Commission at its regularly scheduled November hearing.

Very truly yours,

DOCKET MARKED

JDK:CH

Enclosures (3)

Date

11-4-63

John D. Knodell, Jr.

Carbon Copies and Enclosures as in 9/26 letter.

A M E R I C A ' S L E A D I N G E N E R G Y C O M P A N Y

2935

[Handwritten signature]



MAIN OFFICE CCC

SKELLY OIL COMPANY 4:39

P. O. Box 1650
TULSA 2, OKLAHOMA

November 11, 1963

PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT
W. P. WHITMORE, MGR. PRODUCTION
W. D. CARSON, MGR. TECHNICAL SERVICES
ROBERT G. HILTZ, MGR. JOINT OPERATIONS
GEORGE W. SELINGER, MGR. CONSERVATION

Re: Case No. 2819
Application of Humble Oil & Refining Co.
San Juan County, New Mexico

VIA AIR MAIL SPECIAL DELIVERY

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

Gentlemen:

The captioned hearing is scheduled to come on before the Commission on November 13, 1963. This hearing is for 160-acre proration units and special rules and regulations for a new Gallup pool in portions of Townships 28 North and 29 North, Range 15 West, San Juan County, New Mexico.

Skelly Oil Company has considerable acreage within and adjacent to the area sought to be spaced in this application. We have been furnished a copy of the application along with the exhibits to be presented at this hearing, and after having an opportunity to examine these exhibits we wish to advise that Skelly Oil Company concurs in the application of Humble Oil and Refining Company in the captioned case, and urges the Commission to enter its order granting the 160-acre spacing and special field rules, which include among other things the permitted well in each standard proration unit to be drilled at a location at least 660 feet from the nearest exterior boundary of the unit and also at least 330 feet from the nearest boundary line of any quarter-quarter section within the unit.

We would appreciate your making this letter part of the record and entering our concurrence with the application.

Yours very truly,

RJJ:br

cc-Via Air Mail Special Delivery
Mr. John D. Knodell, Jr.
Humble Oil & Refining Co.
P. O. Box 120
Denver 1, Colorado

DOCKET: REGULAR HEARING - WEDNESDAY - NOVEMBER 13, 1963
OIL CONSERVATION COMMISSION - 9 A.M., MORGAN HALL, STATE LAND OFFICE BUILDING,
SANTA FE, NEW MEXICO

ALLOWABLE: (1) Consideration of the oil allowable for December, 1963.

- (2) Consideration of the allowable production of gas for December, 1963, for ten prorated pools in Lea and Eddy Counties, New Mexico, and also presentation of purchaser's nominations for the six-month period beginning January 1, 1964 for that area. Consideration of the allowable production of gas for nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico for December, 1963.**

CASE 2935:

Application of Humble Oil & Refining Company for the creation of a new pool, for special pool rules, and for interference tests, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Gallup production comprising all of Sections 7 and 18, Township 28 North, Range 14 West; all of Sections 10 through 13, and N/2 and SE/4 of Section 14, Township 28 North, Range 15 West; all of Sections 7 and 8, SW/4 of Section 15, all of Sections 16 through 22, SW/4 of Section 23, SW/4 of Section 25, all of Sections 26 through 30, N/2 and SE/4 of Section 32, and all of Sections 33 through 36, Township 29 North, Range 15 West; all of Sections 11 through 14 and all of Section 24, Township 29 North, Range 16 West. Applicant also seeks the promulgation of special rules for said pool to include provisions for temporary 160-acre pro-ration units and for well locations no nearer than 660 feet to the outer boundary of said units. Applicant further seeks authority to conduct interference tests during said temporary one-year period and to transfer allowables among wells on the same basic lease.

CASE 2936:

In the matter of the application of the Oil Conservation Commission of New Mexico upon its own motion for an order for the creation of a new pool in Lea County, New Mexico, the abolishment of a certain existing pool in Lea County, New Mexico, and the extension of the vertical and horizontal limits of certain existing pools in Eddy and Lea Counties, New Mexico, and giving notice to all persons and parties interested in the subject matter thereof to appear and show cause why such creations and extensions of vertical and horizontal limits should not be made.

- (a) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Bone Springs production, designated as the North Bell Lake-Bone Springs Pool, and described as:**

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM
SECTION 18: SW/4

- (b) ABOLISH the West Crossroads-San Andres Pool in Lea County, New Mexico, described as:**

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM
SECTION 20: E/2
SECTION 21: SW/4

CASE 2936 continued from page 1

(c) EXTEND the Jenkins-San Andres Pool in Lea County, New Mexico to include the above described acreage formerly included in the West Crossroads-San Andres Pool.

(d) EXTEND the Blinebry Oil Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
SECTION 32: SE/4

(e) EXTEND the Double A-Abo Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 36 EAST, NMPM
SECTION 20: S/2 NW/4

(f) EXTEND the Flying "M" - Abo Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 33 EAST, NMPM
SECTION 21: E/2 E/2
SECTION 22: W/2 NW/4 and S/2

(g) EXTEND the North Justis-Tubb Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 37 EAST, NMPM
SECTION 34: E/2 SE/4

(h) EXTEND the Monument-Tubb Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM
SECTION 15: NE/4

(i) EXTEND the Wilson Yates-Seven Rivers Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: W/2 NW/4

(j) EXTEND the vertical limits of the Red Lake(Grayburg-San Andres) Pool in Eddy County to include the Queen formation underlying Unit G of Section 9 only, in Township 17 South, Range 28 East. Further to extend the horizontal limits of said pool to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 9: SW/4 NE/4

-3-

CASE 2936 continued from page 2

- (k) EXTEND the Lusk-Strawn Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 25: NE/4

CASE 2937:

Northwestern New Mexico Nomenclature case calling for an order extending existing pools in Rio Arriba, Sandoval, and San Juan Counties, New Mexico.

- (a) EXTEND the South Blanco-Pictured Cliffs Pool to include:

TOWNSHIP 23 NORTH, RANGE 2 WEST, NMPM
SECTION 3: W/2
SECTION 4: ALL
SECTION 10: ALL
SECTION 14: NW/4 & SE/4
SECTION 23: NE/4
SECTION 24: NW/4

TOWNSHIP 24 NORTH, RANGE 2 WEST, NMPM
SECTION 26: ALL
SECTION 27: E/2 & SW/4
SECTION 28: S/2
SECTION 29: ALL
SECTION 30: ALL
SECTION 31: E/2
SECTION 32: ALL
SECTION 33: ALL
SECTION 34: ALL
SECTION 35: ALL

- (b) EXTEND the Cha Cha-Gallup Oil Pool to include:

TOWNSHIP 28 NORTH, RANGE 12 WEST, NMPM
SECTION 29: W/2

- (c) EXTEND the Many Rocks-Gallup Oil Pool to include:

TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM
SECTION 2: N/2 NW/4

CASE 2938:

In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit all interested parties to appear and show cause why an order should not be entered prohibiting the flaring or venting of casinghead gas, Vacuum Field, Lea County, New Mexico.

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

Cher
2935

October 1, 1963

C
O
P
Y

Mr. R. H. Massey
The Pure Oil Company
P. O. Box 3372
Durango, Colorado

Dear Mr. Massey:

I am enclosing herewith a photostatic copy of Humble's application that you requested during our recent telephone conversation.

Mr. John D. Knodell, Jr., Attorney for Humble, advised me by telephone call yesterday that Humble desired to present the entire case at the regular hearing on November 13, 1963, instead of presenting part of the case in October.

In accordance with your request, I have placed your company's name upon our mailing list and you should receive copies of all dockets in the future.

Please forward a check in the amount of \$4, payable to the Oil Conservation Commission, to cover the cost of the photostatic copy of the application.

Please advise me if we can be of further assistance to you.

Very truly yours,

J. M. DURRETT, Jr.
Attorney

JMD/esr
Enclosure

DOCKET MAILED

Date 11-4-63
gh

OK 2935

J. M. HERVEY 1874-1983
HIRAM M. DOW
CLARENCE E. HINKLE
W. E. BONDURANT, JR.
GEORGE H. MUNKER, JR.
HOWARD C. BRATTON
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.

LAW OFFICES
HERVEY, DOW & HINKLE
HINKLE BUILDING
ROSWELL, NEW MEXICO

October 24, 1963

TELEPHONE 622-6510
AREA CODE 505
POST OFFICE BOX 10

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

Gentlemen:

Enclosed herewith please find an Amended Application of Humble Oil & Refining Company in Case No. 2819, which is to be heard at the regular Commission Hearing in November.

I will appreciate it if you will check it over to see if the publication corresponds with the Amended Application.

Very truly yours,

HERVEY, DOW & HINKLE

By _____

HCB/ea

Enclosure: 3 Copies of Amended Application

AIRMAIL

new case no.

DOCKET MAILED *to Howard Bratton*
Date *11-4-63*
[Signature]

The British-American Oil Producing Company
MAIN OFFICE 666

DENVER CLUB BUILDING

DENVER 1, COLORADO

EXPLORATION DEPARTMENT

1964 MAR 9 AM 11:08

ADDRESS ALL CORRESPONDENCE TO
POST OFFICE BOX 180

March 5, 1964

State Land Office Building
P. O. Box 791
Santa Fe, New Mexico

Attn: Mr. D. S. Nutter

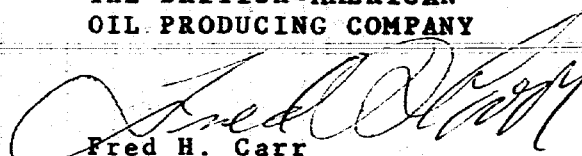
Dear Sir:

I am returning the report which we
borrowed from your file last week.

I wish to thank you for the coopera-
tion that you gave us in our recent
visit. Your office was most helpful
to us.

Very truly yours,

THE BRITISH-AMERICAN
OIL PRODUCING COMPANY


Fred H. Carr
Division Geologist

FHC/bb

Enc.

unit in the pool a proportional allowable factor in the same ratio to 4.00 as the number of surface acres therein bears to 160.

- (D) Permitting each operator within the area to be spaced to locate the well to be drilled in each standard proration unit at a location to be selected by such operator within 165 feet from the center of any of the governmental quarter-quarter sections in such standard proration unit; and permitting the well to be drilled in each non-standard proration unit consisting of a fractional section to be drilled at a location selected by the operator of such unit, which said location shall be no closer than 660 feet to any boundary line of such unit.
- (E) Permitting the Secretary-Director to grant exceptions to said rules and to establish non-standard proration units after notice and hearing and for good cause shown.
- (F) Permitting the transfer of producing allowables from any producing well in the field to any other well or wells on the same lease during the period the temporary order is in force and effect.
- (G) Providing that this matter shall be reopened at the regular hearing of this Commission held in October, 1964, at which time all interested persons may appear to show cause why any order entered herein should not be made permanent.

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. 2935
Order No. R-
NOMENCLATURE

APPLICATION OF HUMBLE OIL & REFINING
COMPANY FOR THE CREATION OF A NEW
GALLUP OIL POOL IN SAN JUAN COUNTY,
NEW MEXICO, AND FOR THE PROMULGATION
OF TEMPORARY SPECIAL RULES AND REGU-
LATIONS IN CONNECTION THEREWITH.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 13, 1963, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of November, 1963, 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, Humble Oil & Refining Company, seeks an order creating a new Gallup oil pool in San Juan County, New Mexico, and promulgating special rules and regulations establishing 160-acre proration units for oil wells completed in the vicinity of said new oil pool for a temporary period of one (1) year.

(3) That the applicant also seeks authority to conduct interference tests in the subject area and to transfer allowables among producing wells on the same lease while such tests are being conducted.

(4) That the evidence available at this time indicates that the Gallup reservoir in the new oil pool created herein may be efficiently and economically drained and developed on 160-acre proration units and that it may be uneconomical to drill wells in said pool on either 80-acre or 40-acre proration units.

(5) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 160-acre proration units should be promulgated for the new oil pool created herein.

(6) That the temporary special rules and regulations promulgated herein should be established for a one-year period in order to

Case No. 2935
Order No. R-
(Nomenclature)

allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(7) That an administrative procedure should be established whereby the operators in the new oil pool created herein will be permitted to conduct interference tests and to transfer allowables among producing wells on the same lease during the temporary one-year period in order to facilitate that gathering of information pertaining to reservoir characteristics.

(8) That this case should be reopened in November, 1964, at which time the operators in the subject pool should appear and show cause why the new oil pool created herein should not be developed on either 80-acre or 40-acre proration units.

IT IS THEREFORE ORDERED:

(1) That a new oil pool in San Juan County, New Mexico, classified as an oil pool for Gallup production, be and the same is hereby created and designated as the South Waterflow Oil Pool, with the vertical limits being the Gallup formation and the horizontal limits being the following described area:

Township 29 North, Range 16 West

Section 11: All
Section 12: All
Section 13: All
Section 14: All
Section 24: All

Township 29 North, Range 15 West

Section 7: All
Section 8: All
Section 15: SW $\frac{1}{4}$
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: All
Section 23: SW $\frac{1}{4}$
Section 25: SW $\frac{1}{4}$
Section 26: All
Section 27: All
Section 28: All
Section 29: All
Section 30: All
Section 32: N $\frac{1}{2}$, SE $\frac{1}{4}$
Section 33: All
Section 34: All
Section 35: All
Section 36: All

Township 28 North, Range 15 West

Fractional Section 10: All
Fractional Section 11: All

Township 28 North, Range 15 West (continued)

Fractional Section 12: All
Section 13: All
Section 14: N $\frac{1}{2}$, SE $\frac{1}{4}$

Township 28 North, Range 14 West

Fractional Section 7: All
Section 18: All

(2) That Special Rules and Regulations for the South Waterflow Oil Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
SOUTH WATERFLOW OIL POOL

RULE 1. Each well completed or recompleted in the South Waterflow Oil Pool or in the Gallup formation within one (1) mile of the South Waterflow Oil Pool, and not nearer to or within the limits of another designated Gallup oil pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations herein-after set forth.

RULE 2. Each well completed or recompleted in the South Waterflow Oil Pool shall be located on a standard 160-acre proration unit comprising a single governmental quarter section or on a non-standard proration unit comprising a single fractional governmental section.

RULE 3. Each well in a standard proration unit projected to or completed in the South Waterflow Oil Pool shall be located no less than 660 feet from each exterior boundary line of the proration unit and also no less than 330 feet from each governmental quarter-quarter section line in the proration unit. Each well in a non-standard proration unit shall be located no less than 660 feet from each exterior boundary line of each proration unit. Nothing contained herein shall be construed as prohibiting the drilling of a well on each quarter-quarter section (or comparable subdivision) in each proration unit.

RULE 4. The Secretary-Director may grant an exception to the requirements of Rule 3 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within twenty (20) days after the Secretary-Director has received the application.

RULE 5. A standard proration unit in the South Waterflow Oil Pool (158 through 162 acres) shall be assigned a 160-acre proportional factor of 4.00 for allowable purposes. Any proration unit comprising less than 158 acres or more than 162 acres shall be assigned a proportional factor in the same ratio to 4.00 as the acreage in the unit bears to 160. In the event there is more than one well on a proration unit, the operator may produce the allowable assigned to the unit from said wells in any proportion.

PURE OIL COMPANY'S PROPOSED ADDITION TO RULE 3:

In each proration unit adjoining and East of the line separating Range 15 West from Range 16 West, the initial well shall not be located in the NW/4 of the unit; in proration units adjoining and West of said line, the initial well shall not be located in the SE/4 of the unit.

IT IS FURTHER ORDERED:

(1) That the Secretary-Director of the Commission is hereby authorized to approve interference tests and the transfer of allowable to wells on the same lease or, if in a unitized area, to wells in the same participating area; provided, however, that any such authorization shall be limited to a period of one (1) year. No transfer well shall be permitted to receive, in addition to its own allowable, more than one top unit allowable for the South Waterflow Oil Pool.

To obtain administrative approval for interference tests and the transfer of allowable, the operator shall submit in triplicate a request for such authority describing in detail the proposed method of conducting such tests and transferring the allowable. The application shall be accompanied by a plat showing thereon all Gallup wells with a radius of two (2) miles of the proposed shut-in well(s) and the transfer well(s). The plat shall also identify each lease or participating area as to ownership or operating rights. The application shall include evidence that all offset operators to the shut-in well(s) and the transfer well(s) have been furnished a complete copy of the application. It shall also be accompanied by Form C-116 for each shut-in well, showing the results of a pre-shut-in test to determine the amount of allowable to be transferred. The transferred allowable shall not exceed the volume of oil produced during the last 24 hours of a 72-hour period during which the well shall be produced at a constant rate. The Commission and offset operators to both the shut-in well(s) and the transfer well(s) may witness such tests if they so desire and shall be notified of the tests at least 48 hours prior to the commencement thereof.

The Secretary-Director of the Commission may grant approval of the interference tests and transfer of allowable upon receipt of waivers from all offset operators or upon expiration of a 20-day waiting period, provided no offset operator has objected to the proposed test and transfer.

(2) That this case shall be reopened in November, 1964, at which time the operators in the subject pool may appear and show cause why the South Waterflow Oil Pool should not be developed on either 80-acre or 40-acre proration units.

(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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

50%
S E A L

/jj

BEFORE THE OIL CONSERVATION COMMISSION
OF THE
STATE OF NEW MEXICO

AM OFFICE OCC
OCT 25 AM 11 05

IN THE MATTER OF THE APPLICATION
OF HUMBLE OIL & REFINING COMPANY
FOR CREATION OF A NEW GALLUP POOL
IN SAN JUAN COUNTY, NEW MEXICO,
AND FOR PROMULGATION OF TEMPORARY
SPECIAL FIELD RULES AND REGULATIONS
IN CONNECTION THEREWITH, INCLUDING
PROVISIONS FOR TEMPORARY 160-ACRE
PRORATION UNITS, ALTERNATE WELL LO-
CATIONS WITHIN SUCH UNITS AND OIL
ALLOWABLE FACTORS FOR PRORATION
PURPOSES

CASE NO. 2819

Dismissed

AMENDED APPLICATION FOR TEMPORARY
SPECIAL FIELD RULES AND REGULATIONS

Humble Oil & Refining Company, a Delaware corporation, authorized
and licensed to do business in New Mexico, hereinafter called "Applicant,"
for its amended application herein represents unto this Commission as fol-
lows:

I.

Applicant is the owner and operator of certain oil and gas leases
wherein the Navajo Tribe of Indians is the lessor and Applicant is the
lessee, which said oil and gas leases cover the premises located in San
Juan County, New Mexico, legally described as follows:

Applicant's Lease No.

Leased Premises

Township 29 North, Range 15 West

L-602689

Sections 7, 8, & 9: All lying south
of the San Juan
River
Section 17: $W\frac{1}{2}$, $W\frac{1}{2}E\frac{1}{2}$, $NE\frac{1}{4}NE\frac{1}{4}$
Section 18: All

L-604847

Section 19: $N\frac{1}{2}$, $N\frac{1}{2}SE\frac{1}{4}$
Section 20: $NW\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$, $W\frac{1}{2}NE\frac{1}{4}$
 $NW\frac{1}{4}SE\frac{1}{4}$

L-604849

Section 20: $S\frac{1}{2}SW\frac{1}{4}$, $S\frac{1}{2}SE\frac{1}{4}$
Section 29: $NW\frac{1}{4}$, $W\frac{1}{2}NE\frac{1}{4}$, $NE\frac{1}{4}NE\frac{1}{4}$

L-603192

Section 28: $SE\frac{1}{4}SW\frac{1}{4}$, $SE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$
Section 32: $S\frac{1}{2}SE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$
Section 33: $S\frac{1}{2}$, $NE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$

Applicant's Lease No.Leased Premises

L-603191

Township 29 North, Range 15 West (cont'd)

Section 27: $E\frac{1}{2}$, $SW\frac{1}{4}$, $W\frac{1}{2}NW\frac{1}{4}$
Section 34: All

L-603193

Township 28 North, Range 15 West

Fractional Section 9: $E\frac{1}{2}$
Fractional Section 10: All
Section 15: All
Section 16: $E\frac{1}{2}$, $E\frac{1}{2}W\frac{1}{2}$
Section 21: $E\frac{1}{2}$
Section 22: All

II.

Heretofore on July 11, 1963, Applicant, The Pure Oil Company and Sun Oil Company commenced the drilling of a well for oil and gas in the Southwest Quarter of the Southwest Quarter ($SW\frac{1}{4}SW\frac{1}{4}$) of Section 18 described above, which said well encountered Gallup Sand formation productive of oil at a depth of 4,109 feet. Thereafter on August 23, 1963, Applicant commenced the drilling of another well for oil and gas in the approximate center of the Northwest Quarter of the Northeast Quarter ($NW\frac{1}{4}NE\frac{1}{4}$) of Section 19 described above, which said well encountered the same productive Gallup Sand formation at a depth of 4,213 feet. Information available from the drilling of said two wells indicates that said wells are completed in a reservoir which contains a common accumulation of crude petroleum oil and which is completely separated from any other such accumulation. Therefore, Applicant believes and represents that the said common accumulation of oil contained in the said reservoir is a separate and individual pool as that term is defined in Article 3, Chapter 65, New Mexico Statutes Annotated.

III.

The information available from the drilling of said wells described above indicates that the reservoir from which said wells will produce can be efficiently and economically drained and developed on 160-acre proration units. Such information further indicates that the drilling of more than one well on each 160-acre proration unit will result in the drill-

ing of unnecessary wells and economic loss therefrom and also will result in the augmentation of risks, arising from the drilling of an excessive number of wells. Such evidence further indicates that the reservoir from which said two wells are producing underlies the premises described as follows:

Township 29 North, Range 16 West

Section 11: All
Section 12: All
Section 13: All
Section 14: All
Section 24: All

Township 29 North, Range 15 West

Section 7: All
Section 8: All
Section 15: SW $\frac{1}{4}$
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: All
Section 23: SW $\frac{1}{4}$
Section 25: SW $\frac{1}{4}$
Section 26: All
Section 27: All
Section 28: All
Section 29: All
Section 30: All
Section 32: N $\frac{1}{2}$, SE $\frac{1}{4}$
Section 33: All
Section 34: All
Section 35: All
Section 36: All

Township 28 North, Range 15 West

Fractional Section 10: All
Fractional Section 11: All
Fractional Section 12: All
Section 13: All
Section 14: N $\frac{1}{2}$, SE $\frac{1}{4}$

Township 28 North, Range 14 West

Fractional Section 7: All
Section 18: All

IV.

In order to adequately protect the correlative rights of all owners of oil and gas within the area to be spaced, each governmental quarter section of normal size within the area to be spaced should be designated a standard proration unit and should be assigned a 160-acre proportional factor of 4.00 for allowable purposes. Permission should be granted each operator within the area to be spaced to locate the well to be drilled in each such standard proration unit at a location to be selected by such operator not less than 660 feet from the nearest exterior boundary of such standard proration unit. Further, in order to maintain a uniform spacing pattern, Fractional Sections 10, 11 and 12, Township 28 North, Range 15 West, and Fractional Section 7, Township 28 North, Range 14 West, should each be designated a separate non-standard proration unit, with a proportional allowable factor granted to each such fractional section in the same ratio to 4.00 as the number of surface acres contained therein bears to 160. Permission should be granted each operator within the area to be spaced to locate the well to be drilled in each such non-standard proration unit at a location to be selected by such operator not less than 660 feet from the nearest exterior boundary of such non-standard proration unit.

V.

In order that all available information relative to effective drainage, recoverable reserves and other reservoir characteristics may be obtained, temporary special field rules and regulations should be established for a period of one (1) year, during which said period each operator in the pool should be granted permission to conduct interference tests in wells completed within the spaced area; and, to permit adequate interference tests, each operator should be permitted to transfer allowables from one producing well to any other well or wells on the same lease.

VI.

No order has heretofore been entered by this Commission establishing proration units or field rules of any kind, governing production of

oil or gas from the reservoir from which the said wells described above are producing. In order to prevent the economic loss caused by the drilling of unnecessary wells, to protect correlative rights, including those of royalty owners, to prevent waste and to avoid the augmentation of risks arising from drilling an excessive number of wells, this Commission should enter an order designating the reservoir discovered in the said two wells described hereinabove a new oil pool in San Juan County, New Mexico, and establishing temporary special field rules and regulations governing the production of oil and gas therefrom.

VII.

Insofar as known to Applicant, those persons owning oil and gas leases in the area requested herein to be spaced are;

The Pure Oil Company	- P. O. Box 1611, Casper, Wyoming
Sun Oil Company	- P. O. Box 1798, Denver, Colorado
Skelly Oil Company	- P. O. Box 1650, Tulsa, Oklahoma
Sunray DX Oil Company	- P. O. Box 2039, Tulsa, Oklahoma
Tidewater Oil Company	- P. O. Box 1960, Durango, Colorado
Pan American Petroleum Corporation	- P. O. Box 480, Farmington, New Mexico
James R. Pickett	- P. O. Box 268, Phoenix, Arizona
Jalco Drilling Company	- Address Unknown

WHEREFORE, Applicant requests this Commission to enter its order designating the reservoir from which the wells described above are producing as a new oil pool in San Juan County, New Mexico, and establishing and promulgating temporary special field rules and regulations governing the production of oil and gas therefrom, as follows:

- (A) Establishing 160-acre standard proration units for said pool, each unit to consist of each governmental quarter section of standard size included therein.
- (B) Establishing non-standard proration units for said pool, each unit to consist of each fractional section included therein.
- (C) Assigning each standard proration unit in the pool a 160-acre proportional factor of 4.00 for allowable purposes and assigning each non-standard proration

unit in the pool a proportional allowable factor in the same ratio to 4.00 as the number of surface acres therein bears to 160.

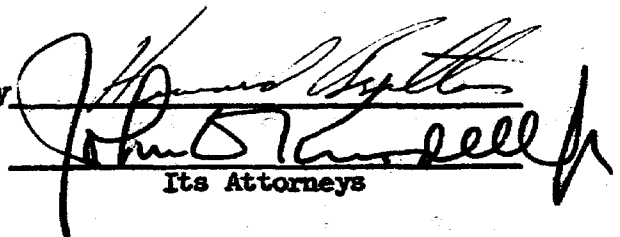
- (D) Permitting each operator within the area to be spaced to locate the well to be drilled in each standard proration unit at a location to be selected by such operator not less than 660 feet from the nearest exterior boundary of such standard proration unit; and permitting the well to be drilled in each non-standard proration unit consisting of a fractional section to be drilled at a location selected by the operator of such unit not less than 660 feet from the nearest exterior boundary of such non-standard proration unit.
- (E) Permitting the Secretary-Director to grant exceptions to said rules and to establish non-standard proration units after notice and hearing and for good cause shown.
- (F) ~~Permitting the transfer of producing allowables from~~ any producing well in the field to any other well or wells on the same lease during the period the temporary order is in force and effect.
- (G) Providing that this matter shall be reopened at the regular hearing of this Commission held in November, 1964, at which time all interested persons may appear to show cause why any order entered herein should not be made permanent.

(E) Making such further provision with regard to the production of oil and gas from said reservoir as may be necessary or desirable.

Dated this 23 day of October, 1963.

Respectfully submitted,

HUMBLE OIL & REFINING COMPANY

By 
Its Attorneys

Mr. Howard C. Bratton
Hervey, Dow & Hinkle
P. O. Box 10
Roswell, New Mexico
622-6510

Mr. John D. Knodell, Jr.
P. O. Box 120
Denver, Colorado
734-1271

- Ex No 1 Index Maps Gallup Land Reservoir
- Ex No 2 Lease Ownership Map South Waterflow Area
- Ex No 3 Structure Map Top of Danoster
- Ex No 4 Stratigraphic Cross-section of 4 wells
- Ex No 7 Structural Cross-section of 2 wells
- Ex No 11 Plot of Cha Cha Gallup Field
- Ex No 12 Oil Production v. time
- Ex No 13 Pressure interference data
- Ex No 14 Proposed Production Units

PURE OIL COMPANY'S PROPOSED ADDITION TO RULE 3:

In each proration unit adjoining and East of the line separating Range 15 West from Range 16 West, the initial well shall not be located in the NW/4 of the unit; in proration units adjoining and West of said line, the initial well shall not be located in the SE/4 of the unit.

For Review

BEFORE THE OIL CONSERVATION COMMISSION

OF THE

STATE OF NEW MEXICO

1963 SEP 27 AM 8 11

MAIN OFFICE OCC

IN THE MATTER OF THE APPLICATION
OF HUMBLE OIL & REFINING COMPANY
FOR CREATION OF A NEW GALLUP POOL
IN SAN JUAN COUNTY, NEW MEXICO,
AND FOR PROMULGATION OF TEMPORARY
SPECIAL FIELD RULES AND REGULATIONS
IN CONNECTION THEREWITH, INCLUDING
PROVISIONS FOR TEMPORARY 160-ACRE
PRORATION UNITS, FIXED WELL LOCA-
TIONS WITHIN SUCH UNITS AND OIL
ALLOWABLE FACTORS FOR PRORATION
PURPOSES

CASE NO.

2935

APPLICATION FOR TEMPORARY
SPECIAL FIELD RULES AND REGULATIONS

Humble Oil & Refining Company, a Delaware corporation, authorized
and licensed to do business in New Mexico, hereinafter called "Applicant,"
for its application herein represents unto this Commission as follows:

I.

Applicant is the owner and operator of certain oil and gas leases
wherein the Navajo Tribe of Indians is the lessor and Applicant is the
lessee, which said oil and gas leases cover the premises located in San
Juan County, New Mexico, legally described as follows:

Applicant's Lease No.

Leased Premises

Township 29 North, Range 15 West

L-602689

Sections 7, 8, & 9: All lying south
of the San Juan
River
Section 17: $W\frac{1}{2}$, $W\frac{1}{2}E\frac{1}{2}$, $NE\frac{1}{4}NE\frac{1}{4}$
Section 18: All

L-604847

Section 19: $N\frac{1}{2}$, $N\frac{1}{2}SE\frac{1}{4}$
Section 20: $NW\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$, $W\frac{1}{2}NE\frac{1}{4}$,
 $NW\frac{1}{4}SE\frac{1}{4}$

L-604849

Section 20: $S\frac{1}{2}SW\frac{1}{4}$, $S\frac{1}{2}SE\frac{1}{4}$
Section 29: $NW\frac{1}{4}$, $W\frac{1}{2}NE\frac{1}{4}$, $NE\frac{1}{4}NE\frac{1}{4}$

L-603192

Section 28: $SE\frac{1}{4}SW\frac{1}{4}$, $SE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$
Section 32: $S\frac{1}{2}SE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$
Section 33: $S\frac{1}{2}$, $NE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$

Applicant's Lease No.Leased Premises

L-603191

Township 29 North, Range 15 West (cont'd)

Section 27: $E\frac{1}{2}$, $SW\frac{1}{4}$, $W\frac{1}{2}NW\frac{1}{4}$
Section 34: All

L-603193

Township 28 North, Range 15 West

Fractional Section 9: $E\frac{1}{2}$
Fractional Section 10: All
Section 15: All
Section 16: $E\frac{1}{2}$, $E\frac{1}{2}W\frac{1}{2}$
Section 21: $E\frac{1}{2}$
Section 22: All

II.

Heretofore on July 11, 1963, Applicant, The Pure Oil Company and Sun Oil Company commenced the drilling of a well for oil and gas in the Southwest Quarter of the Southwest Quarter ($SW\frac{1}{4}SW\frac{1}{4}$) of Section 18 described above, which said well encountered Gallup Sand formation productive of oil at a depth of 4,109 feet. Thereafter on August 23, 1963, Applicant commenced the drilling of another well for oil and gas in the approximate center of the Northwest Quarter of the Northeast Quarter ($NW\frac{1}{4}NE\frac{1}{4}$) of Section 19 described above, which said well encountered the same productive Gallup Sand formation at a depth of 4,213 feet. Information available from the drilling of said two wells indicates that said wells are completed in a reservoir which contains a common accumulation of crude petroleum oil and which is completely separated from any other such accumulation. Therefore, Applicant believes and represents that the said common accumulation of oil contained in the said reservoir is a separate and individual pool as that term is defined in Article 3, Chapter 65, New Mexico Statutes Annotated.

III.

The information available from the drilling of said wells described above indicates that the reservoir from which said wells will produce can be efficiently and economically drained and developed on 160-acre proration units. Such information further indicates that the drilling of more than one well on each 160-acre proration unit will result in the drill-

ing of unnecessary wells and economic loss therefrom and also will result in the augmentation of risks, arising from the drilling of an excessive number of wells. Such evidence further indicates that the reservoir from which said two wells are producing underlies the premises described as follows:

Township 29 North, Range 16 West

Section 11: All
Section 12: All
Section 13: All
Section 14: All
Section 24: All

Township 29 North, Range 15 West

Section 7: All
Section 8: All
Section 15: SW $\frac{1}{4}$
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: All
Section 23: SW $\frac{1}{4}$
Section 25: SW $\frac{1}{4}$
Section 26: All
Section 27: All
Section 28: All
Section 29: All
Section 30: All
Section 32: N $\frac{1}{2}$, SE $\frac{1}{4}$
Section 33: All
Section 34: All
Section 35: All
Section 36: All

Township 28 North, Range 15 West

Fractional Section 10: All
Fractional Section 11: All
Fractional Section 12: All
Section 13: All
Section 14: N $\frac{1}{2}$, SE $\frac{1}{4}$

Township 28 North, Range 14 West

Fractional Section 7: All
Section 18: All

IV.

In order to maintain a uniform well spacing pattern which will adequately protect the correlative rights of all owners of oil and gas within the area to be spaced, each governmental quarter section of normal size within the field should be designated a standard proration unit and should be assigned a 160-acre proportional factor of 4.00 for allowable purposes. The well drilled in each standard proration unit east of the line between Range 15 West and Range 16 West should be drilled in the southwest quarter ($SW\frac{1}{4}$) of such unit and should be located no more than 150 feet from the center of such quarter-quarter section, and the well drilled in each standard proration unit west of such line should be drilled in the northeast quarter ($NE\frac{1}{4}$) of such unit and should be located no more than 150 feet from the center of such quarter-quarter section. The well heretofore drilled in the Northwest Quarter of the Northeast Quarter ($NW\frac{1}{4}NE\frac{1}{4}$) of Section 19 described in paragraph II hereinabove should be allowed to be produced as an exception to said location requirement. Further, in order to maintain a uniform spacing pattern, Fractional Sections 10, 11 and 12, Township 28 North, Range 15 West, and Fractional Section 6, Township 28 North, Range 14 West, should each be designated a separate non-standard proration unit, with a proportional allowable factor granted to each such fractional section in the same ratio to 4.00 as the number of surface acres contained therein bears to 160, and the well drilled in each such unit should be drilled at any location selected by the operator of such unit, but no closer than 660 feet to any boundary line of such unit.

V.

In order that all available information relative to effective drainage, recoverable reserves and other reservoir characteristics may be obtained, temporary special field rules and regulations should be established for a period of one (1) year, during which said period each operator in the pool should be granted permission to conduct interference tests in wells completed within the spaced area; and, to permit adequate

interference tests, each operator should be permitted to transfer allowances from one producing well to any other well or wells on the same lease.

VI.

Applicant installed four and one-half inch ($4\frac{1}{2}$ ") production casing in the well drilled in the Northwest Quarter of the Northeast Quarter (NW $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 19 described hereinabove and plans to install such casing in future producing wells drilled by it in the field. After installing such casing in said well, Applicant fractured the producing formation in said well through such casing without installing tubing in order to stimulate said formation most effectively. After said fracture treatment, said well commenced to flow naturally; but due to the provisions of Rule 107(d)(1) of the Rules and Regulations promulgated by this Commission, it was necessary for Applicant to kill said well in order to install tubing therein before said well could be produced. In spite of all possible precautions, killing a naturally flowing well creates unnecessary risk of damage to the producing formation therein and consequent loss of recoverable oil. On the other hand, producing a flowing well in the field through production casing without tubing can cause no waste or injury to the reservoir or correlative rights or to any public or private interest. Therefore, any temporary special field rules and regulations promulgated in response hereto should permit all operators in the field to produce any naturally flowing well in the field through production casing without installing tubing therein for so long as such well is capable of producing oil by natural flow.

VII.

No order has heretofore been entered by this Commission establishing proration units or field rules of any kind, governing production of oil or gas from the reservoir from which the said wells described above are producing. In order to prevent the economic loss caused by the drilling of unnecessary wells, to protect correlative rights, including those of royalty owners, to prevent waste and to avoid the augmentation of risks arising from drilling an excessive number of wells, this Commis-

sion should enter an order designating the reservoir discovered in the said two wells described hereinabove a new oil pool in San Juan County, New Mexico, and establishing temporary special field rules and regulations governing the production of oil and gas therefrom.

VIII.

Insofar as known to Applicant, those persons owning oil and gas leases in the area requested herein to be spaced are:

The Pure Oil Company	- P. O. Box 1611, Casper, Wyoming
Sun Oil Company	- P. O. Box 1798, Denver, Colorado
Skelly Oil Company	- P. O. Box 1650, Tulsa, Oklahoma
Sunray DX Oil Company	- P. O. Box 2039, Tulsa, Oklahoma
Tidewater Oil Company	- P. O. Box 1960, Durango, Colorado
Pan American Petroleum Corporation	- P. O. Box 480, Farmington, New Mexico
James R. Pickett	- P. O. Box 268, Phoenix, Arizona
Jalco Drilling Company	- Address Unknown

OCT
WHEREFORE, Applicant requests this Commission to enter its order designating the reservoir from which the wells described above are producing as a new oil pool in San Juan County, New Mexico, and establishing and promulgating temporary special field rules and regulations governing the production of oil and gas therefrom, as follows:

Nov (A) Establishing 160-acre standard proration units for said pool, each unit to consist of each governmental quarter section of standard size included therein.

Nov (B) Establishing non-standard proration units for said pool, each unit to consist of each fractional section included therein.

Nov (C) Assigning each standard proration unit in the pool a 160-acre proportional factor of 4.00 for allowable purposes and assigning each non-standard proration unit in the pool a proportional allowable factor in the same ratio to 4.00 as the number of surface acres therein bears to 160.

Nov (D) Requiring the well drilled in each standard proration unit east of the line between Range 15 West and

Nov

Range 16 West to be drilled at a location within the southwest quarter (SW $\frac{1}{4}$) thereof, which said location shall be no more than 150 feet from the center of such quarter-quarter section; requiring the well drilled in each standard proration unit west of such line to be drilled in the northeast quarter (NE $\frac{1}{4}$) thereof; providing that each location in each standard proration unit shall be no more than 150 feet from the center of the quarter-quarter section designated for the location; and requiring the well drilled in each non-standard proration unit consisting of a fractional section to be drilled at a location selected by the operator of such unit, which said location shall be no closer than 660 feet to any boundary line of such unit.

Nov

- (E) Authorizing the production of oil from and the operation of the well drilled in the Northwest Quarter of the Northeast Quarter (NW $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 19 described above as an exception to the well location requirements of said rules.

Nov

- (F) Permitting the Secretary-Director to grant exceptions to said rules and to establish non-standard proration units after notice and hearing and for good cause shown.

Nov

- (G) Permitting the transfer of producing allowables from any producing well in the field to any other well or wells on the same lease during the period the temporary order is in force and effect.

Oct

- (H) Permitting any operator to produce, through production casing and without tubing, any well in the field capable of producing oil by natural flow for so long as such well may be capable of producing oil by such flow, as an exception to the provisions of Rule 107(d)(1).

(I) Providing that this matter shall be reopened at the regular hearing of this Commission held in October,

Oct - Nov 1964, at which time all interested persons may appear to show cause why any order entered herein should not be made permanent.

(J) Making such further provision with regard to the production of oil and gas from said reservoir as may be necessary or desirable.

Dated this 26th day of September, 1963.

Respectfully submitted,

HUMBLE OIL & REFINING COMPANY

Howard C. Bratton
John D. Knodell, Jr.
Its Attorneys

Mr. Howard C. Bratton
Harvey, Dow & Hinkle
P. O. Box 10
Roswell, New Mexico
622-6510

Mr. John D. Knodell, Jr.
P. O. Box 120
Denver, Colorado
534-1251

DRAFT

JMD/esr

January 21, 1965

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CF Subj. _____

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

CASE No. 2935

Order No. R-2612-A
NOMENCLATURE

APPLICATION OF HUMBLE OIL & REFINING
COMPANY FOR THE CREATION OF A NEW POOL,
FOR SPECIAL RULES, AND FOR INTERFERENCE
TESTS, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
January 6, 1965, at Santa Fe, New Mexico, before Examiner
Daniel S. Nutter.

NOW, on this _____ day of January, 1965, 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 Order No. R-2612, dated December 10, 1963, created
the South Waterflow Oil Pool in San Juan County, New Mexico, created
a spacing area for Gallup production designated the South Waterflow
Spacing Area, established temporary Special Rules and Regulations
for said spacing area, and established an administrative procedure
for approval of interference tests and transfer of allowables in
said spacing area.

(3) That pursuant to the provisions of Order No. R-2612,
this case was reopened to allow the operators in the South Waterflow

Spacing Area to appear and show cause why said area or any portion thereof should not be developed on either 80-acre or 40-acre proration units.

(4) That the evidence concerning the reservoir characteristics of the Gallup formation underlying the South Waterflow Spacing Area and the effectiveness of the temporary Special Rules and Regulations promulgated by Order No. R-2612 does not establish that the spacing area can be efficiently and economically drained and developed on 160-acre or 80-acre proration units.

(5) That to afford to the owner of each property in the South Waterflow Spacing Area the opportunity to produce his just and equitable share of oil from the Gallup formation, to prevent reduced recovery which might result from the drilling of too few wells in said spacing area, and to otherwise prevent waste and protect correlative rights, the South Waterflow Spacing Area, the temporary Special Rules and Regulations for the South Waterflow Spacing Area, and the administrative procedure for approval of interference tests and transfer of allowables in said spacing area should be abolished, and the horizontal limits of the South Waterflow Oil Pool should be redesignated.

IT IS THEREFORE ORDERED:

(1) That the South Waterflow Spacing Area created by Order No. R-2612 is hereby abolished.

(2) That the Special Rules and Regulations for the South Waterflow Spacing Area promulgated by Order No. R-2612 are hereby abolished.

(3) That the administrative procedure for approval of interference tests and transfer of allowables in the South Waterflow Spacing Area (established by Order No. R-2612) is hereby abolished.

-3-

CASE No. 2935

Order No. R-2612-A

(4) That the horizontal limits of the South Waterflow Oil Pool are hereby redesignated as follows:

NEW MEXICO PRINCIPAL MERIDIAN

SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 29 NORTH, RANGE 15 WEST

Section 17: SW/4

Section 18: S/2

Section 19: N/2

Section 20: W/2 and SE/4

TOWNSHIP 29 NORTH, RANGE 16 WEST

Section 13: SE/4

(5) 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.

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. 2935
Order No. R-2612
NOMENCLATURE

APPLICATION OF HUMBLE OIL & REFINING
COMPANY FOR THE CREATION OF A NEW Pool,
~~GALLUP OIL POOL IN SAN JUAN COUNTY,~~
~~NEW MEXICO, AND FOR THE PROMULGATION~~
~~OF TEMPORARY SPECIAL RULES AND REGU-~~
~~LATIONS IN CONNECTION THEREWITH.~~
for special rules, and for
interference tests.
San Juan County, New Mexico
ORDER OF THE COMMISSION
BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 13, 1963, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 13th day of November, 1963, 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, Humble Oil & Refining Company, seeks an order creating a new Gallup oil pool in San Juan County, New Mexico, and promulgating special rules and regulations establishing 160-acre *spacing* ~~proportion units~~ for oil wells completed in the vicinity of said new oil pool for a temporary period of one (1) year.

(3) That the applicant also seeks authority to conduct inter-

(4) That a new Gallup oil pool should be created in San Juan County, New Mexico, and designated the South Waterflow Oil Pool.

(5) That the South Waterflow Oil Pool was discovered by the Humble Navajo Tract 12 well ~~now~~ located in the NW 1/4 NE 1/4 SW 1/4 SW 1/4 of Section 19, Township 29 North, Range 15 West, NMPM, San Juan County, New Mexico; that the top of the perforations in said *in the Gallup formation* well is at 4404 4213 feet.

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 160-acre *spacing*

regulations should provide for limited well locations in order to assure orderly development of the pool and

allow the *operator* to gather reservoir information to establish the *area* that can be efficiently and economically drained and developed by one well. *Gallup oil well.*

(9) That an administrative procedure should be established whereby the operators in the *spacing area* created herein will be permitted to conduct interference tests and to transfer allowables among producing wells on the same lease during the temporary one-year period in order to facilitate *the* gathering of information pertaining to reservoir characteristics.

(10) That this case should be reopened in *January*, 1965, at which time the operators in the *spacing area* should appear and show cause why the *spacing area* created herein should not be developed on either 80-acre or 40-acre *spacing* units. *spacing.*

IT IS THEREFORE ORDERED:

(1) That a new oil pool in San Juan County, New Mexico, classified as an oil pool for Gallup production, *be and the same is hereby* created as the South Waterflow Oil Pool, with the vertical *Consisting of*

*New Mexico Principal Meridian
San Juan County, New Mexico*

*Township 29 North, Range 15 West
Section 18: *S/2*
Section 19: *N/2**

*has not been moved
spacing*

(1) That a spacing area for [redacted]
is hereby created and designated the
South Waterflow Spacing Area, consisting
of the following described [redacted]

Township 29 North, Range [redacted]

Section 11: All
Section 12: All
Section 13: All
Section 14: All
Section 24: All

New Mexico Principal
Meridian
San Juan County,
New Mexico

Township 29 North, Range 15 West

Section 7: All
Section 8: All
Section 15: SW $\frac{1}{4}$
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: All
Section 23: SW $\frac{1}{4}$
Section 25: SW $\frac{1}{4}$
Section 26: All
Section 27: All
Section 28: All
Section 29: All
Section 30: All
Section 32: N $\frac{1}{2}$, SE $\frac{1}{4}$
Section 33: All
Section 34: All
Section 35: All
Section 36: All

Township 28 North, Range 15 West

Fractional Section 10: All
Fractional Section 11: All

~~Township 28 North, Range 15 West~~

Fractional Section 12: All
Section 13: All
Section 14: N $\frac{1}{2}$, SE $\frac{1}{4}$

Township 28 North, Range 14 West

Fractional
Section

4th

3rd

2nd

1st

That Special Rules and Regulations for the South Waterflow *Spacing Area* *12* *Area* *are hereby promulgated as follows, effective January 1, 1968.*

SPECIAL RULES AND REGULATIONS
FOR THE
SOUTH WATERFLOW OIL POOL *Spacing Area*

*shall be spaced, drilled, operated,
and*

spacing formation in the
RULE 1. Each well completed or recompleted in the South Waterflow *Spacing Area* *2* *Area* *shall be spaced, drilled, operated, and* *produced in accordance with the Special Rules and Regulations.*

RULE 2. Each well completed or recompleted in the Gallup formation in the South Waterflow Spacing Area shall be located as follows:

- (1) On a standard 160-acre unit comprising a single governmental quarter section; or
- (2) On a non-standard 120-acre unit comprising three governmental quarter-quarter sections, *lying within a governmental quarter section and* contiguous by common bordering sides; or
- (3) On a non-standard 80-acre unit comprising two governmental quarter-quarter sections, *lying within a governmental quarter section and* contiguous by a common bordering side; or
- (4) On a non-standard 40-acre unit comprising a single governmental quarter-quarter section.

RULE 3. Each well projected to or completed in the Gallup formation in the South Waterflow Spacing Area shall be located within 150 feet of the center of a governmental quarter-quarter section; provided, however, that no well shall be located in the NW/4 NW/4 or the NW/4 SW/4 of any section adjoining and east of the line separating Range 15 West from Range 16 West, and no well shall be located in the SE/4 NE/4 or the SE/4 SE/4 of any section adjoining and west of said line.

has been filed for notice and hearing when an application for an unorthodox location necessitated by topographical conditions. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within twenty (20) days after the Secretary-Director has received the application.

RULE 5. No Gallup well in the South Waterflow Spacing Area shall be assigned an allowable until the operator files Form C-128 with the Commission indicating the acreage to be dedicated to the well *under the provisions of Rule 2.*

A standard proration unit in the South Waterflow Spacing Area (158 through 162 acres) shall be assigned a 160-acre proportional factor of 4.00 for allowable purposes. Any proration unit comprising less than 158 acres or more than 162 acres shall be assigned a proportional factor in the same ratio to 4.00 as the acreage in the unit bears to 160.

Case No. 2935
Order No. R-
(Nomenclature)

no later than December 31, 1964.
terminate with the termination of this order.

IT IS FURTHER ORDERED:

(1) That the Secretary-Director of the Commission is hereby authorized to approve interference tests and the transfer of allowables to wells on the same lease or, if in a unitized area, to wells in the same participating area; provided, however, that any such authorization shall be limited to a period of one (1) year. No transfer well shall be permitted to receive, in addition to its own allowable, more than one top unit allowable for the South Waterflow Oil Pool *Spring Area.*

To obtain administrative approval for interference tests and the transfer of allowable, the operator shall submit in triplicate a request for such authority describing in detail the proposed method of conducting such tests and transferring the allowable. The application shall be accompanied by a plat showing thereon all Gallup wells with a radius of two (2) miles of the proposed shut-in well(s) and the transfer well(s). The plat shall also identify each lease or participating area as to ownership or operating rights. The application shall include evidence that all offset operators to the shut-in well(s) and the transfer well(s) have been furnished a complete copy of the application. It shall also be accompanied by Form C-116 for each shut-in well, showing the results of a pre-shut-in test to determine the amount of allowable to be transferred. The transferred allowable shall not exceed the volume of oil produced during the last 24 hours of a 72-hour period during which the well shall be produced at a constant rate. The Commission and offset operators to both the shut-in well(s) and the transfer well(s) may witness such tests if they so desire and shall be notified of the tests at least 48 hours prior to the commencement thereof.

The Secretary-Director of the Commission may grant approval of the interference tests and transfer of allowable upon receipt of waivers from all offset operators or upon expiration of a 90-day waiting period, provided

Further Ordered:

~~the oil-bearing formation underlying the Gallup formation~~
in the South Waterflow Spacing Area that will
not comply with the well location requirements
of Rule 3 is hereby granted an exception
to said Rule. The operator of any such well
shall notify the District Office of the
Commission in writing of the name and
location of the well on or before ~~the 15th~~ 1964.

(3) That any operator desiring to dedicate ~~more~~
40 acres to a well presently drilling or completed
in the South Waterflow Spacing Area shall
file a new Form C-128 with the Commission
in the Gallup formation.

That the operator of the subject pool may appear and show cause
why the South Waterflow Oil Pool should not be developed on either 80-
acre or 40-acre proration units.

(5) 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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

S E A L

/JJ

EXHIBIT

[illegible]

HUMBLE OIL & REFINING COMPANY
PRODUCING WELL STATUS SUMMARY
SOUTH WATERFLOW POOL
SAN JUAN COUNTY, NEW MEXICO

EXHIBIT NO. 4

Humble Nav. Tr. 2 #1	Humble Nav. Tr. 12 #1	Humble Nav. Tr. 12 #2	Humble Nav. Tr. 12 #3	Humble Nav. Tr. 12 #4	Humble Nav. Tr. 120 #1	Humble Nav. Tr. 2-A #1	Humble Nav. Tr. 2-A #2	Humble Nav. Tr. 2-A #3
11,165' 4,247'	4,351' 4,318'	4,298' 4,266'	4,276' 4,240'	4,330' 4,300'	4,166' 4,136'	4,302' 4,272'	4,230' 4,216'	4,265' 4,238'
7" 4,279'	4 1/2" 4,351'	4 1/2" 4,298'	4 1/2" 4,266'	4 1/2" 4,329'	4 1/2" 4,166'	4 1/2" 4,290'	7/8" 4,229'	4 1/2" 4,265'
2,900'	3,800'	3,500'	3,500'	3,600'	3,400'	3,500'	3,500'	3,500'
4109-14'	4213-20' 4230-38' 4244-46' 4252-53'	4243-46' 4224-28' 4213-09'	4183' 4187' 4197-98' 4205' 4211-14' 4221'	4231-34' 4246-48'	4111-16'	4213-14' 4226-27' 4239-41'	51' 55-58' 57-70' 72-73'	4177-82' 4193-98'
11-1-63	9-11-63	1-24-64	12-26-63	3-18-64	12-22-63	2-16		3-22-64
4 BO & 7 BW 1/893 MCFD	F 144 BO & O BW, 8/64" Chk.	100 BO & 5 BW	183 BO & 5 BW, 20/64" Chk.	25 BO & 12 BW	54 BO & 6 BW	12 BO BW		20 BO & 76 BW
23,000/1	400/1	1,610/1	500/1	520/1	5,460/1	Gas TSTM		Gas TSTM
	50 1 1,542/1 P	17 3 1,476/1 P	27 7 1,736/1 P	8 3 2,552/1 P	8 8 1,700/1 P	3 5 2,837/1 P	- - -	10 22 1,203/1 P
	31,808 Bbls	10,538 Bbls	14,130 Bbls	2,915 Bbls	3,756 Bbls	1,730 Bbls	-	4,677 Bbls
.I. 11-7-63	Producing	Producing	Producing	Producing	Producing	Producing	Abandoned	Producing



HUMBLE OIL & REFINING COMPANY
SOUTH WATERFLOW POOL
SAN JUAN COUNTY, NEW MEXICO

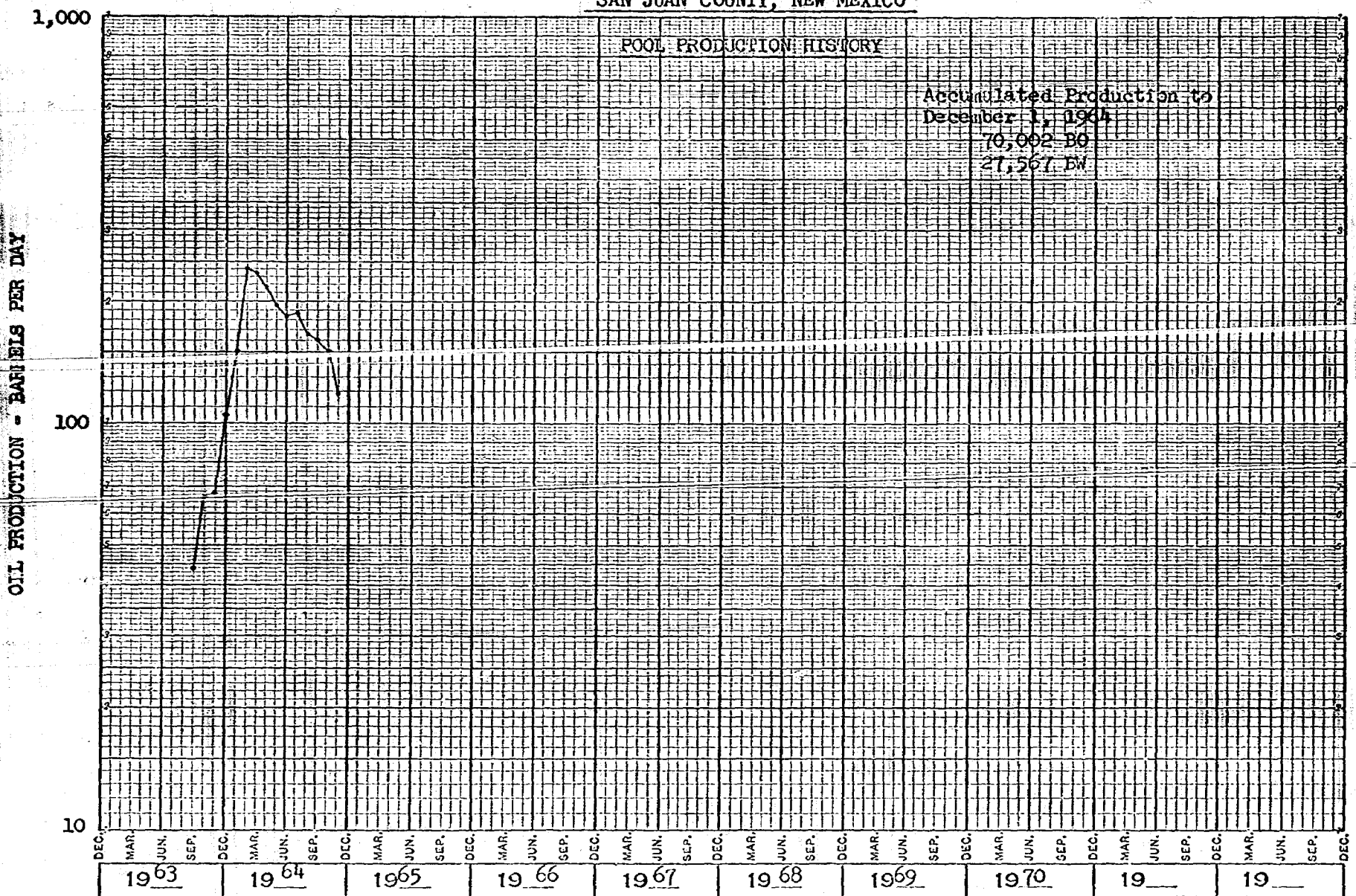
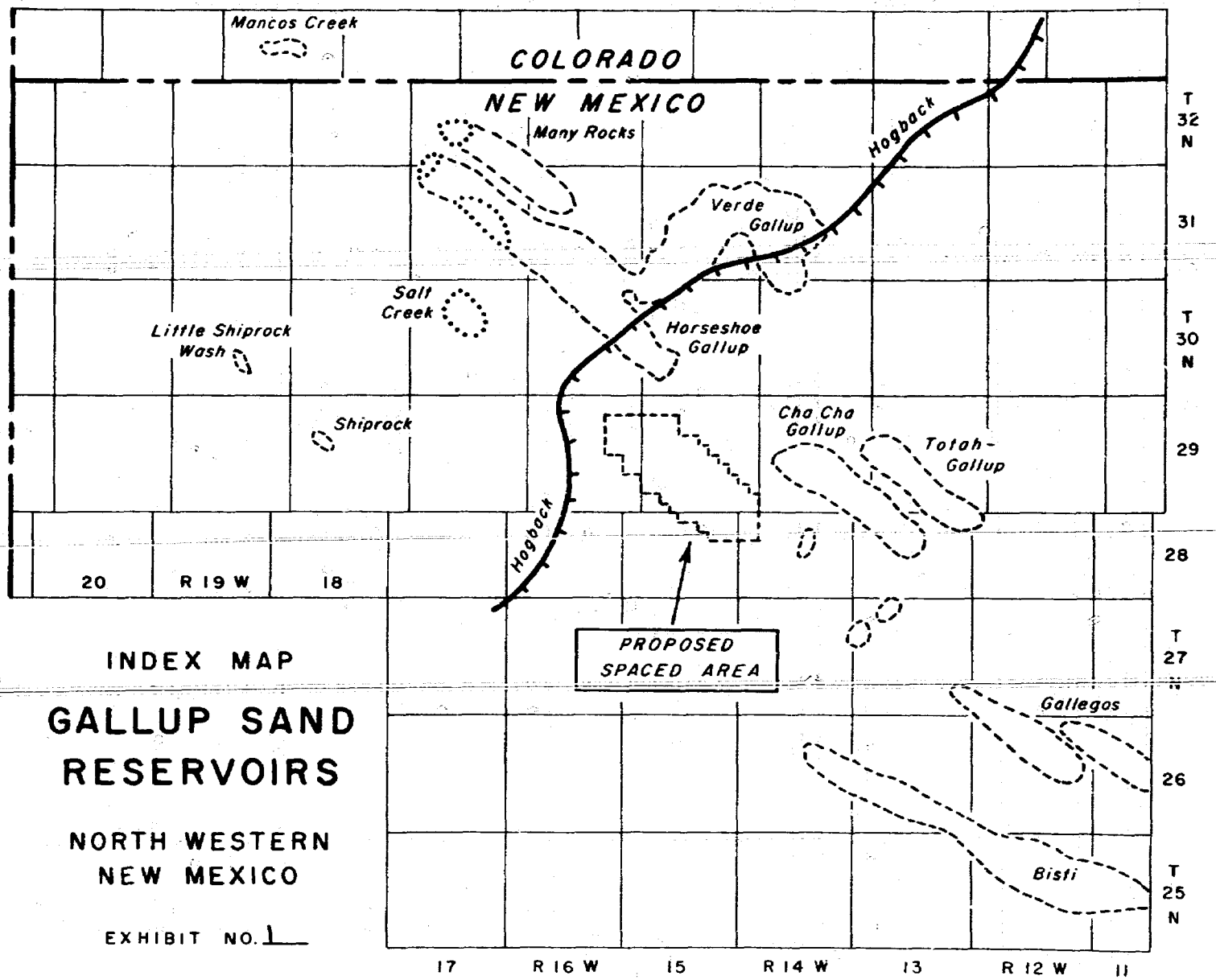


EXHIBIT NO. 6
HUMBLE OIL & REFINING COMPANY
POOL DEVELOPMENT ECONOMICS
SOUTH WATERFLOW POOL
SAN JUAN COUNTY, NEW MEXICO

Estimated Ultimate Production - Total Gross Bbls.	190,000
- Net Bbls. After Royalty (0.833)	158,000
Revenue Less Transportation and Production Taxes \$2.75 - \$0.25 - \$0.16 = \$2.34	\$ 370,000
Operating Expense Lease & Well	\$ 135,000
Operating Profit Before Overhead	\$ 235,000
Overhead @ \$0.15 per net bbl.	\$ 24,000
Operating Profit After Overhead	\$ 211,000
Investment: Drilling & Completion	\$ 450,000
Pump Equipment	55,000
Lease Equipment	<u>95,000</u>
	\$ 600,000
Intimate Status	(\$ 389,000)

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INDEX MAP
GALLUP SAND
RESERVOIRS

NORTH WESTERN
NEW MEXICO

EXHIBIT NO. 1

EXHIBIT NO. 5
HUMBLE OIL & REFINING COMPANY
COMPARATIVE RESERVOIR DATA
CHA CHA GALLUP FIELD AND SOUTH WATERFLOW AREA
SAN JUAN COUNTY, NEW MEXICO

	CHA CHA		SOUTH WATERFLOW
Reservoir Structural and Stratigraphic Features			
Producing Formation	Gallup Sand		Gallup Sand
Structure	Monocline		Nose & Monocline
Gas-Oil or Wtr-Oil Contact	None Indicated		Present; Not Defined
Type Accumulation	Stratigraphic Trap; Sand Bar		Stratigraphic Trap; Sand Bar
Producing Depth	4600'-5600'; Avg 5400'		4200'-4700'; Avg 4400'
Average Net Thickness - "A" Sand	6.5'		7'
- "B" Sand	6.0'		
Reservoir Rock Properties	<u>"A" Sand</u>	<u>"B" Sand</u>	<u>Upper Sand</u>
Average Porosity	14.7%	7.7%	11.7%
Average Permeability (Air)	57.0 Md	0.33 Md	70.2 Md
Connate Water Saturation	35.0 %		33.0 % (Est)
Formation Temperature	158°F.		128°F.
Initial Reservoir Pressure	1560 psig @ / 400' Datum		1603 psig @ / 1200' Datum
Reservoir Fluid Properties			
API Gravity - Average	43°		41°
Formation Volume Factor @ Orig Press	1.392		No Test
Gas-Oil Ratio @ Orig Press (SCF/Bbl)	649		No Test
Oil Viscosity @ Saturation Pressure and 158° F. - Cp	0.415		No Test

Exhibit 5

EXHIBIT NO. 8
HUMBLE OIL & REFINING COMPANY
VOLUMETRIC CALCULATIONS OF PRIMARY OIL RESERVES
SOUTH WATERFLOW, NW CHA CHA AND EAST BISTI AREAS
SAN JUAN COUNTY, NEW MEXICO

	<u>South Waterflow</u>	<u>NW Cha Cha</u>	<u>East Bisti</u>
Porosity - %	11.7	14.7	12.4
Pore Volume - Bbls/Acre-foot	908	1140	962
Permeability - Md	70	57	28
Connate Water - %	33	35	37.5
Formation Volume Factor, Original	1.40	1.39	1.28
Original Oil in Place - ST Bbls/Acre-foot	434	533	470
Primary Recovery - % Original Oil in Place	15	14	14
Average Net Pay - Feet	7	6.5	7
Primary Recovery - ST Bbls/Acre-foot	65	75	66
- ST Bbls/Acre	455	488	462

Exhibit 8

EXHIBIT NO. 9
HUMBLE OIL & REFINING COMPANY
WELL ECONOMICS: 40, 80, and 160-ACRE SPACING
SOUTH WATERFLOW AREA
SAN JUAN COUNTY, NEW MEXICO

SPACING - ACRES PER WELL	40	80	160
Primary Recovery			
Estimated Ultimate Production - Bbls/Acre	500	500	500
- Total Gross Bbls	20,000	40,000	80,000
- Net Bbls after Royalty (0.833)	16,660	33,320	66,640
Earnings Less Production Taxes \$2.75 - \$0.16 = \$2.59 per net bbl	\$ 43,200	\$ 86,300	\$172,600
Operating Expense			
Lease and Well Expense	16,500	21,600	28,900
40 Ac \$250/W-M & 5.5 Yr Life			
80 Ac \$300/W-M & 6.0 Yr Life			
160 Ac \$370/W-M & 6.5 Yr Life			
Operating Profit Before Overhead	26,700	64,700	143,700
Overhead @ \$0.15 per net bbl	2,500	5,000	10,000
Operating Profit After Overhead	24,200	59,700	133,700
Investment			
Drilling & Completion	42,000	44,000	47,000
Pumping Equipment	12,000	13,000	14,000
Lease Equipment	5,000	6,000	7,000
Total Investment	59,000	63,000	68,000
Ultimate Status	(\$ 34,800)	(\$ 3,300)	\$ 65,700

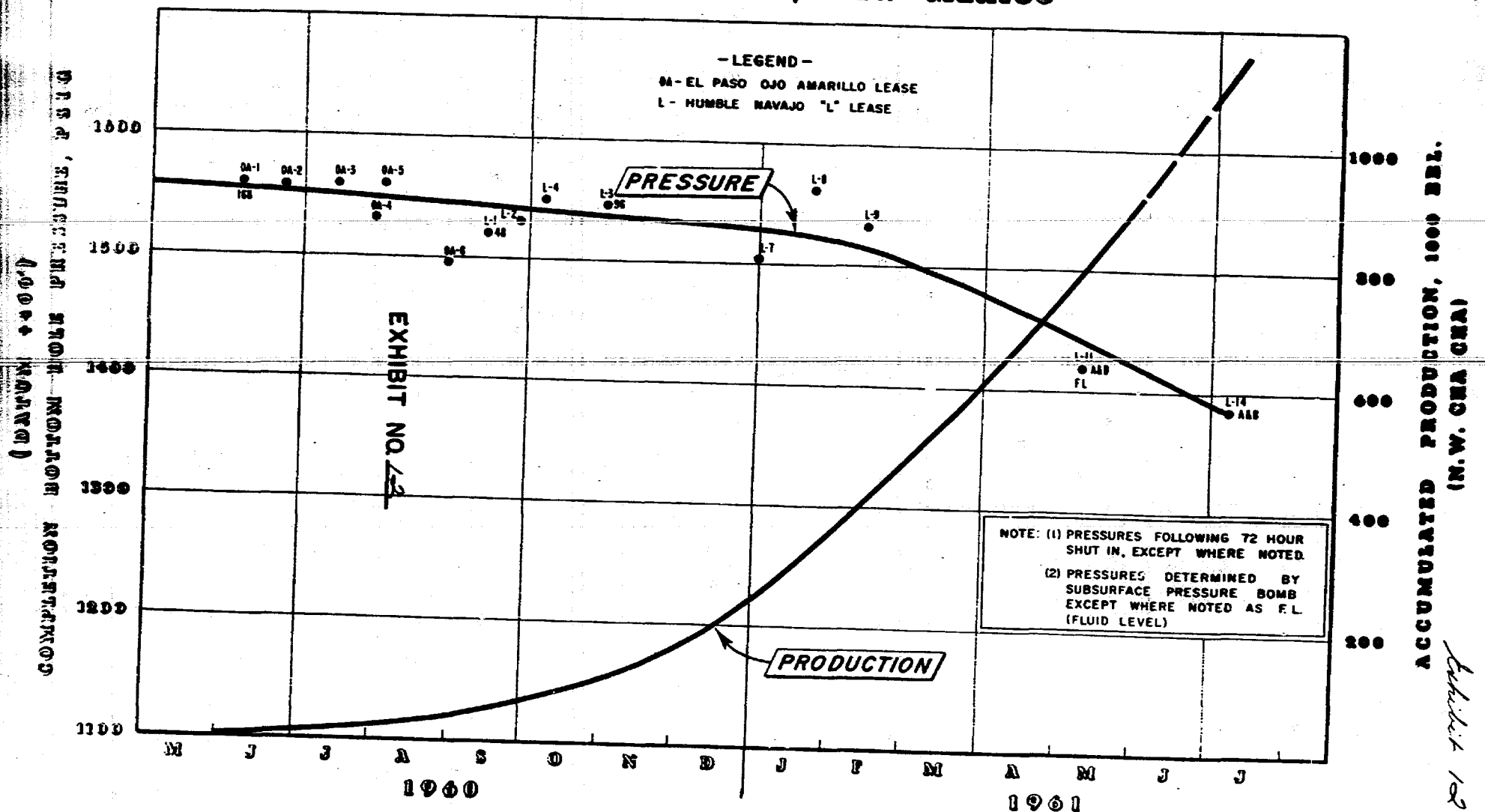
Exhibit 9

EXHIBIT NO. 10
HUMBLE OIL & REFINING COMPANY
COMPARATIVE RESERVOIR DATA
CHA CHA GALLUP FIELD AND SOUTH WATERFLOW AREA
SAN JUAN COUNTY, NEW MEXICO

	CHA CHA	SOUTH WATERFLOW
Reservoir Structural and Stratigraphic Features		
Producing Formation	Gallup Sand	Gallup Sand
Structure	Monocline	Nose & Monocline
Gas-Oil or Wtr-Oil Contact	None Indicated	Present; Not Defined
Type Accumulation	Stratigraphic Trap; Sand Bar	Stratigraphic Trap; Sand Bar
Producing Depth	4600'-5600'; Avg 5400'	4200'-4700'; Avg 4400'
Average Net Thickness - "A" Sand	6.5'	7'
- "B" Sand	6.0'	
Reservoir Rock Properties		
Average Porosity	"A" Sand 14.7%	"B" Sand 7.7%
Average Permeability (Air)	57.0 Md	0.33 Md
Connate Water Saturation	35.0%	33.0% (Est)
Formation Temperature	158°F.	128°F.
Initial Reservoir Pressure	1560 psig @ 400' Datum	1603 psig @ 1200' Datum
Reservoir Fluid Properties		
API Gravity - Average	43°	41°
Formation Volume Factor @ Orig Press	1.392	No Test
Gas-Oil Ratio @ Orig Press (SCF/Bbl)	649	No Test
Oil Viscosity @ Saturation Pressure and 158°F. - Cp	0.415	No Test

Exhibit 10

COMPLETION BOTTOM HOLE PRESSURES vs. TIME
ACCUMULATED OIL PRODUCTION vs. TIME
CHA CHA GALLUP FIELD
SAN JUAN COUNTY, NEW MEXICO



PRESSURE INTERFERENCE DATA

NAVAJO "L" LEASE

CHA CHA GALLUP FIELD

SAN JUAN COUNTY, NEW MEXICO

JUNE 16 - AUG. 4, 1961

LEGEND

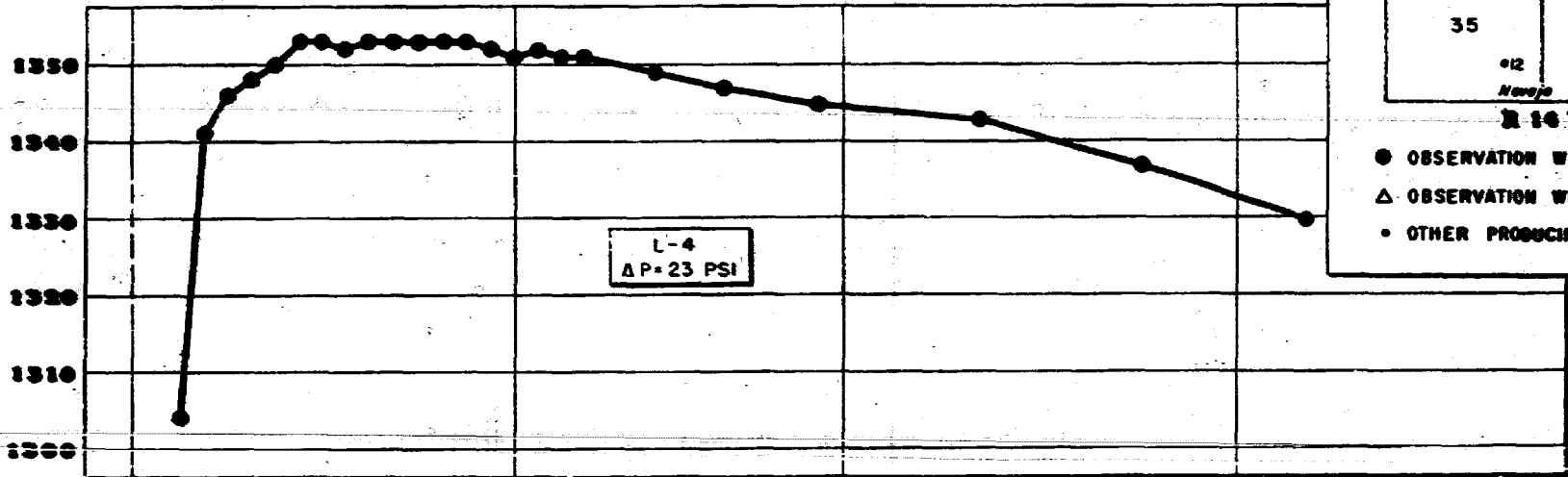
01	Δ3	014
26		25
Δ2	04	Δ6
011	Δ7	05
35		36
012	010	09
Navajo "L"		

R 14 W

- OBSERVATION WELL - SHUT IN
- Δ OBSERVATION WELL - PRODUCING
- OTHER PRODUCING WELLS

NAVAJO "L" NO. 4 STATIC DRP

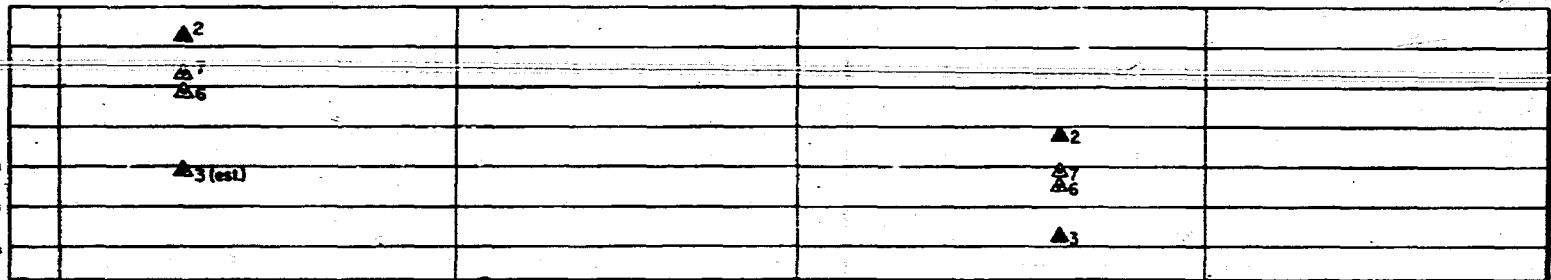
PSIG - 0400' (+500')



FLOWING DRP

PSIG (+500')

NAVAJO "L" NOS. 2, 3, 4, 6, 7



AVG. MONTHLY OIL PROD., BPD

NAVAJO "L" NOS. 2, 3, 4, 6, 7

NAVAJO "L" NOS. 2, 3, 4, 6, 7

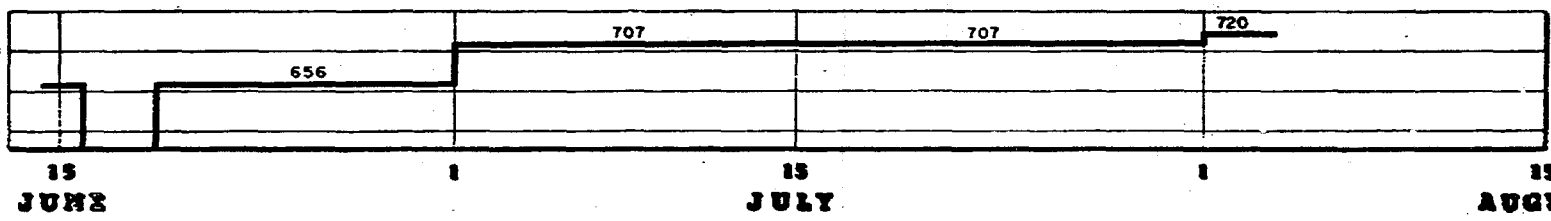


EXHIBIT NO. 13