

OIL & GAS CONSERVATION COMMISSION  
Meeting: May 21, 1969  
Mr. John Bannister, Exec Sec.



OFFICE OF  
**Oil and Gas Conservation Commission**  
STATE OF ARIZONA  
ROOM 202  
1624 WEST ADAMS  
Phoenix, Arizona 85007  
PHONE: 271-5161

A G E N D A

Meeting  
May 21, 1969  
City of Douglas Council Chambers

10:00 a.m.

Call to order

1. Approval of minutes of meeting of April 16, 1969
2. ✓ Executive Secretary report
3. ✓ Geologist report
4. Old business - announcement of Kerr-McGee decision
5. New business -  
1. Bunnister 2 Searlock 3 Pje
6. Adjourn

Kerr Hearing - Motion - Grant well subject to testing to satisfaction of Comm - if cant arrange test then - NO go

Issue Order Tomorrow

IF YOU ARE UNABLE TO ATTEND THIS MEETING, PLEASE NOTIFY THIS OFFICE AS SOON AS POSSIBLE.

Note change notice of Billy Chrom. ship assume to elected

OIL AND GAS CONSERVATION COMMISSION  
1624 West Adams - Suite 202  
Phoenix, Arizona 85007

Minutes of Meeting  
April 16, 1969

Present:

Mr. Lucien B. Owens, Chairman  
Mr. George T. Siler, Vice Chairman  
Mr. Ralph W. Bilby, Member  
Mr. Kenneth G. Bentson, Member  
Mr. Frank E. Moore, Member  
Mr. John Bannister, Executive Secretary  
Mr. James R. Scurlock, Geologist  
Mr. James A. Lambert, Administrative  
Assistant  
Dr. Willard Pye, University of Arizona  
Mr. Fritz Ryan, State Land Department.

Chairman Lucien B. Owens called the meeting to order at 9:30 a.m.

It was moved, seconded and passed that the minutes of the meeting of April 16, 1969, be approved.

Reports of the Executive Secretary and Geologist were accepted.

Discussion of the 1969-70 budget was postponed until the next meeting as final legislative approval has not been received.

Letters from the Mayor of the City of Douglas and the President of the Douglas Chamber of Commerce inviting the Commission to hold the May meeting in Douglas were read. The Executive Secretary was instructed to accept the invitations and the meeting was scheduled for Wednesday, May 21, 1969, at 10:00 a.m., at the City Council Chambers in Douglas, Arizona.

Dr. Willard Pye of the University of Arizona presented the Commission a bound copy of graduate student Richard Dunlap's thesis on the geology of the Pinta Dome area. This was given in appreciation for the assistance and use of logs, etc., in the preparation thereof.

Mr. Fritz Ryan extended greetings and congratulations from the State Land Department to Mr. Moore as a new Commissioner.

It was moved, seconded and passed that Mr. Ralph Bilby <sup>be elected</sup> ~~assume~~ Chairmanship of the Commission.

It was further moved, seconded and passed that Mr. Kenneth Bentson become Vice Chairman of the Commission.

Minutes of Meeting  
April 16, 1969  
Page 2

A vote of thanks was extended to Chairman Owens and Vice Chairman Siler for the time and effort they expended in the past.

Meeting adjourned at 9:50 a.m. to be followed by hearing of Case 36.

APPROVED May 21, 1969

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Ralph W. Bilby, Chairman



OFFICE OF  
**Oil and Gas Conservation Commission**  
STATE OF ARIZONA  
ROOM 202  
1624 WEST ADAMS  
Phoenix, Arizona 85007  
PHONE: 271-5161

May 13, 1969

Memo to: Commissioners  
From: John Bannister  
Re: Report of Activity

I am enclosing a copy of the recommendations of Mr. Ewell Walsh concerning Kerr-McGee's Hearing, Case No. 36. I have discussed Mr. Walsh's recommendations at length with him and I am pleased to report we are in complete accord as to his recommendations. Consequently, it is my recommendation that Kerr-McGee's request to drill this additional well for scientific purposes be granted. However, I feel that should you grant this request, the order should contain language to the effect that immediately upon completion of the well testing procedures be instigated and that the well not be allowed to go into full production until such time as the Commission is satisfied with the spectrum of tests run. I feel that we should also indicate in the Order that Humble, Kerr-McGee and the Commission (and Mr. Walsh as consultant) meet together to work out complete testing procedures, however these procedures need not be a portion of the order and can be arrived at as needed at a later date.

I most strongly urge that, if my recommendation is accepted and Kerr-McGee is allowed to drill this well, production be delayed due to the fact that undue disturbance of reservoir conditions would be instigated, making the ultimate goal of the well, i.e., interference and drainage tests, much more difficult to secure and evaluate.

I have spoken to Chairman Bilby and he has suggested that the Commission meet prior to the called time of 10:00 a.m. to consider Kerr-McGee's request. Inasmuch as our 10:00 a.m. meeting is primarily a publicity effort, I consequently am taking the liberty of suggesting that we meet at 9:30 in the City Council Chambers to consider this matter. We, of course, will have full opportunity to discuss this Tuesday evening, also.

I am leaving for Douglas on May 14th to make arrangements for

our meeting. Mr. Moore and I will see that necessary reservations are secured. Mr. Bentson has advised that he will be out of the country during the time of this meeting. As soon as possible I will advise you as to hotel arrangements, etc. It is suggested that you try to time your arrival in Douglas prior to 7:00 Tuesday evening so that we all can enjoy dinner, etc., together.

There has recently been a substantial lease play in the Northern part of Mohave County and apparently a well will be drilled in the not too distant future in the center of the Northern portion, somewhere near the Utah border.

We are enjoying at this time drilling of more wells than the State has had in quite a while. Most drilling is concentrated, of course, in Apache County in and around and primarily North of the Dineh-bi Keyah Field. Consolidated has, as you are aware, brought in one discovery and are currently working on two offsets to this discovery well. One of the offsets is capable of producing 25 barrels of oil per day and the other approximately 10 barrels of oil per day. Consolidated is currently considering additional frac and acid treatments in an effort to increase production of both wells, however they have advised that they can produce both wells with some margin of profit.

I recently attended a meeting in Denver of a committee of the Four Corners Regional Commission, to which I was appointed by Governor Williams. This committee took under advisement mineral and fuel resources of the Four Corners area and arrived at the conclusion that a consulting firm be hired to make a basic initial study from which the committee would develop a plan for the stimulation of the mineral and fuel exploration of the four States. At my suggestion a sub-committee will be appointed to specifically consider the mineral and fuel problem on the Indian Reservations and in what manner their leasing procedures, regulations, etc., might be amended so as to offer more encouragement to exploration. This committee will meet again in the early part of June and it is anticipated the aforementioned sub-committee will be appointed at that time. The meeting was attended by representatives of the four States as well as the various Federal agencies concerned with minerals and fuels.

New Permits:

Hopkins #1 Coconino Cattle Co. Strat, Center W/2 W/2 NW/4  
8-17N-5E, Yavapai County.

Riddle-Gottlieb #1 Navajo, SW NW 30-36N-27E, Apache County.

Hopkins #34-2 Federal, NE NW 34-18N-5E, Yavapai County.

Gulf #1 Navajo, NE NE 32-6N-7W, Apache County.

Depco #1 Navajo, NW NW 2-38N-30E, Apache County.



OFFICE OF  
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May 13, 1969

**GEOLOGIST'S REPORT**

FROM: JAMES SCURLOCK  
TO : COMMISSIONERS

APACHE COUNTY

**Consolidated Oil & Gas #1 Navajo**

T41N, R28E, G & SRM

Sec. 2: SW/4 SW/4

East Boundary Butte Field

Permit #481

Currently pumping ten barrels of oil plus three barrels of water per day.

**Consolidated Oil & Gas #2 Navajo**

T41N, R28E, G & SRM

Sec. 3: NE/4 SE/4

East Boundary Butte Field

Permit #488

Still a waiting location.

**Consolidated Oil & Gas #3 Navajo**

T41N, R28E, G & SRM

Sec. 3: NE/4 SW/4

East Boundary Butte Field

Permit #490

Drill Stem Test #4 - Interval 5228-5300 (lower paradox).  
Recovered 360' of gas-cut and slightly oil-cut mud and salt water plus 1740' of gas-cut salt water.

Drill Stem Test #5 - Interval 5675-5706 (Mississippian).  
Recovered 270' of gas-cut and oil-cut mud plus 2320' of gas-cut salt water.

Total depth - 5706'. Set 5½" casing to total depth with 300 sacks of cement.

Acidized with 1000 gallons of acid. Perforated Akah Limestone 4778' - 4882'. Installed pump. Currently pumping 25 barrels of oil plus 58 barrels of water per



Page 2  
Geologist's Report  
5-13-69

APACHE COUNTY (Cont.)

Consolidated Oil & Gas #3 Navajo (Cont.)  
day.

Formation tops:

Coconino	1848'
Hermosa	3805'
Ismay	4505'
Desert Creek	4610'
Akah	4769'
Molas	5383'
Mississippian	5529'

Kerr-McGee #C-1 Navajo  
T36N, R30E, G & SRM  
Sec. 33: NW/4 SW/4  
Permit #484

Acidized with 1500 gallons of acetic acid. Fracked  
with 80,220 gallons of crude oil plus 72 pounds of  
sand and 3500 pounds of adomite. Currently testing  
on pump.

This field development well will probably be a small  
producer if at all.

Odessa #2 Navajo 8447  
T37N, R29E, G & SRM  
Sec. 33: SE/4 SE/4  
Permit #489

Total depth 3605'. Dry and abandoned 4-13-69. No  
shows encountered.

Formation tops:

Chinle	Surface
De Chelly	404'
Cutler	904'
Hermosa	2303'
Molas	2906'
Mississippian	3008'
Elbert	3160'
McCracken	3327'
Aneth	3429'
PreCambrian	3590'

Page 3  
Geologist's Report  
5-13-69

APACHE COUNTY ( Cont. )

Riddle-Gottlieb #1 Navajo 8841  
T36N, R27E, G & SRM  
Sec. 30: SW/4 NW/4  
Permit #494

"TIGHT HOLE"

Spud 4-23-69. Contractor: Circle A Drilling Company.  
Set 8-5/8" to 250'. Total depth is 3460' at approxi-  
mately the top of the Mississippian. No shows were  
encountered. Dry and abandoned.

Gulf #1 Navajo BS  
T37N, R29E, G & SRM  
Sec. 12: NW/4 NE/4  
Permit #491

"TIGHT HOLE"

Spud 4-15-69. Set 8-5/8" at 368' with 200 sacks.  
Drill stem test (Barker Creek Zone) 3200-3325. Good  
blow throughout test (nonflammable gas; probably  
helium bearing). Recovered 300' of gas-cut mud. No  
show of oil.

Formation tops:

DeChelly	755'
Hermosa	2520'
Barker Creek	3226'
Molas	3460'
Mississippian	3530'
Ouray	3700'
Elbert	3730'
Igneous	3840'

Total depth - 4145'. Dry and abandoned.

Gulf #1 Navajo 1219  
T6N, R7W, NSM  
Sec. 32: NE/4 NE/4  
Permit #496

Still a waiting location.

Page 4  
Geologist's Report  
5-13-69

YAVAPAI COUNTY

Hopkins #34-1Y Federal  
T18N, R5E, G & SRM  
Sec. 34: SW/4 NW/4 "TIGHT HOLE"  
Permit #482

Continuing to pump fresh water.

Hopkins #1 Frye Strat  
T17N, R5E, G & SRM  
Sec. 34: SW/4 NW/4 "TIGHT HOLE"  
Permit #492

Total depth - 1405' in granite. No shows.

Formation tops:	
Permian Supai	Surface
Mississippian Redwall	582'
Devonian Martin	753'
Cambrian Tapeats	1232'
Pre-Cambrian Igneous	1273'
Pre-Cambrian Granite	1370'

Good water flow at 945'. Well was turned over to land owner as water well. Abandoned April 24, 1969.

Hopkins #1 Coconino Cattle Company Strat  
T17N, R5E, G & SRM  
Sec. 8: C/W/2 NW/4 "TIGHT HOLE"  
Permit #493

Total depth - 1195' in granite. No shows. Well turned over to land owner as a water well. Abandoned 5-5-69.

Formation tops:	
Supai	Surface
Mississippian Redwall	512'
Devonian Martin	696'
Cambrian	1120'
Granite Wash	1152'
Granite Pre-Cambrian	1193'

Hopkins #34-2 Federal  
T18N, R5E, G & SRM  
Sec. 34: NE/4 NW/4 "TIGHT HOLE"  
Permit #495

Set 10-3/4" at 51' with 60 sacks of cement. Currently drilling 8-3/4" hole at 1043' in Devonian dolomite.

Formation tops:	
Mississippian	500' (Approximately)
Devonian	660' (Approximately)

Page 5  
Geologist's Report  
5-13-69

SCUTTLEBUTT:

The Arizona Oil Report has discontinued publication leaving the Southwest Oil and Gas News--a weekly publication--as our remaining industry newspaper.

Texaco has filed approximately 25,000 acres in Mohave County in Townships 38, 39, 40, and 41 North--Ranges 7 and 8 West. This lease play has probably been prompted by the show of oil encountered approximately 30 miles to the north in Washington County, Utah, in the Buttes Gas and Oil #1-C-36 Anderson Junction Well which is currently being drilled by Willard Pease Drilling Company in Sec. 36-T40S, R13W. This well had a show of oil in the Pennsylvanian. Well was put on pump; pumped 14 barrels of oil per day. Plans now are to deepen this test with cable tools.

The Arizona Helium Corporation in Navajo has three wells currently tied into the plant. They are: the Eastern #21 Ancon Santa Fe (Sec. 31-T20N-R28E), the Eastern #35 Santa Fe (Sec. 27-T20N-R27E), and the Crest #1 Santa Fe (Sec. 25-T20N-R27E). The plant was put on stream on April 10 with these three wells delivering approximately 450,000 cubic feet of raw gas per day. Since then production has declined to approximately 200,000 cubic feet of gas per day because of water encroachment in the #1 Santa Fe and the Eastern #35 Santa Fe.

A compressor located approximately  $\frac{1}{4}$  mile from the plant strengthens the line pressure to 200 pounds as it enters the plant.

The raw gas consists of approximately 8.8% helium. Thus, at the rate of 200,000 cubic feet of gas per day, the plant should theoretically be able to produce 528 MCF of Grade A Helium per month. This is about a third of what is estimated to be required to break even economically.

Immediate plans include working over the Crest #8X Well (Sec. 25-T20N-R27E). This well has had some problems with water; however, the operator has hopes in this well. This #8X Well is already tied into the plant but is not in production.

Thus the over-all aspect of the Arizona Helium Plant remains poor. It would appear that their only hope in this enterprise is to develop additional helium reserves on their own acreage. We understand that the company plans to drill a number of exploratory wells in the Navajo area this year.

Page 6  
Geologist's Report  
5-13-69

SCUTTLEBUTT: (Cont.)

Rumor has it that Depco will drill a wildcat in Apache County in Sec. 2-T38N-R30E. This well would be located approximately 15 miles north of the Dineh bi Keyah Field.

It is also rumored that the Phoenix Eastern Oil Fields, Incorporated (Warren, Pennsylvania) is scheduled to drill a wildcat well in the SE/4 of Sec. 2-T24S-R31E, Cochise County. This will be a 7000' test located approximately 25 miles east of Douglas.

# MONTHLY FINANCIAL REPORT

1 RECEIPTS MONTH OF	2 CLASSIFICATION	3 RECEIPTS	4 APPROPRIATED RECEIPTS	5 UNAPPROPRIATED RECEIPTS	6 TOTAL ALL RECEIPTS YEAR TO DATE
April 1969					
150 00	1 Permits to drill			150 00	825.00
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
150 00	TOTAL CURRENT MONTH RECEIPTS			150 00	XXXXXX
	TRANSFERS IN			(200 00)	
XXXXXX	BALANCES BROUGHT FORWARD			5,632 75	XXXXXX
	TOTALS - MONTH AND YEAR TO DATE			5,582 75	825.00

6 CLAIMS PAID MONTH OF	7 EXPENDITURES FUND TITLES	8 TOTAL AMOUNT AVAILABLE YEAR TO DATE	9 CLAIMS PAID YEAR TO DATE	10 OUTSTANDING ENCUMBRANCES	11 UNENCUMBERED BALANCE
April 1969					
	1 Personal Services:				
3,725 00	2 General Fund	36,350 00	30,476 26	-	5,873 74
200 00	3 Conservation Fund	9,000 00	6,687 50	-	2,312 50
795 13	4 Current Expenditures	6,012 00	4,104 09	759 89	1,151 02
356 85	5 Travel - State	5,545 00	3,779 37	1,284 84	480 79
228 94	6 Travel - Out of State	3,248 00	1,474 37	174 00	1,599 63
23 40	7 Current Fixed Charges	525 00	119 15	284 00	121 85
200 62	8 Professional Services	2,000 00	520 62	250 00	1,229 38
165 36	9 Capital Outlay	582 00	517 92	-	64 08
-	10 Museum N. Arizona	2,500 00	1,875 00	625 00	-
625 00	11 Arizona Bureau Mines	2,500 00	2,500 00	-	-
	12				
	13				
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	23				
	24				
	25				
	26				
	27				
	28				
	29				
	30				
6,314 30	TOTALS	68,265 00	52,054 28	3,377 73	12,832 99

FORM 12-A POST AUDITOR

TO BE FILED WITH THE POST AUDITOR BY THE 15TH OF EACH MONTH

AGENCY Oil & Gas Conservation Commission

DIVISION \_\_\_\_\_

IDENTIFICATION CODE NO. 1-7-10-000-0000

1	2	3	4
CLAIMS PAID YEAR TO DATE	OBJECT CODE NO.	DISTRIBUTION OF EXPENDITURES CLASSIFICATION	CLAIMS PAID MONTH OF
			<u>April 1969</u>
35,988.76	110	1 Salaries, wages: employees	1 3,725.00
1,175.00	150	2 Per diem: board members	2 200.00
		3	3
287.12	211	4 Postage	4
1,383.86	212	5 Telephone, telegraph	5 122.09
1,536.99	221	6 Travel -State meals and lodging	6 43.40
718.60		7 mileage reimbursed private car	7 76.60
117.48		8 fares for planes, trains, etc.	8 26.00
1,317.15		9 State-owned auto expense	9 200.55
29.15		10 telephone, taxi, etc.	10 4.30
60.00		11 registration fees at meetings	11
		12	12
		13	13
292.02	231	14 Travel-out of State meals and lodging	14 73.44
1,053.50	233	15 fares for plane, train	15 121.00
7.50	234	16 State-owned auto expense	16 4.50
81.35	235	17 telephone, taxi, etc.	17 5.00
40.00	236	18 registration - meetings	18 25.00
		19	19
520.62	240	20 Professional services	20 200.62
		21	21
47.88	262	22 Mntns/repairs to office equip., furniture	22 129.62
440.91	294	23 Legal advt., notary, court, recording fees	23
-	295	24 Transportation of things (well samples)	24
4,467.19	299	25 Miscellaneous (blueprint service, Ariz Bu	25 625.00
		26 Mines, Museum N. Arizona)	26
		27	27
		28	28
983.71	310	29 Office supplies	29 543.42
555.03	360	30 Scientific supplies	30
3.06	370	31 Mntns supplies (duplicate keys)	31
60.33	390	32 Other supplies (film)	32
		33	33
		34	34
-	411	35 Rent, office equip: copy machine	35
		36	36
14.50	421	37 Bond (notary public)	37
104.65	430	38 Subscription/organization dues	38 23.40
		39	39
		40	40
517.92	611	41 Office equipment/furniture	41 165.36
		42	42
		43	43
		44	44
		45	45
250.00	995	46 To create revolv fund	46
		47	47
		48	48
		49	49
		50	50
		51	51
		52	52
		53	53
		54	54
		55	55
52,054.28		TOTAL	6,314.30

PETROLEUM ENGINEERING  
RESERVOIR STUDIES  
EVALUATIONS  
GEOLOGICAL STUDIES

EWELL N. WALSH, P.E.  
President

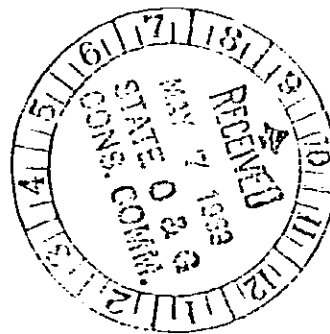
**WALSH  
ENGINEERING & PRODUCTION  
CORPORATION**

PETROLEUM CLUB PLAZA BUILDING  
P. O. BOX 254  
FARMINGTON, NEW MEXICO 87401

LEASE MANAGEMENT  
CONTRACT PUMPING  
DRILLING SUPERVISION  
WORKOVER SUPERVISION

TELEPHONE 325-8293

May 6, 1969



Mr. John Bannister  
Executive Secretary  
Oil & Gas Conservation Commission  
State of Arizona  
1624 W. Adams, Room 202  
Phoenix, Arizona 85007

Ref: Case No. 36  
Kerr-McGee Corporation  
For permission to drill and produce  
an additional Lower Hermosa Formation  
well in the SE/4 of Section 32,  
Township 36 North, Range 30 East,  
Dineh-bi-Keyah Field, Apache County,  
Arizona.

Dear Mr. Bannister:

I have reviewed all the data, exhibits and transcript of  
testimony presented at the hearing of the above-referred-to  
case.

Kerr McGee Corporation presented testimony as follows:

1. Propose to drill, complete and produce a well,  
Navajo No. 11, in the NW/4SE/4 Section 32, T36N,  
R30E, Dineh-bi-Keyah Field.
2. The purpose of drilling the well is to obtain scientific  
information to determine if the 160-acre spacing is or  
is not the proper spacing on which to develop the  
Dineh-bi-Keyah Field.
3. In order to obtain scientific information, the well  
would be produced and producing bottom hole pressures  
recorded.
4. Past pressure surveys and completion attempts indicate  
that inconsistencies are present in the field that  
could indicate that one well is not effectively  
draining 160 acres.



Mr. John Bannister

-2-

May 6, 1969

5. Granting of application will protect correlative rights.
6. Granting of application will result in optimum recovery of hydrocarbons from the field.

The following are my comments concerning the Kerr McGee testimony.

1. The proposed location of the well does not directly offset any other operator other than the Kerr McGee Corporation. The proposed location, in Section 32, T26N, R30E, is located almost in the center of four presently producing wells.

There is no objection to the location of the well.

2. The purpose of drilling the well to obtain scientific information, presumably reservoir information, concerning drainage radius of wells.

The drilling of the well will enable the operator to obtain scientific or reservoir information to determine an effective radius of drainage of the wells in Section 32. The information will be valuable in determining if the 160-acre spacing is the proper spacing for the field.

There is no objection to drilling the well for this purpose.

3. The scientific information will be obtained by producing the well and recording the bottom hole producing pressures.

The pressure information is necessary in determining the effective drainage radius of a well. The method of using the producing bottom hole pressures is not, in my opinion, the proper method to use in obtaining the necessary pressure information. The necessary information, in my opinion, can be only obtained by shutting in wells Nos. 1, 2, 3-X and 4 at the time of completion, recovery of load oil and initial potential of No. 11. This will allow the reservoir to stabilize as much as possible in a reasonable time and then produce well Nos. 1, 2, 3-X and 4 while observing the pressure in No. 11. Well No. 11 would remain shut in

Mr. John Bannister

-3-

May 6, 1969

until it was determined, by bottom hole pressure recordings, that the well is or is not being affected by the production from Well Nos. 1, 2, 3-X and 4.

Kerr McGee Corporation stated, during the testimony, that they would be willing to submit, assuming that an order would grant permission to drill and produce Well No. 11, to the Commission a testing schedule, for Commission approval, for obtaining the necessary information. They also stated that if Humble Oil Company personnel wished to meet with Kerr McGee and Commission personnel concerning the testing schedule they would not have an objection.

There is no objection to obtaining the scientific information in so far as it is determined that the correct information is obtained in a proper manner.

4. Past pressure surveys and completion attempts indicate inconsistencies in field.

In my opinion, the past pressure surveys do indicate inconsistencies, which can be normal between wells in the same reservoir; however, they also could indicate effective communication between wells. Due to not having information normally obtained from an interference test, the drilling of Well No. 11 can help to determine if there is or is not effective communication between wells.

5. Granting of application will protect correlative rights.

In my opinion, the proposed location of the well will not have an effect on the correlative rights of other companies or company due to the fact that the well does not directly offset any well except those operated by Kerr McGee Corporation.

6. Granting of application will result in optimum recovery.

In my opinion, the drilling of the proposed well will present information that will enable the operators and Commission to determine if the field is being developed in a proper spacing.



Mr. John Bannister

-4-

May 6, 1969

Humble Oil Company presented testimony as follows:

1. Previous pressure information on wells in Section 32, when extrapolated to a point of 72 hours, indicated that wells were in communication.

In my opinion, the pressure information does indicate the possibility of the wells being in communication; however, information is not available that is normally obtained from an interference test.

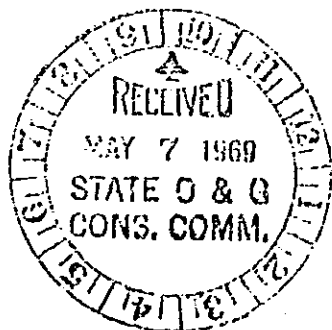
2. The drilling of another well in Section 32 will affect the drainage pattern of the other wells in Section 32 and, therefore, create a chain effect on drainage patterns of wells that will affect Humble's wells.

In my opinion, the probability of such effect can happen; however, such effect would not be to the extent that the correlative rights of Humble would be affected. The majority of the effect would occur in the wells owned by Kerr McGee, and the Humble Well No. 138-1, located in Section 6, T35N, R30E, would be protected by the Kerr McGee Well "E", 1-X located in Section 5, T35N, R30E.

#### RECOMMENDATIONS

The following are my recommendations concerning Case No. 36.

1. Permission be granted to drill the proposed Navajo No. 11 in the SE/4 of Section 32, Township 36 North, Range 30 East, Apache County, Arizona.
2. That upon completion, after recovery of load oil and initial potential, the Navajo No. 11 remain shut in until completion of interference test.
3. That the Wells Navajo 1, 2, 3-X and 4 be shut in at the same time Well No. 11 is shut in and record bottom hole pressure build up with bottom hole sentry.
4. That a bottom hole pressure bomb be run in Well No. 11 at time of shut in, or, if necessary to pull tubing, at the time the tubing is pulled from well. The



Mr. John Bannister

-5-

May 6, 1969

bottom hole pressure bomb should remain in Well No. 11 to continuously record bottom hole pressures throughout the entire interference test or a maximum of 96 hours. In the event there is no indication at the end of 96 hours of fluid movement from the area of Well No. 11, the well shall remain shut in and bottom hole pressures recorded daily until permission is granted by the Commission to produce the well.

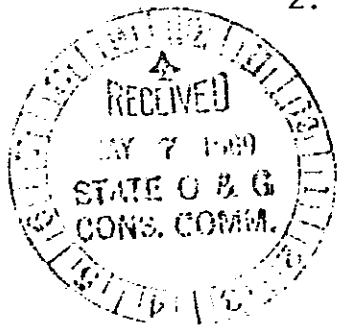
5. Initiate production from the Navajo No. 4 twenty-four hours after Wells Nos. 1, 2, 3-X, 4 and 11 were shut in and not before bottom hole pressure bomb is run in Well No. 11.
6. Initiate production from the Navajo No. 3-X well approximately 36 hours after all above wells were shut in.
7. Initiate production from the Navajo No. 2 well approximately 48 hours after all above wells were shut in.
8. Initiate production from the Navajo No. 1 well approximately 60 hours after all above wells were shut in.
9. That the before recommended testing procedure be used at the time the Navajo Well No. 11 is completed and before the well is put on continuous production.

You may note that I have incorporated some of the procedure suggested by Kerr McGee concerning the test program. Objections from Kerr McGee on my suggested procedure will probably be as follows.

1. Navajo No. 11 remain shut in and not produced if well is completed before the scheduled July, 1969, bottom hole pressure survey.

In my opinion, the well should not be put on continuous production until after the completion of the interference test in order to prevent disturbing the pressure or fluid movement in the area of the Navajo No. 11 well.

2. Shut in of Navajo 1, 2, 3-X and 4 longer than they suggested.



Mr. John Bannister

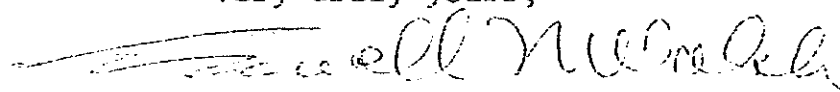
-6-

May 6, 1969

In my opinion, during the initial stage, the shut in time should be a minimum of 24 hours. The 24 hours should be a minimum time to allow the reservoir to stabilize as much as possible. They have suggested a minimum of 12 hours shut in during the initial stage; however, they have only stated that the 12 hours is sufficient and have not presented any bottom hole pressure build up curves to substantiate the shorter time interval.

If you wish to have further explanation, please do not hesitate to call upon me.

Very truly yours,



Ewell N. Walsh, P. E.  
President

ENW:lt

