BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 7, 1956

IN THE MATTER OF:

Application of Gulf Oil Corporation for an order granting permission to convert its G. C. Matthews Well No. 6 into a salt water disposal well in the San Andres formation of the Monument Pool in accordance with New Mexico Oil Conservation Commission Statewide Rule 701. Applicant, in the above-styled cause, seeks an order granting permission to convert its G. C. Matthews Well No. 6 located 1650 feet from the South line and 990 feet from the East line of Section 6, Township 20 South Range 37 East, Lea County, New Mexico, into a salt water disposal well. Said well is presently completed in the Monument-Blinebry Pool, but it is proposed to plug back to the lower portion of the San Andres formation of the Monument Pool for water disposal. Applicant proposes to inject salt water through perforated 7 inch casing at intervals from 4300 to 4620 and 4670 to 4720 feet.

Case No. 1121

BEFORE:

Warren W. Mankin, Examiner

TRANSCRIPT OF HEARING

MR. MANKIN: The hearing will come to order. The next case is Case No. 1121.

(Mr. Jack Cooley, Attorney for the Oil Conservation Commission, read the title of the within case.)

MR. CAMPBELL: Mr. Jack M. Campbell of Campbell and Russell,

Roswell, New Mexico, appearing for the Gulf Oil Corporation. We have two witnesses to be sworn.

(Witnesses sworn by Mr. Mankin.)

MR. GUY A SCHWARTZ

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

DIRECT EXAMINATION

By MR. CAMPBELL:

Q Would you state your name, please?

A Guy A. Schwartz.

Q Where do you live, Mr. Schwartz?

A Roswell, New Mexico.

Q By whom are you employed?

A The Gulf Oil Corporation.

Q In what capacity?

A I am a staff production geologist.

Q Will you state for the Examiner, briefly, your educational and professional background and experience?

A I graduated from Ohio State University in March, 1951. I was employed by the Stanolind Geophysical until December, 1951, when I joined the Gulf Geological Department and I have worked in New Mexico since that time.

Q Are you, in connection with your work, have you had occasion to make a geological study of the general area involved in this application?

A I have.

Q Have you had occasion to make particular studies of the

geology of the wells and the formations involved in this particular application?

A Yes, sir.

Q Are you then acquainted with the application of the Gulf Oil Corporation in this case No. 1121?

A I am.

Q I refer you to what has been already marked as Gulf's Exhibit No. "1" in Case No. 1121, and ask you to state what that is?

A Exhibit No. "1" is a North-South cross section through the Gulf No. 6, Matthews, which is the proposed salt water injection well, showing the proposed perforated intervals -- there are two intervals there -- in relation to the adjacent wells within that area on the line which is shown on the plat.

Q Name the levels?

A -- Which include going from North to South in the Amerada No. 3 Lambert, and the Amerada No. 4 Lambert, Gulf No. 4 Matthews, Gulf No. 6 Matthews, the subject well, Gulf No. 3 Matthews, and the Sinclair No. 2 Barber.

Q Those wells are the ones shown on the Exhibit, A to A Prime, is that correct?

A That is correct.

Q Referring particularly to the plat in the upper right hand corner of Gulf Exhibit No. "1", what does that show with particular reference to the location of the proposed disposal well?

A The proposed disposal well is located 1,650 feet from the South line and 990 feet from the East line of Section 6, Township 20 South Range 37 East, and it is at the present time a Blinebry

producer.

Q Does the red mark on the plat in the upper right hand corner of Exhibit "1", indicate the Gulf lease?

A It does.

Q And this proposed disposal well is shown in that portion of the Exhibit with a red circle, is it not?

A That is correct.

Q And the North-South green line and East-West green line indicate your cross section?

A That is correct.

Q Now Mr. Schwartz, I refer you to Gulf Oil Corporation's Exhibit "2", will you state what that is?

A It is an electric Schlumberger electrical log of the subject well.

Q That is the log of the Gulf No. 6 Matthews which is the proposed disposal well, is that correct?

A That is correct.

Q And Mr. Schwartz, is essentially the same information appearing on that log reflected in Gulf Exhibit No. "1" in connection with which you have already testified?

A It is.

Q Now I refer you Mr. Schwartz, to Gulf Oil Corporation's Exhibit No. "3" in Case 1121 and ask you to state what that is?

A It is a cross section, Cross Section B, which is illustrated by the green line on the plat Exhibit "1".

Q Now Mr. Schwartz, referring, if necessary, to Exhibits 1, 2, 3, will you state for the Examiner what the significance of those

studies and that log indicate with regard to the subject application here, just generally?

A The wells illustrated are wells in that area which are in the unit in the Monument Pool, and the total depth and the casing points are illustrated and also the oil-water contact for that general area.

Q Where does the oil-water contact generally appear with regard to where you propose to inject the salt water?

A It lies approximately 400 feet above the top of the proposed perforation interval..

Q And below that oil-water contact in that area, are the formations at present water-bearing formations?

A The remainder of the San Andres formation, to my knowledge, is water-bearing over that line.

Q What do your studies indicate with reference to the general porosity of the formations below that oil-water contact, Mr. Schwartz?

A The average porosities throughout the proposed perforated interval are approximately sixteen percent as determined from the electrical log.

Q In connection with the drilling of your Gulf No. 6 Matthews Well, did you encounter anything which indicated the possible existence of cavernous areas within that water-bearing zone?

A Yes, in all the wells, or in many of the wells which penetrate this section in this general area, low circulation is encountered near the formation we intend to perforate.

Q With reference to the formations lying below the proposed injection point, what is the situation insofar as oil production

below that point is concerned?

A There is an oil zone which is designated, I believe, as the Monument Paddock Oil Pool which will lie approximately 350 to 400 feet below our proposed plugged back depth.

Q And that is considered to be a separate reservoir by the Oil Conservation Commission, is it not?

A It is.

Q And can you state briefly what the basis, geologically, is for that being considered a separate and distinct reservoir?

A The Paddock zone consists mainly of porous dolomite which is capped by a relatively impervious sand stone bed.

Q Do you have anything further, Mr. Schwartz, that you wish to say concerning the geological aspects of your application?

A There is nothing that occurs to me at this moment.

MR. CAMPBELL: That is all. I would like to offer in evidence Gulf's Exhibits 1, 2, and 3.

MR. MANKIN: Any objection to Exhibits 1, 2, and 3, if not they will be entered in the record.

CROSS EXAMINATION

By MR. MANKIN:

Q Mr. Schwartz, this well, the subject well, has been in the past a Monument-Blinebry oil producer, has it not?

A That is correct.

Q At the present time are there plans afoot to abandon that particular zone, is that correct?

A That is correct.

Q There is oil at that particular zone at this particular

time, is there not?

A I believe the well has reached its economic limit because of the great influx of salt water.

Q In this particular area of the Monument Pool, the oil production is obtained primarily from the top of the San Andres, is that correct?

A From the top of the San Andres and the Grayburgh formation.

Q On your two cross sections in Exhibit "1" and "3", essentially all the wells will open in the San Andres, is that right, or do some of them open in the Grayburgh as well?

A I believe some of the wells have a certain amount of Grayburgh also. There is no boundary or impermeable zone between the Grayburgh and the San Andres, to my knowledge.

Q Wherever there is permeability there might be production in both zones?

A In that which lies above the oil-water contact, yes.

MR. MANKIN: Are there any other questions of the witness?

(No questions).

MR. CAMPBELL: We have another witness.

MR. MANKIN: If there is nothing further of this witness he may be excused.

MR. DON WALKER,

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

DIRECT EXAMINATION

BY MR. CAMPBELL:

Q Will you state your name, please? A Don Walker.

Q Where do you live, Mr. Walker?

A Gulf Oil Corporation, Fort Worth, Texas. (Laughter)

Q Where do you live, Mr. Walker?

A Harlingen, Texas.

Q By whom are you employed and in what capacity?

A I am Division Proration Manager for the Gulf Oil Corporation.

Q And you have testified on numerous occasions previously before the Commission?

A Yes, sir.

MR. CAMPBELL: Are the witness' qualifications acceptable to the Examiner.

MR. MANKIN: They are.

Q Now with regard to the application of Gulf Oil Corporation in Case No. 1121, will you give the Examiner a brief history of the proposed disposal well including the casing program?

A Gulf's G. C. Matthews Well No. 6 is located 1650 feet from the South line and 990 feet from the East line of Section 6, Township 20 South Range 37 East, Lea County, New Mexico, and was originally completed on November 26, 1951 in the Monument-Blinebry Oil Pool. It produced through the perforated interval 5,655 to 5,705 feet and the 7 inch casing was set at 5,769 feet and cemented with 650 sacks before being completed at the plugged back depth of 5,724 feet. Later during work-over operations when attempts were made to exclude water from this well, the entire interval was squeezed and re-perforated from 5,662 feet to 5,674 feet. The present plugged back total depth is 5,675 feet. Now as mentioned briefly a moment ago this well is still a Blinebry oil producer although very slight. We have spent a lot of money in trying to recover a secondary well in the pool but have been unsuccessful, however we plan to convert

the well to a salt water disposal well and plug and perforate the 7 inch casing at the approximate intervals of 4300 to 4620 and 4670 to 4720. That is shown in Exhibit "3" as the enclosed perforated interval. We plan to use this well to dispose of a portion of the water being produced in the Hobbs, Monument and Eunice Pools.

Q Mr. Walker, what tests, if any, do you plan to make of this well after you plug it back, as you have indicated, but before you commence the actual injection of the salt water?

A We will sufficiently test the well, to determine whether or not we will have leaks, with adequate pressure, more than we will have occasion to use during the life of the well.

Q All the joints below the perforation will be completely plugged off?

A Yes, the 7 inch originally set at 5,769 feet, we used 650 sacks and the top of the cement behind the pipe is at 2,820 feet which is well above the interval to be perforated.

Q Mr. Walker, where is the salt water coming from that you propose to dispose of through this well?

A We have a number of leases through the area which are producing some salt water and which is now going into surface pits and we have a four inch gas line which we formerly used for a gas lift system which is tied into all these leases and we propose to set an accumulation tank on each of the leases with a small centrifugal pump or whatever is necessary to boost this water into this line to carry it to the proposed salt water well.

Q Mr. Walker, referring you to Gulf Oil Corporation's Exhibit "4", I ask you to state what that is?

A This is merely a map of the general area which shows the lease G. C. Matthews, 160 acre lease involved here and the Well No. 6 is circled in red and we indicated on this map, outlined in red, the other Gulf leases in the general area which we contemplate tying in to our salt water disposal system.

Q What other oil pools are involved in this water disposal system, Mr. Walker?

A The Hobbs, Monument, and Eunice Pools are all involved.

Q If the application is granted in this case, approximately how omuch water do you expect to dispose of in this manner?

A Based on present water production on these leases, we anticipate approximately 5000 barrels per day.

Q Mr. Walker, as an engineer with your knowledge of this area, and your knowledge, common general knowledge, of the geology, is it your opinion that the injection of this salt water through this well will have any effect on the production of oil from any of the formations in this area?

A Since this water is going to be injected in the lower portion of the San Andres,which is 400 feet below the oil-water contact in that area, I don't anticipate any influence on the oil producing wells.

Q If a situation arose where you would inject a sufficient amount of water to fill any void space existing there, what possibly could be the effect insofar as oil production in the upper zone is concerned?

A If that should happen, I believe, it would have the effect of a bottom water drive and would be fatal to recovering

additional oil from the reservoir.

Q In connection with the injection of the water, and the location of the well, the Gulf wells would be the first to be affected, would they not?

A Yes, sir.

This Matthews No. 6 is located 990 feet from the nearest lease line.

Q Mr. Walker, assuming this water will find its way into the formation there by gravity, at such time as that happens isn't it possible to accomplish -- do you contemplate any particular type of test at that time?

A I would anticipate making periodic tests to determine the pressures in this San Andres formation and actually I wouldn't anticipate any test as long as it went in by gravity and probably the thing would be to see if the formation was plugging which might be cleaned out and acidized when we see it is taking place.

Q Are there many salt water plants in operation at the present time where water is emptying into the same zone?

A Gulf, I believe, had an application approved in January, 1952 -- No, it was July, I think -- but it was tested in January, 1952, in the unit King No. 2, the injection zone is in the lower San Andres formation.

Q What was the section?

A Sections 21, 28, 37.

Q Section 28, Township 31 South, Range 37 East, I believe it was.

A. Thank you.

Q Mr. Walker, in connection with this proposed work, have you investigated the question of protection of any fresh water zones in this area?

A Yes, sir.

Q In that connection I hand you what has been identified as Gulf's Exhibit "5" and ask you to state what that is.

A We have contacted, our Roswell office has contacted the State Engineer's Office of the state of New Mexico to determine what they considered to be the lowest zone of water production which should be protected in this area and we have a letter from them which indicated in their opinion if we protect the water to the base of the triassic rock, and in this particular area the top of the proposed well or the base of the triassic is 1040 feet.

Q Based on that, Mr. Walker, is it your opinion that there is no danger of any contamination of fresh water by this program?

A None, whatever.

Q Mr. Walker, can you give the Examiner some indication of the possible cost involved in setting this program into operation, exclusive of the actual maintenance?

A This would be a very rough figure but I believe I have been given an estimate of approximately $3,200.00 per lease and with the cost of converting this well and plugging it back, I would say in excess of $150,000.00.

Q That is the total?

A Total.

Q That is considering that you are using the existing pipe line facility?

A That is correct, covering several miles.

Q Exclusive of maintenance cost in the future?

A That is correct.

Q Do you have anything else to add in connection with this application, Mr. Walker -- Oh just one more question: Based upon your study of this matter, is it your opinion that the granting of the application will not adversely affect the oil production in any formation in this area?

A That is my opinion, there will be no adverse affect.

MR. CAMPBELL: I would like to offer in evidence Gulf Oil Corporation's Exhibits 4 and 5 in Case No. 1121.

MR. MANKIN: Any objection to entering Exhibits 4 and 5, if not they will be so entered.

MR. CAMPBELL: That is all the questions I have at this time.

CROSS EXAMINATION

By MR. MANKIN:

Q Mr. Walker, you anticipate you will be processing and disposing of approximately 5000 barrels per day?

A Yes, sir.

Q Do you anticipate that that will be treated in any manner?

A Our laboratories in Houston and Ft. Worth have been running tests to determine the compatibility of this water with the formation water of the lower San Andres and in most instances -- we haven't gotten a full report -- it is compatible and no treating will be necessary. There is, I believe, from one area some of the water has a tendency to precipitate a little and if that occurs, we will treat it or use filters or both. It will be a closed

system.

Q It will be a closed system?

A Yes, sir.

Q Do you anticipate in certain areas where you have a high salt content that corrosion might be a problem at the gathering system?

A I don't believe I can answer that now, we do have a line which we can use, I can't say how long it will last but certainly we couldn't replace it until we used it up.

Q You don't anticipate attempting to cut the pipe line in any manner to attempt to lessen the corrosion?

A I know of no such plan but it could be.

MR. MANKIN: Is there a question of the witness?

CROSS EXAMINATION

By MR. NUTTER:

Q Mr. Walker, where is the surface pipe set in this proposed well?

A We have 14 inch at 330 feet and 9 5/8 inch set at 2,648 feet and it was circulated back up past the base of the initial string.

Q In other words --

A (INT.) The 7 inch connects with the 9 5/8 inch.

Q And the top of the 7 inch is 2,820?

A Yes, sir.

Q So the only interval without cement behind it would be at 2648 to 2820?

A 2648 to 2820, that's right.

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Q And the top of the 7 inch is 2,820?

A Yes, sir.

Q So the only interval without cement behind it would be at 2648 to 2820?

A 2648 to 2820, that's right.

Q What type of test could be run to determine whether that casing in that interval was hold or had corroded?

A Well, I would anticipate a straight pressure test on the casing.

Q Would those tests be run on a periodic basis or just if you suspected the pipe was eaten up?

A They could be periodic. This is kind of new with us, we haven't really gotten into this whole routine process. The Eunice King No. 2 has been in use since 1952 and the only trouble is a slight plugging at the formation which we have acidized and cleared up.

Q Referring to Exhibit "4", are all the leases outlined in red, are they all to be connected to this gathering system and water injection?

A That is the present plan.

Q Does it take care of all the Gulf leases in that area?

A I don't believe I have the answer to that, I believe from here North (indicating on the map) we are going to have to make some plans in the Eunice area proper.

MR. NUTTER: That is all.

REDIRECT-EXAMINATION

BY MR. CAMPBELL:

Q Mr. Walker, in connection with the operation of this proposed system, I assume Gulf is willing and anxious to cooperate to any extent necessary with the Commission to satisfy themselves and the Commission that the system is not adversely affecting any production in the area, is that correct?

A Yes, sir, that's right. We certainly, we believe we have enough holdings that we don't want to mess up anybody else's oil field.

MR. CAMPBELL: That's all.

RECROSS EXAMINATION

By MR. MANKIN:

Q Mr. Walker, to go over again the question that Mr. Nutter asked: Essentially this system that you are proposing here of water disposal into the Matthews No. 6 Well will take care of all of Gulf's leases, in other words not the area to the South to the Eunice and Blinebry Pools, but essentially the Gulf operation North and West, is that correct?

A That is my understanding.

MR. MANKIN: Is there anything further of this witness in this case, if not the witness may be excused. Are there any statements to be made?

MR. CAMPBELL: I have no statement to make.

MR. MANKIN: Does anyone else have a statement? If not, we will take the case under advisement.

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STATE OF NEW MEXICO)
: SS.
COUNTY OF SANTA FE)

I, DOROTHY B. MYERS, a Court Reporter, do hereby certify the foregoing and attached transcript of proceedings before the Oil Conservation Commission for the State of New Mexico, was reported by me in shorthand and reduced to typewritten transcript by me or under my personal supervision, and that the same is a true and complete record to the best of my knowledge, skill and ability.

WITNESS my hand and seal this 5 day of Sept., 1956.

Dorothy B. Myers
Court Reporter

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NEW MEXICO OIL CONSERVATION COMMISSION
MABRY HALL - STATE CAPITOL
SANTA FE, NEW MEXICO

REGISTER

HEARING DATE August 7, 1956 TIME: 10:00 a.m.

NAME:	REPRESENTING:	LOCATION
R. M. Richardson	Humble Oil Co.	Roswell, N.M.
J. M. McCague	Shell Oil Co.	Hobbs, N.M.
A. A. Phillips	Humble Oil & Rfg Co	Roswell, N. Mex.
H. A. Merrill	Sinclair Oil & Gas	" "
W. G. Abbott	Amerada Pet Corp	Monument, N. Mex.
R. M. Anderson	Sinclair	Midland, Tex
L. A. Webb	"	"
[illegible]	Richardson & Bass & Humble	Roswell.
C. C. Harlan Jr.	Warren Pet. Corp	Roswell
Perry R. Bass	Richardson & Bass	Ft Worth, Tex
Jack M. Campbell	Campbell & Russell	Roswell, N.M.
D. K. Gilbreath Jr.	Gulf Oil	Roswell
Winston Eddington	" "	Hobbs
Don Walker	" "	Fort Worth
Howard Jennings	Richardson & Bass	Roswell, N.M.
Victor T. Lyon	Continental Oil Co	Roswell, N.M.
Jason Kellahin	attorney	Santa Fe, N. Mex.
[illegible] Jr.	National Potash Co	Hobbs, N.M.
[illegible]	[illegible]	[illegible]