Case No.

91

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE NO. 91

ORDER NO. 699

THE APPLICATION OF GULF OIL CORPORATION FOR THE PROMULGATION OF AN ORDER REVISING RULE 15, GENERAL ORDER NO. 4 "OIL TANKS AND FIRE WALLS".

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at ten o'clock A.M. January 10, 1947 at Santa Fe, New Mexico before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 8 day of April 1947, the Commission having before it for consideration the testimony adduced at the hearing of said case, and being fully advised in the premises;

IT IS THEREFORE ORDERED THAT:

SECTION 1. That part of Order 4 of the Commission (General Rules), captioned "Rule 15. Oil Tanks and Fire Walls", be and the same is hereby amended to read as follows:

Oil shall not be stored or retained in earthen reservoirs, or in open receptacles. All lease, stock and oil storage tanks shall be protected by a proper fire wall, which wall shall form a reservoir having a capacity one-third larger than the capacity of the enclosed tank or tanks in the following cases:

Where any such tanks are within the corporate limits of any city, town or village; or where such tanks are closer than 500 feet to any highway or inhabited dwelling or closer than 1000 feet to any school or church; or where any such tanks are so located as to be deemed an objectionable hazard within the discretion of the Commission. Such tanks shall not be erected, enclosed or maintained closer than 150 feet to the nearest producing well.

Done at Santa Fe, New Mexico as of the day and year hereinabove designated.

OIL CONSERVATION COMMISSION

Thomas J. Mabry, Chairman

John E. Miles

John E. Miles, Member

R. R. Spurrier

R. R. Spurrier, Secretary

BEFORE THE

OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

"Notice of Publication
State of New Mexico
Oil Conservation Commission

"The Oil Conservation Commission, as provided by law, hereby gives notice of the following hearings to be held at Santa Fe, New Mexico, at 10:00 o'clock A.M., January 10, 1947:

"Case No. 90

In the matter of the application of Stanolind Oil Company for modification of the rules and regulations of the Commission with respect to the periods prescribed for waiting on cement in connection with the cementing of casing.

"Case No. 91

In the matter of the application of Gulf Oil Corporation for the promulgation of an Order revising Rule 15, General Order No. 4 'Oil Tanks and Fire Walls'.

"Given under the seal of said Commission at Santa Fe, New Mexico, on December 20, 1946.

OIL CONSERVATION COMMISSION

By: /s/ R. R. Spurrier, Secretary

S E A L".

Said meeting convened at the appointed hour, on the 10th day of January, 1947, in the Coronado room of the La Fonda Hotel, Santa Fe, New Mexico, with the Commission sitting as follows:

Hon. T. J. Mabry, Governor, Chairman
Hon. John E. Miles, State Land Commissioner, Member
Hon. R. R. Spurrier, Secretary, Oil Conservation Commission, Member
Hon. Carl Livingston, Chief Clerk & Legal Adviser, Oil Conservation Commission

REGISTER

NAME	COMPANY	ADDRESS
Glenn Staley	Lea County Operators	Hobbs, New Mexico
W. R. Bollinger	Shell Oil Co., Inc.	Hobbs, New Mexico
H. D. Murray	The Texas Company	Midland, Texas
A. M. Willig	The Texas Company	Ft. Worth, Texas
P. M. Bohart	Gulf Oil Corporation	Tulsa, Oklahoma
Paul C. Evans	Gulf Oil Corporation	Hobbs, New Mexico
Eugene Hunford	Gulf Refining Company	Mt. Pleasant, Mich.
H. C. Otis	Otis Pressure Control	Dallas, Texas
H. C. Laird	Otis Engineering Corporatio	Dallas, Texas
G. M. Gray	Repollo Oil Company	Midland,, Texas
Lloyd Holsapple	Repollo Oil Company	Ft. Worth, Texas
W. M. Little	Tide Water Association Oil Co.	Midland, Texas
Robert L. Bates	U. S. Bureau of Mines & Natural Resources	Socorro, New Mexico

REGISTER (cont'd)

NAME	COMPANY	ADDRESS
William B. Macey	Oil Conservation Commission	Artesia, New Mexico
E. J. Gallagher	Gulf Oil Corporation	Hobbs, New Mexico
John M. Kelly	Independent	Roswell, New Mexico
Foster Morrell	U. S. Geological Survey	Roswell, New Mexico
Vernon B. Bottoms	Superior Oil Company	Midland, Texas
R. S. Christie	Amerado Petroleum Corporation	Ft. Worth, Texas
H. L. Johnston	Continental Oil Company	Midland, Texas
S. V. McCollum	Continental Oil Company	Midland, Texas
N. R. Lamb	State Bureau of Mines & Mineral Resources	Artesia, New Mexico
D. R. McKeithan	Phillips Petroleum Company	Bartlesville, Okla.
Lloyd L. Gray	Gulf Oil Corporation	Tulsa, Oklahoma
S. A. Sanderson	Gulf Oil Corporation	Tulsa, Oklahoma
J. D. Atwood	Gulf Oil Corporation	Roswell, New Mexico
Charles C. Rodd	Gulf Oil Corporation	Tulsa, Oklahoma
Ralph L. Gray	Stanolind Oil Company	Hobbs, New Mexico
J. E. Wooten	Stanolind Oil & Gas Company	Ft. Worth, Texas
R. Floyd Farris	Stanolind Oil & Gas Company	Tulsa, Oklahoma
Roy O. Yarbrough	Oil Conservation Commission	Hobbs, New Mexico
J. W. House	Humble Oil Company	Midland, Texas
W. E. Hubbard	Humble Oil Company	Houston, Texas
R. S. Dewey	Humble Oil Company	Midland, Texas
George Berlin	Skelly Oil Company	Tulsa, Oklahoma
George W. Selinger	Skelly Oil Company	Tulsa, Oklahoma
J. M. Dunlavey	Skelly Oil Company	Hobbs, New Mexico
E. O. Anderson	New Mexico Bureau of Mines	Hobbs, New Mexico
Lewis Finch Jr.	Stanolind Oil & Gas Company	Ft. Worth, Texas
J. O. Seth (Attorney)	Stanolind Oil & Gas Company	Santa Fe, New Mexico

DIRECT EXAMINATION

JUDGE SETH:

My name is J. O. Seth, I represent the Petitioner in this case. It is simply a request to reduce the waiting on cement time in Order 52, to the hours shown in the petition. We would like to introduce in evidence the showing by laboratory tests and actual field tests, the hours requested in the Petition will be ample to protect the strata.

I don't know how much Governor Mabry knows about oil well drilling - - -

EXAMINATION OF MR. LEWIS FINCH, JR.

(After being duly sworn, Mr. Finch testified as follows)

JUDGE SETH:

Please state your name.

MR. FINCH:

Lewis Finch Jr.

JUDGE SETH:

Give us a brief idea of your training and experience.

MR. FINCH:

I am a petroleum engineer, have a B.S. degree from the Oklahoma A. & M.

JUDGE SETH:

What practical experience have you had?

MR. FINCH:

Three years actual experience in the oil fields of Lea County, also had charge of development in Southeastern New Mexico for Stanolind Oil Company for an additional three years.

JUDGE SETH:

What is the present regulation No. 52, as to the time for cement to set?

MR. FINCH:

The present regulation on the surfact pipe is that the cement shall stand for 36 hours before drilling progresses; 48 hours on intermediate casing, on the oil strain 48 hours before drilling progresses.

JUDGE SETH:

Will you state for Governor Mabry's benefit what is meant by cementing the casing?

GOVERNOR MABRY:

I understand that.

JUDGE SETH:

Would you state the Order terms apply outside Lea County?

MR. FINCH:

Order 52, I believe, is limited to Lea County.

JUDGE SETH:

Any general order applicable outside Lea County?

MR. FINCH:

Not - so far as I know.

JUDGE SETH:

Now, have you a draft for the purpose of getting before the Commission some idea of the rule the Stanolind would like to have put into effect?

MR. FINCH:

Yes, Sir, I do.

JUDGE SETH:

We would like to present this to the Commission as Exhibit A, in this case.

State briefly what effect that has on the present rule.

MR. FINCH:

The rule we are proposing will reduce the time for drilling - the cement on the surface drain from the present prescribed hours of 36, to 24. We are also proposing that the surface casing shorten the time for cement for 16 hours before releasing the pressure. With respect to the intermediate strain, we are proposing shortening the time to 24 hours before releasing pressure, but not less than 30 hours before testing plug on cement, and drilling progresses.

Mr. Finch (Cont'd)

Reduce from 48 to 30 hours, on the production strain. On the production strain we are proposing that it shall stand cemented 24 hours before releasing pressure, and less than 30 hours before drilling progresses, reducing from 48 to 30 hours.

JUDGE SETH:

Have there been any previous hearings held before this Commission covering this same matter?

MR. FINCH:

Yes, there has been.

JUDGE SETH:

Do you know when that was held?

MR. FINCH:

In October of 1936.

JUDGE SETH:

As a result of that hearing was the rating on cement time reduced to the present rule?

MR. FINCH:

Yes, sir.

COMMISSIONER MILES:

Reduced to the present ruling?

JUDGE SETH:

Yes.

We would like to offer in evidence Case No. 4, held October 14, 1936. Considerable testimony was taken at that time. I suppose there is a copy of that hearing in the Commission's file, we have one here if you have not.

MR. SPURRIER:

Yes, sir.

MR. LIVINGSTON:

The record is filed in the case.

JUDGE SETH:

What is the practice of adjoining states in this regard?

MR. FINCH:

In Texas the practice has been recently revised to conform with the proposal we are presenting here.

JUDGE SETH:

Do you know about Oklahoma?

MR. FINCH:

I don't believe Oklahoma has any specific rules.

JUDGE SETH:

In your opinion, Mr. Finch, would this reduced waiting time result in considerable saving in the cost of drilling a well?

MR. FINCH:

Yes, sir, I believe it would.

JUDGE SETH:

How much would it reduce and in what manner?

MR. FINCH:

We would have a saving of 12 hours on the surface pipe, 18 hours on the intermediate, and 18 hours on the oil string; which would be a total of 48 hours - two days.

JUDGE SETH:

You mean by that, in paying of the drilling crew?

MR. FINCH:

Yes, sir.

JUDGE SETH:

They sit around waiting while the cement is setting?

MR. FINCH:

That's often the case.

JUDGE SETH:

JUDGE SETH:

What would that amount to?

MR. FINCH:

Some $500 or up.

JUDGE SETH:

What is your opinion as to the adoption of these shorter hours, will it result in any injury to the oil string?

MR. FINCH:

No, sir.

JUDGE SETH:

In you opinion, could these suggested hours of waiting time be safely adopted by this Commission?

MR. FINCH:

That is right, these are minimum hours we are proposing.

JUDGE SETH:

Anything further?

MR. FINCH:

There is one thing further, which I might explain. With respect to the

MR. FINCH (cont'd)

proposal we have made for holding the casing cemented for a certain number of hours before releasing the pressure, we have included in this proposed order here an explanation of the term releasing pressure - by that we mean any step or operation which would relieve any pressure at the base of or outside of the casing string being cemented.

JUDGE SETH:

That may hold pressure by pumping or plugging?

MR. FINCH:

By proper equipment.

JUDGE SETH:

If the pressure is removed too soon, what would be the effect?

MR. FINCH:

Could result in some back flow of cement.

JUDGE SETH:

In other words, you mean if it is removed while the cement is still in liquid form, it might flow back up?

MR. FINCH:

That is right.

COMMISSIONER HILLS:

The longer it is set, the more apt it would be to be in place?

MR. FINCH:

We have another witness that will give some data on the actual setting time of cement to show the time we are proposing here is quite adequate to allow the cement to set up.

JUDGE SETH:

Governor, the rules of evidence don't apply in these hearings.

GOVERNOR MARRY:

You want to get the truth there and not cover it up?

JUDGE SETH:

To get at it quickly is the main thing.

GOVERNOR MARRY:

Cement doesn't set in 24 hours very good.
Don't require the degree of setting for this it would in other circumstances. I guess somebody else will testify about that.

TEST[illegible] OF MR. R. MAYO FERRIS:

(After being duly sworn, Mr. Ferris testified as follows)

JUDGE SETH:

What is your name?

MR. FERRIS:

R. Floyd Ferris.

JUDGE SETH:

Your profession?

MR. FERRIS:

I am research engineer for the Stanolind Oil and Gas Company.

JUDGE SETH:

State briefly your training.

MR. FERRIS:

Have a Bachelor Degree in Petroleum Engineering from the University of Oklahoma. Started to work for the Company about 12 years ago, served two years as engineer in field work, after which I was removed to the Research Department in Tulsa. During the past 9 or 10 years I spent most of my time on well composition problems, particularly having to do with the cementing phase of well composition problems.

JUDGE SETH:

Does Stanolind maintain a production laboratory in Tulsa?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

You have conducted tests on the question before the Commission, have you not?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

Did you put your findings at that time in the form of paper?

MR. FERRIS:

Yes, sir. In October 1945.

JUDGE SETH:

Have you a copy of that article? I believe you wrote about methods for determining the waiting on cement time. - "Method for Determining Minimum Waiting-on-cement Time".

MR. FERRIS:

Yes, sir.

JUDGE SETH:

We would like to introduce this pamphlet as Exhibit #2 in this case.

Have you conducted many tests on this problem?

MR. FERRIS:

We have conducted a number of tests on this problem. The behaviour of

cement, not only in the fluid state - and as they set. They are in the paper you refer to.

JUDGE SMITH:

You have made a summary of that paper, I wish you would read it to the Commission.

MR. FERRIS:

"Stanolind Oil and Gas Company has made an extensive study of chemical and physical properties of cements over the past several years in an effort to secure a better understanding of the performance of cement in wells. The chemical make-up of cements is a complex subject; however, the physical properties and physical behavior of cement are easy to comprehend.

"For example, when water is added to dry cement the slurry thus formed will remain fluid for a period of time, then it will gradually stiffen, set, and gain strength. If the cement slurry is agitated or pumped for just a short time after it is formed, thick gels or false body systems will develop in the slurry, giving it the appearance of a partially set cement. This behavior is sometimes called false set. The cement in this state is a semi-plastic and actually possesses some bonding strength. However, a slight vibration or movement of the cement before the initial set occurs will cause the cement to revert back to a fluid state. After cement takes a final set it assumes the properties of a solid and cannot again be reduced to the fluid state. After it becomes a solid it resists distortion by the amount of its strength in shear. When a force or pressure is applied to it which is greater than the shearing strength of the cement, it simply breaks, cracks or crumbles. Therefore, since the period between the initial set and the final set marks the transition from a fluid state to a solid state, if it can be proved that cement in a well at the time of its final set possesses sufficient strength and rigidity to support the pipe opposite it, to exclude undesirable fluids or gases, and to withstand the shock of drilling, then the time to the development of that physical state in cement would be the absolute minimum WOC time.

"It was reasoning along such lines that prompted the Stanolind Oil and Gas Company to conduct tests in both the laboratory and in the field for a more scientific answer to WOC time problems. The paper entitled "Method for Determining Minimum Waiting-on-Cement Time" presented before the A.I.M.E. in October, 1945, reported the results of some of that work. One of the first efforts in that connection was a study of the bonding strength of cement in the annulus between 8½ inch and 6-5/8-inch casing at early ages or short WOC times.

"This work showed that when the cement reached the final set, i.e. when the irreversible transition from a fluid to a solid was completed, the cement had a bonding strength of [illegible] pounds per linear foot of cement in the annulus. From these data it can be calculated that each linear foot of cement in an annulus at the time of the final set should support 207 feet of 5-1/2-inch 17-pound casing. Since most engineers [illegible] a safety factor of 207 to 1 insofar as support of pipe in the hole is concerned, it appeared obvious that any [illegible] time spent beyond the [illegible] required for the cement to take its final set ([illegible] p.s.i. tensile strength) could be [illegible].

"Following this development, attention was turned to the thought of conducting field tests to verify the laboratory's suggestion that the minimum safe WOC time is the time of the final set (8 p.s.i. tensile strength). Before field tests could be conducted, however, means had to be devised for accurately determining when the final set of cement will occur in a well. This problem was easily and conveniently solved by utilizing the well established fact that cement slurries liberate heat more rapidly during the setting process, i. e. during the fluid-state-to-solid-state transition period, than at any time before or afterward. Laboratory tests established the fact that all the cements tested would attain the final set (8 p.s.i. tensile strength) by or before a period corresponding to 1.5 times the time to the point of maximum heat development in cement. Field tests were then conducted to prove that the heat of hydration of cement slurries in any well will heat drilling fluid on the inside of the casing to the extent that, when the casing is shut in, the pressure at the surface will increase and reach a maximum almost simultaneously with maximum heat development of the cement in the well. The field tests not only proved this thought but also proved that cement may be drilled any time after it reaches the final set or 8 p.s.i. tensile strength.

"Relating the strength development of cements to the heat of hydration during the setting processes was one of the most important developments of this work, since it provided for the first time a means of determining the rate at which cements actually set in wells. The heat generated by cement during the setting processes has been known for years and has been used in connection with temperature surveys to locate the top of cement, but to my knowledge this is the first time it has been employed in the more broad sense.

"This method for determining minimum WOC time has been used in a number of fields in a routine manner for approximately a year. To my knowledge there has been no case of failure attributable to drilling of the plug too early.

"While there are several advantages in using a formula for determining minimum WOC time, i.e., 1-1/2 times the time to the maximum shut-in casing pressure, it has the disadvantage that leaky casinghead connections or other leaks may prevent the normal pressure build-up on the casing. When this occurs on a Stanolind well, an alternate method for determining minimum WOC time is applied which is based on the limit of pumpability of cement slurries at the high pressures and temperatures in simulation of those which exist in the average well at any depth. However, since information of the latter type is not now available to all operators, it is believed that the minimum WOC time should be based on a flat time, at least for the present time.

"Therefore, [illegible] of the setting times of many of the types of cements used in cementing surface pipe, intermediate strings, and oil strings to determine what fixed minimum time might be applied to each type of casing cement job.

"The following times were recommended:

	[illegible] Hrs.	[illegible] Hrs.
Surface Pipe	[illegible]	24
Intermediate	[illegible]	30
Oil String	24	30

"under pressure in this case has reference to the pressure on the cement - not necessarily the pressure on the casing at the surface.

"These times are generally somewhat greater than those which would be obtained by the pressure build-up method.

"The Texas Railroad Commission has adopted these WOC time practices for several fields and it has operated almost a year without difficulty.

JUDGE SMITH:

You have made a summary - Mr. Ferris I believe your method of determining the setting time is based on the theory that cement when setting generates heat?

MR. FERRIS:

That is right.

JUDGE SMITH:

And this heat is generated through the pipe into the fluid in the well, and builds up pressure in the well if there is no leak?

MR. FERRIS:

That is right.

JUDGE SMITH:

Your experiments in the laboratory show the high point of the build-up of the pressure is about the time the cement sets?

MR. FERRIS:

It is between the initial set and the final set.

JUDGE SMITH:

Your experiments show that 1½ that length of time it took to build the highest pressure would give a safe margin?

MR. FERRIS:

Yes, sir.

JUDGE SMITH:

If the build up of the pressure in the casing was 3 hours, your formula out of it would increase the waiting to 12 hours?

MR. FERRIS:

That is right.

JUDGE SMITH:

You are basing it on your laboratory tests that it is a safe margin of safety?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

On page 12 of your printed paper, there are listed 10 wells in Texas, and one in Oklahoma, one in Wyoming - those figures shown there are actual field tests are they not?

MR. FERRIS:

That is right.

JUDGE SETH:

In each instance showing your formula,was there any difficulty encountered?

MR. FERRIS:

The only difficulty was not being able to drill the cement out as early as we would like, to prove the method.

JUDGE SETH:

You did not get to as rapidly as you would like to have?

MR. FERRIS:

In a number of cases we came very close to it. In one case it was between 12 and 13 hours. For all practical purposes we would check it.

JUDGE SETH:

In addition to these 10 wells, have you had experience with other wells?

MR. FERRIS:

We have run a number of tests, which I believe another witness will describe, and I have just seen reports come through company channels, on the routine cement jobs that are being presumed in other areas where no regulations apply.

JUDGE SETH:

It has been adopted at this time?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

Oklahoma has never had any regulation on the subject?

MR. FERRIS:

Not to my knowledge.

JUDGE SETH:

Nor Wyoming?

MR. FERRIS:

Not to my knowledge.

JUDGE SETH:

Louisiana?

MR. FERRIS:

I am not too certain.

JUDGE SETH:

In addition to these wells, the tests have been made in many other wells, have they not?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

Do you recommend, from your experience in the laboratory, from the tests made in the field - will you recommend to the Commission that these hours experienced, and set out in the Petition, be adopted?

MR. FERRIS:

I would.

JUDGE SETH:

Anything further you want to add?

MR. FERRIS:

I don't believe so.

COMMISSIONER MILES:

What would be the result of the damage done if it wasn't in there - not properly set, did not have the time to form as it should?

MR. FERRIS:

Another cement job would be required, but our past experience has been that once cement has set it is fixed in form. After it hardens and goes into that solid state, it attains that strength necessary to support the pipe and enable us to go ahead and drill without waiting 72 hours-or a week would not make the cement serve any different purpose. There will continue to be cement failures that can be brought about for a number of reasons. But waiting will not make mud turn over to cement and set, for that reason we believe once it attains that minimum strength, the strength it attains after that by the hardness is of no particular advantage.

JUDGE SETH:

If it is a failure no particular harm is done, just another cement job to do?

MR. FERRIS:

That is all.

JUDGE SETH:

If they drill too soon it does not injure the field does it?

MR. FERRIS:

No, sir.

COMMISSIONER MILES:

Would not have any effect on the sea?

MR. FERRIS:

No, sir. Frequently cement plugs are drilled at 72 hours on field [illegible] cement plugs. We [illegible] the side of the [illegible].

JUDGE SETH:

That is all, I believe.

COMMISSIONER MILLS:

What is the difference between WOC time and flat time?

MR. FERRIS:

By flat time we have a fixed period. By this formula it would be variable time. At the shallow it would take a longer time because of the lower temperature and pressure. This pressure would occur later, as you go down to higher pressures and higher temperatures we would have a variable time with depth.

JUDGE SETH:

The time you give, is in your judgment, safe on all types of cement?

MR. FERRIS:

Yes, sir. It might appear to one studying these data a little conflicting, but the discussion in the paper and what we propose - The paper we discussed the deeper the well the faster the cement will set, due to the higher pressure and temperature.

JUDGE SETH:

The time begins to run from the time they begin pumping cement in the well?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

How long does it take an operation of that kind?

MR. FERRIS:

The actual time is rarely over 30 minutes and the job is usually completed within an hour.

JUDGE SETH:

They put the cement in by a plug on top of it and begin pumping mud or water of top of that?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

That operation with the plug down to the bottom of the casing is over in less than an hour?

MR. FERRIS:

Yes, sir.

MR. LIVINGSTON:

It will be well to explain what is meant by maintaining the pressure - set a specific pressure in pounds for all wells - will that pressure vary for different wells?

MR. FERRIS:

It will vary with the height of cement which is backed up on the outside. Ten pounds of mud on the inside, and 16 pounds of mud on the inside, the higher you raise it the greater will be the pressure to pump the mud down. The pressure we recommend holding is that pressure necessary to keep the balance. We want to be sure nothing will be released which will allow those gases to come back before the cement sets - until it has attained its final set.

JUDGE SETH:

Any other questions.

EXAMINATION OF MR. RALPH L. GRAY

(After being duly sworn, Mr. Gray testified as follows)

JUDGE SETH:

State your name.

MR. GRAY:

Ralph L. Gray.

JUDGE SETH:

Where do you live?

MR. GRAY:

Hobbs.

JUDGE SETH:

JUDGE SETH:

By whom are you employed?

MR. GRAY:

Stanolind Oil and Gas Company.

JUDGE SETH:

Give a brief statement of your training and experience.

MR. GRAY:

I have a degree - Bachelor of Science from New Mexico School of Mines, also of Petroleum Engineering in the same school.

GOVERNOR MABRY:

I would like to be excused at this time, since I have a lot of work waiting in my office.

(Continuation of examination of Mr. Gray)

JUDGE SETH:

What practical experience have you had?

MR. GRAY:

I have been employed by the Stanolind Oil and Gas Company for approximately 7½ hours, 3½ of which have been spent in Lea County, New Mexico; and approximately 4 years in Texas and Oklahoma performing engineering duties.

JUDGE SETH:

Have you conducted, or have there been conducted under your supervision, some tests in connection with this matter of waiting time on the cement?

MR. GRAY:

Yes, sir. We have conducted tests on a total of 5 wells - 4 wells belonging to outside operators and one well for Stanolind.

JUDGE SETH:

The test on this Stanolind well - will you state what well that was?

MR. GRAY:

The test was made on Stanolind's State-S, Well #2, in the Drinkard pool.

JUDGE SETH:

Have you the data to show the result of that test?

MR. GRAY:

Yes, sir. At this well 7-5/8" casing was cemented at a depth of 2986 feet, using 500 sacks of standard Portland cement. After the casing was cemented, a record pressure gauge was connected to the casing head so as to continuously record the pressure within the pipe. We have a curve we would like to introduce, showing the pressure from the time the first sack of cement was mixed until the maximum pressure was obtained.

JUDGE SETH:

We would like to introduce this curve as Exhibit C - showing the building up of the pressure.

MR. GRAY: That is right.

JUDGE SETH:

The bottom shows the time and the left-hand side shows the pounds?

MR. GRAY:

Yes, sir.

JUDGE SETH:

We offer that in evidence.
What time would the pressure build up to those highest points?

MR. GRAY:

The maximum pressure build-up was obtained in approximately 8 hours after the first sack of cement was run.

JUDGE SETH:

You had a permit from the Commission to make these tests, did you not?

MR. GRAY:

That is right. Under the conditions the test was run, the waiting

time was less than the regulation called for, and we got special approval to continue the experiment.

JUDGE SETH:

The build up of the pressure 8 hours after the first running of the cement?

MR. GRAY:

Yes, sir.

JUDGE SETH:

When did you begin to core?

MR. GRAY:

Fourteen hours, 45 minutes after the first sack of cement was pumped.

JUDGE SETH:

Was the core obtained?

MR. GRAY:

A core was obtained and a recovery at the surface was made 18 hours after the well was cemented. We have as evidence a specimen of that core.

JUDGE SETH:

Were the same marks cut on the outside that were there when the core was taken?

MR. GRAY:

The only change in the form is a little scraping on the side that was done in order to test the hardness of the cement.

JUDGE SETH:

What was the condition of that core when it was taken?

MR. GRAY:

The quality of the cement was good, it drilled the same and the strength was sufficient to support the weight of the drilling pipe.

JUDGE SETH:

Did the drilling operations proceed?

MR. GRAY:

After recovery of the core, a conventional bit was run back into the well and drilling operations were continued.

JUDGE SETH:

Was any trouble encountered by starting the drilling earlier than the present regulations before then?

MR. GRAY:

No difficulty encountered at all.

JUDGE SETH:

In your opinion, was that cement set to the extent that the drilling could safely proceed at that time?

MR. GRAY:

Yes. I think the significant thing about this core is that we were able to recover such a large piece at all - undoubtedly, the cement had taken form, otherwise, it would nothave been possible to have cored and recovered such a large piece if it had not set.

JUDGE SETH:

You speak of other wells - on which tests were made, were they other Company wells?

MR. GRAY:

Yes - we assisted in making tests on the Rowan Drilling Company well B-15, #2, also the Allison B-9, #3, and as a matter of fact, two tests were made on Allison B9-#2.

JUDGE SETH:

Can you get result os those tests?

MR. GRAY:

On the Ellenburger 15, #2, 7" casing cemented at a depth of 5,350 feet with 500 sacks of cement.

JUDGE SETH:

That oil string?

MR. GRAY:

Yes, sir, the oil string. The maximum pressure was recorded 8 hours after the well was cemented.

JUDGE SETH:

Have you one - another on the Rowan Drilling Company?

MR. GRAY:

A test made on the Allison B9, #3, in which 5½" oil string was cemented at a depth of 8,189 feet with 1,450 sacks of cement. On this testing a maximum pressure was recorded 8 hours after cementing.

JUDGE SETH:

Also is a test on the Anderson-Pritchard well?

MR. GRAY:

That is right - It is made on the Anderson-Pritchard #1, in which the intermediate string 9-5/8" casing cemented at a depth of 3,993 feet with 1,150 sacks of cement. On this test it was not possible to record pressure build up, due to some mechanical difficulties, and that might have to do somewhat to our lack of experience at that time in conducting these tests - By a drilling of the core, drilling of the cement plug 17½ hours after cementing in this well and a core was also obtained.

JUDGE SETH:

Was there any zone encountered?

MR. GRAY:

No, sir, not at all. The drilling carried out in a normal manner.

JUDGE SETH:

Anderson-Pritchard have made the test on several wells in Texas have they not?

MR. GRAY:

That is right. We have been advised by Anderson-Pritchard that cement plugs have been drilled out at a total of 14 hours in Texas, at approximately 24 hours after cementing and in no case was there any failure in cementing or casing - -

JUDGE SETH:

Are they supposed to have sent you the reports on those wells?

MR. GRAY:

It was their intention to present this information in the form of a tabulation, and it is enroute. I am sorry it did not arrive in time to present it at this time.

JUDGE SETH:

We ask permission to file it with the Commission when it comes in.

There is another well, one of the Continental wells? -

MR. GRAY:

That is right.

JUDGE SETH:

Is Mr. McCollum of the Continental here?

MR. GRAY:

I believe Mr. McCollum is here.

JUDGE SETH:

Have you anything further to add, any data you wanted to present on this subject?

MR. GRAY:

I believe not.

JUDGE SETH:

We understand Mr. McCollum had data he wanted to present on this subject.

COMMISSIONER HILL:

Other than the economical standpoint, what other advantage is there gained by earlier drilling and not waiting so long?

MR. GRAY:

I cannot think of any other advantage at the moment. I think it is a matter of economics.

C[illegible] MILLER:

The drilling crew keeps on the payroll during this waiting period, does it?

MR. GRAY:

In nearly all cases that is the practice.

EXAMINATION OF MR. S. V. McCOLLUM

(After being duly sworn, Mr. McCollum testified as follows)

JUDGE SETH:

State your name.

MR. McCOLLUM:

S. V. McCollum.

JUDGE SETH:

Give a brief history of your experience and qualifications.

MR. McCOLLUM:

I received a B.S. degree from Texas Tech in 1940. Since that time have been employed by the Continental Oil Company as Petroleum Engineer. During the last three years have been in charge of engineering work in West Texas and New Mexico area.

JUDGE SETH:

Will you go ahead and give the well and tests on it?

MR. McCOLLUM:

Our test was continued in a similar manner of the one on the Lockard A-35- Well nu[illegible]f 3 Drinkard test was only intermediate string, 9-5/8" set at 2,575 feet with 500 sacks. Recording pressure gage was connected to the well head after the cement had been pumped down. Two cores were taken, one after approximately 12 hours. This core we recovered at this time was in small pieces, were fairly well set up but were still where could be considered gre[illegible]n. The second core was taken approximately 36 hours after the plug had been pumped down and an excellent core recovered from it. The pieces vary from 4" to 3" in length. These cores, you could not scratch them with the fingers, could make marks with a brass key.

JUDGE SETH:

In your judgment were they set safely to go ahead and drill?

MR. McCOLLUM:

Yes, sir. The length of time it took for maximum build up was 9½ hours.

JUDGE SETH:

When you drilled you had no trouble?

MR. McCOLLUM:

No, sir.

JUDGE SETH:

In your opinion, was this period recommended by the Stanolind - would it be regarded as safe to go ahead?

MR. McCULLOCH:

I think so, sir.

JUDGE SETH:

We would like to put Mr. Ferris back on your question, Governor Miles.

(Mr. Ferris returned to give further testimony)

JUDGE SETH:

Mr. Ferris, you heard Governor Miles' question to Mr. Gray as to the advantages of shortening this time?

MR. FERRIS:

Yes, sir.

JUDGE SETH:

What advantages other than the saving of cost would it be?

MR. FERRIS:

There are no other advantages other than that the operator will be able to get the well on production some two days earlier than he would otherwise. That quite often is a decided advantage. Another thing, when cement is green, when it has not attained a high degree of hardness or brittleness, it will withstand shock without suffering fracture or damage more readily than will a cement that is extremely brittle - to make an analysis, you can take a hammer and crack clay, whereas if your window payne is of plastic material, it will stand considerable force without cracking. There is quite a belief now that it is quite important in taking advantage of that in certain types of completion problems. Not only from the standpoint of setting of cement, but also some consideration is now being given to prevent the same thing at early ages exactly for the same reason.

MR. LEVERSEN:

Will all cements as ordinarily used in the petroleum industry, not in the sense as so determined by these experiments, or is there any particular standard of quality of cement necessary?

MR. FERRIS:

No, sir. The methods, or proposal, which we make, will apply to all ordinary cements on the market today that we know of. All classes of cements we have used - Standard portland or regular construction cements - slow setting cements. All generate heat and all of them act and react to the high temperatures of pressure in a similar manner.

MR. [illegible]:

Would you care to define the criteria limits you were speaking of, green then finally becomes brittle. That is the interval of time between when you feel it is safe to be [illegible] and that of when the cement has [illegible]?

'R. FERRIS:

I should like to call upon some of the tests we ran in connection with the casing which was backed up by cement set. The same as we have in oil well - set those tests up to study the behaviour or the reaction of the cement to this choke or force brought by the bulleting. In those tests we set up a series of apparatus which consisted of 5" casing set in an 8" hole, then filled with cement, surrounding that we had concrete, a hard formation. at 10 to 15 pounds we found the blast would not crack or shatter the cement, but in the green cement we found we would have holes blown in the cement 2½ to 3 inches in diameter. We found when the cement attains a certain strength of around 150 pounds - tensile strength, then the hole made by the bullet would be the same size - the bullet would gradually become smaller and smaller and after around 300 pounds cracks and shattering would set in. I believe that interval of greenness of cement or plasticity - that physical set would allow it to absorb the shock with the condition which exists after the time of its final set - or to between 150 pounds and 300 pounds, it would begin to border on that degree of hardness where shattering and breaking might set in.

:R. SPURR R:

Lets convert that to the time in hours - from 8 pounds to 150 pounds.

:R. FERRIS:

To convert that to hours I would have to know the type of cement, the weight, the temperatures and pressures - just for rough figures temperatures and pressures should normally be encountered on the surface pipe, I would say we would have 150 pounds tensile strength perhaps in the neighborhood of 48 hours. Those are just off-hand figures, it would be in that region I think. Again it would depend on the type of cement. When you go down to 8,000 feet, 160 degrees temperature, 5,000 pounds of pressure, that condition which for a time might be dropped to 12 hours.

J.OSS SETH:

Anyone one else care to be heard?

:R. FOSTER MORRELL:

I thought it would be of interest to the users and operators to know that the Geological Survey has under consideration an order with respect to federal lands, involving waiting on cement time. We have had for some time, based largely on these experiments. The Federal regulation is 72 hours for all strings. For many years the requirement along that line, based largely on early development in Ealy County - so many failures occurred that we found 72 hours would take care of practically every job. Our interest in control and assurance of cementing is due primarily to the shallow formations found in the Ealy County area. The order has been applied to Lea County. We don't know yet when it might be extended to Lea County. The recognized progress made in the cementing, and the experiments, we have had a number of operators want to go less the 72 hours - we have no argument with the laboratory tests and they appear to be well substantiated facts - we do feel sometimes the practical operation in the field does not meet the standards or perfection of the laboratory tests, and naturally, a new order has to be an over all order and will take care of the operator who is least prepared to conduct a satisfactory cementing job as those that are best prepared. In that connection, last Spring we started witnessing some of these

tests presented to the Commission. Our witnessing was during the early stages, and out of the first dozen less than one-half obtained set - results which were comparable to the laboratory tests, primarily due to mechanical failures which does not necessarily disprove the test would not set.

In June of last year the matter was circularized among 19 major companies operating in Lea County, and I have letters that were received by Rowan Drilling Company with respect to reducing this time on federal land, and the agreement of the majority was for a waiting of cement time of 24 hours on conducting string and 48 hours on intermediate string and production string - The Shell, Mid - Continental, Anderson-Pritchard, Phillips, Skelly, Magnolia, Rowan, Tidewater Association, Continental Oil Company, Sinclair-Prairie, Amerado Petroleum Corporation, Texas-Pacific Coal Oil Company; Stanolind presented practically the same proposition they have petitioned to the Commission.- Humble Oil Company, Gulf Oil Company; Texas Company agreed to the same waiting on cement time but increased their release in pressure time.

These have agreed to that time does not necessarily bind them they do not agree to the lesser time under your petition. I think that qualifications should be studied in all fairness. We intend to keep 72 hours as a general requirement on federal land on cement time to cover base cementing jobs, but where a case of cement of circulation, we are agreeable to reduce the waiting to 24 hours, on surface casing and 48 hours intermediate, and production strings with the condition that additional cement requirements be made that the surface casing be cemented by circulation to the surfact or re-filled from the surface if necessary, and that sufficient amount of cement be used on intermediate production strings. As a minimum on volume, we figure 150 feet of the calculated volume necessary or after a calibre survey is run, 110 feet of calculated volume may be used - giving credit for the expense and additional information obtained, a minimum requirement would be the base of the firm recognizing the fact that it is not always practical. After further consideration of reducing this time, we are including a provision requiring a survey be made determining the height of cement behind the pipe. That information is very desirable, not only from the determination from the amount of cement, but also to prevent corrosion of pipe which has become a large factor in the older producing wells in Lea County, and pressure test shall be made. I merely wish to present this as information so the operators might be informed.

[illegible]:

Anyone else who would care to be heard at this time?

[illegible] - Phillips Petroleum Company

I would like to go on record as being in favor of Stanolind's proposal in change of cementing time on various casing strings.

[illegible] - Superior Oil Company

The Superior Oil Company favors the Stanolind's proposal.

[illegible] - Repollo Oil Company

The Repollo Oil Company favors reduction in cementing time. [illegible] objection to [illegible] requirements [illegible] to the proposed order.

[illegible] U. S. Geological Survey

[illegible]

that could possibly be eliminated. Another thought is that the laboratory tests make no reference to the use of water. We do know the quality of water has a lot to do with the setting time of cement. We had a variance in water used by operators in Lea County, the major companies will generally assure satisfactory water. Some of the other areas might not be able to rely on the petition.

MR. W. B. HUBBARD - Humble Oil Company

The Humble Oil Company is in favor of the proposed reduction of cementing time.

MR. SPURRIER:

Then, Gentlemen, I assume the Commission is expected to promulgate a suitable order with the facts and opinions which we have in the record now. I might add the Commission will not approve or disapprove the recommendations and the case will be taken under advisement, and a suitable order promulgated.

This concludes Case No. 90.

MR. ATWOOD:

The Gulf proposal, I think, can be disposed of in a very few minutes.

CASE NO. 91

MR. ATWOOD:

This applies to modification of existing oil wells relative to fire walls.

TESTIMONY OF MR. LLOYD L. GRAY:

(After being duly sworn, Mr. Gray testified as follows)

MR. ATWOOD:

State your name.

MR. GRAY:

Lloyd L. Gray.

MR. ATWOOD:

Where do you reside?

MR. GRAY:

Tulsa, Oklahoma

MR. ATWOOD:

You are employed by the Gulf Oil Company?

MR. GRAY:

Correct.

MR. ATWOOD:

What position?

MR. GRAY:

Chief production engineer.

MR. ATWOOD:

How long have you had that position?

MR. GRAY:

Approximately 10 years.

MR. ATWOOD:

Mr. Gray, will you state to the Commission what you have to offer with reference to this petition?

MR. GRAY:

At the present time, it is a requirement that storage tanks be enclosed in fire wall capacity 1/3 greater that the storage tanks. I was present when they had the discussion and hearings with reference to the matter. As I recall, they did not give this particular matter a great deal of consideration. In other words, at that time it was practical in other states to have fire walls - practical in other states at the time the statute was enacted creating the Oil Conservation Commission. The requirement in other states, I believe, was more or less outmoded at the time it was adopted. Original tank ladders did not have tops on them, did not have vent lines so that the hazard at this time is nowhere near the hazard involved at the time those ordinances promulgated in other states. Our proposal is that the order requiring fire walls be rescinded except for the tank where batteries are within 500 feet of inhabited dwellings or highways, or 1,000 feet of schools or churches. Any public building where a substantial number of people work or gather.

We have been operating for between 11 and 12 years since the order was promulgated and we have a record of only one fire in that time - that has to do with Gulf only, and I believe at this time we have about 330 walls in Lea County. I believe it is an unnecessary investment. Our records indicate the investment in fire walls cost $150 per two tank battery, will increase $50 per tank in the battery. A compilation of our cost of maintaining fire walls shows direct operating charges against the business amounts to $50 per tank per year. In addition, there is sometimes spent by the Mayer or other employees whose time are not charged directly; the overall cost of maintaining fire walls probably exceeds $50 per year. We feel elimination of tank battery will not cause undue hazard.

MR. [illegible]:

This is an economical consideration entirely?

MR. GRAY:

It has an economical phase to it, but in our operations in Lea County there is not a great deal of damage that would occur. This is a requirement only on [illegible] batteries, I believe, so far as any damage occurring from wrecks there is no greater, probably less leaks that occur in pipe lines from lead lines or pipe lines. We don't want to propose any that would be dangerous.

MR. SPURRIER:

Does not occur to you that in Lea County - you do confine this to Lea County?

MR. GRAY:

So far as we are concerned, we are [illegible] Lea County.

MR. ATWOOD:

No chance for any escape into streams in Lea County is it?

MR. GRAY:

No, I don't believe so.

MR. ATWOOD:

One other question, in other states do they have this?

MR. GRAY:

In Michigan, I believe that is considered up there.

MR. ATWOOD:

Would the Commission like anyone to ask Mr. Gray any questions?

(No questions)

Do you have any factual data to submit?

MR. GRAY:

We have made a compilation of construction cost and brought it down in terms of two-tank batteries - might be of interest to the Commission.

TESTIMONY OF MR. McKeithan.

(After being duly sworn, Mr. McKeithan testified as follows)

I have prepared some notes somewhat along the line of Mr. Gray's testimony, except they probably go into more detail. Stress some of the phases other than the fixing and the unnecessary expense. Don't think it is necessary to go through the first part, but would like to mention some of the disadvantages other than economical disadvantage.

1. My company has come definitely to the conclusion that fire walls in a great many cases, over large areas, particularly such as in most of the New Mexico fields, are a definite disadvantage for the reason they prevent proper drainage conditions around the tank battery, which result in exterior corrosion of tank bottoms.

2. They provide a trap for wind-blown trash and weeds.

3. They form a collecting basin for spilled oil and poisonous gases.

4. They are a definite hindrance to "good housekeeping" in that normal maintenance and repair work around the tank battery is rule more difficult.

5. They necessitate stairways over the wall, thus creating an additional safety hazard to employees.

COMMISSIONER MILLS:

Lets go back to number 4 - a definite hindrance to "good housekeeping" - why?

MR. McKEITHAN:

Because it is much more difficult to get in around the tanks

when you have this wall of considerable height surrounding the battery and the stairways, whereas if your ground is level around the tank battery, it is very simple to maintain and take care of your installations.

COMMISSIONER MILES:

The wall does not interfere with maintaining your tank does it?

MR. McKEITHAN:

No, sir. They run extremely far away - they are way in the very rear proximity of the installation itself. I think a regulation in New Mexico calls for an enclosure large enough to hold 1-1/3 times the calculated volume of the tanks.

These additional provisions, we are very much interested and in favor of removing that part of the general rule which makes it mandatory in all cases to construct fire walls around tank batteries. In Kansas and Oklahoma we got along very nicely without that requirement. In many cases in such a large percentage where it is necessary and desirable to have protection around the tank battery. In that case it is up to the operator for their own protection.

We should like to endorse and urge the Commission to adopt the recommended change as proposed by the Applicant.

MR. VERNON BOTTS -

Is it intended by rescinding this order you will not have to maintain the present fire walls?

MR. GRAY:

That was our intention.

MR. FOSTER MORRELL:

If favorable consideration is given by the Commission of this application, I would like to suggest the consideration of stating that this order be accepted within the areas of established municipalities, and that the 1,000 foot rule applies to schools and churches, and be also extended to state or federal parks, fish refuges.

MR. ATWOOD:

I don't think there are any reclamation withdrawals in Lea County.

MR. GRAY:

So far as we are concerned, the proposal suggested by Mr. Morrell will be satisfactory.

MR. McKEITHAN:

It is satisfactory with us too.

MR. SPURRIER:

Anyone else like to be heard?

(No Response)

If not, we will conclude testimony on this case.

Exhibit A
Case #91

Gulf Oil Corporation - Gypsy Division
District No. 7

Tank Battery Firewall Construction & Maintenance Costs

I Initial Construction Costs

1. Construct firewall around two tanks and shovel up oil and rake — $ 149.50

2. Construct firewall for each additional tank — 50.00

Remarks - The above costs of items are covered by Younger Construction Company's Proposals YB-35-NM and YB-36-NM.

II Firewall Maintenance Based on Operations for Year of 1945

1. Total firewall expenditure for year of 1945 covered by contract — $9,300.00

2. Total number of jobs completed — 45

3. Total number of tanks within the 45 firewalls considered — 184

4. Average maintenance cost per firewall per year — $ 206.00

5. Average maintenance cost per firewall per tank — $ 50.00

Remarks - Some $5,750 was spent on the repair of 16 firewalls which involved 88 tanks.
(a) The average cost of repair of these 16 firewalls amounted to — $ 360.00
(b) The average cost of repair to these 16 firewalls per tank amounted to — $ 65.00

III Other Basic Information

1. At present there are 129 firewalls in this district.

RGM:lfr

Hobbs, New Mexico
January 7, 1947

B.

NOTES

on

ARE LEASE TANK BATTERY FIRE-WALLS NECESSARY IN PRESENT DAY OPERATIONS?

The maintenance of fire-walls or dikes around lease stock tanks is a practice that is an out-growth of the experience of operators in the very earliest day of the American petroleum production industry. The practice of maintaining fire-walls under modern producing conditions and with the use of modern equipment is a thoughtless carry-over from those early days and is supported only by a false sense of hazards involved. The practice of maintaining fire-walls was adopted in the early days due to the topography and generally wooded areas in the Eastern States, wherein the first crude storage tanks subject to leakage and overflow created fire or stream pollution hazards. Because of that condition, state regulations were adopted making it illegal to operate any lease without constructing a wall or ditch around the tank battery. Those state regulations were carried forward as the industry spread to other areas in the United States and were not altered even in the face of improved equipment or greatly improved operating practices.

Generally, present state regulations call for a retaining wall of such heighth enclosing an area sufficient to create a capacity equal to or greater than the capacity of the enclosed tanks.

The intended functions of fire-walls are usually considered to be as follows:

1. Control fire which has started within the limits of the battery from spreading to outside areas and also of fire which has started outside the tanks from approaching the proximity of the tankage.

2. Keep oil which has been accidentally overflowed from tankage from spreading over the surrounding land.

In many regions where oil is produced in the United States, the terrain is such that damage to farm lands from accidental oil overflow or from spreading fire would be negligible. The chances of an outside conflagration attacking the tankage would also be slight.

The main problem then seems to be the one of comparing the cost of constructing and maintaining fire-walls to the actual tangible and/or intangible benefits and insurance derived from their usage. In some areas the over-all cost of constructing and maintaining walls throughout the life of the battery runs into a considerable money, whereas the maximum damage which might occur from any type of run-over or fire would be small. In most of the producing areas of the Mid-Continent this is certainly the case, particularly so in those portions where the plains and desert pervail.

In addition to the unnecessary expense involved, there are several distinct operating disadvantages in having fire-walls around lease tank batteries. These disadvantages may be summarized as follows:

1. Fire-walls prevent proper drainage conditions around the battery, with resultant exterior corrosion of tank bottoms.

2. They provide a trap for wind-blown trash and weeds.

3. They form a collecting basin for spilled oil and poisonous gases.

4. They are a definite hindrance to "good housekeeping" in that normal maintenance and repair work around the tank battery is made more difficult.

5. They necessitate stairways over the wall, thus creating an additional safety hazard to employees.

It should be stressed that under modern day operations the use of lease tank battery fire-walls in most areas is absolutely useless and in many cases quite harmful. Oil field equipment is greatly better and more efficient in operation than it was during the time when existing state regulations were formulated. A majority of the operators are currently using steel welded tanks of heavy gauge material and pressure relief equipment thereby reducing the hazards of leaking or rupture to a minimum. Modern pressure-tight connections and fittings are of a type which promote safe operations. Furthermore, the use of burning pits for disposal of waste oil and water is now a common practice which itself is a safety precaution. There are few if any wood tankage in use today in the more recently developed fields.

There are, of course, some instances where it is desirable that fire-walls and dikes be used. This is particularly true in areas where there is grave danger of drinking water pollution or where valuable crops and timber might be damaged by fire or oil. Also in densely populated communities fire-wall protection might be of unestimated value both for physical and physological reasons. In such cases, it would surely be to the advantage of the producer to have adequate fire-walls around tank batteries.

Some states (Kansas and Oklahoma) have recognized this situation and have as a result removed all fire-wall regulations from their general conservation rules. This was done on the theory that special field rules, if needed, could take care of local conditions.

We believe that the existing New Mexico State regulations in regard to the blanket requirement for fire-walls are outmoded and should be either repealed or amended.

LEGAL NOTICES

Dec. 24

NOTICE OF PUBLICATION
STATE OF NEW MEXICO

The Oil Conservation Commission, as provided by law, hereby gives notice of the following hearings to be held at Santa Fe, New Mexico, at 10:00 A. M., January 10, 1947:

Case 90

In the matter of the application of Stanolind Oil and Gas Company for modification of the rules and regulations of the Commission with respect to the periods prescribed for waiting on cement in connection with the cementing of casing.

Case 91

In the matter of the application of Gulf Oil Cerporation for the promulgation of an Order revising Rule 15, General Order No. 4 "Oil Tanks and Fire Walls".

Case 92

In the matter of the Application of Gulf Oil Corporation for the issuance of a Special Order permitting the production of more than one horizon or pool through a single well bore in the Hobbs Pool, Lea County, New Mexico.

Case 93

In the matter of the Application of Gulf Oil Corporation for the issuance of a Special Order permitting the production of more than one horizon or pool through a single well bore in the Paddock, Drinkard, Brunson, Jones and Blinbry Pools, Lea County, New Mexico.

Case 94

In the matter of the Application of Gulf Oil Corporation for the promulgation of a General Order permitting and controlling production from more than one horizon or pool through a single well bore.

Given under the seal of said Commission at Santa Fe, New Mexico on December 20, 1946.

OIL CONSERVATION COMMISSION
By: (Signed) R. R. SPURRIER,
Secretary

(SEAL)

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATON COMMISSION

The Oil Conservation Commission, as provided by law. hereby gives notice of the following hearings to be held at Santa Fe, New Mexico, at 10:00 A. M., January 10, 1947:

Case 90

In the matter of the application of Stanolind Oil and Gas Company for modification of the rules and regulations of the Commission with respect to the periods prescribed for waiting on cement in connection with the cementing of casing.

Case 91

In the matter of the application of Gulf Oil Corporation for the promulgation of an Order revising Rule 15, General Order No. 4 "Oil Tanks and Fire Walls."

Case 94

In the matter of the application of the Gulf Oil Corporation for the promulgation of a General Order permitting and controlling production from more than one horizon or pool through a single well bore.

Given under the seal of said Commission at Santa Fe, New Mexico on December 20, 1946.

OIL CONSERVATION COMMISSION,
By: (Signed) R. R. SPURRIER,
Secretary

(SEAL)

52-1t

CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

COPY

December 20, 1946

Mr. S. G. Sanderson
Manager of Production
Gulf Oil Corporation
Tulsa, Oklahoma

Dear Mr. Sanderson:

Re: Cases 91, 92, 93 and 94 - Notice of Publication

Enclosed please find Notice of Publication in the matter of your petitions in the above-captioned cases, all of which are set for 10:00 o'clock A. M., January 10, 1947.

Very truly yours,

Chief Clerk and Legal Adviser

Encl
CBL:mem

IL CONSERVATION COMMISSIO
SANTA FE, NEW MEXICO

COPY

December 20, 1946

Honorable Glen Staley
Proration Office
Hobbs, New Mexico

Re: Cases 90, 91, 92, 93 and 94 - Notice of Publication

Enclosed is Notice of Publication in the above-captioned cases.

Very truly yours,

Chief Clerk and Legal Adviser

CBL:mem
Encl

L CONSERVATION COMMISSIOI
SANTA FE, NEW MEXICO

COPY

December 20, 1946

The Artesia Advocate
Artesia, New Mexico

Gentlemen:

Re: Cases Nos. 90, 91 and 94 - Notice of Publication.

Please publish the enclosed notice once, immediately. Please proof-read the notice carefully and send a copy of the paper carrying such notice.

UPON COMPLETION OF THE PUBLICATION, PLEASE SEND PUBLISHER'S AFFIDAVIT.

For payment please submit statement in duplicate, accompanied by voucher executed in duplicate. The necessary blanks are enclosed.

Very truly yours,

Chief Clerk and Legal Adviser

CBL:mem
Encl

PETROLEUM AND ITS PRODUCTS

GULF OIL CORPORATION

P. O. BOX 661 · TULSA 2, OKLAHOMA

GYPSY
DIVISION

December 17, 1946

AIR MAIL

Mr. Carl B. Livingston
Attorney
New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Livingston:

Thanks very much for your letter of December 7 advising that the Commission will probably set a hearing date somewhere between the 7th and 10th of January.

We have several matters which we think should be set for hearing some time soon. In accordance with your suggestion, I have mailed under separate cover four applications for hearing on matters that seem to us to be important at this time. During your absence from Santa Fe last month we discussed with Mr. Spurrier the form in which the information for applications should be submitted. We have found it easier and more convenient for us to prepare these applications in more or less legal form; however, as Mr. Spurrier has doubtless told you, we anticipate that you will wish to make changes in the applications to fit your requirements. In case we have not given all the information in these drafts that you need or desire, we shall be more than glad to furnish any additional information necessary.

With kindest personal regards, and thanking you again for advising us of the Commission's plan to set a hearing date soon.
I am

Very truly yours,

S. G. Sanderson
Manager of Production

SGS:GG

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF :
GULF OIL CORPORATION for the promul- :
gation of an Order revising Rule 15, :
General Order No. 4 "Oil Tanks and :
Fire Walls". :

A P P L I C A T I O N

COMES NOW THE GULF OIL CORPORATION, hereinafter called the applicant, and shows to the Honorable Oil Conservation Commission of the State of New Mexico that:

1. Gulf Oil Corporation is incorporated in the State of Pennsylvania and is duly authorized to do business in the State of New Mexico.

2. Gulf Oil Corporation is actively engaged in the exploration, development and production of oil and gas in the State of New Mexico, and that Gulf Oil Corporation is one of the larger producers of crude oil in that state.

3. Rule 15 of General Order No. 4, quoted herewith for convenience of reference, states: "Oil shall not be stored or retained in earthen reservoirs, or in open receptacles. All lease, stock and oil storage tanks shall be protected by a proper fire wall, which wall shall form a reservoir having a capacity one-third larger than the inclosed tank or tanks. Such tanks shall not be erected, inclosed or maintained closer than 150 feet to the nearest producing well."

4. This application is concerned only with the provision of Rule 15 which requires the construction of fire walls at all storage tanks and tank batteries. It is the opinion of the applicant that such fire walls are unnecessary except where tanks or tank batteries are placed in the vicinity of inhabited buildings or public facilities, and that the construction of such fire walls, in many instances, causes unnecessary expense both in the initial construction and maintenance. Applicant's opinion is based on its own experience and observation regarding the probable failure of tanks and loss of oil and the damage resulting

therefrom. This opinion is further influenced by the isolated location and nature of the terrain of many of the tank batteries in New Mexico, which conditions render unlikely any significant damage from loss of oil.

Wherefore your applicant prays that the Honorable Commission promulgate an order revising or amending Rule 15 og General Order No. 4, and deleting the requirement that fire walls be constructed around lease flow tanks or storage tanks, except where such tanks are closer than 500 feet to inhabited dwellings or highways or closer than 1000 feet to schools or churches.

Respectfully submitted,

GULF OIL CORPORATION

By

Manager of Production

Dec. 16, 1946