

NEW MEXICO OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Form C-110
Revised 7/1/55

(File the original and 4 copies with the appropriate district office)

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION
TO TRANSPORT OIL AND NATURAL GAS

Company or Operator Great Western Drilling Company Lease North Central Caprock Queen Unit, Tract #2

Well No. 18-B Unit Letter D S 18 T 13-S R 32-E Pool Caprock Queen

County Lea Kind of Lease (State, Fed. or Patented) State

If well produces oil or condensate, give location of tanks: Unit D S 18 T 13-S R 32-E

Authorized Transporter of Oil or Condensate Service Pipe Line Co.

Address Box 671, Lovington, New Mexico

(Give address to which approved copy of this form is to be sent)

Authorized Transporter of Gas None

Address _____

(Give address to which approved copy of this form is to be sent)

If Gas is not being sold, give reasons and also explain its present disposition:

Small volume and no market

Reasons for Filing: (Please check proper box) New Well _____ ()

Change in Transporter of (Check One): Oil () Dry Gas () C'head () Condensate ()

Change in Ownership _____ () Other Unitized (X)

Remarks: _____ (Give explanation below)

**Formerly Great Western Drilling Co.
State "M" No. 1
Change effective January 1, 1959**

The undersigned certifies that the Rules and Regulations of the Oil Conservation Commission have been complied with.

Executed this the 29th day of December 19 58

By O. H. Crews (O. H. Crews)

Approved _____ 19 _____

Title General Superintendent

OIL CONSERVATION COMMISSION

Company Great Western Drilling Co.

By [Signature]

Address Box 1659, Midland, Texas

Title _____

1. The first part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation

$$f(x) = \int_0^x \frac{1}{1+t^2} dt.$$

It is well known that

$$f(x) = \arctan x.$$

Let us

show that

$$f(x) = \arctan x.$$

For this we shall use the following theorem

Let $f(x)$ be a function defined on the interval $(-\infty, \infty)$

such that $f(0) = 0$ and $f'(x) = \frac{1}{1+x^2}$. Then $f(x) = \arctan x$.

Proof.

Let $F(x)$ be a function defined on the interval $(-\infty, \infty)$

such that

$$F'(x) = \frac{1}{1+x^2}.$$

- Let $F(x)$ be a function defined on the interval $(-\infty, \infty)$ such that $F(0) = 0$ and $F'(x) = \frac{1}{1+x^2}$. Then $F(x) = \arctan x$.

Let

$$G(x) = \arctan x.$$

Then

$G(0) = 0$ and

$$G'(x) = \frac{1}{1+x^2}.$$

By the theorem we have $G(x) = F(x)$.

Therefore $f(x) = \arctan x$.