

1 MEXICO OIL CONSERVATION COMMISSION

P. O. BOX 2045

HOBBS, NEW MEXICO

Date May 3, 1957

To:

Re: Gas Wells

Continental Oil Co.

Box 427

Hobbs, New Mex.

This is:

A New Gas Well ()
An oil well converted to gas ()
An Oil-Gas Dual ()
A Gas-Gas Dual (X)

Gentlemen:

Form C-104 has been received on your Warren Unit BT #8-J 28-20-38,
Lease and Well No. Unit S-T-R

But no allowable can be assigned this well until the following forms have been received:

Form C-110 _____

Plat _____

NSP Order _____

Affidavit of communitization _____

Notice of Connection _____

And a 160 acre allowable will be assigned in the Blinbry Pool

under NSP Order No. Not Needed.

Filed 2/20/57

Filed 2/20/57

Application filed Not Needed

Filed Not Needed

Date of connection 4/25/57

OIL CONSERVATION COMMISSION

E. J. Fischer

Engineer, District 1

Original-Operator
CC-File

Original-CCC, Santa Fe
CC-File, operator &
Transporter- EP

Introduction to the Theory of Groups

1.1. The Group Axioms

1.1.1. Definition of a Group

A group is a set G equipped with a binary operation \cdot satisfying the following axioms:

(G1) Closure: For all $a, b \in G$, $a \cdot b \in G$.

(G2) Associativity: For all $a, b, c \in G$, $(a \cdot b) \cdot c = a \cdot (b \cdot c)$.

(G3) Identity: There exists an element $e \in G$ such that $e \cdot a = a \cdot e = a$ for all $a \in G$.

(G4) Inverse: For each $a \in G$, there exists an element $a^{-1} \in G$ such that $a \cdot a^{-1} = a^{-1} \cdot a = e$.

Example 1.1.1

The set of integers \mathbb{Z} under addition is a group.

The set of non-zero real numbers \mathbb{R}^* under multiplication is a group.

1.2. Subgroups and Cosets

Let G be a group and H a subset of G . H is a subgroup of G if:

(H1) H is closed under the group operation.

(H2) H contains the identity element e .

For any element $a \in G$, the left coset of H with respect to a is the set $aH = \{a \cdot h \mid h \in H\}$.

The right coset of H with respect to a is the set $Ha = \{h \cdot a \mid h \in H\}$.

Two cosets aH and bH are either disjoint or identical.

The set of all left cosets of H in G is denoted by G/H .

The set of all right cosets of H in G is denoted by $H \backslash G$.

For any $a, b \in G$, $aH = bH$ if and only if $a \cdot b^{-1} \in H$.

The index of H in G is the number of distinct cosets of H in G , denoted by $[G:H]$.

Example 1.2.1

Let $G = \mathbb{Z}$ and $H = 2\mathbb{Z}$. Then $[G:H] = 2$.

1.3. Normal Subgroups and Quotient Groups

A subgroup H of G is normal if $aH = Ha$ for all $a \in G$.

For a normal subgroup H of G , the quotient group G/H is defined as the set of cosets of H in G with the operation $(aH) \cdot (bH) = (a \cdot b)H$.

Example 1.3.1

The kernel of a homomorphism is a normal subgroup.