

**NEW MEXICO OIL CONSERVATION COMMISSION**  
**Santa Fe, New Mexico**

**MISCELLANEOUS REPORTS ON WELL**

Submit this report in triplicate to the Oil Conservation Commission or its proper agent within ten days after the work specified is completed. It should be signed and sworn to before a notary public for reports on beginning drilling operations, results of shooting well, results of test of casing shut-offs, result of plugging of well, and other important operations, even though the work was witnessed by an agent of the commission. Reports on minor operations need not be signed and sworn to before a notary public. See additional instructions in the Rules and Regulations of the Commission.

Indicate nature of report by checking below:

REPORT ON BEGINNING DRILLING OPERATIONS		REPORT ON REPAIRING WELL	
REPORT ON RESULT OF SHOOTING OR CHEMICAL TREATMENT OF WELL		REPORT ON PULLING OR OTHERWISE ALTERING CASING	
REPORT ON RESULT OF TEST OF CASING SHUT-OFF	<b>X</b>	REPORT ON DEEPENING WELL	
REPORT ON RESULT OF PLUGGING OF WELL			

**Midland, Texas, January 4, 1941**

OIL CONSERVATION COMMISSION,  
 Santa Fe, New Mexico.

Place

Date

Gentlemen:

Following is a report on the work done and the results obtained under the heading noted above at the **Texas Company**  
**State of N. M. "O" (W.J. Rutledge, Jr.)**

Company or Operator **SW $\frac{1}{4}$**  of Sec. **16**, T. **17 S**, R. **32 E**, N. M. P. M.,  
**Maljamar** Field, **Lea** County

The dates of this work were as follows: **see below**

Notice of intention to do the work was (~~was not~~) submitted on Form C-102 on **December 20**, 19 **40**  
 and approval of the proposed plan was (~~was not~~) obtained. (Cross out incorrect words)

**DETAILED ACCOUNT OF WORK DONE AND RESULTS OBTAINED**

**Total Depth - 843' - Anhydrite.**

**Set and cemented 8-1/4" Lapweld casing at 843' with 50 sacks and completed cementing at 4:00 p.m., 12-19-40.**

**Drilled plug at 4:30 p.m., 12-26-40. Bailed hole dry and let stand one hour. Tested O.K. Hole dry.**

Witnessed by \_\_\_\_\_  
 Name \_\_\_\_\_ Company \_\_\_\_\_ Title \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_

I hereby swear or affirm that the information given above is true and correct.

**4** day of **January**, 19 **41**  
**C. J. Manes**  
 Notary Public

Name **PDG, Jr.**  
 Position **District Engineer**

Representing **The Texas Company**

My Commission expires **6-1-41**

Address **Box 1270, Midland, Texas**

Remarks:

**PDG, Jr-CVM**  
**NMOCC - 3**  
**Rutledge**

**Roy Yarbrough**  
 Name \_\_\_\_\_  
 Title \_\_\_\_\_

# Mathematical Induction

## Principle of Induction

Let  $P(n)$  be a statement.

If  $P(1)$  is true and  $P(k) \Rightarrow P(k+1)$  for all  $k \in \mathbb{N}$ , then  $P(n)$  is true for all  $n \in \mathbb{N}$ .

Base Case:  $P(1)$  is true.

Inductive Step:

Assume  $P(k)$  is true for some  $k \in \mathbb{N}$ .

Prove  $P(k+1)$ .

Inductive Hypothesis:

$P(k)$

Let  $P(k)$  be true for some  $k \in \mathbb{N}$ .

Then  $P(k+1)$  is true for all  $k \in \mathbb{N}$ .

Q.E.D.

Example: Prove that  $1 + 2 + \dots + n = \frac{n(n+1)}{2}$  for all  $n \in \mathbb{N}$ .

Base Case:  $P(1)$  is true.  $1 = \frac{1(1+1)}{2} = 1$ .

Inductive Step: Assume  $P(k)$  is true for some  $k \in \mathbb{N}$ .

Prove  $P(k+1)$ .

Inductive Hypothesis:

Let  $P(k)$  be true for some  $k \in \mathbb{N}$ .

Then  $1 + 2 + \dots + k = \frac{k(k+1)}{2}$ .

Now,  $1 + 2 + \dots + (k+1) = \frac{k(k+1)}{2} + (k+1)$ .

$= \frac{k(k+1) + 2(k+1)}{2}$

$= \frac{(k+1)(k+2)}{2}$

$= \frac{(k+1)((k+1)+1)}{2}$

$= \frac{(k+1)(k+1+1)}{2}$

$= \frac{(k+1)(k+2)}{2}$

Therefore,  $P(k+1)$  is true.

By the Principle of Induction,  $P(n)$  is true for all  $n \in \mathbb{N}$ .

Q.E.D.

Example:

Prove:

$1^2 + 2^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$  for all  $n \in \mathbb{N}$ .

Base Case:  $P(1)$  is true.  $1^2 = \frac{1(1+1)(2 \cdot 1 + 1)}{6} = 1$ .

Inductive Step: Assume  $P(k)$  is true for some  $k \in \mathbb{N}$ .

Prove  $P(k+1)$ .

Inductive Hypothesis: Let  $P(k)$  be true for some  $k \in \mathbb{N}$ .

Then  $1^2 + 2^2 + \dots + k^2 = \frac{k(k+1)(2k+1)}{6}$ .

Now,  $1^2 + 2^2 + \dots + (k+1)^2 = \frac{k(k+1)(2k+1)}{6} + (k+1)^2$ .

$= \frac{k(k+1)(2k+1) + 6(k+1)^2}{6}$

$= \frac{(k+1)(k(2k+1) + 6(k+1))}{6}$

$= \frac{(k+1)(2k^2 + k + 6k + 6)}{6}$

$= \frac{(k+1)(2k^2 + 7k + 6)}{6}$

$= \frac{(k+1)(k+2)(k+3)}{6}$