

NE EXICO OIL CONSERVATION COMMISS. I
SOUTHEAST NEW MEXICO PACKER LEAKAGE TEST

Operator Gulf Oil Corporation			Lease Eunice King			Well No. 15	
Location of Well		Unit F	Sec 28	Twp 21S	Rge 37E	County Lea	
Name of Reservoir or Pool			Type of Prod (Oil or Gas)	Method of Prod Flow, Art Lift	Prod. Medium (Tbg or Csg)	Choke Size	
Upper Compl Paddock			Oil	Pump	Tbg.	2" WO	
Lower Compl Wantz Abo			Oil	Pump	Tbg.	2" WO	

FLOW TEST NO. 1

Both zones shut-in at (hour, date): 11:15 a.m., 2-26-62

Well opened at (hour, date): 11:15 a.m., 2-27-62

	Upper Completion	Lower Completion
Indicate by (X) the zone producing.....		X
Pressure at beginning of test.....	7	340
Stabilized? (Yes or No).....	Yes	Yes
Maximum pressure during test.....	7	340
Minimum pressure during test.....	5	10
Pressure at conclusion of test.....	5	10
Pressure change during test (Maximum minus Minimum).....	2	330
Was pressure change an increase or a decrease?.....	Decr.	Decr.
Well closed at (hour, date): <u>11:15 a.m., 2-28-62</u>	Total Time On Production 21 hrs	
Oil Production	Gas Production	
During Test: <u>4</u> bbls; Grav. <u>39.6</u>	During Test <u>16.0</u>	MCF; GOR <u>4,000</u>
Remarks _____		

FLOW TEST NO. 2

Well opened at (hour, date): 11:15 a.m., 3-1-62

	Upper Completion	Lower Completion
Indicate by (X) the zone producing.....	X	
Pressure at beginning of test.....	4	0
Stabilized? (Yes or No).....	Yes	Yes
Maximum pressure during test.....	210	0
Minimum pressure during test.....	35	0
Pressure at conclusion of test.....	37	0
Pressure change during test (Maximum minus Minimum).....	175	-
Was pressure change an increase or a decrease?.....	Decr.	-
Well closed at (hour, date): <u>11:15 a.m., 3-2-62</u>	Total time on Production 24 hrs	
Oil Production	Gas Production	
During Test: <u>18</u> bbls; Grav. <u>36.3</u>	During Test <u>21.0</u>	MCF; GOR <u>1167</u>
Remarks _____		

I hereby certify that the information herein contained is true and complete to the best of my knowledge.

Approved _____ 19_____
New Mexico Oil Conservation Commission

By _____
Title _____

Operator GULF OIL CORPORATION

Original Signed By:
By J. W. Davis

J. W. DAVIS
Title WELL TESTER

Date 3-5-62

1. THE PROBLEM

The problem is to determine the number of ways in which the number 100 can be expressed as the sum of three squares of integers. This is a classic problem in number theory, and it is well known that the number of ways in which a number can be expressed as the sum of three squares is related to the number of divisors of the number.

Let N be the number of ways in which the number 100 can be expressed as the sum of three squares of integers. Then N is equal to the number of divisors of 100 which are not divisible by 4.

The number 100 has the prime factorization $2^2 \cdot 5^2$. The divisors of 100 are 1, 2, 4, 5, 10, 20, 25, 50, and 100. The divisors which are not divisible by 4 are 1, 5, 25, and 100.

Therefore, the number of ways in which the number 100 can be expressed as the sum of three squares of integers is 4.

The answer is 4.

2. THE SOLUTION

The solution is to use the formula for the number of ways in which a number can be expressed as the sum of three squares of integers. This formula is given by

$$N = \frac{1}{6} \left(\sum_{d|N} d \right) - \frac{1}{2} \left(\sum_{d|N, d \equiv 0 \pmod{4}} d \right)$$

where N is the number to be expressed as the sum of three squares, and the sums are over the divisors of N . In this case, $N = 100$, and the divisors of 100 are 1, 2, 4, 5, 10, 20, 25, 50, and 100.

The sum of the divisors of 100 is 182, and the sum of the divisors which are divisible by 4 is 54. Therefore, the number of ways in which the number 100 can be expressed as the sum of three squares of integers is

$$N = \frac{1}{6} (182) - \frac{1}{2} (54) = 30 - 27 = 3$$