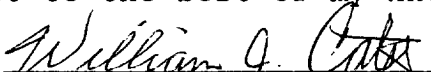


CHRISTIE GAS CORPORATION  
STATE LPG STORAGE WELL NO. 2  
JAL PLANT NO. 4  
UNIT M SECTION 32 T-23-S R-37-E  
LEA COUNTY, NEW MEXICO

MECHANICAL INTEGRITY TEST  
JULY, 1991

CERTIFICATION:

I, William J. Cates, do hereby certify that the Mechanical Integrity Test of Christie Gas Corporation's State LPG Storage Well No. 2 was conducted under my supervision from July 12 thru July 26, 1991 and that all facts, test data, and statements are true and correct to the best of my knowledge.

  
William J. Cates

Oil Conservation Witness: Eddie W. Seay

PERTINENT DATA:

Casing ----- 7" 20# J-55 set at 1672'  
Liner ----- 5 1/2" 15.50# J-55 set at 1656'  
Tubing ----- 2 7/8" 6.5# J-55 set at 1954'  
Well head and valves ----- 600 Series - 2,000 psi WOG  
Lithostatic Fracture Gradient ----- 0.86 psi/ft.  
Maximum Allowable pressure gradient to casing seat -- 0.75 psi/ft.  
Minimum proposed pressure gradient to casing seat --- 0.70 psi/ft.  
Maximum allowable pressure at casing seat of 1672' -- 1,254 psi.  
Minimum test pressure at casing seat of 1672' ----- 1,170 psi.  
Maximum surface pressure with 10# brine ----- 384 psi.

CHRONOLOGICAL LOG OF TEST PROCEDURE:

This well has been out of service since 1986. On November 5, 1990 the casing pressure was 540 psi and the tubing pressure was 45 psi.

On July 12, 1991 the well head was blinded-off and the casing pressure was 535 psi and the tubing pressure was 70 psi. Pumped 140 bbls. 10# brine down the tubing and casing pressure was 876 psi and tubing pressure was 402 psi. CAVERN COMPRESSIBILITY FACTOR =  $140 \text{ bbls} / (402 - 70) \text{ psi} = 0.422 \text{ bbls/psi}$ . A sample of the LPG was sent to a laboratory for analysis and the results showed that the product was mostly butane with a specific gravity of 0.573. A calculation for the product/brine interface is  $(876 - 402) / (1.2 - .573) = 1749'$ . The product/brine interface is below the casing seat.