

HISTORY OF OIL OR GAS WELL

Ute Mountain Tribal "D" Well No. 1 was spudded on February 21, 1958, and on February 23, 1958, 13-3/8" casing was set at 400' with 530 sacks cement. After waiting on cement, casing and water shut-off were tested with 800 pounds pressure for thirty minutes, which held with no drop in pressure.

8-5/8" casing was landed at 4210' with 550 sacks 6% gel cement, and followed by 50 sacks neat cement. After waiting on cement, casing and water shut-off were tested with 1500 pounds pressure for thirty minutes, which held with no drop in pressure.

5-1/2" casing was set at 9808' with 500 sacks 4% gel slow set cement followed by 100 sacks neat slow set cement. Top cement 7400' by temperature survey. After waiting on cement, casing and water shut-off were tested with 1200 pounds pressure for thirty minutes, which held with no drop in pressure.

Results of Drill Stem Test:

Drill Stem Test No. 1 - 8710'-8877' Paradox. Tool open 4 hours, 43 minutes. Gas to surface 6 minutes. Flowed mud, water and gas for two hours to clean up. Gas gauge thru meter run stabilized at 9780 MCFPD at end of test. FBHP 2285#-2725#. Two and one-half hour SIBHP 3750#. Hydrostatic 4375#-4325#. BHT 202° F. No evidence of water or distillate.

Drill Stem Test No. 2 - 9322-93' Mississippian. Tool open 3 hours and 20 minutes. Gas to surface in 20 minutes. Gas rate 36 minutes 433 MCFPD, 2 hours 890 MCFPD. Increased to 1141 MCFPD at end of test. (Gas nonflammable). No show of oil. BHFP 670#-90#. BHT 206°. Hydrostatic out 4735#, hydrostatic pressure in 4780#.

Drill Stem Test No. 3 - 9390'-9445' Mississippian. Tool open 45 minutes. Strong blow immediately gas to surface 2 minutes. Water cut mud 6 minutes and spray water 8 minutes. Used 3/8" bottom choke, 3/4" top choke. No water cushion. Flowed estimated 6000 MCF non-flammable gas. After open 30 minutes, 2" line started to freeze. Turned thru separator with 4" line in attempt to continue test but 4" line froze up and had to shut in well due to pressure increase. Initial FBHP 1780#, final FBHP 2965#, 1 hour SIBHP 4165#. Hydrostatic in 4910#, out 4865#.

Drill Stem Test No. 4 - 9466'-9504' Mississippian. Tool open 2 hours, 45 minutes. Strong blow air immediately. Gas to surface 2 minutes. Slight spray water thruout. Test used 3/8" bottom choke, 3/4" top choke. Final stabilized gas rate 7025 MCFPD, non-flammable gas, pitot tube measurement. Initial FBHP 825#, final FBHP 2610#, 15 minute SIBHP 4250#, hydrostatic in and out 5000#.

Mississippian formation proved to be non-commercial and well was completed in the Paradox formation.

Performed Paradox with four shots per foot 8248-8266, 8647-8658, 8762-8780. Set Baker retrievable bridge plug at 8840'. Tested bridge plug with 1250 pounds pressure which held ok. Spotted acid over perforations 8762-8780. Set Baker full bore connector at 8710'. Acidized with 1000 gallons 15% regular acid. Breakdown pressure 1500 pounds. Average injection rate 3-1/2 barrels per minute. Turned thru test lines for 3 hours and flowed thru 3/4" choke 8150 MCPPD.

Killed well and reset bridge plug at 8790'. Tested bridge plug with 1200 pounds, which held ok. Spotted acid over perforations 8647-8658. Set packer at 8586'. Acidized with 1000 gallons 15% regular acid. Breakdown pressure 2800 pounds, average injection rate 3 barrels per minute. Turned thru test lines for 7-1/2 hours and flowed thru 3/4" choke 10,400 MCPPD AND 12 barrels distillate per day. Distillate clear - 53.10 API Gravity.

Killed well and re-set bridge plug at 8418'. Tested bridge plug with 1200 pounds which held ok. Spotted acid over perforations 8248-8266. Set packer at 8197'. Acidized 1000 gallons 15% regular acid. Breakdown pressure 2800#, average injection rate 3 barrels per minute. Turned thru test lines for 5-3/4 hours and flowed thru 3/4" choke 9600 MCPPD, and 6 barrels distillate per day. Distillate clear, 53.40 Gravity. Killed well and retrieved bridge plug and came out of hole. Ran Baker model D-1 production packer set at 8713'. Ran 2" tubing with pack-off assembly landed at 8713' with Oils side door choke at 8712' with rubber protector sleeves opposite two upper zones; Equipped well to produce 8246-8266, 8647-8658 thru casing and 8762-8780 thru tubing.

Completed as shut-in the Dome Paradox development gas well June 3, 1958. Top pay Paradox 8080'.

Preliminary tests as follows:

Perforated zone 8762-8780 - Acidized with 1000 gallons, cleaned up well, flowed 3 hours thru 3/4" choke, 8150 MCPPD, Pilot Tube Measurement.

Perforated zone 8647-8658 - Acidized with 1000 gallons, cleaned up well, flowed 7-1/2 hours thru 3/4" choke, 10,400 MCPPD, Pilot Tube Measurement.

Perforated zone 8248-8266 - Acidized with 1000 gallons, cleaned up well, flowed 5-3/4 hours thru 3/4" choke, 9700 MCPPD, Pilot Tube Measurement.

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

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

for $x \in \mathbb{R}$. It is shown that $f(x)$ is an odd function and that $f(x) \in C^1(\mathbb{R})$. Moreover, it is proved that

$$\lim_{x \rightarrow \pm\infty} f(x) = \pm \frac{\pi}{2}.$$

2. The second part

of the paper is devoted to the study of the properties of the function $g(x)$ defined by the equation

$$g(x) = \int_0^x \frac{1}{1+t^4} dt$$

for $x \in \mathbb{R}$. It is shown that $g(x)$ is an even function and that $g(x) \in C^1(\mathbb{R})$. Moreover, it is proved that

$$\lim_{x \rightarrow \pm\infty} g(x) = \pm \frac{\pi}{4}.$$

3. The third part of the paper is devoted to the study of the properties of the function $h(x)$ defined by the equation

$$h(x) = \int_0^x \frac{1}{1+t^6} dt$$

for $x \in \mathbb{R}$. It is shown that $h(x)$ is an even function and that $h(x) \in C^1(\mathbb{R})$. Moreover, it is proved that

$$\lim_{x \rightarrow \pm\infty} h(x) = \pm \frac{\pi}{6}.$$