

DRILL STEM TESTS

- 6-22-49 DST #4 - From 9170' to 9230', 4 hour test, 3½" D.P., recovered 8870' dry gas in pipe, 300' oil. Corrected gravity 31.9, and 60' drilling mud cut 50% oil & gas. Halliburton Hydro. pressure in 4400#, out 4275#, Min. flow pressure 350#, Max. 400#, 1/4 hour build-up 600#. Amerada Hydro. in 4438#, out 4420#, Min. flow pressure 125#, Max. 395#, 1/4 hour build-up 700#.
- 6-24-49 DST #5 - From X 9323' to 9355', 4 hour test, 3½" Drill Pipe, 5/8" bottom & 1" top chokes, perf. 9324' to 9352'. Tool opened at 9:35 PM with light blow of air during test, tool closed at 1:35 AM for 1/4 hour build-up. Recovered 3270' sulphur water, 60' drilling mud cut 50% sulphur water, no oil or gas. Halliburton Hydro in 4490#, out 4250#, Min. flow pressure 1400#, Max. 1450#, 1/4 hour build-up 3450#. Amerada Hydro. in 4408# out 4408#, Min. flow pressure 1440#, Max. 1525#, 1/4 hour build-up 3510#.
- 7-6-49 DST #6 - From 10078' to 10162', 2 hours & 5 min. test W/3½" drill pipe W/5/8" bottom & 1" top chokes, perf. from 10079' to 10080' & 10136' to 10159' W/1000' water blanket, tool open at 8:30 PM, good blow of air for 50 minutes & died. Closed tool at 10:35 PM for 1/4 hour build-up. Recovered 1000' water blanket & 2620' of sulphur water.
- 9-15-49 DST #7 - From 12560' to 12597', 3½" Drill pipe W/5/8" bottom & 1" top chokes, Perf. from 12562' to 12594' W/3600' water blanket. Tool opened at 6:20 PM with light blow of air for 8 min. & died. Let set 30 Min. & closed tool. Picked up on packers & re-opened tool at 7:15 PM with fair blow of air, gas to surface in 3 hours & 35 min. ~~Too~~ Too small to measure. Closed tool at 11:15 PM for 1/4 hour build-up. Recovered 3600' water blanket, 120' oil & gas cut mud, 8230' oil, .4% mud, & 520' of dry pipe with gas odor. One stand of water - believe water to be fresh - Test showed no chlorides, specific gravity 1,000 - clear water. Halliburton Hydro. in 6025#, out 6000#, Min. flow 1775#, Max. flow 4200#, no build-up pressure. Amerada Hydro in 6160#, no hydro. out, Min. flow 1880#, Max. flow 4315#, no build-up pressure.

CHAPTER 1

The first part of the book is devoted to the study of the properties of the function $f(x)$ defined by the equation $f(x) = x^2 + 1$. We shall show that this function is strictly increasing on the interval $(0, \infty)$ and that it is concave down on the same interval. To do this, we shall use the first and second derivatives of the function.

Let $f(x) = x^2 + 1$. Then $f'(x) = 2x$ and $f''(x) = 2$. Since $f'(x) > 0$ for $x > 0$, the function is strictly increasing on $(0, \infty)$. Since $f''(x) < 0$ for $x > 0$, the function is concave down on $(0, \infty)$.

Next, we shall study the function $g(x) = x^3 - 3x^2 + 2x$. We shall show that this function has a local maximum at $x = 1$ and a local minimum at $x = 2$. To do this, we shall use the first and second derivatives of the function.

Let $g(x) = x^3 - 3x^2 + 2x$. Then $g'(x) = 3x^2 - 6x + 2$ and $g''(x) = 6x - 6$. Setting $g'(x) = 0$, we find that $x = 1$ and $x = 2$ are the only critical points. Since $g''(1) < 0$, $x = 1$ is a local maximum. Since $g''(2) > 0$, $x = 2$ is a local minimum.