

AER **G40 Misconceptions** re: Initial Pressures...

What's not specifically clear in Directive 40 is that Pressure Transient Analysis (PTA) is acceptable for estimating a p^* for Initial Pressure Oil and Initial Pressure Gas conditions:

Misconception #1: if a test doesn't pass the 2 kPa Rule it has to be shut-in > 14 days. Not True.

Misconception #2: all tests have to pass the 2 kPa Rule. Not True.

Misconception #3: all tests have to be shut-in > 14 days. Not True.

Minimum 8 h of Data

With a minimum eight hours (8 h) of subsurface transient pressure data, *it doesn't matter whether-or-not the test meets the 2 kPa Rule*, if the data are analyzable. PTA has been used for many decades to extrapolate build-up and fall-off tests to a theoretically stable point in time (p^*). We can analyze F&BU, DFIT & PID tests (PTA & PITA) to provide the AER with extrapolated pressures (p^*). The advent of digital data submissions (DDS) required the programming of "business rules" for the Board's computer to check, before accepting PAS files. Unfortunately the 2 kPa and 14 Day Business Rules have been misinterpreted. There are two critical edit mnemonics in the TRG.pas file that help explain...

Critical Edit Mnemonics:

~TEST DATA,INTRP.,Y,Test Interpretation Present

~PRESSURE RESULTS - SUMMARY,PEXTR.KPAA,9558.00,Representative Extrap/ False Pressure

That innocuous 'Y' flags the business rules to ignore the 2 kPa Rule and search instead for the p^* (PEXTR).

Flow & Build-up Tests

Traditionally new wells were cleaned up before a single point flow and build-up test was performed. This method is still valid, with PTA providing a p^* for Initial Pressure compliance. Formation flow characteristics (permeability & skin) are also provided for reservoir engineering, as well as production forecasts for tie-in economics. The build-up should be at least 4x as long as the flow period (but the longer the better).

Perforation Inflow, Formation Leak-off & Fracture Fall-off Tests

These simplified tests, now in common usage, provide an economical alternative to traditional methods. There are several different scenarios, depending on your completion operation logistics. All of them can be analyzed using PITA to generate a p^* for Board compliance.

Mini-frac' or DFIT Tests

Helpful for fracture stimulation design DFIT tests also Double For Initial Test using PITA to extrapolate a p^* (must have subsurface pressure gauges installed).