Santa Fe Main Office
Phone: (505) 476-3441
General Information
Phone: (505) 629-6116

Online Phone Directory Visit:
https://www.emnrd.nm.gov/ocd/contact-us/

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-53387

5. Indicate Type of Lease STATE ☐ FEE ☐ FED X

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: PAPA SQUIRREL SWD

1. Type of Well: Oil Well ☐ Gas Well ☐ Other INJECTION

8. Well Number 1

2. Name of Operator CHEVRON USA INC

9. OGRID Number 4323

3. Address of Operator 6301 DEAUVILLE BLVD, MIDLAND TX 79706

10. Pool name or Wildcat SWD;DELAWARE

4. Well Location
Unit Letter L : 1928 feet from the SOUTH line and 870 feet from the WEST line
Section 13 Township 26S Range 32E NMPM County LEA

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3204' GL

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER: DFIT/SRT TEST RESULTS			X

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Chevron USA Inc has conducted the DFIT/SRT tests on the Papa Squirrel SWD 1. Please see attached tests.

Spud Date: | Rig Release Date:

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

SIGNATURE Cindy Herrera-Murillo TITLE SENIOR PERMITTING SPECIALIST DATE 9/8/2025

Type or print name Cindy Herrera-Murillo E-mail address: Cherreramurillo@chevron.com PHONE: 575-263-0431

For State Use Only

APPROVED BY: TITLE DATE

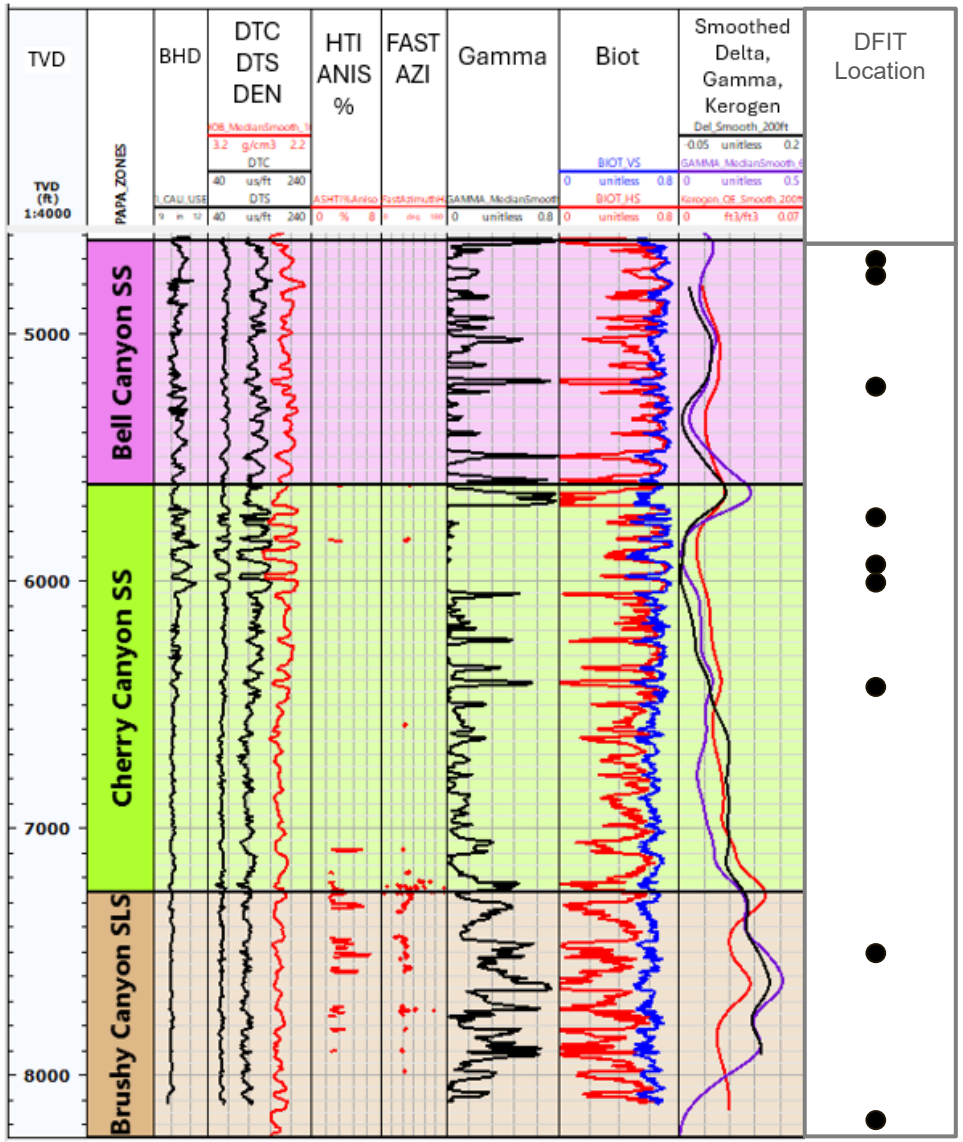
Conditions of Approval (if any):

the human energy company™

Papa Squirrel DFIT and SRT Interpretations

Xinghui “Lou” Liu, Cody Baca, Brent Kebert and Kris Walker
Chevron
9/2/2025

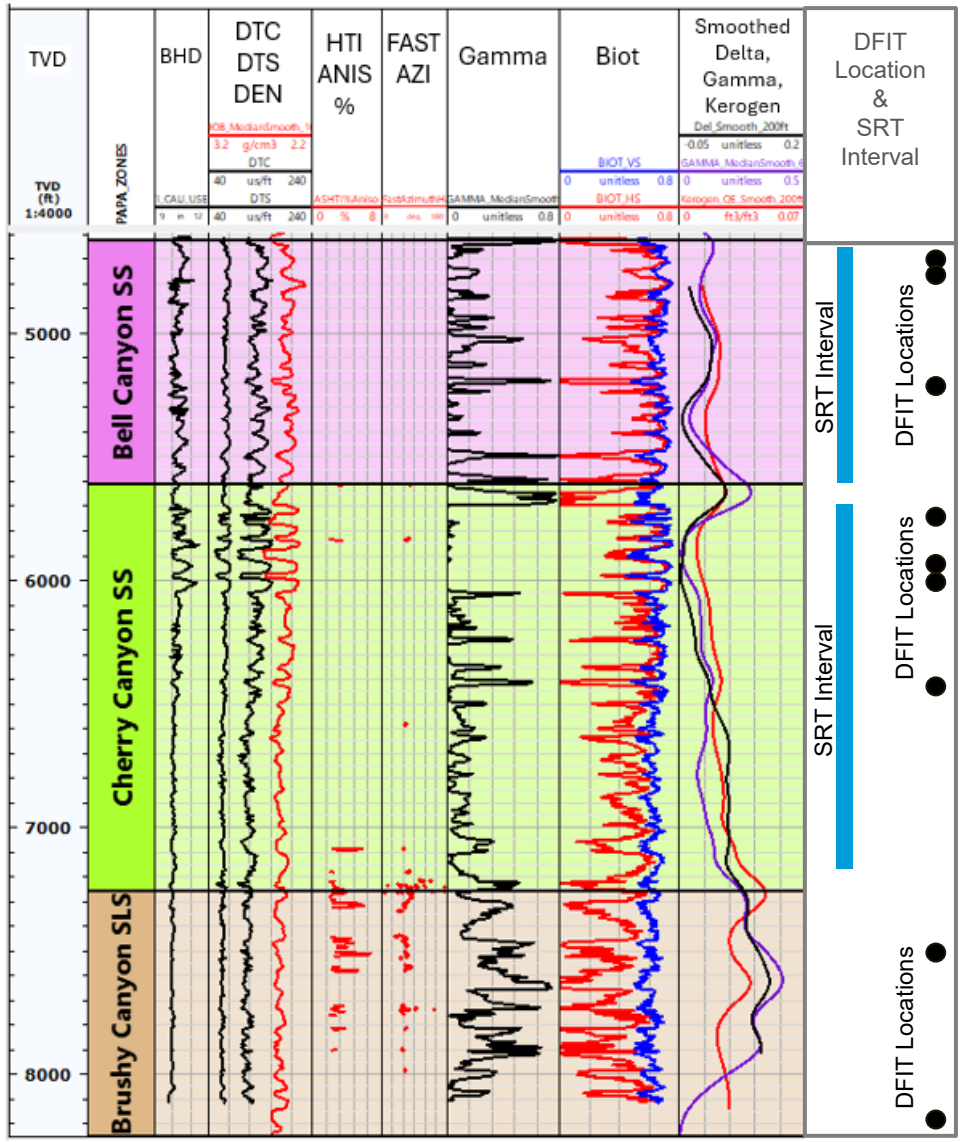
DFIT Summary



Formation	TVD (ft)	ISIP (psi)	ISIP Grad (psi/ft)	Shmin (psi)	Shmin Grad (psi/ft)	Pp (psi)	Pp Grad (psi/ft)	Stress Confidence
Bell	4692.5	2,890	0.62	2,609	0.56	N/A	N/A	Higher
Bell	4724.5	2,832	0.60	2,600	0.55	2,379	0.501	Higher
Bell	5221.5	3,159	0.60	2,878	0.55	2,550	0.488	Lower
Cherry	5752.5	3,603	0.63	3,199	0.56	2,763	0.480	Higher
Cherry	5935.5	3,566	0.60	3,212	0.54	3,033	N/A	Higher
Cherry	6010.0	3,671	0.61	3,338	0.56	3,014	0.501	Higher
Cherry	6439.0	4,046	0.63	3,914	0.61	N/A	N/A	Lower
Brushy	7499.5	6,863	0.92	6,161	0.82	N/A	N/A	Lower
Brushy	8187.5	7,572	0.92	6,294	0.77	4,293	0.52	Higher

- Nine DFITs were conducted across the 3 DMG formations from the Papa Squirrel in support of SWD permit application.
- Testing pressure was measured at surface with high-precision pressure gauges.
- Bottomhole pressure was converted based on fluid density.
- Stress confidence is labeled as higher or lower based on fracture closure signatures.
- Pore pressure (Pp) interpretation is not accurate due to the lack of reliable linear flow signature, but an average gradient of 0.50 psi/ft was provided for mechanical earth model calibration.

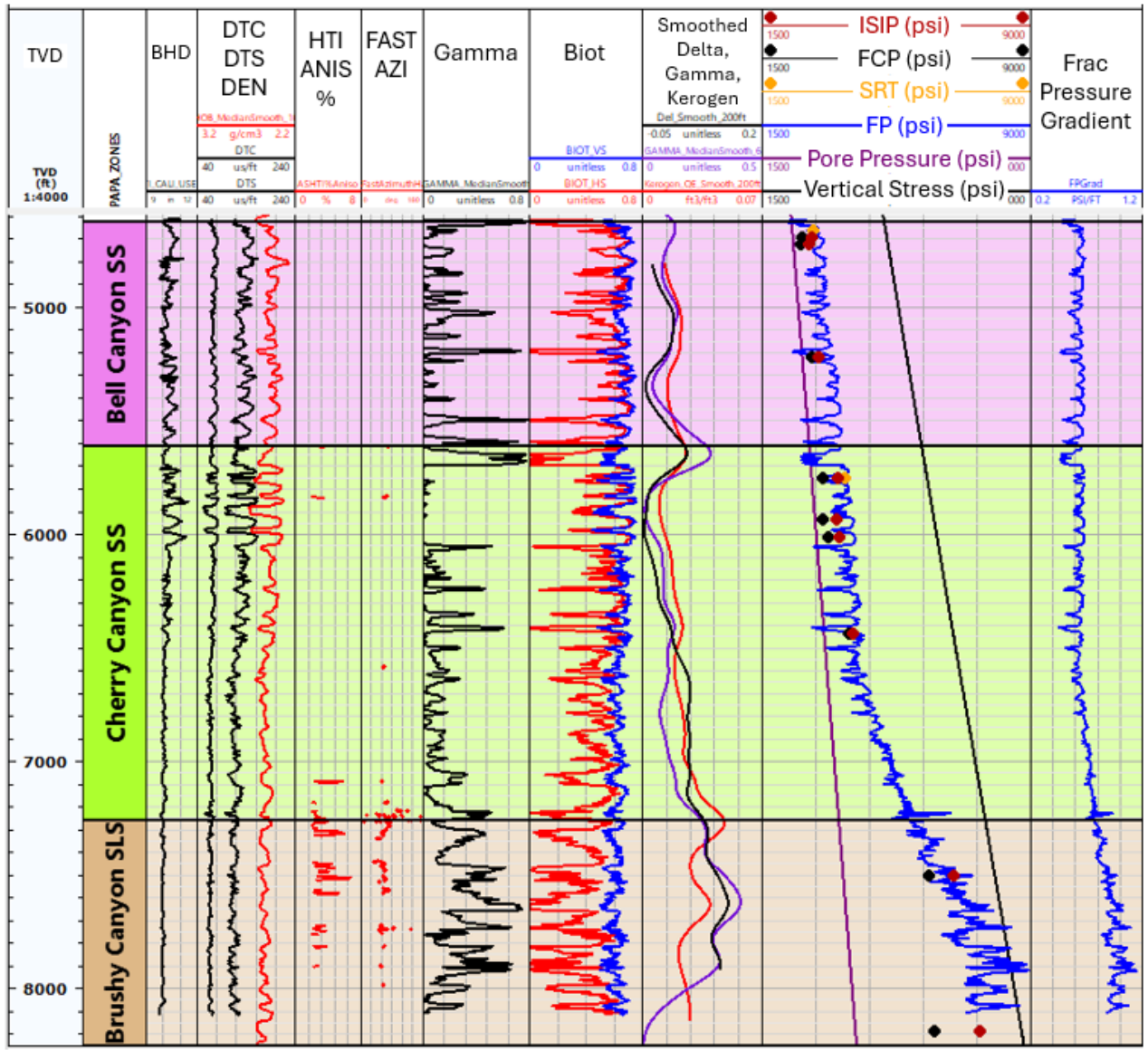
SRT Summary



Formation	Perf MD (ft)	Perf Top TVD (ft)	Frac Press (psi)	Frac Press Grad (psi/ft)	ISIP (psi)	ISIP Grad (psi/ft)	Est. Net Press (psi)	Shmin (psi)	Shmin Grad (psi/ft)
Bell	4,662-5,682	4,660	2,900	0.62	2,780	0.60	241	2,539	0.55
Cherry	5695-7175	5,693	3,720	0.65	3,450	0.61	306	3,144	0.55

- Two SRTs were conducted in the Cherry and Bell Canyons.
- DH gauges were installed, and pressure was converted to the top perforation depth.
- Fracture extension pressure (frac press) and ISIP from each SRT were obtained.
- Fracture extension pressure is higher than ISIP by 120-270 psi.
- A fracture from each SRT would initiate where the minimum stress (Shmin) is the lowest and tends to be near the perf top.
- If an average net pressure estimated from the DFITs was used, the estimated Shmin values from SRTs are consistent with those from DFITs.
- Due to lower permeability, the fracture from each SRT was initiated at very low rate, which is consistent with the observation from DFITs.

DFIT/SRT Integration with Mechanical Earth Model

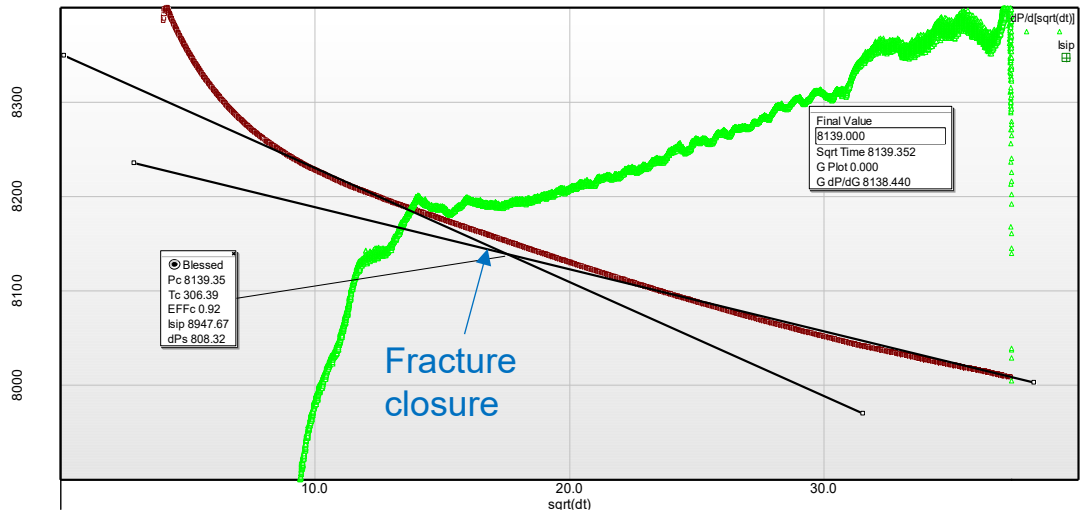


- Regional pore pressure has been elevated due to extensive SWD activity in adjacent areas of the Delaware Basin in Texas.
- Kerogen maturation effects, which may induce horizontal tectonic strain through microporosity development in the lower Cherry and Brushy formations, have significantly increased the minimum stress in these two formations.
- SRT data shows that the fracture extension pressure is higher than ISIP by 120 psi in the Bell and 270 psi in the Cherry, which could bring to the fracture pressure gradient in the Brushy to ~ 1.0 psi/ft.
- The fracture pressure gradient in the DGM at the Papa Squirrel starts increasing with from 0.6 psi/ft depth at 6500 ft to ~1.0 psi/ft at 7700 ft, most likely due to an increase in pore pressure in cross-border SWD disposal and kerogen maturation effects in the Brushy Canyon.

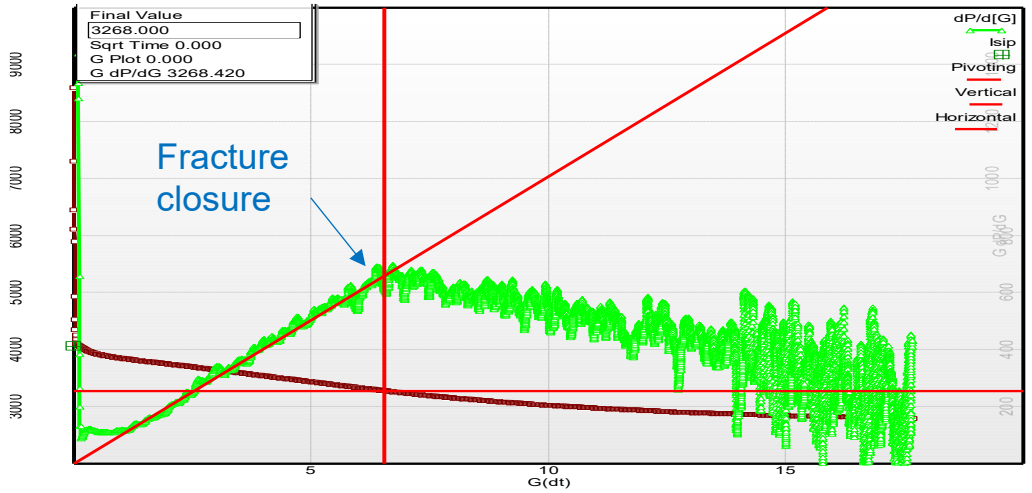
Pre-Closure Analysis Methods and Plots

- Commonly used pressure decline analysis techniques to obtain closure stress include:
  - Square-root time plot
  - G-function plot
  - Log-log plot
- Among techniques using these diagnostic plots, the G-function plot is the most popular.

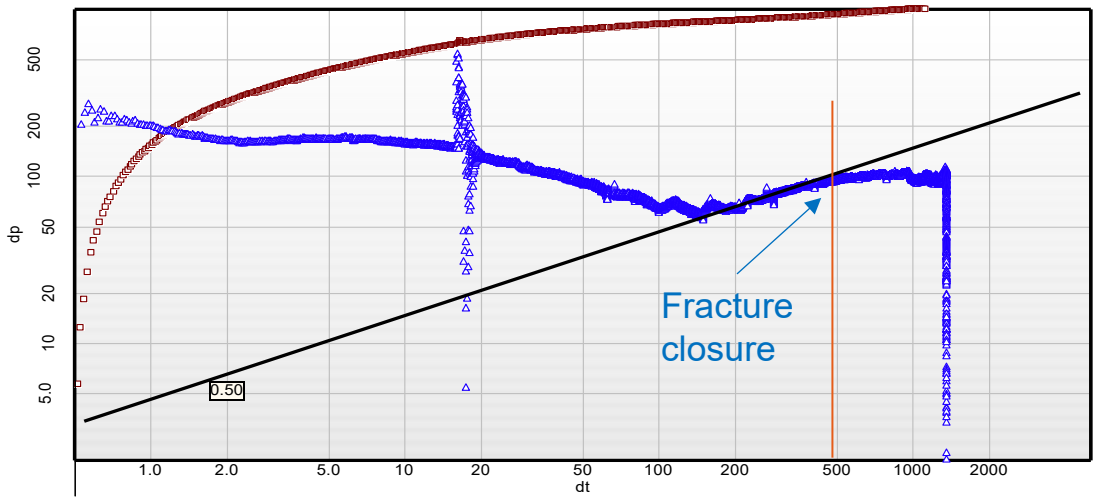
Typical Square Root Time Plot



Typical G Function Plot



Typical Log-Log Plot



G-time Function for Pre-Closure Analysis

- A straight-line pressure response over time during shut-in is the best way to characterize fracture closing behavior.
- A G-time function was introduced by Nolte (1979) in the paper SPE- 8341 to analyze pressure decline data:

$$\Delta P = (P_f - P_c) \propto \frac{\pi C_L \sqrt{t_p}}{2c_f} G(\Delta t_D)$$

- Pre-closure analysis (**PCA**) is thus performed using one of the three types of plots:
  - Pressure vs G-function time
  - Pressure vs square root of time
  - Pressure vs time on log-log scale
- G-function is most popular, as it is often used to identify natural fracture opening in addition to closure stress.
- In addition to closure stress (Shmin), the following parameters can be determined from PCA:
  - Instantaneous Shut-In Pressure (ISIP)
  - Net fracture pressure
  - Fracture fluid efficiency

G-function Definition

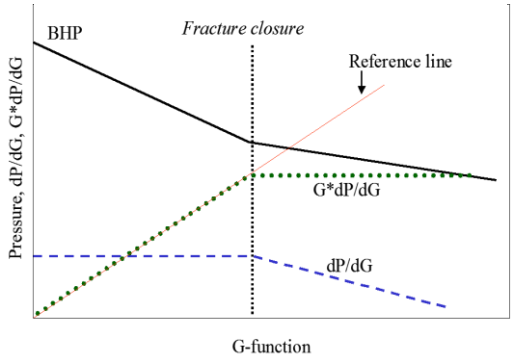
$$\Delta t_D = (t - t_p)/t_p$$

$$G(\Delta t_D) = \frac{4}{\pi}\left(g(\Delta t_D) - g_0\right)$$

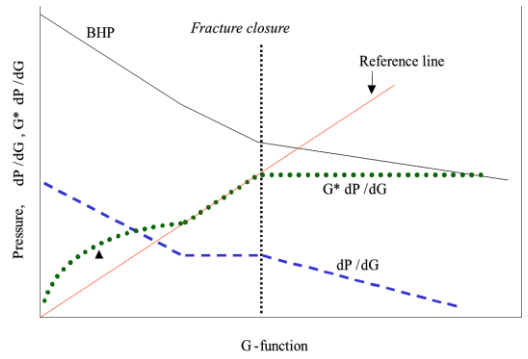
$$g(\Delta t_D) = \begin{cases} 4/3\left((1+\Delta t_D)^{1.5} - \Delta t_D^{\,1.5}\right) & -\textit{low leakoff} \\ (1+\Delta t_D)\sin^{-1}(1+\Delta t_D)^{-0.5} + \Delta t_D^{\,0.5} & -\textit{high leakoff} \end{cases}$$

where t is total time and t_p is pumping time

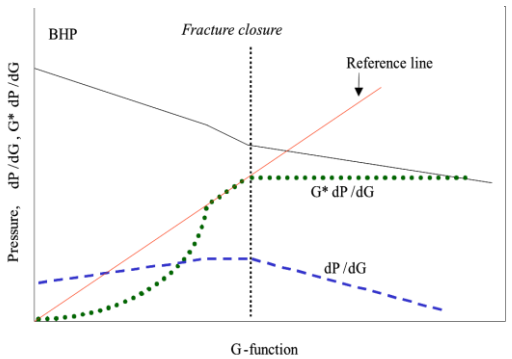
Normal Leakoff Behavior



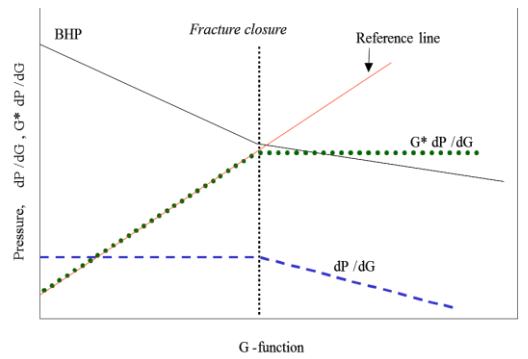
Pressure Dependent Leakoff



Fracture Height Recession



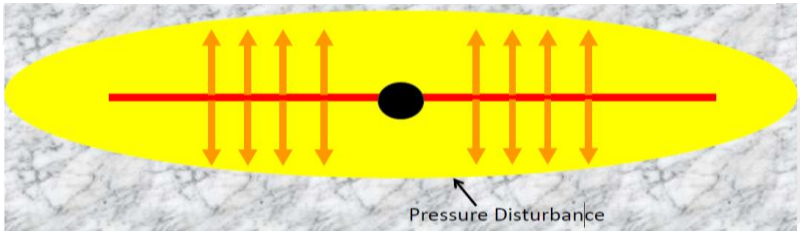
Fracture Tip Extension



After-Closure Analysis

- After-closure analysis is performed after the fracture closes.
- ACA is based on the "**impulse solution**", which assumes a short duration of injection and depends on the injection volume.
- Traditional pressure transient analysis (PTA) is typically based on the "constant-rate solution".
- During the pressure decline, **two linear flow regimes** can develop:
  - **The first linear flow** is driven by fluid leakoff from the fracture into the formation before the fracture closure.
  - Once the fracture is closed, **the second linear flow** is the pressure fall-off behavior in the formation without any fluid coming from the fracture. It calls as pseudo linear flow (**PLF**).
- If the shut-in is long enough and the reservoir is more permeable, a pseudo radial flow (**PRF**) may develop. In this case, the fracture acts as a giant wellbore, and the reservoir pressure and permeability can be determined independent of fracture geometry.
- More uncertainty is associated with reservoir permeability estimation from PLF as it depends on fracture geometry and leakoff behavior. It is difficult to accurately determine fracture length/height for small injection tests.

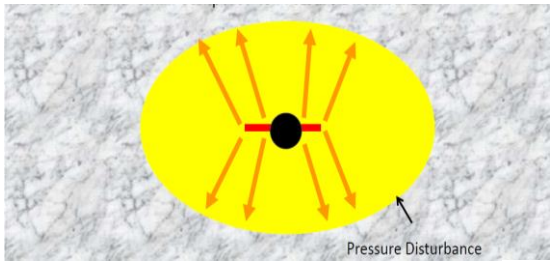
Pseudo-Linear Flow



$$p(t) - p_r = m_L F_L(t, t_c) \qquad m_L = C_T \sqrt{\frac{\pi \mu}{k \phi c_t}}$$

$$F_L(t, t_c) = \frac{2}{\pi} \sin^{-1} \sqrt{\frac{t_c}{t}} \qquad C_T = \frac{V_{inj}}{8 h x_f \sqrt{t_c}}$$

Pseudo-Radial Flow

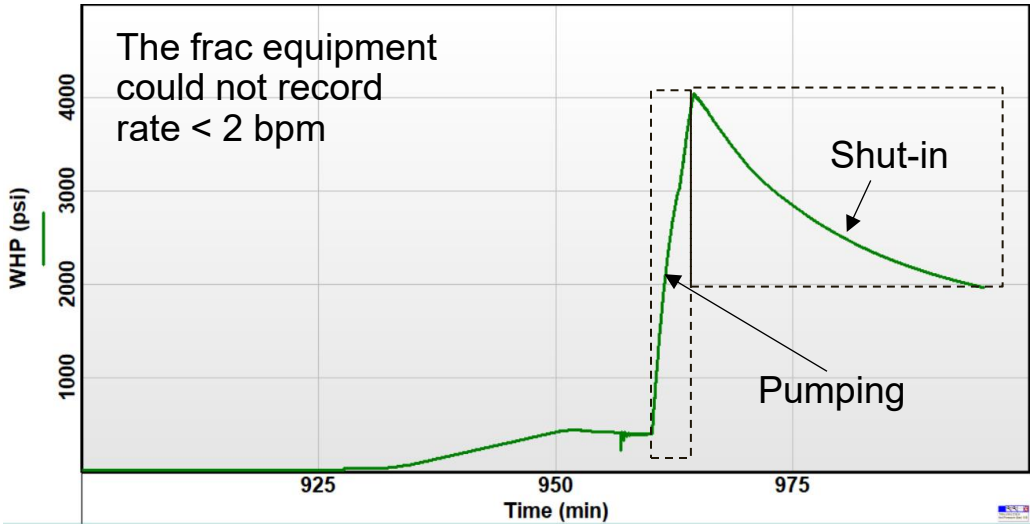


$$p(t) - p_r = m_R F_R(t, t_c) \qquad m_R = \frac{\pi}{16} \frac{V_i \mu}{k h t_c}$$

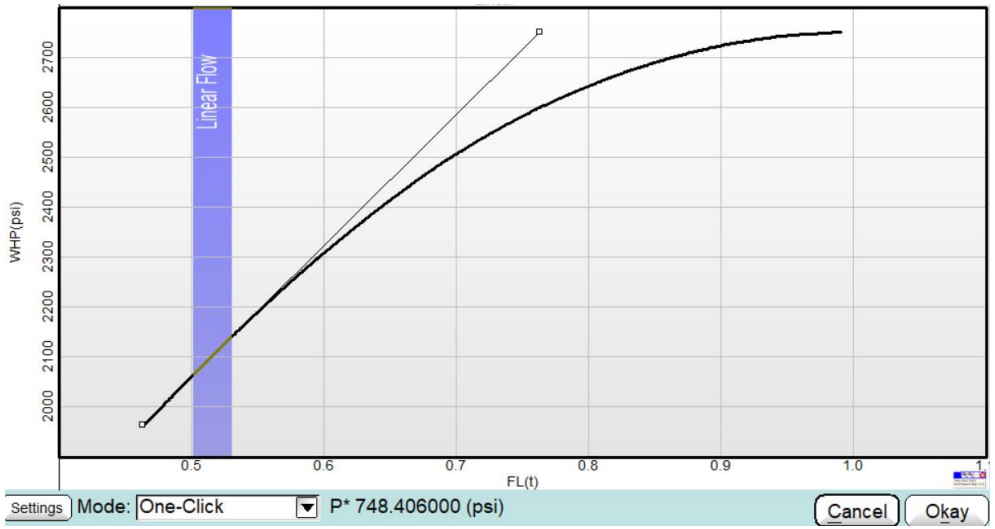
$$F_R(t, t_c) = \frac{1}{4} \ln\left(1 + \frac{\chi t_c}{t - t_c}\right) \qquad \chi = \frac{16}{\pi^2} \cong 1.6$$

DFIT in the Brushy (Sand)

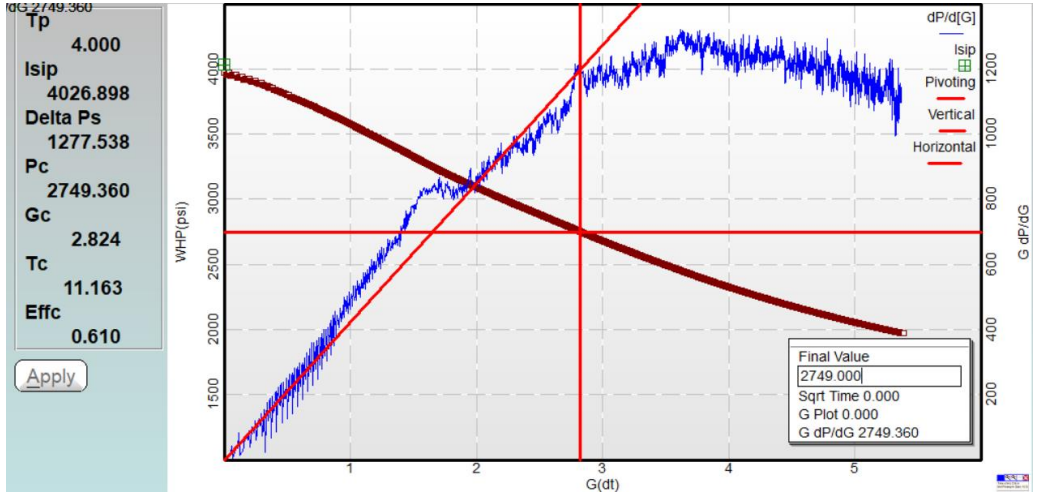
DFIT Surface Pressure Data



Reservoir Pressure Estimation



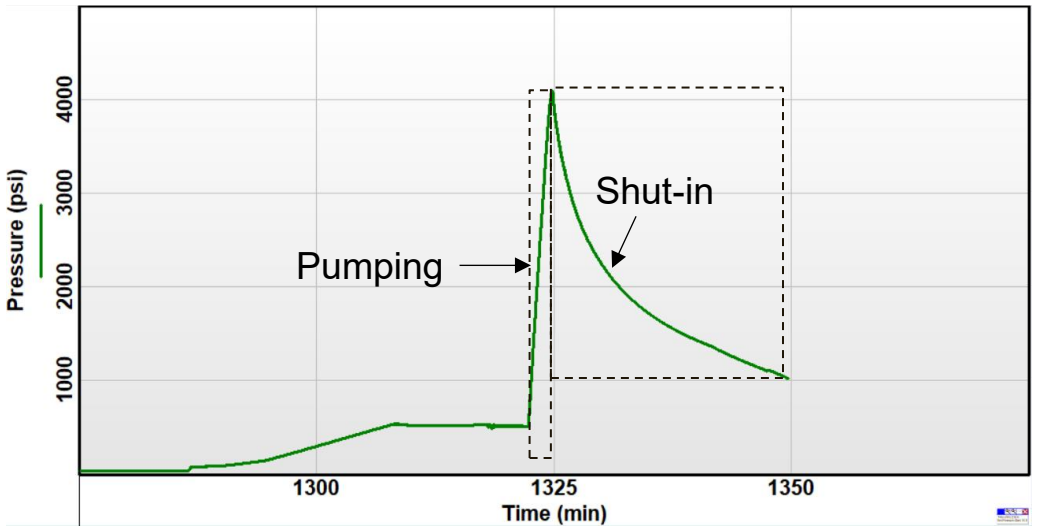
DFIT Closure Analysis



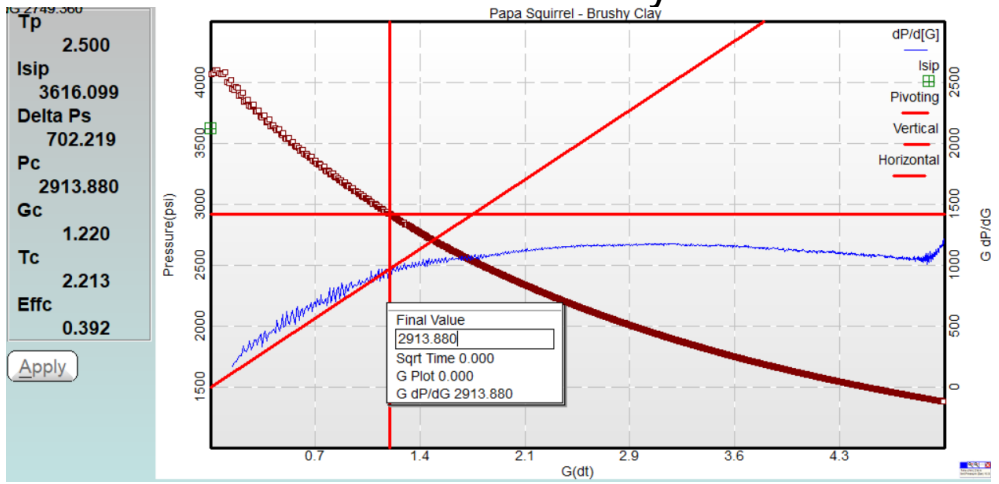
Test date	5/21/2025
Perforation interval MD, ft	8,188-8,193
TVD, ft	8,187.5
Pumping rate, bpm	2
Pump-in volume, bbl	5
Frac fluid density, g/cc	1.00
Max surface treating pressure, psi	4,043
ISIP at surface, psi	4,027
BH ISIP, psi	7,572
BH ISIP grad, psi/ft	0.925
Closure pressure (Shmin) at surface, psi	2,749
Shmin, psi	6,294
Shmin grad, psi/ft	0.77
Frac closure time, min	11.2
Reservoir pressure at surface, psi	748
Reservoir pressure, psi	4,293
Res press grad, psi/ft	0.524

DFIT in the Brushy (Clay)

DFIT Surface Pressure Data



DFIT Closure Analysis

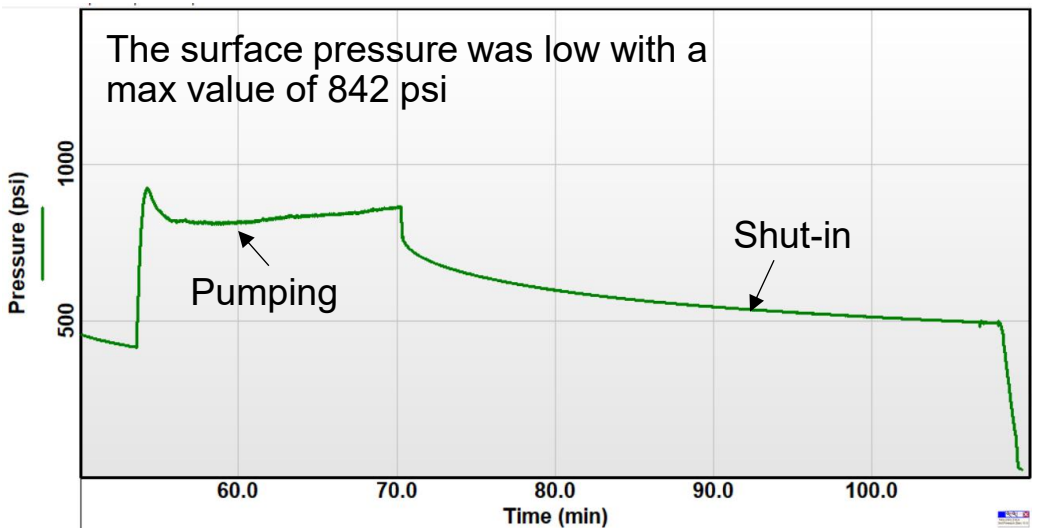


Test date	5/21/2025
Perforation interval MD, ft	7,500-7,505
TVD, ft	7,499.5
Pumping rate, bpm	2
Pump-in volume, bbl	5
Frac fluid density, g/cc	1.00
Max surface treating pressure, psi	4,072
ISIP at surface, psi	3,616
BH ISIP, psi	6,863
BH ISIP grad, psi/ft	0.915
Closure pressure (Shmin) at surface, psi	2,914
Shmin, psi	6,161
Shmin grad, psi/ft	0.82
Frac closure time, min	2.2

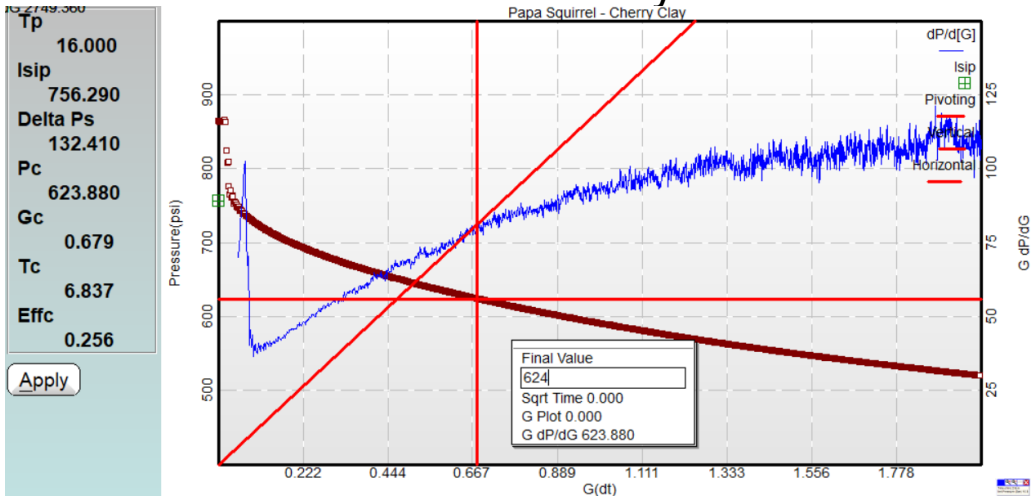
- Reservoir pressure could not be estimated due to a short shut-in time.
- The fracture created from the DFIT test was closed in 2.2 mins after shut-in.
- A shorter closure time indicates that the zone is more permeable than that from the last DFIT in the Brushy.

DFIT in the Cherry (Clay)

DFIT Surface Pressure Data



DFIT Closure Analysis

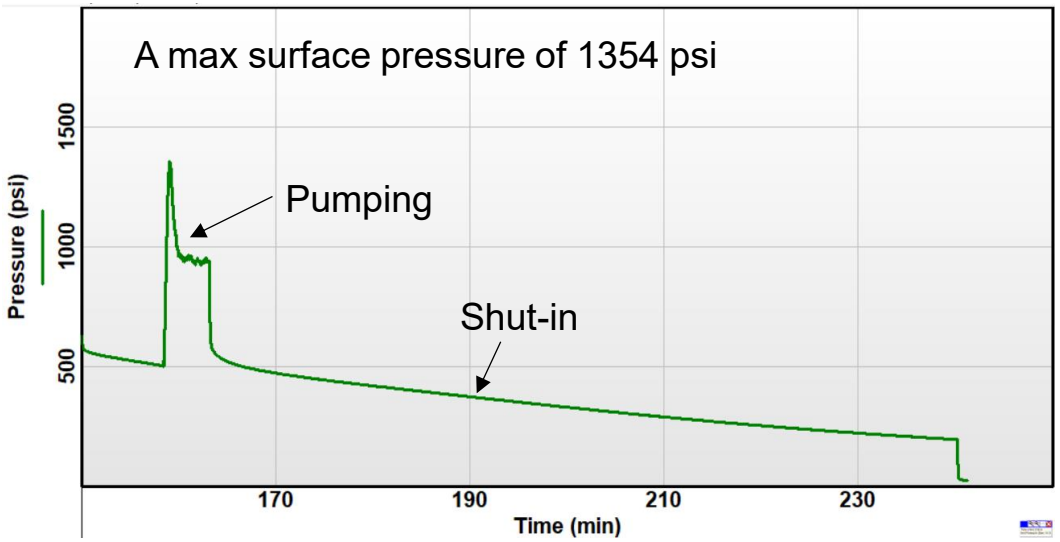


Test date	5/29/2025
Perforation interval MD, ft	6,440-6,442
TVD, ft	6,439.0
Pumping rate, bpm	2.0
Pump-in volume, bbl	30
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	842
ISIP at surface, psi	756
BH ISIP, psi	4,046
BH ISIP grad, psi/ft	0.628
Closure pressure (Shmin) at surface, psi	624
Shmin, psi	3,914
Shmin grad, psi/ft	0.61
Frac closure time, min	6.8

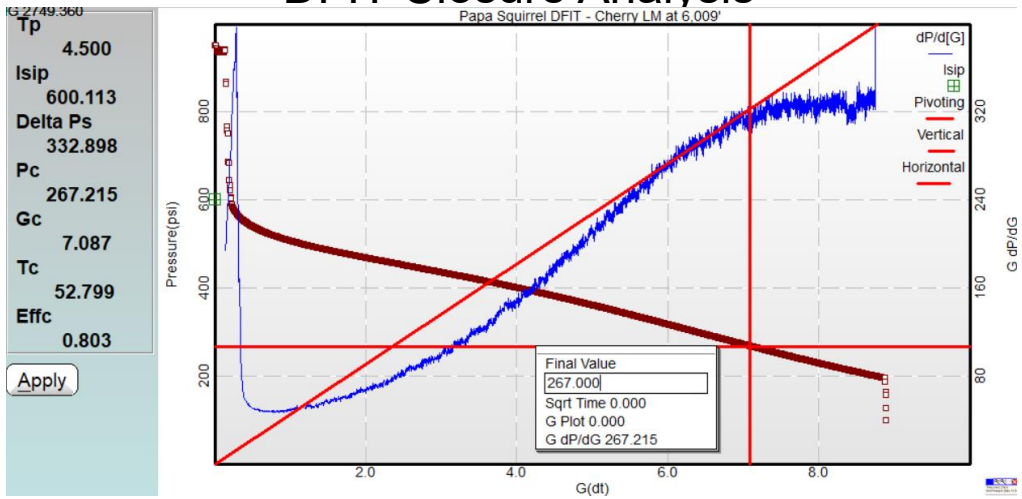
- Reservoir pressure could not be estimated due to uncertainty with closure time/stress.
- The DFIT test was pumped with 30 bbl of brine.
- A frac closure time: 6.8 mins.
- A frac closure time of 6.8 mins for a DFIT of 30 bbl suggests a permeable zone.

DFIT in the Cherry (Carbonate 1)

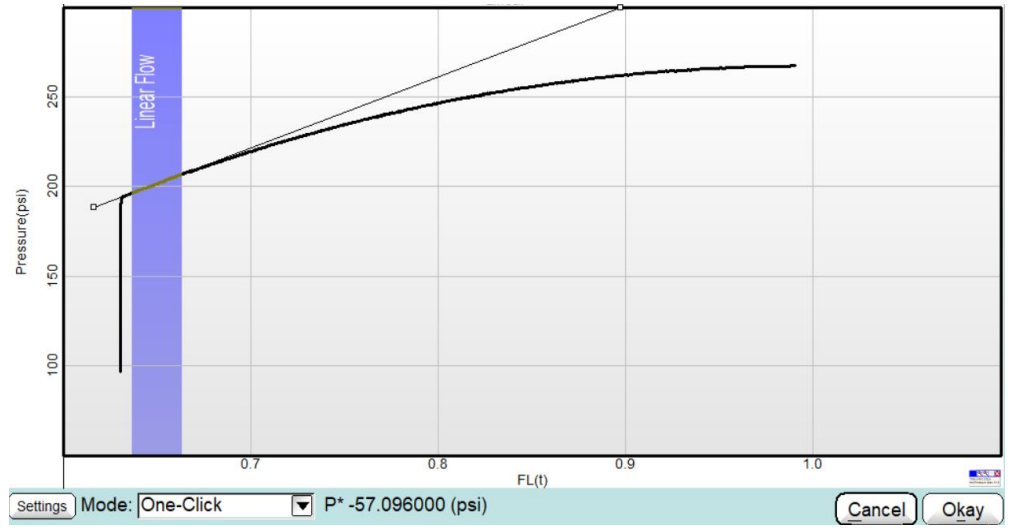
DFIT Surface Pressure Data



DFIT Closure Analysis



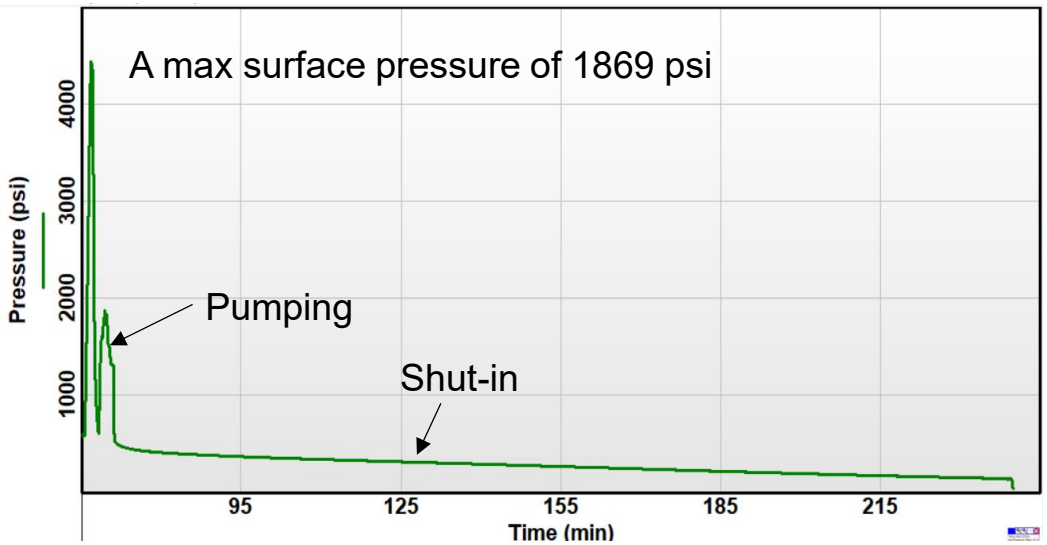
Reservoir Pressure Estimation



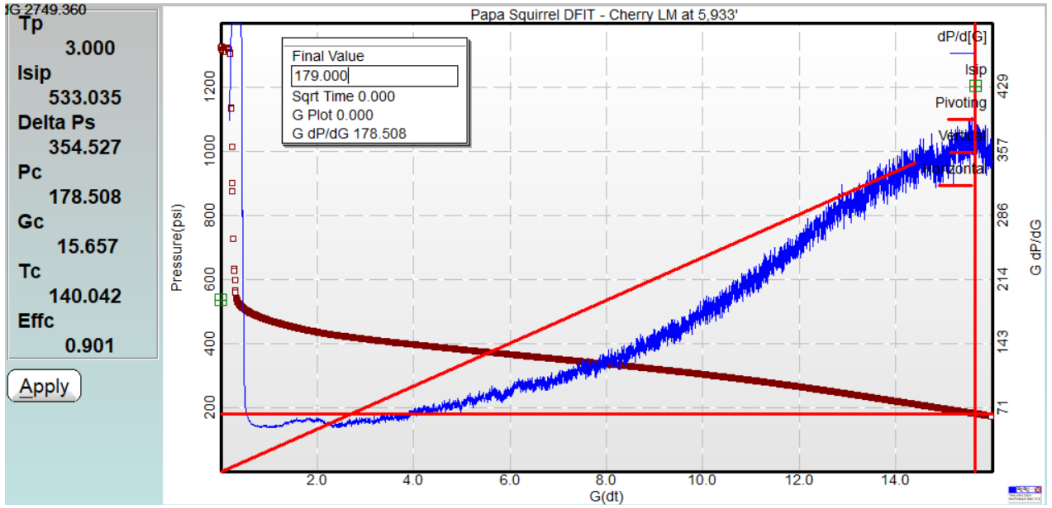
Test date	5/29/2025
Perforation interval MD, ft	6,011-6,013
TVD, ft	6,010.0
Pumping rate, bpm	2.2
Pump-in volume, bbl	10
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	1,354
ISIP at surface, psi	600
BH ISIP, psi	3,671
BH ISIP grad, psi/ft	0.611
Closure pressure (Shmin) at surface, psi	267
Shmin, psi	3,338
Shmin grad, psi/ft	0.56
Frac closure time, min	52.8
Reservoir pressure at surface, psi	-57
Reservoir pressure, psi	3,014
Res press grad, psi/ft	0.501

DFIT in the Cherry (Carbonate 2)

DFIT Surface Pressure Data



DFIT Closure Analysis

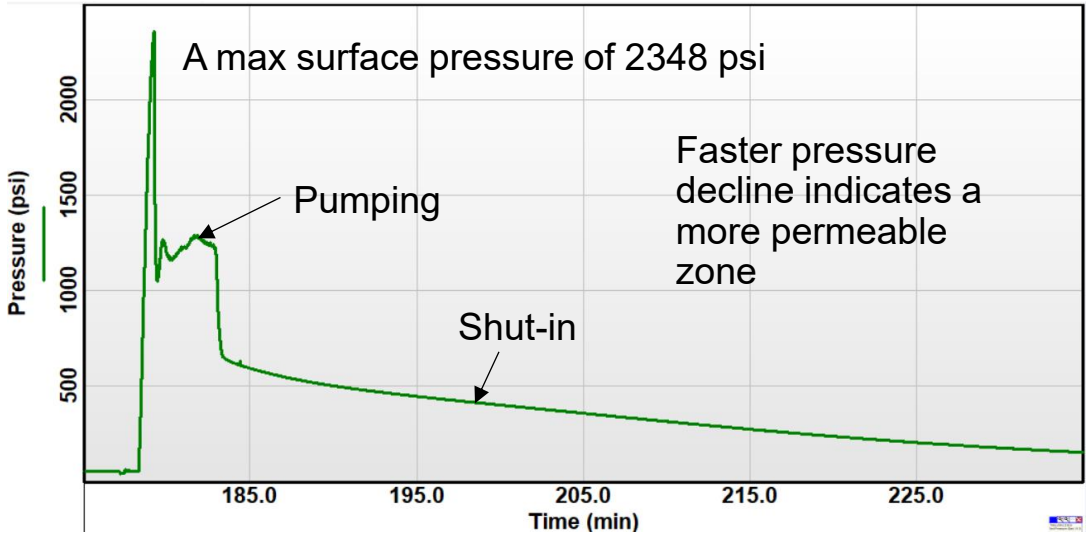


Test date	5/30/2025
Perforation interval MD, ft	5,935-5,940
TVD, ft	5,935.5
Pumping rate, bpm	1.7
Pump-in volume, bbl	5
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	1,869
ISIP at surface, psi	533
BH ISIP, psi	3,566
BH ISIP grad, psi/ft	0.601
Closure pressure (Shmin) at surface, psi	179
Shmin, psi	3,212
Shmin grad, psi/ft	0.54
Frac closure time, min	144.0

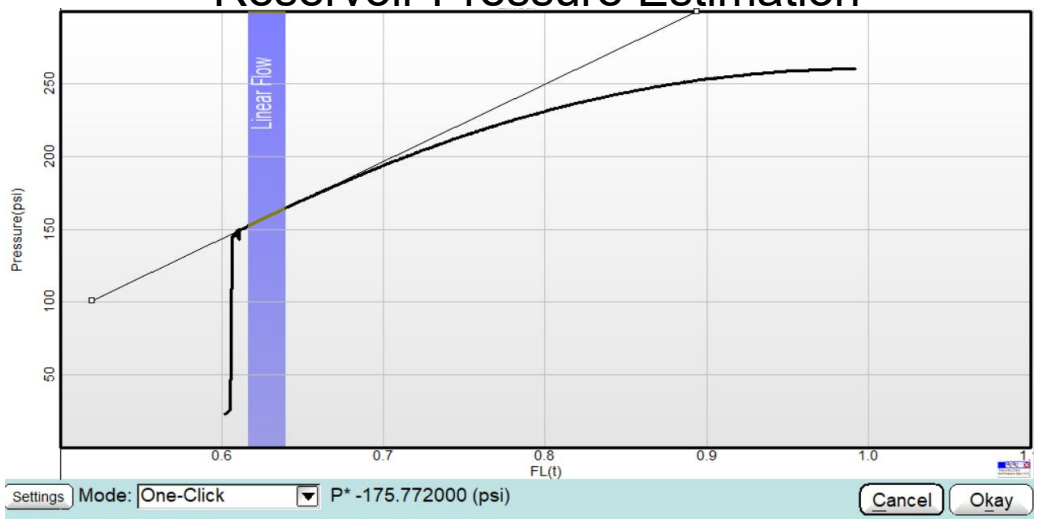
- Reservoir pressure could not be estimated due to longer closure time.
- The DFIT test was pumped with 5 bbl of brine.
- A frac closure time: 144 mins.
- A frac closure time of 144 mins for a DFIT of 5 bbl also suggests a low-permeability zone.

DFIT in the Cherry (Sand)

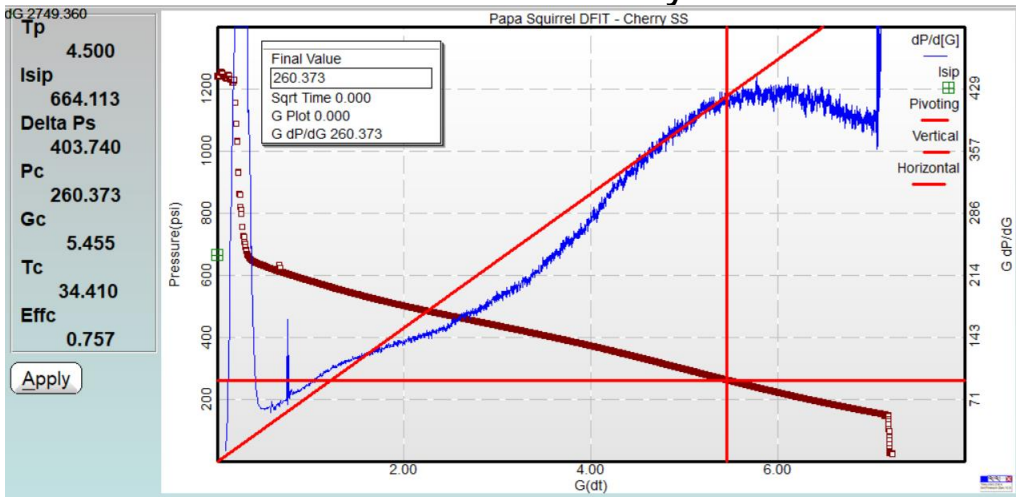
DFIT Surface Pressure Data



Reservoir Pressure Estimation



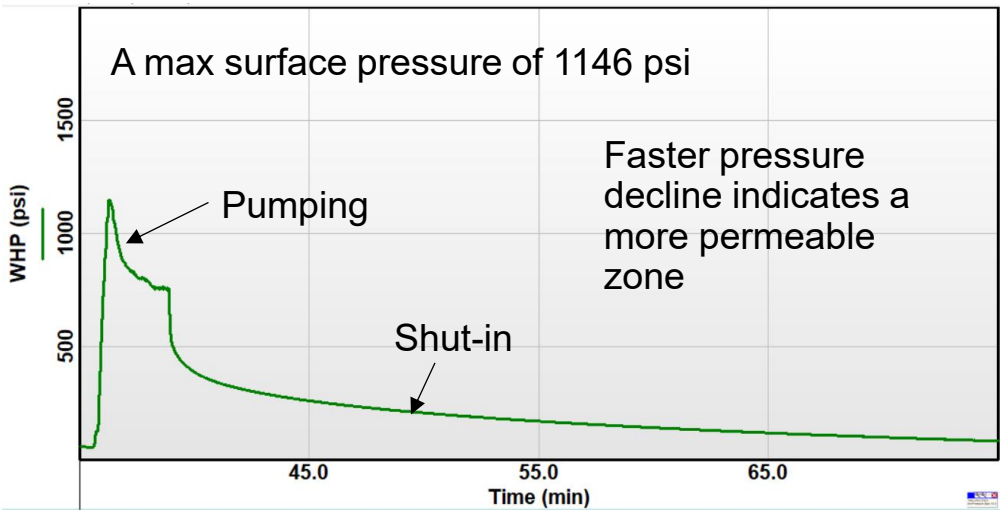
DFIT Closure Analysis



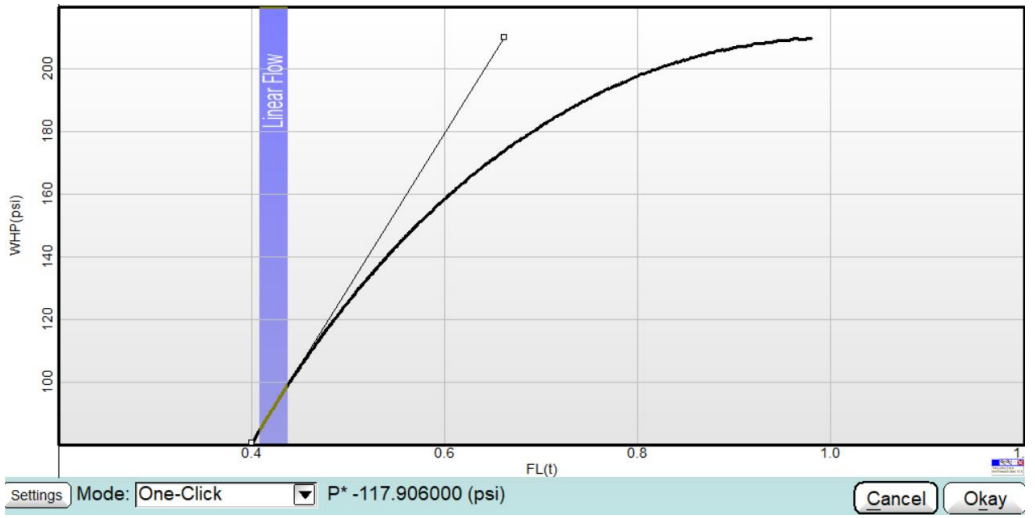
Test date	5/31/2025
Perforation interval MD, ft	5,752-5,757
TVD, ft	5,752.5
Pumping rate, bpm	2.2
Pump-in volume, bbl	10
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	2,348
ISIP at surface, psi	664
BH ISIP, psi	3,603
BH ISIP grad, psi/ft	0.626
Closure pressure (Shmin) at surface, psi	260
Shmin, psi	3,199
Shmin grad, psi/ft	0.56
Frac closure time, min	34.4
Reservoir pressure at surface, psi	-176
Reservoir pressure, psi	2,763
Res press grad, psi/ft	0.480

DFIT in the Bell (Carbonate)

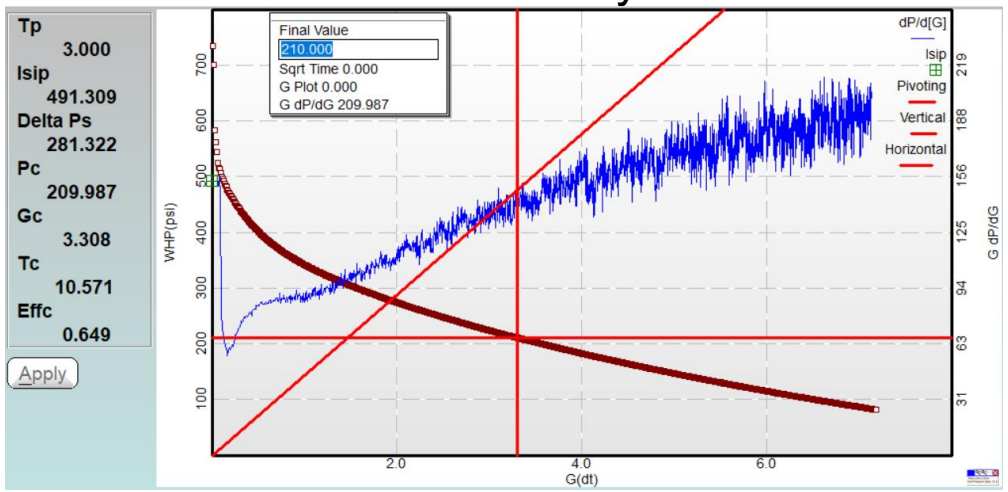
DFIT Surface Pressure Data



Reservoir Pressure Estimation



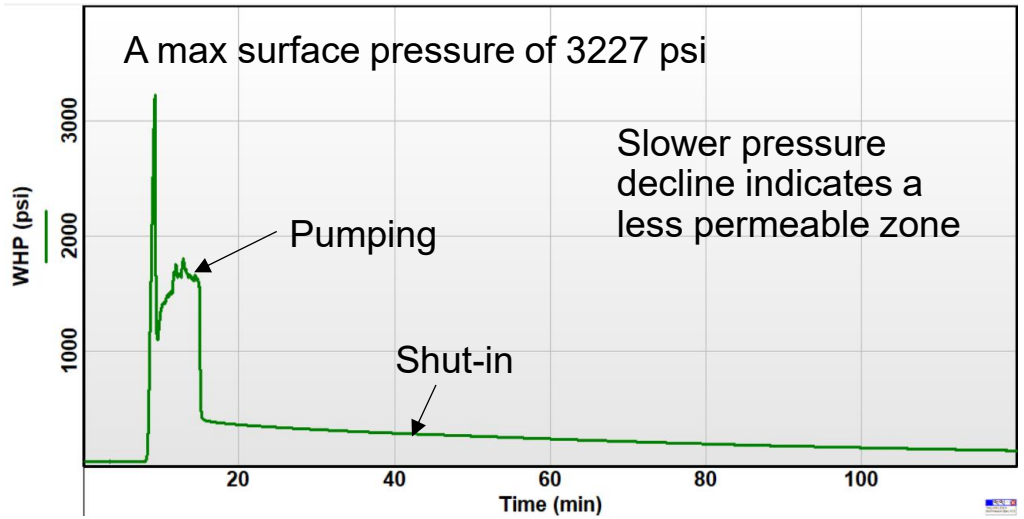
DFIT Closure Analysis



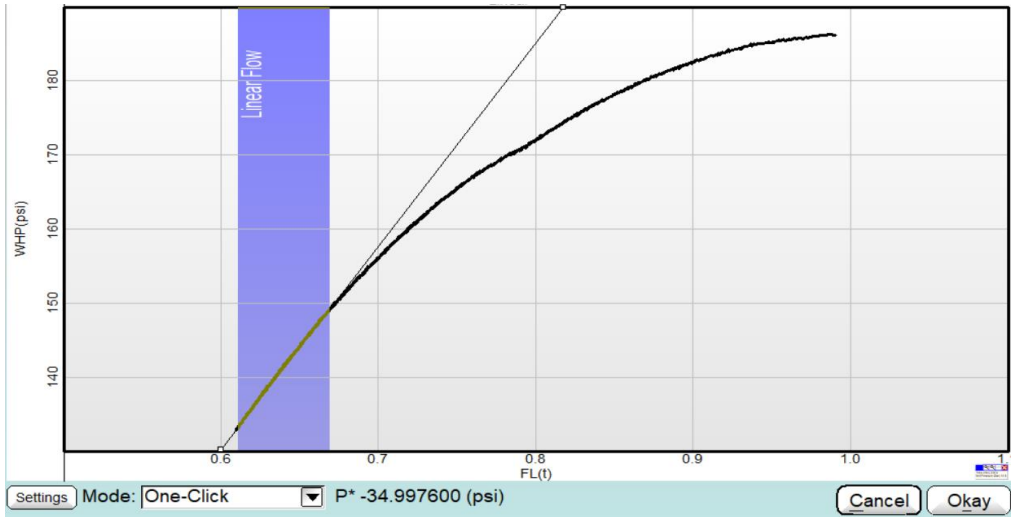
Test date	6/6/2025
Perforation interval MD, ft	5,221-5,226
TVD, ft	5,221.5
Pumping rate, bpm	3.8
Pump-in volume, bbl	15
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	1,146
ISIP at surface, psi	491
BH ISIP, psi	3,159
BH ISIP grad, psi/ft	0.605
Closure pressure (Shmin) at surface, psi	210
Shmin, psi	2,878
Shmin grad, psi/ft	0.55
Frac closure time, min	10.6
Reservoir pressure at surface, psi	-118
Reservoir pressure, psi	2,550
Res press grad, psi/ft	0.488

DFIT in the Bell (Sand)

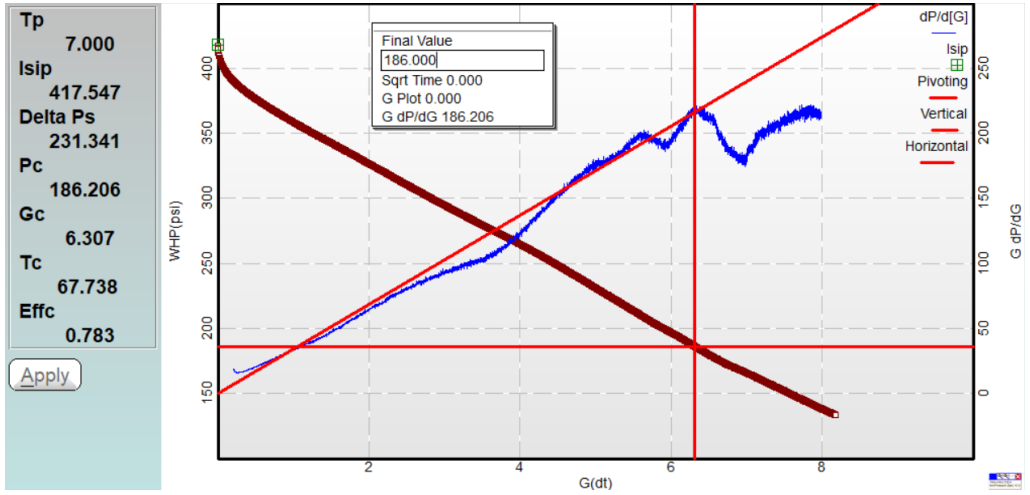
DFIT Surface Pressure Data



Reservoir Pressure Estimation



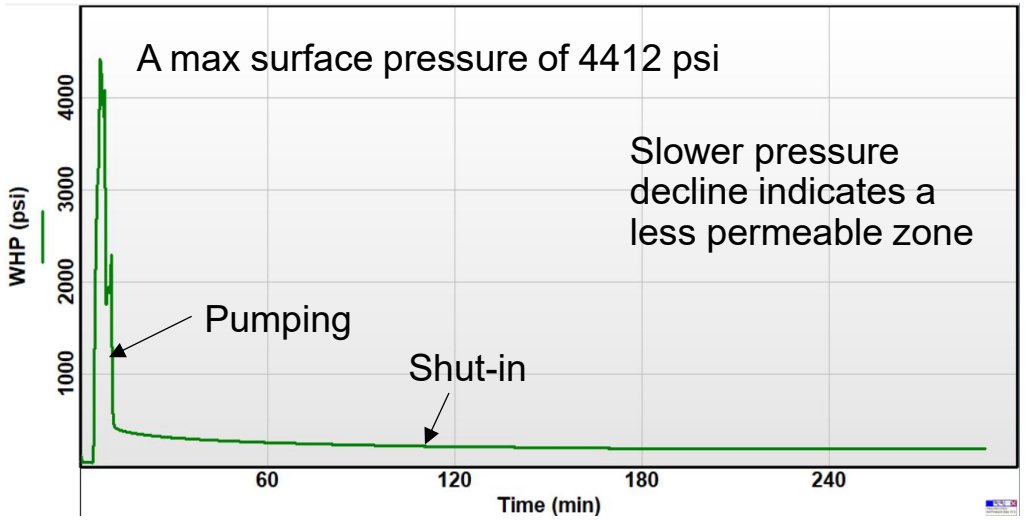
DFIT Closure Analysis



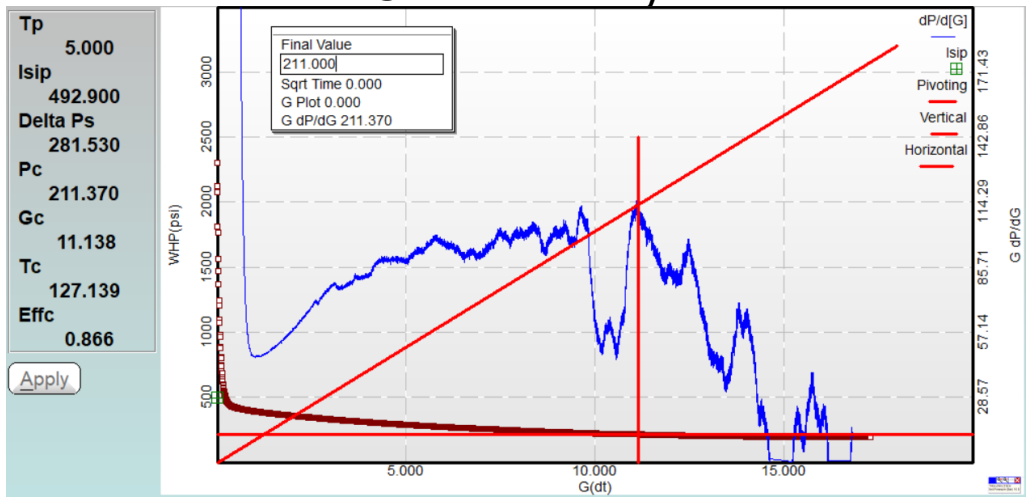
Test date	6/6/2025
Perforation interval MD, ft	4,724-4,729
TVD, ft	4,724.5
Pumping rate, bpm	3.6
Pump-in volume, bbl	25
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	3,227
ISIP at surface, psi	418
BH ISIP, psi	2,832
BH ISIP grad, psi/ft	0.599
Closure pressure (Shmin) at surface, psi	186
Shmin, psi	2,600
Shmin grad, psi/ft	0.55
Frac closure time, min	67.7
Reservoir pressure at surface, psi	-35
Reservoir pressure, psi	2,379
Res press grad, psi/ft	0.504

DFIT in the Bell (Clay)

DFIT Surface Pressure Data



DFIT Closure Analysis

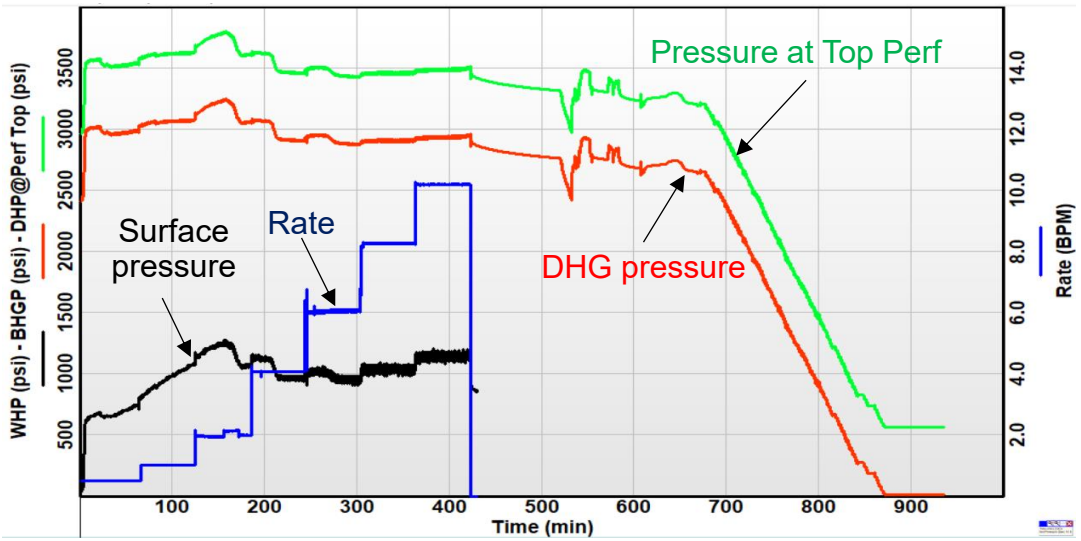


- Reservoir pressure could not be estimated due to longer closure time.
- The DFIT test was pumped with 5 bbl of brine.
- A frac closure time: 144 mins.
- A frac closure time of 144 mins for a DFIT of 5 bbl also suggests a low-permeability zone.

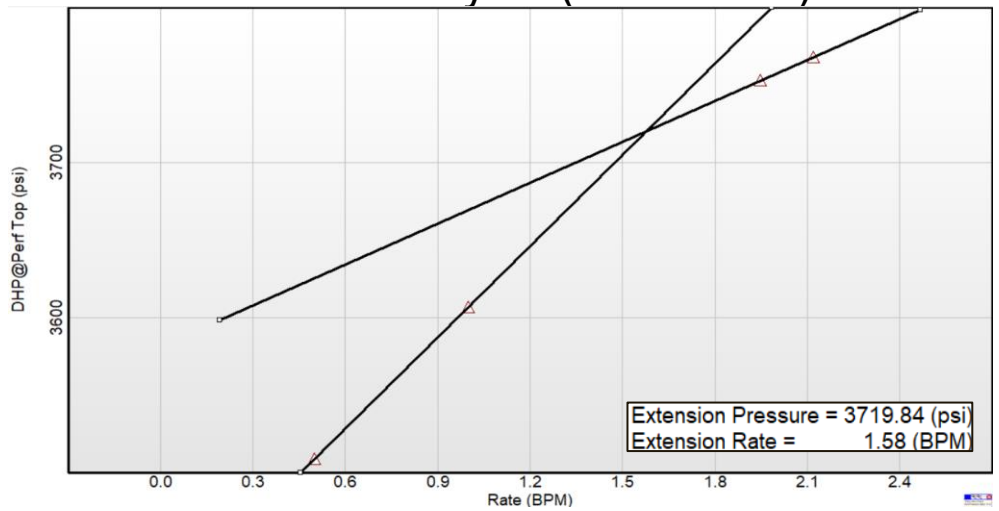
Test date	6/8/2025
Perforation interval MD, ft	4,692-4,697
TVD, ft	4,692.5
Pumping rate, bpm	2.9
Pump-in volume, bbl	10
Frac fluid density, g/cc	1.18
Max surface treating pressure, psi	4,412
Closure pressure (Shmin) at surface, psi	492
BH ISIP, psi	2,890
BH ISIP grad, psi/ft	0.616
Closure pressure (Shmin) at surface, psi	211
Shmin, psi	2,609
Shmin grad, psi/ft	0.56
Frac closure time, min	127.14

SRT in the Cherry

SRT Pressure and Rate Data



SRT Analysis (DHG Data)

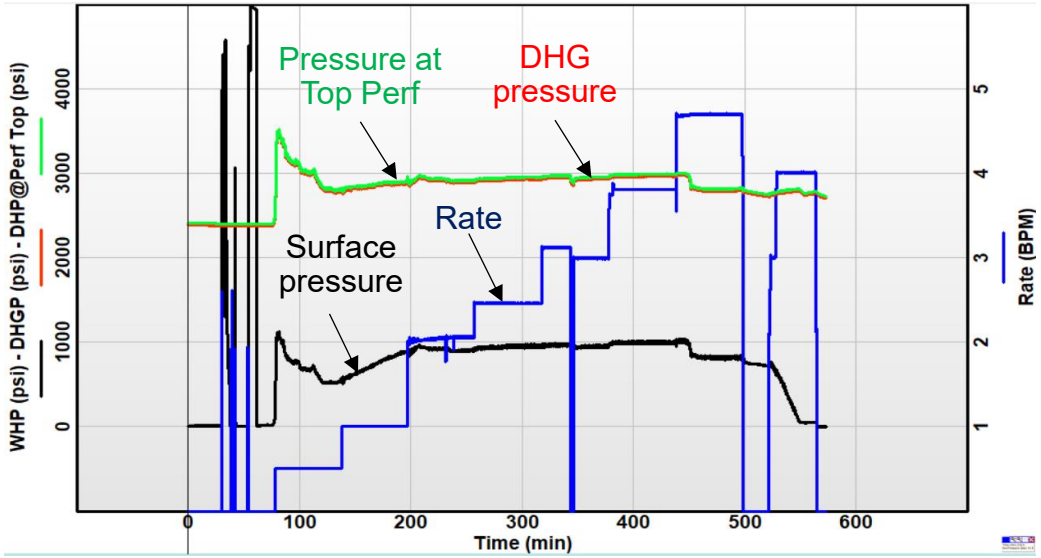


- Data (rate and pressure) from surface pumping equipment and DH gauges were synchronized.
- Pressure at the top perf was used for SRT analysis.
- Frac extension pressure and ISIP from each SRT were obtained.
- Pressure drop after fracture extension indicates that near-wellbore restriction was removed by more perfs taking fluid.
- If an average net pressure from the DFITs was used, the estimated Shmin from SRT is consistent with that from DFIT.
- Due to lower permeability, the fracture from the SRT was initiated at very low rate, which is consistent with the observation from DFITs.

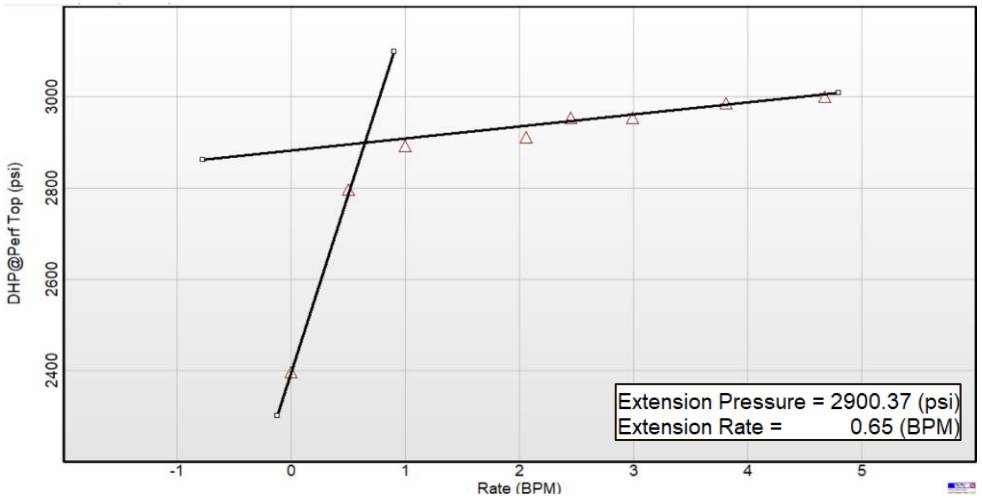
Test date	6/4/2025
Perforation interval MD, ft	5,695-6,375
Top perforation TVD, ft	5,693
Downhole gauge depth, ft	4,615
Max rate, bpm	10.2
Max surface treating pressure, psi	1,272
Frac fluid density, g/cc	1.18
Fracture extension rate, bpm	1.58
Frac extension pressure at top perf, psi	3,720
Frac extension press grad at top perf, psi/ft	0.653
ISIP at top perf, psi	3,450
ISIP grad at top perf, psi	0.606
Estimated net pressure from DFIT, psi	306
Shmin (closure pressure) at top perf, psi	3,144
Shmin grad at top perf, psi/ft	0.552

SRT in the Bell

SRT Pressure and Rate Data



SRT Analysis (DHG Data)



- Data from surface pumping equipment and DH gauges were synchronized.
- Pressure at the top perf was used for SRT analysis.
- Frac extension pressure and ISIP from each SRT were obtained.
- If an average net pressure from the DFITs was used, the estimated Shmin from SRT is consistent with that from DFIT.
- Pressure drop after fracture extension indicates that near-wellbore restriction was removed by more perfs taking fluid.
- Due to lower permeability, the fracture from the SRT was initiated at very low rate, which is consistent with the observation from DFITs.

Test date	6/12/2025
Perforation interval MD, ft	4,662-5,682
Top perforation TVD, ft	4,660.0
Downhole gauge depth, ft	4,618
Max rate, bpm	4.7
Max surface treating pressure, psi	1,121
Frac fluid density, g/cc	1.18
Fracture extension rate, bpm	0.65
Frac extension pressure at top perf, psi	2,900
Frac extension press grad at top perf, psi/ft	0.622
ISIP at top perf, psi	2,780
ISIP grad at top perf, psi	0.597
Estimated net pressure from DFIT, psi	241
Shmin (closure pressure) at top perf, psi	2,539
Shmin grad at top perf, psi/ft	0.545

Key Takeaways

- Nine DFITs across the three DMG formations and two SRTs in the Cherry and Bell Canyons were conducted were conducted successfully from the Papa Squirrel.
- ISIP (instantaneous shut-in pressure) and minimum stress (Shmin) were measured and interpreted from each DFIT. Stress confidence is labeled as higher or lower based on fracture closure signatures.
- Pore pressure interpretation from the DFIT data was attempted but not accurate due to the lack of reliable linear flow behavior. An average pressure gradient of 0.50 psi/ft was estimated and used for mechanical earth model calibration.
- Fracture extension pressure (or frac pressure) and ISIP from each SRT were obtained.
- A fracture from each SRT would initiate where the minimum stress (Shmin) is the lowest and tends to be near the perf top.
- Pressure drop after fracture extension indicates that near-wellbore restriction was removed by more perfs taking fluid.
- If an average net pressure estimated from the DFITs was used, the estimated Shmin values from SRTs are consistent with those from DFITs.
- Due to lower permeability, the fracture from each SRT was initiated at very low rate, which is consistent with the observation from DFITs.

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Santa Fe, NM 87505

CONDITIONS

Operator:	OGRID:
CHEVRON U S A INC 6301 Deauville Blvd Midland, TX 79706	4323
	Action Number: 503613
	Action Type: [C-103] Sub. General Sundry (C-103Z)

CONDITIONS

Created By	Condition	Condition Date
anthony.harris	None	9/17/2025