

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Dylan M. Fuge
Deputy Secretary

Dylan M Fuge,
Director Oil Conservation
Division (acting)



Ben Stone
SOS Consulting, LLC
Agent for Spur Energy Partners, LLC
ben@sosconsulting.us

RE: Injection Pressure Increase; Order IPI-546
Osage Boyd 15 SWD #1 (30-015-28992)
Pool: SWD; Cisco-Canyon (Pool Code: 96186)
Eddy County, New Mexico

Ben Stone:

Reference is made to your request on behalf of Spur Energy Partners, LLC (OGRID 328947); the “operator”) for the application received on January 25, 2024, to increase the maximum surface injection pressure (“MSIP”) based on Step Rate Test results of offsetting wells that share same stratigraphic correlation with the subject well. The requested increase of injection pressure is based on 0.26 psi/ft surface pressure gradient be applied on the subject well.

| Well Name | API Number | UL-S-T-R | Injection Authority | Existing MSIP Limit (psi) | Existing Tubing OD (in) |
|------------------------|--------------|--------------|---------------------|---------------------------|-------------------------|
| Osage Boyd 15 SWD No.1 | 30-015-28992 | F-15-19S-25E | SWD-1717 | 1528 | 3.5 (IPC) |

It is the Oil Conservation Division’s (“OCD”) understanding that the requested pressure increase is needed to increase the rate of injection and this pressure increase will not result in:

1. the fracturing of the permitted disposal interval;
2. the fracturing of either the upper or lower confining strata; or
3. induced-seismic events as a consequence of the higher injection pressure.

Administrative Order IPI-546
Spur Energy Partners, LLC.

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Based on the results of the submitted step rate injection test of offsetting wells that share same stratigraphic with the subject well, considering the wellhead pressure rating of the well and application of a 10% of safety factor, the following shall be the new pressure limit for subject well listed below while equipped with 3.5 inch (IPC) **injection** tubing:

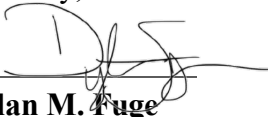
| Well Name | Step Rate Test Base on: | New MSIP Limit (psi) | While injecting | Injection Interval (ft) | Pressure Gradient (psi/ft) |
|------------------------|-------------------------|--|-----------------|-------------------------|----------------------------|
| Osage Boyd 15 SWD No.1 | 30-015-28992 | $(0.26\text{psi/ft} \times 7682\text{ft} - 10\%)$ = 1797.6 psi | Water (8.3 ppg) | 7682-7916 | 0.26 |

*10% safety factor

This approval is based on the provision that the tubing size, packer setting depth and completion interval for the well do not change and all provisions in IPI-546 are adhered. Any future requested pressure increase will require resubmission of additional data. The Director retains the right to require, at any time, wireline verification of completion and packer setting depths in the well. This approval is subject to your being in compliance with all other OCD rules including, but not limited to, Rule 19.15.5.9 NMAC.

The Director may rescind any injection pressure increase permit if it becomes apparent that the injected fluid is not being confined to the permitted disposal interval, impacts correlative rights, is endangering any freshwater aquifer or endangers public health and safety.

Sincerely,



Dylan M. Fuge
DIVISION DIRECTOR (Acting)
DMF/mgm

Date: 3/27/24

cc: Oil Conservation Division – Santa Fe Office
Order IPI-546
Well file 30-015-28992

Attached: Cross Section and Fracture Gradient
Correlation of offsetting wells



**Cross Section and Fracture
Gradient Correlation for
Osage Boyd SWD Injection
Pressure Increase**

February 21, 2024

Introduction

- ✦ 3 Step Rate Tests have been performed by Spur in the Dagger Draw area where bottom hole pressure gauges have been run
 - ✦ Secrest Et Al SWD #1 – Tested Oct. 2022
 - ✦ Lakewood Farms 18 1 SWD – Tested November 2023
 - ✦ Osage Boyd 15 1 SWD – Tested November 2023
- ✦ The Osage Boyd SWD is stratigraphically/geologically similar to the Secrest SWD and Lakewood Farms SWD causing us to be curious when it showed to have fractured sooner than either of those wells
- ✦ Spur's theory is that since the well was initially gel acid-fractured in 1996, this “break” in pressure is likely the already existing fractures “opening-up” allowing enhance conductivity and not new fractures being created
- ✦ A cross section and base map were prepared to show the geological similarities



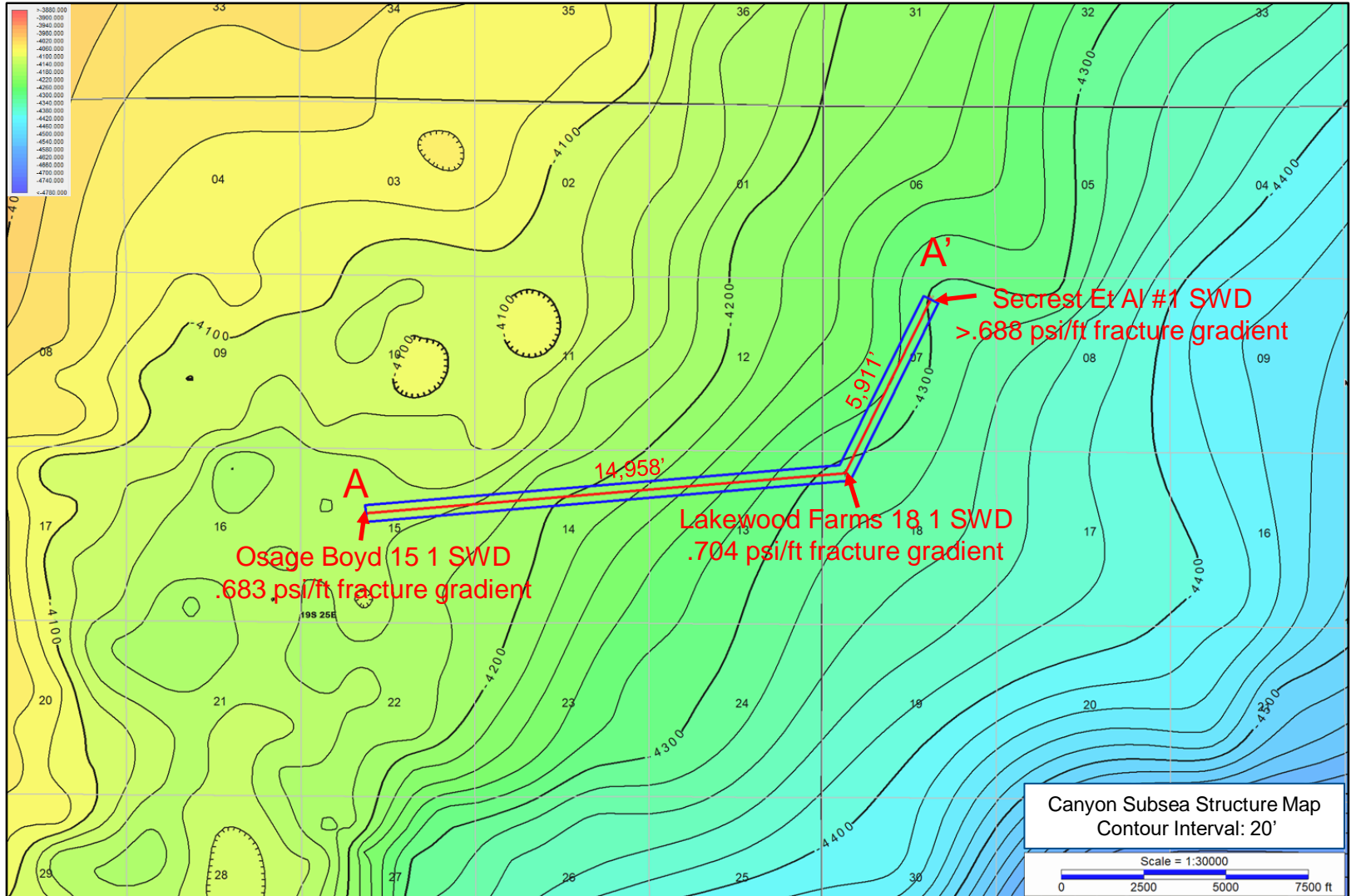
Test Summary



- ✦ The Secret Et Al #1 SWD did **not** fracture the formation
 - ✦ Fracture gradient is above .688psi/ft,
 - ✦ Based on the maximum BHP observed during that test
- ✦ The Lakewood Farms 18-1 SWD was tested in November of 2023 and did reach fracture pressure
 - ✦ Fracture gradient is known to be .704 psi/ft
- ✦ The Osage Boyd 15 1 SWD was tested in November of 2023 and did reach formation breakdown pressure
 - ✦ Estimated fracture opening pressure at around .683 psi/ft



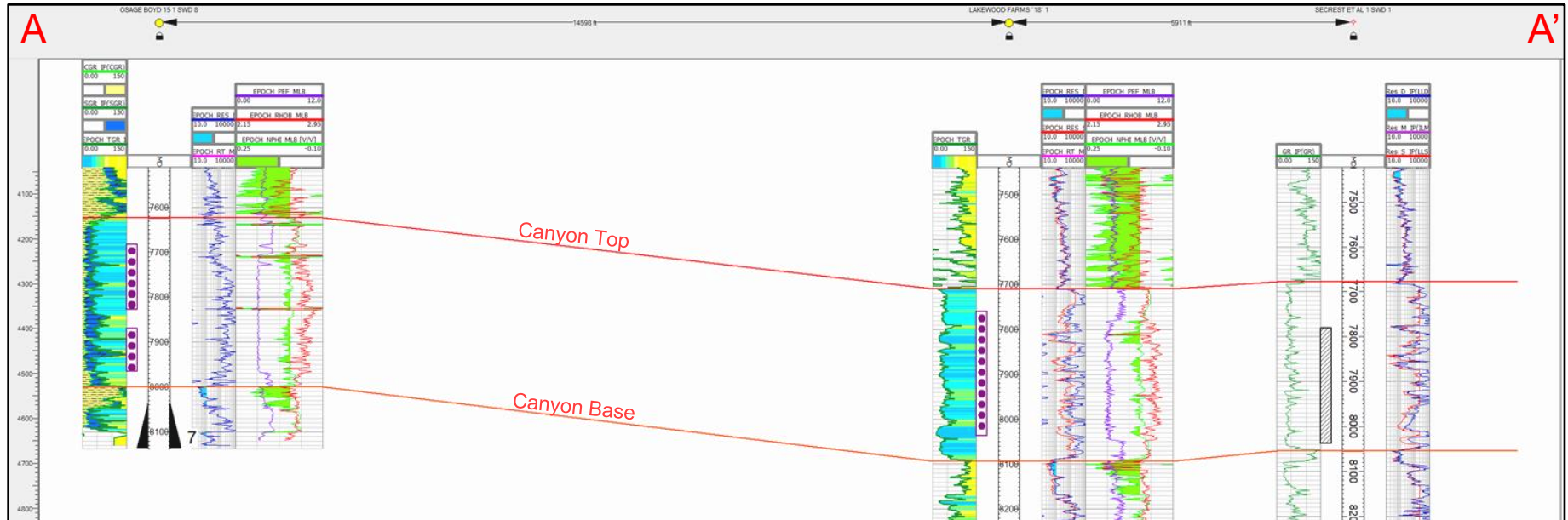
Base Map



Structural Cross Section



- ✦ Perforated intervals very similar in all three wells
- ✦ Rock Quality comparable in all three wells



Osage Boyd 15 1 SWD
.683 psi/ft fracture gradient

Lakewood Farms 18 1 SWD
.704 psi/ft fracture gradient

Secret Et Al #1 SWD
>.688 psi/ft fracture gradient



Summary

- ✦ Secret SWD SRT did not fracture the rock, so we know the gradient is $>.688$ psi/ft
- ✦ Lakewood Farms SWD has a clear break/fracture pressure and was not fractured during its original completion to our knowledge
- ✦ The Osage Boyd SWD pre-stimulated fracture gradient is likely similar to the Lakewood Farms at $\sim.704$ psi/ft
 - ✦ The requested 2,000 psi maximum allowable injection pressure correlates to $.693$ psi/ft ($.01$ psi/ft higher than observed fracture opening pressure)



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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
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CONDITIONS

Action 330449

CONDITIONS

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|---|--|
| Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024 | OGRID: 328947 |
| | Action Number: 330449 |
| | Action Type: [IM-SD] Admin Order Support Doc (ENG) (IM-AAO) |

CONDITIONS

| Created By | Condition | Condition Date |
|---------------|-----------|----------------|
| mgebremichael | None | 4/5/2024 |