

nanoActiv[®] Solutions

Enhancing Hydrocarbon Recovery

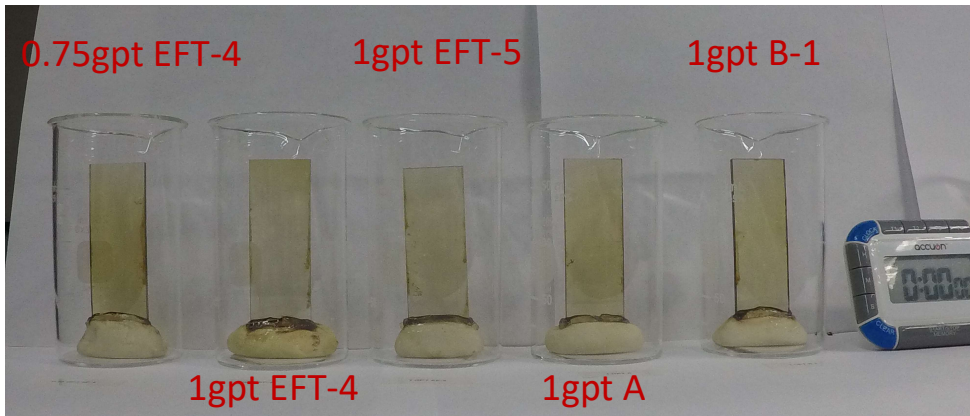


Nissan Chemical
America Corporation

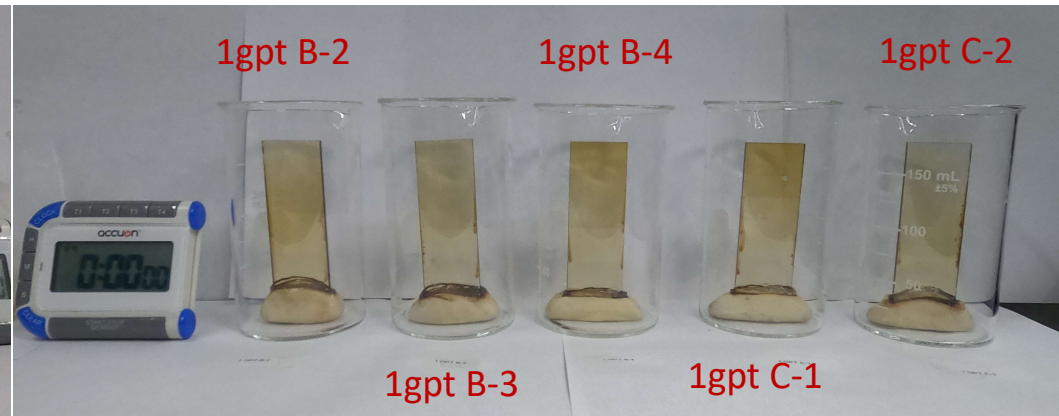
Background and Genesis of Study

- A New Mexico Delaware Basin operator wanted to test the efficacy of nanoActiv EFT for new well completions in the Bone Springs and Wolfcamp reservoirs.
- It was determined that the Hele Shaw Test was the best way to compare the frac' additive products. The test involves placing the product between two parallel flat plates separated by a 2-micron gap. The plates are surrounded by water. The effectiveness of the product is visible to the eye – you can actually see how effective the product is at removing oil from small pore throats in reservoir rock.
- The operator collected 7 samples from (mostly) all of the other chemical companies supplying frac' surfactants.
- The testing was conducted in September of 2020 and was completed by Assure Oil Field Testing, an independent third-party laboratory.
- Photographs of the experiment were taken every 3 hours to record the visual effects of the products. We have annotated the Nissan nanoActiv products and concentrations.
- We have included a well trial that confirms the lab results with real field data.

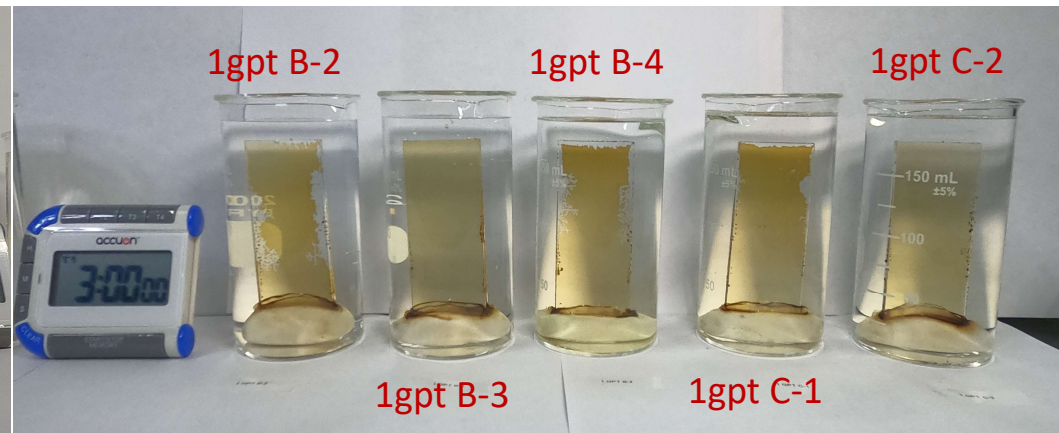
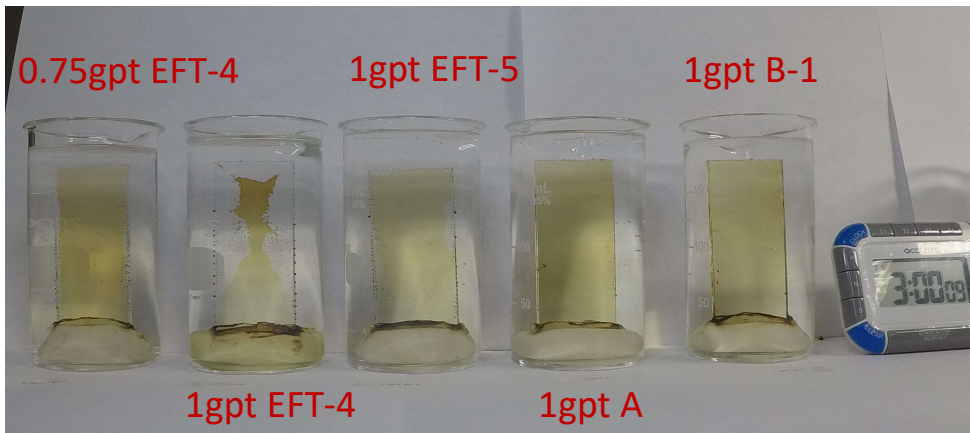
Hele-Shaw Cell Test Results (t=0, 3hrs)



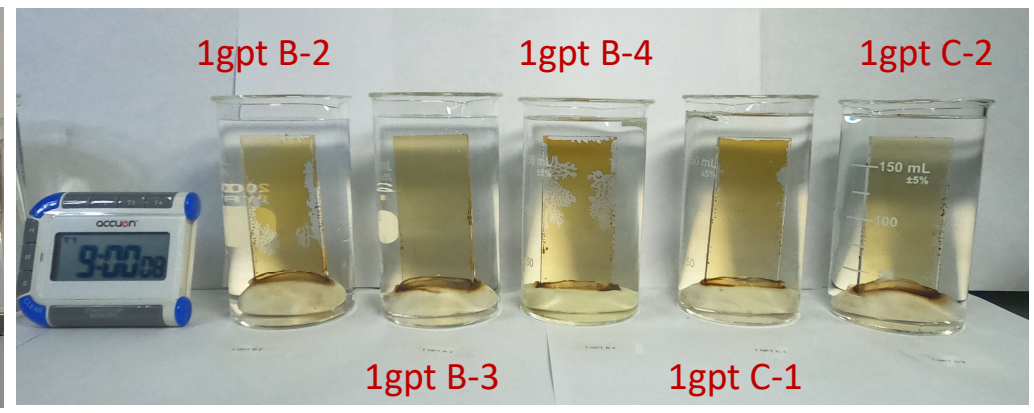
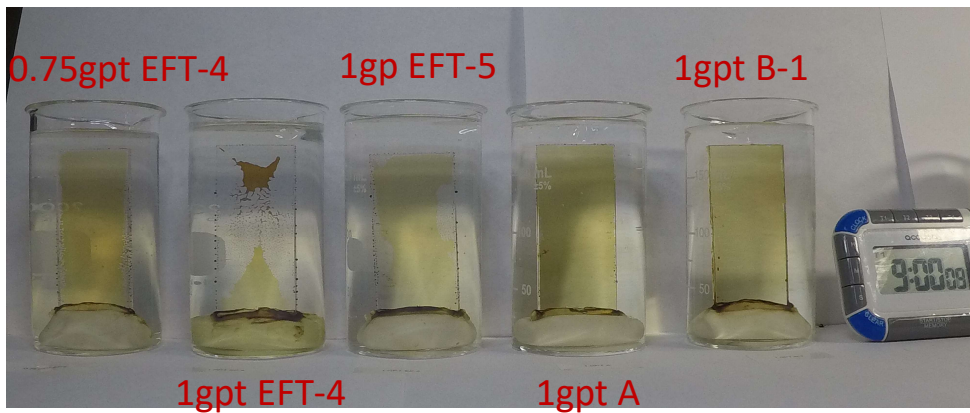
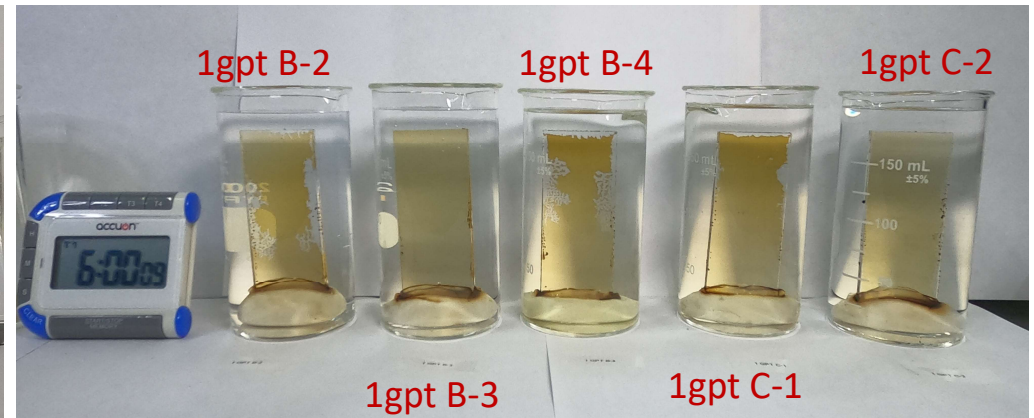
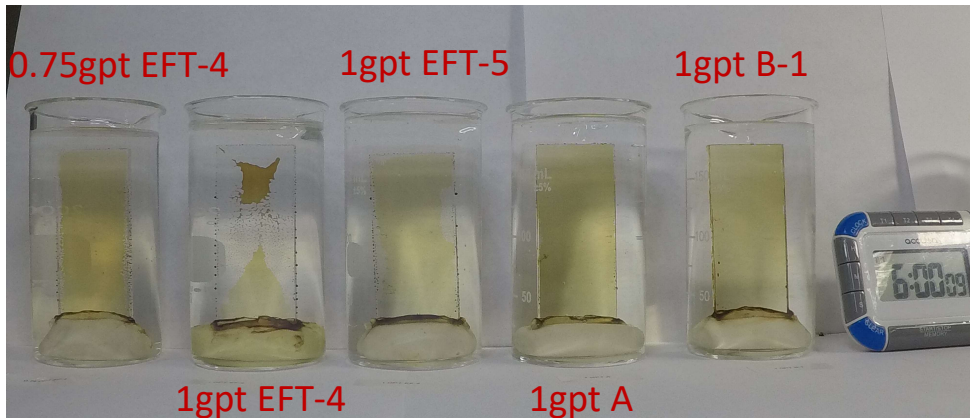
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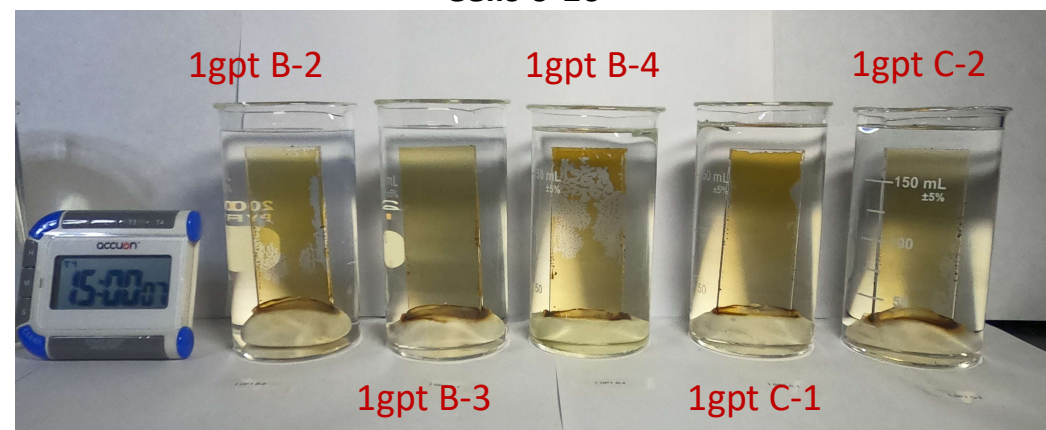
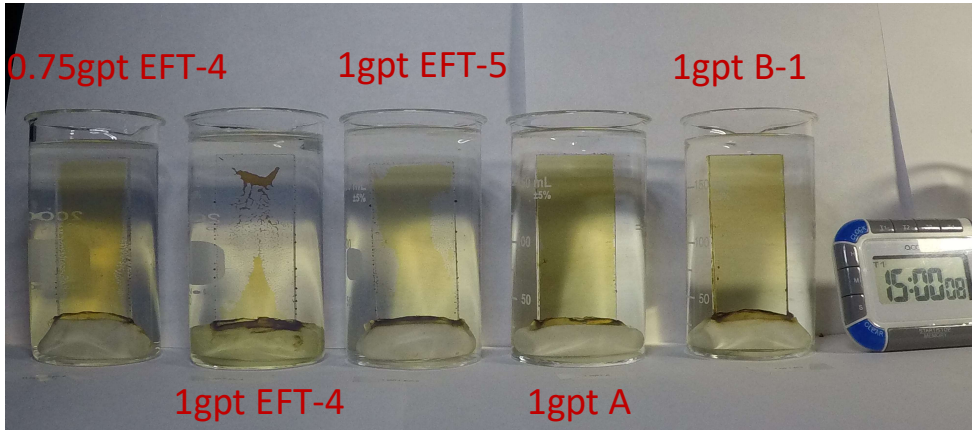
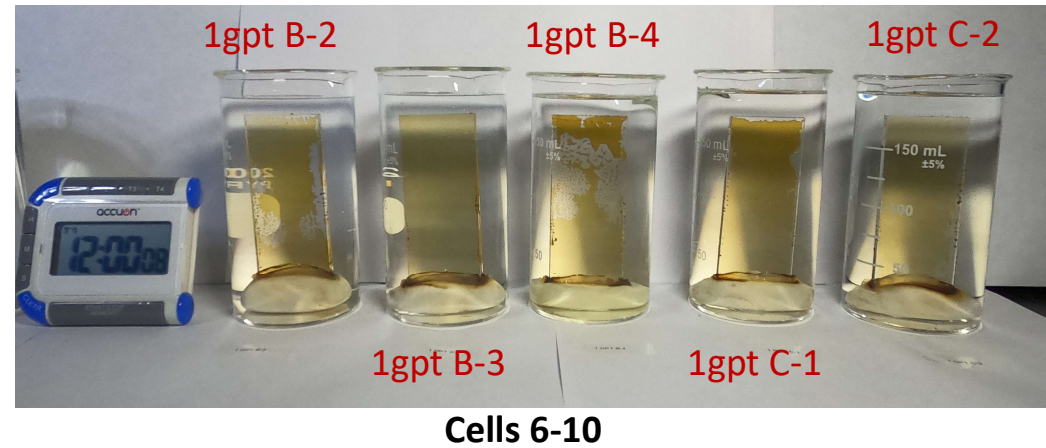
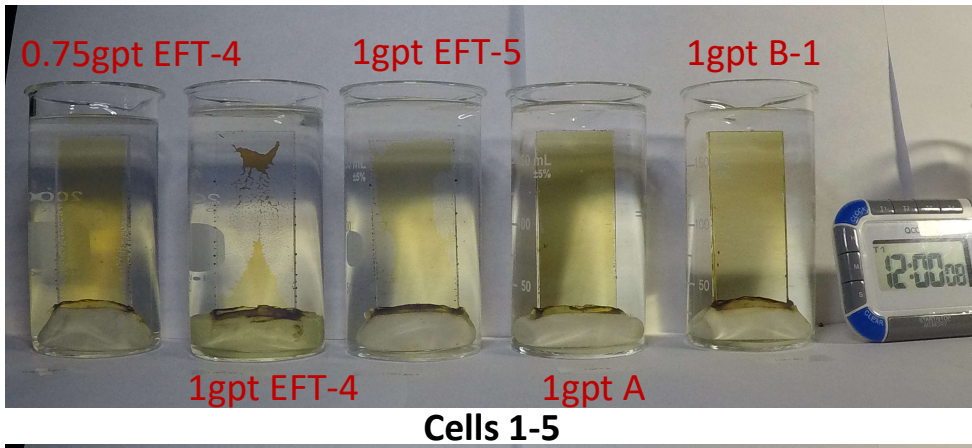
Hele-Shaw Cell Test Results (t=6, 9hrs)



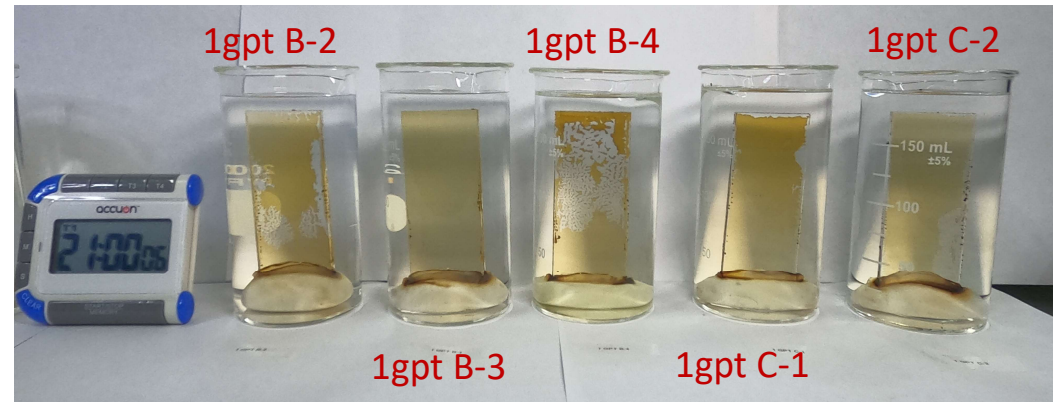
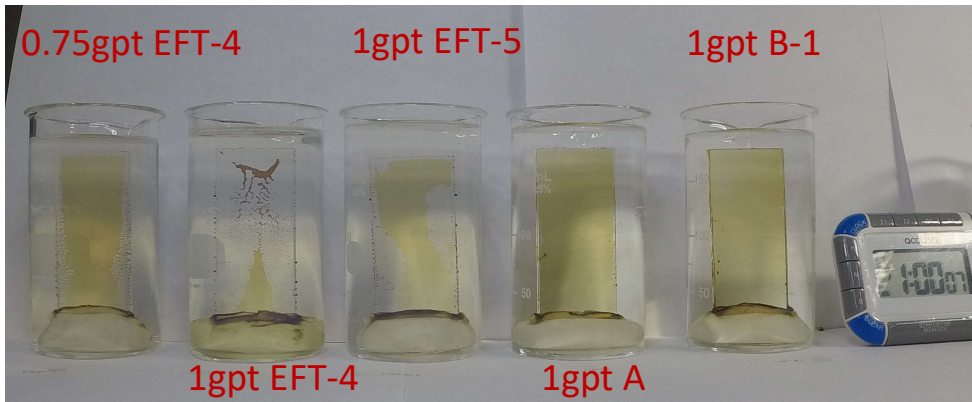
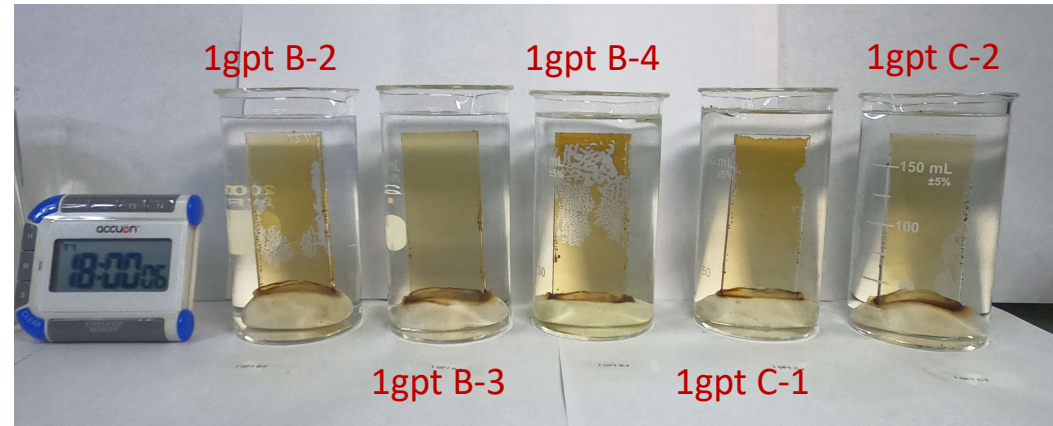
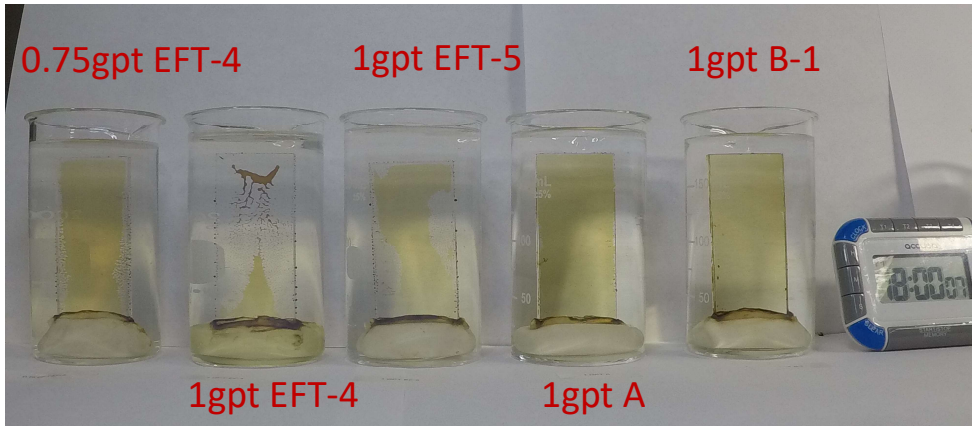
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Hele-Shaw Cell Test Results (t=12, 15hrs)



Hele-Shaw Cell Test Results (t=18, 21hrs)

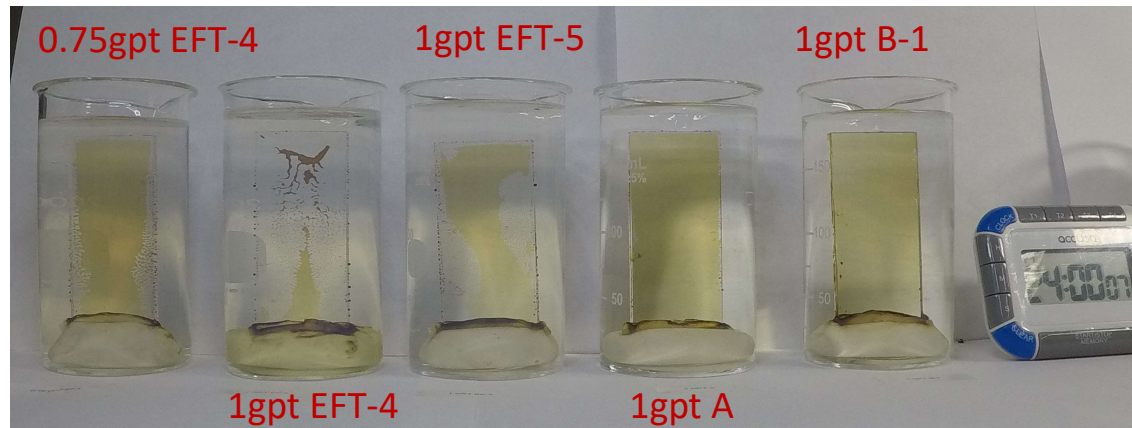


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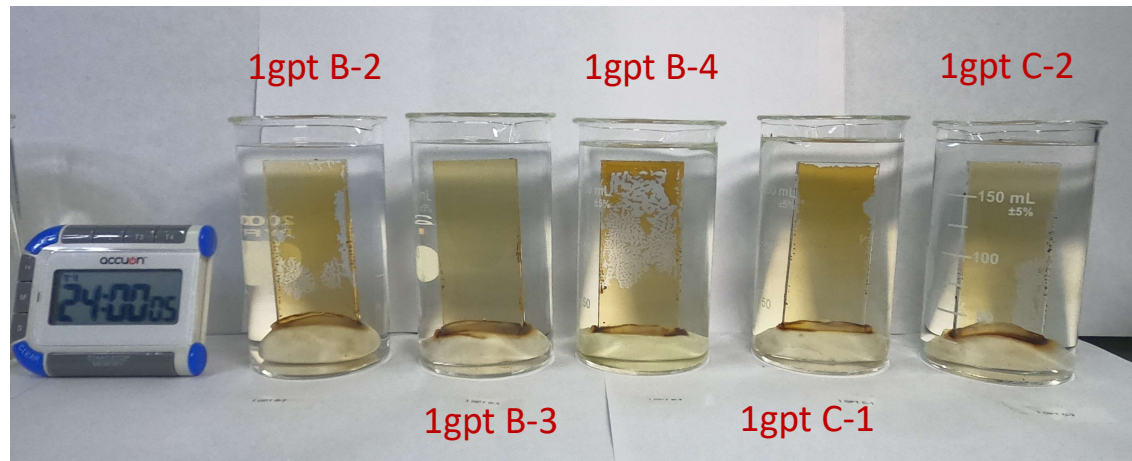
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Hele-Shaw Cell Test Results (t=24hrs)

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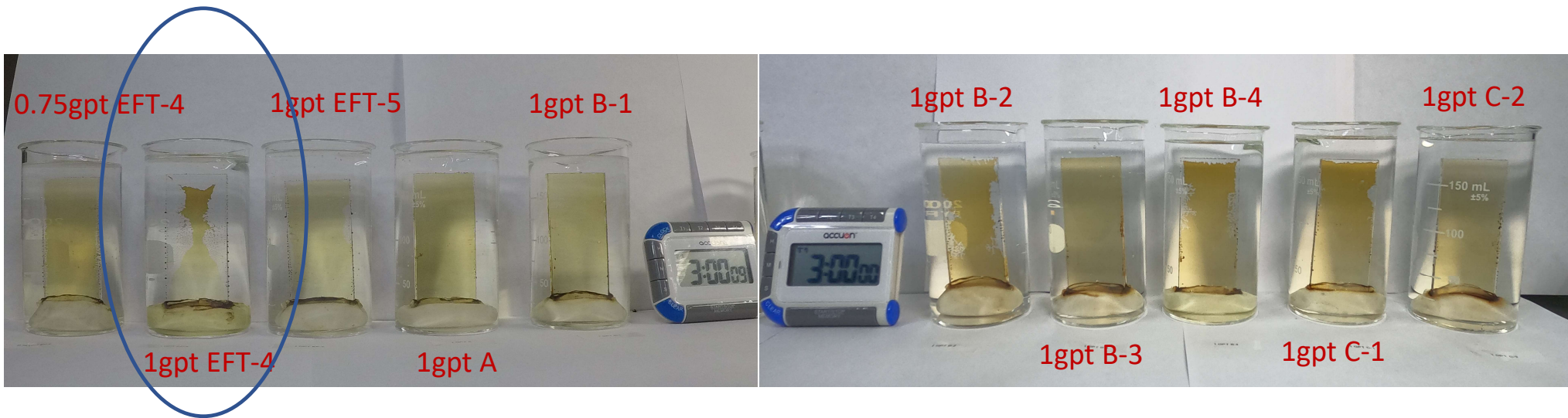


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Conclusion & Test Results at 3hrs

- The EFT 4 at 0.1 vol% clearly is hands down the best product at removing oil from pore-throats.



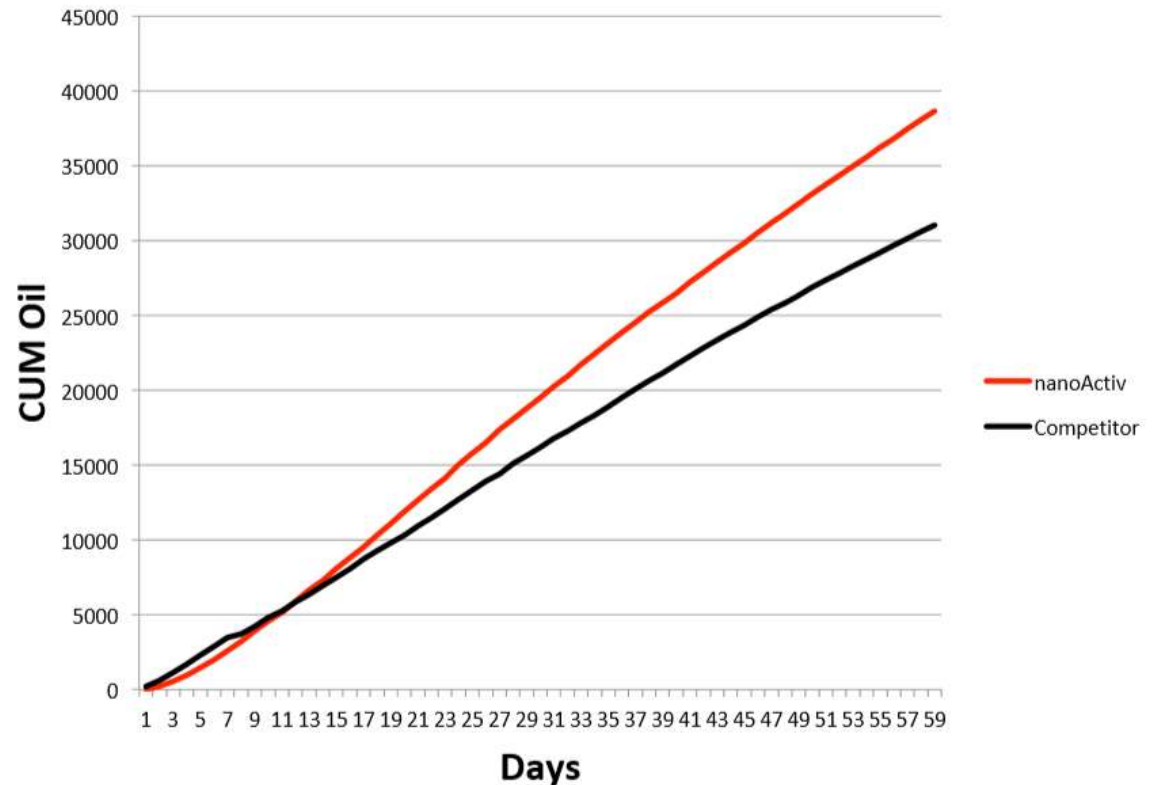
nanoActiv Field Trial v Industry Competitor

Details:

- Operator comparing two new completions using nanoActiv® vs. a competing technology
- Offset wells 1300' spacing
- Both products ran at ~1gpt
- Delaware Basin
- Lower Wolfcamp
- Eddy County, NM
- Treated in Spring 2019

Conclusion:

- nanoActiv® well at 60 days has
 - Higher oil cut: 30% to 25%
 - Higher tubing pressure: 300psi over offset
 - More gas: 2000 MCF over offset
 - More CUM BO



CUM BO delta in 60 days equates to 7,000 more barrels of oil in the tank
A difference of ~\$250,000