# Comparative Flowback of Distinct Zones During an Appraisal Study using Chemical Tracers

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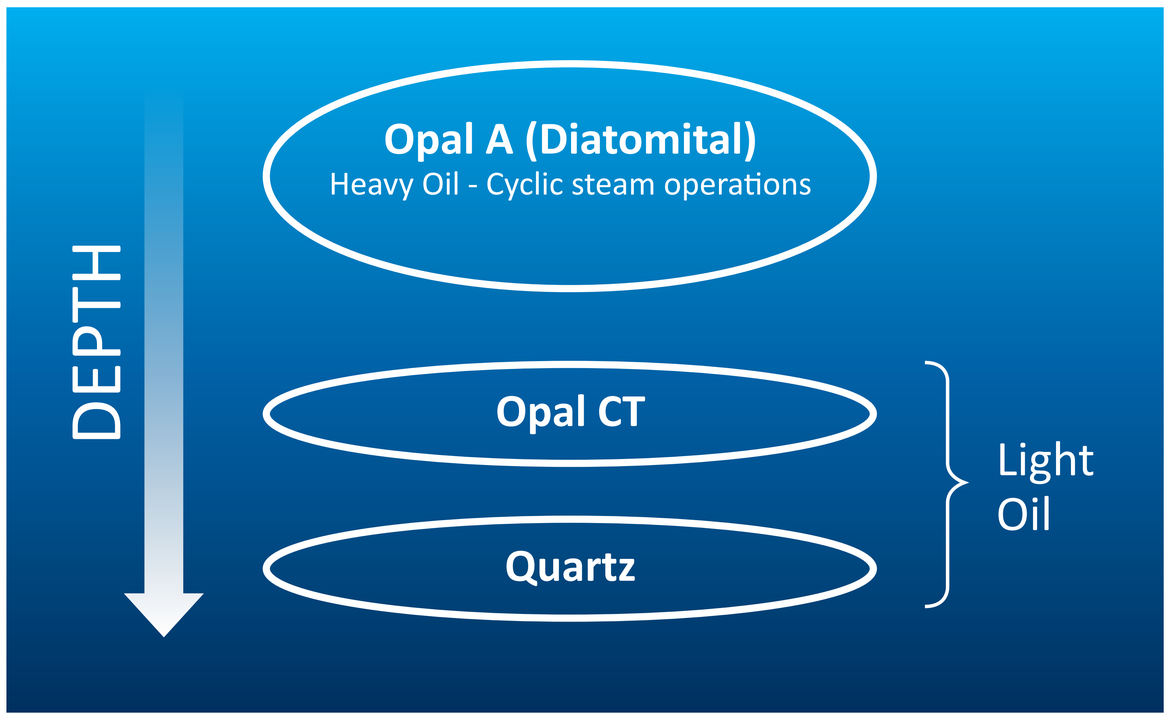
An exploration company wanted to evaluate a new formation consisting of three silica phases. It was known that oil from the shallow Opal A (Diatomite) rock could be produced via cyclic steam operations, but the deeper silica-based resources were yet to be commercially proven. Extracting these deeper hydrocarbons would potentially require more upfront costs with greater risk to return on investment.

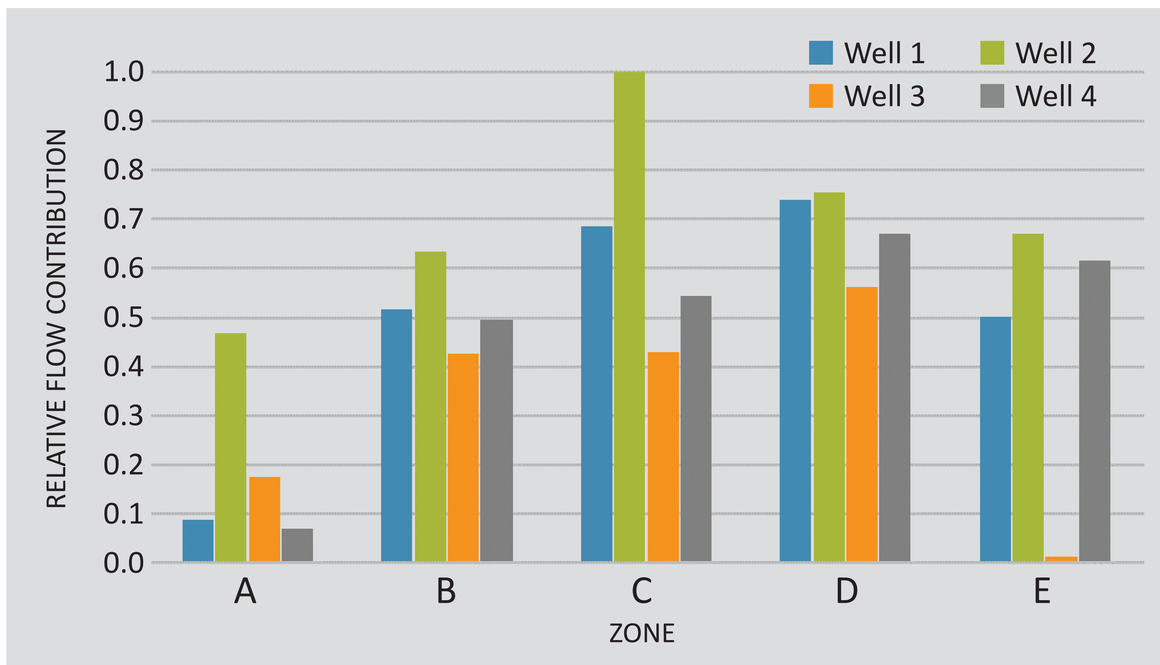
As these were thick zones a decision needed to be made on vertical vs. horizontal development plans.

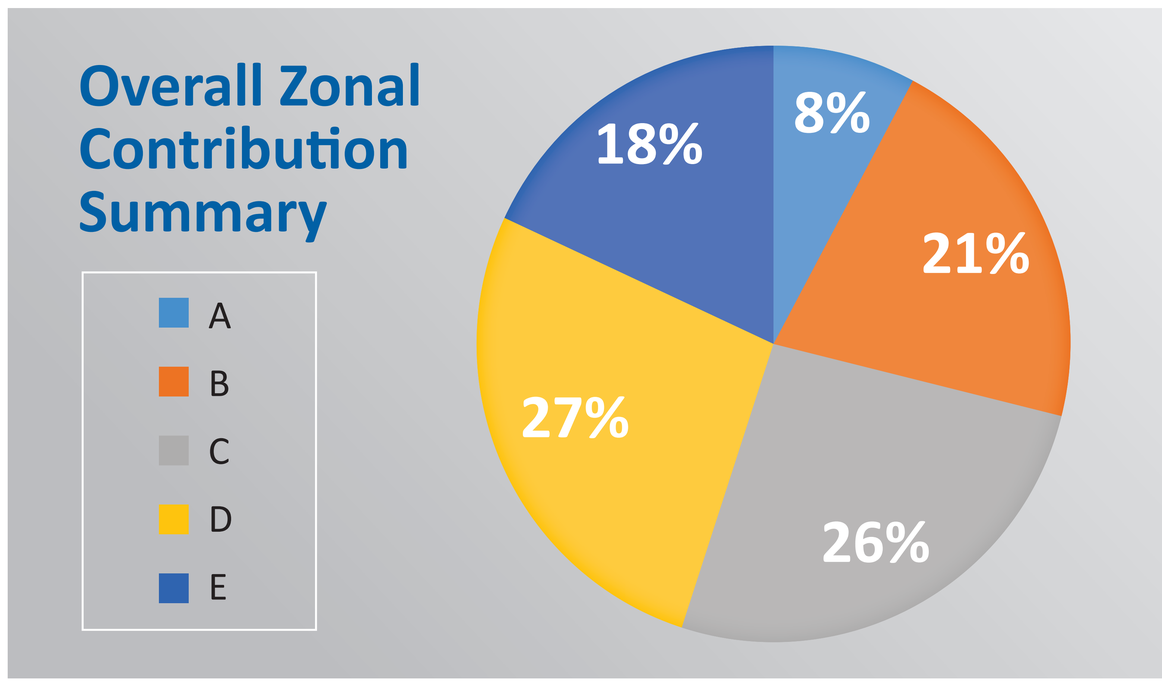
Over the completion of 4 wells a total of 37 unique chemical tracers were used to gain insight into the zonal production, both as a number of snapshots over time and overall contribution.




## Injection Log

| | Well 1 | Well 2 | Well 3 | Well 4 |
|---|---|---|---|---|
| Stage | Zone | | | |
| 12 | | E | | |
| 11 | E | E | | |
| 10 | E | D & E | | |
| 9 | D | D | | |
| 8 | D | D | | |
| 7 | C & D | C & D | E | E |
| 6 | C | C | D | D |
| 5 | B | B | C & D | C & D |
| 4 | B | B | B & C | B & C |
| 3 | A | A | A | A |
| 2 | A | A | A | A |
| 1 | A | A | A | A |

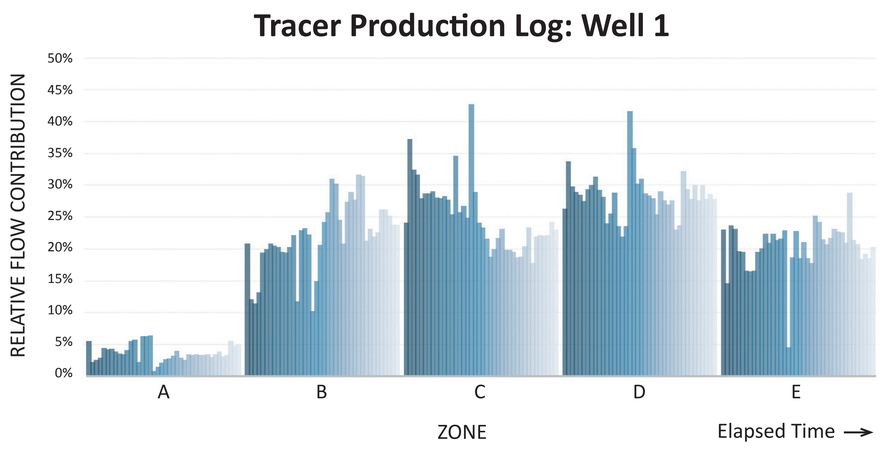


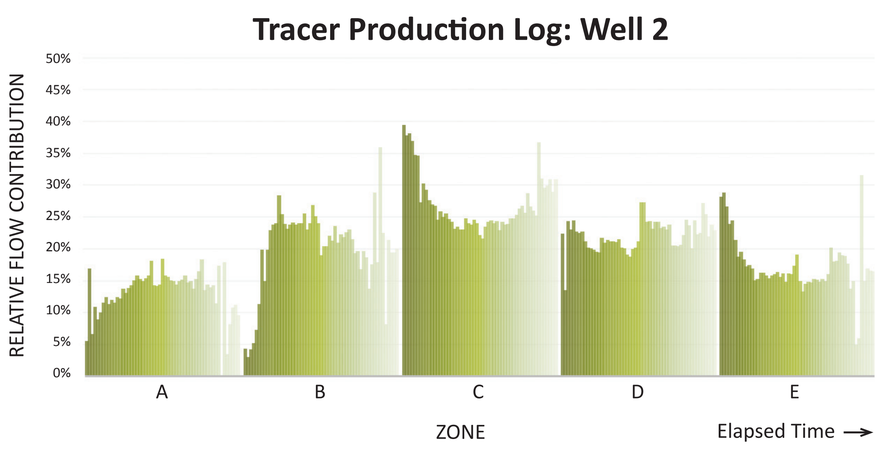



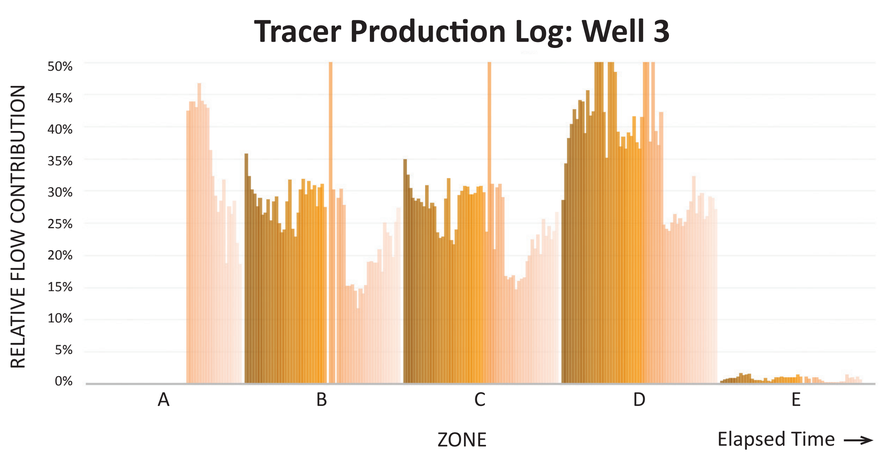

Some formation layers produced immediately and then declined, as seen with Zones C,D, & E.

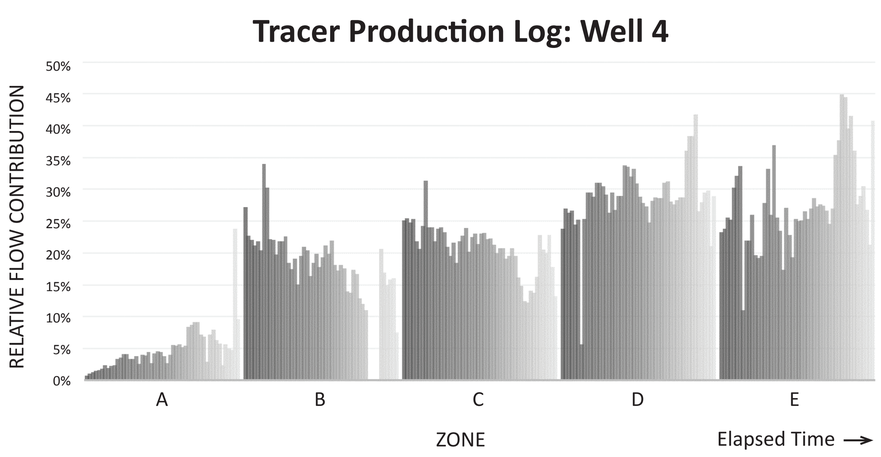
Other formation layers took longer to clean-up and start contributing to total production, as observed with Zone A.

The results helped narrow the uncertainty around the potential target zones.

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