



Active Acoustic Ranging For Open Hole Intercept

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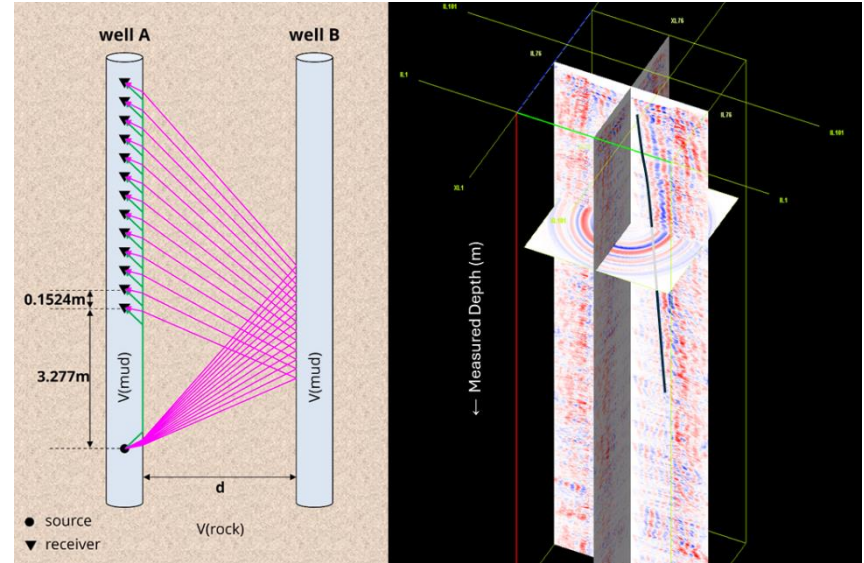
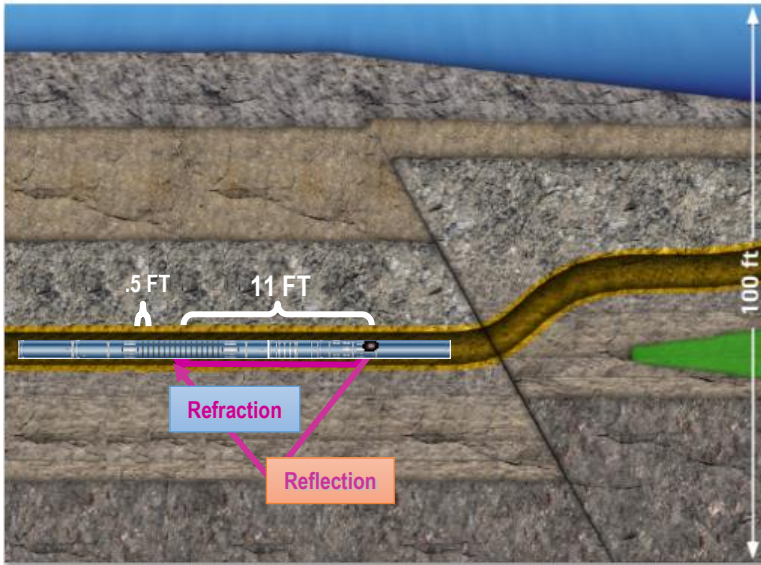


Speaker Bio

Rustam Rakhmangulov

- Drilling Engineer
- Survey Specialist
- Ranging



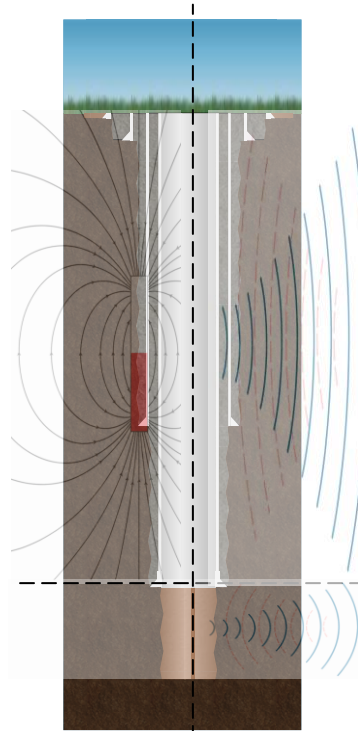


SPE-222241-MS

Ranging Methods

Active/Passive

- Range up to 30 m
- Detects only cased hole/fish
- Range limited in salts (AMR)



SLB-Private

Acoustic

- Range up to 30 m (depends on formation)
- Detects both open/cased hole + other features (fractures)
- Primary or supplementary method to AMR

Case Study

Location:

USA, Land

Objective:

Intercept for re-plugging

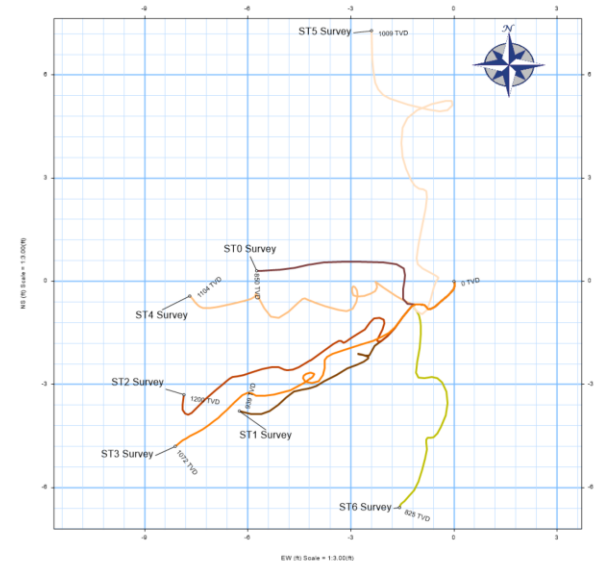
Target well:

Vertical, drilled in 80's

No directional surveys



Well Schematic



Attempted Blind Intercepts

Ranging Results

Locating the well

Pilot hole was drilled for
acoustic logging

Data interpretation

Distances and directions to
the target well were provided

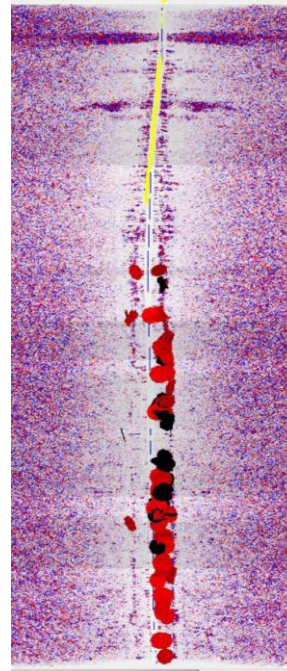
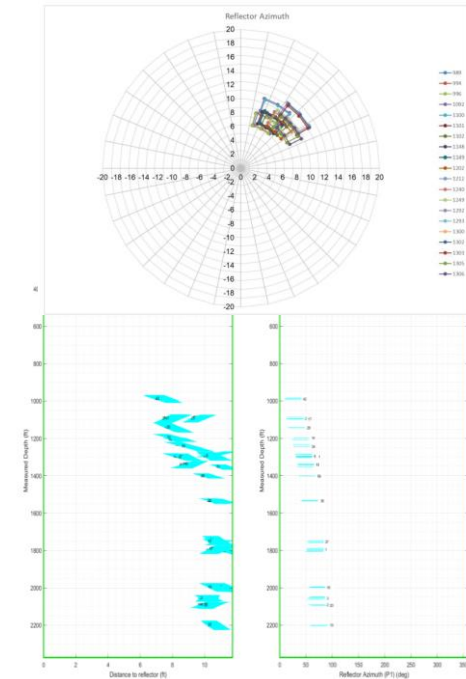


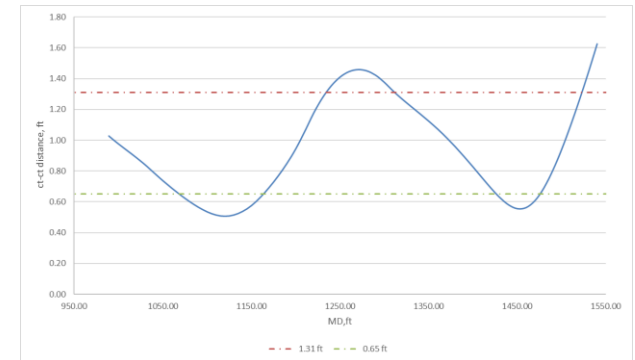
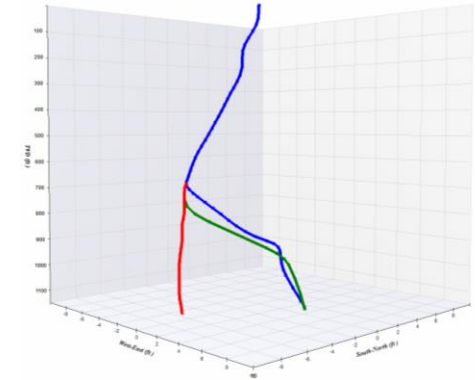
Image after processing



Distance 8-10 ft

Intercept

- ST from the pilot hole and drilling ahead
- Open hole intercept from the first attempt



Other case studies

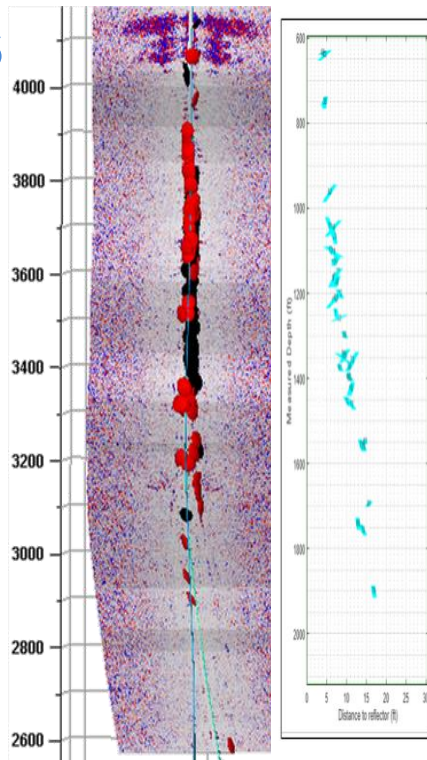
- 4 AAR intercept jobs were conducted
- Wells were detected in a range of distances:

Case 2: 5-17ft

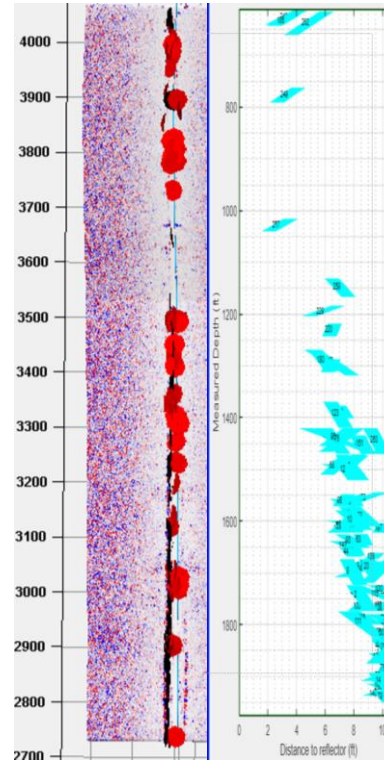
Case 3: 8-10 ft

Case 4: 10-20 ft

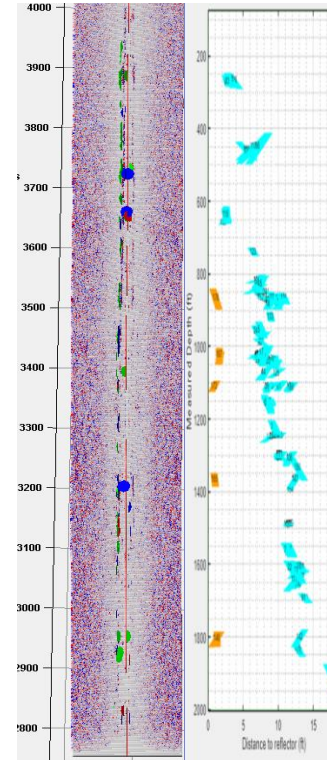
Case 2



Case 3



Case 4



Conclusion

- Method proved to be effective technology for locating and re-entering legacy open-hole wellbores
- AAR enables access-independent open-hole intercepts, including applications in relief well drilling
- AAR can register other reflecting events (fractures, faults, karsts)

