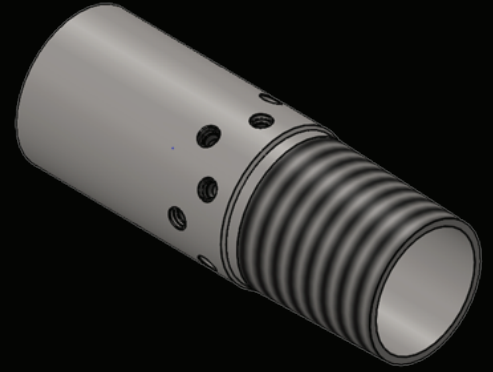




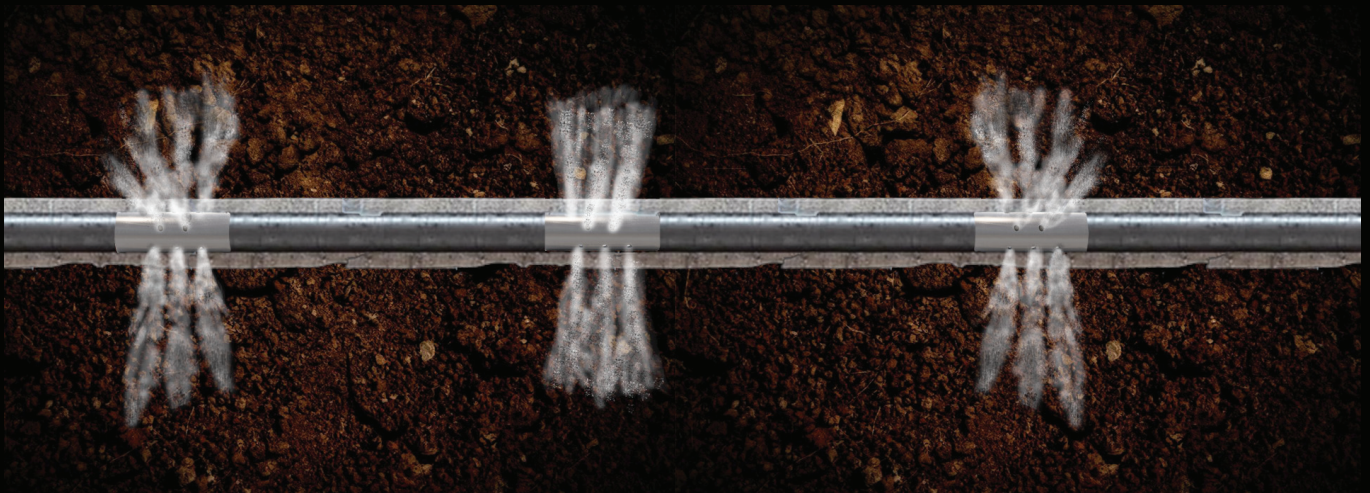
Perf-Less Toe Initiator

Single or Cluster Toe Initiation

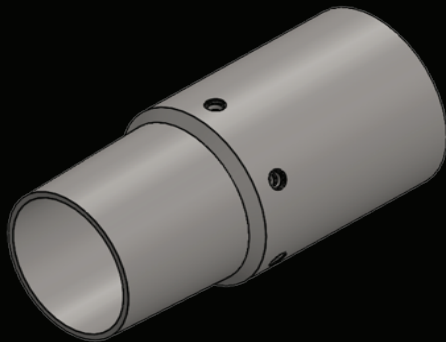
- Setup to dissolve in days to weeks.
- Dissolve one or more subs at same time.
- Simulate first stage cluster.
- Pressure test to MACP during well integrity period.
- Eliminate Toe Valves.
- Eliminate Toe Prep operations.
- Eliminate PRE Frac Operations and Pre Frac Cost.



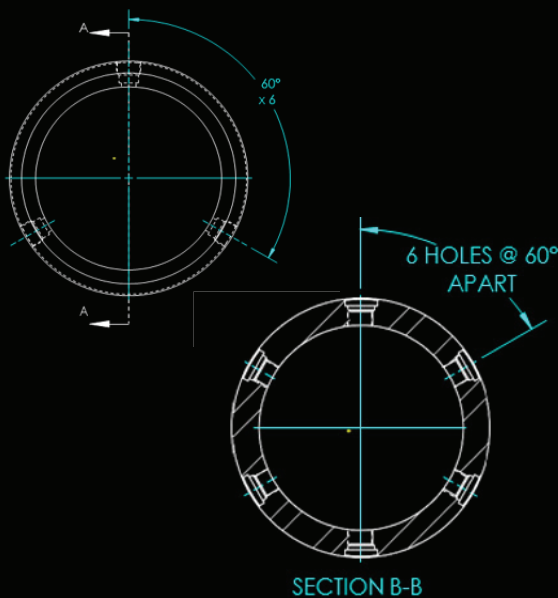
Successfully Completed, 2-10 clusters performed



Overview



- Casing subs ran between casing joints on the drilling rig.
- Full-bore ID.
- Simulate any perforation design.
- Provides full wellbore integrity until a pre-determined time.
- Ports dissolve to allow communication to the formation.
- Variable dissolve rates can be achieved by changing material compositions or wellbore fluids.



Benefits

- Decreased erosion over conventional perforations.
- Provides a low-cost alternative to perforating and mechanical sleeves.
- Eliminate Toe Valves and Toe Prep operations.
- Uniform entry hole size.
- Any SPM / Phasing / Shot Density.
- Recommended min 4 hole per sub.
- Slim-line subs for any flush casing size or casing type.
- Perf-less sub are same o.d as casing connections.

Perf-less system – a path forward

Potential Cost Savings:

- Eliminate Toe Valves Operations.
- Eliminate Toe Preps and First Stages.
- Low cost alternative to Mechanical Toe Sleeves.
- No initial coiled tubing run or Pumpdown when used as a first stage cluster.
- Eliminating Perforating Guns.
- Eliminating Crane needed.
- Eliminating Frac Plug, also so no drillout for first frac plug.
- No chance of mis-run for losing plug, guns or e-line which could create a fishing job.
- Less Fluid with no pumpdown of plug and guns.
- Perfect Entry Hole Sizes.
- Less pumping time.
- Less time on the first stage means, less time on the frac and faster time off location and faster time to production.



Mitigation of risk:

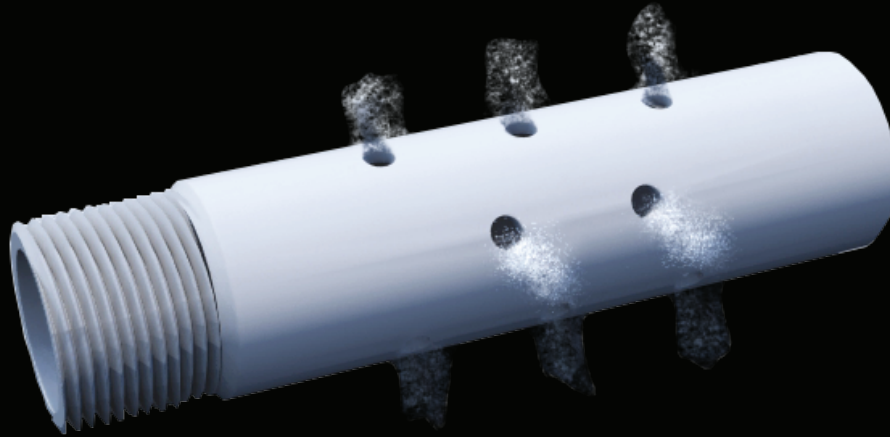
- Coil failures during milling or remedial perforating the toe stage.
- Failed Mechanical Toe initiation systems.
- Breakdowns.
- Stuck in-hole.
- Gun string issues.
- Human error.

Wellhead exposure hours:

- Decrease man hours on location.

Reduced Environmental impact:

- No disposal of spent guns.
- Decreased CO2 Emissions.



Perf-Less system - Benefits

	Perf-Less System	Conventional Perforating	Burst Ports / Toe Sleeves
Create Cluster or Limited Entry scenarios	✓	✓	✗
Increase Shot Density per linear Meter (Tighter entry hole spacing)	✓	✗	✓
Dissolve times tailored to clients needs	✓	✗	✗
Full formation access through all ports w/ consistent entry hole size	✓	✗	✗
Allow for MACP test to be performed, open at lower pressure	✓	✓	✗
Reliable, Low Cost Solution	✓	✗	✗
No mechanical Components	✓	✗	✗
Disruptive Technology with growth potential	✓	✗	✗
Green Technology	✓	✗	✓

Perf-less – Savings & Contingencies

Cost savings when using Dissolva-Perf System on toe perp and first stage:

1. Eliminating E-Line run.
2. Eliminating Perforating Guns.
3. Eliminating Crane needed
4. Eliminating Frac Plug, also so no drillout for first frac plug.
5. No chance of mis-run for losing plug, guns or e-line which could create a fishing job.
6. Less Fluid with no pumpdown of plug and guns.
7. Perfect Entry Hole Sizes
8. Less pumping time.
9. Sand can be pumped immediately (We will explain in presentation).
10. Less day rate for consultants.
11. Less time on the first stage means, less time on the frac and faster time off location and faster time to production.
 - There is many more cost saving that you are more familiar during the toe perp and first stage that I have not thought about like frac tanks, light plants,
12. If Dissolva-Perf doesn't dissolve at the time of frac:
 - a. Spot acid across Dissolva-Perf for 5 - 7 minutes then frac.
13. If Dissolva-Perf is open before casing test is preformed:
 - a. Drop dissolvable ball on the top Dissolva-Perf Sub that has a ball seat.
 - b. Fast dissolve time on the ball and go forward with frac job.