

Uses No Explosives

GATOR PERFORATOR



**LEE
ENERGY
SYSTEMS**

**Simple Designs That
Simply Work!**

GATOR **PERFORATOR**

Repeatable Hydro Mechanical Multi-Use Perforating System



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Applications

Water Injection Well Integrity:

- Perforate for cement squeeze for zonal isolation
- Sequentially perforate outer casing in preparation for cementing inner casing string.
- Ground water protection

Plug & Abandon:

- Low Cement Top, SCVF, Zonal Isolation
- Ground water protection

Completions:

- Alternative to electric line and tubing conveyed perforating.

Production:

- Re-perforating, adding perforations



Example perforated 7.0" casing



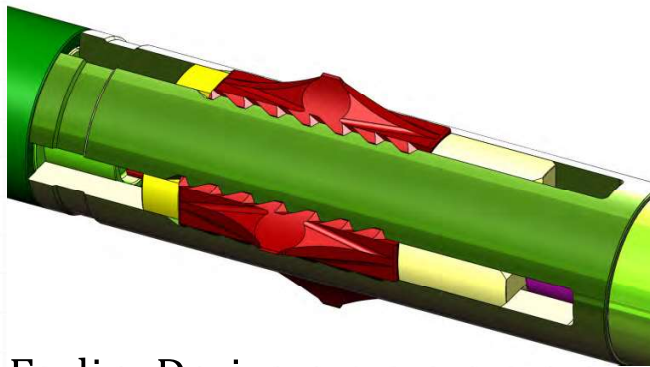
Casing maintains round even after very short cut spacing.

Cuts can be indexed in hole to give a spiral effect for improved fluid sweep.

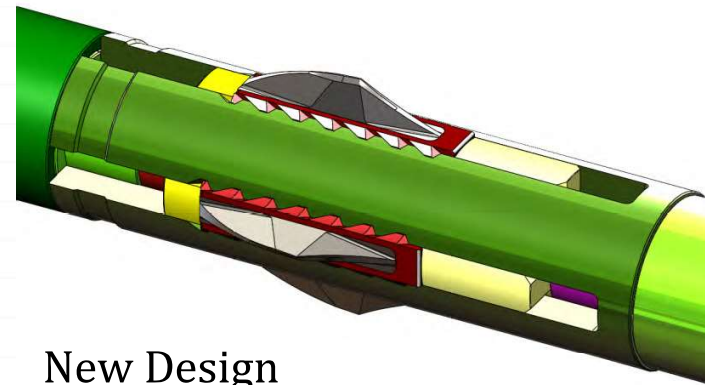


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Cutter Blocks Redesign



Earlier Design



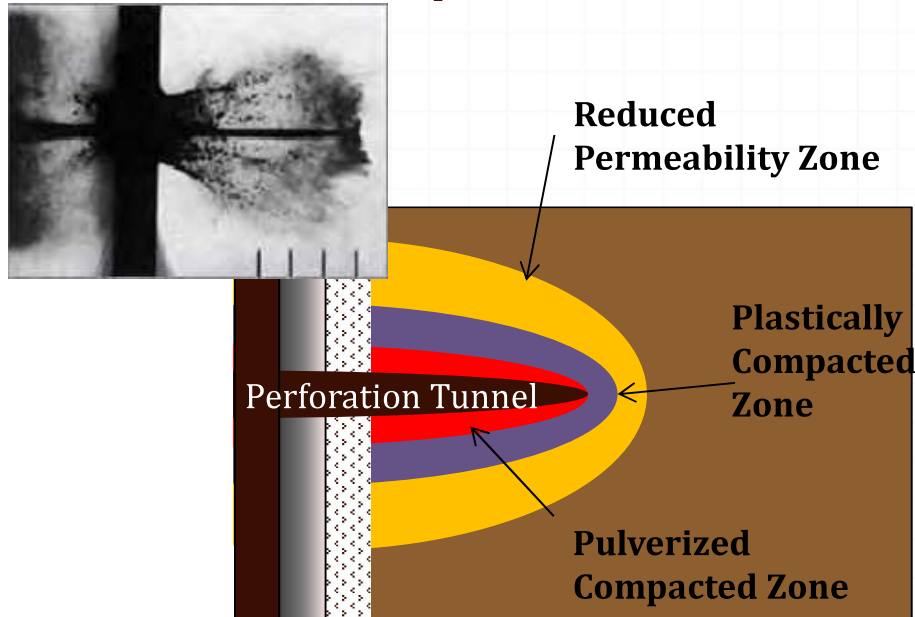
New Design



- Hole size is 126% larger.
- Force required to cut the casing is reduced by 19%

Damage vs Non-Damage

Explosive Perforation



Large damage area associated with the explosive charge.

Hydro-Mechanical Perforation



Very minor damage associated with the perforation.
Beneficial fractures in the cement / formations(?)

Application & Benefits

- No explosives or explosion risk, great for highly populated or high traffic areas.
- Perforate vertical and horizontal wells for production.
- Perforate vertical and horizontal wells for cement squeeze.
- Perf and set bridge plug & squeeze cement on a single run.
- Sequentially Perforate, set Packer & confirm federate on each perf on a single run.
- Ideal for shallow perforating (close to surface).
- Ideal for perforating production casing with no damage surface casing.
- Replace large TCP operations with multiple cutting tools.
- Leaves ID of casing smooth not requiring scarper run.

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