

**LEE
ENERGY
SYSTEMS**

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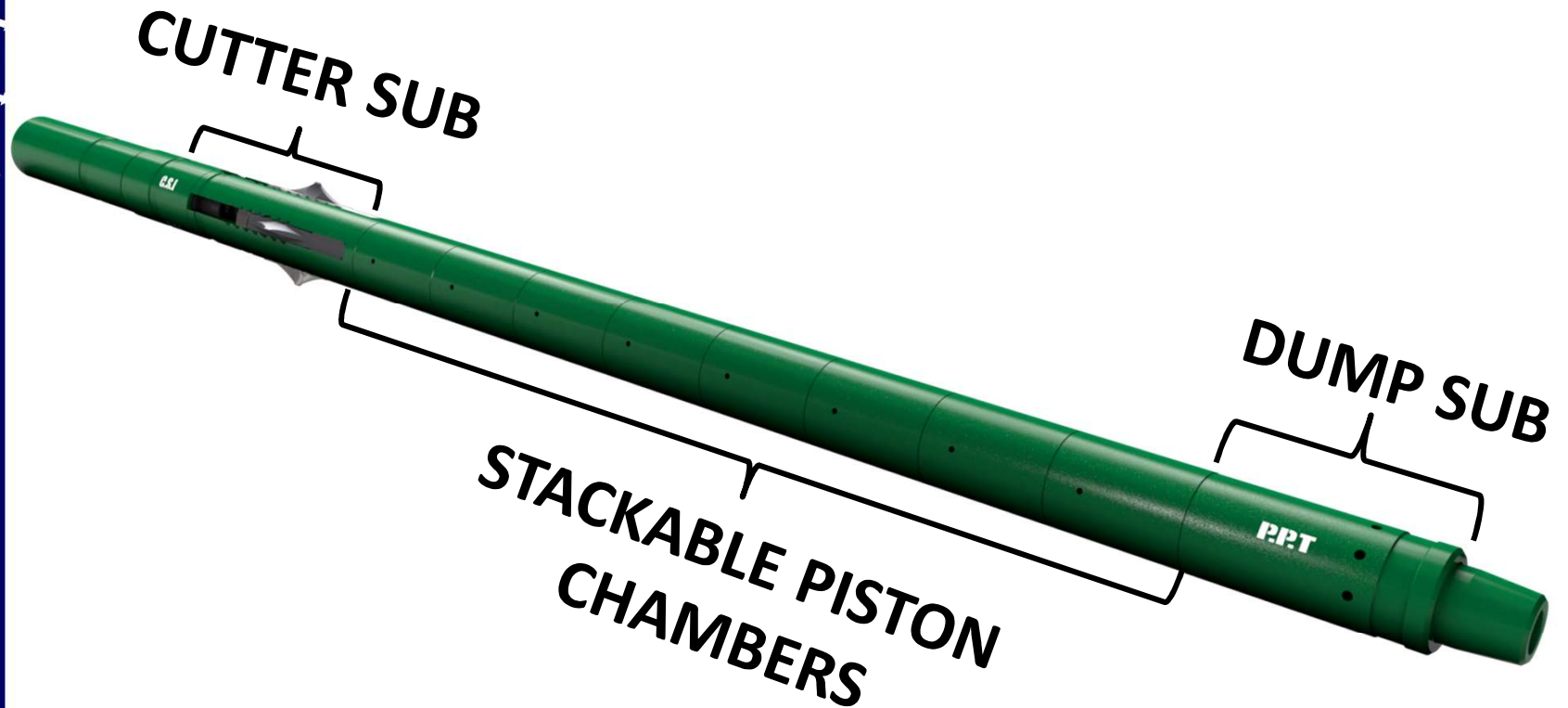
Presenter: Dayln Beazer, P.Eng.

GATOR 
PERFORATOR

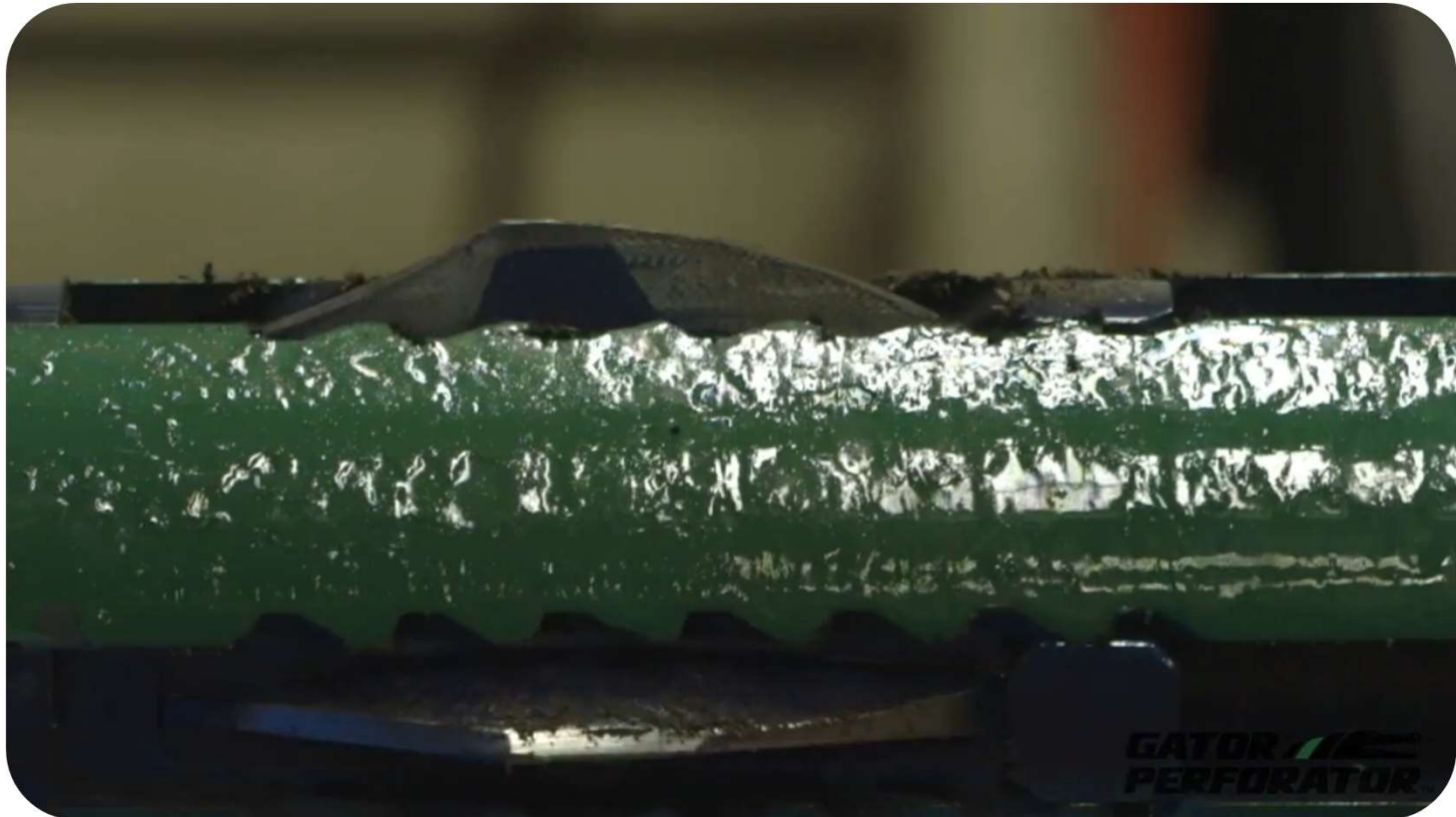
SPEED SQUEEZE
HYDRAULIC STIMULATION SYSTEM

Patent Pending

NEW TECHNOLOGY CT HYDRO-MECHANICAL CASING CUTTER



GATOR PERFORATOR



GATOR PERFORATOR FOR ABANDONMENTS

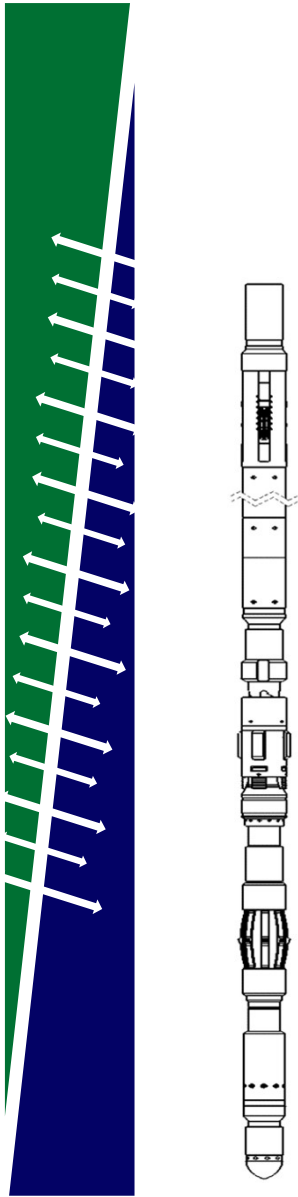
Low Cement Top Remediation on Well Abandonments:

Challenges:

- Do not want to damage surface casing or intermediate strings when repairing low cement tops.
- It takes too many trips to correctly abandon the required geological zones.

The use of the tool combined with a packer allows you to complete cuts at your required geological zone while isolating previous cuts and conducting independent feed rates or attempts to establish circulation to surface.

Efficiency has been increased in time and cost to complete the P&A



GATOR PERFORATOR FOR SAGD

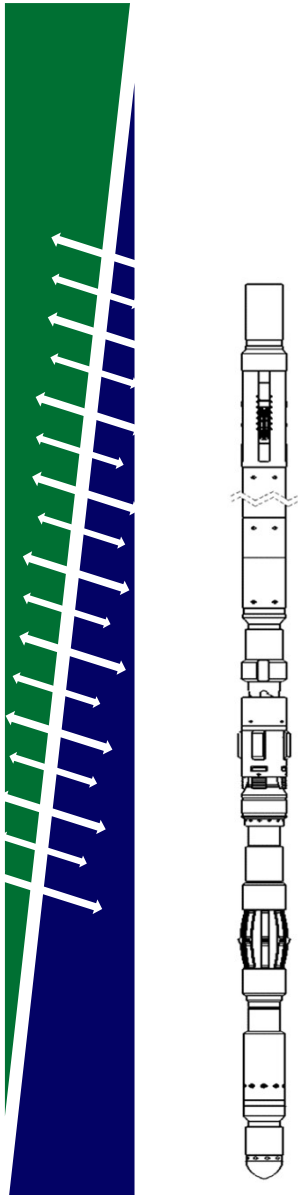
Producers and Injectors:

Challenges:

- Steam splitters and slotted liner are getting clogged up or more flow area is desired
- Fibre optic is reading cold zones

Solution:

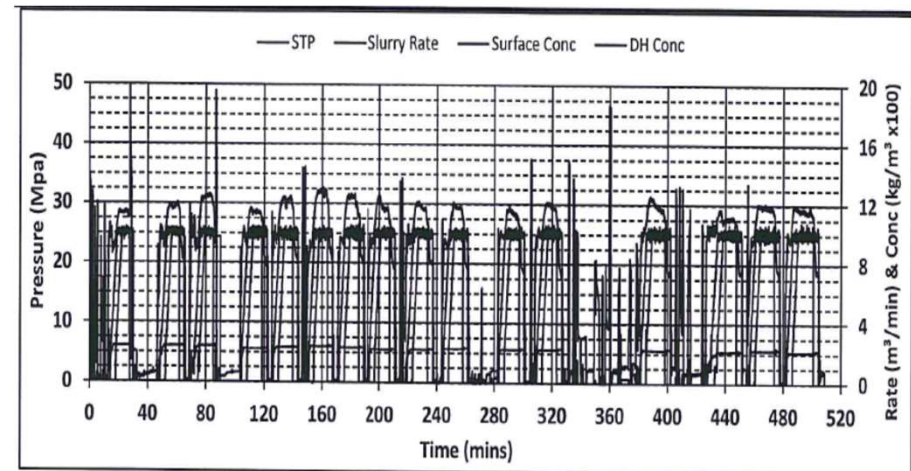
- Pull the liner
- ...Or... make new slots in the slotted liner or steam splitter by cutting holes with the Gator
- Looking for a specific flow through area???



GATOR PERFORATOR FOR NEW COMPLETIONS

Frac Data from Gator job on a Viking cup tool completion

- Gator tool was deployed on coil tubing with 18 intervals being perforated in a single run in approximately two hours downhole
- The BHA assembly consisted of a Gator tool, a collar locator designed for horizontal wells and a circulation sub to equalize the coil tubing to the annulus
- Breakdown pressure was approximately 2 MPA higher than perforating.
- On an offset well, intervals were single cut and double cut and no difference was seen on frac data indicating one single cut was more than adequate for the Viking zone.



Total Frac Time: 6:30 - 14:56

Average Job Rates

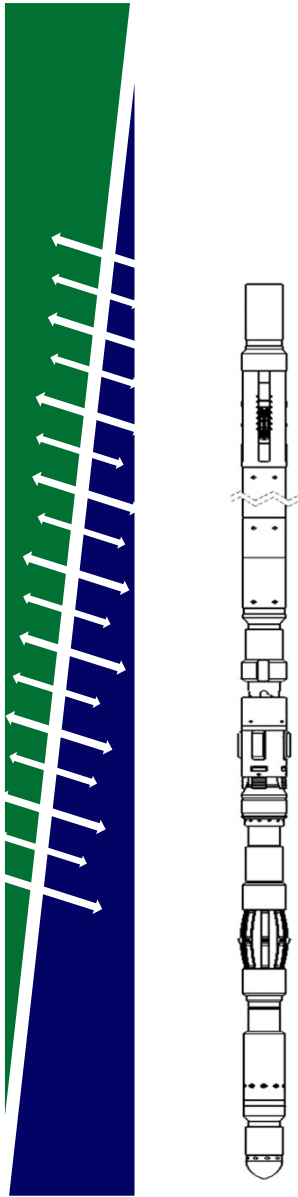
Fluid	2.2 m³/min
CO ₂	
N ₂	
Downhole	2.2 m³/min

Average Frac Pressures

Breakdown	25.7 Mpa
Maximum	32.3 Mpa
Minimum	25.9 Mpa
Average	28.6 Mpa
ISIP	6.4 Mpa



GATOR PERFORATOR FOR RE-COMPLETIONS



Challenges:

- Zone/Sleeve did not open or closed after stimulation
- Casing did not land at bottom, sleeves in the wrong place
- Inherited well, original completion stimulated too few zones

Solution:

- Use the Gator to cut new zones. The tool OD is 3.75" or 95.25 mm. This allows re-entry into some sleeve systems in order to create new zones or more flow area.

Example – Prepped well for Re-Frac with 24 new access points using frac diverter system

- Mechanical cutter tool chosen over abrasive perforating technology
 - Eliminates the logistics around pumping sand
 - Reduces cut time from 10 min to 5 minutes / zone
- Mechanical cutter tool chosen over explosive perforating technology
 - Cuts made in a single run vs. 6 runs needed for guns
- 24 new stages cut in a single run on Coiled Tubing
- Significantly lower cost compared to other technologies



OTHER APPLICATIONS/FUTURE DEVELOPMENT

Coil Deployed Annular Frac System



One trip, multi-stage, single point, annular frac system which combines the hydro-mechanical casing cutter with a packer and other accessory tools to perforate, isolate, and stimulate the intended zones of your cased wellbore.

QUESTIONS?

For more information about Lee Energy Systems

Website: www.LeeEnergySystems.com

Contact us: 403-984-3274

Acknowledgements

