

Tubing Conveyed Perforating

Eastern Testing Services is using Tubing Conveyed Perforating (ITP) accessories provided by own and TCP explosive provided by Geo ynamics. GeoDynamics was formed as a 'Perforation Solution' provider in 2003. They have:

- Razor-Ultra Deep penetration charges
- CONNEX-Clean tunnel charges

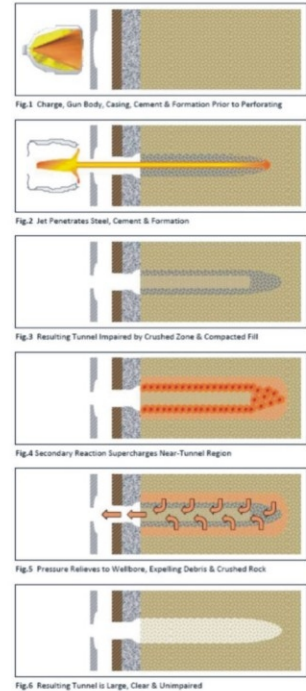
in addition to standard perforation charges.

CONNEX-Clean perforatoion Tunnels

In April 2007, GEO Dynamic introduced a new class of Reactive TM perforating shaped charge that delivers a stepchange improvement in perforation tunnel geometry and performance. The CONNEXTM perforating product generates a secondary reaction in the perforation tunnel thanks to proprietary liner metallurgy and charge design. CONNEXTM perforating technology was developed under license from QinetiQ with the vision and support of shell.

How it Works

When CONNEXTM Perforating charge is fired, it initially behaves exactly like a conventional shaped charge. The main explosive load detonates, evolving a huge volume of gas and generating tremendous pressure. As the detonation wave advances through the main body of the charge it collapses the conical metal liner toward its axis, producing a high velocity jet of particles moving at over 20,000 ft/sec. Along the axis of the cone, particle collision pressure as high as 15 million psi are generated. The particle jet pushes aside and plastically deform the gun body, wellbore casing, cement and formation. Rock grains are pulverized and displaced radically, forming the perforation tunnel. Finely crushed rock together with mud, cement and charge debris is forced into the pore throats of the surrounding rock, leading to a 'crushed' or 'altered' zone of reduced permeability.



	Average
	XXXXXX
Casting Hole Diameter, Short Axis, in	0.43
Casting Hole Diameter, Long Axis, in	0.44
Average Casting Hole Diameter, in.	0.44
Total Depth, in.	62.9
Burr Height, in.	0.05

Razor Beats all in APT 19B Shoot

API 19B tests carried out in July 2008 showed that the average penetration of 4 1/2', 5 shots per foot RaZor charges exceeded its nearest competitor charge by greater than 3 INCHES.