

Case History: Hughes Specialty Tools for Apache Corp / Western Oklahoma ~ March, 2012

Target: Partial liner hanger setting tool (Q-125 hardened steel) and stuck aluminum plug...all with remnants of Kutrite and Diamond Mills on top

Q-125 unworked hardness = max 38 HRC...work hardened max 55 HRC

Mill: 3 5/8" MX, diamond-impreg made by Short Bit & Tool Co.

Operational Data: Run on jointed pipe and power swivel with light WOB and about 80 to 100 RPM

Results: Cut all 11" of Q-125 in 18 hours and enough of the Aluminum plug so that it released...mill wear about 15-20%



MX style mills and XDS style shoes have a 30 to 60 mesh diamond grit that is blended with and infiltrated into the mill blades as much as 3/4". The grit diamonds do work in a grinding action that has cut targets as hard as sintered carbide. As each individual diamond is dulled by friction or impact it is sloughed out of the matrix that wears away to expose fresh diamond. This is repeated until the blade thickness is used up.