**OBJECTIVE/SOLUTION:**
Develop an affordable manufacturing process for complex geometry tungsten carbide components. Focus on an assessment of novel powder manufacturing processes such as Field Assisted Sintering, Injection Molding, Waterjet cutting. Optimization of traditional powder manufacturing techniques including Press & Sinter, Green Machining, Grinding.

**Achievements:**
- 75% cost savings for prototype level quantities using Green Machining. Components currently under testing to ensure material property compliance. Further cost reduction should be realized with transition to production level quantities.
- Component grinding time has been reduced from 15 minutes to 7 minutes. One large part of this accomplishment was in the reduction of finish grinding which was reduced from 5 minutes to 58 seconds.
- Waterjet cutting — analogous to grinding — has demonstrated a process time of 2 minutes and 45 seconds with sub-optimal surface finish. The technology can be streamlined to compete with diamond wheel grinding.
- Sintered pure tungsten carbide to full density using Field Assisted Sintering

**Achievements (cont):**
- Advanced manufacturing techniques for tungsten carbide in all markets

**Benefits:**
- Lower cost tungsten carbide components for next generation projectiles, which in turn results in reduced cost ammunition
- Higher performance ammunition

**Transition and Weapon Systems/Secondary Items Impacted:**
- The effort will be applicable across many families of ammunition as well as other areas outside ammunition.

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