The Vanguard™ air performance tricone drill bit, from Baker Hughes, a GE company (BHGE), combines extra-hard tungsten-carbide alloys with a customized insert layout to maximize penetration rates and downhole rock destruction in air-drilling applications. The tricone bit’s uniformly applied tungsten-carbide hardfacing protects the body from damaging rock formations and debris, enhancing wear resistance while extending the life of bearing and grease-compensator seals. Further optimizing performance, the bit features a unique seal and bearing package engineered to improve bit life and reliability.

Tricone bit performance can be additionally enhanced through the BHGE Drilling Application Review Team (DART) process.

The DART process, which combines advanced technology, data, and designs, provides individualized solutions to maximize field performance across multiple wells while reducing risk. The results are a true collaboration, drawing on unique resources, including a comprehensive BHGE database that taps into our rich history of continual drilling improvements. The process also includes a state-of-the-art drilling laboratory and a full-scale research rig and downhole simulator. This combination of unique resources in a fully collaborative environment permits us to create tricone drill bits and systems that optimize performance, minimize drilling and completion costs, while reducing nonproductive time.

Applications
- Air-drilling operations

Benefits
- Custom cutting structures with tungsten-carbide inserts, carbide grades, and insert layouts optimized for air drilling applications
  - Provides exceptional ROP
- Protective bit body armor with patented STL™ hard-facing pattern on outer diameter
  - Increases bit life in abrasive drilling environments
- Efficient cuttings removal with center-bore hydraulics
  - Better hole cleaning for greater ROP and reduced risk of bit erosion
- Air bearing package
  - Improves reliability

bhge.com
12¼ in. VG-40A

- Greene County, PA: Southern Marcellus
- +60% faster ROP than competition’s average
- The challenge is to complete a one-bit run at high ROP. The 12¼ in. VG-40A reliably delivers superior results

12¼ in. VG-30A

- Wyoming County, PA: interbedded sands, silts, and limes
- 79% faster ROP than competition’s average
- The challenge is to complete the interval in one run with high ROP. The 12¼ in. VG-30A exceeds averages of its competitors

8¾ in. VG-30A

- Susquehanna County, PA: Northern Marcellus
- 63% faster ROP than competition’s average
- The challenge is to complete the interval in one run with high ROP. The 8¾ in. VG-30A exceeds averages of its competitors