

**1604 DUOLEC™ VARI-PURPOSE GEAR LUBRICANT**  
**GLACIAL SAND & GRAVEL, Western Pennsylvania**  
**Nordberg Cone Crushers • SIC 1442 Crushed & Broken Stone**

**CUSTOMER TESTIMONIAL**

**The Nordberg HP400 has run double shifts for ten years with no repairs or replacement of internal components!**

**CUSTOMER PROFILE**

Glacial Sand & Gravel Corp. and Allegheny Mineral Corp. are sister companies located in Western Pennsylvania where they recover and process limestone and glacial sand and gravel. Parent company Snyder Associates, Inc., in business for over sixty years, has been a Lubrication Engineers customer for over twenty years.

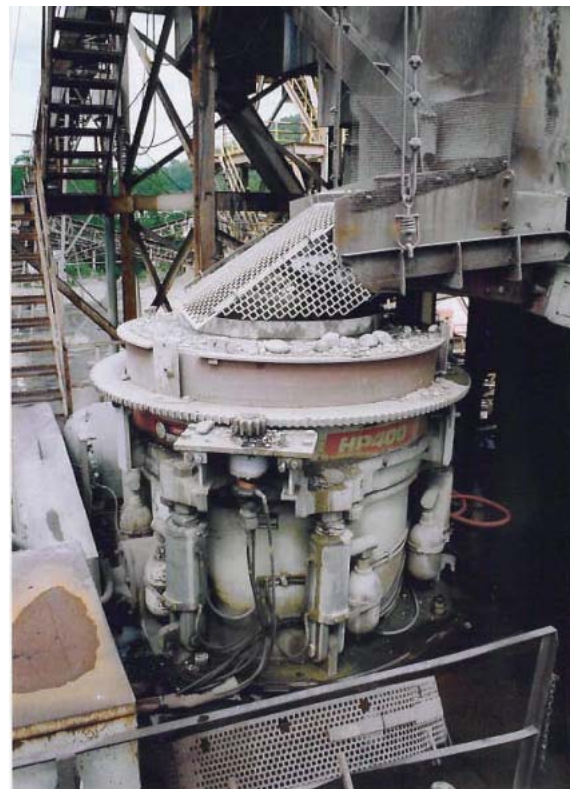
Operations include three open pit limestone mines, one open pit gravel operation, an open sand pit and a river dredging gravel operation, with processing facilities at each location.

**APPLICATION**

A key piece of equipment in their operations are eight cone crushers, including five Nordberg Cone Crushers. The Nordbergs include two model HP300 and three HP400's. The crushers are used as primary crushers at glacial deposit gravel sites and secondary crushers at limestone facilities.

**AREA OF INTEREST**

The environment in which the cone crusher operates is wet and dusty, and the eccentric bushing can run



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hot. With water as a factor in the application, emulsion of the gear oil can also be an area of concern.

### **LE SOLUTION**

LE Representative John Hayes recommended LE's 1604 DUOLEC™ Vari-Purpose Gear Lubricant. LE's 1604 is a high performance gear oil acceptable for use in any industrial gear or bearing application that requires a high thermal stability, extreme pressure lubricant. LE 1604 separates readily from water and is fortified with a shear stable tackifier to provide adhesion to the metal during use. It contains DUOLEC, LE's proprietary temperature activated, dual acting, liquid additive that increases film strength and EP characteristics.

### **CUSTOMER COST SAVINGS**

All cone crushers are lubricated with LE's 1604 DUOLEC Vari-Purpose Gear Lubricant ISO 150 EP.

In May 2006, Glacial Sand & Gravel Corp. called in a Nordberg field mechanic to assist with a maintenance pro-

cedure. This unit is used as the primary crusher processing very hard river deposited glacial gravel. Upon shut down and internal inspection, the service rep reported the following:

Nordbergs should take no **less** than 30 seconds to wind down once the power is shut off. This unit takes three minutes, 30 seconds indicating no performance robbing wear and minimal internal friction. Internal inspection showed no wear or discoloration on the head ball or socket. **All bushings and bearings measured within new tolerance and all gears showed minimal to no wear.**

This unit has run double shifts for ten years with **no repairs or replacement of internal components.**

Additionally, this HP400, along with the rest of the cone crusher fleet, has never shut down because of high oil temperatures, a common occurrence with cone crushers.

The service rep remarked he has never seen Nordbergs run this cool and have this little wear.



**John Hayes**

Our sincere thanks goes to Glacial Sand & Gravel Plant Manager Richard Snyder, Production Superintendent Steve Shay, Snyder & Associates Maintenance Superintendent Paul Neupert and LE Representative John Hayes for the information provided to prepare this report.