



**LAMBDA**  
Technologies Group

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### **Lambda Processing Pegasus Disks for NAVAIR**

Lambda Technologies has begun using its Low Plasticity Burnishing (LPB<sup>®</sup>) process to extend the fatigue life of the titanium LPC1-2 disk assembly on the F402-RR-408 Pegasus engine. The engine is used for AV-8B and Harrier II. Fretting between the disk post and the LPC1 blade dovetail was causing cracking that led to premature retirement of the disk.

Previous efforts to mitigate the problem, such as applying an anti-fretting coating, were only partly effective. With LPB, NAVAIR is able to completely eliminate crack growth from fretting fatigue. Disk posts that were LPB treated, even with damage as deep as .02 inches, outperformed new, undamaged posts in fatigue testing. The LPB process allows disks that have already seen significant flight time to be returned to service with superior fatigue performance and fretting damage tolerance than when they were new.

"I am excited to see LPB being utilized like this," says Dr. N. Jayaraman, Lambda's Director of Materials Research. "The power of the technology is its versatility. On a single engine, it can solve problems caused by fretting, FOD, corrosion and any number of other damage mechanisms."

LPB treatment is being performed at Lambda's Cincinnati headquarters. Lambda is already processing the LPC1 vane on the same engine to increase its FOD tolerance. More than 12,000 vanes have been LPB processed, completely eliminating safety critical vane fatigue failures. Programs are underway to transition the technology to more sections of the engine.

LPB is a patented, proven surface treatment that provides a deep layer of compressive residual stress to mitigate damage mechanisms in the critical areas of metallic components. LPB delivers significant damage tolerance and fatigue life extension with minimal initial capital investment and low production costs. LPB is FAA accepted for the repair and alteration of aircraft components.

Lambda Technologies is an innovative company incorporating a premier materials research laboratory with a world-class engineering and production enterprise dedicated to the development and optimization of surface treatments to improve component performance. For additional information on Lambda Technologies or the LPB process, contact Justin Combs at (513) 561-0883 or visit [www.lambdatechs.com](http://www.lambdatechs.com).



**LPB Processing of the F402 R1 Disk**