



## Success Story

### FIRST-EVER LITHIUM-ION MAIN AIRCRAFT BATTERY READY FOR THE B-2 SPIRIT



The Propulsion Directorate, along with industry partners, developed the first-ever main aircraft battery using advanced lithium-ion technology for the B-2 Spirit. The lithium-ion battery (shown above) boasts the advantage of five times the energy output with the same weight of the currently used nickel-cadmium (Ni-Cd) battery in a form, fit, and function replacement. This battery has an estimated useful life of 2-3 years and is virtually maintenance free.



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### **Accomplishment**

The 36 lb lithium-ion battery will replace the existing vented Ni-Cd battery. The directorate designed the new battery to fit dimensionally into the existing B-2 battery case and function with the existing charger system to avoid a costly charger modification.

Implementing the new technology provides five times the existing battery capacity and exceeds the performance requirements of the upgraded B-2 aircraft. An equivalent sealed Ni-Cd battery would weigh approximately 108 lbs and require structural modification to the aircraft and battery compartment.

### **Background**

The directorate, along with industry partners, successfully developed the lithium-ion technology and tested the battery for the B-2 Spirit. Directorate researchers partnered with Yardney, Inc. to make this advanced battery capability available for use.

The program's goal was to create a battery of the same size and weight that generates greater capacity at a lower temperature. The battery has undergone low-temperature, high-temperature, and life-cycle tests with excellent battery performance. It supplies the required capacity at low temperatures and higher than required capacity at normal temperatures.

Propulsion  
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### **Additional information**

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (02-PR-07)