

## **Boeing Receives CALCM Development and Production Contract**

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The U.S. Air Force has awarded The Boeing Company a \$5.53 million development and production contract to provide precision strike capability to the Conventional Air Launched Cruise Missile fleet. Boeing will develop and deliver retrofit kits for existing CALCM missiles to produce the new Block IA configuration.

"The CALCM Block IA enhances the Air Force ability to engage high-value targets deep within enemy territory," said Col. J.P. O'Neill, CALCM program director at Tinker Air Force Base, Okla. "Ultimately, the new configuration provides a missile with precision strike capability that can be launched from B-52s against targets anywhere in the world."

The CALCM, a conventional, modified version of surplus Air Launched Cruise Missiles, was developed by Boeing and initially used in Operation Desert Storm and later during Operation Desert Strike. For Block IA, Boeing will design and produce 28 missile retrofit kits for delivery to the Air Force in the year 2000. The missile kit installation then will be completed by the Air Force.

"This contract is a demonstration of faith in CALCM capabilities by our Air Force customer," said Chris Sales, CALCM program manager for Boeing. "The precision accuracy of the new CALCM Block IA provides the warfighter with an all-weather, standoff missile capability on very short notice."

Boeing Block IA development includes an eight-channel global positioning system receiver with navigation and guidance enhancements and an adaptive antenna array for precision delivery with a high degree of anti-jam immunity. To expand CALCM applications, an enhanced capability for shallow to near-vertical dive angles from any approach reference point also is being integrated.

Flight software improvements include a large-state Kalman filter for optimizing GPS accuracy, code and phase measurement data, pressure and temperature measurements, and wide-area GPS enhancement to reduce system errors. The projected accuracy for the CALCM Block IA is three meters including an estimated target-location error of two meters.

The CALCM also is being evaluated for applications to defeat hard targets using several conventional penetrator warheads. Current considerations include a foreign comparative test of the British Royal Ordnance Augmenting Charge warhead developed by British Aerospace and an evaluation of the U.S. Air Force Advanced Unitary Penetrator by Boeing for potential CALCM integration. Once testing is complete, the Air Force will conduct a cost benefit analysis and a penetrating warhead will be selected for CALCM.

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