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**FINAL – Approved by USAF for Public Release**

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## **Locata Passes Critical Design Review Milestone for U.S. Air Force Ground-Based Positioning System**

*Locata prototypes a system for centimeter-accurate positioning  
over large areas when GPS is completely denied*

**IRVINE, California and CANBERRA, Australia — September 6, 2011 —**

[Locata Corporation](#) today announced it has successfully completed the Critical Design Review (CDR) contract phase for a Locata network which will enable the USAF to deploy a new ground-based, centimeter-accurate “truth-reference level” positioning system for use in GPS-denied environments. The USAF [746th Test Squadron](#) (746TS) awarded Locata a multi-year contract for this project in July 2010, and the CDR was the last milestone to be met before the USAF committed to a technology demonstration in the USA. Locata’s Non-GPS Based Positioning System (NGBPS) – sold commercially as a LocataNet – will provide accurate positioning when GPS is jammed over 2,500 sq. miles (6,500 sq. kilometers) of the White Sands Missile Range (WSMR) in New Mexico.

The project’s most significant milestone to date, completion of the CDR demonstrates the company’s detailed LocataNet design as capable of meeting the non-GPS based positioning component of the 746TS Ultra-High Accuracy Reference System (UHARS). The contract now moves to an initial deployment over approx 600 sq. miles (1,500 sq. kilometers) at WSMR for further testing in October 2011.

“I am excited about the potential Locata’s technology has to dramatically improve our reference system’s accuracy in a navigation warfare environment,” said Christopher Morin, Technical Director for the 746TS at Holloman Air Force Base in New Mexico. “The Locata team has made great strides over the last year to develop the hardware and software required to track low and medium dynamic flight profiles across the range of altitudes that we test the DoD’s next generation navigation systems. The prototype tests conducted in Cooma and post-processed reference solution delivered during the CDR clearly indicate that Locata has captured and is successfully modeling the various sensor, antenna and tropospheric errors. I expect that the technology demonstration scheduled for early FY12 will give us the confidence to field this system throughout the 40 by 60 mile area of WSMR we use for navigation system testing.”

“The 746TS CDR is probably the most significant technical deployment milestone in Locata’s history to date,” said Nunzio Gambale, CEO of Locata. “We are proud to be working so closely with the legendary 746TS, an entity well-known throughout the positioning industry as managers of the tri-service GPS Test Center of Expertise (COE) for the U.S. military. Our CDR success is also a testament to the inventions of Locata co-founder David Small and the outstanding Locata team – it’s truly a moment in their lives when they can justifiably stand tall for this achievement.”

Locata brought together many years of engineering experience and numerous Locata technical “firsts” to deliver NGBPS technology to the 746TS in these flight trials, including:

- demonstrating Locata’s autonomous, nanosecond-accurate TimeLoc synchronization capability when Locata transmitters (LocataLites) are placed up to 30 miles (50 km) apart;
- demonstrating that TimeLoc can be “cascaded” from one LocataLite to another in multiple “TimeLoc hops” of at least 30 miles (50km) per hop;
- showing LocataLites can be successfully attached to various high-powered transmit amplifiers to deliver much longer ranges, yet continue to maintain accurate TimeLoc;
- demonstrating that Locata receiver tracking loops perform adequately under demanding “military-spec” speed, acceleration and jerk stresses;
- demonstrating Locata receivers acquiring and tracking Locata positioning signals at a range of at least 30 miles (50km);
- showing navigation solutions with tropospheric models that adequately mitigate the large tropospheric errors encountered by terrestrial signals at these long ranges,
- demonstrating a carrier-phase “truth-reference” solution to the 746TS of <18cm at a range of 30 miles (50km) with a PDOP <3 and;
- developing, manufacturing and demonstrating new transmitter and aircraft antennas to provide both satisfactory network coverage to the WSMR test area and adequate gain and multipath mitigation capabilities for the aircraft. The new antennas were developed in collaboration with Cooper Antennas Ltd of Marlow, Buckinghamshire, UK.

“Delivering completely independent high-accuracy GPS-style positioning when GPS is not available is no trivial task – in fact, many believed it was not possible,” added Gambale. “Locata is the only company in the world that can do it. The Locata team has spent countless hours designing and then refining this world-first positioning capability. Meeting difficult technical hurdles for partners like the USAF helps us to hone our technology, and validates our solution to the world.”

Dr. John Raquet, Director of the Advanced Navigation Technology Center at the Air Force Institute of Technology and Satellite Chairman for The Institute of Navigation, joined six other positioning experts from the 746TS at Locata’s Australian Headquarters to conduct the CDR. Over a four day period, the group conducted a meticulous review and analysis of real-world data gathered by Locata during two flight trials over a 600 sq. mile (1,500 sq. kilometer) LocataNet deployed around Cooma airport in southern New South Wales. Following this analysis, Locata produced a final CDR Report which was tendered, and accepted. Locata has now been advised officially that the NGBPS CDR objectives have been achieved and the CDR is formally closed.

“Working in close partnership with the US Air Force, Locata looks forward to building on the momentum from completing the CDR” said Gambale. “The next step will be to deploy Locata’s technology at the White Sands Missile Range in October 2011. At that time, the company plans to not only meet, but exceed, our customers’ performance requirements for this important program. It’s certainly an exciting time for Locata.”

The 746TS is scheduled to present a paper on the NGBPS program at the Institute of Navigation (ION) [GNSS 2011 Conference](#) in September in Portland, Oregon. The paper will outline the history of the 746TS positioning capabilities and present results from relevant Locata flight tests.

### **About Locata**

Locata Corporation has invented new radiolocation technology which gives precise positioning in the many environments where GPS is either marginal or unavailable for modern applications. The company achieves this by creating a network of ground-based LocataLite transceivers that transmit extremely well-synchronized signals. These signals form a positioning network called a LocataNet that operates in combination with GPS or totally independent of GPS (e.g. indoors). Early adopters of Locata technology include open-cut mining, construction, the military, structural deformation, automation and warehousing markets. LocataNets have the unique ability to replicate a GPS satellite constellation locally – on the ground. Locata calls this “**Your own GPS**”.

A LocataNet can provide independent GPS-style performance because Locata's patented TimeLoc technology enables the network to autonomously synchronize transceivers to the nanosecond level (i.e. a billionth of a second) without using any atomic clocks or external aids. This is an amazing technical breakthrough which allows Locata Technology Integrator (LTI) partners to deploy flexible, scalable, wide-area LocataNets that independently provide one of the "holy grails" of positioning: cm-level accuracy without any external assistance. TimeLoc accomplishes this without differential corrections, atomic clocks, reference networks, data links or any of the normal external aids needed by GPS for carrier-phase positioning. Locata is the only technology in the world that can do this.

Locata's combination of reliability, flexibility and accuracy promises new opportunities for the many markets where GPS-style positioning has previously been difficult, or simply impossible. In mid-2011 Locata once again extended the commercial potential of the LocataNet by demonstrating for LTIs a world-first cm-level indoor positioning system for machine and industrial automation inside warehouses. Today Locata has 82 granted patents on devices and systems which advance radiolocation technology to new levels, and about 160 more patents in process.

For more information, visit: [www.locatacorp.com](http://www.locatacorp.com)

#### **About USAF 746<sup>th</sup> Test Squadron**

With over 50 years of experience, the 746th Test Squadron (746TS), also known as the Central Inertial and GPS Test Facility (CIGTF), is the U.S. DoD's premier facility for testing and evaluating GPS user equipment, inertial navigation systems (INS) and embedded GPS/INS navigation and guidance systems. To this end, the 746TS leads the tri-service GPS Test Center of Expertise (COE) comprised of Army, Navy, and Air Force test agencies chartered to support GPS test and evaluation initiatives. The 746TS's GPS evaluation capability includes all aspects of GPS receiver performance, to include testing of new GPS satellite/receiver compatibility prior to launch and on-orbit, analyzing signal-in-space characteristics that affect receiver performance, and assessing operational performance of GPS in the global airspace and electronic combat environments. Additionally, it provides GPS space and control (S&C) segment monitoring and performs trade studies, technical oversight consultation services and analyses regarding GPS platform integration.

For more information, visit:

[http://www.holloman.af.mil/library/factsheets/factsheet\\_print.asp?fsID=5922&page=1](http://www.holloman.af.mil/library/factsheets/factsheet_print.asp?fsID=5922&page=1).

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