Aurora Flight Sciences’ Centaur combines the best of manned and unmanned surveillance aircraft capabilities. Based on the Diamond DA42 Multi Purpose Platform (MPP) Centaur provides a versatile, flexible airborne sensing platform, with exceptional range, high efficiency, and extremely low life cycle cost for many missions whether defense, intelligence, law enforcement or science related.

Centaur is available as an Optionally-Piloted Aircraft (OPA), as a manned Special Mission Aircraft (SMA) and as an Unmanned Aircraft System (UAS).

**Centaur OPA** is a very flexible airborne sensing solution because it can be operated either unmanned or with pilots on board. This unique ability has many advantages: Manned operation and civil certification allow the Centaur to be stored at any commercial or general aviation airport worldwide and deployed through controlled airspace to remote sites for unmanned operations without the need for large transport aircraft, ground support equipment or personnel. As Centaur is based on the DA42, it is an excellent solution for clandestine operations. Where extended performance is needed or where operations are too dangerous for manned aircraft Centaur can be operated from a remote ground control station which it can conveniently ferry onboard.

**Centaur SMA** is low cost, low footprint and high performance solution for manned airborne sensing missions. Centaur’s design is payload agnostic and uses an open architecture. So, any payload that will fit can be carried aboard Centaur. The Centaur SMA aircraft is outfitted with universal payload bays and separate payload power buses to facilitate the ease of changing payloads.

**Centaur UAS** is an unmanned aircraft system with optimum reliability. Centaur features triplex redundancy in all avionics and duplex redundancy for all other flight critical systems. It presents the next generation of reliability in UAS with the use of two engines, two to four alternators and more redundancy throughout all systems affecting the safety of flight.

The Centaur OPA and UAS systems are compatible with NATO STANAG 4586, the standard for other existing unmanned systems. Centaur OPA has a very small footprint as compared to other airborne sensing solutions – its mobile ground control equipment easily fits within the existing DA42 cargo space and can be ferried to remote destinations allowing Centaur to effectively deploy itself.
Conversion from manned to unmanned flight is accomplished by a two-man team in the field in under four hours. Control of unmanned flight is via a proven Aurora FCS/GCS system that provides for high levels of redundancy in line of sight (LOS) and beyond line of sight (BLOS) operations. Centaur retains the DA42 MPP low operationing cost and apperance while blending into the general aviation landscape.

In October 2011, Aurora announced a strategic alliance with AAI Unmanned Aircraft Systems, an operating unit of Textron Systems, to integrate AAI’s Universal Ground Control Station (UGCS) technologies with Centaur OPA/UAS, creating commonality between Centaur and U.S. DoD unmanned aircraft. Centaur’s ground control stations range from a small mobile unit to fixed units that mount in buildings and vehicle-based units for small or large trucks.

**Centaur Operational Features:**

- Full autonomy with mobile command and control
- Fully autonomous operation, including ATOL, waypoint navigation and mission action commands
- Flexible command and control using LOS Ku band CDL and L-band with BLOS SATCOM C2 options
- Video downlink to mobile C2 station or ROVER station
- Vehicle handoff from GCS to GCS, either mobile-to-mobile or mobile-to-centralized control
- Onboard ATC comms and transponder
- Manned, Unmanned and Optionally-Piloted Versions Available

<table>
<thead>
<tr>
<th><strong>Description</strong></th>
<th><strong>Performance</strong></th>
<th><strong>Mission Capabilities</strong></th>
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<tr>
<td>44 ft wingspan, 28 ft length, general aviation certified airframe</td>
<td>24 hours endurance with 200 lb payload</td>
<td>Self deployable to remote locations, certified in controlled airspace in manned configuration</td>
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<tr>
<td>Heavy fuel engines</td>
<td>135-160 KTAS typical cruise speed</td>
<td>Up to 800 lb payload capacity</td>
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<tr>
<td>Redundant actuators and avionics suite</td>
<td>Top speed 175 KTAS</td>
<td>Variable electric power options</td>
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<tr>
<td>STANAG 4586 compliant GCS</td>
<td>&gt;2000 nm range with 200 lb payload</td>
<td>Three payload locations available with wide forward, rear, up, down, left, and right views</td>
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<td>Minimal logistics footprint needed: one operator with self-deployable equipment</td>
<td>27,500 ft service ceiling unmanned; 18,000 ft service ceiling manned</td>
<td>Open architecture mission computer for quick integration of new payloads</td>
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1. **Centaur** is flown to its mission site with a two-person crew
   - The OPA / UAS avionics are carried onboard but not active
   - The ground control station is carried in storage containers
2. Upon arrival, crew converts Centaur to a UAS and performs ATP
3. Centaur flies its unmanned missions
4. At mission completion, Centaur is converted back to a manned airplane by mechanics followed by a conformity inspection
5. The crew then flies it home as a normal airplane

**OPA CONOPS**

**UAS CONOPS**
**PROVEN AIRFRAME, EXCEPTIONAL PERFORMANCE**

- Proven COTS airframe combined with Aurora's advanced autonomy technology
- Triple redundant avionics—900,000 hours MTBCF
- Full ATOL with no special equipment needed
- Pre-planned, on-demand updates, and waypoint navigation using computer input—not joystick controlled
- Automatic contingency handling
- Very low-noise/Low-IR signature
- Traffic Avoidance System and Mode S Transponder
- Twin-engine reliability—return safely on one
- Efficient heavy fuel engines—<8 gal/hour
- Anti-icing capability
- Multi-payload bays for ease of integration—up to 800 lbs payload capacity
- Dedicated payload power bus with up to 6.7kW peak—pre-installed wiring conduit
- Low maintenance composite structure

**CENTAUR ENDURANCE**
Aurora Flight Sciences is a privately held aerospace company. As a leader in unmanned aerial vehicle technology, Aurora is engaged in the design, development, production, and support of robotic aircraft. Built on a strong foundation of more than two decades in the industry, Aurora is engaged in a wide variety of programs organized into business sectors: Research & Development, UAS, and Aerostructures. Learn more about Aurora Flight Sciences by visiting the company’s web site at www.aurora.aero.

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