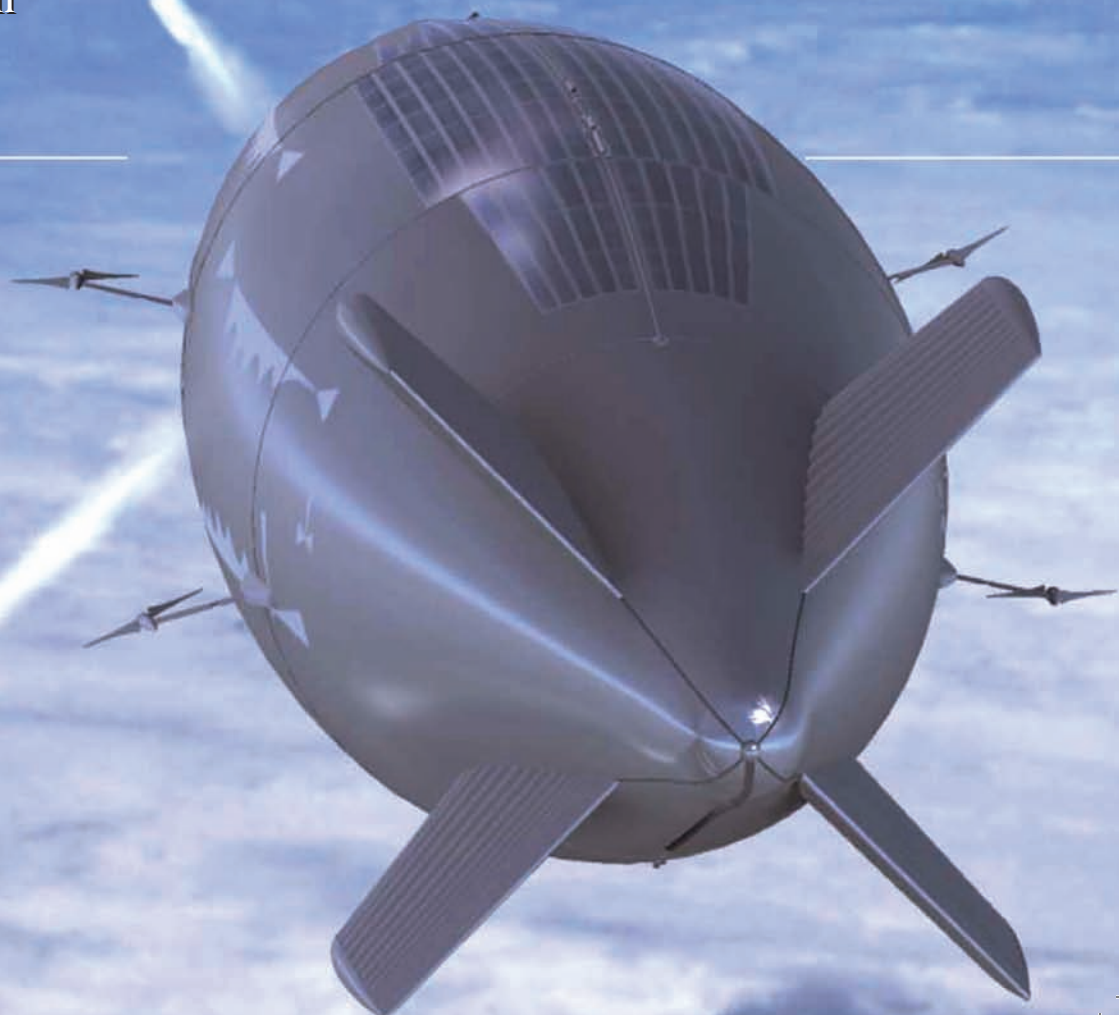




LOCKHEED MARTIN 
We never forget who we're working for®

High Altitude Airship (HAA) - Global Persistent ISR
Always There, Always On



HAA™: Persistent Communications and ISR for the Joint Warfighter

The Lockheed Martin High Altitude Airship (HAA™) – an unmanned, untethered, lighter-than-air (LTA) vehicle operating autonomously in the stratosphere for sustained, ultra long endurance (months) missions as a stable, geostationary platform suitable for multi-mission sensor operations. The HAA will provide the Warfighter affordable, real-time, ever-present Intelligence Surveillance and Reconnaissance (ISR) and rapid beyond-line-of-sight communications connectivity over the entire battle space. The technology is available now and ready for integration and flight test. An HAA subscale prototype will demonstrate these integrated technologies during flight testing in 2009.



Proven Team

Lockheed Martin first delivered LTA-based persistent Intelligence, Surveillance and Reconnaissance (ISR) systems to the U.S. Navy more than 75 years ago. This began the enduring legacy of LTA innovation, engineering, production, and operations resulting in more than 300 airships and thousands of aerostats in support of military operations worldwide. Lockheed Martin's LTA

Persistent Surveillance Systems in Akron, Ohio encompasses a world-class team of technologists



and engineers; specialized design and calibrated analytic tools unique to LTA aircraft; comprehensive system and sub-system testing capabilities including a dedicated LTA System Integration Lab; and expansive facilities for production, final system assembly, integration, check-out, and flight operations from the Akron Airdock.

Low-Risk Solution

Integration of modern technologies with proven operational approaches enable the HAA to achieve affordable, ultra-long endurance at stratospheric altitudes (65,000 ft) with large, multi-mission payloads. High-strength fabrics to minimize hull weight, thin-film solar panel arrays with high-efficiency energy storage media for the regenerative power system,

and lightweight propulsion units are key elements of this new generation all-electric airship. Under continuous control from launch through recovery, the HAA will maintain its geostationary position above the jet stream and controlled airspace, or transit to specified mission locations. As required, the system will be recovered to reconfigure mission payloads or perform periodic maintenance. Key HAA performance attributes are:

- Persistent Global Operations (Months)
- Large Coverage Area (>300,000 mi²)
- Much Lower Cost Than Other Aircraft
- Extremely Durable / Survivable
- Recoverable; Repairable; Re-Taskable
- No In-theater Logistics

Partnering to Meet Customers' Defining Moments

In April 2008, the HAA program was transferred from the Missile Defense Agency to the U.S. Army Space and Missile Defense Command (USASMDC) in Huntsville, Alabama. The USASMDC is continuing to develop and demonstrate the HAA to align with anticipated mission needs. USASMDC is the Army-specified proponent for space, high altitude, ground-based midcourse defense and serves as the Army operational integrator for global missile defense.

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High Altitude Long Endurance - Demonstrator (HALE-D) Summer 2009 Flight Demonstration

Delivering Disciplined Performance

Lockheed Martin is currently on contract to build a subscale prototype airship system, the High Altitude Long Endurance-Demonstrator (HALE-D). The performance goals for this prototype HAA include sustained operations for at least two weeks at 60,000 feet altitude, while providing 500 watts of power to a user-defined 50-lb payload suite. Driven by two electric propulsion motors, the HALE-D is powered by thin-film solar cells and rechargeable lithium ion polymer batteries. The HALE-D will demonstrate long-endurance station keeping and flight control capabilities.



HALE-D Performance Parameters

Station-keeping Altitude	60,000 ft
Payload Weight	50 lbs
Payload Power	500 watts
Endurance	> 15 days
Recoverable	Yes
Reusable	Yes

HALE-D Characteristics

Hull Volume	500,000 ft ³
Length / Diameter	240 ft / 70 ft
Propulsion Motors	2 kW Electric
Energy Storage	40 kWh Li-ion Battery
Solar Array	15 kW thin-film
Cruise Speed	20 ktas @ 60 kft