Aeros & NADATS – Tethered aerostats

Peter Lobner, 31 October 2025

1. Introduction

Igor Pasternak established a volunteer airship design bureau at Lviv Polytechnic University in Ukraine in 1981. His firm, Aeros, became one of the first private aerospace companies permitted under Mikhail Gorbachev's Perestroika reforms in 1986. In 1994, he relocated to the U.S. and established Worldwide Aeros Corp. (Aeros) in Montebello, CA with the goal of becoming a major manufacturer of lighter-than-air (LTA) craft in the U.S. The Aeros main website is here: http://aeroscraft.com, and their aerostat website is here: https://www.neona.org/aerostat

In addition to its manned airship business, Aeros also designs and manufactures a range of tethered aerostats that can be customized to meet the specific mission objectives of its customers. Their first aerostat program, for the Aeros 25M, was launched in 1997. Aeros states that their aerostats "are mobile, cost effective, and are deployed as tactical airborne platforms with surveillance cameras, radars, telecommunications equipment, and a variety of other scientific apparatus."

In 2015, Aeros formed a new division named NADATS (North American Defense Advanced Technology Solutions), to supply mission-specific tactical ISR (intelligence, surveillance and reconnaissance) solutions for a range of defense applications using adaptations of Aeros tethered aerostats and blimps integrated with terrestrial systems. The NDATS website is here: https://nadats.com

This article addresses Aeros' current production tethered aerostats, adaptations made by NADATS, and legacy aerostats no longer in production.

2. Aeros' current production models (2025)

In 2025, Aeros lists the following tethered aerostats as current production models: Aeros 21M, Aeros 1170, Aeros 3200, Aeros Sky Crow and Aeros NG1000.

General characteristics of Aeros current production tethered aerostats (2025)

Parameter	Aeros 21M	Aeros 1170	Aeros 3200	Aeros Sky Crow	Aeros NG1000
Year introduced	1999	2004	2010	2014	2019
Length	21 m (68.9 ft)	25 m (82.0 ft)	39 m (128.0 ft)	10.3 m (33.8 ft)	27 m (88.6 ft)
Altitude, operational	300 m (984 ft)	1,200 m (3,937 ft)	1,500 m (4,921 ft)	305 m (1,000 ft)	600 m (1,968 ft)
Payload weight at op. altitude	112 kg (246.9 lb)	90 kg (198.4 lb)	300 kg (661.4 lb)	9 kg (19.8 lb)	170 kg (374.8 lb)
Transportability	Transported by a single mid-sized vehicle	Packaged for deployment on a C-130 transport aircraft.	Fully transportable system (fifth wheel trailer)	Pelican case container for storage and shipping	
Ground crew	Robotic launch & recovery with 2 -3 persons	Robotic launch & recovery with 2 persons	RIMS robotic launch & recovery with 2 persons	One person set up and operation	Robotic "Grab & Moor" launch & recovery with 1 person
Relocatable	Yes	Yes	Yes	Yes	Yes
Max. sustained wind speed, operational	40 knots	40 knots	50 knots	40 knots	40 knots
Wind speed, max. moored				25 knots	
Wind speed, survival			80 knots		
Mission duration	15+ days	15+ days	16 days	14+ days	
Line of sight to horizon at operational altitude (calculated)	61.9 km (38.5 miles)	123.7 km (76.9 miles)	138.3 km	62.4 km (38.8 miles)	87.4 km

2.1 Aeros 21M aerostat

The Aeros 21M program was launched in 1999. Aeros reports that this 21-meter (68.9-foot) low life cycle cost aerostat system can be rapidly deployed with an integrated, gyro-stabilized, EO (electro-optical) sensor package designed for short- and medium-range (tactical) surveillance. The aerostat is designed for mission durations of 15+ days without interruption.

The complete Aeros 21M tethered aerostat system can be transported by a single midsized vehicle. With its robotic launch and recovery system, the aerostat can be deployed and recovered with a groundcrew of two to three people. The mission package and aerostat systems are controlled via a remote ground control station.

Aeros 21M. Note rounded waffle pattern tail fins. Source: Aeros

Aeros 21M in flight. Source: (Above) AeroExpo,
(Below) Aeros product brochure,

Relative sizes of an Aeros 21M aerostat (background) and an Aeros 40B Sky Dragon blimp. Source: Aeros

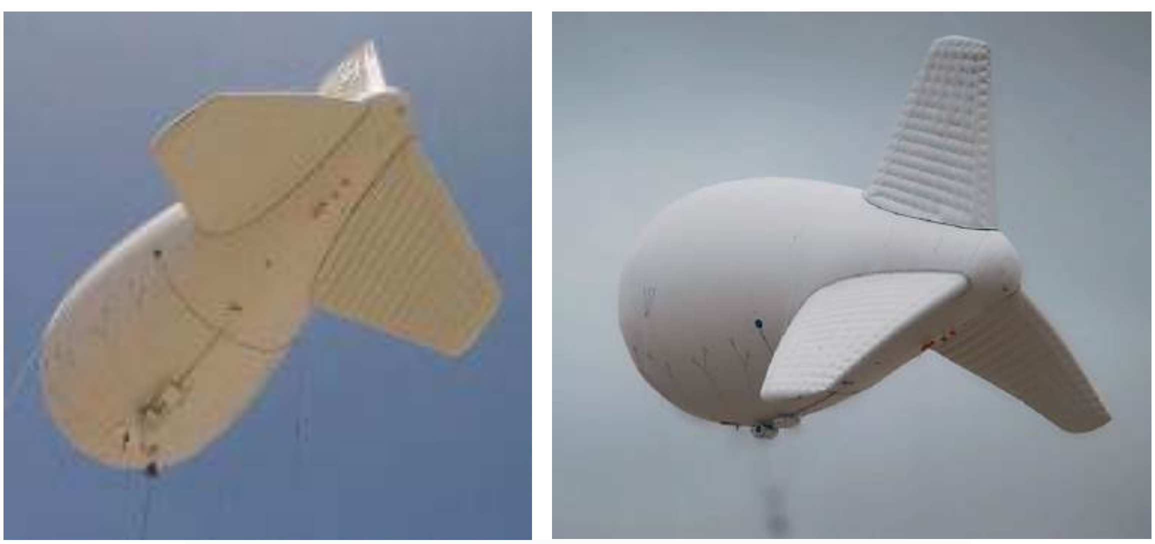
2.2 Aeros 1170 aerostat

The Aeros 1170 program was launched in 2004. Aeros reports that the 25-meter (82-foot) tethered Aeros 1170 aerostat is a multi-functional, low life cycle cost system capable of operating as a stable sensor platform for government and commercial applications. Payload options include EO/FLIR (electro-optical / forward-looking infrared) systems, radar, radio relay, communications / signal intelligence (COMINT / SIGINT) and communications jamming. The Aeros 1170 aerostat system includes the following features:

- Smart pressure management system
- Active flight management
- Intelligent flight termination system
- IP monitor/control airborne network
- Robotic ground base station

The aerostat system can be packaged for deployment on a C-130 transport aircraft. Payloads can be tailored for specific missions. The robotic ground base station enables the aerostat to be launched and recovered by a team of two persons, and operated from a remote ground control station on missions lasting 15+ days.

Aeros 1170 and robotic ground base station. Source: Aeros



Aeros 1170 in flight. Note the horizontal ribbing on the inflated tail fins. Sources: (Left) AeroExpo, (Right) Aeros

2.3 Aeros 3200 aerostat

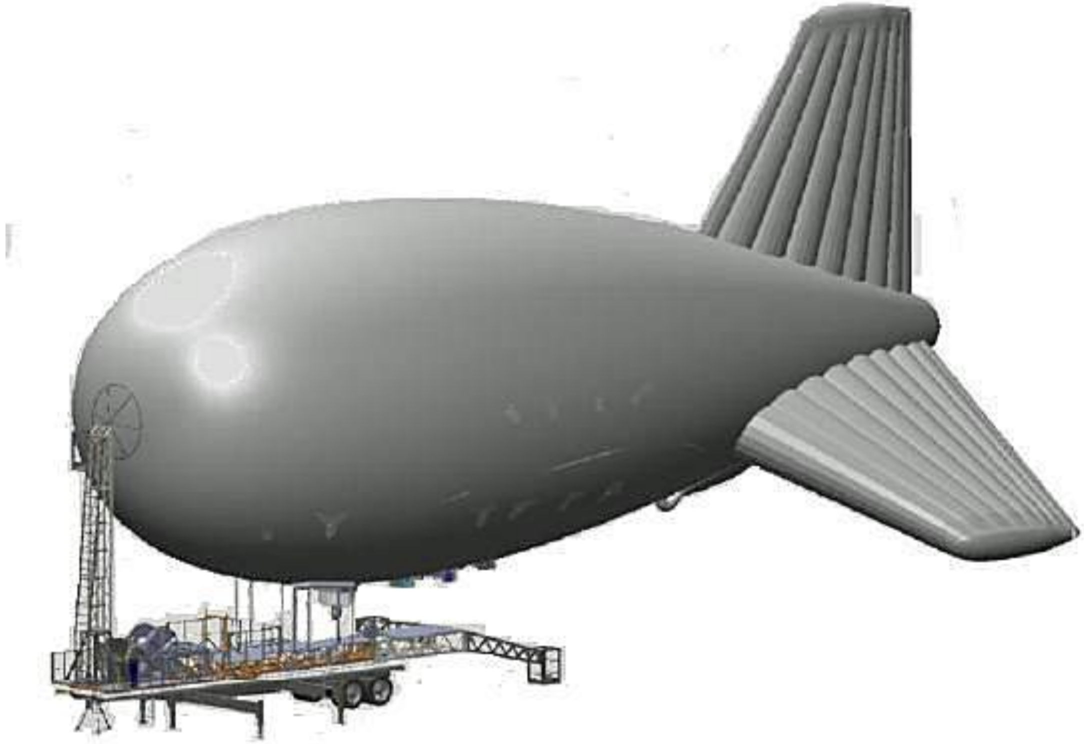
The Aeros 3200 program was launched in 2010. Aeros describes the 39-meter (124.7-foot) Aeros 3200 aerostat system as follows: "The Aeros 3200 aerostat system is designed to provide a highly accurate, over-the-horizon surveillance capability with effective early warning, detection and identification of objects by land, sea or air. Build for national security, border security, immigration control and counter-terrorism, the Aeros 3200 includes surveillance radar, EO/IR integrated sensors, transportable command and control systems, and tactical awareness software."

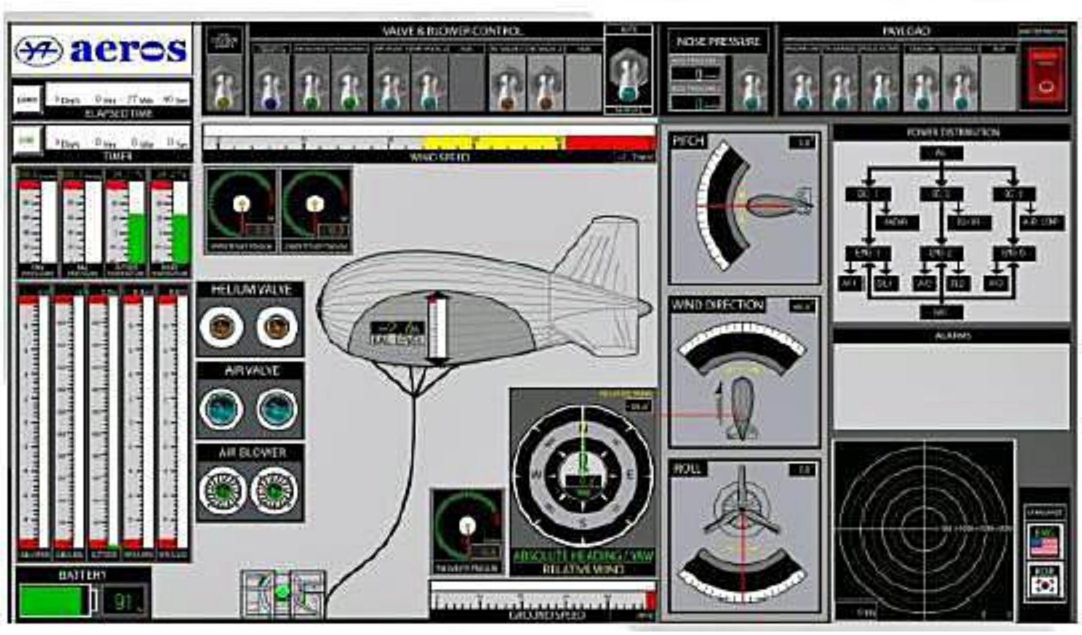
The payload is mounted along the bottom centerline of the gas envelope, offering unobstructed views toward the ground. Quick disconnect cables enable the modular payload to be rapidly reconfigured to meet changing mission requirements.

The Re-locatable Integrated Mooring System (RIMS) is designed for simple transportability on a fifth-wheel trailer, rapid setup and remote operation by a single operator over a fiber optic or wireless network, including remote winch operation and automated mast release for launch and recovery.

The Aeros 3200 product brochure is available here.

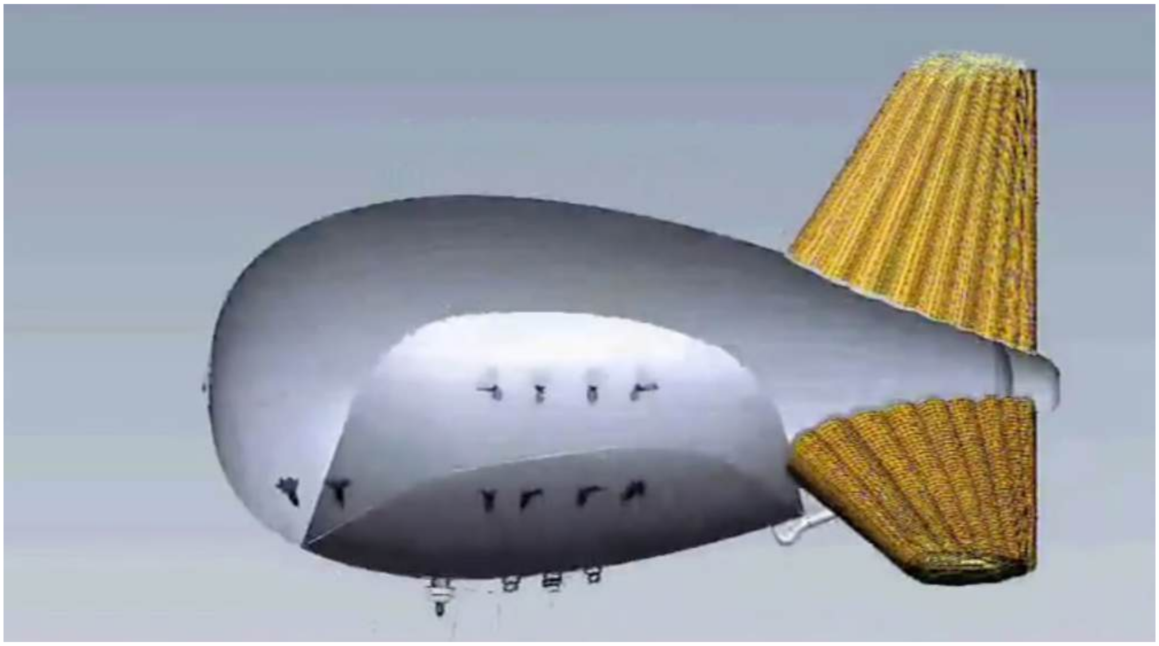
Rendering of an Aeros 3200 aloft at a remote site. Source: Aeros





Diagrams showing an Aeros 3200 moored at its Re-locatable Integrated Mooring System (RIMS) and the control panel for an operator at a remote ground control station. Source, both graphics: Aeros

Aeros 3200 moored at its Re-locatable Integrated Mooring System (RIMS). Source: (Above) AeroExpo, (Below) Aeros



Aeros 3200 cross-sectional view showing the ballonet and reinforced suspension points on the gas envelope. Note the vertical ribbing on the inflated tail fins. Source: screenshot from Aeros timeline video

Aeros 3200 in flight. Note the multiple payload modules installed along the bottom centerline of the gas envelope. Source: Aeros

Multiple payload modules installed on an Aeros 3200 aerostat.
Source, both photos: Aeros via AviaEXPO (circa 2011)

Aeros 3200 in the World War II-era blimp hangar (now demolished) at the former Marine Corps Air Station in Tustin, CA. Source: Aeros

Relative sizes of an Aeros 3200 aerostat (L) and an Aeros 40D Sky Dragon blimp (R). Source: Aeros

Aeros 3200 & Sky Dragon blimp (in background).
Source: screenshot - Aeros Aerostats video (2015)

2.4 Sky Crow

Aeros' smallest tethered aerostat system is the 10.3 m (33.8 ft) Sky Crow, which provides users with a highly-mobile asset that can mount a variety of small, mission-specific payloads and provide persistent surveillance for periods in excess of two weeks, with a minimal ground crew for deployment, operation and retrieval. Aeros states, "The Sky Crow Tactical Aerostat system is ideal for military, DHS, or commercial surveillance missions. Gain the edge with rapidly deployable real-time field ISR assets."

The Sky Crow is stored and transported in a Pelican case container. It can be set up, launched and recovered by a single person, and monitored from a Laptop Control Unit (LCU). Payload options include:

- High-resolution video or EO/IR (electro-optical / thermal infrared) imaging system,
- Communications relay,
- Environmental monitoring system,
- Various small ISR (intelligence, surveillance, reconnaissance) payloads, or
- Other payloads weighing up to 9 kg (19.8 lbs).

With "plug-in-play" payload modules, a Sky Crow can be rapidly reconfigured in the field to support changing user needs.

Sky Crow viewed from below. Source: Aeros

Sky Crow. Source: Aeros (2019)

2.5 Next Generation NG1000

Aeros describes the NG1000 aerostat system as follows: “NG1000 is a 27-meter (88.6-foot) aerostat equipped with new automated systems to reduce the cost of operation. The combination of the new automated close haul system and the advanced mooring mast and arm mechanism [known as the “grab & moor (GM) launch & recovery system] insures the smooth launch and recovery of the NG1000 aerostat with only one operator. The system is designed modular to accommodate any logistics needs.”

Further details on the NG1000 are not available.

Aeros NG1000 aerostat and its base station.
Source: Aeros

Aeros NG1000 aerostat and its base station being tested in the Tustin hangar.
Source: Aeros

3. NADATS aerostats

In 2015, Aeros formed its NADATS division (North American Defense Advanced Technology Solutions), with a mission to "serve operators with elevated early warning systems, tactical ISR solutions and custom, mission-specific equipment for actionable intelligence in hostile environments, in border and coast guard, in facility and event security, and for related missions."

In addition to terrestrial equipment and systems, NADATS solutions can include adaptations of Aeros' tactical tethered aerostats and the Aeros Sky Dragon crewed blimp configured as an aerial surveillance platform. The NDATS website is here: https://nadats.com

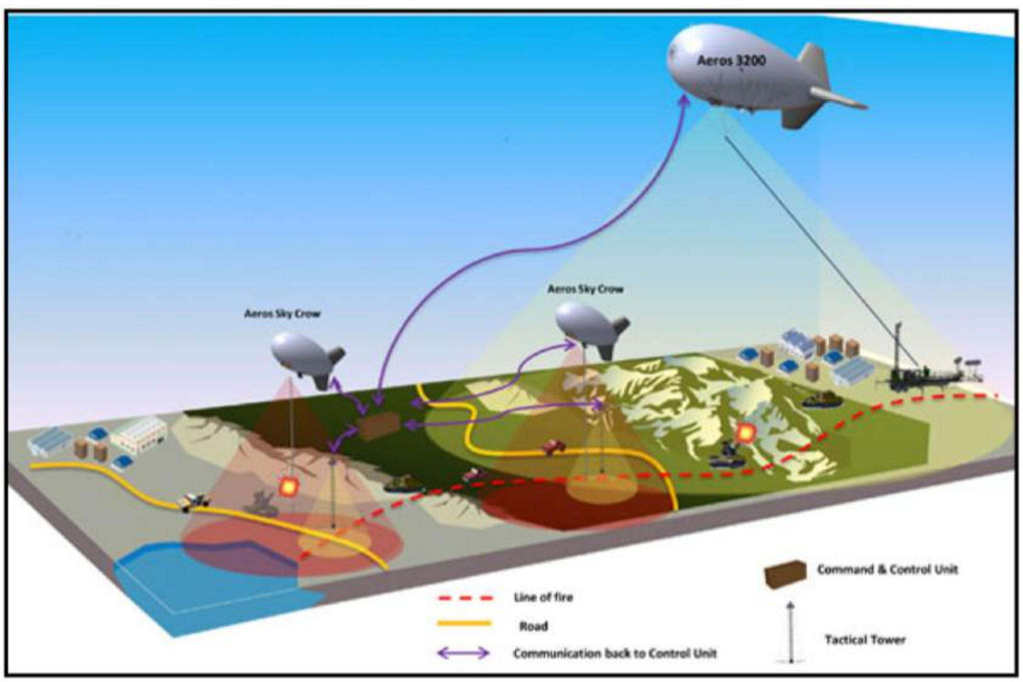
NADATS family of LTA vehicles: (L to R) Tactical Aerostat, Multi-Payload Tethered Aerostat (MPTA) & the Sky Dragon blimp. Source: NADATS

The NADATS Multi-Payload Tethered Aerostat (MPTA) is based on the Aeros 3200, and smallest Tactical Aerostat is based on the Sky Crow aerostat.

General characteristics of NADATS tethered aerostats (2025)

Parameter	**NADATS Tactical 130**	**NADATS Tactical 260**	**Multi-Payload Tethered Aerostat (MPTA)**
Comparable Aeros model	Sky Crow	Growth version of Sky Crow	Aeros 3200
Length	10.3 m (33.8 ft)	16.5 m (54.1 ft)	39 m (128.0 ft)
Altitude, operational	305 m (1,000 ft)	305 m (1,000 ft)	1,500 m (4,921 ft)
Payload weight at op. altitude	10 kg * (22.0 lb)	30 kg (66.1 lb)	300 kg (661.4 lb)
Transportability	Pelican case container for storage and shipping		Fully transportable system (fifth wheel trailer)
Ground crew	One person set up and operation	One person set up and operation	RIMS robotic launch & recovery with 2 persons
Relocatable	Yes	Yes	Yes
Max. sustained wind speed, operational	40 knots		50 knots
Wind speed, survival			80 knots
Mission duration	14+ days		20+ days
Line of sight to horizon at operational altitude (calculated)	62.4 km (38.8 miles)	62.4 km (38.8 miles)	138.3 km (85.9 miles)

** Payload capacity is +1 kg greater than basic Sky Crow.*



Concept of operation for an Aeros 3200 operating with smaller Sky Crow aerostats in an integrated NADATS system. Source: Aeros

3.1 NADATS Tactical Aerostats

The NADATS Tactical Aerostats are based on the Aeros Sky Crow tethered aerostat system. There are two Tactical Aerostat models, the 130 and the 260. The 10.3 m (33.8 ft) Tactical Aerostat 130 has the same general characteristics as the Aeros Sky Crow described in Section 2.4, with 1 kg (2.2 pounds) greater payload capacity. The 16.5 m (54.1 ft) Tactical Aerostat 260 is a substantially larger growth version capable of carrying three times the payload weight.

The NADATS Tactical Aerostat product brochure is available here.

The Tactical Aerostat payload options brochure is here.

3.2 NADATS Multi-Payload Tethered Aerostat (MPTA)

The NADATS MPTA is based on the Aeros 3200 tethered aerostat system and has the same general characteristics and multi-payload capabilities as described in Section 2.3. Additional features of the MPTA for military applications include:

- Moving maps software integrates geolocation for simplified operation.
- Ground Control Station (GCS) for data analysis with a Laptop Control Unit (LCU).
- Network Attached Storage (NAS) capable of storing 24 hours of surveillance video.
- Ability to interface with military networks to distribute target information.

NADATS describes the MPTA as follows: "Multi-Payload Tethered Aerostats are integrated with full ISR capabilities that provide extended persistent observation with rapid re-deployment, mission flexibility, and operational cost efficiency. For the full suite of surveillance capabilities of strategic aerostat systems, with the mission flexibility and reduced logistical footprint of smaller tactical aerostats, the Multi-Payload Tethered Aerostat delivers exceptional capability and efficiency The multi-payload capability enables to MPTA to be rapidly configured to meet changing mission needs……

The integrated aerostat, mobile mooring station, and remote ground control station were engineered to provide 360° wide-area observation, 24/7, for weeks at a time. The system supports long range multi-mode radar and HD day/night (EO/IR) imaging systems for air, ground, and marine target detection at great distances."

The NADATS MPTA product brochure is available here.

The MPTA payload options brochure is here.

MPTA (or Aeros 3200) exiting the Tustin hangar.

MPTA (or Aeros 3200) on its Re-locatable Integrated Mooring System (RIMS). Source, both photos: Screenshot from Aeros / NADATS video

4. “Legacy” models no longer in production (2025)

Aeros also has produced the following “legacy” models that are not in production as of 2025: Aeros 18M, Aeros 25M and Aeros ELASS.

4.1 Aeros 25M aerostat

The Aeros 25M program was launched in 1997 as the first Aeros aerostat system. The aerostat was 25 m (82.0 ft) long.

Aeros 25M. Source: Aeros product brochure

Aeros 25M. Source: adapted from screenshot – Aeros Aerostats video (2015)

4.2 Aeros 18M aerostat

The Aeros 18M program was launched in 2001. The aerostat was 18 m (59.1 ft) long.

Aeros 18M. Source: Aeros

Aeros 18M. Note the waffle pattern in the inflated tail fins.
Source: adapted from screenshot - Aeros Aerostats video (2015)

In 2002, an Aeros 18M was used in a feasibility demonstration to support the instrumentation platform at the focal point of the Large Adaptive Reflector (LAR) radio telescope. The interesting aerostat application is summarized below.

> "In the interest of drastically improving the capabilities of current radio telescope technology, the international radio astronomy community is pursuing the development of an instrument commonly known as the square kilometer array (SKA). The instrument will be comprised of many individual radio telescopes functioning together as an array with a total of one square kilometer of collecting area. Researchers at the National Research Council of Canada's Herzberg Institute of Astrophysics have put forward a novel design concept for the SKA known as the large adaptive reflector (LAR) which is depicted in Figure 1.1-6.

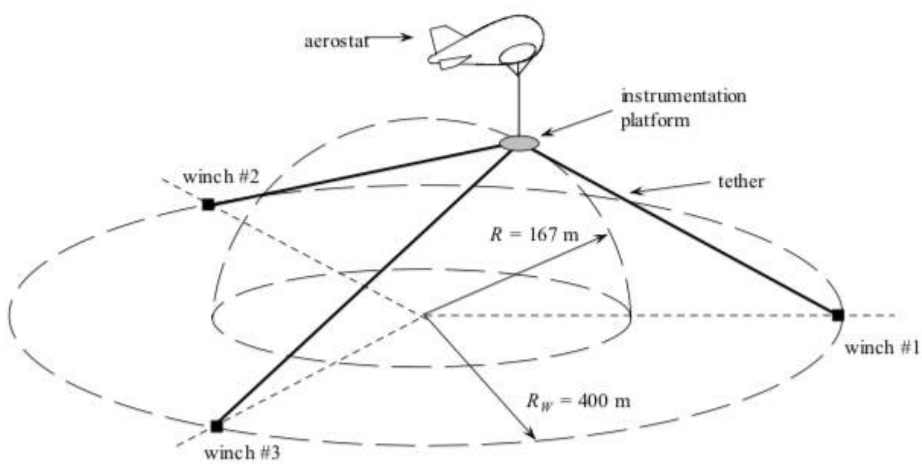


Figure 1.1-6. LRA radio telescope geometry showing the location of the aerostat supporting an instrumentation platform positioned at a focal point by three variable tethers.

> The LAR concept consists of two central components. The first is a 200 m (656 ft) diameter parabolic reflector with a focal length of 500 m (1,640 ft), composed of actuated panels supported by the ground. The second component is the receiver package which is supported by a tension structure consisting of multiple long tethers and a helium filled aerostat. Approximately 50 LAR telescopes are required to make up the square kilometer array.

The position of the receiver is controlled by changing the lengths of the tethers with winches and is performed at both macro and micro levels. At the macro level, the receiver is moved to various locations on a circular hemisphere to allow the telescope to point to different regions in the sky. For sufficient coverage of the sky, the system must be capable of positioning the receiver for a range of zenith angles from 0 to 60º ($0 \le \theta ze \le 60º$) for the full range of azimuth angles ($0 \le \theta az \le 360º$). Once the receiver is in place, the micro-level position control of the tethered aerostat system responds to disturbances such as wind gusts in order to limit the movement of the receiver. It is clear that the viability of the LAR concept hinges on the capacity of the tethered aerostat positioning system to limit the receiver's motion within an acceptable range."

Aeros 18M at the SKA test site (2002).
Source: C. Lambert, et al (2003), photo by Curran Crawford

Aeros 18M at the SKA test site (2002).
Source: C. Lambert, et al (2003), photo by Curran Crawford

4.3 Aeros ELASS aerostat

The acronym ELASS has been used by Aeros in connection with an electric variable buoyancy airship program and the following two aerostats photos are associated with ELASS. No further information is available.

ELASS aerostats. Source: (L) Aeros website, (R) Aeros product brochure

5. For more information

- C. Lambert, et al., “Design of a one-third scale multi-tethered aerostat system for precise positioning of a radio telescope receiver,” Proceedings of 2003 CASI Flight Mechanics and Operations Symposium, Montreal, January 2003: https://www.researchgate.net/publication/228560180_Design_of_a_one-third_scale_multi-tethered_aerostat_system_for_precise_positioning_of_a_radio_telescope_receiver
- “Aeros 3200,” AviaEXPO, circa 2011: https://www.aerocontact.com/en/virtual-aviation-exhibition/product/248-aeros-3200
- “Airships: A New Horizon for Science,” Aeros presentation to Keck Institute for Space Studies by Fred Edworthy, April 30 - May 3, 2013: https://kiss.caltech.edu/workshops/airships/presentations/edworthy.pdf
- “Aeros Announces Serial Production for Cost-Effective Tactical Aerostat System (Sky Crow),” Aeros press release on CISION PR Web, 22 January 2014: https://www.prweb.com/releases/2014/01/prweb11512708.htm
- John Kiehle, “Quietly Effective, Vigilant Airborne ISR,” India Defence Review, 31 March 2016: http://www.indiandefencereview.com/news/quietly-effective-vigilant-airborne-isr/0/
- “Sky Crow Tactical Aerostat System,” Homeland Security Technology: https://www.homelandsecurity-technology.com/projects/sky-crow-tactical-aerostat-system/attachment/sky-crow-tactical-aerostat-system4/

Aeros and NADATS aerostat product brochures

- “Aeros 3200 Advanced ISR Tethered Aerostat System,” Aeros product brochure, AeroEXPO: https://pdf.aeroexpo.online/pdf/aeros/aeros-3200/175125-4023.html
- “Multi-Payload Tethered Aerostat,” NADATS product brochure, 2023: https://nadats.com/wp-content/uploads/2023/12/Multipayload_Aerostat.pdf

- “Multi-Payload Tethered Aerostat Payload Options,” NADATS product brochure, 2023: https://nadats.com/wp-content/uploads/2023/12/1NV_MultiPayloadTetheredAerostatPayloadOptions.pdf
- “Tactical Aerostat,” NADATS product brochure, 2023: https://nadats.com/wp-content/uploads/2023/12/TacticalAerostat2016.pdf
- “Tactical Aerostat Payload Options,” NADATS product brochure, 2023: https://nadats.com/wp-content/uploads/2023/12/1NV_TacticalAerostatPayloadOptions.pdf

Video

- “Worldwide Aeros Corp. History 1981-2015,” (3.24 min), posted by Worldwide Aeros, 27 July 2015: https://www.youtube.com/watch?v=WjmYjbaDnFI
- “Aeros Aerostats,” (0.34 min), posted by Worldwide Aeros, 9 July 2015: https://www.youtube.com/watch?v=k4g3U7zrnEk
- “Aeros' Multi-Payload Aerostat,” (3.01 min), posted by Worldwide Aeros, 9 July 2015: https://www.youtube.com/watch?v=Lw6VX2kTfeM

Other *Modern Airships* articles

- *Modern Airships - Part 1*: https://lynceans.org/all-posts/modern-airships-part-1/
    - Aeros - *Aeroscraft* variable buoyancy airships
    - Aeros - *Dragon Dream* variable buoyancy airship prototype
    - Aeros – Aeros 50 & Aeros 40 *Sky Dragon* blimps
    - Aeros - High altitude airships
    - Altaeros Energies – SuperTower tethered aerostats
    - Silicis Technologies Inc. – Altus & Durus tethered aerostats
    - TCOM – tethered aerostats
- *Modern Airships - Part 2*: https://lynceans.org/all-posts/modern-airships-part-2/
- *Modern Airships - Part 3*: https://lynceans.org/all-posts/modern-airships-part-3/