

BRIEFINGS



May–August 2024

HILLER AVIATION MUSEUM WHERE INSPIRATION TAKES FLIGHT

PREDATOR INSTINCT: SENTINEL IN THE SKY/THE MQ-1 PREDATOR

by Jenna Kimberlin



The Smithsonian's Predator

A quiet sentinel, the Predator drone soars above, surveying remote areas, and providing valuable intelligence and reconnaissance data. From military applications to disaster response, the role of the Predator and the unmanned aerial vehicles that followed it continue to evolve, and spark discussions about their place in modern technology.

The Predator's development began in the 1980s when Southern California aerospace engineer Abraham Karem developed an unusual shaped—and named—GNAT 750, a prototype long-endurance propeller-driven UAV with reconnaissance sensors and cameras, similar to the sensors on the Hiller Aviation Museum's 1969 Lockheed YO-3A. A decade later, the CIA and DARPA were quick to pounce on the project which landed at General Atomics in Southern California, and evolved into the MQ-1 Predator.

The timing was just right. The United States had recently learned in the Gulf War (1990-1991) that there was a need for safer and more comprehensive ways to collect real time intelligence, surveillance and reconnaissance data in remote mountainous areas. The rugged terrain of Iraq was a challenge to navigate and communications were unreliable. Additionally, it offered numerous hiding places for hostile forces. An unmanned aircraft capable of providing undetected, prolonged surveillance over target areas was an ideal solution which reduced risk to personnel and other assets.

The Predator's first assignment was in 1995 towards the end of the Bosnian War. While it did not participate in any combat, this was an important test bed for the unarmed vehicle as an intelligence gathering tool. The aircraft demonstrated that it could fly nonstop for 20-30 hours at high altitudes: it did not "hover" so much as "loiter" over its target areas. The Predator achieves this remarkable endurance via a large 55-foot wingspan which generates significant lift at low speeds, while its distinctive inverted "V" tail minimizes drag.

The GNAT 750 prototype



Biggest Little AIR SHOW

Saturday
June 15
10am-1pm



European Train Enthusiasts Model Train Expo July 13,14

Planes, Trains & Cool Cars Saturday, Aug. 10



Smithsonian Institution
Affiliations Program



Ground-Control Station at Hollman AFB, NM

A lightweight composite body contributes to its longevity in the air, and it cruises at a leisurely 85 mph using a four-cylinder Rotax 914 aircraft engine in a pusher configuration.

The experience in the Balkans also led to the fine tuning of a suite of onboard tools: high-resolution sensors to capture clear day and night images and video, a laser designator to mark targets, and a laser range finder which accurately determines the distance to targets in motion. Recent advances in image stabilization (now used everyday on smart phones) reduced the effects of engine vibration so steady footage is obtained. The ability to transmit live video feeds from the battlefield for quick analysis and decision-making was a boon to intelligence gathering.

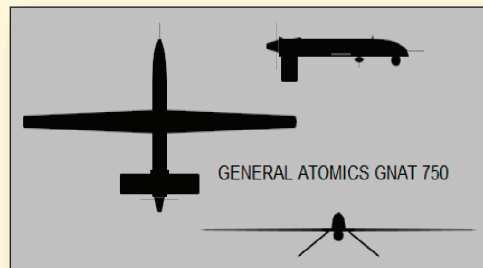
Ultimately, one of the most valuable features of the Predator is the ability to keep flight personnel safe on the ground thousands of miles away from the conflict zone. During a mission, a pilot and a sensor operator operate the drone jointly from a control station, which at first glance looks like a high-end video game setup. The station has multiple computer screens, keypads, joysticks and sensor readouts to monitor and control the flight controls and payload systems. If a Predator is shot down, there is no crew to rescue and a replacement drone can take its place almost immediately.



After proving its worth as a reconnaissance and surveillance tool, the Predator was ready for action following the 9/11 terrorist attacks. In Afghanistan it gathered intelligence on Taliban and Al-Qaeda activity

and used its laser to illuminate targets for piloted aircraft to strike. As capabilities and experience evolved, the obvious next step was to arm the Predator with two precision-guided AGM-114 Hellfire missiles to make it a fully self-sufficient unmanned combat aerial vehicle, able to complete missions in regions which were highly dangerous and difficult to traverse by ground troops. The Predator played a pivotal role in tracking down and eliminating Al-Qaeda networks.

While the Predator made its reputation as the world's first armed drone, there have also been uses for UAVs like the Predator in non-combat environments. Some have been enlisted for humanitarian aid after the 2010 Haiti and 2015 Nepal earthquakes where they used thermal imaging cameras for search and rescue operations in difficult to access areas. In Northern California, a Predator used its infrared sensors to assist the California Department of Forestry in monitoring the 2013 Rim Fire in Tuolumne County.



Ultimately, The MQ-1 Predator revolutionized the military applications of unmanned aerial vehicles. Its ability to combine persistent surveillance with precision strike capability has reshaped combat operations. By enabling extended reconnaissance without putting pilots at risk, the Predator has ushered in a new era of unpiloted combat operations.

The Hiller Aviation Museum has received a Predator drone on loan from the USAF which will be on display beginning in May 2024. This distinctive combat aircraft will share the spotlight with sleek civilian Airbus and Wisk air taxis, offering a fascinating contrast between cutting edge combat drones and the future of urban air mobility. It is an exciting addition to the narrative of UAV development, one that we hope will inspire conversations about technology, ethics, and the future of autonomous air mobility.

References:

National Defense Magazine. (2020, September 10). The Next Chapter of the Predator's Story. Retrieved from <https://www.nationaldefensemagazine.org/articles/2020/9/10/the-next-chapter-of-the-predators-story>
Whittle, R. (2014). Predator: The Secret Origins of the Drone Revolution. Henry Holt and Company.

President's Perspective



It's been a fabulous spring at the Hiller Aviation Museum, with new experiences for young and old alike joining the exhibits and experiences to be had throughout the museum.

In April the museum welcomed 00-3069, an MQ-1B Predator on loan from the National Museum of the United States Air Force. The Hiller Aviation Museum has highlighted the development of remotely operated aircraft since it opened, and with the MQ-1 now includes an important chapter to the story of robotic flight.

Another new aircraft is taking shape in the museum's Restoration Shop as our volunteers prepare a two-thirds scale Mustang for exhibition. The original North American P-51 was an iconic aircraft of World War II, but our aircraft will be the centerpiece of a new exhibit dedicated to the history of air racing. With an airframe donated by the family of late museum volunteer George Mendonca and restoration graciously sponsored by museum supporter and aerobatic pilot Vicky Benzing, this Mustang will join the collection later in 2024.

None of these exciting new exhibits would happen without our many supporters, members, volunteers, board members and others – you make it possible for the Hiller Aviation Museum to continue its mission. On behalf of the entire team, a heartfelt thank you for all that you do. We look forward to seeing you this summer!

Jon Welte, President & CEO

Hiller Aviation Museum
has gone green with
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cards

Members, please visit
[www.hiller.org/
digital-membership](http://www.hiller.org/digital-membership)
for details and download
the eMembership App
on your Smartphone.

Hiller Aviation Museum



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Mark Jon Bluth

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HILLER AVIATION MUSEUM

PRESENTS

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HILLER AVIATION MUSEUM + JUNE 15, 2024

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Sukhio West Demo Team

Radio-Controlled Planes
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FLYING COLORS

at Hiller Aviation Museum

June 8-9 12:30pm & 2:30pm
with purchase of museum admission
Tickets at hiller.org/tickets

Hiller Aviation Museum
601 Skyway Rd.
San Carlos, CA 94070

For more information about Oceanica Ballet,
visit oceanicaballet.org



EUROPEAN TRAIN ENTHUSIASTS

EUROWEST

The 26th EuroWest MODEL TRAIN SHOW

Theme for 2024:
**Celebrating
French Railways**

HILLER AVIATION MUSEUM
601 Skyway Rd., San Carlos, CA 94070

Saturday, July 13th, 2024 10:00am to 5:00pm
Sunday, July 14th, 2024 10:00am to 4:00pm

- Fun Challenges for Young and Old!
- Operating European Model Train Layouts
- Manufacturer Displays
- Clinics, Lectures and Presentations
- Sales Tables
- Children's Activities
- Raffle and Silent Auction

ADMISSION PRICE INCLUDES ADMISSION TO THE HILLER MUSEUM
Please see [http://www.hiller.org](https://www.hiller.org) for current admission

For show and vendor information please contact
Dave Cowl: eurowest@ete.org or visit [http://www.ete.org](https://www.ete.org)

CALENDAR OF EVENTS

MAY

SUN, MAY 5 • 11 AM – 12 PM
Water Rocket Rally

SUN, MAY 12 • 10 AM – 12 PM
Kids' Carnival

SAT, MAY 18 • 10 AM – 1 PM
Open Cockpit

SUN, MAY 19 • 3 PM – 4:30 PM
Flight Sim Rally

SUNDAY, MAY 19 • 10 AM – 5 PM
Scout Day

SUN, MAY 26 • 11 AM – 12 PM
Glider Discovery

JUNE:

SUN, JUNE 2 • 10:30 AM & 11:30 AM
Starlab Sky Show

JUNE 8 & 9 • 12:30 PM & 2:30 PM
Oceanic Ballet

SUN, JUNE 9 • 3 PM – 4:30 PM
Flight Sim Rally

WED, JUNE 12 • 11 AM
Happy Birds

SAT, JUNE 15 • 10 AM-1 PM
Biggest Little Air Show

SUN, JUNE 16 • 10 AM – 12 PM
Kids' Carnival

WED, JUNE 19 • 11 AM – 12 PM
Glider Discovery

SUN, JUNE 23 • 10 AM – 12 PM
Bubble Bonanza

WED, JUNE 26 • 11 AM – 12 PM
Helicopter Adventure

SUN, JUNE 30 • 3 PM – 4:30 PM
Flight Sim Rally

JULY:

WED, JULY 3 • 10 AM – 1 PM
Open Cockpit

THUR, JULY 4 • 11 AM – 12 PM
Water Rocket Rally

SAT, JULY 6 • 11 AM
Happy Birds

SUN, JULY 7 • 11 AM – 12 PM
Water Rocket Rally

WED, JULY 10 • 10 AM – 12 PM
Bubble Bonanza

JULY 13 & 14 • 10 AM-4 PM
European Model Train Expo

SUN, JULY 14 • 3 PM – 4:30 PM
Flight Sim Rally

WED, JULY 17 • 10 AM - 12 PM
Kids' Air Faire

SUN, JULY 21 • 10 AM – 12 PM
Bubble Bonanza

WED, JULY 24 • 11 AM
Happy Birds

SUN, JULY 28 • 10 AM – 12 PM
Kids' Carnival

WED, JULY 31 • 11 AM
Helicopter Adventure

AUGUST:

SUN, AUG 4 • 10 AM-12 PM
Members Only Aviation Party
(Museum is open to the public)

SUN, AUG 4 • 3 PM – 4:30 PM
Flight Sim Rally

WED, AUG 7 • 11 AM – 12 PM
Helicopter Adventure

SAT, AUG 10 • 10 AM – 2 PM
Planes, Train and Cool Cars

SUN, AUG 11 • 10:30 AM & 11:30 AM
Starlab Sky Show

WED, AUG 14 • 11 AM
Happy Birds

SUN, AUG 18 • 10 AM – 12 PM
Bubble Bonanza

DRONE PLEX • SATURDAYS & SUNDAYS, 11 AM – 3 PM

INVENTION LAB • SATURDAYS & SUNDAYS, 11 AM – 3 PM

FLIGHT SIM ZONE • SATURDAYS & SUNDAYS, 11 AM – 2 PM

BSA AND GIRL SCOUT PROGRAMS OFFERED EACH MONTH

KIDS' AIR FAIR WEDNESDAY, JULY 17



NEW EXHIBITS

PAPER PLANE PORT



Dedicated by master paper airplane designer John Collins at its premiere in January, the Paper Plane Port has become one of the Hiller Aviation Museum's most popular interactive exhibits. Fold and fly a record setting shape or design one of your own and send it launching through the exhibit!

SCIENCE ON A SPHERE EXPLORER

Explore your world, and the other worlds of the solar system! Opened in March as part of the museum's weather exhibit, Science on a Sphere uses over 100 sets of data collected by NOAA and NASA to provide a unique interactive experience.



AVIATION CAMP 2024

SUMMER PROGRAMS GRADES K-7

Limited space remains available for Aviation Camp 2024. Aviation Camp introduces kids entering Grades K-7 to aerospace with hands-on experiments, flight simulation, real aircraft and much more. Eight different topics are available.

Visit www.hiller.org for more information.

BIGGEST LITTLE *Air Show* AT SAN CARLOS AIRPORT!

SATURDAY, JUNE 15, 2024 • 10AM – 1PM
FLIGHT DEMONSTRATIONS • 10:30AM – NOON!

Big things come in small packages in an amazing aerial display at the Hiller Aviation Museum!



This year's show will see the return of the Sukhoi West Demo Team aerobatic performance along with demonstrations of exceptional radio-controlled models.

San Carlos Airport will close to regular traffic from 10:30 am to noon to allow realistic model aircraft to roll down the runway and into the sky to take their part in a unique aerial extravaganza including aerobatic planes, helicopters, drones, quadrotors, and more!!

Performers are scheduled to include:

Sukhoi West Demo Team

US Coast Guard SAR Demo

The RC Flyers model aircraft demonstrations

Aerobatic gyroscopic routines

3D aerobatic helicopters

DRONES

Quads

Model Rockets

Jets and other RC aircraft

**Performances subject to change*

PEAXY TOTAL DATA ACCESS
FOR INDUSTRY



Beautifully detailed radio control model aircraft will be on display and perform demonstrations at the Museum from 10:30 AM to 1 PM. With air show demonstrations from 10:30 AM to 12:00 PM. Drone demonstrations from 12-3 PM in the Drone Plex

Special admission tickets required – Museum Members can purchase discounted tickets! Capacity is limited and advanced tickets are required. For more info visit www.hiller.org

EDUCATION AND FAMILY EVENTS

AVIATION CAMP 2024 • SUMMER PROGRAMS GRADES K-7

Limited space remains available for Aviation Camp 2024, the Hiller Aviation Museum's week-long exploration of flight for children ages 5-12. Each week long program investigates the science and engineering of aerospace with hands-on experiments, flight simulation, real aircraft, and much more! Visit www.hiller.org to view availability, join a waiting list, or enroll today!



SPECIAL FAMILY-FRIENDLY EVENTS AT THE HILLER AVIATION MUSEUM

BUBBLE BONANZA

**WEDNESDAYS: JULY 10, AUGUST 7,
SUNDAYS: JUNE 23, JULY 21, AUGUST
18 • 10 AM – 12 PM**

Float into the air with a fantastical exploration of bubbles! Explore the many different shapes, sizes, and colors of bubbles in a fun-filled bubble adventure.



FLIGHT SIMULATOR RALLY

**SUNDAYS: MAY 19, JUNE 30, JULY 14,
AUGUST 4**

20-MINUTE SESSIONS 3 PM - 4:30 PM

Flight with the best of the best! Each Flight Simulator Rally features a special challenge in flight – completing an instrument approach, landing on a short island runway, even attempting a space shuttle landing! Pilots receive a pre-flight briefing and then take the controls in a unique flight simulation mission.



shuttle landing! Pilots receive a pre-flight briefing and then take the controls in a unique flight simulation mission.

GLIDER DISCOVERY DAY

**SUNDAY, MAY 26, WEDNESDAY,
JUNE 19, 11 AM - 12 PM**

Learn how an airplane works, then build and fly a model glider! Participants identify key parts of the museum's Penguin airplane, then help to remove and re-attach the wings and control system. Pilots then construct a simple balsa glider and send it skyward in an amazing festival of flight.



HELICOPTER ADVENTURE

**SUNDAYS: JUNE 26, JULY 31,
WEDNESDAY, AUGUST 23
11 AM - 12 PM**

Investigate the world of vertical flight and find out about the amazing history of helicopters! Observe the control system of a Scorpion helicopter, then take a turn at the controls to try them out firsthand. Construct an



easy-to-build paper helicopter and test it in a unique vertical wind tunnel and more in a whirly-twirly helicopter adventure!

HAPPY BIRDS

**WEDNESDAYS: JUNE 12, JULY 24,
AUGUST 14, SATURDAY, JULY 6 • 11 AM**

Take a flight on the feathered side! Meet the hilarious team of feathered fliers as the Happy Birds take wing once more at the Hiller Aviation Museum. This unforgettable flock of parrots, macaws and cockatoos demonstrates remarkable natural behaviors and amazing trained tricks and antics.



KIDS' AIR FAIRE

WEDNESDAY, JULY 17 • 10 AM – 12 PM



Join the excitement as local public safety organizations descend on the Hiller Aviation Museum with a remarkable collection of aircraft, cars, trucks, and other vehicles. Check out the interior of working airplanes, helicopters and emergency vehicles, participate in fun activities, take home cool giveaways and so much more in a special day dedicated to our youngest aviators.

KIDS' CARNIVAL

**SUNDAYS: MAY 12, JUNE 16, JULY 28,
AUGUST 25 • 10 AM – 12 PM**

Explore open airplane cockpits, hand-paint a Cessna Cardinal airplane, help to assemble or take apart a Penguin training aircraft, build and fly a glider or experiment with wind tunnels in a monthly morning of family-themed fun!



STARLAB SKY SHOW

SUNDAYS: JUNE 2, AUGUST 11

20 MINUTE SESSIONS AT: 10:30 AM, 11:30 AM

Enter the amazing dome of a Starlab planetarium and see the glittering stars of the night sky projected overhead. Discover the brightest constellations visible each night and the stars used by pilots, sailors and others to navigate across vast and featureless oceans.



WATER ROCKET RALLY

**THURSDAY, JULY 4, SUNDAYS: MAY 5,
JULY 7 • 11 AM - 12 PM**

Have a blast exploring the world of rocket propulsion! Check out a JPL-designed research rocket, learn about the science of rocketry, and create a high flying water rocket. Bring a clean, recycled soda bottle from home or purchase one at the Gift Shop on the day of the event.



PLANES, TRAINS AND COOL CARS!



Cool Cars - Model Trains - Unique Aircraft
Saturday August 10, 2024
10 AM - 2 PM



Hiller
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Museum



San Carlos Airport
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Event Included with Museum Admission



HILLER AVIATION MUSEUM

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LEVELS AND BENEFITS

As a member of the Hiller Aviation Museum you'll enjoy free unlimited admission for one year, a store discount, and invitations to members-only events!



	SENIOR (65+)	INDIVIDUAL	FAMILY	PIONEER	PILOT	BARNSTORMER
	1 named member	1 named member	2 adults (1 must be the named member) & up to 4 children under 18	3 adults (1 must be the named member) & up to 4 children under 18	3 adults (1 must be the named member) & up to 4 children under 18	4 adults (1 must be the named member) & up to 4 children under 18
Signature Events (Noon Year's and Biggest Little Air Show)	50% Admission Discount			Complimentary Admission		
Digital membership card	✓	✓	✓	✓	✓	✓
Members-only events	✓	✓	✓	✓	✓	✓
One-time guest pass	2	2	2	4	4	6
15% discount in gift shop everyday	✓	✓	✓	✓	✓	✓
Free flights in Flight Sim Zone	✓	✓	✓	✓	✓	✓
Subscription to Museum's newsletter, Briefings	✓	✓	✓	✓	✓	✓
Discount for Aviation Camp	—	—	✓	✓	✓	✓

Be prepared to show photo ID of named member

Guest Passes are "one-time use" only

Children 4 and under are admitted free

Membership card may be downloaded on the Membership Card App within one week of purchase. More info: hiller.org/digital-membership

Visit hiller.org/membership-faq for membership tax deductibility and employer match amounts.

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PIONEER	PILOT	BARNSTORMER
☐ \$175	☐ \$339	☐ \$500

☐ New Member ☐ Renewal Membership # _____ Optional for Renewal

Primary Adult Member _____

Optional Second Adult Member (For Family Membership and up) _____

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Optional Fourth Adult Member (For Barnstormer Memberships) _____

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