AEROTECH NEWS and Review

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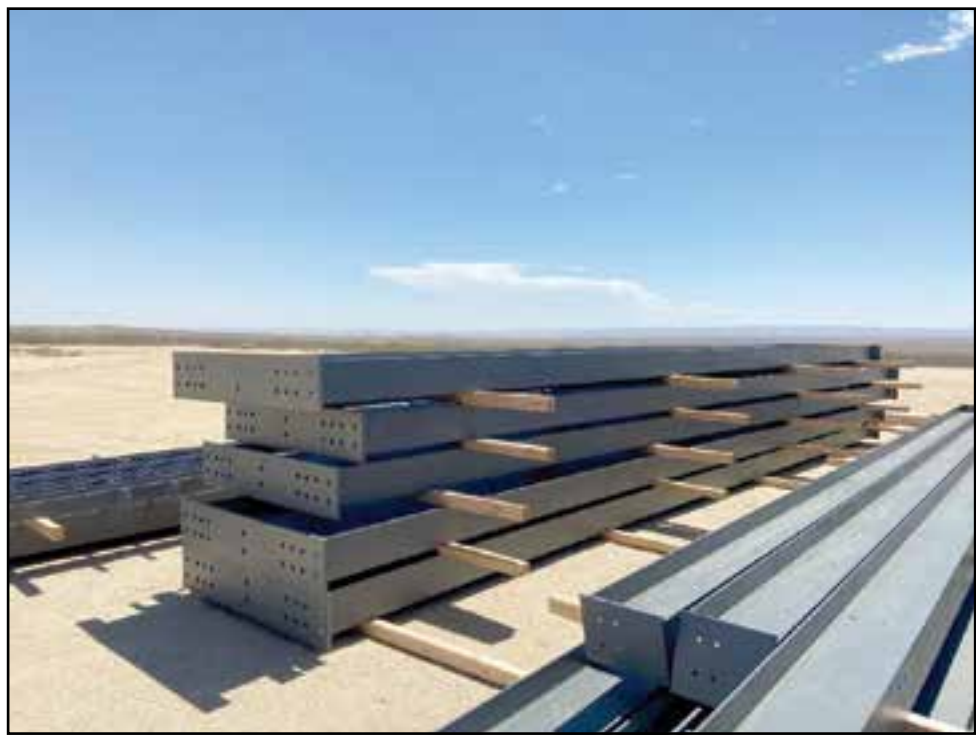
360,000 lbs of steel delivered for new museum

The Flight Test Museum Foundation announced this past week that Phase Two has begun, and construction of the steel frame is beginning on the Flight Test Museum site at Edwards Air Force Base, Calif.

The museum's main mission is to protect and preserve the historical and extremely rare aircraft inside the new structure and away from the damaging outside elements. The hall will house one of the most unique collections of research aircraft in the world and provide a place for the world to see it.

"Our mission is to preserve, display, and educate the public about the more than 75 years of flight tests, aerospace and technological developments in the Aerospace Valley," said a museum spokesperson. "Our Educational Programs provide online and in person activities, lessons, and classes on the principles of Science, Technology, Engineering, and Math in flight test and aerospace research to expand knowledge, inspire, and motivate future generations using examples of the advancements in aerospace in our collection."

Innovation and exploration are alive and well in the Aerospace Valley. In the past, the pilots and engineers broke the shackles of traditional thinking holding them back from chasing their wild ambition to fly faster, longer, and further than anyone ever had. Today, Blue Origin rocket testing is conducted, the Space Force is testing systems, and NASA is developing a commercial supersonic aircraft with the Lockheed Martin Skunk Works. History is being made every day in the Aerospace Valley, and the museum is the place for the world to learn about it.



Flight Test Museum Foundation photographs

The Flight Test Museum Foundation took delivery of 360,000 pounds of steel as Phase Two of the construction project begins.

Upcoming events and updates

• **Sept. 21-24, 2022 —** The Flight Test Museum Foundation is a partner of the Society of Experimental Test Pilots and will be attending the 66th Annual Symposium and Banquet at the Grand Californian Hotel in Anaheim, Calif. For more information, visit https://www.SETP.org/

• **Oct. 15-16, 2022 —** Edwards AFB Air Show! This is the first air show since 2009. The 2022 Aerospace Valley Air Show at Edwards AFB makes a historic return, marking the 75th anniversary of the U.S. Air Force and the 75th anniversary of the breaking the sound barrier by Capt. Chuck Yeager. The Flight Test Museum Foundation will be hosting a booth in the STEM Hangar along with local aerospace companies and industry partners. Headlining this year's show will be the U.S. Air Force Thunderbirds. For more information, visit https://FlightTestMuseum.org/Contact/

• **Nov. 12, 2022 —** The Flight Test Museum Foundation will host its annual Gala — The Gathering of Eagles — celebrating 75th Years of Breaking the Barriers over the Antelope Valley and marking its own 40th year of sharing the amazing story of America's heart of aerospace research at Mojave Air and Space Port, Edwards AFB, NASA Armstrong Research Center, and Air Force Plant 42 in Palmdale, as well as current aerospace industries including SpaceX, Blue Origin and Virgin Galactic. For more information, visit https://FlightTestMuseum.org/Gathering-of-Eagles/

Modified X-62 helps accelerate tactical autonomy development

by Patrick Foose
Wright-Patterson AFB, Ohio

The Air Force Research Laboratory Strategic Development Planning and Experimentation office has invested $15 million upgrading a decades-old workhorse to make it relevant for 21st century warfighter challenges.

AFRL's Autonomous Aircraft Experimentation team is using a highly modified Air Force Test Pilot School NF-16, an aircraft recently designated the X-62, to accelerate the development of tactical autonomy for uncrewed aircraft.

Matthew Niemiec, the autonomous aircraft experiment portfolio lead, said the upgrades to the X-62, also known as the Variable In-flight Stability Test Aircraft, or VISTA, include software that allows it to mimic the performance characteristics of other platforms. He said it also could host a variety of autonomy behaviors, including those from the Skyborg Autonomy Control System and others provided by third-party industry partners.

Skyborg is a Department of the Air Force Vanguard project that has informed the transition of open, modular autonomy to enable combat mass using low-cost uncrewed aircraft. These vehicles will be equipped with autonomy systems and will assist human-piloted aircraft perform critical missions.

Since March 2021, the Autonomous Aircraft Experimentation team executed 16 live test events focused on evaluating the Skyborg Autonomy Control System on the Kratos XQ-58 Valkyrie, UTAP-22 Mako and General Atomics MQ-20 Avenger uncrewed air vehicles.

"The data generated during these tests, along with feedback provided from our user community, show that in order to rapidly develop and mature tactical autonomy on an appropriate timeline, investment in, and utilization of, a mature, tactically relevant platform is required," Niemiec said.

The X-62 uses a "safety sandbox" that allows integration and flight of modeled air vehicles, control laws and autonomy capabilities. Unlike the uncrewed aerial vehicles such as the Valkyrie, Mako and Avenger, the X-62 has room for a crew of two, including a pilot who can supervise the autonomy control system's performance, similar to the way the automotive industry tested autonomous driving features.

"Ground and flight testing on X-62 is one of several steps we are taking to build out critical information networks and physical storage infrastructure necessary to enable rapid autonomy development," Niemiec said. "The goal by fall 2022 is to have it flying alongside an uncrewed platform, with both using tactically-relevant sensors while flying autonomy behaviors. We're also building out a robust simulation environment to capture operator feedback and integrate their inputs into our autonomy development process."

Two systems have been modified in the X-62. One is the VISTA simulation system, which allows the aircraft to mimic the flight characteristics of a different airplane. The other is the system for the autonomous control of the simulation, which enables different autonomous behaviors to fly the airplane.

"When you stitch those two capabilities together, you get a tactically relevant aircraft that enables rapid test of autonomy capabilities while also proving out the interface requirements necessary for different vehicle platforms," Niemiec said.

He said Skyborg and other advanced autonomy development efforts like DARPA's (Defense Advanced Research Projects Agency) Air Combat Evolution can leverage the X-62 as a surrogate for testing high-risk autonomous maneuvers, in parallel with uncrewed aircraft development efforts that are evaluating new high-risk vehicle model designs.

Air Force photograph by Giancarlo Casem

Crews from the U.S. Air Force Test Pilot School and Calspan work on the X-62, also known as the Variable In-flight Stability Test Aircraft, or VISTA, Aug. 3, at Edwards Air Force Base, Calif.

"Because we have a safety pilot, we can always turn it off, and improve our throughput for testing autonomy capability by 10 times," Niemiec said.

VISTA's safety trip system also could automatically disengage the VISTA simulation system when the boundaries of its safety sandbox are violated, allowing larger and riskier steps to be taken with no impact on flight safety, he said.

Dr. M. Christopher Cotting, USAF Test Pilot School director of research, said VISTA is maintained and operated under a partnership with the Calspan Corporation and Lockheed Martin Skunk Works. The USAF Test Pilot School acts as VISTA's prime integrator, manager and test organization.

"The USAF Test Pilot School has been the home of NF-16D VISTA since 2001," Cotting said. "It has been used to expose students to a wide range of aircraft dynamics, allowing students to experience first-hand both 'good' and 'dangerous' aircraft after they have been discussed and analyzed in the classroom."

VISTA has also been a risk mitigation platform for future USAF technologies.

"After a long track record of supporting the [USAF] Test Pilot School and the Air Force, the research systems on the aircraft were becoming dated and unsupportable," Cotting said.

As part of the transformation into the X-62 VISTA, Lockheed Martin Skunk Works designed the system for Autonomous Control of the Simulation, a new system for VISTA. This highly flexible computer architecture enables VISTA to test a wide range of autonomous systems.

Another integral part of the transformation was the new VISTA simulation system Calspan Corporation designed and installed. Lockheed Martin Skunk Works contributed the model following algorithm, an enhanced modeling framework capability to the simulation system. The improvements allow VISTA to support a wider range of aircraft simulation and multiple research control laws.

Cotting said the model following algorithm supports a modeling framework that can be openly distributed to researchers.

"Once researchers have integrated their simulation models, the new VISTA simulation system can take those models and easily implement them into the X-62," he said.

"Normally a new control system for an aircraft can take years to implement on an aircraft," Cotting said. "With VISTA, a new control system can be installed and flown in just a few months. Once installed, changes can be made overnight to modify the control system based on information learned during that day's flight test."

The X-62 VISTA is built to be a technology demonstrator and risk reduction platform. For example, the control laws used to fly the Joint Strike Fighter were first flown on VISTA before the strike fighter's first flight, reducing significant technical and safety risk.

"VISTA's simulation framework is flexible enough to allow aircraft designers a chance to fly their aircraft before it ever leaves the ground," Cotting said. "While modern simulation laboratories are getting much better at simulating aircraft, they still cannot replicate some of the unknowns of operating an aircraft in a relevant flight environment. VISTA and its simulation system allow digital aircraft designs to be 'flight tested' before the aircraft is ever built."

Niemiec said AFRL is working with multiple industry partners to integrate advanced, tactical performance vehicle designs along with cutting edge autonomy capabilities onto the X-62.

"VISTA will allow us to parallelize the development and test of cutting edge artificial intelligence techniques with new uncrewed vehicle designs," he said. "This approach, combined with focused testing on new vehicle systems as they are produced, will rapidly mature autonomy for uncrewed platforms and allow us to deliver tactically relevant capability to our warfighter."

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Plans made for inland port at Mojave Air, Space Port

by Larry Grooms
special to Aerotech News

MOJAVE, Calif. — Fifteen Years after Los Angeles County launched an ultimately unrealized campaign to create an inland port in Palmdale, Kern County's Board of Supervisors signed a proclamation of support for a proposal to build a new generation transportation hub adjacent to Mojave Air and Space Port.

The proclamation announced the county's agreement to support the intention of two private sector companies to finance, plan and construct a 402 or 410-acre inland port adjacent to Mojave Air and Space Port.

Located 90 miles north of the Long Beach and San Pedro harbors, the Mojave Inland Port would receive from the mega seaports an estimated 3 million cargo shipping containers a year arriving on Union Pacific Railroad trackage and on trucks using the SR-14 Antelope Valley Freeway.

The reported privately financed project involves collaboration between Kern County, the Governor's Office of Business and Economic Development, Houston-based holding company Pioneer Partners, and Greenbriar Capital, LLC. In its press release, Greenbriar Capital said what it called California's first inland dryland port would be the largest in the United States and could support as many as 3,000 new jobs while generating an annual economic impact exceeding half a billion dollars.

Cost estimates for the project were not given.

Pioneer Partners Chairman Richard Kellogg was quoted in his company' news release as saying, "This one-of-a-kind project will help unsnarl the congestion in the twin ports of Los Angeles and Long Beach; it will help the national economy by reducing pressure on the supply chain; it will help the local economy through job creation."

Kellogg's statement concluded, "Goods will get to businesses and consumers faster and more efficiently. We can't wait to get started."

According to Pioneer Partners' press release, groundbreaking for the inland port is expected by 2023, with grand opening in 2024. The release quoted Kern County Planning Director Lorelei Oviatt as saying the Mojave Inland Port is a fully permitted industrial site. Pioneer Partners said it will work with Kern County to secure the necessary building permits.

Trelynd Bradley of the Governor's Office of Business and Economic Development wrote in a statement to media, "Inland ports are a critical component to the future balance of our supply chain. They can provide flexibility and efficiency, all the while relieving traffic congestion at critical choke points." He added, "We appreciate the work that Pioneer's Mojave Inland Port proposal has done to help find new solutions to address our supply chain challenges."

Containers are expected to arrive in Mojave from the L.A. harbors astride Union Pacific's main line via shuttle trains, and are to be distributed via state highways 15 and 58.

The presence of Mojave Air and Space Port (MASP), briefly mentioned in the Bakersfield session as having available land for development along Highways 14 and 58, and being one of only a few sites with airport, freeway and rail transportation. Developers also noted the location was selected because of its proximity to undeveloped land for warehouses and industry.

In its news release Pioneer Partners predicted MASP will see more traffic because of the port location. "We believe the additional container traffic coming to Mojave will stimulate its use as a hub for air and space cargo, taking advantage of the 12,500-foot heavy lift runway directly adjacent to a new, state-of-the-art intermodal cargo hub."

The only written response from Mojave Air and Space Port was a letter from departing airport CEO Michael Lindner to Kern County planning chief Oviatt. Lindner wrote that he found the port project has no conflict with the air and space port's zoning and land use matters.

Beacon Economics, LLC, a private Los Angeles-based research consulting company, did the feasibility study for the project, estimating it will generate $113 million, create 662 regional jobs during construction, and add $73 million to Kern County's property tax base. Beacon also estimated the port development will eventually create 2,851 permanent jobs in Kern County.

Pioneer Partners, whose largest project to date is a 2,200-acre brownfield development in Henderson, Nev., said 75 people will work directly for the inland port, "engaging with more than 1,000 truck drivers.

The plan calls for the jammed cargo ports in San Pedro and Long Beach, where there is no room for growth, to send shipping container-carrying rail cars to Mojave for unloading and transshipment via road or rail to destination cities and states.

Now retired L.A. County Fifth District Supervisor Michael D. Antonovich, who initiated the original inland port effort at Palmdale, told Aerotech News, "As you so well know, inland ports would quickly increase efficiency with our supply chain from the ports, drastically reduce congestion and tearing up of our freeways, highways, roadways, and reduce insurance and medical costs."

Courtesy graphic

The site of the proposed inland port at the Mojave Air and Space Port.

Michael Cano, who served as Antonovich's transportation deputy on the North L.A. County inland port planning effort, is now Deputy Executive Officer for Goods Movement Planning and State Policy and Programming for Los Angeles County Metro's Countywide Planning Department.

Among his duties, Cano leads development of the L.A. County Goods Movement Strategic Plan, multimodal corridor planning and integration, grant applications for state and freight programs, project development, and local-state-federal policy analysis for goods movement-related at Metro.

The sum of it means Metro's Freight Working Group brings together stakeholders from state, local and private entities directly involved with goods movement in Los Angeles County. Cano also serves as Metro's representative on the California Freight Advisory Committee.

In interviews with Aerotech News, inland port pioneers Antonovich and Cano recalled challenges overcome, those that weren't, lessons learned, and thoughts about what might work better this time around, and why.

Antonovich said the need to reduce heavy truck congestion on the region's highways and freeways is even greater now than it was in mid-summer 2007 when he brought together officials representing transit agencies, ports, railroads, urban planners, road and highway departments and businesses. The *L.A. Times* quoted him as saying, "The congestion is here and it's only going to get worse. We need to act now to resolve the problem."

Then, as now, much of the cargo lifted from ships at the seaports was loaded onto big rigs which clogged freeways at all hours, causing gridlock and contributing to air pollution and a growing rate of freeway crashes.

A few years before L.A. began its inland port effort, the county built a trench for trains from the ports to downtown railyards. What was called the Alameda Corridor eased congestion surface congestion on the first leg of route, but just moved the bottleneck north, authorities found.

L.A. County's next stage in development was the Antonovich concept of using rail and roads to quickly move seaport cargo to large tracts of undeveloped land in the vicinity of Air Force Plant 42 in Palmdale. From there, the goods would be transshipped to final destinations.

And then as now, a major impediment to building transportation infrastructure were two questions: What will it cost, and who pays the bills?

Back then, the financing issue seemed less pressing. In 2006 — just a year before Antonovich launched the Palmdale inland port initiative, California voters passed a $19.9-billion statewide transportation bond measure, with $3.2 billion allocated to improving the movement of cargo through the seaports via highways and rail.

With that setting the stage, Antonovich convened the multiple agencies needed to cooperate in creating the Antelope Valley Inland Port.

Key to unlocking an inland port in Palmdale was a Joint Use Agreement involving the Air Force, the City of Palmdale and Los Angeles World Airways (LAWA). The agreement allowing commercial air traffic provided leverage in pursuing economic development and job creation.

In the aftermath of the Palmdale inland port idea's demise, several Antelope Valley leaders observed that LAWA dragged its feet on supporting commercial uses in Palmdale, while supporting Ontario Airport.

Other impediments to success of the Palmdale inland port plan were limitations on the most direct access routes from the Los Angeles Basin. The railroad from L.A. to Palmdale was limited in its hauling capacity, and the 14 Freeway was not yet expanded. Officials studied tunneling through the mountains to build a new freeway from Pasadena, using toll revenue to build a High Desert Corridor to connect Lancaster and Palmdale west to the I-5 freeway and east to the I-15 in San Bernardino. And there was consideration of using magnetic levitation (mag-lev) technology for freight trains.

AFTC Summer Internship creates next gen leaders

by Tech. Sgt. Tabatha Arellano
Edwards AFB, Calif.

Every summer since 2018, the Air Force Test Center has hosted a variety of internship programs for students 18 years old and up. The program was created by former Air Force Secretary Dr. Heather Wilson as part of a force renewal initiative. This opportunity has capitalized not only at Edwards Air Force Base, Calif., but at Eglin Air Force Base, Fla., and Arnold Engineering Development Complex, Tenn.

This 10–12-week summer internship provides a variety of science engineering opportunities, gives students the chance to test out a hands-on experience, and learn more about operations in that specific job.

"Since this was my second summer at the Benefield Anechoic Facility, the internship met my expectations. Last summer, when I started, I didn't really know what to expect other than I would be working with radio frequency equipment. My boss and team did an amazing job of incorporating me into the flight, teaching me how to use the equipment, and ultimately preparing me for a job as an RF engineer," said Jesse Brunet, 772nd Test Squadron radio student trainee, at Edwards, AFB.

"At the 772nd Test Squadron Benefield Anechoic Facility, I worked several projects relating to our antenna patterns and radar target simulator capabilities. These included developing software for instrument automation, characterizing new equipment, and leading an effort to evaluate and upgrade our polarimetry system," said Brunet. "My favorite experience as an intern has probably been the opportunity to work with our radar target generator, ARES. This capability allows us to simulate a target for a radar so that the radar can be tested without having to actually fly the plane around. Working with ARES helped me learn a lot about radar and how advanced some modern radar systems are becoming."

Dayana Contreras, 412th Test Engineering Group/812th Aircraft Instrumentation Test Squadron engineering student trainee, worked in the instrumentation department designing and analyzing a support system for the Reconfigurable Airborne Sensor, Communication and Laser — or RASCAL — pod at Edwards, AFB.

Contreras wrapped up the summer internship program, leaving with more on-the-job knowledge.

"[For those who are considering the program, my advice would be to] try your best and approach every situation and challenge with an open mind," Contreras said.

The S&E hosts multiple internship programs every summer and interns are typically college students with at least 60 credit hours and a 2.95-plus GPA.

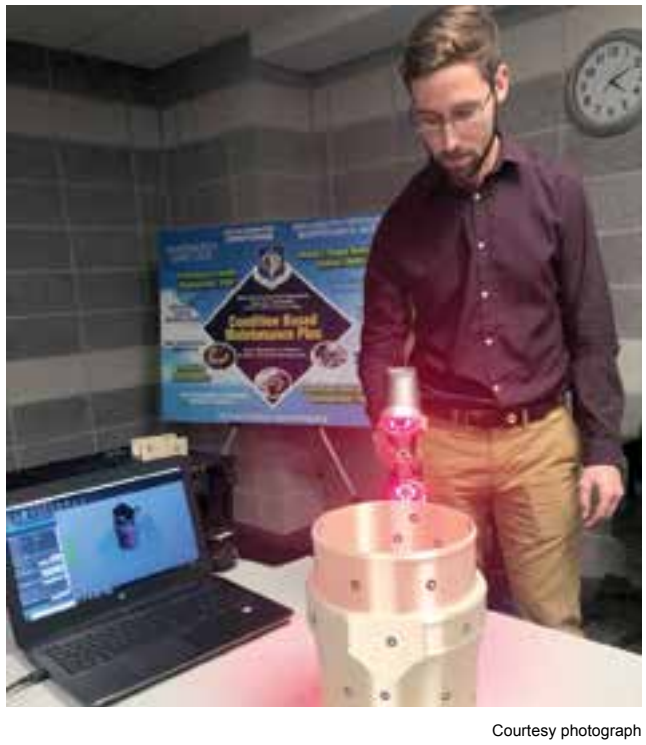
AFTC executive director, Dr. Eileen Bjorkman said, "Intern programs are a great recruiting tool, and they help us to hire the right college graduates. First of all, the intern programs help us reach college students who might otherwise not be aware of the exciting opportunities we have in the Air Force Test Center. Second, the programs allow us to get to know someone before we hire them and lets the students learn about the different options available across AFTC."

"When we hire someone right out of college who's been an intern for us, we get someone already several months ahead of their peers regarding AFTC, and we already have a good idea of where to place that person to maximize the benefit to both them and AFTC," said Bjorkman.

The program's success over the years is attributed to the Talent Acquisition managers.

"I have over five years of experience working with the Force Renewal Programs in Air Force Life Cycle Management Center and Air Force Sustainment Center. I am responsible for acting as the liaison between AFTC organizations, interns, and Air Force Personnel Center/Air Force Material Command S&E Career Field Team Program Offices," said Katherine Ficklin, AFTC S&E Talent Acquisition manager. "The duties under that umbrella include, but are not limited to, ensuring recruiting, onboarding, promotions, conversions and evaluations happen in a timely manner for all AFTC locations. We currently have over 160 participants in our Force Renewal Programs (PCIP, SMART, PAQ)."

Interns are selected through the Direct Hiring Authority, providing the most suitable students from across the country, with the goal of developing the next generation of the Air and Space Force's leaders.



Courtesy photograph

Premier College intern Matthew Robinson, a mechanical engineering student at Cedarville University, learns how to create a 3D model of an airplane part using scanning software at the University of Dayton Research Institute. Robinson was an intern at the Air Force Life Cycle Management Center at Wright-Patterson Air Force Base, Ohio in 2019.

"The best part of the job for me is recruiting the best and the bright-

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est S&E candidates to fill AFTC's pipeline to ensure we are providing warfighters quality products, at or below cost in a timely manner," said Ficklin. "Being able to follow the career of interns from recruiting all the way to becoming a PM or Supervisor. As an engineer, internships were hard to come by for me so I try to ensure to cast the net for AFTC's internships as far as I can to ensure we are reaching as many qualified candidates as possible."

At this moment, AFTC has 50 internship positions available for summer 2023 between Edwards AFB, Eglin AFB, and Arnold AFB.

For more information or to register, visit the sites below:

412th Test Wing Intern Opportunities: https://afcs.experience.crmforce.mil/s/events?eventId=a02t0000009enxvAAA

96th Test Wing Intern Opportunities: https://afcs.experience.crmforce.mil/s/events?eventId=a02t0000009eo4mAAA

Arnold Engineering Development Complex: https://afcs.experience.crmforce.mil/s/events?eventId=a02t0000009eo4rAAA

Arnold Engineering Development Complex (Holloman AFB) Intern Opportunities: https://afcs.experience.crmforce.mil/s/events?eventId=a02t0000009eoENAAY

NASA tests Advanced Air Mobility automation concepts with Sikorsky, DARPA

by Beau Holder and Laura Mitchell
NASA Armstrong

New forms of highly automated Advanced Air Mobility (AAM) aircraft, such as electric vertical take-off and landing vehicles, could transform transportation, cargo delivery, and a variety of public services.

NASA, working alongside the FAA, is applying its decades of expertise in aeronautical research to ensure this new type of technology enters the National Airspace System in a safe and sustainable way.

In March, a team of pilots and researchers from NASA's Advanced Air Mobility National Campaign visited the headquarters of Sikorsky, a Lockheed Martin company in Stratford, Conn. The National Campaign team conducted research flights with the Sikorsky Autonomy Research Aircraft (SARA), an S-76B commercial helicopter that Sikorsky — which develops autonomy software and hardware focused on improving flight safety, reliability, and affordability with two, one or zero flight crew — configured as a flying research laboratory.

Known as MATRIX™ Technology, the autonomy system is designed to give operators like NASA the ability to fly any aircraft autonomously or as an optionally piloted vehicle. The Defense Advanced Research Projects Agency is already testing this unique technology for use in defense — and the same technology could be used in future eVTOL vehicles.

NASA research pilots Wayne Ringelberg and David Zahn flew several flight maneuvers in SARA; instead of using traditional flight controls, the pilots manually input commands, flight paths, and flight conditions via tablets and controllers connected to SARA's advanced flight controls with autonomous capabilities.

During the flights, the pilots and project engineers assessed the software's responsiveness and efficacy, testing the human-to-machine interactions to support progress in the development of autonomy for eVTOL vehicles.

"In the cockpit we take for granted that some flight procedures are executed by air traffic controllers who already deconflicted the route, sometimes years beforehand," Zahn said. "When you look at the government's role in aviation, safety is number one, but efficiency is also extremely important. When introducing autonomy, you want to make sure the same tempo of operations is maintained."

Sikorsky photograph

NASA's Advanced Air Mobility National Campaign research pilots take flight in Sikorsky's flight test helicopter SARA on March 22 in Stratford, Conn., in partnership with DARPA.

Automation could enable future AAM vehicles to operate without a pilot or reduce workload for a single pilot. Use cases include helping the vehicle avoid bad weather or other aircraft, and safely take off and land. Work in this area supports NASA's vision to map out a safe, accessible, and affordable new air transportation system that incorporates Advanced Air Mobility.

A multi-year partnership between Sikorsky and NASA allows for several additional flight scenarios to further test this automation technology. This NASA effort is called the Integration of Automated Systems and falls under the AAM National Campaign demonstration series. The series includes partnering with various industry partners to further AAM research.

"These flight tests are an important step for NASA's Advanced Air Mobility project because they integrate multiple research and development efforts and demonstrate them in a relevant flight environment," said Adam Yingling, the National Campaign's IAS technical lead. "Our partnership with DARPA and Sikorsky allows NASA to safely accomplish this key testing much earlier than we originally anticipated and at a much lower cost."

WWII vet joins American Legion before 100th birthday

by Dennis Anderson
special to Aerotech News

PALMDALE, Calif. — It has been a long, but rewarding journey for a World War II veteran of Chinese American descent: From surviving history's biggest war to becoming something of a celebrity author, and recognized as a distinguished American soldier.

A couple months shy of his 100th birthday, World War II veteran Lou Moore was inducted into American Legion Post 348 on Aug. 21, 2022. Moore was a veteran of the Army Air Force during the war. He soloed in a PT-18 open cockpit trainer.

A rough landing in a cow pasture got him transferred to ground forces, but he served as a non-commissioned officer in the European Theater of Operations, with a weather squadron and airfield security in England, France, and at the end of the war in Germany.

A recipient of the Congressional Gold Medal awarded to Chinese-American veterans of World War II in 2021, Moore is looking forward to turning 100 so he can promote his memoir "Eternal Love" about his 74-year marriage to Nellie Hatsumi Mayeda Moore, a Japanese American high school valedictorian who was held at the Gila Bend "relocation center," which Moore refers to as a concentration camp.

During World War II no Japanese American citizen was ever convicted of a subversive act against America. Moore met his bride to be after she was released from Gila Bend and went on to New York. He was smitten by her when he saw her dance in the chorus line at the "China Doll Nightclub," a night spot that catered to Asian exotic stereotypes. But the two bright young people found each other and engaged in a lightning round of courtship.

Lou and Nellie met in New York City and married a couple of months after his honorable discharge in 1946. Lou served in the Army Air Force in the European Theater of Operations until after VE Day, Victory in Europe. They courted for a week, and the young couple married after a short train trip to Baltimore because you could not get married in one day in New York.

Moore's book "Eternal Love" ranked on Amazon as "Best Asian American Autobiography."

"It is the story of how one Chinese-American veteran could marry a Japanese-American love of his life and have a wonderful 74 years together," Moore told the gathering of dozens of members of the American Legion and other veterans support groups.

Richard Hayes, Post 348 Commander, administered the oath. Linda Evans Hayes informed Moore the Legion Auxiliary would adopt him. "We are going to do a lot to help you have a nicer life."

Courtesy photograph

Lou Moore takes the American Legion Oath.

"May I kiss you on the cheek?" she asked.

"I was waiting," he said. He added, "I have two cheeks."

Chaplain Carl Hernandez gave the invocation. Representing Congressman Mike Garcia, Navy veteran fighter pilot, veteran aide Christine Ward presented a certificate of recognition to Moore.

Also presenting recognition were Assemblyman Tom Lackey, and representatives for State Sen. Scott Wilk, and Charles F. Bostwick, representing Los Angeles County Supervisor Kathryn Barger. City Councilperson Juan Carrillo presented recognition from the City of Palmdale, joined by Los Angeles County Veterans Commissioner Dennis Anderson, a Life Member of the American Legion.

"I want to thank you all for welcoming me into this family of veterans," Moore said. "I am grateful to be an American, to have survived World War II, and to be welcomed into Post 348.

The event was hosted by Veterans of Foreign Wars Post 3552, Matt Jackson, Post commander. American Legion Post 348 has been allowed use of the VFW Post after it lost its own location during the pandemic.

"We want to thank VFW Post 3552 for helping us today and assisting us in our hour of need," Evans said, noting Post 348 has no permanent post location of its own.

Organizations turning out in support included Coffee4Vets, Vets4veterans, Adopt At Risk Veteran, Point Man Antelope Valley, High Desert Medical Group, and Bombshell Betty's Calendar for Charity, as well as American Legion Riders.

Courtesy photograph

Lou Moore speaks during the ceremony at which he became a member of the American Legion.

Courtesy photograph

Lou Moore during World War II.

Photo Archive!

A Douglas C-47 Skytrain. The Skytrain was a military transport aircraft developed from the civilian Douglas DC-3 airliner. It was used extensively by the Allies during World War II and remained in front-line service with various military operators for many years. The C-47 also saw extensive service during the Berlin Airlift. Now you can search for hundreds of photos from our collection. Simply go to https://www.aerotechnews.com/photoarchive/ and click on a folder to view images.

Courtesy photograph

Winners of first NASA TechLeap challenge take flight

by Nicole Quenelle
NASA Armstrong

Winners of the first NASA TechLeap Prize launched their technologies this summer on high-altitude balloon flights to test them at stratospheric heights.

The Autonomous Observation Challenge No. 1 asked winners to develop SmallSat observation technologies that can autonomously detect, locate, track and collect data on transient events on Earth and beyond — such as dust plumes on the Moon or other planets or terrestrial phenomena on our home planet. The winning teams are now using balloon flights to gather valuable test data and experience with the full process of building a technology payload and bringing it from lab to flight test.

"When we launched the TechLeap Prize in 2021, we wanted to accelerate access to flight testing and expand the diversity of ideas and solutions brought to the NASA table," said Danielle McCulloch, deputy program manager for the Flight Opportunities Program at NASA's Armstrong Flight Research Center at Edwards, Calif., which manages the competition. "These organizations are building innovative payloads and literally getting them off the ground — in just one year."

Advancing wildfire detection — and student futures

The first winning technology to launch was a wildfire detection system called Bronco Ember from Bronco Space Lab at Cal Poly Pomona. Both undergraduate and graduate members of the lab contributed to the design and test of Bronco Ember. The system combines a short-wave infrared camera with artificial intelligence to provide potentially faster, more accurate aerial detection of nascent wildfires, which often go undetected by current geolocation methods.

"We live in California, so it would be impossible to ignore the growing problem of wildfires in our state," said Zachary Gaines, the team's project manager. "Bronco Ember could hopefully serve a key role in lessening the impact of wildfires, saving lives and millions of dollars in damages."

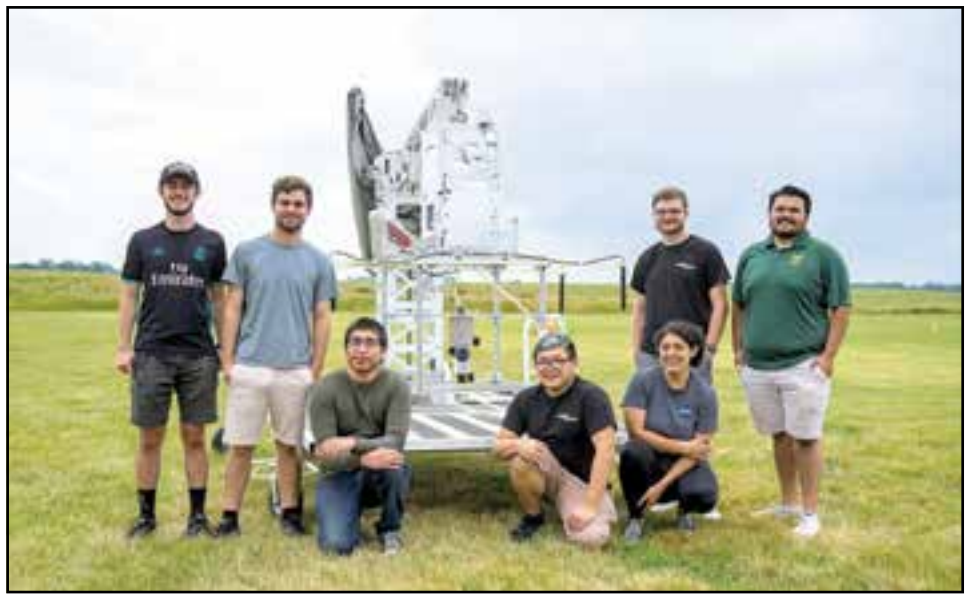
During the recent flight test, the Bronco Ember payload was positioned on a gondola below the balloon to detect small blazes on the ground, which the team lit under controlled and contained conditions to test the technology's efficacy. While all components of the technology functioned successfully, the team found that improvements could be made to the technology's detection and tracking consistency — refinements they plan for the next generation of Bronco Ember.

In addition to analyzing their data and hardware performance, the team is reflecting on the experience of their year-long TechLeap project.

"It's been a great learning experience for us to be able to do this in such a short timeframe," said Cristian Rodriguez, principal investigator for the project. "The skills we've developed — time management, working with technology vendors, NASA, and a flight provider — were incredibly valuable."

Rodriguez leveraged his experience with the project to land a job as a research and development mechanical engineer at University of California Observatories in Santa Cruz, where he's starting a career building instrumentation for research telescopes.

"I ended my Master's degree with this project, and everything that I've learned in developing and flying Bronco Ember I'm now using in my job. I wouldn't have gotten it without this experience," said Rodriguez. "Meanwhile, others at Bronco Space Lab will pick this technology up and continue developing it. TechLeap has allowed us to engage in a meaningful way, bringing university innovation into the tech development space to contribute to our world."



Aerostar photograph by Aaron Propst

Members of the NASA TechLeap Prize-winning Cal Poly Pomona Bronco Space Lab with their Bronco Ember payload on July 8, 2022, prior to launch on a high-altitude balloon from Aerostar International. From left to right: Charles Pellitteri, Zachary Gaines, Julian Garcia, Thang Nguyen, Jacqueline Llamas, Matthew McDougall and Cristian Rodriguez.

Please come to a complete stop before taxiing up ramp

On Sept. 8, 1954, NACA Aeronautical Research Pilot Scott Crossfield took the North American Aviation F-100 Super Sabre on its first NACA test flight — and his first flight in an F-100. Tests of the prototype and early production Super Sabres revealed directional stability problems, a very dangerous inertia coupling characteristic that could cause the aircraft to go violently out of control. In another three weeks, this would result in the death of North American's chief test pilot, George Welch. The highly swept wings could stall at high angles of attack, causing the airplane to pitch up in the deadly "Sabre dance." NACA wanted to explore the causes of these aerodynamic problems and design solutions.

During the flight there was an engine fire warning and Crossfield shut down the Pratt & Whitney J57-P-7 turbojet engine. The F-100A had no flaps and North American's own test pilots did not think a "dead stick" landing was possible due the very high landing speed required.

Scott Crossfield tells the story in his autobiography:

"As a matter of fact, North American tests pilots were then flipping coins to see who would bring an F-100 in dead-stick to fulfill a requirement of the Air Force acceptance tests. I was not concerned. Dead-stick landings in low L-over-D [Lift-over-Drag] airplanes were my specialty. Every test pilot develops a strong point. I was certain that my talent lay in dead-stick landings.

"With the engine idling and generating no energy to the plane's systems, I was running out of hydraulic pressure to operate the controls. Following the handbook instructions, I pulled a lever which extended a miniature 'windmill' into the slipstream. This 'windmill' churned, building up pressure in the hydraulic lines. Unknown to me, there was a major leak in the line. The windmill was not helping, but hurting me. It was pumping hydraulic fluid overboard as fast as it could turn.

"I called Edwards tower and declared an emergency. All airborne planes in the vicinity of the base were warned away from the lake area. I held the ailing F-100 on course, dropping swiftly, following the glide path that I used for the dead-stick Skyrocket. [Douglas D-558-II Skyrocket] I flared out and touched down smoothly. It was one of the best landings I have ever made, in fact. Seconds later, while the F-100 was rolling out, the remaining bit of hydraulic pressure in the control lines drained out and the controls froze.

"I then proceeded to violate a cardinal rule of aviation: never try tricks with a compromised airplane. The F-100 was still rolling at a fast clip, coming up fast on the NACA ramp, when I made my poor decision. I had already achieved the exceptional, now I would end it with a flourish, a spectacular wind-up. I would snake the stricken F-100 right up the ramp and bring it to a stop immediately in front of the NACA hangar. This trick, which I had performed so often in the Skyrocket, was a fine touch. After the first successful dead-stick landing in an F-100, it would be fitting.

"According to the F-100 handbook, the hydraulic brake system — a separate hydraulic system from the controls — was good for three 'cycles,' engine out. This means three pumps on the brake, and that proved exactly right. The F-100 was moving at about fifteen miles an hour when I turned up the ramp. I hit the brakes once, twice, three times. The plane slowed, but not quite enough. I was still inching ahead ponderously, like a diesel locomotive. I hit the brakes a fourth time — and my foot went clear to the floorboards. The hydraulic fluid was exhausted. The F-100 rolled on, straight between the yawning hangar doors!

"The good Lord was watching over me — partially anyhow. The NACA hangar was then crowded with expensive research tools—the Skyrocket, all the X-1 series, the X-3, X-4 and X-5. Yet somehow, my plane, refusing to halt, squeezed by them all and bored steadily on toward the side wall of the hangar.

"The nose of the F-100 crunched through the corrugated aluminum, punching out an eight-inch steel I-beam. I was lucky. Had the nose bopped three feet to the left or right, the results could have been catastrophic. Hitting to the right, I would have set off the hangar fire-deluge system, flooding the hangar with 50,000 barrels of water and ruining all the expensive airplanes. Hitting to the left, I would have dislodged a 25-ton hangar-door counterweight, bringing it down on the F-100 cockpit, and doubtless ruining Crossfield.

"Chuck Yeager never let me forget the incident. He drew many laughs at congregations of pilots by opening his talk: 'Well, the sonic wall was mine. The hangar wall was Crossfield's.' That's the way it was at Edwards. Hero one minute, bum the next. That I was the first pilot to land an F-100 dead-stick successfully, and memorized elaborate and complete instrument data on the engine failure besides, was soon forgotten.

"The F-100 is a tough bird. Within a month NACA's plane was flying again, with Crossfield back at the helm. In the next few weeks I flew forty-five grueling flights in the airplane, pushing it to the limits, precisely defining the roll coupling. (On one flight the coupling was so severe that it cracked a vertebra in my neck.) These data confirmed, in actual flight, the need for a new F-100 tail, which North American was planning to install on later models of the airplane.

"Every night after landing, I taxied the F-100 slowly to the NACA ramp. At the bottom, placed there on orders of Walt Williams, there was a large new sign, symbolic of the new atmosphere at Edwards. It said: PLEASE COME TO A COMPLETE STOP BEFORE TAXIING UP RAMP."

Courtesy photogaphs

Left: NACA test pilot Scott Crossfield signs the maintenance documentation prior to his flight in the North American F-100 Super Sabre. **Right:** Scott Crossfield climbs into the F-100 Super Sabre cockpit.

NASA photographs

Left: The North American F-100 Super Sabre sits on the lakebed at Edwards, Calif. **Above:** The F-100A with its nose through hangar wall following Scott Crossfield's emergency landing.

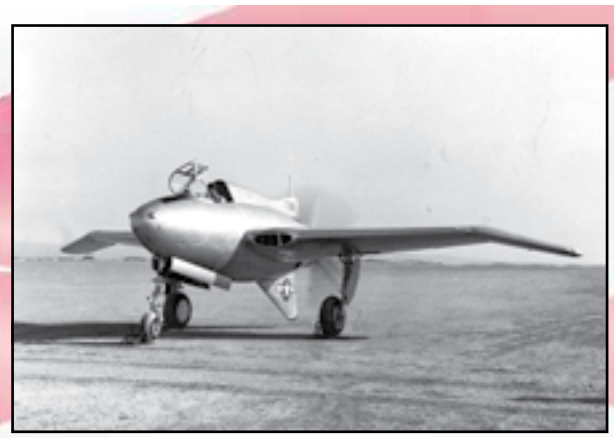
On this date . . .

Sept. 3, 1932: At the Cleveland National Air Races, Jimmy Doolittle won the Thompson Trophy Race with his Granville Brothers Aircraft Company Gee Bee Supersportster R-1, NR2100. He also set a Fédération Aéronautique Internationale World Speed for Record Over a three-kilometer Course, averaging 294.42 mph.

Sept. 4, 1936: Louise Thaden became the first woman to win the Bendix Trophy Race when she and her co-pilot, Blanche Noyes, flew a Beechcraft C17R "Staggerwing" Floyd Bennett Field in Brooklyn, N.Y., to Mines Field (now LAX), Los Angeles, Calif., in 14 hours, 55 minutes, and one second. With one fuel stop at Wichita, Kansas, Thaden and Noyes had averaged 165.35 mph. In addition to the trophy, she won a prize of $2,500. Thaden had been employed by Walter Beech as a sales representative in Wichita, Kansas, and he included flying lessons with her employment. She received her pilot's license from the National Aeronautic Association, signed by Orville Wright, May 16, 1928. In 1929, she was issued Transport Pilot License number 1943 by the Department of Commerce.

Sept. 4, 1984: The B-1B Lancer is rolled out at the Rockwell International facility at Air Force Plant 42 in Palmdale, Calif.

Sept. 5, 1944: The Douglas C-74 Globemaster made its first flight in Long Beach, Calif., with Ben O. Howard at the controls. The flight lasted 79 minutes. The Globemaser was a United States heavy-lift cargo aircraft. The aircraft was developed after the Japanese attack on Pearl Harbor. The long distances across the Atlantic and, especially, Pacific oceans to combat areas indicated a need for a transoceanic heavy-lift military transport aircraft. Douglas Aircraft Company responded in 1942 with a giant four-engined design. The production contract was canceled following V-J Day.



Sept. 6, 1943: Northrop's experimental fighter, the XP-56 Black Bullet was trucked to the Muroc lakebed and made its first flight, flown by company test pilot John Myers. The XP-56 was a near-tailless design with a pusher engine driving contra-rotating propellers. It was the first aircraft to be constructed entirely of magnesium.

Sept. 9, 1972: Capt. Charles DeBellevue, a Weapons System Officer flying on F-4D and F-4E Phantom II fighters, became the high-scoring American Ace of the Vietnam War when he and his pilot, Capt. John A. Madden, Jr., shot down two MiG 19 fighters of the Vietnam People's Air Force, west of Hanoi. DeBellevue later went on to command the 6500th Air Base Wing at Edwards AFB, Calif. He retired from the Air Force as a colonel in 1998, after 30 years of service.

Looking back to … the first around the world flight

by Ray Ortensie
Wright-Patterson AFB, Ohio

On Sept. 6, 1924, eight airmen departed in their Douglas World Cruisers, specially built by the Douglas Company in California and tested at McCook Field, Dayton, Ohio, from Lake Washington in Seattle, Wash., heading westward for Asia via Alaska for one of the most sensational aviation events of the 1920s.

This around-the-world flight was the first globe-circling flight in aviation history and required logistical support prepositions at locations along the route. Of the original eight airmen, two would not finish the first leg and two of the original aircraft would not finish the trip.

These photographs for Around the World Flight are laid out in roughly in chronological order to walk readers through the airmen's history-setting globe-circling flight. Awarded the 1924 Mackay Trophy for the flight, the airmen were decorated with the Distinguished Service Medal in 1925.

National Museum of the U.S. Air Force photograph

Douglas World Cruiser at one of the refueling/servicing sites along the Fourth Division Route along the path between India, Persia, Mesopotamia, Syria and Turkey.

National Museum of the U.S. Air Force photograph

Workers construct the World Cruisers at the Douglas Company factory in Santa Monica, Calif.

National Museum of the U.S. Air Force photograph

The Douglas World Cruisers at a refueling site at Allahabad, India.

National Museum of the U.S. Air Force photograph

The New Orleans hoisted on the beach to dry out at Reykjavik, Iceland.

World Flight Crews (Left to Right): Lt. Jack Harding, Lt. Erik Nelson, Lt. Leigh Wade, Maj. Frederick Martin, 1st Lt. Leslie Arnold, Lt. Lowell Smith, and Lt. Le Clair Schulze. They are wearing black armbands in honor of former U.S. president Woodrow Wilson, who had recently passed away.

National Museum of the U.S. Air Force photograph

National Museum of the U.S. Air Force photograph

World Fliers in front of the Chicago at McCook Field, Dayton, Ohio.

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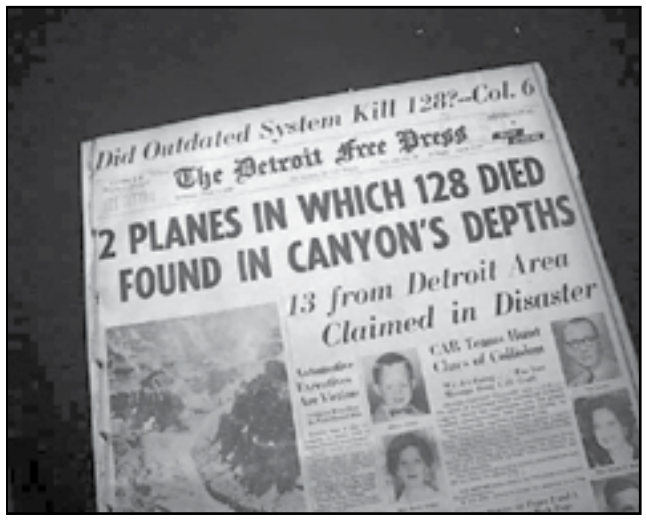
Major catastrophe in the air leads to loss of life

by Bob Alvis
special to Aerotech News

I am not one to do book reviews, but on a recent trip, a book on display caught my attention. Its subject matter was an event that, at the time, was called the most terrible airline catastrophe ever. Having worked at the Valle Airport near the Grand Canyon off and on over the years I was very aware of the June 30, 1956, event, when a TWA aircraft and a United Airlines aircraft came together over the Grand Canyon, resulting in the violent crash of both aircraft into the famous tourist attraction.

All the souls on board were lost as the two aircraft came to rest at two different locations. Nothing strikes fear in the heart of aviation enthusiasts then the thought of the word "midair," for most of the time it results in a tragic loss of life be it one person or many.

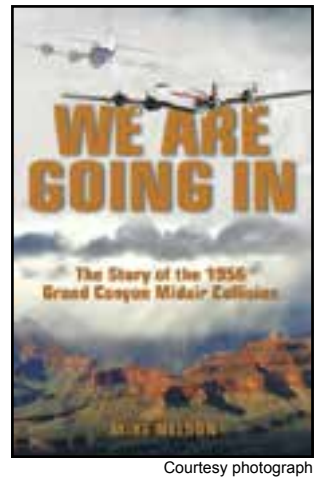


Courtesy photograph

From T*he Detroit Free Press:* The headline of the day that helped change airline travel.

In this case, the story of two airliners full of travelers really pulls at one's heart especially when you remember the lost souls that were just going about their lives on a summer day traveling to all different types of jobs and activities, not knowing that day would come to such a dramatic end.

Wanting to know more about that event had me purchasing *We Are Going In*, by Mike Nelson. Nelson also has a personal connection as one of the passengers was his uncle.



Courtesy photograph

We Are Going In by Mike Nelson.

The story, as he tells it, covers a lot of ground about the investigation and the "whys" of the crash and how it played out. Looking back at 1956, he pointed out how, back then air travel was not as well-regimented as it is today and that aircrews did not have many of the advancements that modern day aircraft do to prevent such events.

Even one aspect of the story really shows how far we have come when, after the crashes, it was the fact that the first clue that something was wrong was that the airplanes never arrived at the gates, and landline telephones were used to find the answers.

What really makes this book different, and a standout, is how Nelson goes about dealing with the 128 people who lost their lives that day. The sad fact is of all the 128 passengers and crewmembers, only three sets of remains were ever identified.

The rest were buried in a common grave, each airliner having its own monument and grave site remembering the lost.

Nelson spends a lot of this book telling stories of those individuals and telling the stories of their lives – from the kids heading out on vacation, to corporate leaders making business trips. Today, most of the remains of the two aircraft — a Lockheed Constellation and a Douglas DC-7 — have been removed from the canyon as the two airlines were asked back in 1973 to clean up their respective aircraft.

Much of the wreckage was removed, but still today artifacts of that day remain. The memories of those lost have now faded over time, and it was nice to see those lives revisited and to tell their story that at the time, was overshadowed by a national tragedy — a tragedy that made people rethink their travel plans and created an uptick in rail travel for a short period of time.

I highly recommend this book as it does its job very well because it's entertaining — if that can be said about a subject that is so horrific — and it's done in a manner that keeps one flipping the pages.

But more importantly it brings back the lives of those lost in time, that now share a common grave, never realizing when they boarded their respective flights that it would be for eternity with their fellow passengers.

Peace my friends, and until next time, Bob out …

Courtesy photograph

The mass grave for the victims of United Airlines Flight 718 in Grand Canyon Pioneer Cemetery. The cemetery is located near the South Rim.

Courtesy photograph

The victims of TWA Flight 2 are in at Citizens Cemetery in Flagstaff, Ariz.

Courtesy photograph

An artist sketch of the tragic event …

Courtesy photograph

The National Historic Landmark in the Grand Canyon.

NOTICE OF PUBLIC LIEN SALES
Business & Professional Code Section 21700-21707

Notice is hereby given by the undersigned that a public lien sale of the following described personal property will be held at the hours of **12 noon on the 14th day of September 2022** or thereafter. The auction is being held at **www.selfstorageauction.com** by competitive bid. The property is stored by Nova Storage located **3305 E. Palmdale Blvd., Palmdale, CA 93550**.

The items to be sold are generally described as follows: Furniture, clothing, tools and or other household items stored by the following persons.

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B086 Topa, Ion
F527 Smith, Paul
E483 Barnes, Gregory
D242 Toribio Jr, Alberto
D142 Pratt, Emmanuel
B102 Sarran, Kester
E366 Scott, Marcus

Date: August 29th, 2022 Signed NOVA STORAGE

This notice is given in accordance with the provisions of section 21700 et seq. of Business & Professional Code of the Sate of California. The owner reserves the right to bid at the sale. All purchased goods are sold "As Is" and must be paid for and removed at the time of sale. Sales subject to prior cancellation in the event of settlement between owner & obligated party. Auctioneer: Nova Storage

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The items to be sold are generally described as follows: Furniture, clothing, tools and or other household items stored by the following persons.

0515 Harmon, Frank
0331 Stringer, Diane
0574 Quagliotto, Albert
0577 Medina, Juliana
0087 Molett, Jasmine
0538 Scott, David

Date: August 29th, 2022 Signed NOVA STORAGE

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ADVERTISEMENT OF SALE

Notice is hereby given that the Undersigned intents to sell the Personal property described below to enforce a lien imposed on said property pursuant to sections 21700-21716 of the California Business & Professions code. Section 2328 of the UCC, Section 535 of the Penal Code, provisions of the Civil Code.

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