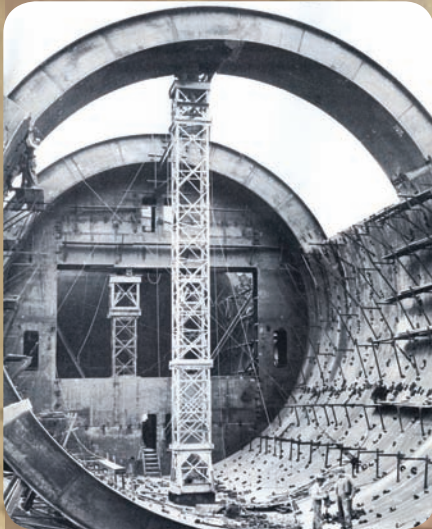





# 60 Years of Progress



A look at the  
**people**, **places**,  
and **programs**  
that made  
**Arnold  
Engineering  
Development  
Center**  
a leader  
in aviation  
research and  
development.

1951-2011





Sixty years ago, area residents were preparing for a visit by a president. Harry S. Truman was coming to officially dedicate the Arnold Engineering Development Center to the memory of General Henry “Hap” Arnold.

The April 1948 announcement that the former Army training site Camp Forrest would be the location of the new Air Engineering Development Center spurred a massive movement that changed the local landscape and established the center as a key contributor to the success of the nation’s aviation endeavors.

This publication is a pictorial celebration of the world’s advanced complex of ground simulation facilities, the programs that have spent time here and, most important, the people who, for the past 60 years, have used their knowledge, skills and talents to ensure that U.S. airpower is the best it can be.

*Celebrating AEDC's 60th Anniversary*

An AEDC Honor Guard member folds an American flag during a retirement ceremony.



# Contents

There have been literally thousands of pictures taken at AEDC in the 60 years of the center's history. Some are well-known and easily recognizable as they have been used in countless publications, reports and briefings while others were only used once then filed away and forgotten. With a limited number of pages for this publication, showcasing those photos everyone is familiar with seemed a bit too simple.

Therefore, we chose to take a different route and dig through the photo files, past *High Mach* issues and other old publications to find some of the images time – and the work force – may have forgotten. We have chosen images spanning more than six decades with varied subjects. Some are taken in facilities that no longer exist while others showcase our co-workers who have since retired, but all are a part of the center's heritage. We hope this publication will both remind you of the past and inspire you as the journey toward the next 60 years begins.

*This publication was created by Aerospace Testing Alliance (ATA) Public Affairs and Information International Associates, Inc. (IIa). All photos and corresponding captions were pulled from previously cleared publications and have been changed only to update them. This publication is cleared for public release.*

AEDC PA Number 2011-091



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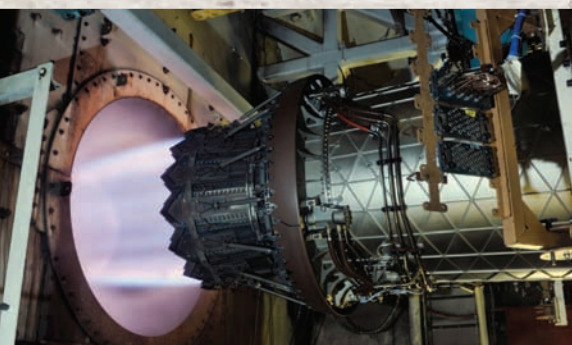
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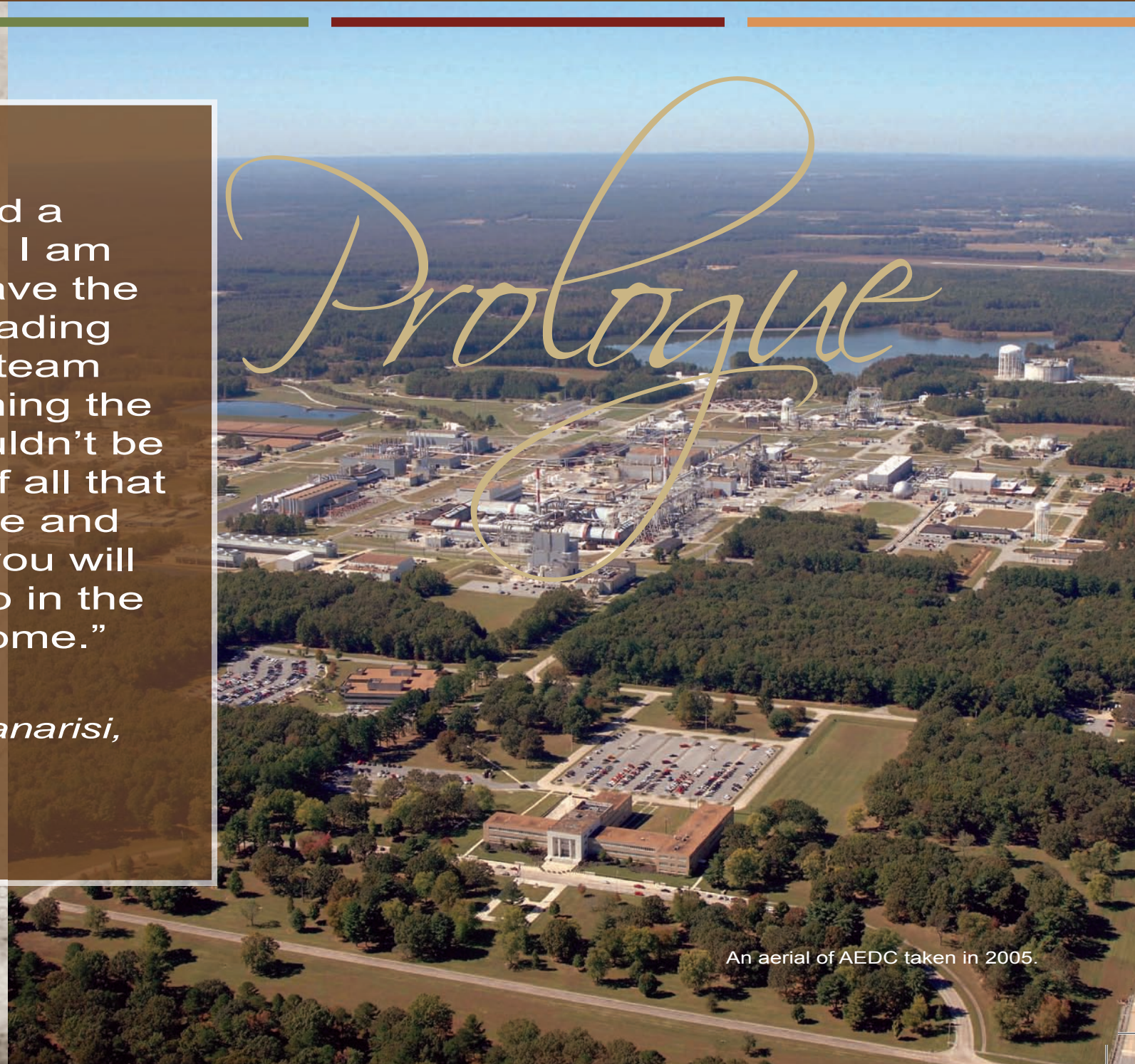
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“This is indeed a special event. I am honored to have the privilege of leading this amazing team through reaching the big ‘6-0.’ I couldn’t be more proud of all that you have done and what I know you will continue to do in the decades to come.”

*Col. Michael Panarisi,  
2011*

# Prologue



An aerial of AEDC taken in 2005.



# proven success

## AEDC Commander Col. Michael Panarisi

Truly the highlight of my tenure as the Commander of AEDC is the celebration of 60 years of aerospace innovation led by the thousands of world class pioneers who have called AEDC “home.” In these six decades, the men and women of AEDC have fostered the development of countless aircraft, ushered in new generations of spacecraft, and forged the technologies needed to keep U.S. aerospace at the very leading edge in the world. President Truman even recognized General Henry “Hap” Arnold’s vision that “You can’t have a first class Air Force with second class airplanes.” From our inception, we have been on a mission to fulfill his vision of building an Air Force “second to none.” Time and time again, we have proven that we have succeeded.

This year is more than just another milestone ... it’s a tribute to the vision, dedication and spirit of innovation that made General Arnold’s visions a reality. While we stand in awe of the phenomenal facilities and equipment, it’s the minds and hands behind these machines that made it all happen. We have been

truly blessed with a team that have repeatedly faced seemingly insurmountable challenges and proved, without question, the spirit of innovation here will prevail. In conflict after conflict, the limits of our fielded systems were exposed. Team AEDC worked tirelessly to extend the capabilities of these systems and at the same time, paved the way for new capabilities needed to succeed in the next conflict. To date, US airpower remains unmatched, and AEDC’s pioneering efforts in space lead the world as well. For this, we owe our present and past work force a huge debt of gratitude.

Though we are extremely proud of all that Team AEDC has accomplished, we would be remiss if we did not acknowledge the vital partnerships that have made our success possible. From its inception, the Air Force has benefited from the dedication and loyalty of a world-class industry partner. The company names have changed over the years, but for the most part, the work force remained intact and continued a long history of unrivaled achieve-

ments, many of which took place on a world stage, as AEDC tests gave birth to breakthroughs leading to supersonic flight, moon landings and more recently, the space shuttle.

As a research and development center, our relationships with academia are just as important and live on with the continued growth in the University of Tennessee Space Institute; our continued partnerships with Motlow State Community College, Tennessee Tech University and the University of Maryland; as well as our burgeoning partnerships with UT Knoxville and UT Chattanooga.

As our work gained popularity, a growing number of commercial and government entities began to rely on AEDC, and we are proud to list NASA, the Department of Energy, Defense Advanced Research Projects Agency and the Missile Defense Agency among our most treasured partners.

Finally, our hosts here in Middle Tennessee have been strong supporters from the very beginning. We enjoy a special positive and mutually benefi-

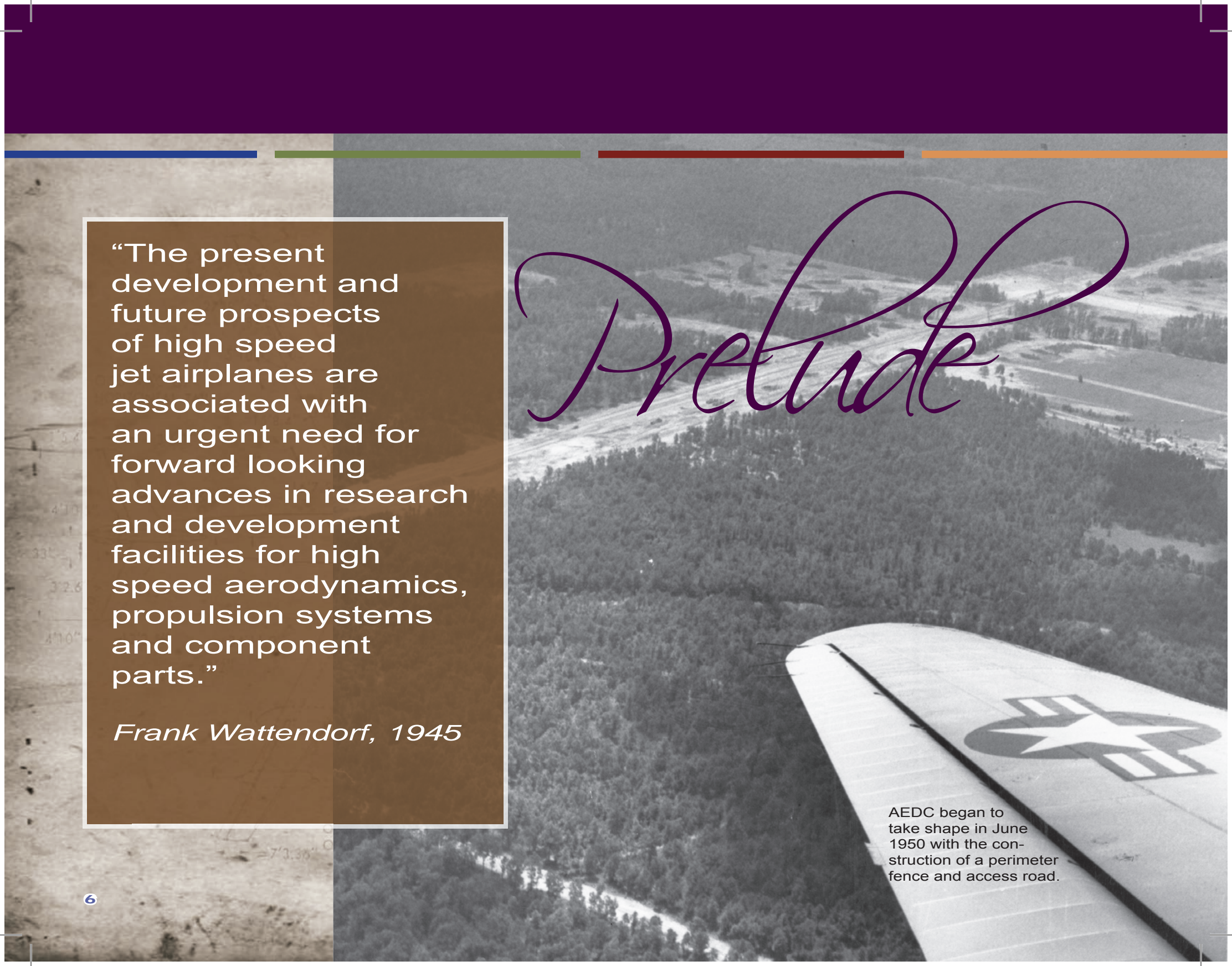
cial relationship with our local city and county leaders, our state legislators, and the Governor. Just as important, our ties and partnership with the Tennessee National Guard remain strong. We can’t thank them all enough for making our mission a welcome addition to their community.

This is indeed a special event. I am honored to have the privilege of leading this amazing team through reaching the big “6-0.” I couldn’t be more proud of all that you have done, and what I know you will continue to do in the decades to come. Congratulations Team AEDC!



Col. Michael Panarisi inspects students' design projects as a part of the 2011 National Engineers Week activities.





“The present development and future prospects of high speed jet airplanes are associated with an urgent need for forward looking advances in research and development facilities for high speed aerodynamics, propulsion systems and component parts.”

*Frank Wattendorf, 1945*

# Prelude

AEDC began to take shape in June 1950 with the construction of a perimeter fence and access road.



# before technology

“the next 60 looks just as promising...”

It was a hot June day in 1951.

The president of the United States was in a small rural area in the middle of Tennessee to dedicate the new Air Engineering Development center. Thousands of people braved the heat to not only hear and see the president but also to witness the start of something important in the field of aviation and aeronautics.

During his speech, the president said, “The scientists who work here will explore what lies on the other side of the speed of sound. This is part of our effort to make our air power the best in the world – and to keep it the best in the world. This applies to the planes of the Air Force, the Navy, and our Marines. It applies to our guided missiles and all the future development that science may bring.”

Advances in aviation were seemingly happening by leaps and bounds considering controlled, sustained, power-driven free flight was only 48 years old. The Air Force was still in its infancy, having been recog-

nized as a separate service on Sept. 18, 1947; the sound barrier had been broken in October 1947 by an Air Force test pilot – Capt. Charles “Chuck” Yeager; and now, a complex of facilities built to develop and test the state-of-the-art aircraft and weapons systems was being built to support further advances.

But the area was no stranger to big military undertakings.

Camp Peay, built east of Tullahoma as a National Guard Camp in 1926, covered approximately 1,040 acres and was designed to support 2,500 soldiers. It remained active as a National Guard training camp until January 1940.

From 1941-1947, the area was home to Camp Forrest, an active Army post and one of the U.S. Army’s largest training bases during World War II. In 1942, Camp Forrest became a prisoner of war (POW) camp, receiving, housing and securing more than 22,000 German, Italian and Japanese POWs during the war.

The state of Tennessee donated the land of Camp Peay and Camp Forrest to the Air Force as the site for the new facility, and the Air Force purchased additional land to increase the area to approximately 40,000 acres, its current size.

With a current replacement value of \$11.3 billion, AEDC has matured into a recognized leader among other research and development facilities within the armed services, the aircraft industry and educational

institutions of the U.S.

AEDC is also recognized as an important community partner. In fiscal year 2010, AEDC pumped more than \$656 million back into the community through payroll, secondary jobs created through local spending and other expenditures for supplies, utilities, fuel and services and the spin-off impact of those purchases.

With 60 years already under its belt, the next 60 looks just as promising.



David Hiebert, AEDC historian, center, facing camera, presents an account of Camp Forrest, the World War II-era training complex pre-dating Arnold. The former ‘brig’ is only one of two structures from the camp that remain intact.





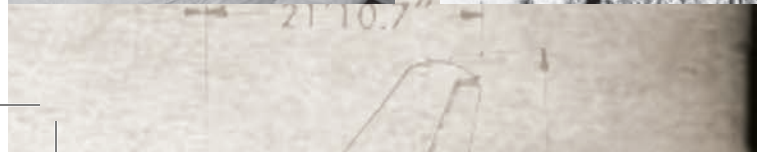
CARPENTER'S BLOCK F. RALPH J. BABB SUPT.  
CAMP PEAY, TULLAHOMA, TENN. 1-9-41.

Above: Camp Peay  
in 1941.

Right: Images from  
Camp Forrest.







Members of the 132nd Infantry Regiment, one of the first to train at Camp Forrest, marched in the 1986 Camp Forrest Reunion parade.



“First of all, we are American, young enough, eager enough and brash enough, to believe that we can do the impossible and ignorant enough and curious enough to try to do it.”

*AEDC Commander  
Maj. Gen. Sam T. Harris,  
1955*

People

AEDC hosted a special retreat ceremony to commemorate the victory in Europe in World War II. Tech. Sgt. David Kline presents the flag to a local veteran as Chief Master Sgt. Bobby Barksdale looks on. About 150 people attended the 1995 ceremony.



# our driving force

“AEDC people feel a strong sense of pride”

AEDC is an impressive collection of test facilities. The speeds, temperatures and other test parameters the facilities are able to attain are nothing short of remarkable.

The notion of a test center designed to make the United States a dominant military force was born in the waning days of World War II. The realization that the nation's enemies were more advanced in developing their military technology forced military and government leaders to plan for a future where the United States always led in air superiority.

It was the foresight of these leaders that led to the transformation of middle Tennessee farmland into the Air Force's preeminent test center. Yet, take away those who operate and maintain these facilities and AEDC is nothing more than a lot of steel, some bricks and mortar, a large lake and several thousand pine trees.

It is the technical excellence and skill

of the people – both then and now – coupled with their understanding of and designed improvements to these facilities that have propelled the center to the forefront of the test and evaluation arena.

AEDC personnel are good at what they do. The center's work force perform a wide range of services including: maintenance, information technology, communications, test utility operations; environmental, safety, industrial health and quality assurance; calibration, chemical and photo laboratories; civil engineering, transportation, financial, contracting, management, fire protection, security services, emergency management, food services, custodial and public affairs.

As one of the largest employers in Middle Tennessee, AEDC has benefitted from employing the best and brightest talents. Many families boast of multiple members – and generations – who have worked at AEDC. Students who tour the center want to

come back as employees. Retirees often volunteer to come back if their expertise is needed.

As Rogers Starr, former general manager of the Sverdrup Technology work force and current president of Jacobs Technology, observed in 1997, “I think that AEDC people feel a strong sense of pride both in the center's reputation and in their own technical ability. It is a high performing work force and the people here strive to meet the highest standards set for themselves.”

The AEDC work force has witnessed a lot in 60 years. They have played an integral role in ensuring that the programs vital to our nation's defense have been thoroughly tested and will perform as designed. From the early fighter to unmanned aerial systems and the lunar landing to the International Space Station, the men and women of AEDC – past and present – have been an integral part of the advancements of military and commercial development and space transportation.



The first airline ticket for company travel was issued in 1956 to Harvey Cook.



Left, Chris Graham, AEDC Fire Department driver/operator Charlie Armstrong, AEDC fire fighter crew chief, participates in an emergency response exercise in 2009 simulating a terrorist chemical attack.







Apprentice boilermaker D.F. Adcock and E.M. Steadmon, journeyman, weld on a bulkhead assembly in the Model Shop in 1967.

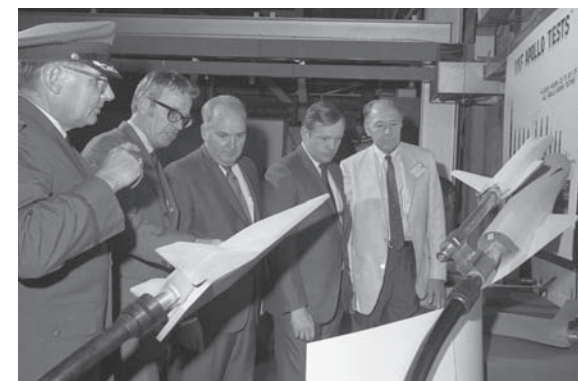


Left: Holding safe driver awards from the National Safety Council and gold watches from ARO in 1966 are, front row, second from the left, J.W. Glasner, J.L. Sanson, F.B. Hasty and M.E. Trail. Their supervisors, from left, R.N. Brewer, Jack Jones and S.F. Crowell, were on hand for the presentations.

Below: Apollo 11 mission commander Neil A. Armstrong, second from the right, the first man to step on the moon, visited AEDC in 1971 with a group of NASA and DoD officials who stopped during their tour of VKF to inspect some of the wind tunnel models.



Micro Craft Technology engineer Tom Hartvigsen shows Franklin County High School student John Smith around the center's Model Shop during job shadow day in 1995.



The first Navy civilians joined the AEDC work force in 1994.





From left, Robbie Evans, Bronson Kindermann and Stanley Hill bale a load of mixed paper at the base Services Recycling Center as part of the AEDC Resource Recovery and Recycling Program in 2009. The money generated from the sales goes toward maintaining and sustaining the equipment needed for the recycling process, with some of the funds going into a non-appropriated account for Services' programs.

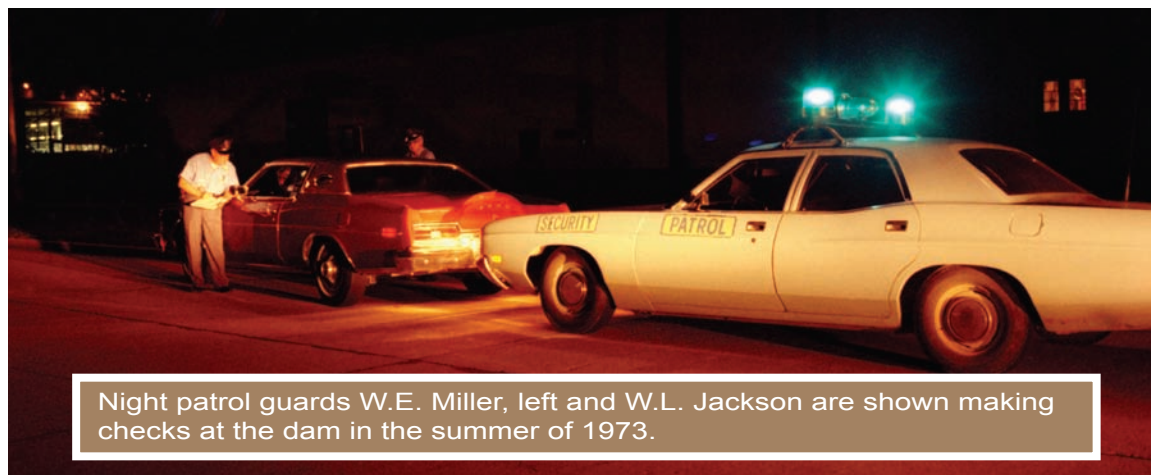




Tim Brown, left, and Darrin Perry, ATA boilermakers, fabricate an exhaust duct for H3 in 2007.



Col. David J. Eichhorn, AEDC commander, unveils the new "Let's Roll" nose art on the center's F-105 Thunderchief static display aircraft at the Main Gate during a formal ceremony March 21, 2002.



Night patrol guards W.E. Miller, left and W.L. Jackson are shown making checks at the dam in the summer of 1973.



The F110-GE-129 Alternate Fuels test team marks the successful completion of the test program in front of test cell J-1 in 2009.





The technical professionals hired in 1985 and 1986 by Calspan gathered for a "class photo" following an informal get-acquainted luncheon with company management. From left, front row, Christa Herron, Mike Parkinson, Melissa Sullivan, Cindy Condra, Denise Kirby, Sharon Carter and Eddie Roberts. Second row, Dan Kollstedt, Allen Rogers, John Hopf, Terry Underwood, Ben Hall, Doyle Veazey, Janet Feller and Michelle Ratliff. Third row, Tony Buchanan, Rodney Hoefer, Glenn Cooper, Joel Chandler, Jeff Amacher, Walt Bruce, John Grubbs, Mike Ashby, David Walker and Cliff Ratliff. Fourth row, Kim Mead, Mark Smith, Ben Hall and Sean McNeil.





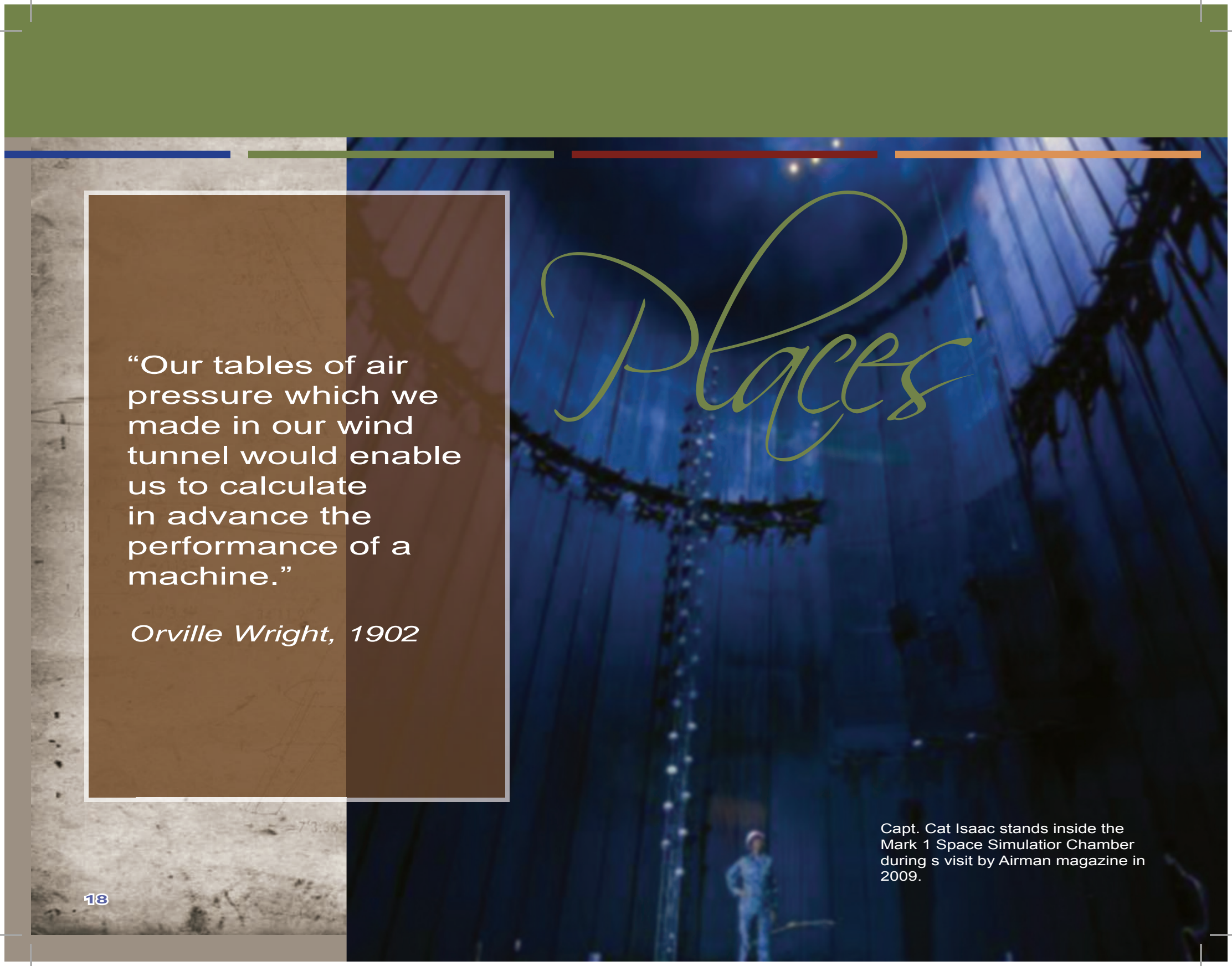
Top: Sverdrup established a company supervisor training program in the late 1980s to prepare selected employees for future promotion and serve as primary source for supervisor promotions. Pictures from left are Dale Kooperman, Ross Rains, Ted Lester, Jerry Crownover, Randy Cowan, Bobby Sons, Ed Sutton, training manager, R.T. Smith, John Bowden, Al Baker, Ron Wood, Bob Nelson and Johnny Murray.

Below: A 1972 security patrol and fire truck accompany a truck transporting explosives from the airfield to ETF.



Near Left: In 2009, from left. Tech. Sgt. Jamie Johnson and 2nd Lt. Jason Lackey perform one of the Air Force Honor Guard's duties of destroying unserviceable flags in a respectful and dignified manner. Faded, torn and damaged flags are turned in to the Honor Guard throughout the year to be retired in this manner.





“Our tables of air pressure which we made in our wind tunnel would enable us to calculate in advance the performance of a machine.”

*Orville Wright, 1902*

# Places

Capt. Cat Isaac stands inside the Mark 1 Space Simulator Chamber during s visit by Airman magazine in 2009.



# where things happen

“the world’s most diverse collection of ground test facilities”

Two years before the first successful flight at Kitty Hawk, the Wright Brothers demonstrated the value of wind tunnel testing as a vital preliminary to flight.

Using what they described as a “pressure measuring machine” in their Dayton bicycle shop, they systematically investigated the lift and drag characteristics of a variety of airfoils made out of wax. The amazingly accurate test data helped them substantially revise the theoretical calculations of earlier aerodynamicists and select the optimum wing shape for their flyer.

This information, which supplemented information gained in experimental flights of several unmanned gliders, indicated one of the basic advantages of wind tunnel testing: the production of a high volume of data, quickly, safely and at low cost.

Wind tunnels – and other ground test facilities – have been a key factor in advancing aerospace progress. And

as flight systems have become more complex and more expensive, the need for ground testing under realistically replicated flight conditions has grown.

Virtually every environment that an aircraft, engine, spacecraft or weapon system will experience in flight can be duplicated in AEDC’s facilities. Some of the facilities are big, loud and fast, while others were designed for endurance. Some of the facilities replicate altitude or sea-level conditions, while others mimic those of a vacuum. There are facilities that can reach temperatures below 300 degrees Fahrenheit and others that can reach temperature well above 4,000 degrees Fahrenheit.

AEDC is the world’s most diverse collection of ground test facilities. It’s facilities have been instrumental in ensuring that the tools used by our military forces perform as designed.

Testing aerospace systems on the ground before they take flight has

always helped reduce development costs and hazards. It has helped significantly in bringing new systems into operation and in modifying, correcting or upgrading existing systems.

Many hundreds of millions of dollars – and potentially many pilots’ lives – have been saved as a result.

While ground testing will never fully replace flight testing, it does offer opportunities for “fine tuning” jet or rocket propulsion systems and

the aerodynamic efficiency of flight vehicles. Important improvements may be made in the performance and reliability of complete systems and sub-systems. These improvements are of substantial long-range significance in the total cost of operating a system.

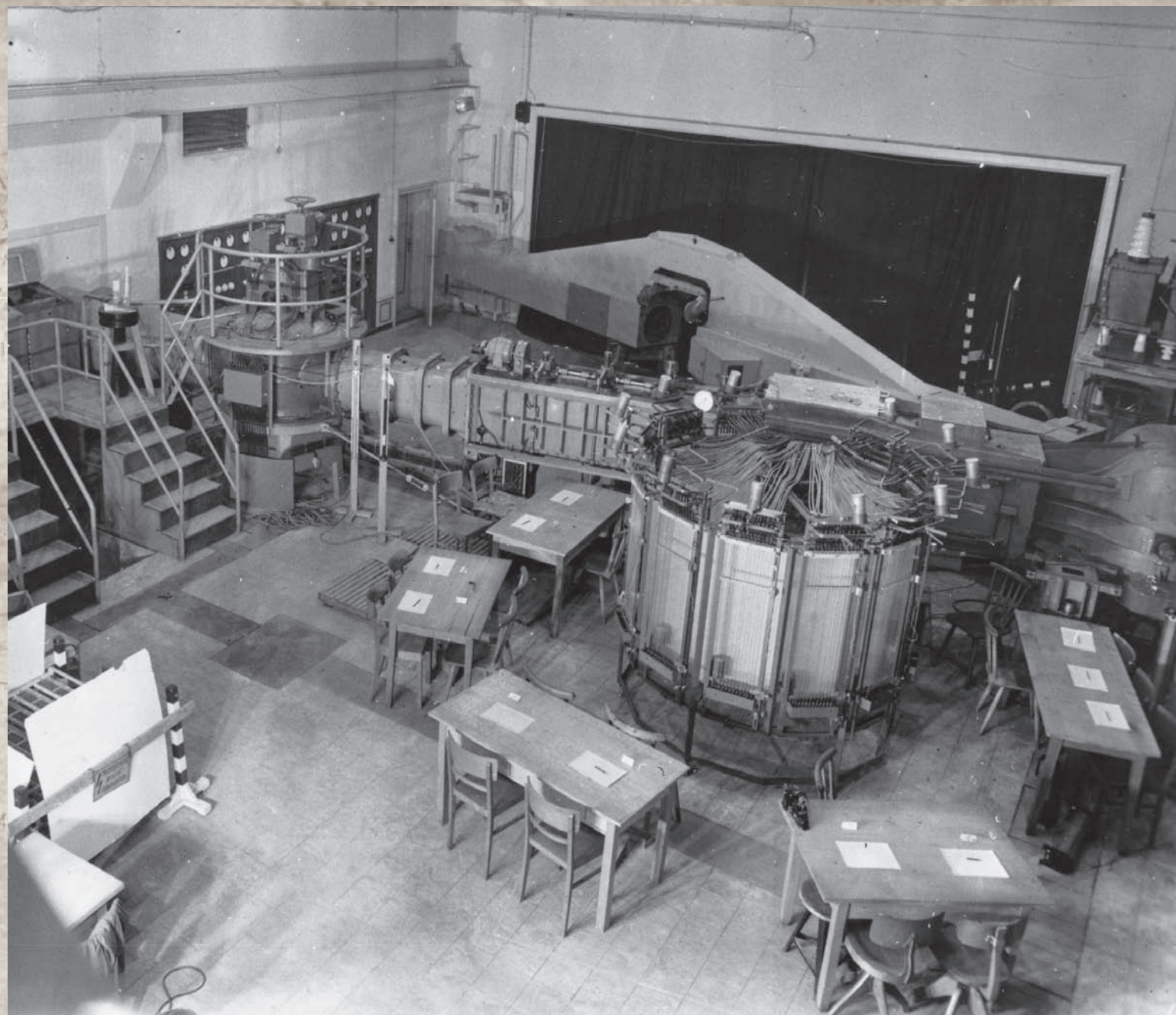
AEDC has become recognized as the “test center of choice,” a distinction earned though many years of providing both quality and a quantity of data unavailable elsewhere.

With the heaviest work done, the huge crane at the ASTF construction site was disassembled in 1979. The last pieces of ducting on the large jet engine testing facility was put into place by the crane.

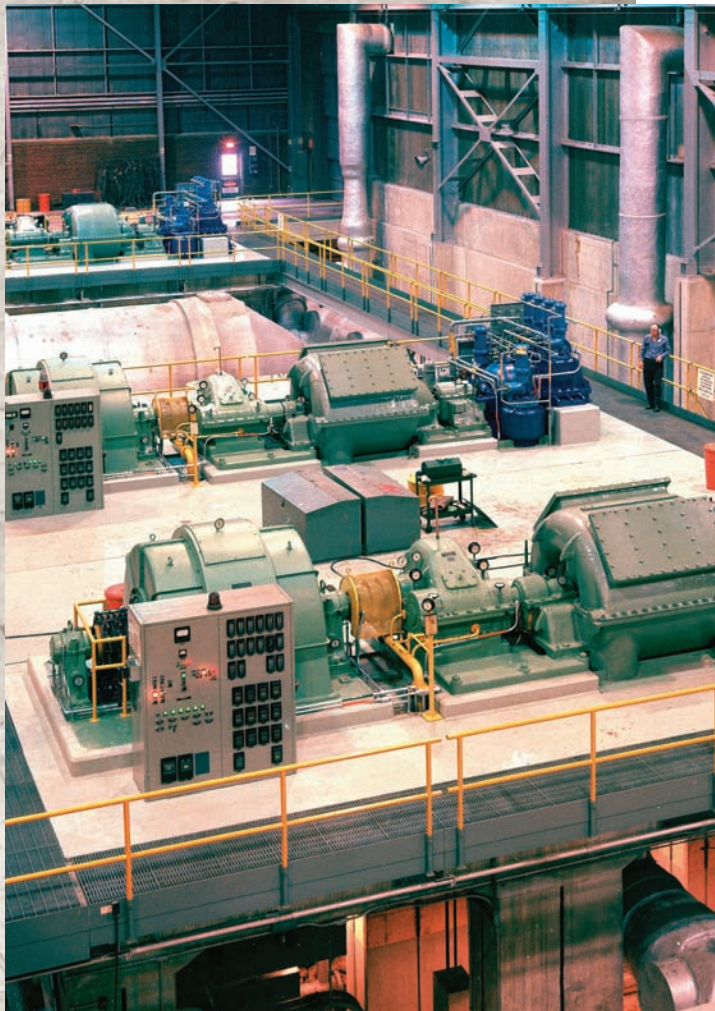




The heritage of AEDC's White Oak site began with early supersonic research conducted in Germany where supersonic missiles were under development for use against the Allies in World War II. After the war, critical facilities and scientists were brought to America to continue this ground-breaking research. In July 1945, the custody of one of these German wind tunnels was awarded to the Navy to be installed at the Naval Ordnance Laboratory at White Oak, Md. The site became a remote operating location of AEDC in 1997.







This photo from 1965 shows an elevated overview of the air compressors, motors and refrigeration equipment, which was removed from the BMW plant in Germany after World War II, in the ETF's Basic Plant (B Plant) airside facility. Commissioned in 1952, B Plant was the second operational facility at AEDC and supported testing programs until its closure in late 2006.



Left: An anxious crew waits for the start-up of the 16-foot transonic tunnel in 1956.

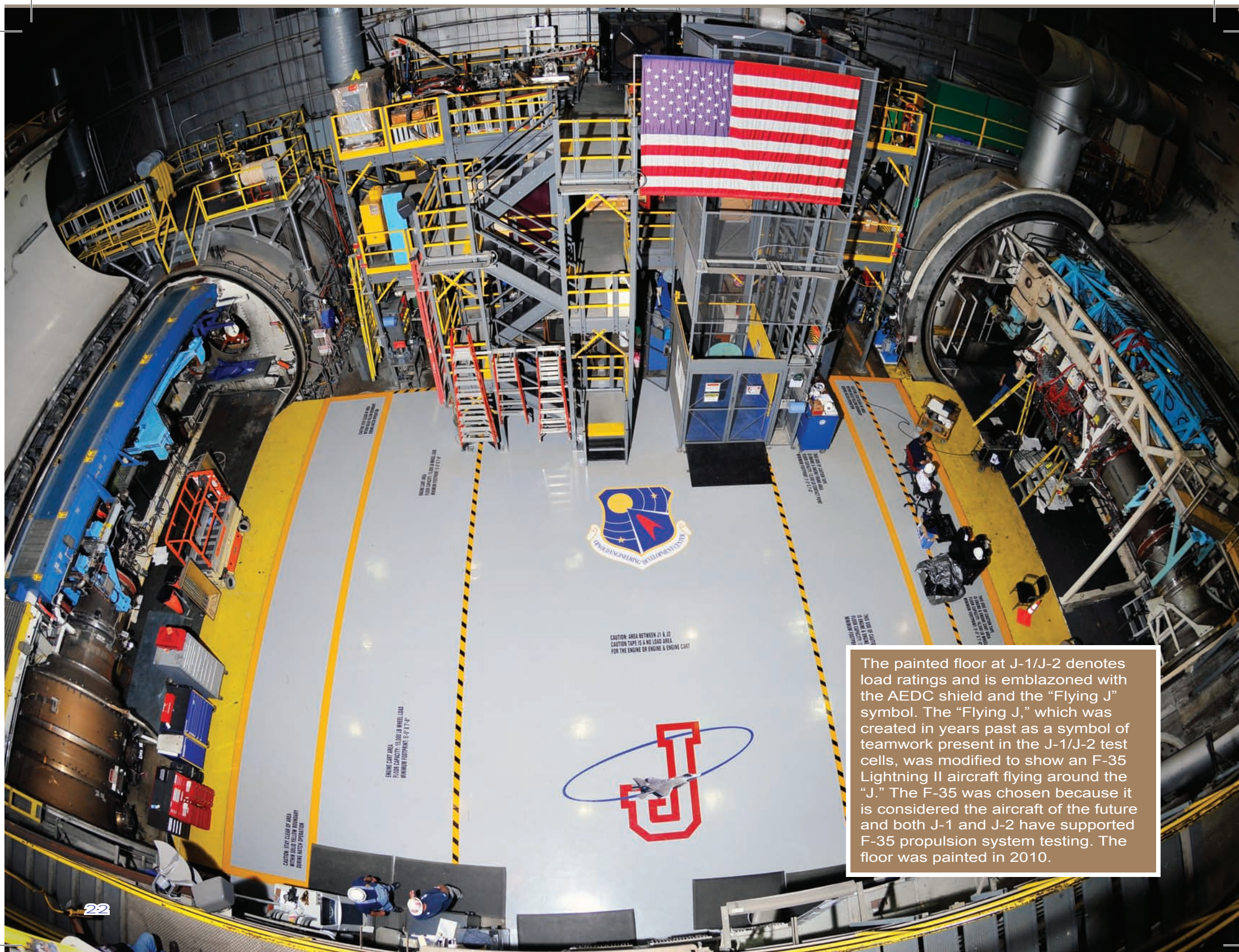


Left: Poised aloft – with the help of a 100-ton crane – the 48-foot-diameter (base measurement), 25-foot-high, 55-ton cap-like cover for the J-4 test cell can be lifted off for easy placement and removal of engines being tested as it was for this 1966 photo.

Below: Taken in 1963, this photo shows the two-stage launcher for the 1,000-foot hyperballistic Range G which uses black powder, a piston and compressed hydrogen gas to propel models velocities up to and exceeding Mach 20.







The painted floor at J-1/J-2 denotes load ratings and is emblazoned with the AEDC shield and the “Flying J” symbol. The “Flying J,” which was created in years past as a symbol of teamwork present in the J-1/J-2 test cells, was modified to show an F-35 Lightning II aircraft flying around the “J.” The F-35 was chosen because it is considered the aircraft of the future and both J-1 and J-2 have supported F-35 propulsion system testing. The floor was painted in 2010.





Above: At 222 feet high, the hinge exhaust stack graces the skyline at PWT.

Right: Tunnel L in VKF, specifically modified for testing radiosondes – instrument packages lifted by balloons or dropped from aircraft to measure weather conditions at various altitudes – is now able to subject the instruments to real-time changes in weather conditions. The wind tunnel is believed to be the only one of its type in the U.S. Through close control of the temperature, humidity, pressure and air velocity in the test section, the radiosonde's sensing device can fly without leaving the ground while its performance is monitored. The sonde can also be subjected to solar radiation. This photo was taken in 1972.

Right: Turned horizontally as it is lifted in 1982 by a crane – and with ant-sized workmen on the ground to provide reference – the piece looks a lot less like a fire hydrant. Actually, it is the end of a piece of ASTF's ducting capped off just beyond the 32-foot butterfly valve, which controls the third stage exhaust duct.







Right: The reservoir built to provide cooling water for AEDC was dedicated to the memory of Col. Lebbeus B. Woods in 1953. Colonel Woods was one of the first two Air Force officers to come to this area in connection with the center. His wife, Dorothy, and son were present for the dedication ceremony.



Above: Today, the 4,000-acre Woods Reservoir is one of the area's hunting and recreational attractions.





Above: Pan Am officials receive a bird's eye view of the Aero-propulsion Systems Test Facility from the catwalk just outside the exhauster building in 1983.

Right: At AEDC's Hazardous Materials Pharmacy exact dosage dispensing per chemical requirements prevents improper chemical use loss and disposal and assists the AEDC pollution prevention initiative.



The 32-ton, 33-foot long, multi-component thrust stand is positioned in ASTF's C-2 test cell in 1986.



“The development of aviation is a struggle against the limitations imposed by nature upon man, created to live on the ground, but nevertheless endeavoring to move in the unlimited space surrounding our globe.”

*Dr. Theodore von Kármán, 1945*

# Programs

Vanguard, a Navy program to develop a space launch vehicle and tested at AEDC in 1958, was transferred to NASA shortly after its creation.



# what we support

“being prepared for the future does not mean responding or reacting...”

AEDC has supported virtually every high performance military flight system, space launch and weapons programs, as well as NASA manned space systems and many commercial aircraft.

The tests on these programs have been conducted years – sometimes decades – before the article is set to enter service. AEDC has always supported the notion that being prepared for the future does not mean responding or reacting. Rather, it means taking a proactive look at what can be done to ensure the U.S. retains its technological superiority.

In 1960, Leif Sverdrup addressed the ARO employees on the 10th anniversary of the company’s contract signing with the Air Force. In a letter, he pondered what the future holds for AEDC. “We know that man will go into space before the decade is out. And we have some idea of what the vehicles he will use may look like. Beyond that, I don’t believe anybody really knows what’s ahead of us ...

I believe we’ll see many strange things in the air and in space in the future, some perhaps unbelievably weird by today’s standard. Strange and weird as they might be, they will be the product of intensive research and development testing in laboratories which will simulate the environments and conditions they will meet.”

Since that time, hundreds of programs have benefitted from the expertise available at the center. It is an impressive list that contains aircraft no longer in service, those that never made it into service and ones that are slowly being added to the inventory of the U.S. military.

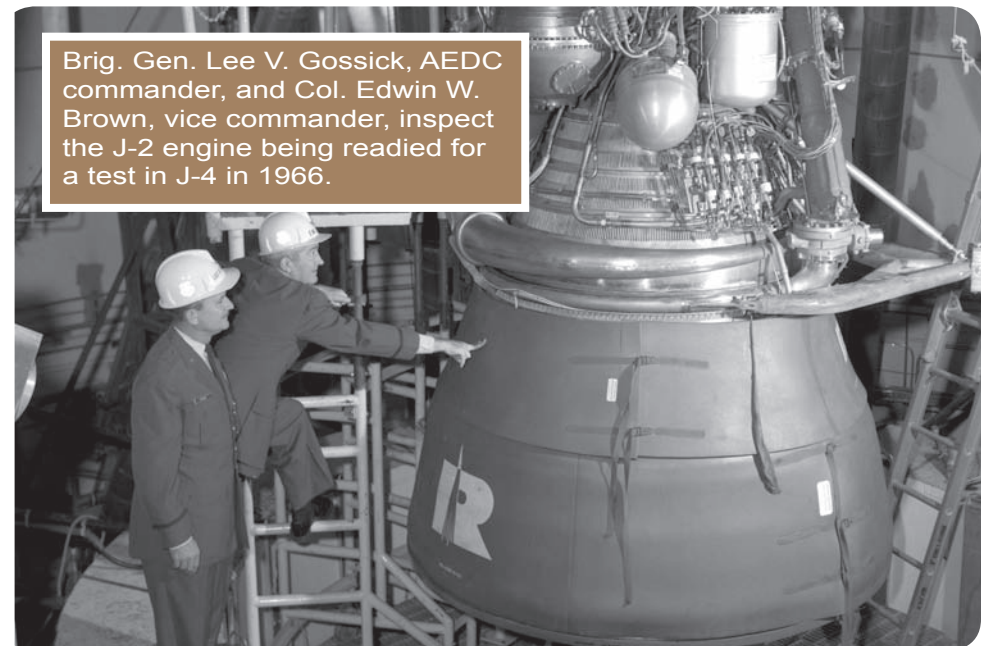
Take, for instance, the F-15 Eagle. AEDC’s work began prior to the selection of the final McDonnell Douglas design. Scale models of various configurations were tested in the center’s wind tunnels to help determine the optimal design.

Another milestone was demon-

strating the compatibility of the F100 engine with the aircraft’s inlet. Weapons and store separation tests and more than 23,000 hours of engine tests followed. The F-15 has occupied AEDC facilities on and off for more than 40 years, and some of its components continue to be tested in AEDC facilities.

In just 60 short years, AEDC’s

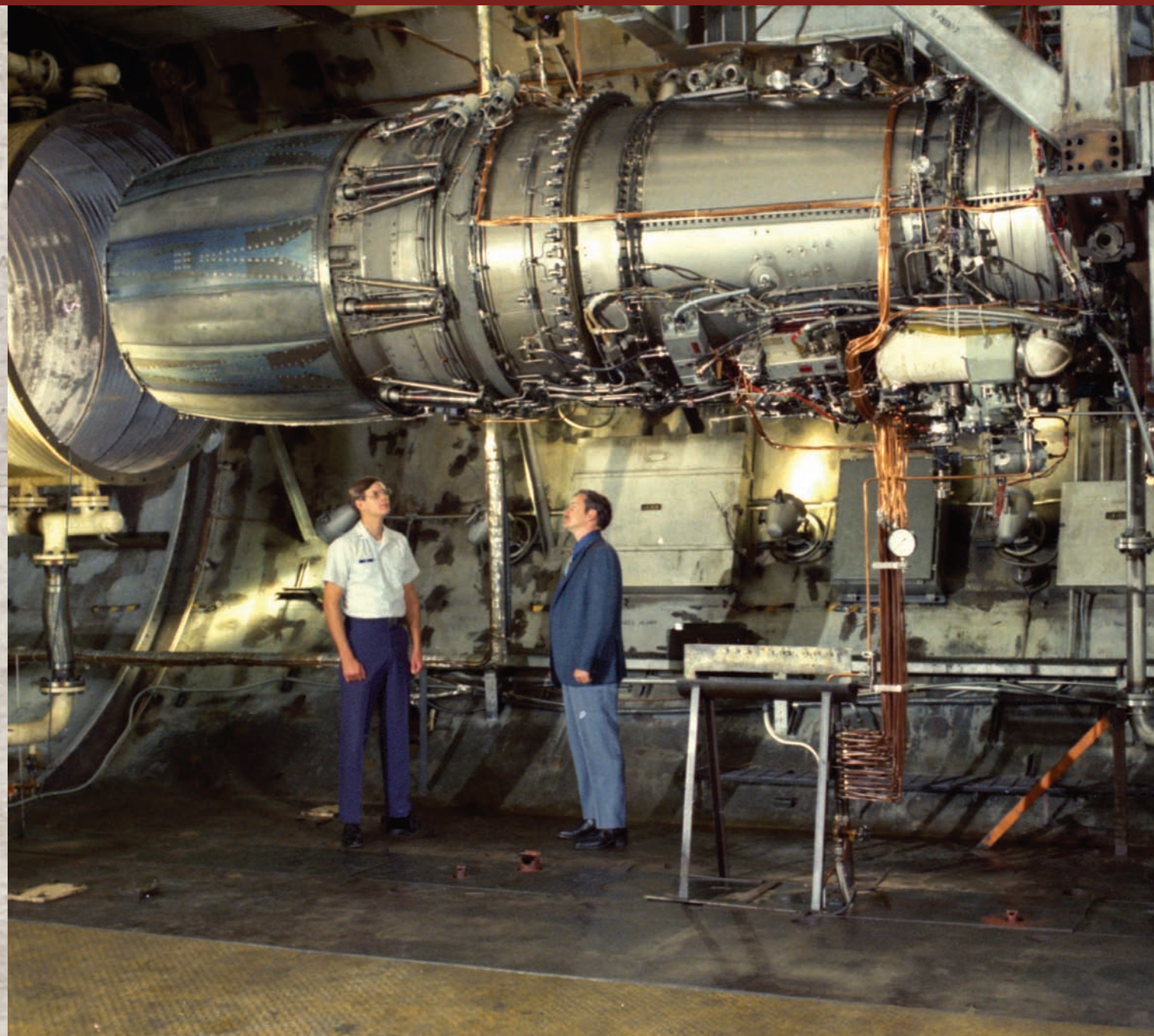
people have not only been witness to some fantastic technological advances, they have been some of the key players. The evolution of the war-fighter, the development of manned space vehicles and the advancement of precision weapon systems have all experienced growth and refinement attributable to their time in one of AEDC’s facilities.



Brig. Gen. Lee V. Gossick, AEDC commander, and Col. Edwin W. Brown, vice commander, inspect the J-2 engine being readied for a test in J-4 in 1966.



ARO test engineer Cecil Gibbs, right, and 2nd Lt. Ron Case take a look at GE's F101 turbofan engine between running cycles in a high-altitude test cell. Four of the 30,000-pound thrust class engines powered the B-1 when it made its initial flight a few days following this 1973 photo.







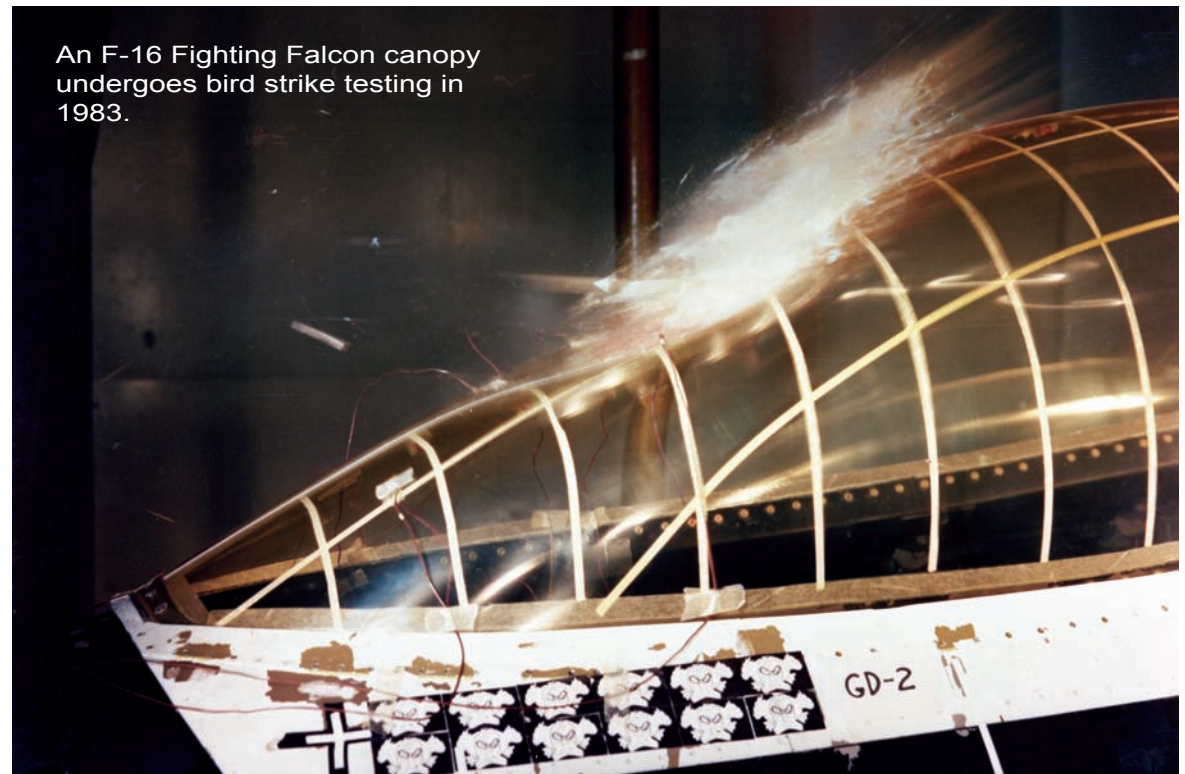
Far Left: This unusual bomb carriage and release system, known as "low level" delivery," was one of many test programs conducted during 1981. Examining the model are Air Force test director 1st Lt. Jere Matty, right, and Elton McDill.



Near Left: The addition of laser guidance packages for off-the-shelf airborne munitions in 1971 greatly increased the effectiveness of air strikes in Southeast Asia. Here, PWT craftsman R.F. Cummings checks one of the configurations tested with the special nose control unit for the "smart" bombs.

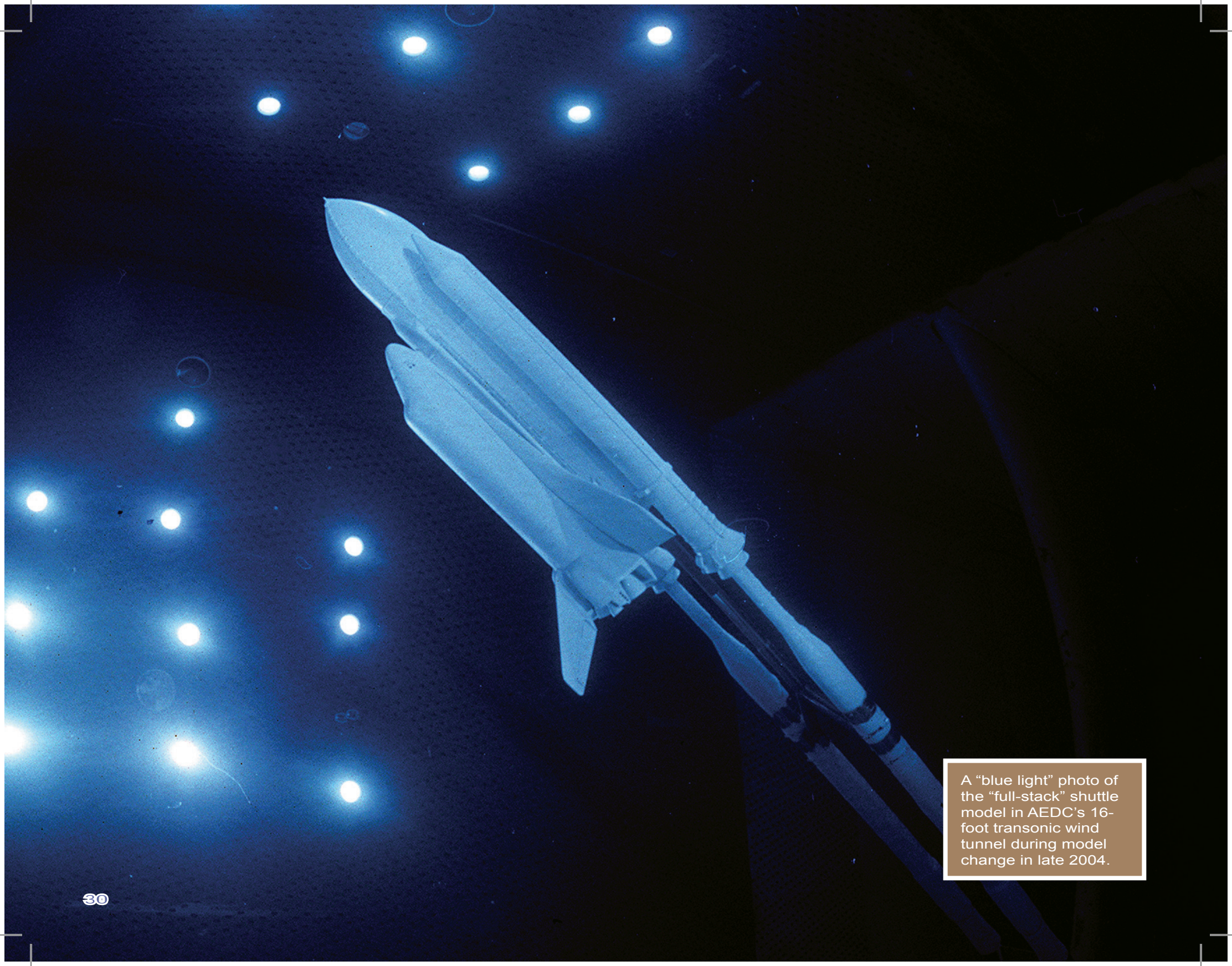


The first RAM Accelerated Mission Test (AMT) was successfully conducted at AEDC in 1992. A new computerized throttle system was installed in test cell J-2 for the AMT tests. The left monitor tracks the path the throttle is following. The right display provides the test conductor easy visibility of turbine inlet temperatures, engine speeds and other critical operating parameters. The new system helped to maximize testing efficiency.



An F-16 Fighting Falcon canopy undergoes bird strike testing in 1983.





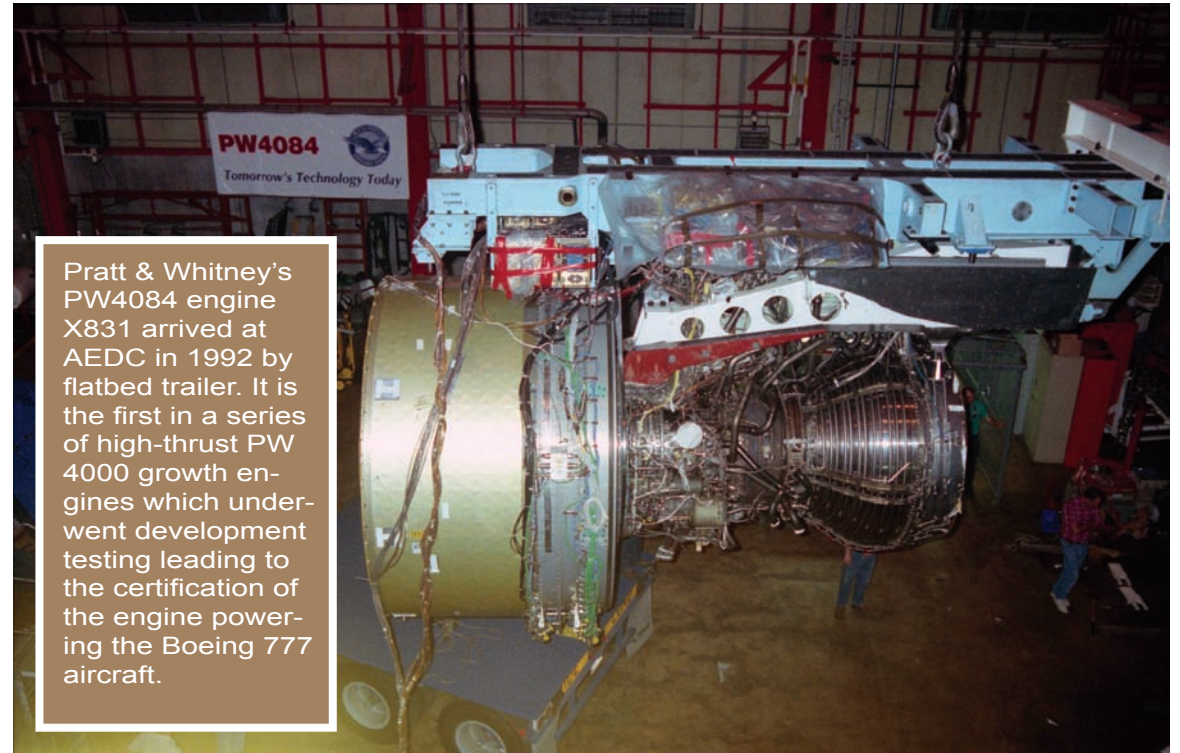
A "blue light" photo of the "full-stack" shuttle model in AEDC's 16-foot transonic wind tunnel during model change in late 2004.





Above: Lt. Larry Davis, left, and Dave Stallings, a project engineer, examine a post-test sample of insulating materials which surrounds a connection point on the shuttle orbiter bipod – the single structural link connecting the nose of the orbiter with the critical point was tested for NASA in Tunnel C in 1981.

Right: Shane Thornley, a J-6 outside machinist, removes the protective tape covering the roll control exhaust nozzles. AEDC conducted the 2006 successful test firing of a Minuteman III Intercontinental Ballistic Missile (ICBM) Stage 2 Production Quality Assurance (PQA) rocket motor in the Large Rocket Test Facility J-6. This test was followed by a successful test firing of a Stage 3 rocket motor.

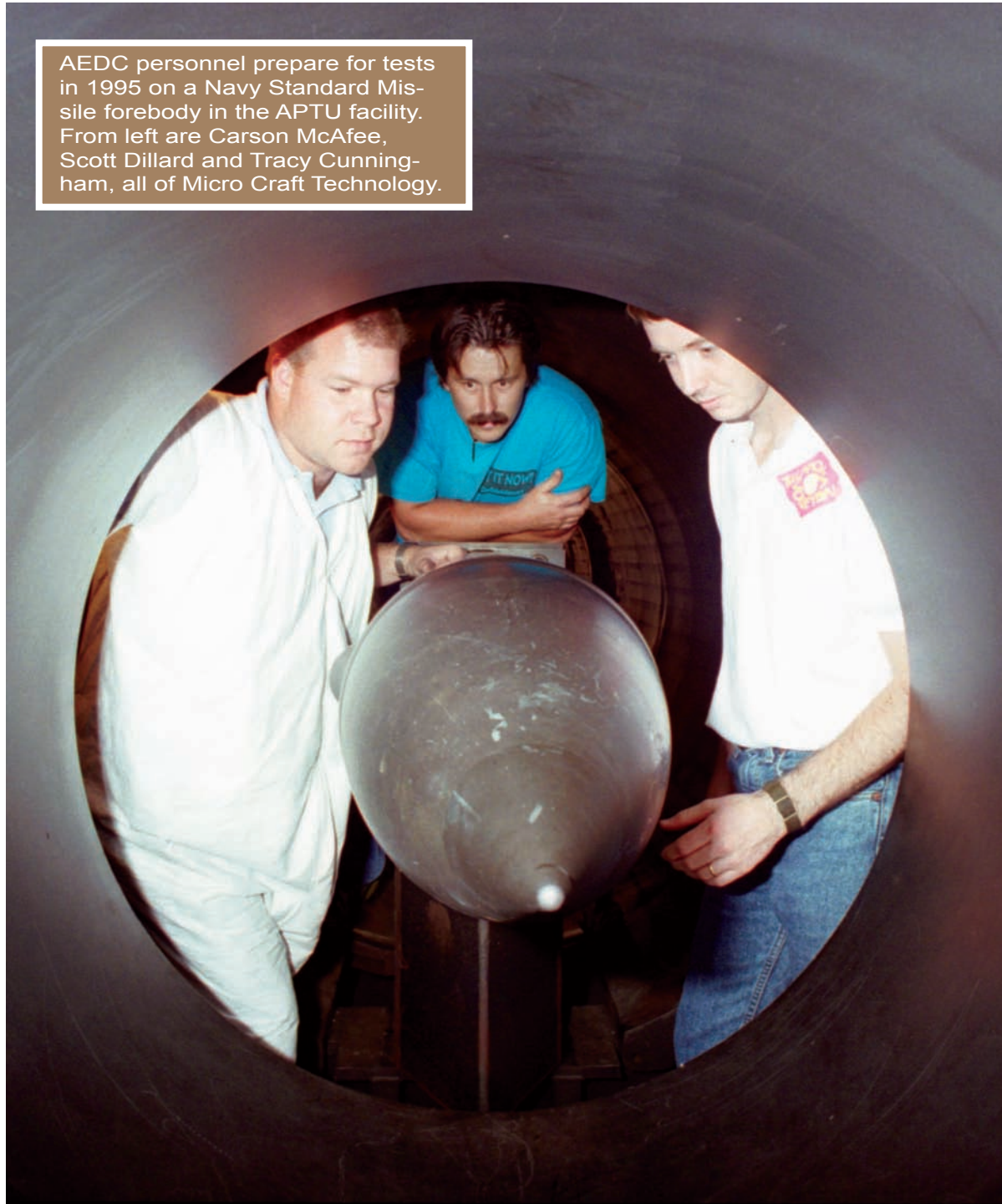


Pratt & Whitney's PW4084 engine X831 arrived at AEDC in 1992 by flatbed trailer. It is the first in a series of high-thrust PW 4000 growth engines which underwent development testing leading to the certification of the engine powering the Boeing 777 aircraft.



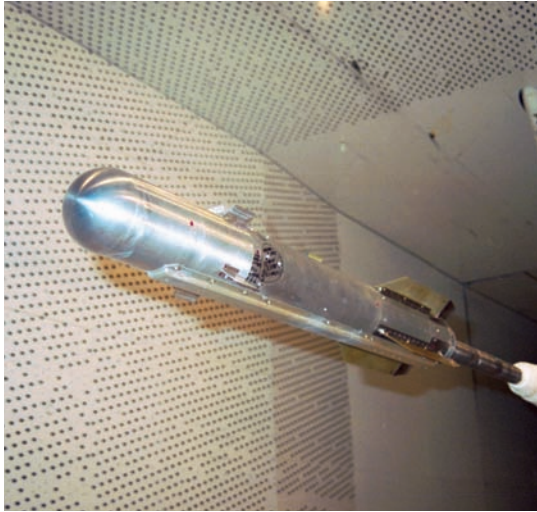


AEDC personnel prepare for tests in 1995 on a Navy Standard Missile forebody in the APTU facility. From left are Carson McAfee, Scott Dillard and Tracy Cunningham, all of Micro Craft Technology.

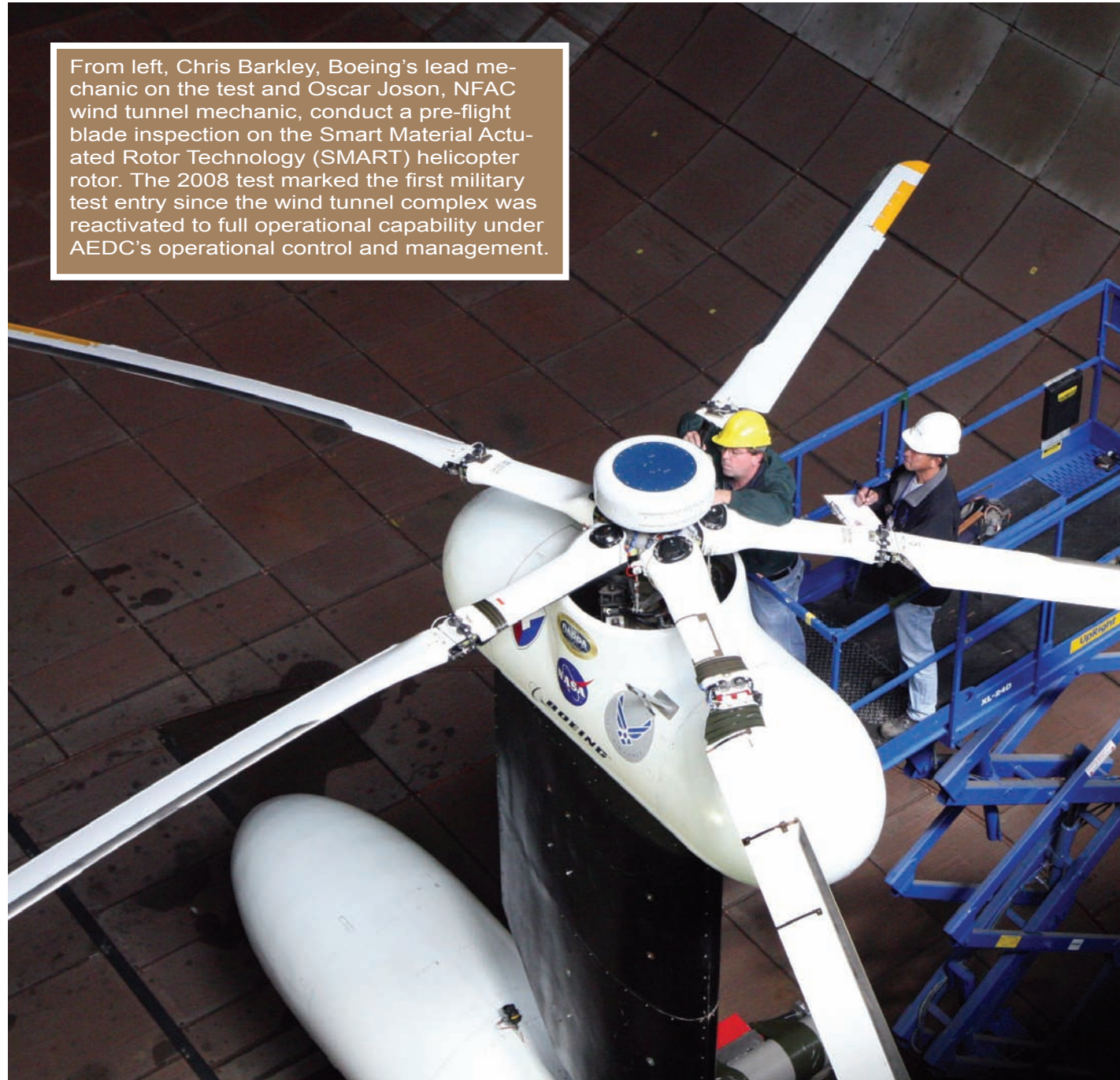
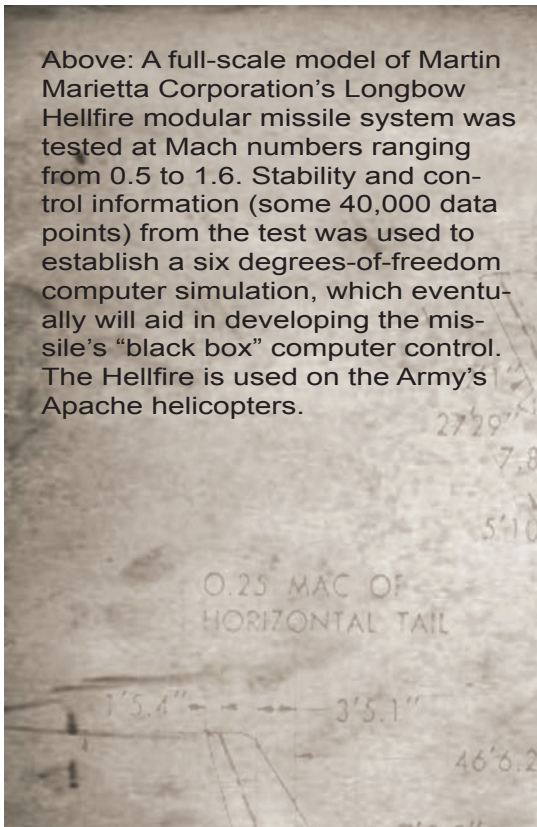


Above: Test team members examine a Russian-built aircraft model in 16T in 1995. The test was a follow-up comparison test of a similar test performed at a wind tunnel in Russia. From left are Professor Vera Neyland, chief of wind tunnel testing at Russia's Central Aerohydrodynamic Institute; Marvin Sellers, AEDC project engineer, Dr. Sergel Fonov, from Russia, and Capt. Jay Cossentine, AEDC project manager.





Above: A full-scale model of Martin Marietta Corporation's Longbow Hellfire modular missile system was tested at Mach numbers ranging from 0.5 to 1.6. Stability and control information (some 40,000 data points) from the test was used to establish a six degrees-of-freedom computer simulation, which eventually will aid in developing the missile's "black box" computer control. The Hellfire is used on the Army's Apache helicopters.



From left, Chris Barkley, Boeing's lead mechanic on the test and Oscar Joson, NFAC wind tunnel mechanic, conduct a pre-flight blade inspection on the Smart Material Actuated Rotor Technology (SMART) helicopter rotor. The 2008 test marked the first military test entry since the wind tunnel complex was reactivated to full operational capability under AEDC's operational control and management.



“We think that folks will look back on June 25, 1951, with something of the same feeling some day that we have as we reflect on the dedication date of Wright Field back in 1927.”

*Maj. Charles Phillips Jr.*



A crew filming for the Discovery Channel's "How Stuff Works," was at AEDC in 2009 to discuss ethanol. While here, the crew toured and filmed the fuel farm and some alcohol-based experiments demonstrated by ATA chemist Bill Lock. One of the things Lock showed the crew was the volatility of alcohol by showing its usefulness as a propellant.



# moving forward

“Honest, old-fashioned American ingenuity”

At the time of AEDC's dedication, the United States was a year into the Korean War and only six years removed from the end of World War II. Big bombers like the B-29 and the B-17 and fighters like the P-38 and the P-51 emphasized the importance and proved the value of air dominance and superiority. Not resting on past successes, the nation's forward-thinkers began to contemplate supersonic travel, sleeker aircraft designs and more powerful engines and realized that an air research and development center was necessary not only to put the country on the cutting edge of technology but to keep it there.

A couple of days before the center's dedication, Maj. Charles Phillips Jr. wrote a press release called “Air-Minded,” which was distributed to the local media outlets in anticipation of President Harry Truman's arrival.

He wrote, “This looks like an especially good opportunity to take a look back into the pages of history – aviation history – and see what less

than 50 years of development have produced in air progress.

“Things have happened pretty fast. Keep in mind that word ‘development’ too, the product of air-minded men who have reacted to the urge to fly, at first a primitive urge, later to become in an effort for our very survival, the urge to fly higher and faster over farther reaches of this old Earth.

“Honest, old-fashioned American ingenuity played a most important part in this entire air development picture. From the very first, when Dayton's two bicycle repairmen considered the possibility of flight with a scientific approach, it was resourcefulness and know-how that led to their success. And later, the desire to get just a little more out of the airplane promoted men to experiment with ideas and designed until finally in 1927 the great research and development center was established at Wright Field, Dayton, Ohio. Today's speedy and mighty airplanes are products of this

continuous development, carried on so successfully at Wright Field since that date.

“The battle for ‘cleaner’ shapes, sturdier but lighter structures, added power and more range has been going for years and years now, but here at Tullahoma the post-graduate work, so to speak, in supersonic field of flight, will be undertaken.”

In the years since, AEDC has met the challenges facing air power head on. Just as in the 1950s, there are forward-thinkers who are busy sculpting the Air Force of tomorrow.

And AEDC will surely be a part of their expectations.

Future aircraft will be required to travel faster, farther and carry more payload. Many may be unmanned. Requirements will be tougher and budgets will be tighter. New challenges will arise, but AEDC will con-

tinue to fulfill a need to ensure any new endeavors will be successful.

Center leaders know that resting on past successes will not be enough to guarantee future work. Instead, that same “honest, old-fashioned American ingenuity” Major Phillips wrote about in 1951 will play a vital role in ensuring that tomorrow's Air Force remains the best in the world.



AEDC successfully conducted a test in 2007 on the General Electric F101 engine running on a 50-50 blend of Fisher-Tropsch synthetic fuel and JP-8 fuel. Above, the Fischer-Tropsch fuel is on the left and the traditional JP-8 fuel is on the right.





Top: Members of the Restoration Advisory Board (RAB) and Coffee and Franklin county mayors join AEDC Commander Brig. Gen. David L. Stringer in a ribbon-cutting ceremony in 2006 that marked the activation of the new Gossick Road Groundwater Extraction System at AEDC.



Members of the Arnold Community Council (ACC), a support group for AEDC which was formed in 2000 to promote and support the base, meet annually with Congressional members and staffers from Tennessee and 10 other states who have a tie to the center. At right, ACC members John Payne, Bill Comer and Ted Hackney talk with Sen. Lamar Alexander in April 2011.

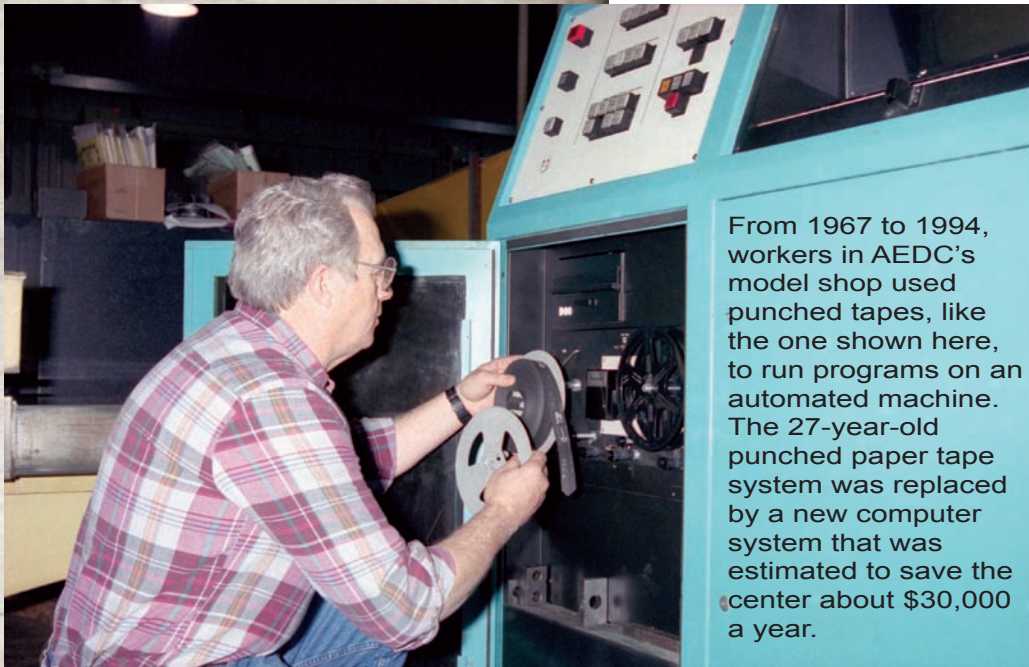
Right: Brian Skelton, the general manger of Tullahoma Utility Board's, addresses the Air Education and Training Command representatives during a public scoping meeting in 2006 for the Common Battlefield Airmen Training program environmental impact statement. AEDC was one of three locations being considered for the program before the Air Force canceled it in 2008.







Left: Joe Bettis, operational specialist, uses the 16T videowall system in 1999 to demonstrate new data visualization technology employed by AEDC. The system, in combination with the new data acquisition and control systems, created a more efficient means of data delivery and display.



From 1967 to 1994, workers in AEDC's model shop used punched tapes, like the one shown here, to run programs on an automated machine. The 27-year-old punched paper tape system was replaced by a new computer system that was estimated to save the center about \$30,000 a year.



Sverdrup instrument technician Maynard Schewe watches as Terry Hayes, program engineer, completes a systems checkout of the AEDC CADDMAS program in 1995.



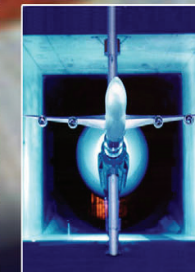
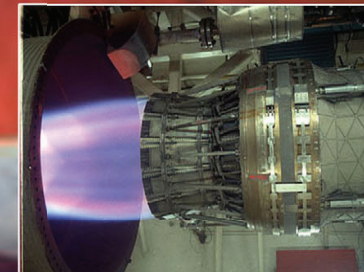
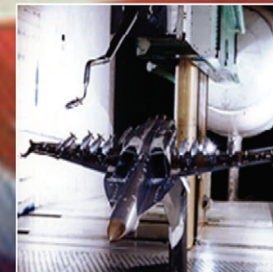
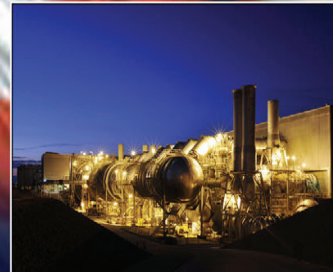
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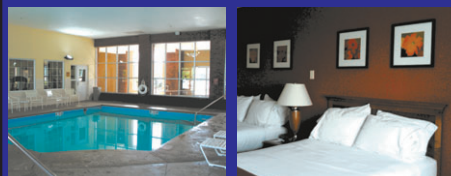
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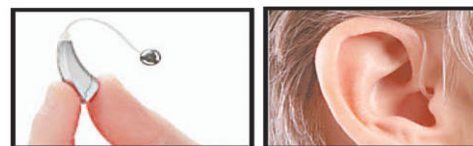
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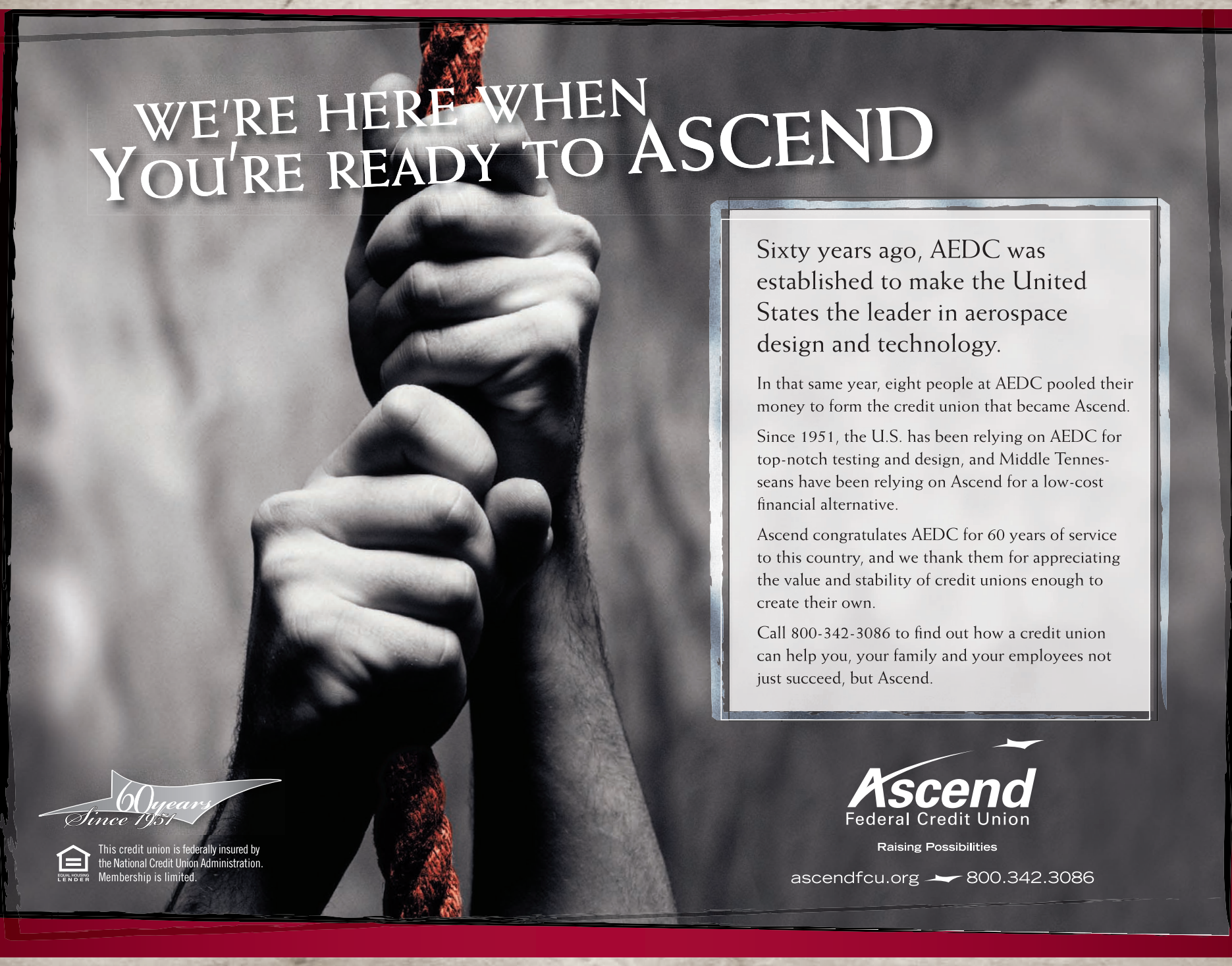
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60th Publication (Anniversary)

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