

INSIDE: Training for Mobility p. 20 | A New Jet Trainer? p. 34 | The Rise of Special Tactics p. 40

AIR FORCE

MAGAZINE

ON MY OWN TERMS

MSGT. ISRAEL DEL TORO
says “the SOBs” who injured him
don’t determine his future.

He does.

p. 26



Published by the
Air Force Association

December 2017

\$8



1 2 >

0 74470 29757 4



BOEING JSTARS

WHEN THE STAKES ARE HIGH RISK MUST BE LOW

PROVEN IN COMBAT

Critical JSTARS systems are flying today on the P-8, AEW&C, and C-40. Aerial refueling, self-defense, battle management, and power systems are integrated from current, combat-proven commercial derivative platforms, ensuring a low-risk program.

PROVEN RELIABILITY

The 737 has a 99.7% mission capability rate. Its worldwide base of over 9,000 aircraft ensures that JSTARS will be there when it's needed.

PROVEN AFFORDABILITY

The 737 is proven as the lowest-cost aircraft in the JSTARS competition to own and operate. Built to perform in high-tempo operations, the 737 has 80% less depot time than the competition, and half the total overall operating cost per flight hour.

FEATURES



18 Out of Africa

By Jennifer Hlad
USAF teams and the Nigerian armed forces led an aeromedical evacuation exercise with African partner nations.

20 Mobility Guardian

By Brian W. Everstine
This was not AMC's first rodeo, but it was the biggest.

26 Like a Phoenix

By Amy McCullough
Israel Del Toro became the first airman to ever return from 100 percent disability.



31 Commemorating USAF's 100-Year Units

Research by Mike Tsukamoto and Daniel L. Haulman
A pullout poster commemorating USAF units that can trace their history back 100 years.

34 Heading To a T-X

by John A. Tirpak
The T-38 is increasingly ill-suited for training 21st century pilots.

40 The Rise of AFSOC's Special Tactics

By Wilson Brissett
A handful of incredibly skilled airmen have proved critical in the war on terror.

44 Global Reach, Through Tankers

By Wilson Brissett
Photos from the collection of Warren Thompson
Aerial refueling gives the Air Force worldwide reach.

52 They Owned the Night

By Rebecca Grant
The P-61 Black Widow offered a glimpse of modern nighttime combat.

58 The Neutron Bomb

By John T. Correll
It is almost forgotten today, but the enhanced radiation warhead was a blazing international issue in the 1970s.

DEPARTMENTS

2 Editorial: Giving Joint Assignments Their Due

By Adam J. Hebert
Airmen need to be ready for "purple" assignments.

4 Letters

4 Index to Advertisers

6 Senior Staff Changes

8 Forward Deployed

By Jennifer Hlad

9 Verbatim

10 Aperture

By John A. Tirpak

12 Screenshot

14 Air Force World

30 Books Special:

CSAF Professional Reading List.

63 Wingman: 7 Steps to Retaining Members

By Joseph Burke

64 Namesakes: Dyess

STAFF

Publisher

Larry O. Spencer

Editor in Chief

Adam J. Hebert

Managing Editor

Juliette Kelsey Chagnon

Editorial Director

John A. Tirpak

News Editor

Amy McCullough

Deputy Managing Editor

Frances McKenney

Senior Designer

Betsy Moore

Pentagon Editor

Brian W. Everstine

Senior Editor

Wilson Brissett

Digital Platforms Editor

Gideon Grudo

Production Manager

Eric Chang Lee

Photo Editor

Mike Tsukamoto

Media Research Editor

Chequita Wood

Contributors

Joseph Burke, John T. Correll, Robert Dudney, Rebecca Grant, Daniel L. Haulman, Jennifer Hlad, Warren Thompson

ADVERTISING:

Arthur Bartholomew

213.596.7239

Tom Buttrick

917.421.9051

James G. Elliott Co., Inc.

airforcemagsales@afa.org

SUBSCRIBE & SAVE

Subscribe to *Air Force Magazine* and save big off the cover price, plus get a free membership to the Air Force Association.

Call 1-800-727-3337

FOLLOW US



facebook.com/
airforcemag



twitter.com/
airforcemag



instagram.com/
airforcemag

GET THE

DAILY REPORT

ON THE COVER

MSgt. Israel Del Toro. See "Like a Phoenix," p. 26. Photo by Christian Murdock/*The Gazette*.

Giving Joint Assignments Their Due

It is a truism to say the Air Force will not go to war alone. In all realistic scenarios, USAF will battle alongside Army, Navy, and Marine Corps forces. In war zones and on deployments, a joint environment is the norm.

Organizationally, however, the Air Force sometimes operates as if the “purple” world were a mysterious parallel universe. In the worst-case scenarios, airmen aren’t educated about or trained for their joint assignments, the service is unprepared to lead multiservice teams, USAF doesn’t know what to do with its joint experience, and airpower winds up marginalized.

The Air Force is moving to fix this. Gen. David L. Goldfein, Chief of Staff, has made “strengthening joint leaders and teams” one of his three primary focus areas. This includes rebuilding USAF’s ability to lead joint task forces (JTFs).

“If you look around the globe today you can see upwards of 20 JTFs, ... more if you count the combined joint task forces,” Goldfein noted at AFA’s Air, Space & Cyber Conference in September.

USAF typically does not lead these task forces. The Army, which has built JTF leadership into its organization, does.

This leaves the National Command Authority with limited options when a crisis erupts. “Historically, JTFs stand up within days or weeks of a crisis with little fanfare or warning,” Goldfein noted in a 2016 paper on joint leadership. “While intended to exist only for the duration of the crisis, they often become enduring.”

When the Army is the entity certified to lead a US response, well, the Army is going to lead the task force. Often this makes sense, but what if an emergency requires an airpower-intensive response? The Army will lead that, too. The Army keeps elements of its 82nd Airborne Division prepared to lead JTFs and is regularly called upon for that purpose.

Goldfein has tasked 9th Air Force at Shaw AFB, S.C., with



Airmen and soldiers work together in a command post during an exercise to learn joint task force headquarters functions.

rebuilding the service’s JTF capabilities. Maj. Gen. Scott J. Zobrist, 9th Air Force commander, is working to organize, train, equip, and certify forces.

In a little over a year, 9th Air Force should have a team “ready to command and control a JTF or joint operation,” he said in an interview, and “handle any mission that is given to us.”

“This is another arrow in the quiver of the joint force,” Zobrist said. “Given the importance air operations have played in all of the operations over the last 20 years, it’s helpful for the US military leadership ... to have a variety of organizational specialties and backgrounds do command and control.”

The goal is for planners to say, “Ninth Air Force: I know them, they participated in all these exercises, they’re really good at what they do, they bring this unique capability. ... We’re going to pick them,” Zobrist explained.

Running parallel with the JTF effort are several personnel management needs. USAF needs airmen ready for joint work at every stage of their careers; personnel trained for these assignments; and to reward them with logical follow-on assignments and promotions.

Airmen need to be ready for “purple” assignments.

For example, the Air Force should educate airmen on joint language and processes beginning in basic training, continuing throughout their careers, said Maj. Gen. Brian M. Killough, director of strategic plans on the Air Staff and head of Goldfein’s joint leaders task force.

The Air Force’s culture and organizational stovepipes can penalize airmen who serve in purple assignments. “In the past, there have been airmen who have gone out into these joint assignments, and their core function has ‘forgotten about them’ or they have been disadvantaged when they came back,” Killough explained in an interview.

USAF will begin tracking joint duty more closely and planning lead-in training and follow-on assignments more carefully. Some joint assignments will even be considered equivalent to command positions at promotion time.

Goldfein “considers that joint assignment to be such a high priority that he has dedicated one of his top three efforts [to making sure] we train, educate, develop, reward folks” for those assignments, Killough explained. “This is a growth field.”

USAF has successful processes in place to prepare general officers for joint leadership positions. Majors and tech sergeants up for a joint posting in Djibouti or South Korea need to know the Air Force will have them ready for the deployment and that such a move will be good for their careers.

The Chief has pledged to push this issue for all four years he is in office, which is good because it takes time for a culture shift to sink in. The Air Force needs to stick with this and strengthen joint leaders for the long haul.



USAA is proud to be the
Preferred Provider
of Financial Services
for the Air Force Association

USE THE CREDIT CARD THAT SUPPORTS THE AIR FORCE ASSOCIATION.



USAA Bank is proud to offer members ways to support organizations like the Air Force Association. You can also benefit from great rewards, competitive rates and USAA's legendary customer service. Plus, now you can extend your support by redeeming your rewards points for a donation to the Air Force Association.



APPLY TODAY.

usaa.com/afavisa or 877-618-2473

USAA means United Services Automobile Association and its affiliates. USAA products are available only in those jurisdictions where USAA is authorized to sell them.

Use of the term "member" or "membership" refers to membership in USAA Membership Services and does not convey any legal or ownership rights in USAA. Restrictions apply and are subject to change. The Air Force Association receives financial support from USAA for this sponsorship.

This credit card program is issued by USAA Savings Bank, Member FDIC. © 2017 USAA. 233320-0717

But What About ... ? USAF 70th

We were never more certain that we'd get bags of mail than when we assembled our "United States Air Force: 70 Years in Pictures" feature, September, p. 32. Space restrictions compelled us to approach this pictorial differently, and not try to illustrate every significant person or system. With exactly one image per year there was no way to present a picture of everything important in Air Force history. We gritted our teeth knowing full well we had no F-100s or B-47s—or Bomarc's or Hound Dogs, or Hap Arnold or Steve Ritchie. Even 10 pictures per year would have left things out, and, paradoxically, the "omissions" would feel more egregious and insulting the bigger the feature became. We touched on as many communities and events as possible, knowing we could never be comprehensive. It was gratifying, though, that so many read the article so closely and that it stimulated so much discussion. Looking back at the world's greatest air force's achievements over the past 70 years, we look forward to finding out what we will be able to add for our 2087 edition.—THE EDITORS

I am disappointedly shocked that not one picture of the F-100, the world's first supersonic operational fighter, was included!

Col. James F. Wolff,
USAF (Ret.)
Niceville, Fla.

As a former member of SAC'S 310th Bomb Wing, stationed at Schilling AFB, Salina, Kan., I am sorely disappointed by your omission of the B-47 and KC-97. There were many SAC wings flying these magnificent aircraft, and it's a

shame Mssrs. Tirpak and Tsukamoto did not include them. Those of us who were in the Air Force during the late '50s and '60s were and are still very proud to have served and kept the peace during the Cold War. A lot of ink was granted to the Atlas rocket and ICBM program, but it was the fleets of bombers and tankers surrounding the Soviet Union that formed the major deterrent, especially early in that period. I hope in some future issue you will honor the crews that flew and maintained these aircraft by publishing an article about their contributions.

James O. Gundlach
New Orleans

I was glad to see "United States Air Force: 70 Years in Pictures," but I was dumbfounded to discover neither word nor picture of the B-47 Stratojet. With over 2,000 manufactured, it first flew in 1947 and provided the core of SAC's deterrent mission through the 1950s and much of the 1960s.

As a visual force, ... it was recognized internationally as we maintained B-47s on continuous alert in locations such as Spain, Morocco, and England, as well as Alaska and Guam.

Col. Neil C. Ray,
USAF (Ret.)
Montgomery, Ohio

For the year 1947 you could also have [mentioned]: SAC is currently exploring the entire Arctic with a newly developed grid system of navigation and/or [that] a Lt. [Frank O. Klein] in SAC's first operational unit, in an unassigned project, determined that the north magnetic pole, which had not moved in over 100 years on Boothia Peninsula, had in his study moved more than 150 miles to a precise position on Prince of Wales Island in the Canadian archipelago. This new position was confirmed three months later by a Canadian ground expedition. (This was also reported on Wikipedia.)

Col. Frank O. Klein,
USAF (Ret.)
Sierra Vista, Ariz.

I enjoyed flipping through this historical montage of Air Force history. The 1960 shot of the B-58 describing it as

"the first (and only) USAF double-sonic bomber" made me pause. The FB-111 Aardvark has often gotten short shrift in print. It also was a double-sonic bomber as well as the first operational variable geometry wing bomber, preceding the B-1.

Col. Steve Fish,
USAF (Ret.)
Albuquerque, N.M.

The "F" at the beginning of the FB-111's designation will forever stoke confusion and debate—THE EDITORS

I believe you missed one of the iconic pictures of Air Force lore: the airdrop and subsequent firing of a Minuteman missile from a C-5A aircraft in August 1974.

The test program that sprang from ideas put forth by Henry Kissinger combined two unique Air Force capabilities, intercontinental ballistic missiles and heavy airlift.

Dick Keen
Big Timber, Mont.

First, congratulations on a superb September 2017 edition of *Air Force Magazine*. The 70-year highlights of the Air Force are arguably some of the more interesting aspects of our history.

I noted a couple of errors as follows: 1. The B-36 had six 4360 cu. in. reciprocating and four turbojets rather than six turboprops. 2. There were 100 B-1s produced, not 104. There were four B-1As produced prior to program cancellation, so that is likely the source of confusion.

Lastly, I am a bit surprised that the B-2A was not listed as a seminal event in our history. Though the program was

WRITE TO US

Do you have a comment about a current article in the magazine? Write to "Letters," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198 or email us at letters@afa.org. Letters should be concise and timely. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Letters without name and city/base and state are not acceptable. Photographs cannot be used or returned.

—The Editors

INDEX TO ADVERTISERS

AT&T.....	17
Bradford.....	39
Boeing.....	Cover II
Mercer.....	Cover III
Northrop Grumman.....	Cover IV
USAA.....	3
Aerospace Education Programs.....	17
AFA's 70 for 70.....	50-51
Go Green.....	57

truncated, the 21 aircraft (now 20) hold at risk every target in the world. What could be more defining of our United States Air Force?

Again, thanks and congrats on a terrific historical vignette!

Lt. Col. Richard J. Rose,
USAF (Ret.)
Ocala, Fla.

Great issue! Much appreciated by both Air Force pilots in our family.

I noticed on p. 33, under the caption for the 1949 B-36, "six turnin' and four burnin'" an error that described those magnificent P&W 4360 radials as turboprops. Had they been, there might never have been a requirement to add those gas hungry turbojets to get it off the ground. Still, any airplane that has a wingspan in excess of the length of the first Wright brothers' flight brings huge smiles about my memories of lying on my back in my yard, as a five-year-old, watching them fly overhead.

My wife still laments not being permitted to have a fighter, though she served on the first all-women's flight crew at McGuire AFB [N.J.]. I appreciated the acknowledgment that the B-707 and the C-135 were significantly different airplanes. Flew both. SAM 26000 is a significant draw to visitors at the NMUSAF, and the B-707-300 series remains my all-time favorite airplane after 46 years of making a living flying airplanes.

Don Brown
Cincinnati

As an Air Force veteran of over 40 years on Active Duty, I "lived" many of the events highlighted in your photo collage.

That said, the photo of Capt. James "Jabby" Jabara is the one that really caught my eye and reminded me of my older brother. Joe enlisted in the Air Force in 1965 and served under Colonel Jabara when he was the 31st Tactical Fighter Wing commander at Homestead AFB, Fla.

Colonel Jabara had many amazing accomplishments in a career cut short by his tragic death, along with his 16-year-old daughter, in a car crash in November 1966. What my brother remembered most was not that Jabara was the youngest colonel in the Air Force at the time, the first American ace in the Korean War, or his 16.5 enemy aircraft kills across two wars.

What my brother Joe always raved about was the time that the wing com-

mander pulled up in his staff car and offered him a ride to work one hot and humid south Florida morning.

Col. Bill Malec,
USAF (Ret.)
O'Fallon, Ill.

I really enjoyed reading your article "United States Air Force: 70 Years in Pictures." However, I was very disappointed that you failed to include two of the aircraft that were major contributors to the USAF effort in Vietnam. The F-100 flew more combat sorties than any other aircraft, and the F-105 carried the vast majority of ordnance delivered by fighter aircraft into the heavily defended North.

Lt. Col. John W. "Jack" Redmond,
USAF (Ret.)
Las Vegas

Cover Issues

Just a comment regarding your front cover, September 2017. I think the "centerfold" should have been a Medal of Honor winner: A1C John Levitow. Talking about firsts, he was [for years] the lowest ranking enlisted troop to be awarded the MOH. Being a former loadmaster, I was disappointed he was only provided a postage size photo—on the bottom corner of the cover.

CMSgt. Paul A. Castanedo,
USAF (Ret.)
Redlands, Calif.

Airman Levitow appeared for 1969, on p. 36, in addition to the cover.—THE EDITORS

The cover of your September issue worries me.

In 70 years of existence that has resulted in achievements that no other air force can match, you chose to highlight a social first for your 70th anniversary cover: the first woman fighter pilot. The problem is it's a distinction, not an achievement. Worse, it symbolizes that which is most wrong with today's military: the blurring of operational focus by sensitivity issue myopia.

Cmdr. Robert L. Gore,
USN (Ret.)
Texarkana, Texas

Your September issue of *Air Force Magazine*, celebrating the 70th anniversary of the United States Air Force, has on the magazine cover a collage of photos showing famous and heroic men and events surrounding a larger photo in the center of the Air Force's

first female fighter pilot. This pride of place on the front cover of your magazine puzzles me. Are we now to believe that the most important event of the last 70 years is the feminization of the force?

Pictures are worth a thousand words.

Col. Mike Sexton,
USAF (Ret.)
Albuquerque, N.M.

We neither said nor implied that "the feminization of the force" was the most important event of the last 70 years. Brig. Gen. Jeannie Leavitt is, however, one of the very few pictured airmen who is still serving, and that influenced our selection for the cover.—THE EDITORS

"Long Time Coming" letters lauded recent attempts to get a handle on the Air Force mission, which a lot of us like to call, "Don't make us come down there" ["Letters," September, p. 6]. But the rest of the 70th anniversary issue leaves me wondering.

The cover looks like there will be a centerfold section. I know that Second Lieutenant Flynn was the first female selected for fighter pilot training and that she is standing on the wrong side to climb into that T-38, but is that the central message for the Air Force for the past 70 years?

The [article] says you can't select the "most important" from any given year, but you will illustrate "accomplishments." That's fine, but you seem to forget the Air Force warriors in favor of social engineering. You lost interest in the Korea conflict after two years. There were no F-105s, F-100s, EB-66s, etc., or any mention of pilot Vietnam Medals of Honor during the late 1960s, speed records, launch of the C-5, and women in ROTC, and the Air Force ride to the moon in the early 1970s. Oh, and then after 1,000 planes got shot down in Vietnam, the POWs finally came home in 1973 when airpower was finally used as it should have been in 1967.

Air Force Magazine can be whatever it wants to be. It seem to me it is straying further from being a voice for airpower.

John Conway
Jackson, N.J.

My first thought when I saw the cover of the September issue was to immediately cancel my AFA membership, which I've been enjoying for 36 years.

I realize that *Air Force Magazine*, like all other professional publications that wish to stay in business these days, must comply with America's laws of



Air Force Association

1501 Lee Highway • Arlington, VA 22209-1198

afa.org

Telephone: 703.247.5800

Toll-free: 800.727.3337

Fax: 703.247.5853

AFA's Mission

Our mission is to promote a dominant United States Air Force and a strong national defense and to honor airmen and our Air Force heritage.

To accomplish this, we:

- **Educate** the public on the critical need for unmatched aerospace power and a technically superior workforce to ensure US national security.
- **Advocate** for aerospace power and STEM education.
- **Support** the Total Air Force family and promote aerospace education.

Contacts

CyberPatriot info@uscypatriot.org
 Field Services field@afa.org
 Government Relations grl@afa.org
 Insurance afa.service@mercer.com
 Membership membership@afa.org
 News Media communications@afa.org

Magazine

Advertising . . . airforcemagsales@afa.org
 Editorial Offices afmag@afa.org
 Letters to Editor Column . . . letters@afa.org
 Wingman wingman@afa.org

Change of Address/Email

In an effort to stay connected with AFA and your local chapter, please update your mailing and email addresses. Change of address requires four weeks' notice.

To update your contact information:

- **Email:** membership@afa.org
- **Visit:** The Members Only area of our website, afa.org
- **Call:** Our Membership Department at 1-800-727-3337
- **Mail** your magazine label, including your first and last name, to our Membership Department at 1501 Lee Highway, Arlington, VA 22209-1198.

political correctness. But your selection of the Air Force's first female pilot as the centerpiece of this cover's 70th anniversary photo collage is taking a bad thing way too far. This is especially disturbing because two *real* Air Force heroes who also appear on the cover—Chuck Yeager and James Jabara—are relegated to the sidelines along with the lesser-knowns. Why couldn't one of those well known and highly respected icons have been tapped for the center spot? Even better, why not USAF's first Chief of Staff, Gen. Carl "Tooey" Spaatz? Any of these legendary officers would have been

more appropriate, especially since the pic of the service's first lady pilot also appears in the main photo spread.

My blood pressure went down a bit as I thumbed through the related photos inside. I was expecting to see even more laws of political correctness pictures there, but I must admit that the ones you selected do an excellent job of depicting USAF's evolution over the past seven decades—and without any PC.

I do wonder, though, why some other Air Force greats weren't included—for instance: the Air Force's only five-star general ("Hap" Arnold); Korean War

SENIOR STAFF CHANGES

RETIREMENTS: Maj. Gen. Scott A. **Vander Hamm**, Maj. Gen. Tommy J. **Williams**. Brig. Gen. John A. **Cherrey**, Brig. Gen. Steven D. **Garland**, Brig. Gen. Daniel J. **Orcutt**.

NOMINATIONS: To be Lieutenant General: Jacqueline D. **Van Ovost**.

To be ANG Brigadier General: Jeffery D. **Aebischer**, Shawn N. **Bratton**, Jeffrey L. **Butler**, Michael E. **Callahan**, Kevin J. **Campbell**, Thomas S. **Cauthen**, Lawrence L. **Christensen**, Shawn A. **Clouthier**, Darwin L. **Craig**, Robert C. **Desko**, Kevin M. **Donovan**, Bobbi J. **Doorenbos**, David M. **Dziobkowski**, Randal K. **Efferson**, Howard L. **Eissler III**, Nathan B. **Alholinna**, Shawn D. **Ford**, Jed J. **French**, Daniel E. **Gabrielli**, Mark P. **Gaul**, Rainer G. **Gomez**, Patrick M. **Guinee**, Penny D. **Hodges-Goetz**, Jeremy C. **Horn**, Cassandra D. **Howard**, Paul D. **Johnson**, Boris R. **Armstrong**, Edward S. **Jones**, Gary W. **Kirk**, Heidi L. **Kjos**, Meaghan Q. **LeClerc**, Gregor J. **Leist**, Suzanne B. **Lipcaman**, Keith G. **MacDonald**, Rolf E. **Mammen**, Gerald E. **McDonald**, Christopher G. **McGraw**, Kimberly A. **Baumann**, Michael R. **Morgan**, Rebecca L. **O'Connor**, Duke A. **Pirak**, Jeffrey L. **Ryan**, Jon S. **Safstrom**, William L. **Sparrow**, James R. **Stevenson**, Jeffrey D. **Storey**, Brian J. **Teff**, Edward L. **Vaughan IV**, Robert L. **Bell**, April D. **Vogel**, Charles M. **Walker**, Christopher S. **Walker**, David A. **Weishaar**, Wendy B. **Wenke**, Gregory T. **White**, Brent W. **Wright**, William T. **Yates**, Daniel S. **Yenchesky**.

CHANGES: Brig. Gen. Paul E. **Bauman**, from Dep. Dir., Future Jt. Force Dev., Jt. Staff, Suffolk, Va., to Sr. Defense Official & Attaché-Pakistan, US Embassy, Islamabad, Pakistan ... Brig. Gen. Lance R. **Bunch**, from Principal Mil. Asst. to SECDEF, OSD, Pentagon, to Dir. CJ35, Future Ops., Resolute Spt., CENTCOM, Kabul, Afghanistan ... Maj. Gen. Thomas W. **Geary**, from Asst. DCS, ISR, USAF, Pentagon, to Mil. Dep. to the Dir., DIA, Washington, DC ... Brig. Gen. Joel D. **Jackson**, from Sr. Spec. Asst. to the Cmdr., EUCOM, Mons, Belgium, to Spec. Asst. to the Cmdr., AMC, Scott AFB, Ill. ... Brig. Gen. Michael G. **Koscheski**, from Chief, Strategy Planning Integration Div., DCS, Strat. Plans, Prgms., & Rqmts., Pentagon, to Dir., Air Crew Crisis Task Force, DCS, Ops., USAF, Pentagon ... Maj. Gen. Robert D. **Labrutta**, from Cmdr., 2nd AF, AETC, Keesler AFB, Miss., to Dir., Mil. Force Mgmt. Policy, DCS, Manpower, Personnel, & Svcs., USAF, Pentagon ... Maj. Gen. Timothy J. **Leahy**, from Cmdr., Curtis E. LeMay Center for Doctrine Dev. & Education, to Cmdr., 2nd AF, AETC, Keesler AFB, Miss. ... Maj. Gen. Michael D. **Rothstein**, from Dep. Asst. Secy. for Plans, Prgms., & Ops., Bureau of Political-Mil. Affairs, Department of State, Washington, D.C., to Cmdr., Curtis E. LeMay Center for Doctrine Dev. & Education, Maxwell AFB, Ala. ... Maj. Gen. Stephen N. **Whiting**, from Dir., Integrated Air, Space, & Cyberspace and ISR Ops., AFSPC, Peterson AFB, Colo., to Cmdr., 14th AF, AFSPC, Vandenberg AFB, Calif.

SENIOR EXECUTIVE SERVICE CHANGES: William S. **Castle**, to Principal Dep. General Counsel, DOD, Pentagon ... Colin F. **Jackson**, to Dep. Asst. SECDEF for Afghanistan, Pakistan, & Central Asia, DOD, Pentagon.

ace-of-aces Capt. Joseph C. McConnell; and/or Desert Storm air boss Gen. Chuck Horner. I know photo space was limited, but surely room could have been found for one or more of these major figures, even if it meant leaving out a few relatively unknown troops. Despite those omissions, I commend *Air Force Magazine* for your well researched, politically benign main photo spread. I may even continue my AFA membership now, on the chance that your cover was just a random LPC blip in an otherwise superb magazine. Perhaps we can call it an unrealistic, but necessary, sign of our modern times.

MSGt. James B. Walker,
USAF (Ret.)
Dayton, Ohio

No Surprise There

The Minot Bent Spear incident wasn't particularly surprising when it occurred in 2007 ["Minot's Bent Spear," August, p. 35]. Some of us who were members of ACC (Provisional) expected something similar much sooner. As a member of ACC (Provisional) tasked in 1992 with coordinating merging of different SAC and TAC directorates within the new command, we were also tasked to identify overlap of command regulations. A subsequent effort was made at Air Force direction to reduce the number of pages of regulations. Admittedly, the combined stack of all the SAC and TAC manuals, regulations, and supplements were indeed a formidable pile of paper. However, like aircraft tech orders adding warnings, cautions, and notes as the aircraft and learning curve matures, there were a lot of hard lessons learned in those regulations.

As we went through this process, a few of us former SAC aircrew types frequently met, comparing notes and discussing the potential outcomes with the direction of the old SAC regs. Several of us concluded we needed to keep copies in a desk drawer because "we're going to need these again someday."

Furthermore, we thought a few babies were thrown out with the bathwater as we witnessed the diminishing bomber force nuclear role. Little did we know it would take until 2007 for the implications to manifest themselves. Perhaps enough corporate memory was resident and prevented such an incident happening sooner.

When the heads began to roll, I could only think of my time in SAC and the whispered reminder, "To err is human, to forgive is not SAC policy."

Col. Francis Gibbons,
USAF (Ret.)
Royse City, Texas

Blue Suit PR

Regarding letters in *Air Force Magazine's* September issue [p. 6] about your editorial "Silent Leadership—At a Cost" [July, p. 4].

Perhaps one reason for the Air Force's poor public profile is the lack of blue-suiters in the White House. President Trump's chief of staff and defense secretary are retired Marine generals, and his national security advisor is a retired Army general. His former strategic advisor was an ex-Navy officer. But no one from the Air Force works closely to him. Can we change this situation? To quote an old real estate adage, "Location is everything."

Richard Reif
Flushing, N.Y.

US Postal Service Statement of Ownership, Management, and Circulation

1. Publication Title: Air Force Magazine
2. Publication Number: 0730-6784
3. Filing Date: Oct. 20, 2017
4. Issue Frequency: Monthly, except for two double issues, April/May and October/November
5. No. of Issues Published Annually: 10
6. Annual Subscription Price: \$45.00
7. Complete Mailing Address of Known Office of Publication (not printer): 1501 Lee Highway, Arlington, VA 22209-1198. Contact Person: Eric Chang Lee. Telephone: 703-247-5849
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (not printer): 1501 Lee Highway, Arlington, VA 22209-1198
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor:
Publisher: Larry O. Spencer, 1501 Lee Highway, Arlington, VA 22209-1198;
Editor: Adam J. Hebert, 1501 Lee Highway, Arlington, VA 22209-1198;
Managing Editor: Juliette Kelsey, 1501 Lee Highway, Arlington, VA 22209-1198
10. Owner: Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198
11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities: None
12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates): Has not changed during preceding 12 months
13. Publication Title: Air Force Magazine

15. Extent and Nature of Circulation	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
Monthly Journal of the Air Force Association		
a. Total Number of Copies (net press run)	84,020	83,840
b. Paid Circulation (by mail and outside the mail)		
(1) Mailed outside-county paid subscriptions stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	75,440	73,890
(2) Mailed in-county paid subscriptions stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	0	0
(3) Paid distribution outside the mails including sales through dealers and carriers, street vendors, counter sales, and other paid distribution outside USPS	656	612
(4) Paid distribution by other classes of mail through the USPS (e.g., first-class mail)	0	0
c. Total Paid Distribution [sum of 15b (1), (2), (3), (4)]	76,096	74,502
d. Free or Nominal Rate Distribution (by mail and outside the mail)		
(1) Free or nominal rate outside-county copies included on PS Form 3541	11	11
(2) Free or nominal rate in-county copies included on PS Form 3541	0	0
(3) Free or nominal rate copies mailed at other classes through the USPS (e.g., first-class mail)	48	50
(4) Free or nominal rate distribution outside the mail (carriers or other means)	117	117
e. Total Free or Nominal Rate Distribution [sum of 15d (1), (2), (3), (4)]	176	178
f. Total Distribution [sum of 15c and 15e]	76,272	74,680
g. Copies Not Distributed	7,748	9,160
h. Total [sum of 15f and g]	84,020	83,840
i. Percent Paid [15c / 15f x 100]	99.77%	99.76%

16. Electronic Copy Circulation		
a. Paid electronic copies	0	0
b. Total paid print copies (15c) + paid electronic copies (16a)	76,096	74,502
c. Total print distribution (15f) + paid electronic copies (16a)	76,272	74,680
d. Percent paid (both print & electronic copies)(16b / 16c x 100)	99.77%	99.76%

17. Publication of Statement of Ownership
If the publication is a general publication, publication of this statement is required. Will be printed in the December 2017 issue of this publication.

18. Signature and Title of Editor, Publisher, Business Manager, or Owner: Eric Chang Lee (signed), Production Manager. Date: Oct. 20, 2017

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

AL DHAFRA AB, UNITED ARAB EMIRATES—

ON THE FARM

Operation Inherent Resolve uses a lot of fuel. Not just for the fighter jets dropping bombs on ISIS, but for the aircraft gathering intelligence, surveillance, and reconnaissance, for the generators powering the air-conditioning units cooling the bases, and for all the trucks and other vehicles transporting troops on the ground.

About eight million gallons of that fuel is stored here, the largest fuel bladder farm in the Department of Defense. The farm—made up of more than 20 giant dirt pits holding enormous tan bags of fuel—processes roughly 500,000 gallons each day.

The fuel bladders range from 50,000 to 210,000 gallons and are checked daily for cuts or leaks.

SrA. Dustin Hicks, a fuels lab technician with the 380th Expeditionary Logistics Readiness Squadron, said his primary focus is quality assurance.



A giant fuel bladder at the farm, Al Dhafra AB, United Arab Emirates.

"We just want to make sure these planes have the best fuel," he said.

The aircraft fuel is moved to the flight line using a constant-pressure hydrant system, which is much faster and more efficient than using trucks, said A1C Austin Coe. The equipment they use mimics permanent infrastructure in a deployed environment, he added.

The fuel keeps the base humming and feeds the aircraft based here, but it also goes to a variety of other American and coalition partner aircraft via midair refueling.

"The fuels airman is not just refueling the KC-10," explained Col. Mark S. Robinson, vice commander of the 380th Air Expeditionary Wing. "It's not just putting gas in a truck, the truck drives to the KC-10, we put gas in the KC-10, and it comes back. That singular drop of fuel could end up in a number of different platforms, flying in a number of different locations, and ending up in a number of different coalition jets."

A quarter of the Air Force's KC-10 fleet is based here, and though the aircraft has more pallet positions than a C-17, the bulk of what they do is midair refueling, said Capt. Rebecca Sullivan, a KC-10 pilot.

As she prepared for an eight-hour flight repeatedly refueling a pair of F-22s over Iraq, Sullivan explained that the KC-10 has a boom and drogue and can be refueled itself, if necessary. It carries around 250,000 pounds of fuel, and some of the planes also have wing air refueling pods, enabling them to refuel two aircraft at once.

"It allows us to have a lot of flexibility in theater, and essentially refuel [any] ... of our coalition partners that's out there



An F-22 refuels from a KC-10 during a mission for Operation Inherent Resolve. The fuel came from the farm.

[and] needs the gas, whether it's an emergency or whether it's planned," Sullivan said.

The capabilities make it obvious why the KC-10 is called the Extender.

"We are able to extend the sortie duration for multiple airframes, so they can provide cover to troops on the ground, ... can collect intelligence and do reconnaissance missions, [and] ... they can take off and land out of places that are safer, rather than having them be in-country," Sullivan said.

Lieutenant Colonel Shell, commander of the 27th Expeditionary Fighter Squadron, said the squadron's F-22s "could not accomplish" their Operation Inherent Reserve mission without refueling from KC-10s and the KC-135s based elsewhere in the region. (The Air Force does not release the full names of fighter pilots deployed downrange.)

"Not possible," Shell said.

The fuel also powers the base generators, which serve as a backup in case of power loss. In addition to computers and other equipment that rely on power, air-conditioning is "mission critical" during the sweltering summer months, said Col. Dee Jay Katzer, commander of the 380th Expeditionary Mission Support Group.

"We could live without air-conditioning," he said, noting that "it would be painful," but many aircraft maintenance functions can only be performed at certain temperatures, and the space suit U-2 pilots wear while flying has to be kept cool, too.

If the air-conditioning fails in those locations, Katzer said, "that mission doesn't go."

And even AC in lodging can be mission critical from a crew rest standpoint, he said.

"If it's 90 degrees in your room, you're not getting a good night's sleep, and now you're flying a nine-hour mission, 10-hour mission, it doesn't work," Katzer explained.

It's no wonder the HVAC airmen were, according to operations superintendent MSgt. Dan Salazar, the busiest of the eight trades this summer.

Cooling is also necessary for storing the liquid oxygen that high-altitude pilots breathe—it's kept "very, very cold" in special tanks made so the gas will not boil off into the atmosphere, said SSgt. Jason Wood, who works on the storage crew.

Jennifer Hlad is a freelance journalist based in the Middle East and a former *Air Force Magazine* senior editor.

Attention-Getter

"On a nominal basis, you don't have more than single digits of B-2s available to do anything [immediately]. ... The US Air Force is the smallest and least ready it's ever been in history. That should get people's attention."—**Retired USAF Lt. Gen. David Deptula**, *militarytimes.com*, Aug. 12.

Playing Catchup

"[The Air Force] is modernizing across the board. It's an unusual situation—that we have so much modernization going on in the Air Force at one time. ... The Air Force has not been modernizing at the pace that it needs to in order to meet the threat of the future and our adversaries are modernizing. They're innovating faster than we are, and if we're going to be able to protect our vital national interest, we need to get beyond the caps in the Budget Control Act."—**Secretary of the Air Force Heather Wilson**, remarks at Whiteman AFB, Mo., Sept. 5.

From Russia With Love

"Artificial intelligence is the future—not only for Russia but for all humankind. ... Whoever becomes the leader in this sphere will become the ruler of the world."—**Russian President Vladimir Putin**, speech to students as reported by Russian news service RT.com, Sept. 1.

The Commitment

"While we never asked for this fight [in Afghanistan], we are steadfastly committed to seeing it through, and with no more temporizing. ... We Americans are not made of cotton candy. We are not seaweed drifting in the current. We are not intimidated by our enemies, and ... your military does not scare."—**Secretary of Defense James N. Mattis**, 9/11 memorial speech, Sept. 11.

Check, Please

"[The US must] make sure that Kim Jong Un knows that, if he acts in an aggressive fashion, the price will be extinction."—**Sen. John McCain (R-Ariz.)**, CNN's "State of the Union," Sept. 10.

That's the Spirit

"There's no military solution [to the North Korean threat]. Forget it. Until somebody ... shows me that 10 million people in Seoul don't die in the first 30 minutes from conventional weapons, I don't know what you're talking about. There's no military solution

here. They've got us."—**Then-White House aide Steve Bannon**, remarks to *The American Prospect*, Aug. 16.

It Could Happen

"We have many military options, and the President wanted a briefing on each of them. ... We are not looking to the total annihilation of a country—namely, North Korea—but, as I said, we have many options to do so."—**Secretary of Defense James N. Mattis**, White House press briefing, Sept. 3.

Cherry on Top

"There will be a war with North Korea over the missile program if they continue to try to hit America with an ICBM. ... There IS a military option: ... to destroy North Korea's [missile] program and North Korea itself. ... I prefer the diplomatic approach, but they will not be allowed to have a missile to hit America with a nuclear weapon on top."—**Sen. Lindsay Graham (R-S.C.)**, NBC's "Today" program, Aug. 1.

Annals of Diplomacy

"The Kellogg-Briand Pact [which aimed to outlaw war] does not get bad press. It gets no press. That's because the treaty went into effect on July 24, 1929, after which the following occurred: Japan invaded Manchuria (1931). Italy invaded Ethiopia (1935). Japan invaded China (1937). Germany invaded Poland (1939). The Soviet Union invaded Finland (1939). Germany invaded Denmark, Norway, Belgium, the Netherlands, Luxembourg, and France and attacked Great Britain (1940). And Japan attacked the United States (1941), culminating in a global war that produced the atomic bomb and more than 60 million deaths. A piece of paper signed in Paris does not seem to have presented an obstacle to citizens of one country engaging in the organized slaughter of the citizens of other countries."—**From Louis Menand**, "What Happens When You Outlaw War?" in *The New Yorker*, Sept. 18.

Annals of Diplomacy II

"The Norwegian Nobel Committee has decided to award the Nobel Peace Prize for 2017 to the International Campaign to Abolish Nuclear Weapons (ICAN). The organization is receiving the award for its work to draw attention to the catastrophic humanitarian consequences of any use of

nuclear weapons and for its groundbreaking efforts to achieve a treaty-based prohibition of such weapons. We live in a world where the risk of nuclear weapons being used is greater than it has been for a long time. Some states are modernizing their nuclear arsenals, and there is a real danger that more countries will try to procure nuclear weapons, as exemplified by North Korea. Nuclear weapons pose a constant threat to humanity and all life on Earth. ... An international legal prohibition will not in itself eliminate a single nuclear weapon, and ... so far neither the states that already have nuclear weapons nor their closest allies support the nuclear weapon ban treaty. The committee wishes to emphasize that the next steps towards attaining a world free of nuclear weapons must involve the nuclear armed states."—**The Norwegian Nobel Committee**, press release, Oct. 6.

Hmmmmmmmmmmmmmmmmmmmm ...

"[Machine intelligence] algorithms will be evolved in synthetic, simulated environments and then deployed in the real world. When an inferior foe can field highly skilled 'pilots' that never tire, don't need training, and exhibit none of the biological constraints of a human pilot, what becomes of [the US] training-enabled advantage?" **Amir Husain**, author of "The Sentient Machine," *fifthdomain.com*, Aug. 7.

Bears in the Woods

"As long as we're going faster than [rival nations] behind us, I don't want to think about how we fend them off. I just want to go faster than they can keep up. If there's a bear in the woods, you just have to be faster than the slowest person."—**Dawn C. Meyerriecks**, CIA chief of science and technology, remarks in Washington, D.C., Sept. 6.

In America, Dogs Have It Better

"In North Korea, I lived a dog's life. Ain't nobody live good in North Korea. Nothing to eat. No running water. No electricity. In the wintertime, you freeze. In my bedroom, the walls were covered in ice. ... You can't bring your neighbor over for a drink. Why? People start drinking, they start talking. People disappear."—**Charles Robert Jenkins**, US Army deserter who spent the period 1965-2004 in North Korea, interview with *military.com*, Aug. 16.



Gen. Merrill McPeak (right), then Chief of Staff, observes operations beside flight engineer TSgt. Michael Deroggi in 1993. McPeak and other former Chiefs were panelists at the 2017 Air, Space & Cyber Conference.

CHIEF CONCERNS

No question, the job of Air Force Chief of Staff is tougher now than 30 years ago, but the key to doing it right is to focus on the force you're leaving your successor, former Chiefs advised at AFA's Air, Space & Cyber Conference in September.

A rare assemblage of former top uniformed leaders of the service since the 1980s, including retired generals Larry D. Welch, Merrill A. McPeak, Ronald R. Fogleman, Michael E. Ryan, and Norton A. Schwartz, offered perspectives in a panel discussion titled "Leading an Air Force." They talked about how the job has evolved since their tour in the top spot and gave suggestions on how USAF can navigate around some of its thornier problems.

Welch, who led the service from 1986 to 1990—toward the end of the Cold War to the eve of Operation Desert Shield—said he had it "pretty good" as Chief, because the threat was well-understood, the Air Force was well-valued by the other services, and "we had the luxury of focusing" on issues the uniformed leaders thought were most important. During his watch, Welch said, there were no major conflicts or surprises like the Cuban Missile Crisis.

Importantly, when it came to portioning out funds for readiness, people, and modernization, "we got to choose" where to put emphasis, and budgets came along regularly and predictably, Welch observed. During his tour, the Air Force bought the bulk of the force it still flies today, in the form of F-15s, F-16s, and B-1Bs. He offered the sitting Chief, Gen. David L. Goldfein, his sympathies for dealing with the chronic unpredictability of continuing resolutions instead of budgets and a seemingly nonstop demand for combat forces beyond what the service can provide.

Congress, too, seems more intent on micromanaging the force, the former Chiefs agreed.

McPeak, Chief from 1990 to 1994, said he also lived in "a simpler world," because although he had to deal with a massive post-Cold War drawdown, which took the service from a \$110 billion budget to below \$70 billion (in roughly 1991 dollars), he had free reign to reorganize it in a way "that made sense." When it was over—the merging of Tactical and Strategic Air Commands, for example, and a broad reduction in the size of the force of about 30 percent—the Air Force was "smaller and poorer ... but tougher."

Desert Storm was fought on McPeak's watch, and it was about the most "high intensity" conventional war that could be fought at the time, he said. In that conflict, "we lost an airman about every two days," he pointed out, which at the time was considered an almost absurdly low rate of losses. Since then—across almost 27 years of nonstop combat—"we lose about one airplane every four years." That record of success "doesn't happen by accident," he said. It happens because "serious people thought a lot about what our real purposes are" as a service and structured the force to focus on those core competencies.

He said it was important during the big drawdown to let the troops who were staying in uniform know that "there was a future" in the Air Force, and the leadership would do all it could to provide them some stability.

CHAIN OF CUSTODY

Fogleman, Chief from 1994 to 1997, advised younger members of the audience that it's pointless to set a goal of becoming Chief—Fogleman noted that getting the job owes as much to luck as to good preparation—but urged them to seek out jobs and experiences outside their comfort zones that will broaden their knowledge and make them more valuable to the service. Even jobs he felt unprepared for and frankly didn't want, Fogleman said—he was a career fighter pilot suddenly in charge of mobility as a four-star—made him a better officer.

The late 1990s brought the big surprise, Ryan said. Although the "reliable enemy" in the form of the Soviet Union was gone, a multiplicity of brush fire wars in the Balkans and elsewhere put the much-smaller Air Force on a too-busy operating tempo. Ryan opted to emphasize readiness over modernization at that time because of the constant fighting and because "you have to keep the force ready. It's unconscionable to send a force that isn't."

Ryan created the air and space expeditionary force in an attempt to give airmen some predictability about their lives and to more fairly spread the duty of constant deployments.

Schwartz took over the Chief job from Gen. T. Michael Moseley, who along with Secretary Michael W. Wynne, was sacked by Defense Secretary Robert Gates in 2008. Schwartz said simply that he came to the job "most unexpectedly" and had to deal with a force where "confidence in our leaders was not as high" as it should be. Schwartz said rebuilding USAF's credibility was one aspect of his tenure, and sometimes that meant keeping quiet and letting the Air Force's achievements "speak for themselves."

Schwartz asserted that the nature of deterrence is chang-

ing, as an increasing number of new states develop nuclear weapons of their own. It may be necessary to introduce or reintroduce new theater nuclear weapons, particularly in the Pacific, because of unsteady powers like North Korea that may not be deterred with the existing arsenal, Schwartz said. Moreover, mutual assured destruction is not a viable strategy in dealing with such powers, so missile defense, at least in limited form, "is now a strategic priority."

Systems must be expanded for "effectively defending against a determined—but not necessarily massive—first strike," Schwartz asserted.

POLITICS, GENERALLY SPEAKING

The panel members were asked if they believe it's wrong for retired generals like themselves to get involved with politics, as that became a sore spot in the 2016 presidential election. Welch said that while it's "wrong for me," he wouldn't say it's wrong for others.

McPeak confessed feeling that his two forays into politics—supporting the presidential bid of former Republican Sen. Bob Dole (Kan.) in 1996 and later as a supporter/advisor to the campaign of President Barack Obama, a Democrat, in 2008—were "a mistake."

He signed on with Dole because he knew him and believed in him, while he supported and advised Obama because McPeak was "angry" about George W. Bush's invasion of Iraq. McPeak said it was based on "false claims" that Iraq had weapons of mass destruction.

Since then he's "isolated" himself politically, but noted one good outcome of his political involvement: Obama appointed him to head the American Battle Monuments Commission, which had never before been led by an airman. That job has allowed him to get the US to take responsibility for some American cemeteries overseas, as well as the Lafayette Escadrille Memorial in France, which had fallen into serious disrepair and has now been rehabilitated. The former Army or Marine Corps officers preceding him at the ABMC wanted "nothing to do" with those projects, he said.

As to his involvement in politics, Fogleman said, "I was never asked, so it was an easy decision," to laughter and applause.

Ryan said without elaboration that he thinks it's a bad idea to mix the military and politics. Schwartz said "it's a personal call" for each general's conscience, but warned that there's grave danger of allowing an impression that decisions made about the force by serving officers "might be tainted" by political considerations. That, he said, would be "awful for the republic."

UP THE HILL TO CARRY WATER

The Chiefs were asked what—if anything—can be done to improve the relationship between the service and Congress—a relationship that has clearly become strained in recent years.

Fogleman said the trick is for the Secretary to deal with Congress. "Let the Secretary do most of the heavy lifting" in this regard, he said, because doing so allows the Chief to focus on the tough-enough job of manning, training, and equipping and staying above the political fray. He added that "Secretary 24"—Heather A. Wilson—"has to go work on that," rebuild confidence in the service, and run interference for her generals.

Ryan said it's essential that the Air Force have a well run and plugged-in legislative liaison office, keeping its ear out for issues that some members of Congress care deeply about. In one hearing, Ryan said, Sen. John Warner (R-Va.) peppered him with questions about what it would cost to add six more B-2s to the 20-plane fleet.

Ryan said he'd get back to Warner later, a response that angered the Senator, who yelled that Ryan "shouldn't be the Chief" if he didn't have such answers immediately at hand. And Warner, Ryan pointed out, was a family friend.

It's crucial to "have that intel on Congress," Ryan said. "If you don't, you're liable to step in quicksand."

Welch observed that in his time, the three services were individually labeled by Capitol Hill staffers as "dumb, defiant, and deceptive," and "the feeling over there" on Capitol Hill "was that we were the ones who were 'deceptive.'"

He advised USAF to find out what Air Force issue was most important to each member of Congress and make sure that issue was addressed in all dealings with that member, toward finding common ground. One Colorado congressman, he recalled, fought every hardware program but was a ready ally "on every people program."

The Air Force should treat its political capital like a bank account, Schwartz said. "You make deposits, you make withdrawals," and the former should always outnumber the latter.

Finally, the former Chiefs were asked to suggest how the disparate activities of the Air Force can be summed up in three letters—CBG (carrier battle group) or MEB (marine expeditionary brigade)—or on a bumper sticker, because the other services seem to be successful distilling their activities in such a way and winning support for their programs.

"I don't know how to reduce that to a slogan," Welch said. The Air Force, he said, fights "in three domains and is essential to every kind of fight."

Fogleman, too, said such a summary is difficult. Many airmen, he observed, "don't know what we do. ... We have to remind them why we exist." They also need to know "the role they play" in the grand scheme.

Schwartz, borrowing a slogan USAF used in 2013, answered simply, "Vigilance, Reach, Power." ✪



SrA. Amanda Butch, 332nd Expeditionary Maintenance Squadron, accounts for munitions in Southwest Asia. Air and space expeditionary forces were created to give deploying airmen something resembling predictability.

Photos: DOD via National Archives, SrA. Damon Kasberg





10.12.2017

An F-22 Raptor takes off at RAF Lakenheath, UK. F-22s and airmen deployed there to conduct training with other European-based US aircraft and NATO allies.

■ Pilot Killed When USAF Aircraft Crashes Near Nellis

Lt. Col. Eric E. Schultz died when his aircraft crashed on Sept. 5 while flying a training mission. The crash occurred at the Nevada Test and Training Range about 100 miles northwest of Nellis AFB, Nev.

The Air Force has declined to identify the type of aircraft involved in the fatal crash or the unit to which it was assigned because of classification, but Chief of Staff Gen. David L. Goldfein told reporters it was not an F-35. The aircraft was assigned to Air Force Materiel Command.

Schultz, a test pilot with multiple advanced degrees including a doctorate in aerospace engineering, was a native of Annapolis, Md. He had more than 2,000 hours of flying experience, according to the *Capital Gazette*, which received an obituary from Schultz's family.

Schultz had completed more than 200 missions flight testing the F-35 and CF-18 and had flown more than 50 close air support missions in an F-15E while deployed to Afghanistan. He had worked as director of operations, as an exchange officer with the Canadian Forces flight test center, and as a systems engineer for the Airborne Laser Program.



Lt. Col. Capt. Eric Schultz in an F-35 in 2011.

■ USAF Continues To Fly Near Korea To Assure Allies

The Air Force continues to participate in show-of-force missions near North Korea as a gesture of assurance to US allies in the region.

On Sept. 17, two B-1B bombers deployed

to Andersen flew with four F-35Bs from Iwakuni, four ROK F-15Ks, and four Japanese F-2s in response to North Korea's launch of an intermediate-range ballistic missile over Japan on Sept. 14.

Then, for the second time in a week, B-1Bs—flanked this time by USAF F-15C

fighters—flew over international waters east of North Korea on Sept. 23. This show of force was “the farthest north of the demilitarized zone any US fighter or bomber aircraft have flown off North Korea's coast in the 21st century,” according to a Pentagon press release.



B-1B bombers (right) flanked by four USMC F-35s (top) and four Japan Air Self Defense Force F-2s, in a bilateral mission over the Pacific in September.

■ Iraqi F-16 Pilot Killed in Arizona Crash

An Iraqi student pilot was killed when his F-16 crashed on Sept. 5 about 20 miles northwest of Safford, Ariz. The F-16 belonged to the Iraqi air force but was assigned to the Arizona Air National Guard's 162nd Wing, where it flew alongside USAF fighters.

"Our thoughts and prayers are with the family and friends of our wingman during this difficult time," said Brig. Gen. Andrew J. MacDonald, commander of the 162nd Wing, in a Facebook post. "Today we are mourning the loss of an airman and friend alongside our Iraqi partners." The Air Force has convened an interim safety board to investigate the accident.



Iraqi air force Maj. Noor Falih Al-Khazali.

■ Pilots Safe After A-10s Crash Near Nellis

Two pilots ejected before their A-10Cs crashed at the Nevada Test and Training Range on Sept. 6. The aircraft, assigned to the 57th Wing at Nellis AFB, Nev., were flying a routine training mission as part of the US Air Force Weapons School and were carrying chaff and inert munitions at the time of the crash.

The pilots were taken to the Mike O'Callaghan Military Medical Center at Nellis. They were released the next day with no significant injuries. The Air Force is investigating the crash.



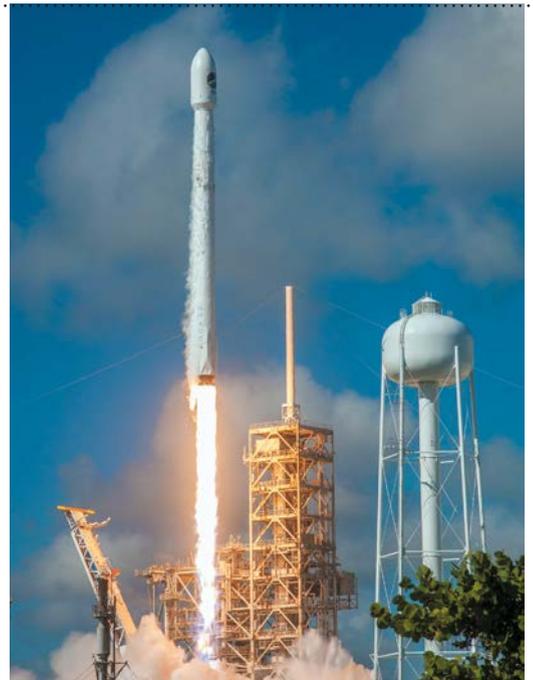
An A-10 near Nellis AFB, Nev.

■ SpaceX Falcon 9 Launches X-37B

The Air Force on Sept. 7 launched the secretive X-37B unmanned space vehicle aboard a SpaceX Falcon 9 rocket from NASA's Kennedy Space Center, Fla. The reusable rocket landed about eight minutes after the launch, at SpaceX's Landing Zone 1 at Cape Canaveral AFS, Fla.

This is the fifth mission of the X-37B, with the previous mission lasting two years in low Earth orbit. The aircraft, manufactured by Boeing and managed by the Air Force Rapid Capabilities Office, conducts experiments, performs risk reduction, and tests concepts of operations for reusable space vehicle technologies.

This is the first time the X-37B has been launched on a SpaceX rocket. Previous missions were launched aboard a United Launch Alliance Atlas V rocket.



The X-37B launches on Sept. 7.

■ Hill Divests Operational F-16s

Hill Air Force Base's last operational F-16s left the Utah base Sept. 21, as Hill builds up its contingent of F-35s. The final F-16 took off to Holloman AFB, N.M.

Hill had hosted operational F-16s since 1979, but the location is now the Air Force's first operational F-35 base. Hill will still see Falcon traffic, as it is the home of the Ogden Air Logistics Complex.

■ Air Force Responds as Three Hurricanes Batter US

In August and September, the Air Force was centrally involved in US efforts to respond to Hurricanes Harvey, Irma, and Maria, as they charted a path of destruction across the Caribbean and the southern US.

The Air Force Reserve's 53rd Weather Reconnaissance Squadron, known as the Hurricane Hunters, began flying missions into the storms on Aug. 17 to provide crucial storm tracking and storm strength information to the National Hurricane Center. Texas activated all 12,000 members of its Air and Army National Guard to assist with Harvey's landfall on Aug. 25 near Corpus Christi. As flooding increased from the storm, the National Guard postured 30,000 additional Guardsmen to support the region, and more than 100 ANG members and more than a dozen aircraft traveled to Texas from six states.

As the Air Force was providing Harvey relief, bases across the Southeast and the Caribbean began preparing for Hurricane Irma. F-15s, F-16s, A-10s, KC-135s, C-130s, C-17s, C-146s, and HH-60s from bases in Florida, Georgia, South Carolina, North Carolina, and Puerto Rico were forced to relocate.

Irma caused damage in the US Virgin Islands and Puerto Rico, and it made landfall near Naples, Fla., Sept 10. Bases in Georgia, Alabama, and South Carolina became staging areas. The massive response to Irma included more than 950 airmen.

Maria made landfall in Puerto Rico on Sept. 20. The entire island lost power, and cell phone service was entirely cut. The hurricane also hit the US Virgin Islands as a Category 5, bringing 90 percent power outages there. ANG and Army Corps of Engineers personnel worked to establish air traffic control so that relief supplies, and temporary power and communications, could flow into the islands.

Days after the hurricane, Puerto Rico governor Ricardo Rosselló asked the federal government for more aid because



C-5M Super Galaxy crew members from the 9th Airlift Squadron unload relief cargo at Luis Munoz Marin Arpt., Puerto Rico, on Oct. 6.

the island had experienced "complete devastation" from the storm. By Sept. 27, more than 3,000 National Guard airmen and soldiers were on the ground in Puerto Rico and the Virgin Islands, and the Air Force said its full capacity airlift campaign would continue for weeks.

■ Academy Superintendent Tells Racists to "Get Out"

The top leader of the US Air Force Academy (USAFA) on Sept. 28 gathered all academy personnel to tell them he would not tolerate racist slurs at the school. The message from superintendent Lt. Gen. Jay B. Silveria came after racist slurs were written on the dormitory message boards of five cadet candidates at the US Air Force Academy Preparatory School.

The mother of one cadet candidate posted a picture of her son's message board with the phrase "go home n****r" written on it.

"If you're outraged by those words, then you're in the right place," Silveria told USAFA personnel. "That kind of behavior has no place at the Prep School, it has no place at USAFA, and it has no place in the United States Air Force."

Silveria told the cadets, who were standing at attention as they listened to his remarks, to "reach for your phones" so they could record his next message. "If you can't treat someone with dignity and respect, then you need to get out," Silveria said.



Lt. Gen. Jay Silveria addresses academy cadets on Sept. 28.

■ The War on Terrorism

As of Oct. 12, 44 Americans had died in Operation Freedom's Sentinel in Afghanistan, and 48 Americans had died in Operation Inherent Resolve in Iraq and Syria.

The total includes 87 troops and four Department of Defense civilians. Of these deaths, 44 were killed in action with the enemy while 48 died in noncombat incidents. There have been 227 troops wounded in action during OFS and 53 troops in OIR.



THANK YOU ROLLS-ROYCE FOR YOUR PLATINUM SPONSORSHIP OF AFA'S AEROSPACE EDUCATION PROGRAMS



Rolls-Royce



Aerospace Education Programs

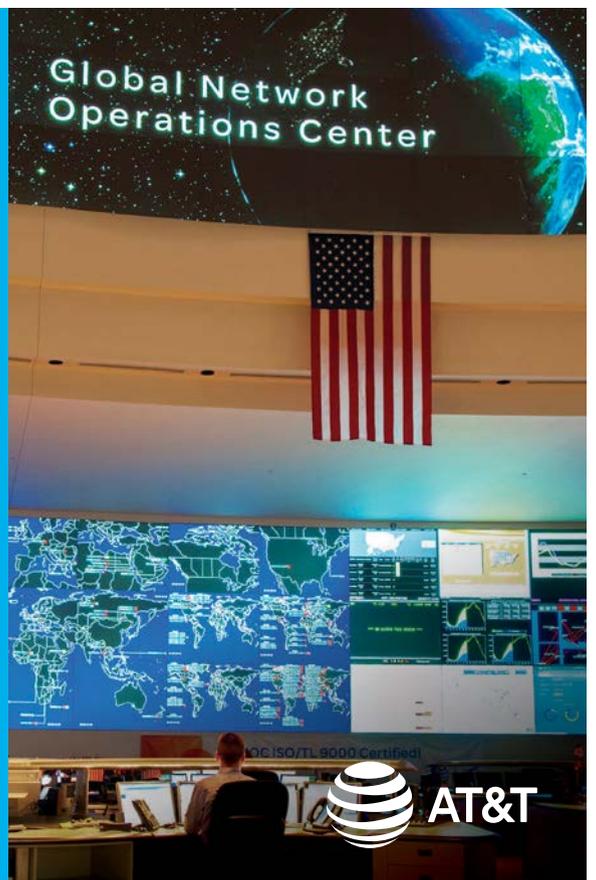
Funds support the Teacher of the Year Program, K-12 Educator Grants, Scholarships, and much more

Connectivity for today, resilience for tomorrow.

Connect your bases, systems and people with a Network as a Service solution to improve security, service and costs.

att.com/afnaas

© 2017 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.





Out of Africa

By Jennifer Hlad

USAF teams and the Nigerian armed forces led an aeromedical evacuation exercise with African partner nations.

In the Lake Chad region of West Africa, a humanitarian disaster and the subsequent need for aeromedical evacuation “is a very real possibility.” Such an event would likely involve multiple countries.

And so, for African Partnership Flight Nigeria, the US Air Force wanted to help partner nations coordinate and pool resources in planning a joint aeromedical evacuation, so “they could overcome the fact that one country might have the aviation resources, but the other has the doctors,” Maj. Andrew Moisan told *Air Force Magazine*.

Moisan, the team leader for this event, said Active Duty airmen from Ramstein AB, Germany, and Scott AFB, Ill., and Air Guardsmen from California, worked together for the training that included participants from Chad, Benin, Niger, and Nigeria.

Lt. Col. Kimberly Polston, a flight nurse who works as an international health specialist with the Office of the Command Surgeon, US Air Forces in Europe-Air Forces Africa, said the training scenario was an earthquake near the border. Five countries had to respond. There were 5,000 displaced people, and the scenario commander wanted each group to deploy 1,000 ground troops and all available aviation and medical assets—including ambulances and hospitals—to the region.

US service members head home from Liberia after a 2014 response to an Ebola virus outbreak. It was one of many ways USAF has been working with African nations.



Ghana army Capt. Seth Essiaw (l) and SMSgt. Benjamin Barnett establish a drop zone during a 2016 African Partnership Flight in Ghana.

The countries already move each other’s patients, she said, “but they know it’s an area where they could use some assistance.”

FIRST, WORK AS A TEAM

“Some of the countries had really strong deployable medical capabilities, and other countries had ... larger aircraft to help move these hospitals,” Polston said.

She said the US trainers talked about different echelons



In 2015's African Partnership Flight Djibouti, TSgt. Albert Kirkey talks with airmen from Djibouti about maintenance for the Let L-410 Turbolet aircraft.

of medical care and UN guidelines for aeromedical evacuation, because while Nigeria, for example, has good medical capabilities, it doesn't really know "how to interface with the airlift and the pilots."

One of the most important elements of the APF was getting medical personnel and pilots talking, Polston said, "to get them working together as a team, and then to have them think about patient movement."

Many medical personnel didn't know how many patients could fit on a given aircraft, so the trainers had pilots and medics look at that and at the staffing requirements for ambulances and various levels of hospitals, "because they have to move their equipment [and] their people, too."

A critical aspect of the event was how to share resources, since every country doesn't have the same capabilities, Polston explained. One country has C-17s, C-5s, and helicopters, some countries have multiple level 1 and 2 hospitals, and some don't have any.

The groups had to look at what they had available "to determine what they were going to move and where they were going to put it," Polston said.

The trainers gave the participants the weights of a Level 2 hospital and a Level 1 hospital, how much pallet space each takes, and the size and weight of ambulances, but they had to do their own research to determine how much an individual service member might weigh and what capabilities each aircraft has.

THE STRESSES OF FLIGHT

Trainers also went over stresses of flight, because pilots and medics may not know how altitude and movement can affect a patient.

"Patient care is different in the air," Polston explained.

The groups looked at force health protection, since part of the scenario was deploying ground troops to the area.

Though the training really just touched the surface of what they can do, Polston said, the big focus in US Africa Command is "rapid response and quick deployment in support of peacekeeping operations and humanitarian assistance disaster response."

"We want to be able to train our partners so they can respond independently and regionally," she added.



USAF aeromedical evacuation personnel observe members of the armed forces from Cameroon and Gabon train in a US Army Africa exercise last year in Libreville, Gabon.



A team of airmen from Nigeria and Chad discuss aeromedical evacuation through a translator during APF Nigeria in Lagos in August.

About 30 USAF personnel participated in the mid-August APF, Moisan said; the first part of the week focused on classroom instruction and best practices, with the tabletop exercise putting all the pieces together at the end of the week.

"I think our partner nations really enjoyed it, they enjoyed the interaction with the other nations, and I think they all really learned quite a bit during this event," Polston said. "And they said, 'This is exactly what we need. We need to be working together with our partner nations from a regional approach.'" ★

Jennifer Hlad is a freelance journalist based in the Middle East and a former *Air Force Magazine* senior editor.



Mobility Guardian

This was not AMC's first rodeo, but it was the biggest.

By Brian W. Everstine, Pentagon Editor

Hundreds of 82nd Airborne paratroopers, packed into 19 C-130s, jumped into central Washington state in August, with the goal of “retaking” a captured airfield. They were preceded into the target area by 13 C-17s that were hastily but expertly loaded with combat gear, and together they were escorted by a package of frontline combat jets including brand-new F-35s.

Mobility Guardian, the largest international air transport exercise of the modern era, was on.

Against a backdrop of skies laden with smoke from nearby forest fires, Mobility Guardian played out over more than two weeks, with JB Lewis-McChord, Wash., as its hub. The Air Mobility Command (AMC) event was a reincarnation of the old Air Mobility Rodeo canceled in 2013 because of the budget sequester, now reborn as a much more combat-oriented drill. Rather than put smaller numbers of ground and air crews through loading and launching races or “elephant walks” to earn proficiency trophies, the exercise practiced large-scale, nonstop, real-world scenarios reminiscent of Air Combat Command's Red Flag.

Two years of planning went into the event, which flexed every “muscle” in AMC and gave every indication of being a thorough success.

“It's one big scenario that focuses on every aspect of our mobility air forces portfolio,” said Col. Johnny LaMontagne, the combined forces air component commander for the exercise.

Red Flag was indeed the model for Mobility Guardian, LaMontagne said. The objective was to drill every aspect of AMC's mission set and “train like we fight.”

More than 65 aircraft flew in and out of multiple bases in the region. While Lewis-McChord was the central base, others in the wargames included Fairchild AFB, Wash.; Moses Lake Arpt., Wash.; and Mountain Home AFB, Idaho. More than 3,000 personnel took part, and two dozen international partners either participated with their own aircraft or came to observe.

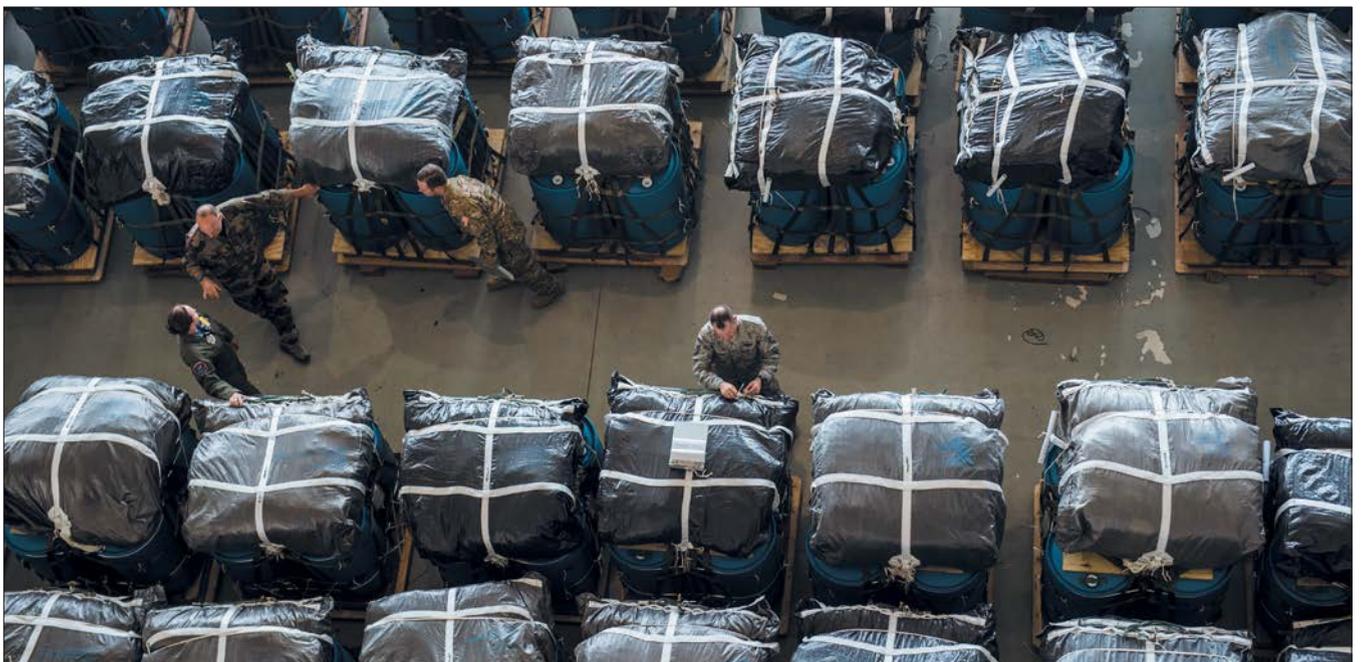
“We're going to do this as a partnership,” said Brig. Gen. Brian Robinson, the director of operations for headquarters Air Mobility Command, in a first-day welcome briefing at McChord.

On the first night, C-130s launched from McChord and headed out on a joint forcible-entry drill to get things



A USAF C-130 performs multiple airdrops at Yakima Training Center, Wash., during Exercise Mobility Guardian in August. More than 3,000 joint service personnel and international partners participated in the exercise.

Below: USAF and coalition joint airdrop inspectors check container delivery system bundles in preparation for a drop during Mobility Guardian.



Photos: TSgt. Gregory Brook; SA. Christopher Dyer



“THIS EXERCISE WAS AN INVESTMENT IN ENSURING OUR AIRMEN ARE PREPARED TO SUCCEED.”

—Gen. Carlton D. Everhart II, commander,
Air Mobility Command

started. The C-17s that took off earlier linked up with aerial tankers, carrying equipment to be airdropped at the Army's Yakima Training Center in south central Washington.

The C-130s, coming from every component of the Air Force as well as from several international partners, flew in over the Pacific Ocean and up through the range at Mountain Home. The range put on a simulated defense by a near-peer adversary. The C-130s were escorted to the drop zone by F-15Es, A-10s, F-35s, and Navy EA-18G Growler electronic warfare jets. The fighters helped “mitigate those threats for us, clear a path, and let us accomplish our objectives,” LaMontagne said.

Throughout the exercise, mobility and combat aircraft collectively flew about 90 joint sorties.

The paratroopers, from Ft. Bragg, N.C., jumped over the airport in the central Washington city of Moses Lake about six hours after takeoff, seizing it from an “enemy” force and setting up for future mobility operations.

For two weeks, the strip then served as a simulated austere location where aeromedical evacuation teams operated, aided by contingency response airmen. It hosted dozens of flights per day.

MOSES LAKE, LIKE IRAQ

Moses Lake sits in the state's Columbia Basin, largely dry from the rain shadow cast by the Cascade Mountains to the west. The airport's flight line is surrounded by rugged brush.

For the airmen of the 821st Contingency Response Group, holed up in tents and surrounded by Humvees and soldiers, it was a familiar setting.

“In this environment here at Moses Lake, it is probably as close to [feeling like] Iraq as I can imagine,” said Col. Justin Niederer, commander of the 821st from Travis AFB, Calif. “The temperatures, the dust, ... the coalition members on the ground here, and the flying aircraft. This is not very different from how we conduct operations.”

The setting was chosen deliberately. Representatives from USAF's contingency response forces helped plan the exercise, based on lessons learned from Iraq and Syria. The airmen have been busy as part of Operation Inherent Resolve, setting up austere airfields like Qayyarah West in Iraq during the campaign toward Mosul, and one near Kobani in Syria in advance of the push to Raqqa.

The airmen often work closely with soldiers from the 82nd,



C-17 Globemaster IIIs ready for takeoff were joined by RAAF C-17s and an RAF A400M for Mobility Guardian.



Participants listen to a briefing about their roles, safety measures, and expectations for Mobility Guardian.



TSgt. Jonathan Carr, a crew chief, runs checks on the engines of a C-17.

so their duties in Mobility Guardian mirrored their regular operations in current wars.

Before the exercise, Niederer asked who had been deployed and who had not. About half the airmen were experienced with deployments, and again, this was purposeful, so the veterans could mentor the newbies.

In a typical deployment scenario, an eight-man contingency response team will be the first in after a main seizure group, such as the 82nd Airborne or Army Rangers, take the airfield. After the green light, about 130 airmen from across 23 different Air Force specialty codes move in and get the airstrip running for operations. Every airman does double duty, fulfilling their turnkey specialties but also providing security to augment the 26 or so dedicated security forces airmen in case of an attack.

It's a highly disciplined group that's been performing as expected during Operation Inherent Resolve, Niederer said. The group is right-sized to work with special operations and other types of units to move airpower closer to where it is needed, he said.

Early in the exercise, the contingency response airmen helped control multiple flights from USAF and Royal Australian Air Force C-17s, along with a UK Royal Air Force A400M. US Army Strykers, Humvees, and soldiers were loading onto the jets following the simulated airfield seizure.

"Our airmen are getting access to, and experience in, a joint operation to a level they couldn't get in any exercise we could build ourselves," Niederer said.

Units across AMC were urged to send some of their younger crews to Mobility Guardian to get them working alongside seasoned hands, Lt. Col. Jeremy Wagner, director of the exercise, pointed out.

Air Mobility Rodeo, conversely, had focused on the most

Photos: SrA, Ericka Engblom; A1C Gracie Lee; TSgt. Nathan Lipscomb



experienced ground and flight crews, because it was a competition and units wanted to send their best in order to win.

There was a “whole lot of money, a whole lot of training time” devoted to “a small number of crews,” LaMontagne said. In contrast, Mobility Guardian gives younger airmen a chance to fly intense flight operations and “really wring out the jet,” he said.

“We wanted to get as far away from rodeo as possible,” Wagner said. “We treated it like a chain: You are only as strong as your weakest link. If we can improve our least-qualified people, our least-experienced people, [and] raise the floor of their core capabilities, we feel like that would have an incredible impact on the force’s readiness as a whole.”

The younger officers were doing the flying. The more senior participants helped with planning, and as a result, the exercise’s White Cell—planners in the command center—said it was “as good as it gets,” according to Wagner. The exercise gave AMC a chance to practice mission sets that it doesn’t usually get a chance to fly.

Some of the C-130s stopped over at Fairchild for a chance to do hot defueling, where crews offload the fuel from the aircraft onto a truck for use at an austere location. The tactic has seen only limited use in current operations, but on the Fairchild flight line, a C-130 and crews from Little Rock AFB, Ark., practiced the tactic before a planned deployment, said SMSgt. Chris Dobbertin, the 92nd Logistics Readiness Squadron superintendent at Fairchild.

Two engines were run on one side of the C-130 as airmen linked up a connection to an R-11 refueling truck to offload fuel. In a real-world event, a C-130 can receive fuel from a tanker, land at a forward operating base, and provide fuel via a truck to deployed aircraft such as attack helicopters without having to shut off its engines.

PRACTICING PARTNERSHIP

The US rarely fights alone, and the “train like we fight” adage meant bringing in allied country air forces. Eleven nations went to the wargames: Australia, Belgium, Brazil, Britain, Canada, Colombia, France, New Zealand, Pakistan, South Korea, and Taiwan. They sent planes such as A400s, C-130s, C-17s, and CASA 295s.

Observers came from Argentina, Austria, Bangladesh, Gabon, Germany, Japan, Kazakhstan, the Philippines, Senegal, Spain, Sweden, Thailand, and the United Arab Emirates.

Mobility Guardian was the largest exercise to date for the Airbus A400s and marked the first time an RAF squadron had deployed the aircraft for an exercise. The type began service with the RAF in 2014 and its crews are still preparing it for operations overseas, said Wing Cmdr. Ed Horne, Number 70 Squadron commanding officer from RAF Brize Norton, UK.

The exercise showed partners that the airlifter “is a really capable platform,” he said in a news release. The event provided a way for A400 crews “to be meeting people from all over the world that we might well be operating with in a real-world



A C-130 Hercules assigned to Little Rock AFB, Ark., takes off from JB Lewis-McChord, Wash., during the exercise.



An RAF A400 at JB Lewis-McChord. Mobility Guardian was the first time the RAF deployed the Airbus A400 for a major exercise.

scenario in the future," Horne observed.

International aeromedical evacuation teams worked with those from USAF, and international security forces patrolled the Moses Lake flight line. The rest of the allied nations came along to watch and learn.

"There's a spectrum of capabilities across the coalition,

just like there is when we deploy forward," LaMontagne said.

For about two weeks, the exercise ran 24 hours a day, seven days a week. During the few lulls of flight operations, the White Cell remained fully operational, and international partners were able to meet and share their tactics, techniques, and procedures, LaMontagne said. AMC aircrews rarely get the chance to train with coalition partners, and an exercise of this size gives them an ability to work together before a conflict instead of forming an alliance "on the fly," he said.

Flight operations totaled about eight days, amounting to about 1,200 flight hours across 650 sorties. Some 1.2 million pounds of fuel were offloaded, while aerial port personnel processed 3,676 passengers and 4,911 tons of equipment. Aircrews dropped 356 paratroopers, 33 heavy vehicles, and about 300 container delivery system bundles.

AMC is now assessing lessons from the exercise and deciding whether it should be a yearly event.

"Mobility Guardian was about learning, discovery, and the opportunity to work as a part of a joint and coalition team," said Gen. Carlton D. Everhart II, the commander of Air Mobility Command, after the exercise drew to a close. "This exercise was an investment in ensuring our airmen are prepared to succeed in the most challenging environments and deliver the desired results across the globe." ✪

Photos: A1C Erin McClellan; SAC Nicholas Egan/RAF



By Amy McCullough, News Editor

Like a Phoenix

Israel Del Toro became the first airman to ever return from 100 percent disability.

MSgt. Israel Del Toro—known to friends as “DT”—had never believed the old saying that people about to die see their lives flash before them. Then it happened to him.

In December 2005, then-Staff Sergeant Del Toro was in Afghanistan, riding with a team of soldiers tasked with killing or capturing a high-value target and destroying a supply route used by the Taliban around Helmand province. A TACP, or tactical air control party specialist, his job was to call in air support when needed.

Heading up into the mountains to resupply another coalition team, the Humvee he was riding in drove over an IED, or improvised explosive device. There was a flash and explosion.

Some of the images came fast, others slowly. He and his wife were finally going to get the church wedding that had been delayed three times by deployments. They were going to honeymoon in Greece. He was going to teach his son how to play ball.

As the images faded and he regained his senses, Del Toro realized he had to get out of the burning vehicle, fast. Engulfed in flames “from head to toe,” he remembered having just passed a creek.

“I tried to run to it but the flames overtook me and I collapsed,” he said. “I remember thinking to myself that I’m going to die here. ... Then one of my teammates helped me up and we both jumped into the creek to [extinguish] the flames, and the only sound I hear is that sizzle sound. Only it wasn’t a pan, it was my body.”

Up in the mountains, the team that DT’s unit was trying to reach was caught in a crossfire and needed close air support. Even as medics cut his clothes off his severely burned body, DT talked a US Army scout through the TACP procedures.



The scout called in the air strikes for him.

Having lost his own father at the age of 12, Del Toro swore his own son wouldn't grow up without a dad. As he begged the medics to let him sleep, they

repeatedly reminded him of this promise. "Fight for your son, DT. Fight for your son," said one. "He just kept saying it until the medevac came," Del Toro recalled.

When the chopper arrived, Del Toro's teammates began to carry him to it. But he insisted, "Hell, no! I walked into this fight; I'm going to walk out." I hobbled my naked butt to the helicopter," he said.

Throughout the flight to his forward operating base, he drifted in and out of consciousness. He remembers seeing



MSgt. Israel Del Toro listens to cadet instructor Jordan Wesemann while taking the jumping course at the US Air Force Academy in February.

some of his Air Force and Army buddies at the field hospital. He remembers the doctor cutting off his watch and telling him he was going to be OK. That was Dec. 4, 2005.

When he woke up in March 2006 at Brooke Army Medical Center at Ft. Sam Houston, Texas, Del Toro thought it was still December in Afghanistan.

He had suffered third degree burns over more than 80 percent of his body and had gone from a "200-pound muscle head" to a mere 115 pounds. The inhalation burns in his lungs had nearly killed him three times. Doctors gave him a 15 percent chance of living and broke the news that if he did survive, he would never walk again or breathe without a respirator. They said he would be hospitalized another year-and-a-half and that his military career was over.

DT refused to accept that prognosis.

"I couldn't really talk," he recalled, because of a tracheostomy. "I might have given some colorful words, but pretty much, I just told them they can go to hell." Two months after the grim forecast, "I was out of the hospital, walking and breathing on my own."

First, though, he'd have to make it through what he called his "darkest hour."



Air Force Chief of Staff Gen. T. Michael Moseley joins in applause for Staff Sergeant Del Toro during the 2006 presentation of a Purple Heart Medal awarded for his actions six months earlier.

THE DARKEST HOUR

Del Toro was making amazing progress in recovery. His positive attitude, strength, and perseverance were an inspiration to everyone he encountered.

He hadn't yet seen his face, though.

Because of the severity of his burns and disfigurement, all the mirrors in his line of sight had been kept covered. Doctors wanted to give him time to heal and ease into his new reality.

One day, as his wife and therapist were helping him to the bathroom, one of them tripped and accidentally pulled the towel off the mirror.

"I saw myself for the first time and I broke down. I told them, 'Why did you guys let me live? I should have died out in the field. You guys should have let me die those three times. Why did you let the doctors save me?'"

DT was inconsolable. Everyone else was crying, too.

"It wasn't a vanity thing. ... I was a 30-year-old man and I had a three-year-old son and I thought, if at 30 years old I looked like a monster, what's my three-year-old going to think?" he wondered.

His therapist, whom DT refers to as his "guardian angel," wouldn't let him give up.

"You don't realize how many people look up to you," the therapist said, "not only the medical staff, but the other service members that are in here with you. They see you go



Del Toro throws a shot put during the Invictus Games in Orlando, Fla., in May 2016.

through some of the most excruciating pain a human can possibly go through, but you're not quitting. You keep pushing. You keep asking, 'Get me back out there,'" he recalled.

Del Toro had convinced himself, though, that his son would be terrified of him, and he just didn't know how to live with that. His wife and therapist kept assuring him that his son, also named Israel, wouldn't care what he looked like. He just wanted his dad.

It would be another month-and-a-half, in May 2006, before DT came to believe that. When he walked in the door of his house, he looked "like a mummy" because his wounds were all wrapped up. He was happy to see his friends and family, but he was focused on his son, whom he hadn't seen since August 2005.

"I hear his little feet stomping. Dat Dat Dat Dat. And he stops right in front of me. ... I'm like, 'Oh crap, he's scared of me,'" said Del Toro. But his son "just [tilted] his head to the side" and asked, "Boppy?" Del Toro answered, "Yeah, buddy." DT said, "He comes up and gives me the most amazing hug. It's probably the best sensation I've ever had besides him being born."

"Gary was right, my therapist, all he wanted was his dad. He didn't care what dad looked like. He knew who I was, it was



my voice or I don't know what it was maybe a child's intuition, but all he wanted was his dad."

STAY STRONG, FINISH STRONG

Although he walked out of the hospital on his own power after just two months, it would take three more years before Del Toro really started to feel strong again. His status was "limbo," as he called it—as a patient, he couldn't work and couldn't get promoted. Recovery took five years, 120 surgeries, and countless hours of therapy.

He was charting new ground. Wounded troops of the Vietnam era had simply not survived injuries comparable to his.

"At that time, the Air Force didn't really know how to deal with wounded service members," DT observed.

As a noncommissioned officer, Del Toro felt compelled to change that. He had to prove to himself—and the Air Force—that he could still serve.

"I missed my teammates downrange, but I knew all these wounded guys were now my teammates," he said. "I had to take care of them. ... I had to fight for them and try to get better things for them."

Eventually a medical board gave him a choice: He could retire with 100 percent disability and come back as a civilian and



Del Toro, left, talks to Wesemann during jump training.

teach TACP students, or he could put the uniform back on and do the same job. The civilian alternative offered more money, but for Del Toro there really was only one option.

“It’s very hard for someone to find a job they truly love, and I truly love serving my country,” said DT. “I truly love being a TACP.” He knew he couldn’t be a frontline operator anymore, couldn’t go downrange, but he could still teach young airmen how to call in air strikes.

“I always wanted to retire on my own terms, not on the terms of the SOBs that left the IED on the road and tried to ruin my career, ruin my life,” Del Toro insisted.

On Feb. 8, 2010, then-Technical Sergeant Del Toro became the first airman with 100 percent disability ever to re-enlist. Maj. Gen. Anthony Przybyslawski, then vice commander of Air Education and Training Command, administered the oath before a packed base theater at JBSA-Randolph, Texas.

“He’s bringing back his skills to the Air Force as a tactical air party controller. He’s going to be an instructor,” Przybyslawski said at the ceremony. “He has credibility and the ability to teach from experience. That’s why we need him; that’s why we want him. He’s going to serve us and he’s back on the job.”

After his re-enlistment, Del Toro was assigned to the Air Force Services Activity at JBSA-Lackland, Texas. Initially, though, he stopped at the Air Force Academy, as the first



Del Toro walks away from the landing site with his son, Israel, left, now 14, after completing his first jump in 11 years Feb. 18, 2017, at the academy. When Del Toro re-enlisted in 2010, he was teaching TACPs. He is now assigned to the academy.

Paralympian in the Air Force’s World Class Athlete Program. This allowed him to train full-time for national and international athletic competitions. The man who doctors said would never walk again—the most recognizable face of the Air Force Wounded Warrior Program—was training at the Olympic Training Center and competing in cycling, track and field, and powerlifting.

Del Toro today works as an instructor in the academy’s parachuting airmanship course, where he trains cadets trying out for the Wings of Blue, the school’s parachute demonstration and competition team. On Feb. 18, he made his 131st parachute jump alongside members of the 98th Flying Training Squadron in Colorado. It was his first jump in 11 years.

Seven days later, he pinned on master sergeant’s stripes. Then-Academy Superintendent Lt. Gen. Michelle Johnson surprised him after a speaking engagement to say there was a mismatch with his Air Force Specialty Code after he returned from Afghanistan, resulting in a retroactive promotion to August 2014.

“It’s tremendously exciting for us to share this day with Master Sergeant Del Toro,” CMSgt. Max Grindstaff, the academy’s command chief at the time, said during the ceremony. “He represents the best of the best, a true commitment to service before self, and is an inspiring example of strength, faith, and honor to all airmen and our 4,000 cadets. Specifically, the trailblazing he’s done for his fellow wounded warriors exemplifies the best of what makes us great.”

As an NCO and instructor, Del Toro conveys his hard-won wisdom. He knows his scars are a constant reminder to his students of the very real dangers they will encounter in the field, but he encourages them to stay focused on the mission.

“I always say, if they look at me and see the severity and possibility of what can happen to you in this job—and they still want to do this job—then these are guys I want in my Air Force. These are guys I want in my military. ... These are my teammates I want downrange having my back,” he said.

His friends frequently rib him over his “Hollywood status,” because of all the celebrities he’s encountered through his journey. He’s met former President George W. Bush several times. Comedian Jon Stewart presented Del Toro with the Pat Tillman Award at this year’s ESPY awards and the TV personality often sends him “crazy texts.” Kat Von D, star of the reality TV show “LA Ink” did one of the tattoos on his arm—a phoenix surrounded by fire. Del Toro said this image represents his “spiritual animal,” because when a phoenix dies, “it turns to ashes and from the ashes is new life.”

Also emblazoned on his arms are the words his son used to say to him as he trained, that he continues to live by today: “Stay Strong, Finish Strong.”



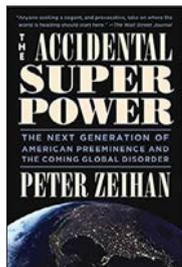
SSgt. Israel Del Toro on patrol in Iraq in 2003.

Photos: TSgt. Cecilio Ricardo; Bill Evans/USAF; E. J. Hersom/DOD; Christian Murdock/The Gazette; USAF; Christian Murdock/The Gazette

CSAF Professional Reading List

Compiled by Chequita Wood, Media Research Editor

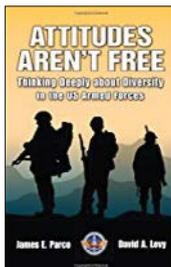
Air Force Chief of Staff Gen. David L. Goldfein released his latest reading list in September. The list has undergone a restructuring and is now a "Living Program." There will no longer be a year attached to the list as it will be periodically updated. Twenty books, 10 of them featured here, are split into five categories tailored to the airman's experience. It also includes "Chief Master Sergeant of the Air Force Picks," photography, Air Force art, blogs, and videos/TED Talks. In introducing the list, Goldfein said, "This reading list was developed to strengthen your ability to turn challenges into opportunities going forward in defense of our nation." To find the complete list, visit <http://static.dma.mil/usaf/csafreadinglist>.



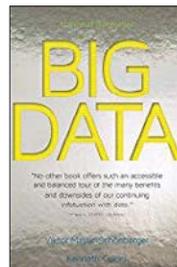
The Accidental Super Power: The Next Generation of American Preeminence and The Coming Global Disorder. Peter Zeihan. 384 pages. \$28.00.



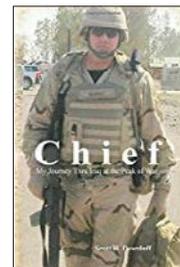
Airpower Reborn: The Strategic Concepts of John Warden and John Boyd. John Andreas Olsen. 256 pages. \$49.95.



Attitudes Aren't Free: Thinking Deeply About Diversity in the US Armed Forces. James E. Parco and David A. Levy. 570 pages. \$25.00.



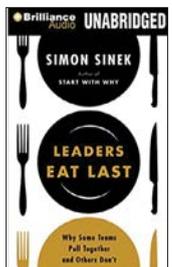
Big Data: A Revolution That Will Transform How We Live, Work and Think. Victor Mayer-Schönberger and Kenneth Cukier. 272 pages. \$15.95.



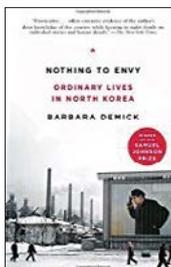
Chief: My Journey Thru Iraq at the Peak of War. Scott H. Dearduff. 390 pages. \$17.99.



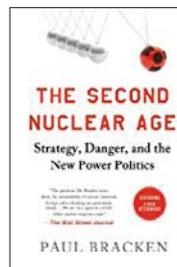
The Strategist: Brent Scowcroft and the Call of National Security. Bartholomew Sparrow. 752 pages \$37.50.



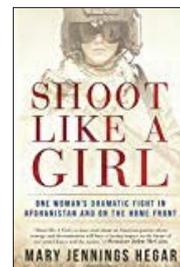
Leaders Eat Last: Why Some Teams Pull Together and Others Don't. Simon Sinek. 368 pages. \$27.95.



Nothing to Envy: Ordinary Lives in North Korea. Barbara Demick. 336 pages. \$27.00.

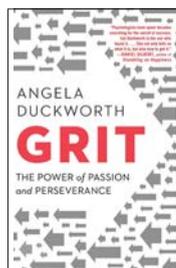


The Second Nuclear Age: Strategy, Danger, and the New Power Politics. Paul Bracken. 336 pages. \$17.99.



Shoot Like a Girl: One Woman's Dramatic Fight in Afghanistan and on the Home Front. Mary Jennings Hegar. 304 pages. \$26.00.

CMSAF PICKS



Grit: The Power of Passion and Perseverance. Angela Duckworth. 352 pages. \$28.00.

PHOTOGRAPHY



"MSgt. Joshua L. DeMotts" Coalition force joint terminal attack controllers (JTAC) and supporting elements direct the action of combat aircraft during a close air support exercise in a salt flat near JB Balad, Iraq, Jan. 4, 2009.

AIR FORCE ART



"No Man Left Behind" Painting by Thomas Morgan



"Vigilant Action Abroad" Painting by Michael Kane

TED TALKS



"Three ways to plan for the (very) long term" Ari Wallach shares three tactics for thinking beyond the immediate.

BLOG



"Over the Horizon (MDOS)" As in the past, success requires we keep a strategic eye on the other side to make sure we're prepared for that future when it arrives.



COMMEMORATING USAF'S 100-YEAR UNITS

2017 marks 70 years since the United States Air Force was established as an independent military service, but many of USAF's entities trace their history back much further. In fact, 65 of today's Active Duty, Air National Guard, and Air Force Reserve units have lineages dating back to World War I.

Most began their time as WW I-era Army aero squadrons, and many were stationed in France during the Great War. Over time, units have changed names, locations, equipment, and missions—sometimes repeatedly. They may have been inactivated and reactivated several times. The stories of these units and their airmen can fill volumes, and many official and unofficial histories are available online.

Today, a diverse collection of more than five dozen Air Force groups and squadrons trace their histories back a century or more, as in the case of the 1st Reconnaissance Squadron and 2nd Air Refueling Squadron. On the following pages are their patches—check them out.

Research by Mike Tsukamoto, photo editor, and Daniel L. Haulman, Air Force Historical Research Agency



1ST AIRBORNE COMMAND AND CONTROL SQUADRON



1ST RECONNAISSANCE SQUADRON



2ND AIR REFUELING SQUADRON



2ND SPECIAL OPERATIONS SQUADRON



3RD FLYING TRAINING SQUADRON



5TH RECONNAISSANCE SQUADRON



6TH WEAPONS SQUADRON



7TH RECONNAISSANCE SQUADRON



8TH SPECIAL OPERATIONS SQUADRON



9TH BOMB SQUADRON



17TH WEAPONS SQUADRON



19TH FIGHTER SQUADRON



20TH BOMB SQUADRON



22ND INTELLIGENCE SQUADRON



23RD BOMB SQUADRON



32ND AIR REFUELING SQUADRON



33RD SPECIAL OPERATIONS SQUADRON



34TH BOMB SQUADRON



35TH FIGHTER SQUADRON



36TH FIGHTER SQUADRON



44TH RECONNAISSANCE SQUADRON



48TH FLYING TRAINING SQUADRON



49TH TEST AND EVALUATION SQUADRON



54TH AIRLIFT SQUADRON



55TH FIGHTER SQUADRON



94TH FIGHTER SQUADRON



95TH RECONNAISSANCE SQUADRON



96TH BOMB SQUADRON



97TH INTELLIGENCE SQUADRON



99TH RECONNAISSANCE SQUADRON



109TH AIRLIFT SQUADRON



119TH FIGHTER SQUADRON



394TH COMBAT TRAINING SQUADRON



429TH ATTACK SQUADRON



436TH TRAINING SQUADRON

COMMEMORATING USAF'S 100-YEAR UNITS



11TH BOMB SQUADRON



12TH RECONNAISSANCE SQUADRON



13TH BOMB SQUADRON



15TH ATTACK SQUADRON



16TH ELECTRONIC WARFARE SQUADRON



25TH SPACE RANGE SQUADRON



26TH SPACE AGGRESSOR SQUADRON



27TH FIGHTER SQUADRON



28TH BOMB SQUADRON



31ST TEST AND EVALUATION SQUADRON



37TH BOMB SQUADRON



41ST ELECTRONIC COMBAT SQUADRON



42ND ATTACK SQUADRON



43RD ELECTRONIC COMBAT SQUADRON



43RD FIGHTER SQUADRON



87TH FLYING TRAINING SQUADRON



89TH ATTACK SQUADRON



90TH FIGHTER SQUADRON



91ST CYBERSPACE OPERATIONS SQUADRON



93RD BOMB SQUADRON



102ND RESCUE SQUADRON



105TH AIRLIFT SQUADRON



106TH AIR REFUELING SQUADRON



107TH FIGHTER SQUADRON



108TH AIR REFUELING SQUADRON



489TH ATTACK SQUADRON



867TH ATTACK SQUADRON



908TH EXPEDITIONARY AIR REFUELING SQUADRON



911TH AIR REFUELING SQUADRON



USAF AIR DEMONSTRATION SQUADRON

Due for replacement: USAF T-38s are on average more than 50 years old.

HEADING TO A T-X

By John A. Tirpak, Editorial Director

The T-38 is increasingly ill-suited for training 21st century pilots.

By year's end, the Air Force expects to announce the winner of its T-X competition, aimed at replacing the venerable T-38 in the advanced pilot training role. With 350 aircraft and \$16.3 billion on the line, the T-X has become one of the most attractive—and risky—contracts on USAF's hefty slate of modernization projects.

It's attractive because the contract would provide the winner with a steady, uncontroversial chunk of work for at least 15 years, with stable production running from about 2020 through 2034, and opportunities for follow-on support of aircraft, simulators, and courseware lasting many years beyond that. USAF may order additional lots of the aircraft for missions such as Aggressor and companion trainer—roles also filled by T-38s over the years—although the service warns that those potential follow-on buys aren't part of the T-X program, may not materialize, and won't be a factor in T-X evaluations.

There are no other large-run military fixed wing aircraft competitions on the books until the Navy's F/A-XX and Air Force Penetrating Counterair (PCA) aircraft take shape—both at least a decade away—making T-X a

doubly important must-win for airframe houses that want warm production lines in the 2020s.

The victor will have a significant edge in foreign advanced trainer competitions, likely able to offer a better price than other contractors due to economic order quantities and volume production. It would enjoy the prestige of being USAF's choice—important because foreign customers know the Air Force's blessing means parts and support for the jet and associated training systems will be available for decades.

Lockheed Martin officials estimate a market for up to 2,000 advanced trainers over the next 25 years, though others see a need for only 1,200 or so.

The T-X is risky, though, because while it was originally envisioned as a "best value" competition (and that is still the official USAF language), those vying for it say it has devolved into a "low price shootout," shaving potential profits razor-thin. If problems emerge during development, under a firm fixed-price or fixed-price incentive contract, the winner would have to eat the cost of fixing them, potentially rendering the project a money loser. Boeing, for example, underbid the fixed-price KC-X tanker program and





has so far absorbed well over a billion dollars in write-downs on it, though company officials insist it will be profitable in the long run.

Even two years ago, the Air Force was referring to the T-X as a \$20 billion program, but the final request for proposal, released in December 2016, quoted a value of \$16.3 billion. (Since the release of the RFP, Air Force officials have declined to comment on the T-X, because the program is “in source selection,” and any remarks could later be construed as an effort to sway the outcome.) Offerers must be judged to have presented a low- or moderate-risk plan for building the jets and training system.

A COMPETITOR BAILS OUT

So steep was the reduction in the T-X’s contract value that one major contractor opted out of bidding once it saw the final RFP. Northrop Grumman is arguably the incumbent since it built the T-38 nearly 60 years ago—just over 1,100 jets were built over 13 years. The company declined to bid, despite having built and flown a prototype T-X aircraft.

By way of indirect explanation, CEO Wes Bush said in January the company prefers programs where “best value,” not price, is the key discriminator.

The Air Force accepted final offers on the T-X in April, but allowed contractors to continue offering flight test data on their designs through June. Since then, USAF has been evaluating the entries, although high-level approvals have had to wait for the appointment of key acquisition officials in the new administration. With many of the nominees for those key positions confirmed over the summer, the way was cleared for an award this month or so, assuming Congress passes a defense bill.

The service won’t disclose the identities of companies that bid on the T-X, leaving it up to the companies themselves to discuss that information.

Those announcing or confirming their participation include Boeing/Saab of Sweden, Leonardo of Italy, Lockheed Martin/Korean Aerospace Industries, Sierra Nevada/Turkish Aerospace Industries, and Stavatti Aerospace.

The Air Force’s final RFP said it could opt to buy as many as 473 jets and 120 ground-based training systems, but that is not the program baseline.

The T-38 needs replacement for a number of reasons. First, the aircraft is simply old. Though it’s still a sleek, modern-looking jet, the first T-38s were delivered in 1961, and some of the aircraft in the fleet have been through or will have undergone three service life extension programs, named Pacer Classic I to III. The modifications ranged from updated structures, including the air intakes and wings, to an updated cockpit.

The Air Force has contemplated further T-38 life extensions in lieu of a new airplane, but even rebuilding the airframes to essentially zero time wouldn’t solve the main problem: The T-38’s performance no longer matches the skills modern USAF fighter/bomber pilots must master. In fact, when the draft RFP was released in 2015, Air Education and Training Command (AETC) said the T-38 can’t teach 12 of 18 core skills the service wants for its advanced training graduates.

Over the years, learning those skills migrated to operational squadrons. With the T-X, USAF could bring those lessons back to basic flight school, saving hundreds of flying hours at front-line units and on operational assets needed for real-world contingencies.

What the T-X must have that the T-38 doesn’t is a modern cockpit that will make the transition to a fourth or fifth generation aircraft more seamless; the ability to sustain a 6.5G turn (though 7.5Gs is preferred); “embedded training,” which is the ability to simulate weapons releases and sensor operations in the cockpit; sharply better

Lockheed Martin T-50As. The company paired with Korean Aerospace Industries for the T-X competition.



The Boeing/Saab team says their T-X entry went from drawing board to first flight in a year's time.



Leonardo's T-100 is an off-the-shelf entrant. The company said its US subsidiary would be its program lead.



sustainability and maintainability; at least a 10 percent fuel economy improvement versus the T-38; and the ability to teach aerial refueling, among other requirements.

For years, the Air Force thought the best way to go about getting the T-X at an affordable price was to adapt something already flying—a modern trainer in service with another country. American companies were encouraged to partner with a foreign firm to offer an Americanized version of these off-the-shelf jets, to save substantially on the cost and time required to produce airplanes for the Air Force. The service had an ambitious timetable for buying, testing, and fielding the new jet, so purchasing the T-X wouldn't pile unaffordably on top of other big-ticket acquisitions.

USAF made it a priority to keep open a running dialog with potential bidding companies on the art of the possible, so it didn't ask for performance that would either unnecessarily rule out too many competitors or specify a capability that spiked the cost without adding comparable value.

Initially, most of the potential competitors took the off-the-shelf approach. For example, Northrop Grumman partnered with BAE Systems on a version of that company's Hawk trainer, along with L-3; Lockheed paired with Korean Aerospace Industries, with whom it had collaborated to develop South Korea's T-50 trainer; General Dynamics partnered with Alenia-Aermacchi (now Leonardo) on the M-346 Master, redubbed the T-100. Textron saw an opportunity for its self-funded Scorpion light jet. Boeing, seemingly going against the current, partnered with Saab of Sweden in 2013 to develop an all-new airplane for the T-X program and the world trainer competitions that would follow.

However, as the Air Force refined its requirements, some of those off-the-shelf aircraft couldn't fit the bill. The Northrop team dropped the Hawk and decided to create its own clean-sheet design. Textron, which had intended the Scorpion as potential low-cost candidate for T-X, a Red Air platform, and other missions, such as light attack, finally decided it could not tweak the jet to USAF's required T-X performance.

THE CONTEST WITHIN

Lockheed had directed its Skunk Works advanced products division to pursue a Red Team approach. It

developed a concept for a clean-sheet design, then compared the tailor-made aircraft with the T-50 to determine which was the more competitive platform when measured against USAF's specs.

An adaptation of the T-50 "was the clear choice," Skunk Works president Rob Weiss told *Air Force Magazine* in 2016. While "in some areas" the tailor-made airplane bested the T-50, "that was completely outweighed" by the cost advantages of offering an airplane that had already been through flight test and development, had flown hundreds of thousands of hours training thousands of pilots, and already had a production line and vendor base, he explained. With some modifications—notably the fitting of a dorsal spine that could make the T-50 air refuelable—Lockheed discarded the clean sheet and stuck with the T-50, rebranding it the T-50A.

Weiss acknowledged that the T-50, though designed for the Republic of Korea Air Force in the late 1990s, had been developed with the Air Force's need for a T-38 replacement in mind.

"We thought the Air Force would get around to this a lot sooner," Weiss allowed. The T-50 is flying with air forces in Korea, Indonesia, Iraq, the Philippines, and Thailand. The stock T-50 will be upgraded with displays adapted directly from the F-35 (for which Lockheed is the prime contractor), embedded training systems, and a dorsal refueling spine—removable for those times the Air Force isn't teaching air refueling and doesn't want to carry around the extra weight. The T-50 has racked up over 100,000 hours of operational flight time and has trained thousands of pilots.

In fact, the T-50A is so low-risk—with the vast majority of testing to USAF standards already accomplished—"we could deliver operational capability two years earlier than the Air Force's goal" of 2024, Weiss asserted. That's a potential big cost saver for the Air Force because the service wouldn't have to extend the service lives of as many T-38s to last until all the T-Xs are delivered.

Going with a new design would present the Air Force with "a substantial and unacceptable amount of concurrency" if the service wants to meet the stated timetable, Weiss stated.

The Korean version of the T-50 is available as a light strike jet called the FA-50, and the T-50A will retain

"WE THOUGHT THE AIR FORCE WOULD GET AROUND TO THIS A LOT SOONER."

—SKUNK WORKS PRESIDENT ROB WEISS

capability for wing hardpoints. Weiss said the T-X will inevitably be "used for other training roles," and it's important that the capacity for those "be built in now, so you don't need extensive modifications" later.

If Lockheed Martin wins the T-X, it will perform final assembly and check-out at its Greenville, S.C., facilities, where it is also moving F-16 production, from Fort Worth, Texas. A company spokeswoman acknowledged that the F-16 and T-50A are similar, and there is "some commonality" of parts between the two jets.

Boeing, partnered with the Swedish firm Saab, is offering a new, or clean-sheet design, that it insists deserves a fresh way of evaluation because it incorporates new ways of building aircraft. Its motto on T-X is, "Breaking the norm."

When the company rolled out its new airplane in September 2016, Boeing Phantom Works president Darryl Davis said the jet had been tailored precisely to USAF's requirements, incorporating additional lessons learned from other successful trainer aircraft. The Boeing/Saab airplane has staggered, or stadium, seating to give the backseater excellent forward visibility, and the jet's twin tails give it more agility than a single tail and a handling experience more like the F-35 and F-22.

BEND IT LIKE BOEING

"What you can't see," Davis said at the rollout, "is the advanced design and manufacturing that went into this." Boeing developed advanced manufacturing techniques called Black Diamond, that make it possible to manufacture large sections of the aircraft as a single piece. That eliminates "a tremendous amount" of touch labor, he said, and the jet can even be built "without tools"—without the elaborate (and often expensive) framing jigs that hold the jet together while it's being assembled. That translates into reduced time and cost in manufacturing, Davis said, adding that the fastener count on the Boeing/Saab jet would be far less than that of competitors, because of the use of "advanced adhesives."

"We're going to shatter the cost curve," Davis said, a play on then-Air Force Secretary Deborah Lee James' theme of "Bending the Cost Curve."

Davis said the team's ground-based training system, rather than "an afterthought," was designed in tandem with the embedded systems on the jet, making for a "seamless" training experience. Boeing officials said Saab was brought in as a partner because of its reputation with the Gripen fighter, a world-class combat jet that nevertheless can be maintained in the field



With this illustration, Stavatti Aerospace depicts its forward-swept-wing supersonic trainer. It is one of two concepts it submitted for the T-X competition.

Photos: Lockheed Martin; Kevin Flynn/Boeing; Leonardo DRS; Stavatti illustration

by personnel with only a few months of training due to its simplicity.

The landing gear on the Boeing airplane came from the F-16, part of the team's effort to "reuse systems already proven" in other platforms—again, to save development and testing time. The jet would have a glass cockpit but not necessarily the same displays as in the F-35.

At a December 2016 company event, Boeing officials said their jet had gone from drawing board to first flight in just a year, underscoring Boeing's skill at advanced design and fabrication. The company would perform final assembly and checkout at its St. Louis facility. Parts would be fabricated there, from among Boeing's worldwide vendors, and by Saab in Sweden.

Both the Lockheed/KAI T-50A and Boeing/Saab T-X would be powered by a variant of the GE F404 engine. The Air Force already operates a similar engine in its B-2 bombers.

Even though Davis said the Boeing jet is tailored tightly to the T-X requirements, he allowed that it has some margins of performance above those stated by the Air Force, but "we're not going to talk about details of what we can do above threshold requirements."

THE MASTER'S PARTNERS

The Leonardo T-100—going by the nomenclature M-346 Master overseas—is a true off-the-shelf entrant in the T-X competition. Leonardo's predecessor Finmeccanica at first partnered with General Dynamics to offer the jet, but GD withdrew from the partnership in 2015. The company then teamed with Raytheon, but that company bowed out in January, citing an inability to "reach a business agreement" with Leonardo "that is in the best interest of the US Air Force," a Raytheon spokesman said.

Industry sources said at the time Raytheon felt Leonardo was not being aggressive in reducing costs enough to be competitive in the contest and that there was disagreement about meeting a goal of 70 percent US content.

Soon after, Leonardo said it would offer the T-100 with DRS, its US subsidiary, as the program lead. The Raytheon partnership had been seen as a strong factor in the T-100's favor, as Raytheon is the prime contractor for both the T-1 Jayhawk and the T-6 Texan II, AETC's other two jet trainers, and since Raytheon has long experi-



At JBSA-Randolph, Texas, 1st Lt. Austin Hornsby, a 435th Fighter Training Squadron student pilot, uses a training simulator.

ence in flight training and courseware.

In announcing its partnership with Raytheon in February 2016, Finmeccanica (now Leonardo) officials touted the T-100 as an "affordable" and "proven" design and said they were taking a fresh look at the program and not continuing the work done on the training system with General Dynamics. When Leonardo announced it was going it alone on T-X after Raytheon's withdrawal, it did not say whether it would start over on the courseware, although it has a training program operating in several countries.

Leonardo plans to assemble the T-100 in Moton, Ala., if it wins the contract. In its early days, the M-346 was a co-development with Yakovlev of Russia and bears a strong resemblance to that company's Yak-130 trainer. The jet would be powered by two Honeywell F124-GA-200 turbofans.

Sierra Nevada partnered with Turkish Aerospace Industries in late 2016, forming Freedom Aircraft Ventures LLC to offer the Freedom Trainer, another new design, for the T-X competition. The twin-tailed aircraft would be powered by two Williams International FJ44-4M business-class turbofan engines. Company officials said the all-composite (i.e., nonmetal airframe) jet would be 30 percent more fuel efficient than the

T-38. The jet is envisioned as a pure trainer, with no provision for other roles such as light attack.

Sierra Nevada is best known for satellite systems, electronic warfare, and special mission aircraft modifications, and the A-29 light attack aircraft. TAI has built hundreds of F-16s under license from Lockheed Martin and is a second source on the F-35 center fuselage.

Stavatti Aerospace of Eagen, Minn., announced in April that it had submitted two concepts for the T-X program shortly before the deadline. One is a forward-swept-wing design that the company claims can be produced at \$20 million each. The other is a "reimagined" version of its one-off Javelin demonstrator, at a cost of \$10 million each, powered by a Honeywell turbofan. The company called the jet an "homage" to the T-38. The Javelin design dates to 1998 and the sole example was stored in nonflying condition for many years.

To win the T-X, contractors will probably have to offer radical savings in production, operation, or development, and those who've announced their participation all seem to have fixed on a different aspect of that equation.

It remains to be seen what approach the Air Force finds most convincing. ☛

Express your

AIR FORCE PRIDE

in Warm, Contemporary Style



Cotton blend sweater knit jacket with contrasting black faux suede accents



Custom art patch on the back features the Air Force Symbol



FLY, FIGHT, WIN MEN'S SWEATER JACKET

The United States Air Force has a rich history of tradition, honor and pride. Show your love and respect in style with our exclusive "Fly, Fight, Win" Men's Sweater Jacket. This men's jacket is custom-crafted of a cotton blend heather gray sweater knit with black faux suede accents on the front, the pockets and the elbows. The back of this front-zip jacket features a striking full-color appliqué patch that features the Air Force Symbol along with embroidered stars and a black banner that is embroidered with "Fly, Fight, Win". Plus, the words "U.S. Air Force" are embroidered in gray on the front.

A Limited Time Offer... Don't Miss Out!

Available in five men's sizes, M-XXXL, this striking custom sweater jacket is a remarkable value at \$149.95*, payable in 4 convenient installments of \$37.49 each, and backed by our 30-day money-back guarantee. To reserve your jacket, send no money now; just return the Priority Reservation. Don't miss out—order today!

*For information on sales tax you may owe to your state, go to bradfordexchange.com/use-tax.
™Department of the Air Force. Officially Licensed Product of the Air Force (www.airforce.com).

www.bradfordexchange.com/airforcesweater

01-26286-001-BIB
© 2017 The Bradford Exchange

PRIORITY RESERVATION

SEND NO MONEY NOW

THE
BRADFORD EXCHANGE
APPAREL & ACCESSORIES

9345 Milwaukee Avenue · Niles, IL 60714-1393

YES. Please reserve "Fly, Fight, Win" Men's Sweater Jacket for me as described in this announcement in the size checked at right.

*Plus a total of \$15.99 shipping and service (see bradfordexchange.com). Please allow 2-4 weeks after initial payment for shipment. All sales are subject to product availability and order acceptance.

- Med (38-40) 01-26286-011
- Lrg (42-44) 01-26286-012
- XL (46-48) 01-26286-013
- XXL (50-52) 01-26286-014
- XXXL (54-56) 01-26286-015

Signature _____

Mrs. Mr. Ms. _____
Name (Please Print Clearly)

Address _____

City _____ State _____ Zip _____

E-Mail (Optional) _____

E61011



THE RISE OF AFSOC'S SPECIAL TACTICS

A CV-22 Osprey conducts exfiltration and infiltration exercises in Florida in 2016.

A handful of incredibly skilled airmen have proved critical in the war on terror.

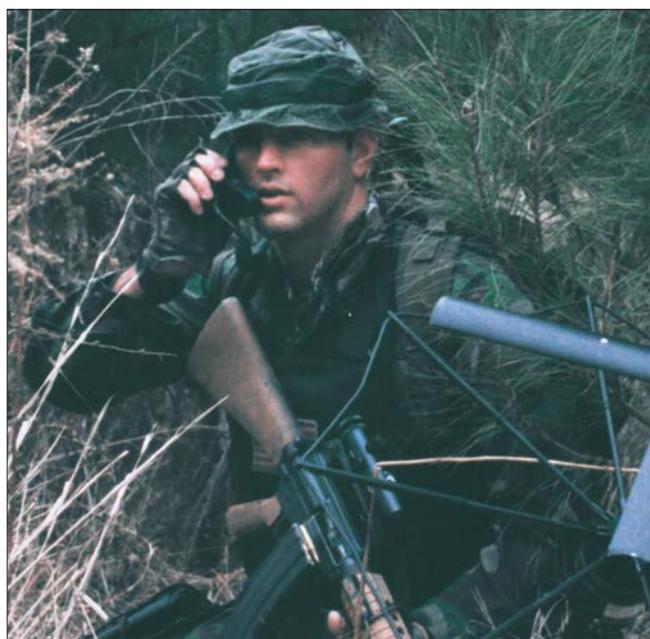
By Wilson Brissett, Senior Editor

Since the Vietnam era, the Air Force's special tactics community of pararescuemen, combat controllers, and experts in weather, tactical air control, and far-forward surgical care have been the most highly decorated airmen in the Air Force. They are often first in, leading joint and coalition forces by establishing air control in remote locations, directing precision strikes at the forward edge of the battlefield, and rescuing personnel under the toughest combat conditions.

Since 9/11, USAF's special tactics airmen have endured an astoundingly high operations tempo, matched by a grim record of sacrifice. In the US wars in Afghanistan and Iraq, special operations airmen have received more than 600 Bronze Star Medals (almost 250 of those with valor), more than 100 Purple Hearts, 36 Silver Stars, and 10 Air Force Crosses.

During that same period, the career field has averaged almost one airmen killed or wounded in action per month. While they don't get as much attention as Navy SEALs or Army Green Berets, USAF's own special operators have been continuously on (and behind) the front lines of the war on terror.

These achievements and sacrifices define the special tactics community, providing ground power ahead of—and in concert with—the world's best air force. These unique



Combat controller TSgt. Jeffrey Bray was part of the "Black Hawk Down" action in Mogadishu, Somalia, in 1993.

missions demand a commitment to excellence along with a willingness to take on substantial levels of risk.

USAF's 2,500 special tactics personnel operate in 29 locations around the world and 16 geographically separated units. The career field maintains nine recruiting sites. This stability was a long time in coming, because the community really only established itself as a mature career field—and clarified its mission and its role—through the counterterrorism fight of the post-9/11 era.

Having been tested, the community has emerged stronger than ever. The task now is to stay on top of today's fight while working hard to prepare for the next one. "As a whole, special tactics has an adaptability mission set," according to Maj. Gabriel Brown, an enlisted combat controller in Afghanistan in 2002 and now a special tactics officer at Hurlburt Field, Fla.

"We can go from anti-terrorism to supporting flood relief to landing a C-130 on a major highway," CMSgt. Michael West said. He is superintendent of the 720th Operations Support Squadron at Hurlburt.

Special tactics airmen were crucial to aiding relief efforts after the 2010 earthquake in Haiti. They controlled "2,000 airplanes in two weeks from a card table beside a runway—a single-use runway with no taxiway," West said in an interview.

EARLY DAYS

Air Force special tactics started out as little more than "a safety mechanism for Military Airlift Command [MAC]," retired CMSgt. Wayne Norrad told *Air Force Magazine*. When he finished his combat controller training in 1972, the job was mostly "going out to drop zones ... and setting up the navigational aids, taking [wind measurements] to make sure they were within the limits." The controllers didn't receive much advance preparation at the time, Norrad said. "Our only training was two weeks every six months."

Norrad pointed to the October 1977 hijacking of Lufthansa Flight 181 as a key point of transition. When Palestinian terrorists took over the plane and redirected it to Mogadishu, Somalia, the West German elite special police unit GSG 9 stormed the aircraft during a nighttime operation and rescued all 86 passengers.

The Lufthansa incident accelerated US plans to "stand up a special unit" that could respond to terrorist attacks of a similar nature, Norrad said, and combat controllers and pararescuemen were included in the early plans.

Norrad was one of 14 enlisted combat controllers and two combat control officers who began training with Army Delta Force members at Scott AFB, Ill.

By 1979, Delta Force was ready to go, and soon after, the unit would receive its first test in Operation Eagle Claw. After 52 US diplomats and citizens were taken hostage in the US Embassy in Tehran and held for nearly six months, the US military launched a rescue operation that stalled under brownout conditions. The air assets involved in Eagle Claw were unable to cope with the conditions, and the mission was aborted. (See "Desert One," January 1999.)

Retired Lt. Gen. Eric Fiel, commander of Air Force Special Operations Command (AFSOC) from 2011 to 2014, said, "There were a lot of people who said it was a failed mission," but "they never got to execute it."

As the Eagle Claw force secretly prepared to return from Iran, a helicopter collided with a refueling plane on the ground at the forward staging area. Eight US troops were killed. "They never got to attack" the compound, Fiel noted.



A 26th Special Tactics Squadron airman communicates with aircraft during an exercise.

If the plug had not been pulled, "I'm sure they could have done it," he said.

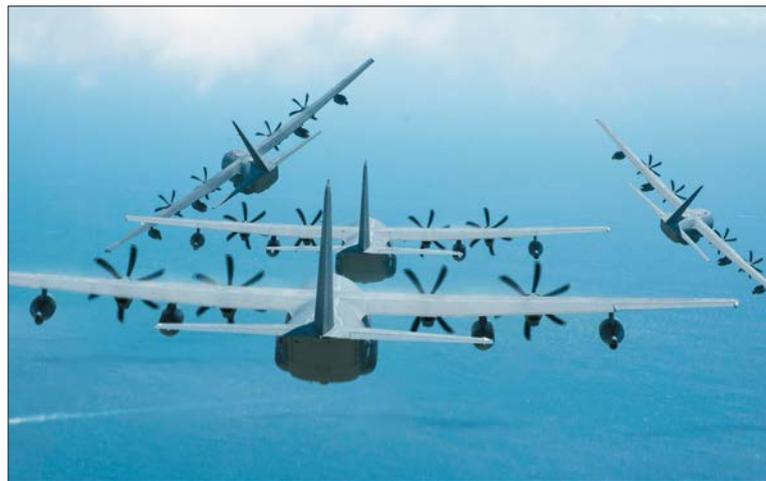
Nonetheless, the special tactics community benefited from the soul-searching that followed the hostage rescue attempt. In 1980, a special tactics unit was established at Pope AFB, N.C. No longer treated as a MAC safety force, special tactics airmen were "in the tactical planning and mission briefs and putting it together for the counterterrorist mission," Norrad said.

Training for special tactics personnel was also expanded in the 1980s. "We're learning how to fast-rope, we're learning how to do high-altitude, high-opening" parachuting, and "going to a lot of shooting schools," Norrad said.

While the growth of joint special operations training helped the special tactics airmen, they continued to suffer from institutional neglect. Ever since Vietnam, Fiel said, USAF had let the mission "deteriorate" so far that the special tactics roles almost passed out of the Air Force altogether. Promising airmen were overlooked for promotion, he said, and there were "very few making colonel, very few making senior master sergeant or chief. They just ended up separating."

Fiel said it was difficult "growing up in the Air Force" as a special operator in the 1980s, "being an aircrew member in SOF [special operations forces] in an Air Force that's mostly fighters and bombers." The big Air Force failed to understand how critical the mission was, and the lack of special tactics officers in key staff positions reflected that gap. At the time, AFSOC had only one wing, two squadrons, 14 MC-130s,

Photos: A/C Joseph Pick; courtesy photo; TSgt. Manuel Martinez; S/A. John Linzmeier



MC-130J Commando IIs execute a simultaneous overhead break in June off Japan, during mass-launch training. The aircraft can be used to deliver or recover special tactics airmen from forward areas.



Combat controllers from the 23rd Special Tactics Squadron talk to aircraft from a makeshift air traffic control site at Haiti's Port-Au-Prince Airport after the 2010 earthquake.

10 gunships, and “some helicopters,” Fiel said, and special tactics was but a subset of this special operations slice of the Air Force.

READY FOR AFGHANISTAN

Today, AFSOC has 95 MC-130s as well as its own intelligence, surveillance, and reconnaissance assets. Several special tactics airmen have been promoted to general officer; Fiel himself retired in 2014 with three stars.

Things have improved dramatically in the past three decades. “The biggest change was standing up US Special Operations Command,” he said, because “SOCOM has its own money.” After 1987, “the Air Force would buy us a C-130, and SOCOM would turn it into a gunship.”

The mission has also been refined. Trained to respond to the terrorist threat of the 1970s and 1980s, special tactics has found itself well prepared for the global counterterrorist wars of the post-9/11 era. Especially in the difficult geography of Afghanistan, the US military found the one qualification that was “the most important, and everybody wanted, and no one had, was JTAC-qualified guys,” Norrad said.

Joint terminal attack controller is a special skill for combat controllers, tactical air control party airmen, and some pararescuemen. JTAC-trained operators can establish control of remote airspace, deconflict aircraft, and direct air strikes on enemy targets.

When the war in Afghanistan demanded more personnel with JTAC certifications, “our guys were naturals for that,” Norrad explained. In addition to completing air traffic control school, special tactics airmen had been expanding their tactical training ever since the 1980s. They could control multiple aircraft overhead, he said, and still “move and communicate and shoot and do whatever the Army unit is doing.”

Because they were also qualified in free fall jump and military combat diving, they could go anywhere Army Rangers or Navy SEALs wanted to go. The “only difference,” Norrad said, is that USAF special tactics operators are “usually carrying a little bit heavier load because they’ve got radios and batteries.”

Afghanistan proved an ideal setting for special tactics airmen to mature operations. Col. Michael Martin, commander of the 24th Special Operations Wing at Hurlburt Field, points to the Battle of Takur Gar in Afghanistan in May 2002 as having validated new tactics. Even so, seven US service members, including two airmen, lost their lives there, and three Air Force

Crosses were awarded to airmen in the battle. (See “Stacked Up Over Anaconda,” March 2012.)

COORDINATION ON TAKUR GAR

The team on that mission had “operators out in the battle space” calling back reconnaissance reports on enemy fighting positions via satellite communications to the air assets, Martin said in an interview. “We actually knew where all the friendly positions were. We knew where the enemy positions were. We had a prioritized list of those enemy positions.”

What resulted was a “near real-time coordinating and deconflicting” of the kind that “we hadn’t really been doing up to that point,” Martin said. But on Takur Gar, it “really drove the targeting cycle through that period of darkness” and hastily rebuilt an “abbreviated air tasking order cycle that the CAOC [combined air and space operations center] is used to producing.” This information was being relayed back from operators in “inhospitable terrain” and working at high altitudes in extremely low temperatures.

The close air support they directed was crucial to salvaging a tough mission on Takur Gar, and none of it would have been possible without the direction provided by the special tactics personnel. “They made that a mission of success and it really could have been a huge mission of failure,” commented West.

The special tactics community has refined its role as the war in Afghanistan has continued and built a record of success. Because of this, “special tactics has been busy,” West said. “The emphasis has been on small special forces teams, and that’s what we’ve seen a lot in Afghanistan.” That high tempo of operations has weighed heavily.

“Some of these guys have been over there in the teens,” Field said, indicating airmen who had deployed 13 times or more. AFSOC has confirmed that its deploy-to-dwell ratio has sometimes been one-to-one in recent years—the airmen have spent just as much time deployed as they have at their nominal home stations. “We started seeing [the] toll it was taking on them,” Fiel said.

AFSOC had provided its operators with “NFL quality” workout facilities, but “we realized we weren’t taking care of them emotionally and psychologically and spiritually,” Fiel said.

In 2013, SOCOM launched a program, called Preservation of the Force and Family (POTFF), to alleviate these pressures on special operators, including special tactics airmen. Chap-



Combat controllers guide an A-10 pilot to a landing on a highway in Jägala, Estonia, in August. Special tactics airmen surveyed the “runway,” deconflicted airspace, and coordinated the landing.

lains, psychologists, and physical therapists were integrated into each squadron to provide constant support. Adding chaplains was “an easy welcome,” Fiel said. “The psychologist was a little bit different” because airmen worried that with a certain diagnosis, “first thing they do is take your clearance.”

Despite the concerns, POTFF is making a difference in its goal to “really take care of people,” West said. “We do everything we can, mentally and physically, to provide them with all the resources they need, and we provide their family with resources.” West said he’s willing to pull members off assignments if necessary. “If we have to go to the leaders and say, we’re short one, I’m not afraid to do that.”

That leadership is crucial, Brown insisted, for maintaining the operations tempo of recent years. Officers must be willing to “call a shortfall just to do the right thing for the individual” in some cases. “I’ve seen people put their promotion worries aside so they’re taking care of their guys first,” West said. “And I like that.”

In the end, though, commitment to the mission drives morale more than any other factor, Fiel said. “Are they tired? Sure. Are they worn out? Yes. Do they miss their families? Absolutely. Are they going to go again the next day? You betcha,” he explained, “because they believe in what they’re doing.”

Fiel himself became a believer when he found special tactics. “I had no plan to stay in” the Air Force, he said, “but I stayed in for 33 years. To be honest, if I had never come to special operations, I never would have stayed in.” In the special tactics community, he found that “just the attitude of the people to get the mission done is second to none.”

EYES ON THE NEXT FIGHT

Special tactics grew into maturity in the context of the wars of counterterrorism, but its leaders insist it will be ready for the next fight even as it keeps its focus on Afghanistan 16 years later. “We are not a myopic force,” Martin said. “We pay attention to the threats that are out there.”



In Jordan, an airman assigned to the 23rd Special Tactics Squadron scans for threats during a combat exercise.



24th Special Operations Wing airmen fast rope from an Army Black Hawk helicopter at Hurlburt Field, Fla., in a 2016 exercise, part of training to respond to emerging threats.

That includes the North Korean threat, Martin said. Special tactics airmen from the 353rd Special Operations Group, Kadena AB, Japan, recently conducted a “joint clearing team” exercise, he said. “They air-dropped into an airfield and simulated doing an airfield assault and assuming control of that to project force.” The goal was to practice holding targets at risk “north of the 38,” the line of latitude that roughly divides North and South Korea.

Fiel sees the need to adapt to near-peer adversaries as the next special tactics challenge. “I can’t remember the last time we fought in contested airspace,” he said. When he was a young airman in the 1980s, the threat was “the Red Army, and we practiced that and trained that and exercised that a lot.” But now “you spend all your day worried about Iraq and Afghanistan,” Fiel said, and “there is a whole generation—almost 16 years now—of people who never even worried about” fighting an enemy with advanced air defense systems. He said the special tactics community will “need to start doing some high-end training.”

Others, like Norrad, imagine a near future where Air Force special tactics operators are deployed for “unilateral missions, without a security force, without Delta, without the Army.” Precisely because the special tactics members have become “so well qualified and trained,” Norrad thinks Air Force operators could deploy to “certain strategic places” as a secretive force when heavy surveillance of a US joint special operations compound makes undetected movement difficult.

“Moving a few Air Force guys some place, [they] might not detect that,” he said. Such a force could “take down a foreign country nuclear plant” or take on a mission involving “chemical weapons, or [hit] an airfield some place undetected.” These are the sorts of missions that might make sense in light of the Pentagon move in August 2016 to give SOCOM primary responsibility for countering weapons of mass destruction.

Whatever the future looks like for special tactics airmen, it will certainly involve “day after day after day, going and getting bad guys,” Fiel said.

To support that mission, Martin said the community would continue to focus on the basics and on creating a “culture of excellence” around their core competencies of “access, strike, recovery, and surgery.” If special tactics operators and their support teams concentrate on these, they will have “the foundation to make sure the operator force can do what they do,” he said.

Global Reach,



Through Tankers

A close-up photograph of an aerial refueling hose, showing the yellow and black striped sections and the nozzle. The background is a clear blue sky.

Aerial refueling gives the Air Force worldwide reach.

By Wilson Brissett, Senior Editor

Photos from the collection of Warren Thompson

The first aerial refueling flight in US military history was completed in June 1923, when a DH-4 biplane deployed a device invented by Russian émigré Alexander P. de Seversky to refuel another DH-4 inflight. Four months later, the same airplane used four inflight refuelings to fly from Sumas, Wash., to San Diego, effectively quadrupling the range of the aircraft.

In January 1929, two Douglas C-1 transports, equipped with fuel hoses, allowed an Air Corps C-2A to fly for six days. The flight of *Question Mark* required 43 contacts with the tankers, demonstrating aerial refueling's potential.

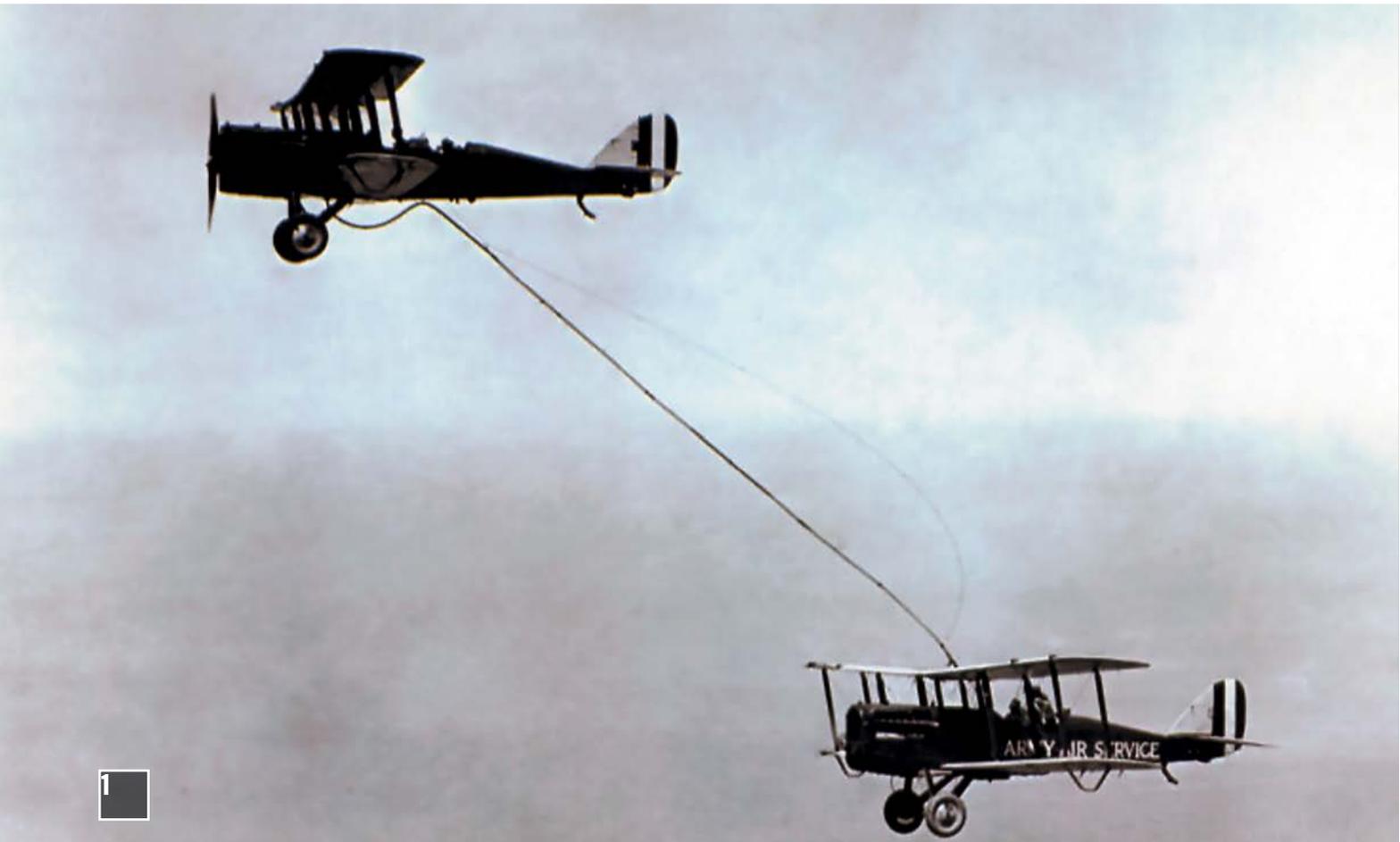
But the tanker revolution had not yet arrived because the need was less than clear.

During World War II, B-17 and B-24 bombers were able to reach Berlin from forward bases in England and Italy, but only the B-29 could cover the longer distances involved in the Pacific Theater. In addition to this limitation, refueler-enabled fighters could have taken some of the heat off US bombers that took heavy fire from German air defenses. But US factories were working full tilt to produce strike aircraft and could not redirect resources toward what was considered a secondary need.

During the Cold War, however, a tanker requirement moved to the forefront. Because Warsaw Pact ground forces outnumbered those of the US and NATO, strategy relied heavily on the US long-range nuclear bomber deterrent. The effectiveness of that deterrent, in turn, relied on efficient air refueling.

A T-33 pilot takes on fuel from a tanker over South Korea in 1967.

Photo: Ray Lee



1

In February 1949, Air Force KB-29 tankers supported a B-50 bomber on the first nonstop flight around the world. KB-29s made use of a looped hose to deliver fuel to the receiving aircraft, but that system was grossly inefficient and required extra crew to grab and connect the hose. It could not be used to refuel single-seat fighters.

The probe and drogue system was more efficient and eliminated the need for additional crew members. It allowed the receiving pilot alone to position a probe into the basket-shaped drogue from the tanker, and it could transfer 250 gallons per minute.

That was still pretty slow. By 1950, the flying boom system had been perfected. It allowed an operator on the tanker to “fly” (direct) the boom into position to connect with the receiving aircraft. It could pump fuel at 700 gallons per minute. Booms were added to some KB-29s and to KB-50s and KC-97s.

In 1956, the KC-135 debuted as the first jet-powered tanker. It was designed to carry passengers and cargo and could transfer six times more fuel than the KB-50. Strategic Air Command bought 732 KC-135s for its fleet of 744 B-52s. The tankers and bombers were stationed together, took off together, flew together, then the tankers would peel off and return home as the bombers neared enemy airspace.

During the Vietnam War’s Rolling Thunder campaign (1965-68), almost every strike sortie flown into the North required refueling. Over nine years of war, KC-135s flew nearly 200,000 sorties and performed 800,000 air refuelings.

Refueling in the air was quickly emerging as an essential capability, and the transformation of the force was dramatic. In 1960, USAF had 2,000 refuelable aircraft. By 1980, it had 4,500.

In 1981, the first KC-10s were delivered. This was a larger



3



2



4



5



6

1/ Lt. Lowell Smith and Lt. John Richter, in the bottom aircraft, receive the first military midair refueling in 1923. 2/ In the Vietnam War, this F-104 needed refueling to get back to base after flying cover for bomber strikes heading to the Hanoi/Haiphong area in North Vietnam. 3/ This F-102 from the 64th Fighter-Interceptor Squadron was preparing for deployment to Southeast Asia. The temporary apparatus allowed refueling while crossing the Pacific. 4/ A B-47 refuels off a KC-135 in 1962. 5/ A KC-97 boom operator lies prone to refuel an aircraft. KC-135 boomers still do this. 6/ The 1929 refueling record-setters: Sgt. Roy Hooe, Lt. Elwood Quesada, Lt. Harry Halverson, Capt. Ira Eaker, and Maj. Carl Spaatz. The airmen on this aircraft, *Question Mark*, went on to become Air Force legends.

Photos: Menard Collection; Bob Crainer; Bill Winkler; Charles Willis; Dave Henry; Army Air Forces (file photo)



1

tanker that could double as an airlifter. It even had its own refueling receptacle, allowing KC-10s to be topped-off by KC-135s or KC-10s in flight.

This capability was demonstrated in the 1986 Operation El Dorado Canyon bombing of Libya in retaliation for terrorist attacks. When France and Spain refused to let US strike aircraft overfly their nations, USAF was forced to fly around the Iberian Peninsula, and used 29 air refuelers to provide an air bridge for the attacking F-111s.

At the beginning of Operation Desert Storm, 100 USAF tankers operating from nine countries supported US airlifters carrying 500,000 personnel and 540,000 tons of cargo into the theater. Over the course of the conflict, the service flew 16,865 refueling sorties.

Today, the global reach of USAF refuelers is impressive. In January 2017, two B-2 bombers flew a 34-hour round-trip mission from Whiteman AFB, Mo., to drop munitions on ISIS training camps near Sirte, Libya, and then return home. The bombers were supported by five aerial refuelings, and their strikes killed more than 80 ISIS fighters.

Tankers' rate of use has not slowed, either. In Operation Inherent Resolve, USAF tankers flew 14,000 sorties and completed 90,000 refuelings in the first year alone.

Now, the service looks to the arrival of its modern tanker, the KC-46. First delivery is expected in early 2018, and USAF should have 179 KC-46s by 2027. The KC-46 is 20 percent larger than the KC-135 and can deliver three times as much fuel. It brings significant advances in survivability, allowing tankers to refuel aircraft much closer to combat zones.

Given how heavily the US military has come to rely on aerial refueling in its global campaigns today, those KC-46s cannot come online fast enough. ☹



5

1/ KB-50s accompany Thunderbirds headed for an air show in Okinawa. 2/ A KC-97 tanker at Thule, Greenland, in 1953. 3/ A KB-50 tanker over France in 1959 refuels an F-100 from the 613th Tactical Fighter Squadron. 4/ A KB-29 at Tinker AFB, Okla., in 1952. Some B-29s went to Japan to refuel F-84s on missions to North Korea. 5/ There is spray over the cockpit of this B-58. The nozzle on No. 2 engine is open, reflecting use of afterburner. The other nozzles are closed. 6/ As this F-117 crossed the border into Saudi Arabia on a return flight from Baghdad during Desert Storm, a KC-10 extended its boom. 7/ In 1961, an RB-66 takes on fuel from a KB-50. 8/ Twenty-nine tankers did the refueling for El Dorado Canyon in 1986. Here, a KC-10 refuels an F-111 based in the UK.



2



3



4



6



7



8



AFA SALUTES 70 HEROES FOR THE 70TH BIRTHDAY OF THE US AIR FORCE



#70for70
Secretary Deborah Lee James
Breaking Barriers through innovation by making every dollar count



#70for70
Captain Joseph C. McConnell, Jr.
Breaking Barriers through heritage as the leading jet ace of the Korean War



#70for70
Lt Gen I Scott Rice
Breaking Barriers through teamwork with the Air National Guard



#70for70
CMSgt Elizabeth Perez Melahn
Breaking Barriers through teamwork and positivity



#70for70
Daniel Holley
Breaking Barriers through innovation in neuroscience



#70for70
SSgt Sebastiana Lopez Arellano
Breaking Barriers through teamwork and resilience



#70for70
TSgt Vilma Cantu
Breaking Barriers through innovation in combat missions



#70for70
MSgt Dan Wassom
Breaking Barriers through teamwork and valor



#70for70
SrA Shaquille Stephens
Breaking Barriers through teamwork and dedication



#70for70
Capt Jason Flory
Breaking Barriers through innovation in exercise



#70for70
Lt Col Scott Gunn
Breaking Barriers through innovation in aerospace power



#70for70
Charles B. DeBellevue, Col, USAF (Ret.)
Breaking Barriers through heritage as Vietnam leading ace



#70for70
Secretary F. Whitten Peters
Breaking Barriers through innovation in AFA leadership



#70for70
Dr. Lani Kass
Breaking Barriers through innovation in Cyber Security



#70for70
SSgt Esther McGowen Blake
Breaking Barriers through heritage as the first female Airman



#70for70
Brig Gen Jeannie M. Leavitt
Breaking Barriers through innovation as first female fighter pilot



#70for70
Clarence "Kelly" Johnson
Breaking Barriers through innovation in aeronautical engineering



#70for70
Congresswoman Martha McSally
Breaking Barriers as first USAF female to fly in combat



#70for70
Joshua Leary, TSgt, USAF (Ret.)
Breaking Barriers through teamwork at the Air Force Trials



#70for70
Heather Carter, SrA, USAF (Ret.)
Breaking Barriers through teamwork at the Air Force Trials



#70for70
Bob Brewster
Breaking Barriers in teamwork for AFA Chapters



#70for70
Lt Gen Stayce Harris
Breaking Barriers as first female African American Lt Gen



#70for70
Colleen Shine
Breaking Barriers through Teamwork as Daughter of Vietnam Vet



#70for70
Gail S. Halvorsen, Col, USAF (Ret.)
Breaking Barriers through Innovation as the Berlin Candy Bomber



#70for70
Maj Gen Michael Kim
Breaking Barriers through innovation in the Air Force Reserve



#70for70
General Ira Eaker
Breaking barriers through heritage as aviation pioneer



#70for70
General Mark A. Welsh III
Breaking Barriers in teamwork through leadership



#70for70
CyberPatriot's Team Wolfpack
Breaking Barriers in STEM problem solving through teamwork



#70for70
Joseph H. Ortega, Lt Col, USAF (Ret.)
Breaking Barriers through heritage in F-51 Mustang Flight



#70for70
The US Air Force Band
Breaking Barriers through teamwork in Air Force excellence




#70for70
Mrs. Ora Spencer
 Breaking Barriers through teamwork in the Air Force family




#70for70
Mrs. Carrie Fisher
 Breaking Barriers through teamwork as Wounded Airman Caregiver




#70for70
Ms. Lori Lemoine
 Breaking Barriers through Teamwork as a Mother and Caregiver




#70for70
Lt Col Christine Mau
 Breaking Barriers in Innovation as first female F-35 pilot




#70for70
General Bernard A. "Bennie" Schriever
 Breaking Barriers in Innovation through space and missile programs




#70for70
Trent Smith, SrA, USAF (Ret.)
 Breaking Barriers through teamwork as an AFWZ Ambassador




#70for70
Brig Gen Harold H. George
 Breaking Barriers through heritage as WWI Fighter Ace




#70for70
James G. Clark, Col, USAF (Ret.)
 Breaking Barriers through Innovation in ISR technology




#70for70
Mrs. Denise Bernard
 Breaking Barriers as Donley Spouse Scholarship Winner




#70for70
General Henry "Hap" Arnold
 Breaking Barriers in heritage as General of the Air Force




#70for70
Phillip Meilinger, Col, USAF (Ret.)
 Breaking Barriers in innovation as SAAS Dean




#70for70
Col Merryl Tengesdal
 Breaking Barriers in innovation as U-2 pilot




#70for70
Lt Gen Archie Old
 Breaking Barriers through Innovation in Military Aviation




#70for70
Ashley Kinsey
 Breaking Barriers with Teamwork as Young Airpower Advocate




#70for70
Justin Jordan, MSgt, USAF (Ret.)
 Breaking Barriers with Teamwork in the Fight Against PTSD




#70for70
General Hawk Carlisle
 Breaking Barriers in Airpower Dominance




#70for70
Ms. Tonya McGough
 Breaking Barriers in Teamwork with AFW2




#70for70
Senator Orrin G. Hatch
 Breaking Barriers through commitment to supporting air power




#70for70
Jerry Yellin, Capt, Army Air Corps (Ret.)
 Breaking Barriers through heritage as WWII's last lighter pilot




#70for70
Secretary of Defense Jim Mattis
 Breaking Barriers in Innovation through intellectualism and defense leadership




#70for70
StellarXplorers Team Sky Dragons
 Breaking Barriers in teamwork and innovation through STEM




#70for70
SrA Marc Granville
 Breaking Barriers through teamwork and commitment to service




#70for70
Lt Col Virgil "Gus" Grissom
 Breaking Barriers through heritage as first Airman in space




#70for70
Mrs. Tonya Wright
 Breaking Barriers in teamwork by supporting Air Force families




#70for70
The Wright Brothers
 Breaking Barriers through Innovation by flying the first successful airplane




#70for70
MSgt Ivan Ruiz
 Breaking Barriers through teamwork in courageous acts and leadership




#70for70
Cadet Garrett Andrews
 Breaking Barriers through teamwork in focused and passionate leadership




#70for70
Al Tucker, Col, USAF (Ret.)
 Breaking Barriers through a heritage of resilience




#70for70
Molly Mae Potter
 Breaking Barriers in teamwork by supporting female veterans




#70for70
SSgt Joshua D. Ross
 Breaking Barriers in teamwork through Air Force values




#70for70
Maj Gen Claude Bolton
 Breaking Barriers through innovation in acquisitions during war




#70for70
Maj Heather Penney
 Breaking Barriers through a heritage of bravery




#70for70
Tuskegee Airmen
 Breaking Barriers through heritage




#70for70
Elinor Otto
 Breaking Barriers through a heritage of patriotism




#70for70
Capt. Edward Torres
 Breaking Barriers through innovation in combative tactics




#70for70
Lt Col Dick Cole (Ret.)
 Breaking Barriers in Heritage as Doolittle Raider




#70for70
Lance P. Sijan
 Breaking Barriers through a heritage of resilience and honor




#70for70
Gen Billy Mitchell
 Breaking Barriers through a heritage of advocacy of air power




#70for70
Chief Paul Airey
 Breaking Barriers through innovation as first CMSAF




#70for70
Gen Jimmy Doolittle
 Breaking Barriers of Innovation through strategic air power

They Owned The Night

By Rebecca Grant

The P-61 Black Widow offered a glimpse of modern nighttime combat.



Midnight Mickey. Moonhappy. Sleepy Time Gal. Outta Hell. The Spook. Nocturnal Nuisance. The Creep. Dark of the Night. Doubtful Doris. Vivacious Vivian. Virgin Widow.

P-61 Black Widow night fighters wore these and many more colorful nose-art names in the Pacific and European theaters of World War II. While today nearly every USAF aircraft “owns” the night, in 1944 the P-61 was the only airplane designed from the ground up for the night fighter mission. Its secret venom? The most sophisticated flying radar built by America during the war.

Northrop built nearly 700 P-61s. They appeared late, flying combat only in the last year of the war, and a slew of other types—from the P-38 to the British Mosquito—shared night fighter duties. Yet more than any other World War II fighter, the P-61 foreshadowed the highly instrumented cockpits and two-man crew arrangement that could make the most of radar in the air battle.

The Luftwaffe’s bombing of London in the fall of 1940 helped drive the need for an able night fighter aircraft. RAF fighters tenaciously defended the airspace by day, but at night, the city lay open to attack, and anti-aircraft fire had its limits. Brig. Gen. Carl A. “Tooey” Spaatz, in England as an observer, worried about nighttime long-range bomber attacks on defenseless coastal American cities.

The answer, in part, was a purpose-built night fighter with stable flying qualities and the necessary speed to close with its targets.

In October 1940, Vladimir Pavlecka, the Northrop Aircraft Co.’s chief of research, was at Wright Field in Dayton, Ohio, when the Army’s head of experimental aircraft, Col. Laurence C. Craigie, called him into the office. Craigie asked Pavlecka to design a two-engine night fighter and drilled him to memorize the specifications without writing them down. Pavlecka flew back to Los Angeles and met with his

boss, Jack Northrop, the next morning. Their first proposal for the P-61 was presented in Dayton scarcely a week later.

January 1941 brought a contract for Northrop to build 13 YP-61s. The 66-foot wingspan gave the Black Widow the look of a medium bomber. Twin tail booms added comfortable flying qualities while two supercharged engines delivered a top speed of 366 mph. Northrop’s XP-61 made its first flight in May 1942.

Combat was still two years away, though.

“Even back in the early 1940s, a sophisticated aircraft like the P-61 could not be designed, tested, and made operational in a few months,” wrote historian Warren E. Thompson. Indeed, the first P-61s would not reach European forward areas until March 1944 and didn’t get to the Pacific until late June 1944.

Night operations could not wait. America’s early night fighters were hasty conversions with primitive cockpit radars installed. In North Africa, four American squadrons flew British Beaufighters as night fighter units. Britain’s swift, wooden Mosquito became a premier night fighter and the US seriously considered procuring it in quantity.

Night fighters depended on ground control for vectors to enemy aircraft, then closed within a few hundred yards for visual identification. If they could close, they often got



P-61 *Midnight Mickey*, with the 6th Night Fighter Squadron, is readied for a mission at East Field, Saipan, Mariana Islands, September 1944. The SCR-720 radar's parabolic dish antenna can be seen through the radome.

their kill; it was tracking and pursuing the target at night that posed the biggest challenge.

The SCR-540 1.5 m wavelength radar—the American version of the British Mk IV—had a maximum range of 4,000 yards. It was fitted to a Douglas A-20, renamed the P-70, for tests. Production P-70s carried an upgraded SCR-520 with a 10 cm wavelength. This twin-engine light bomber and attack aircraft went into service in the Pacific as a night fighter in 1942 but it lacked speed and supercharged engines.

Germany had its own night fighters. The Messerschmitt Bf 110G was equipped with a small cockpit radar display. Along with other types, such as the Ju 88 and He 219 Eagle Owl, the German night fighters worked with short-range, ground-based Würzburg radars to vector close to British bombers.

British tactics called for the bombers to fly in a continuous stream. German fighters closing within a few miles could be devastatingly effective as they worked with ground controllers.

All this operational experience funneled into the refinement of the P-61. Crew tactical requirements got high priority. At one point, Northrop brought several experienced night fighter pilots to the plant to voice their concerns and requests for more fuel, heated cockpits, etc.

The rollout of the YP-61 was in February 1943, and the new engines generated enthusiasm from the start. “Pilots at Orlando [AAB, Fla., the P-61 training facility] familiar with the British night fighters consider the P-61 the most suitable night fighter in existence,” stated a November 1943 War Department memo. “Handling characteristics are excellent,” the memo enthused.

The P-61's official public debut was dramatic. On Jan. 8, 1944, a production P-61 performed a flyover of the Los Angeles Coliseum filled with 75,000 spectators as part of an Army-Navy show.

What the Los Angeles crowds couldn't see was the innovation in the cockpit. The P-61 was the first dedicated night fighter designed around the much-improved SCR-720 airborne intercept radar.

This “set complete radar” was lighter and more compact than its predecessors. Still, the SCR-720 weighed in at 415 pounds, not including cables. The transmit antenna dish fitted into the extended nose cone of the P-61. Azimuth receiver antennae were placed along the fuselage. Wartime sensors routinely snipped antennae out of official pictures.

The SCR-720 was optimized for night combat with a 180-degree forward sweep. The cone of energy forward was a step up from British and German systems dependent on a blip or ball of energy. The range of 8,500 yards or about five miles at 17,000 feet gave the crew plenty of time to track and intercept for a gun kill.

The P-61 relied on a radar operator seated behind the pilot.

“The radar operator was given the best position in the XP-61, installed above and behind the pilot in his own cockpit with an excellent forward view,” wrote Michael O'Leary in his book *USAAF Fighters of World War Two*.

The rim of the radar operator's scope was lined with fur. Red cockpit lighting washed over the instruments, assisting



A Northrop P-61 painted in olive drab in flight. Eventually most P-61s would sport iconic glossy black paint.

night vision. Northrop also designed a low-light fluorescence system for alternative cockpit lighting. Later P-61s added a scope up front so the pilot could share his radar operator's view of the bogey they were approaching.

The mission depended on guns, too. Four 20 mm cannon were slung underneath the P-61, providing a devastating barrage. Later, many P-61s in the Pacific were modified with additional .50 caliber guns fixed in the top turret.

Of course, the P-61 crews used no tracer rounds when they opened up on German or Japanese fighters and bombers.

Another stealthy innovation was a new glossy black paint scheme. British experience showed that flat black paint rendered a faint white silhouette of an aircraft bathed by searchlights. Flight tests in Florida in October 1943 pitted olive drab against flat black and glossy black. The glossy paint was not detected in 80 percent of flights through searchlight beams.

Due to red tape, some early P-61s were painted olive drab anyway. A few ended up with vivid yellow and red paint jobs on the nose—eyesores in daylight but not noticeable at night.

The pilots and radar operators selected for the P-61 were all experienced in other types. B-25 experience was considered especially desirable. Several radar operators had flown with the RAF or in USAAF night fighters. Even with this foundation, crews needed extended training periods in Orlando before shipping out.

By the time the P-61 made it overseas, theater commanders were eager for it to join in night operations protecting forward areas.

First to arrive in England in March 1944 was the 422nd Night Fighter Squadron under the command of Maj. Oris B. Johnson. Even after seven months of operational training, the sophisticated P-61 had its skeptics. Combat pilots experienced with other types of night fighters barraged their superiors with memos making the case for other solutions.

Spaatz solved one controversy by allowing a fly-off between the vaunted Mosquito and the new P-61. The match took place at Hurn, England, on July 5, 1944. Ground crews got their P-61 into perfect shape and it outflew the Mosquito—although pilots all acknowledged the virtues of the British aircraft, too.

In reality, there was plenty of work for both. Hitler struck back against the June 6, 1944, Normandy invasion with a fresh campaign of V-1 buzz bombs targeted at England. The 422nd Night Fighter Squadron started defending against the night-launched V-1s in July 1944.

Destroying a V-1 was no simple task. The buzz bombs were fast and dove to the ground at even higher speed in the last



Aircrews of the 426th Night Fighter Squadron at their first operational base at Chengdu, China, 1944.

phase of their flight. Ideally, night fighters could intercept the V-1s over the English Channel where their radar tracks were fresh and shooting them down would do no harm—on the surface.

Tactics called for P-61 pilots to target the V-1 engine. Hitting the fuselage instead could explode the V-1 into a fireball that could envelop the P-61.

On one night in early August, British ground-controlled interception radar picked up four inbound V-1s on long-range radar. Pilot Lt. Herman E. Ernst and radar operator Lt. Edward H. Kopsel set out after them and saw an RAF Mosquito nail the first V-1. Ernst dove from 5,000 feet to close within 900 feet of another V-1. He splashed it into the English Channel.

P-61s soon followed the advance of Allied forces in Europe. They deployed to provisional airfields and meshed with the increasingly sophisticated radar control of the air war. Their special niche was hunting Luftwaffe fighters and bombers harrying Allied forces.

P-61 crews needed to get close for final visual identification.

Lt. Paul Smith and Lt. Robert Tierney would go on to become night fighter aces. In one of their first battles, though, they pulled in so close to their prey they found themselves in a turning fight with a Bf 110. The Black Widow turned so well it stayed with the Bf 110 until the aircraft actually bumped wings.



P-61s with the 547th Night Fighter Squadron at Lingayen Airfield, Philippines, in early 1945. An aircraft called *Snuggle Bunny*, identifiable by its nose art, is second from left.



A P-61 with the 6th Night Fighter Squadron is fueled and armed at East Field in 1944.



Airmen work on four .50 caliber machine guns in the upper turret of a P-61 night fighter on Saipan.

Smith got the P-61 back under control, and pilots of the P-61 universally testified to its docile, forgiving nature.

Advances in the P-61's radar were matched by advances in ground control radar. When P-61 squadrons moved from England to forward airfields in France, they needed a tracking radar like the one in England that had been vectoring them to V-1s. The solution? Pack up the 60-ton AN/CPS-1 radar and move it to the European continent, where it could be relocated as air operations moved forward.

Once installed in September 1944, this radar type provided 200-mile coverage and the ability to track a single aircraft. Paired with a British-made height-finder, the radars created a ground control center that delivered range, altitude, and azimuth on contacts.

According to David N. Spires' book *Airpower for Patton's Army*, "Only the radar system made possible the command's new night offensive capability." The radar under XIX Tactical Air Command controlled many daytime flights and all of the night fighter operations. Kill tallies rose.

The 422nd racked up 43 enemy aircraft killed—including at least one of almost everything the Axis flew.

It was in March 1945 when Ernst and Kopsel destroyed two Ju 87s and damaged a Bf 110 the same night. According to Ernst, the crew took off from an airfield in Belgium, then contacted "Nuthouse," the Eighth Air Force radar station.

Nuthouse was flooded with radar contacts and put the P-61 on hold—where Allied anti-aircraft fire picked it out. Ernst retreated closer to German airspace to get a break from the ack-ack. Soon the vectors came and with two victories that night Ernst and Kopsel concluded the evening as official aces.

A few P-61 crews in Europe ended up as what their friends called "semi-aces," credited with the mixed but satisfactory tally of four German fighters and one V-1.

MEANWHILE IN THE PACIFIC

Gen. Douglas MacArthur, Gen. George C. Kenney, and Maj. Gen. Curtis E. LeMay were as eager as Patton for night fighter protection in the Pacific Theater. Rapid island-hopping meant that air bases were jammed with valuable airplanes and crew. As MacArthur's forces advanced toward the Philippines and Adm. Chester Nimitz closed on the Marianas, Japan was resupplying its occupied islands by night.

Black Widows arrived in the Pacific in summer 1944. One of the oldest outfits in the business was the 6th Night Fighter Squadron, which had been fighting on Guadalcanal. The 6th swapped its P-70s for P-61s and redeployed to Saipan in June 1944, eventually going on to Iwo Jima in March 1945.

MacArthur wanted to protect his airfields and landing forces and wreak havoc on Japanese night supply lines. Kenney put the 421st Night Fighter Squadron to work against Japanese shipping convoys steadily resupplying at Ormoc in the Philippines. He ordered the P-61s to "heckle the convoy all night and see if we could keep them from unloading." It worked. The Japanese ships were "still offshore with decks piled high with boxes and crowded with troops when our attack hit them just after daybreak," Kenney later wrote. The night fighters also downed seven Japanese aircraft attempting to cover the convoy.

The 418th Night Fighter Squadron deployed in the Southwest Pacific was home to Maj. Carroll C. Smith, who would become the USAAF's leading night fighter ace. It was in the contested skies of the Philippines that Smith and radar officer Lt. Philip Porter bagged four Japanese aircraft in one night.

Smith described how P-61s loitered awaiting targets. An hour after dusk on Dec. 29, 1944, the fighter director messaged



A P-61 night fighter at an airfield in France.

Smith with indications of an aircraft approaching from the southwest at 8,000 feet and 12 to 15 miles away. The crew set a collision course and chased the Japanese Irving—a large twin-engine escort fighter—for seven minutes in and out of clouds. Finally, a pair of bursts from Smith and Porter flamed the Irving.

Smith and Porter returned to convoy overwatch and sure enough, another Irving approached the convoy a few minutes later. A 20 mm burst from 800 feet sent the Japanese plane into the water. After landing to refuel, Smith and Porter picked up a slow-flying Rufe floatplane 200 feet above the water.

“We chased him around like trying to catch a greased pig in a barrel,” as Smith later told it. After two more hours on patrol their fourth and final target was a new Japanese medium bomber type dubbed a Frank, with a top speed of 400 mph. Smith thought he was low on ammunition and closed steadily to get in the first burst. At 75 feet the P-61 gunned the Frank. “My marksmanship improved in direct relation to how close we got to them to shoot them,” Smith said.

P-61s were sent to China to protect the B-29 base opened by LeMay at Chengdu. Japanese air activity was on the wane but no one wanted a repeat of the German night raid on Poltava, Russia, that had destroyed bombers on the ground. The B-29 was far too precious to risk. To get to Chengdu, both P-61s and pilots traveled by ship to India, then flew over the Hump to their new base.

Often, Black Widows were sent out from Chengdu and other forward Pacific locations to escort lost or crippled B-29s returning home. On occasion they hunted and strafed Japanese supply vehicles.

In all theaters, P-61s logged many intruder missions seeking out ground or sea targets after dark. Patton wanted to shut down German resupply at night, so XIX TAC shifted the 425th Night Fighter Squadron to strafing German road and rail traffic to help protect Patton’s tank force at night and whittle down German resupply.

In the Pacific, the 427th Night Fighter Squadron added underwing rockets in February 1945 to increase its effectiveness. Special nose art for publicity shots designated the intruder missions with a quarter-moon silhouette pierced by a lightning bolt.

The Black Widow continues to fascinate World War II avia-



Airmen check out the SCR-720 radar system on a Black Widow from the 6th Night Fighter Squadron, on Saipan.

tion buffs. A P-61C is in the collection at the Smithsonian Air and Space Museum’s Udvar-Hazy Center and another is at the National Museum of the US Air Force in Dayton. A P-61 left behind in wartime China has long been on view at a Beijing University museum.

An even more incredible story of devotion concerns tail No. 42-39445. This P-61B spent just five days with its squadron in New Guinea before it crash-landed after takeoff. It came to rest at a 55-degree angle on the slopes of Mount Cyclops. Survivors made it out. Forty years later, Gene and Russ Strine formed the Mid-Atlantic Aviation Museum with the express purpose of retrieving this P-61.

Multiple expeditions in the 1980s extricated the abandoned Black Widow, now restored to perfection and on display in Reading, Pa.

For that last year of the war, the biggest and heaviest of the USAAF fighters also offered a glimpse of the future. This night interceptor, with its ranging radar, presaged modern combat where pilots and radar operators form an integrated team. ★

Rebecca Grant is president of IRIS Independent Research. Her most recent article for *Air Force Magazine* was “Banding Together” in the October/November issue.



HELP AFA GO GREEN!

If you currently receive the hard copy *Air Force Magazine* each month, please consider “saving a tree” by reading the digital version of the magazine instead.

(Life Members will still receive a hard copy of the annual *Air Force Magazine Almanac*)



Just call 1-800-727-3337
or email membership@afa.org
to let us know you would like to “Go Green.”

YOU'LL STILL RECEIVE ALL THE AWARD-WINNING CONTENT *AIR FORCE MAGAZINE* HAS BEEN DELIVERING SINCE 1918, AND CAN ACCESS IT ALONG WITH EACH DAY'S DAILY REPORT USING THE CONVENIENCE OF YOUR PHONE, TABLET OR LAPTOP!

The Neutron Bomb

By John T. Correll

It is almost forgotten today, but the enhanced radiation warhead was a blazing international issue in the 1970s.

American public.”

Limited-yield nuclear weapons that achieved their main effect from radiation instead of blast and heat were described in considerable detail by a *Post* article in July 1959. The term “neutron bomb” first appeared in 1959 in *US News & World Report*, which called it a “death ray” that “would kill man with streams of poisonous radiation, while leaving machines and buildings undamaged.” The neutron bomb was openly debated in Congress between 1960 and 1963.

In November 1976, President Gerald R. Ford signed a request from ERDA to fund research and development. Public testimony was heard in Congress in early 1977, although little notice was taken of it.

Technocrats regarded the neutron bomb as a straightforward update of battlefield nuclear weapons. Harold Brown, Carter’s Secretary of Defense, was probably right when he said that “without the Pincus articles [neutron warheads] would have been deployed and nobody would have noticed.”

BATTLEFIELD ATOMICS

In November 1950, President Harry S. Truman announced that use of the atomic bomb in Korea was under “active consideration.” US national strategy in

The neutron bomb controversy exploded suddenly into public notice June 6, 1977, with a headline in *The Washington Post*: “Neutron Killer Warhead Buried in ERDA Budget.” ERDA, the Energy Research and Development Administration, was the US agency responsible for developing nuclear weapons.

The Post front page article—the first of many by reporter Walter Pincus—charged that “the United States is about to begin production of its first nuclear battlefield weapon specifically designed to kill people through the release of neutrons rather than to destroy military installations through heat and blast.”

Others quickly joined the chase. *The New York Times* reported that “the nuclear weaponeers have unfolded a new brainchild, the neutron bomb, which will kill people while preserving buildings, tanks, and artillery.”

The uproar over the neutron bomb is largely forgotten today but it was in the news almost constantly in 1977-78 and again in 1981, a blazing international issue that drew in top leaders from the United States, Europe, and the Soviet Union.

After almost a year of waffling and indecision, US President Jimmy Carter decided in April 1978 to defer production of the neutron bomb, although he did not cancel the program outright. President Ronald Reagan reopened the question in 1981, eventually electing to produce neutron weapons but to keep them in storage.

“Neutron bomb” was the popular term for the enhanced radiation weapon (ERW), a small hydrogen warhead for short-range US Army rockets and artillery shells. It was intended to replace existing nuclear warheads—atomic rather than hydrogen devices—already deployed on battlefield weapons in Europe.

Many critics shared the judgment of science fiction author and commentator Isaac Asimov that the neutron bomb “seems desirable to those who worry about property and hold life cheap.”

In fact, the purpose had nothing to do with preserving property. The neutron bomb did not leave property intact; by limiting collateral damage, it just destroyed less of it. The objective was to restore the sagging credibility of “tactical nuclear weapons”—as they were then called—as a deterrent against an attack by Soviet and Warsaw Pact tank armies.

The critics were closer to the mark with their accusation that the neutron bomb lowered the nuclear threshold by reducing the reluctance to use nuclear weapons. “By giving NATO greater potential to fight a limited nuclear war, will battlefield nuclear weapons increase deterrence, or will they increase the likelihood that NATO may actually engage in nuclear battle?” asked historian Sherri L. Wasserman.

The Pincus article in the *Post* generated a powerful reaction but, as Wasserman noted, it “revealed nothing either deliberately concealed or extraordinarily new about ERWs to Congress or the

BOMB IMPACT

● From 300 to 700 yards radius.

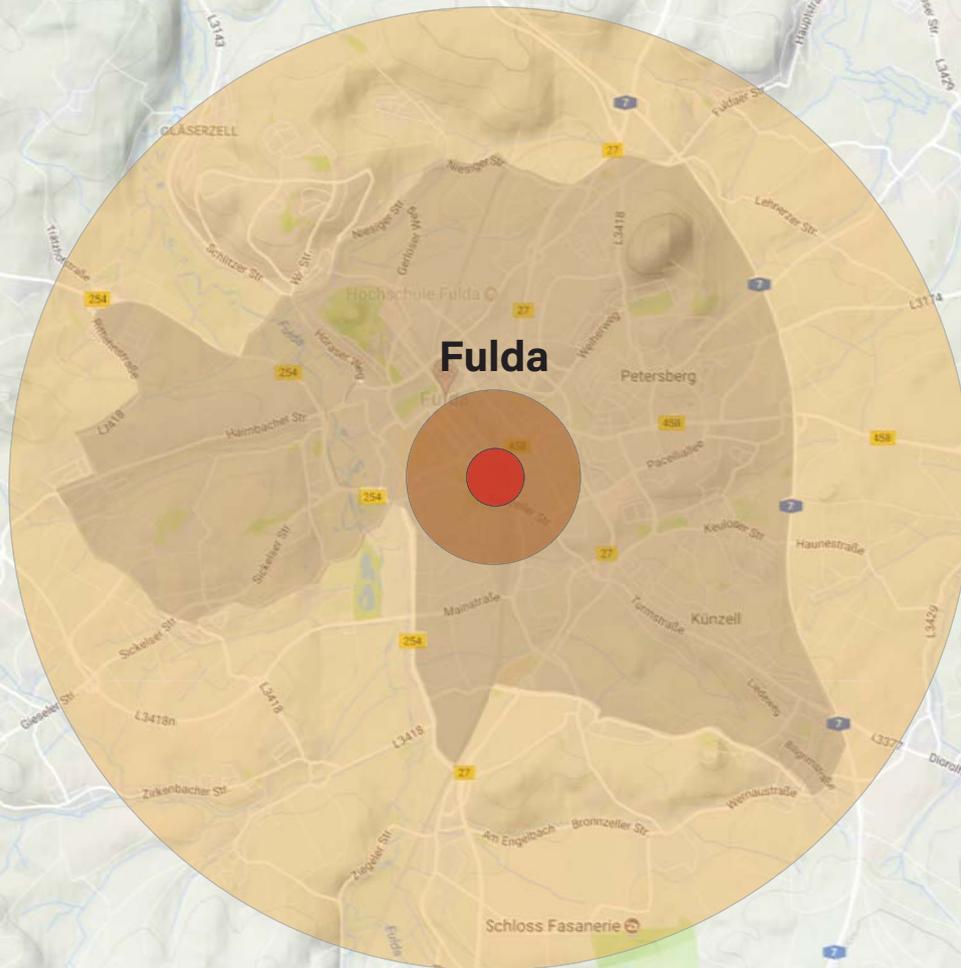
A one-kiloton neutron weapon limits severe damage to this area.

● About one mile radius.

This is an area exposed to lethal radiation from both a one-kiloton neutron bomb and a 13-kiloton atomic weapon.

● Nearly seven miles radius.

The area destroyed or severely damaged by the blast and heat of a 13-kiloton atomic weapon.



STRATEGIC PLANNING

During the Cold War the city of Fulda, near the border of West and East Germany, and which gave its name to the Fulda Gap, was the area most likely to be attacked by Soviet and Warsaw Pact armies in the event of a war with NATO.

Soviet forces would have attempted a breakthrough here with their tank forces to exploit an easy geographic route to attack and capture the city of Frankfurt. If war began, one of the largest tank battles might have been fought in this area.

Due to the numerical advantage of Soviet and Warsaw Pact armor, it is possible that allied commanders might have used tactical nuclear munitions, like the neutron bomb, to slow or stop the advance.

Use of an enhanced radiation weapon like the neutron bomb limits severe damage from blast and thermal effects to a small area but produces lethal radiation that can penetrate enemy armor. However, a standard nuclear weapon that produces the equivalent amount of radiation will destroy a much larger area through its blast and heat.

1953 said that “in the event of hostilities, the United States will consider nuclear weapons to be as available for use as other munitions.”

The firebreak between conventional and nuclear weapons came later. The scope of danger was expanded enormously by the hydrogen bomb and its attendant radioactive fallout. Introduction of ICBMs increased the immediacy of the danger and reduced the options for defense against an attack.

By the early 1950s, technology made tactical nuclear weapons small and light enough for deployment with battlefield forces. Among the first was the M65 “Atomic Annie,” a huge atomic cannon that required two tractors to move it from place to place. Annie threw an 803-pound warhead and had an effective range of about 20 miles. There were atomic warheads for delivery by rockets, artillery, and aircraft. Incredibly, there were even

atomic land mines. Atomic Annie was superseded by guns packing smaller nuclear rounds.

The strategic nuclear arena was dominated by the Air Force and Strategic Air Command but battlefield atomic weapons were primarily the province of the Army. In 1956, the Chief of Staff, Gen. Maxwell D. Taylor, reorganized the Army around the “Pentomic” concept. Each combat division had five self-contained battle

groups and low-yield tactical nuclear weapons.

The most significant of these were the mobile Lance missile, which could fire a one-kiloton atomic warhead for 75 miles, and eight-inch howitzers, with one-kiloton atomic shells and a range of just over 20 miles. By comparison, the yield of the atomic bomb at Hiroshima in 1945 was 15 kilotons; the yield of the Nagasaki bomb was 21 kilotons.

NATO, unable to match the overwhelming conventional strength of Soviet and Warsaw Pact tank armies, based its defense on nuclear weapons. At first, it was a matter of “massive retaliation,” in which an attack was to elicit an automatic response by the US strategic arsenal.

In 1968, however, under pressure from the United States, NATO adopted a strategy of “flexible response.” NATO would try to turn back a conventional attack with its own conventional forces and tactical nuclear weapons before resorting to the strategic nuclear capability.

The Europeans were uneasy with this. It meant a “defense in depth,” with the destruction from the tactical nuclear exchange taking place on NATO territory as the attack rolled westward. The French, disgusted, left the NATO military structure to rely on their independent *force de frappe*, targeted on the Soviet Union.

SAM COHEN'S INVENTION

The battlefield nuclear warheads were getting old and had obvious drawbacks, but deterrence depended on convincing the Soviet Union that NATO was ready to use nuclear weapons to meet an attack.

In 1973, the United States began looking seriously for a way to make limited nuclear force in Europe more effective and credible and with less potential damage to western Europe. The search led directly to the neutron bomb.

It is generally agreed that the neutron bomb was invented by Samuel T. Cohen of RAND as a consultant to the Lawrence Livermore National Laboratory in 1958. Cohen always claimed that he worked out the concept in 15 or 20 minutes with calculations on a slide rule.



Cohen



A Lance MGM-52C mobile surface-to-surface tactical missile, which could fire a one-kiloton atomic warhead up to 75 miles.

The enhanced radiation warhead was a modification of the hydrogen or thermonuclear bomb. Like all hydrogen (or “fusion”) devices, it used a small atomic (or “fission”) bomb as a trigger to set off the hydrogen chain reaction.

The neutron bomb would release more of its energy in the form of lethal radiation. Physical damage would be limited to a relatively tight area while the radiation reached further out to penetrate Warsaw Pact armor, which was shielded against nuclear blast and heat. Since the neutron bomb produced little or no radioactive fallout or residual radiation, the target area could be reoccupied within a matter of hours.

The neutron bomb was tested successfully in 1962, but to Cohen's dismay, there were few takers for it. The weapons labs were unable to convince the Pentagon of the merits of replacing the battlefield atomic weapons with costly neutron devices. A neutron warhead was fielded briefly on the Sprint anti-ballistic missile, but was retired in 1975 after only a few months of service when the Sprint system was deactivated.

By the middle 1970s, however, the credibility of the battlefield nuclear deterrent was in doubt. In 1976, the Department of Defense asked ERDA to proceed with the W70-3 neutron warhead for the Lance missile and the W79 neutron artillery shell for the Army's eight-inch gun.



M110A2 203 mm self-propelled howitzers deployed along a line of trees during Exercise Reforger '85 near Weitershain, West Germany. The howitzers could fire atomic shells over 20 miles.

JIMMY CARTER'S STRUGGLE

The Carter administration, in office for less than six months, was taken by surprise when the “killer warhead” story broke in *The Washington Post* in June 1977. Carter waited more than a month to make a public statement on the neutron bomb.



Carter

“The enhanced radiation of the neutron bomb has been discussed and also has been under development for 15 or 20 years,” he said at a news conference July 12. “It is not a new concept at all, not a new weapon.” He said that he had “not yet decided whether to advocate deployment of the neutron bomb” but that “it ought to be one of our options.” He forwarded ERDA’s funding request to Congress, adding that “in my present view,” approval was “in the nation’s security interest.”

Sources inside the administration confided later to Richard R. Burt of *The New York Times* that “from the beginning, Mr. Carter was never comfortable with the controversial weapon, one that apparently challenged his strong personal beliefs over the morality of nuclear warfare.”

The State Department began consultations with the NATO allies. Several of the smaller European nations were dead set against the neutron bomb, but opinions were mixed in West Germany, where the weapons would be based. Apprehension about the neutron bomb was offset somewhat because the Soviet Union had begun deploying a new nuclear missile, the multiple-warhead SS-20, with range to reach all of western Europe.

A major sticking point was that Carter wanted the Europeans to commit to deployment of the neutron bomb before he committed to production. The Europeans wanted him to make the production decision first.

“In effect, the Carter administration decided not to let the Europeans have it both ways,” the *Los Angeles Times* said. “If they consider the weapon to be militarily useful, the European allies will have to say so publicly and take whatever political heat results from that.”

In November, Congress gave Carter authorization and funding to go ahead with the neutron bomb. The measure

passed with minimal debate in the House of Representatives and by voice vote in the Senate.

MEDIA EVENT

Other news media picked up the chase. *The Boston Globe* said the neutron bomb was a symbol of “the moral idiocy of military technocrats.” *The Nation* said it offered “a rare glimpse into the military mind in its most modern convolution.”

Some publications were moderate or even supportive of the neutron bomb but the general effect was inflammatory. Looking back in 1984, after it was all over, a Harvard University study, “The Press and the Neutron Bomb,” said that reports spinning off from *The Washington Post* led to a political storm in the United States and mass protests in Europe.

As late as August 1977, opinion polls in the United States favored building the neutron bomb by a margin of 44 to 37 percent, but that fell steadily toward 47 percent against it in 1978.

The Soviet Union joined in the outrage, citing “grave dangers for international peace,” and at an arms control conference in Geneva, submitted a draft treaty to outlaw the neutron bomb. At the same time, the Soviets refused to consider any restraint in deploying the SS-20, which the Soviet news agency TASS said had “no relation” whatever to the neutron bomb.

Key NATO leaders were more inclined toward the neutron bomb than they said publicly. In West Germany, Chancellor Helmut Schmidt supported the concept but for political reasons was constrained from getting too far out front.

By March 1978, negotiators had worked out a compromise agreement for production and deployment of the neutron bomb. The arrangement would avoid a Dutch veto and allow tacit acceptance by Italy, Denmark, and Norway. It was to be announced at a meeting of the North Atlantic Council March 20.

Carter, reviewing the draft agreement, was not satisfied and canceled the meeting. According to *The New York Times*, “Mr. Carter’s exact reasons for rejecting the alliance plan remain unclear,” but he was said to regard the assurances as “vague” and the commitment as unreliable.

CARTER DEFERS PRODUCTION

Carter announced his decision to

defer neutron bomb production April 7. He said the Pentagon would “proceed with the modernization of the Lance missile nuclear warhead and the eight-inch [artillery] weapon system, leaving open the option of installing the enhanced radiation elements.”

In fact, his position was the result of two separate decisions and much behind-the-scenes wrangling. He made the first decision—not to produce the neutron bomb—in isolation during a fishing trip to Georgia.

Senior Cabinet officials and White House advisors were reportedly “stunned” by this “eleventh hour reversal,” leading to the second decision—adding provisions to defer production rather than cancelling it outright—which repackaged the position for public consumption.

Chancellor Schmidt, who had privately gotten his Cabinet to support neutron deployment, was said to be “deeply embarrassed” and feeling that the Americans had reneged on the bargain. Former President Ford assailed Carter’s decision. Sen. Sam Nunn (D-Ga), a rising star on the Armed Services Committee, called it “a bad mistake that will hurt the NATO alliance.”

The decision was a big victory for opponents of the neutron bomb and anti-nuclear activists in the United States and abroad. Soviet leader Leonid Brezhnev said the USSR would not begin production of neutron bombs either. He invited Carter to join him in a ban on neutron weapons. Carter declined, pointing out that “the Soviets have no use for a neutron bomb” and Brezhnev’s offer had “no significance” since nobody was threatening the Soviet Union with huge tank armies.

In 1978, the United States began work on updated atomic warheads for Lance and the eight-inch artillery, designed so they could be converted into neutron weapons by the insertion of a “special component” which would not be built until a separate decision to do so was made.

Also in 1978, the French, who had remained aloof from the neutron bomb controversy in NATO, revealed that they were considering development of a neutron bomb of their own.

THE REAGAN REVIVAL

In February 1981, in the first month of the Reagan administration, Secretary of Defense Caspar Weinberger said at a press conference that the United States “very probably” would

want to deploy the neutron bomb in Europe.

However, the European allies were not sure they wanted to go down that road again, partly because of their experience with Carter in 1978 and partly because they were now focused on the proposed deployment of the US Air Force's Ground-Launched Cruise Missile



Schmidt

and the US Army's Pershing II missile to counter the SS-20, which the Soviets were deploying at the rate of one a week. Like the neutron bomb, GLCM and Pershing II were opposed by leftist demonstrators in Europe. NATO officials preferred to concentrate on that problem instead of diluting their effort to promote the neutron bomb.

Reagan solved the problem for everybody by making the decision himself without asking for any European commitment. In August, he announced that the United States would produce the neutron warheads for Lance and the artillery shell, but would stockpile them in storage in the United States rather than deploy them to Europe.

Reagan's decision was denounced by the regular group of opponents but Chancellor Schmidt and NATO Secretary General Joseph Luns endorsed it.

Lawrence Livermore Lab designed a third neutron weapon, an artillery shell for the Army's 155 mm gun. It was a third smaller than the eight-inch shell and had a range of 18 miles. In the end, the decision was for a modernized 155 mm atomic round that could be converted to

a neutron weapon with the addition of a special component.

Deployment of GLCM, Pershing II, and the SS-20 continued, but all three types were soon removed from Europe by the Intermediate-Range Nuclear Forces (INF) Treaty in 1987.

In 1982, France began production of a neutron weapon under the presidency of Socialist Francois Mitterand but the program was canceled in 1986 when he was succeeded by his arch-rival, Gaullist Jacques Chirac.

DRAWDOWN

In May 1990, with the end of the Cold War imminent, President George H. W. Bush canceled programs for upgrade replacements for the fission warheads on the Lance missile and nuclear artillery shells in Europe.

In 1992, Bush removed the battlefield nuclear weapons altogether. "The prospect of a Soviet invasion into western Europe, launched with little or no warning, is no longer a realistic threat," he said in September 1991. "I am therefore directing that the United States eliminate its entire worldwide inventory of ground-launched short-range, that is theater, nuclear weapons. We will bring home or destroy all of our nuclear artillery shells and short-range ballistic missile warheads. We will, of course, ensure that we preserve an effective air-delivered nuclear capability in Europe."

In 1995, the Army turned over its nuclear warheads to the Department of Energy—which had succeeded ERDA—for destruction. The DOE Pantex Plant in Texas did the dismantling as time allowed between other work, and the last US nuclear artillery shell, a W79 round, was destroyed in 2003.

At peak deployment in the 1960s, the

United States had 7,000 tactical nuclear weapons in Europe alone. Only a few such weapons—"nonstrategic nuclear weapons" in current parlance—are left, none of them of the neutron variety.

"The United States now has approximately 760 nonstrategic warheads, with around 200 of them deployed with aircraft in Europe and the remaining stored in the United States," the Congressional Research Service reported earlier this year. "Estimates vary, but experts believe Russia still has between 1,000 and 6,000 warheads for nonstrategic nuclear weapons in its arsenal."

THE BIG SWITCH

The neutron bomb is seldom mentioned today except in unusual circumstances. One such was in 2012 when John Gilbert rose in the British House of Lords to propose dropping a neutron bomb on the Pakistan-Afghanistan border to create a barrier against terrorists. He said nobody lived there "except for a few goats and a handful of people herding them." He did not explain what he expected a neutron bomb to accomplish.

By numerous accounts, Israel and China have tested and possess neutron bombs. The strangest case, however, is that of Russia. According to a CIA report in 2000, released with extensive redactions in 2005, the Russians inherited from the defunct Soviet Union a "subkiloton nuclear warhead" enhanced for tailored radiation output and "minimal ecological consequences."

This weapon, with a yield of about a third of a kiloton, was the result of tests "conducted in the early 1980s to simulate the effects of a US neutron bomb." The Russians no longer had the overwhelming conventional force advantage that the Soviets did. Their vulnerability was now akin to that of NATO in the 1970s.

The Soviets "would be interested in low-yield warheads because of fears that a future conflict could be waged on Russian soil," the CIA said. "Russia's new warheads would inflict less collateral damage."

That sounds much like the capabilities and purposes of the weapon once decried by the Soviet Union as "the capitalist bomb," built to kill people and preserve property. ★

John T. Correll was editor in chief of *Air Force Magazine* for 18 years and is now a contributor. His most recent articles, "Turning Point at Stalingrad" and "Rolling Thunder," appeared in the September issue.



Soviet T-72A tanks parade at the end of exercise Zapad-81 in September 1981. Nearly 100,000 troops participated, showcasing the Soviet Union's huge numerical advantages in conventional arms.

7 steps to retaining members

The Gen. Charles A. Gabriel Chapter in Virginia has a highly regarded retention program. As chapter president, I've been asked how we do it. My usual answer is: There's no magic. It takes commitment and an understanding that it's a contact sport.

Here's what has worked for us:



1. Track Like a Bloodhound.

We download our membership roster every month. We do this to determine who's coming up for renewal or expiration and to track whether the person we contacted about re-upping actually did.

2. Who's in Charge?

We assign a chapter lead who will take ownership of membership renewal.



3. Think Like the Air Force.

Assign a sponsor. This is the person who recruited or best knows the member and who will make personal contact to encourage a renewal. For others, we divvy up the list among the Executive Committee members.



4. Offer Value.

Our meetings feature Active Duty and Reserve Component speakers. We have at least one social event a year, and we hold meetings in different locations so they are easier to attend.



5. Hello!

We communicate nearly every week through email and our Facebook page, website, and newsletter.

6. Reach Out.

We contact new members and transfers, as well as those up for renewal. Nevermind that AFA headquarters has already done this. The local, personal touch makes a difference.



7. Don't Take Attendance.

We make it clear that even if members participate in only one event, they matter.

Joseph Burke learned many retention tactics from the AFA website's Retention Training Module. His chapter recently received an AFA 2017 overall retention award.



DYESS

One-Man Scourge

The remarkable life of Lt. Col. William Edwin Dyess ended in December 1943. Amazingly, some 13 years passed before the Air Force finally got around to naming a base after him.

Dyess was a genuine World War II hero—a fighter pilot, infantry commander, unbreakable prisoner of war, guerrilla warrior. *The New York Times* called him “a one-man scourge” of Japanese forces in the Philippines.

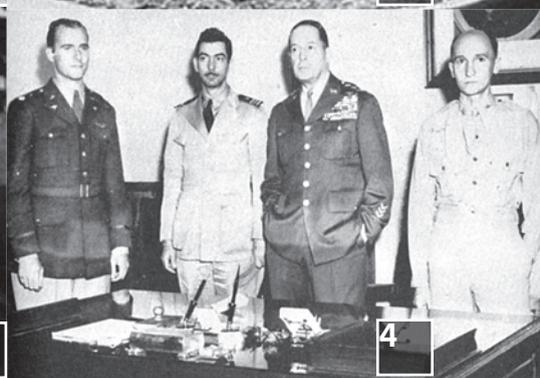
Growing up in Albany, Texas, Dyess (he went by “Ed”) was the archetypal winner—the star athlete and class president. In college the story was much the same. Ed seemed bound for law school. Yet in 1937 Dyess dropped that plan and joined the Air Corps. Soon he was a flying cadet at Randolph and Kelly Fields in Texas.

Ed Dyess—smart, bold, tough, matinee-idol handsome—was a born leader. He was only a first lieutenant when he took command of the 21st Pursuit Squadron. Dyess deployed to the Philippines in November 1941. He arrived just in time for the war.

On Dec. 8, Japan struck. The Texan led his outnumbered fighter forces in many missions. When the badly under-supplied 21st could no longer sustain combat operations, Dyess reformed it as an infantry unit and fought on.

Dyess on Feb. 8, 1942, led the first US amphibious landing of the war, taking a party of airmen ashore at Agloloma Bay, under fire, to finish off an entrenched enemy force. For this, Dyess was awarded the Distinguished Service Cross.

Once back on flight duty, Dyess scavenged beat-up P-40s to create flyable ones. On March 2, he led an audacious raid



on enemy forces in Subic Bay, an action bringing Dyess a second DSC.

Defeated in the Battle of Bataan, Gen. Douglas MacArthur departed Luzon, Philippines. Dyess disobeyed an order—issued to all pilots—to leave, choosing to stay with his men. He was captured on April 9 and was forced to walk on the infamous Bataan Death March to a POW camp.

Dyess spent a year in captivity but then organized a 12-man escape from Davao prison. On April 4, 1943, “the Davao Dozen” broke out and fought alongside local guerrillas. Dyess’ exploits led to a third DSC. He was picked up by a US submarine on July 15, 1943, and brought home to recuperate.

Unsurprisingly, Dyess prepared for a quick return to war. On Dec. 23, 1943, the P-38 in which he was training caught fire over Burbank, Calif. He refused to bail out and instead steered the fighter to an unpopulated area and died in the crash. He was 27.

Even then, the Dyess story was not over. He had cooperated with the *Chicago Tribune* and, in January 1944, the newspaper began publishing his tale, the first widely circulated eyewitness account of the horrors of the Bataan Death March.

Ed Dyess, the decorated hero from Albany, Texas, grew up 36 miles from what is now Dyess AFB, Texas. Long a Strategic Air Command facility, it is now home to the 7th Bomb Wing—a B-1 bomber unit—and the 317th Airlift Wing, composed mostly of C-130 transports.

1/ Ed Dyess. 2/ A B-1B at Dyess Air Force Base. 3/ Abilene AFB before it was re-named. 4/ Dyess (left), two fellow POW escapees, and Gen. Douglas MacArthur (second from right).

WILLIAM EDWIN DYESS

Born: Aug. 9, 1916, Albany, Texas
Died: Dec. 22, 1943, Burbank, Calif.
College: John Tarleton Agricultural College
Service: US Air Corps, US Army Air Forces
Occupation: US military officer
Main Era: World War II
Years Active: 1937-43
Combat: Pacific Theater
Final Grade: Lieutenant Colonel
Honors: Distinguished Service Cross (3); Silver Star (2); Legion of Merit; Distinguished Flying Cross (2); Bronze Star Medal; Purple Heart; Texas Legislative Medal of Honor

DYESS AIR FORCE BASE

State: Texas
Nearest City: Abilene
Area: 10.1 sq mi / 6,409 acres
Status: Open, operational
Opened: (as Tye Army Airfield) Dec. 18, 1942
Renamed: (Abilene Army Airfield) April 8, 1943
Inactivated: Jan. 31, 1946
Reactivated: Sept. 1, 1955
Renamed: (Abilene Air Force Base) April 15, 1956
Renamed: (Dyess Air Force Base) Dec. 1, 1956
Current Owner: Air Force Global Strike Command
Former Owners: Second Air Force, Continental Air Command, Strategic Air Command, Air Combat Command

Photos: USAF (1-4); A1C Emily Copeland; courtesy photo



TRICARE & MEDICARE WEREN'T DESIGNED TO COVER ALL CARE.

Are you prepared to cover the rest?

Sudden accidents and serious illnesses happen without warning. So do the extra expenses they bring.

Expenses not covered from a hospital stay can be costly, but at-home recovery needed after your stay can deplete your personal and retirement savings you've worked so hard for. And you still may not be able to afford the quality of care you deserve.

The **AFA Hospital Income and Short Term Recovery Insurance Plan** picks up where Medicare and TRICARE For Life leave off—providing you, or anyone you choose, with a cash benefit to help pay for things such as physical therapy, occupational therapy, speech therapy, nursing care, companion services, homemaker services and more. And, you decide how the money is spent without any restrictions—allowing you to be in control of your health care decisions while paying for the care you need and receiving the quality of care that your service has earned.

COVERAGE FOR AFA MEMBERS AND SPOUSES AGE 65 AND OLDER

AFA Hospital Income and Short Term Recovery Insurance Plan:

- Guaranteed acceptance—you cannot be turned down*.
- Affordable group rates negotiated for our AFA members.
- Cash benefits paid directly to you or anyone you choose, in addition to any other coverage you may have.
- Use the money any way you want—without restrictions.

Learn more about the AFA Hospital Income and Short Term Recovery Insurance Plan. Call **1-800-291-8480** or visit www.afainsure.com



Underwritten by: Hartford Life and Accident Insurance Company Hartford, CT 06155
The Hartford® is The Hartford Financial Services Group, Inc., and its subsidiaries, including issuing company Hartford Life and Accident Insurance Company.

Coverage may not be issued in some states. All benefits are subject to the terms and conditions of the policy. Policies underwritten by Hartford Life and Accident Insurance Company detail exclusions, limitations and terms under which the policies may be continued in force or discontinued.

*This policy is guaranteed acceptance, but it does contain a Pre-Existing Conditions Limitation. Please refer to the Certificate of Insurance for more information on exclusions and limitations, such as Pre-Existing Conditions.

Program Administered by Mercer Health & Benefits Administration LLC
AR Insurance License #100102691
CA Insurance License #0G39709
In CA d/b/a Mercer Health & Benefits Insurance Services LLC

79642 (12/17) Copyright 2017 Mercer LLC. All rights reserved.



**THE VALUE OF
KEEPING F-16s
RELEVANT FOR
DECADES TO COME.**

To stay ahead in today's high-tech battlespace, every F-16 needs the most advanced AESA radar. Fortunately, Northrop Grumman's APG-83 SABR is currently in production and available today. SABR provides proven 5th generation aircraft radar capabilities to the F-16 faster and more cost effectively than any other alternative. *That's why we're the leader in advanced, innovative, and affordable radar solutions.*

THE VALUE OF PERFORMANCE.

NORTHROP GRUMMAN