



MOBILITY FORUM

THE MAGAZINE OF AIR MOBILITY COMMAND | WINTER 2021-2022

**The 18th Air Force
Prepares for the
Road Ahead**

Airlift/Tanker
Association
Convention:
**Leveraging
Our Legacy to
Aggressively
Forge Our
Future**



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THE MOBILITY FORUM

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A C-17 Globemaster III safely transports approximately 823 Afghan citizens from Hamid Karzai International Airport, in Kabul, Afghanistan, Aug. 15, 2021.

USAF courtesy photo

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Happy Holidays, Mobility Warriors!

The holiday season provides a perfect time of year to take a knee. However, I recognize that as our mission never stops, many Mobility Warriors are either deployed or out getting the mission done this holiday season. To those away answering the call of duty, I offer heartfelt thanks to you and your families for continued sacrifices. For those able to be home this holiday season, I hope you take advantage of the time to reflect and rest while closing out a truly historic year.

Reflecting on 2021 reveals a year unlike any other in Air Mobility Command. I am honored to join this team, and I look forward to building on the incredible feats going forward! You led the charge for the nation in executing the largest non-combatant evacuation operation in U.S. history. More than 124,000 American citizens and at-risk Afghans airlifted off a single airfield—a single runway—in only 17 days. We engaged every facet of our Rapid Global Mobility mission to get it done—Airlift, Air Refueling, Aeromedical Evacuation, Global Air Mobility Support, and Command and Control. There is simply no other force on earth capable of such power projection and agility. Our nation and the world watched in awe as you professionals executed an instant classic in the distinguished annals of Air Mobility history and then followed it up with compassionate care to bring those evacuees to their final destinations.

And while the overall result was an incredible triumph, there are always lessons we must study to improve, learn, and convert our hard-fought experiences into future successes. I am proud beyond measure of the fantastic execution during Operations ALLIES REFUGE and ALLIES WELCOME and the diligence in bringing forth the lessons learned to grow a stronger, more capable force.

We must also allow ourselves time to rest following a year of demanding operations and surges executing Mobility Guardian, Afghanistan to Zero, and finally, the historic NEO (Noncombatant Evacuation Operations) while simultaneously delivering hope following a 7.2 magnitude earthquake in Haiti, a hurricane hitting the Gulf Coast, and wildfires across the western United States. Rest, recovery, and reconstitution ensure the energy required to meet the challenges ahead safely and effectively. I am fully aware of the extraordinary conditions our crews operated under in unprecedented situations this past year. In our line of work, safety can never be first, but it is ever-present in our minds to mitigate risk and ensure future readiness.

As we look forward to 2022 and beyond, there are clear challenges which we must attack head-on. A rising and increasingly aggressive pacing competitor, China, continues to attempt to mold the international rules-based order only to benefit them. Readiness and focus on Strategic Competition has never been more critical, and as we look forward to 2022 and beyond, we will meet those challenges together. The Chief of Staff of the Air Force's call to Accelerate Change or Lose endures. We will answer that call by keeping our nation's Rapid Global Mobility force ready and able to project American power and win ... anytime, anywhere ... Let's go! 



Gen Mike Minihan, Commander, Air Mobility Command, Scott Air Force Base, IL

“Reflecting on 2021 reveals a year unlike any other in Air Mobility Command. I am honored to join this team, and I look forward to building on the incredible feats going forward!”

– Gen Mike Minihan

The 18th Air Force Prepares for the Road Ahead



BY MS. LAUREN SCHATZ, STAFF WRITER

As Air Mobility Command's (AMC) sole numbered Air Force, the 18th Air Force ensures the readiness and sustainment of approximately 36,000 Active Duty, Reserve, and civilian Airmen. This readiness includes preparation for tomorrow's fight, in which tactics are quickly evolving. With a shift in strategy from AMC and the overall Air Force, the 18th Air Force has been busy exploring and refining several concepts that may become crucial for carrying out AMC's mission to provide rapid global mobility and sustainment for America's Armed Forces. With changing adversaries and overall arenas, the 18th Air Force

is pivoting away from large bases and keying in on the art of quick movement and dispersion.

Maj Gen Kenneth T. Bibb, the Commander of the 18th Air Force, discussed how Airmen are preparing for the high-end fight and aligning with the National Defense Strategy. According to Bibb, the 18th Air Force is focusing on two primary goals. The first is to restore our nation's competitive edge by blocking adversaries such as Russia and China. The second is to keep these rivals from throwing the international crime order out of balance.

Maj Gen Thad Bibb, 18th Air Force Commander, discusses the importance of the 22d Air Refueling Wing to the 18th Air Force's mission May 14, 2021, at McConnell Air Force Base, KS.

USAF photo by SrA Alexi Bosarge

The 18th Air Force aligns under AMC's strategies of advancing fighting capabilities, protecting the Force, and improving strategic deterrence to achieve these goals. An experimental approach is being embraced across the board to improve their expertise in these areas.

"It's clear that we need strong mobility capabilities to test new environments,"

“We see our Airmen focused on innovation and experimentation. We see Airmen willing to take risks like never before. We see our Airmen and our planners focusing on mobility and our desired learning objectives more so than we’ve ever done.”

Bibb shared. “That is involved across the full spectrum. AMC and the 18th Air Force are doing that all the way up to the high end of the spectrum with our nuclear forces.”

By testing new concepts and technologies, the 18th Air Force is accelerating positive changes. Bibb credits this innovative shift to the Airmen. “I think that our strength really comes in empowering our Airmen who are on their toes and want to lead,” Bibb said. “AMC and the Air Force in general have always been good about empowering every level by giving Airmen a task and then watching them carry it out.”

This proficiency has been exemplified through extensive training exercises, such as Mobility Guardian, which have been vital in preparing for the road ahead. Now, with more Airmen available, the Air Force has placed a stronger focus on training. “We’ve always placed a high value on training, but because of real-world missions, we haven’t been able to participate in the level we would like to,” Bibb explained.

Training exercises allow Airmen to take risks in a practice environment. Mobility Guardian and similar events have given Airmen the space to experiment and to be able to train using new Tactics, Techniques, and Procedures (TTPs).

One increasingly popular TTP is Agile Combat Employment (ACE).

In recent years, the Air Force has been incorporating this concept, which focuses on rapid movement. With highly capable adversaries in mind, setting up quickly in austere, fragmented environments can be advantageous. ACE encompasses numerous TTPs and has been a driver of many Airmen’s efforts.

“What’s exciting to me is the enthusiasm I see from our Airmen,” Bibb said. “We see our Airmen focused on innovation and experimentation. We see Airmen willing to take risks like never before. We see our Airmen and our planners focusing on mobility and our desired learning objectives more so than we’ve ever done.”


Bibb said ACE had forced them to “think outside the box.” For example, the 18th Air Force has developed new methods for expanding fueling operations. These methods include wet wing refueling and hot pit refueling processes in which ground crew Airmen refuel an aircraft while one or more engines are still running. Although these procedures have been done for years, ACE has enabled a stronger focus on testing survivability in different environments and streamlined improvement.

Another TTP similar to ACE is Multicapable Airmen (MCA). MCA equips Airmen to be proficient in the multiple skills necessary to support air operations and provides the training needed for diverse positions and expanding roles. Bibb says it is exciting

to see this program implemented in Mobility Forces.

A third TTP, Joint All-Domain Command and Control (JADC2), provides the Services the opportunity to join forces to implement and test joint operation concepts. JADC2 involves network-friendly forces, accelerated operations, and overwhelming adversaries with simultaneous challenges from every domain. It has been tested in aircraft such as C-17s and KC-10s to ensure all Airmen are digitally adept.

The 18th Air Force recognizes that technology is a key component for growth. Bibb quickly recalled several examples of technological achievements. For example, Airmen coded an app that enabled them to communicate with each other in remote environments. This app aids Airmen in receiving critical orders that can be essential to a mission. Project Mercury, which helped optimize scheduling, is another technological success story of the 18th Air Force, which has its software factory at its headquarters at Scott Air Force Base, IL.

There have been many examples of innovation and improvement in the past year, and Bibb recognizes that everything starts with the talented Airmen. “I couldn’t be prouder of our Airmen,” Bibb said. “When I’m out with our 36,000 Airmen, I think, ‘Hey, I wish you could see yourself through my eyes.’ It is amazing to see what our team does on a day-to-day basis.” 

Incorporating TEM Into Every Flight

BY LT COL LANCE HOLLOWAY,
HQ AMC FLIGHT SAFETY

In today's booming housing market across the United States, homebuyers often have only a day or sometimes only hours to decide on whether or not to make an offer and contract on their new home. Under normal housing market conditions, buyers would be afforded the opportunity to collect and analyze the data, make comparisons between other homes in the area, research the school districts for their kids, and put in a bid lower than the asking price with one or two more competitive buyers. Unfortunately, buyers are not afforded those opportunities in today's market for various reasons, including tightened homebuilder inventories, commodity prices, and the Federal Reserve's easy monetary policy. As a result, buyers will inevitably tend to make rushed decisions, leading to potentially overspending on their budget, settling with a less-than-desired home, and forgetting other vital considerations. Most of us do not make good decisions under time pressure, and the same type of situation can happen in the aviation world.

Pilots and aircrews often make numerous decisions with limited time and incomplete information during mission execution. We inherently perform our risk management based on experience levels, training, and proficiency. We

have all heard the phrase "aviate, navigate, communicate," but we must also consider adding the term "mitigate" to our operational perspective. Risk mitigation is complex; the key is having the ability to identify and anticipate what factors could potentially impact our flight and narrow our safety margins. Mishaps often result from a string of mismanaged threats and errors versus any single event. Breaking the chain of events as soon as a threat is identified can make the difference between a mishap and a routine sortie. To help us better understand risk mitigation, the aviation community often defers to the practical and effective model of Threat and Error Management (TEM).

TEM ORIGINS

TEM's origins came from a partnership between the University of Texas Human Factors Research Project and Delta Air Lines in 1994, during one of Delta's Line Operations Safety Audits. TEM is a methodology to identify and recognize threats, reduce errors, and prevent undesired states (US). All pilots and aircrews acknowledge that we inevitably make mistakes in the complex aviation environment, and there is no perfect flight.

TEM TERMINOLOGY

In the context of TEM, a *threat* is any condition or event occurring beyond or outside the crew's influence. Threats

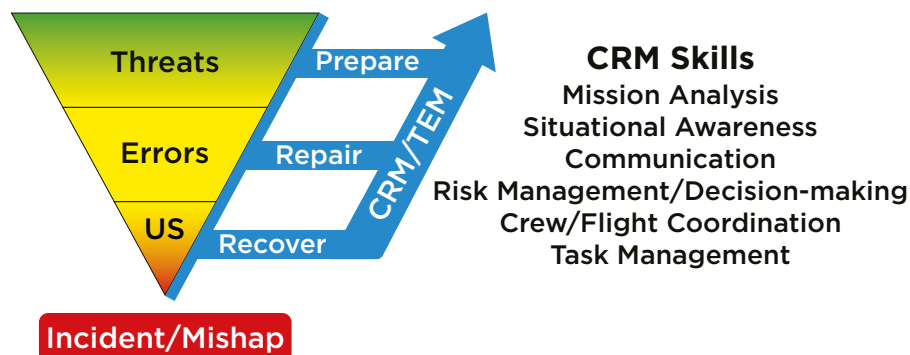
inherently increase the complexity of the operation and can lead to errors if not appropriately managed. Threats should serve as red flags. Watch out—there could be severe consequences! The Federal Aviation Administration describes an *error* as a mistake made when threats are mismanaged. Air Mobility Command (AMC) defines errors as actions or inactions that lead to deviations from organizational or operational intentions or expectations. In simple terms, threats are external to the aircrew, and errors are internal to the aircrew. Furthermore, unmanaged and/or mismanaged errors lead to one of three outcomes:

- **Inconsequential Outcomes:** the error has no immediate effect on safety (if managed properly);
- **Additional Errors:** the error causes another error(s);
- **Undesired States (US):** risk or unsafe operational conditions are increased, possibly leading to a mishap. AFMAN 11-290 now refers to undesired aircraft states as "Undesired States (US)."

THREAT AND ERROR MANAGEMENT

Active TEM strategies, coupled with sharp Crew Resource Management (CRM) skills, serve as a proactive pathway toward mission effectiveness and safe operations. The appropriate

Mission Effectiveness and Safe Operations



CHAIN OF EVENTS LEADING TO A US

	THREATS	ERRORS	US
Weather	<ul style="list-style-type: none"> Excessive crosswinds Turbulence Icing/snow 	<ul style="list-style-type: none"> Improper crosswind controls Below turbulence penetration airspeed Failure to review cold-weather operational procedures and brief crew on expectations and duties 	<ul style="list-style-type: none"> Off-centerline landing Reduced stall margins Wrong engine/pneumatic configuration for taxi and takeoff
Airfield	<ul style="list-style-type: none"> Wingtip clearance Increased taxi distance for closed taxiway and/or runway in hot conditions 	<ul style="list-style-type: none"> Failure to download crewmembers to verify/improper use of marshallers Excessive taxi speed to make mission timing at maximum takeoff gross weight resulting in abnormally high heat buildup in tires 	<ul style="list-style-type: none"> Inside minimum obstacle clearance Blown tire(s) during takeoff run
Air Traffic Control (ATC)	<ul style="list-style-type: none"> Revised clearance given right before transition altitude on climbout Radio congestion, complex clearances, language difficulty, and runway changes 	<ul style="list-style-type: none"> Failure to reset altimeters to 29.92 in. Hg Misinterpretation/wrong readbacks or callbacks to ATC 	<ul style="list-style-type: none"> Resolution Advisory (RA) after level-off Taxiway/runway incursion
AMC Operations	<ul style="list-style-type: none"> Operation with duty time/crew rest waiver—fatigued Incorrect ramp fuel loaded 	<ul style="list-style-type: none"> Omitted stabilized approach callouts Failure to cross-verify fuel quantity between aircraft and dispatch paperwork 	<ul style="list-style-type: none"> Failure to execute go-around during unstabilized approach Landed with less than reserve fuel requirements


response to threats is: Identify and Prepare. Strategies include the identification of major threat(s) during the crew briefing prior to takeoff and before the descent, then developing tactics to mitigate the known and present danger. Repair includes the application of tools already within the system to protect against errors, such as briefing guides, aircraft checklists, and effective training programs. Effective strategies for error recognition and mitigation include: anticipation of errors (e.g., as discussed during mission planning), appropriate task prioritization, and selecting the appropriate automation level for the situation. Recover addresses related human factors; for example, an aircrew corrects the error before it leads to unwanted consequences. Effective error countermeasures

include continuous employment of flight path management concepts and communication/coordination techniques such as verbalize, verify, and monitor. The model on the previous page depicts the proper interaction and employment of CRM/TEM skills.

CRM VS. TEM—WHAT IS THE DIFFERENCE?

Crew Resource Management (CRM) is similar to TEM but has some significant differences. CRM relates more to managing resources, including Air Traffic Control, fellow crewmembers' inputs, Air Operations Center, Flight Managers, and Base Operations. TEM focuses on effectively managing threats and maintaining proper safety margins. Due to their symbiotic nature, CRM and TEM are most effective when used together.

PRACTICAL APPLICATION AND WAY FORWARD

Individual aircrew members are at different stages in their careers. Some are first flying assignment lieutenants, whereas others are transferring from one aircraft platform to another; many aircrew members are returning from staff and/or school tours, whereas others fly regularly and proficiently. Regardless of where we are on the spectrum, being aware of the vulnerabilities posed by each flight will help us to anticipate and recognize the compounding effects threats and errors can have on flight safety when unmanaged or mismanaged. Protecting our Airmen from injury or loss of life and preserving our AMC assets from damage ensures we are always ready when the nation needs us. 

Go-Arounds From Unstable Approaches

BY MR. JAMES BUSBEA, C-5M MFOQA FLIGHT DATA ANALYST

Do the stabilized approach criteria directed in the Air Mobility Command (AMC) Supplement to Air Force Manual 11-202, Volume 3, significantly influence go-around rates? Analysis shows that, although the approach counts may vary significantly by Aircraft Mission-Design Series, overall percentage rates for go-arounds per unstable approach are very similar for all USAF Mobility Air Forces (MAF) airplanes. Therefore, the analysis focused on C-5 go-arounds to answer the opening question. Figure 1 depicts the rate of C-5 go-arounds from unstable approaches across 12 months, with an average annual rate of 17.2 percent. By comparison, the Flight Safety Foundation reports that the commercial airline industry's unstable approaches result in an annual rate of approximately 3-percent

go-arounds.¹ On the surface, it appears that the MAF is nearly six times more likely to abide by the stabilized approach go-around requirement than our airline counterparts. On closer inspection, however, there may be something other than rule following and safety consciousness influencing these MAF go-around statistics.

During the past 2 years, AMC has used the rate of go-arounds following unstable approaches as a barometer of the crew force's acceptance of stabilized approach guidance. Like the stabilized approach concept, the USAF adopted the practice of analyzing go-arounds following unstable approaches from its commercial counterparts. The airline industry does

not practice go-arounds in the airplane for training, however. As a result, the rationale for airline go-arounds conveniently fit into two categories. Their go-arounds are motivated by either stabilized approach compliance or environmental factors. Examples of environmental factors would be when the runway environment is not in sight at decision height or the previous aircraft has not cleared the runway. By process of elimination, one can logically deduce that environmental factors influence most commercial go-arounds executed from stable approaches. We cannot apply the same logic because the USAF routinely conducts missed-approach training in its aircraft. Figure 2 shows the result for all C-5 approaches and illustrates a higher percentage of go-arounds from stable approaches than all unstable approaches combined. If

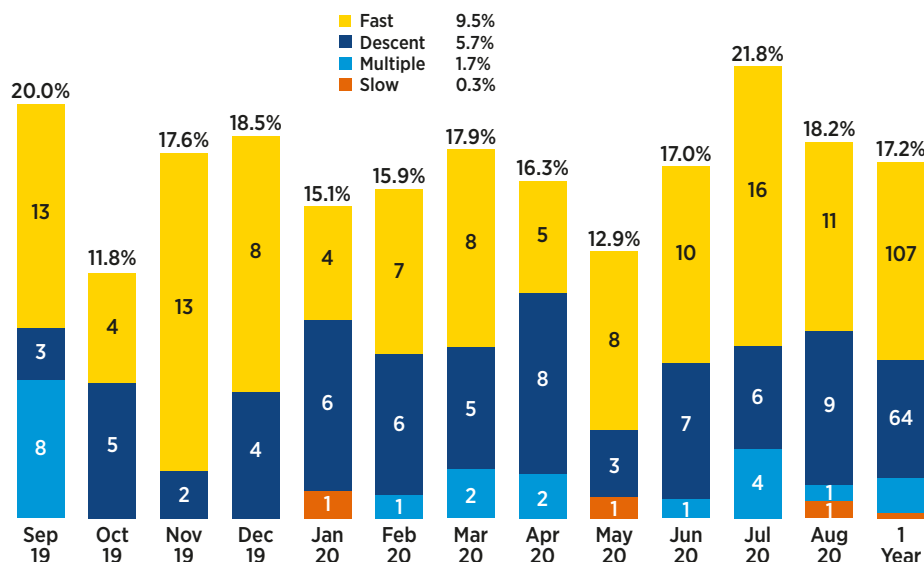


Figure 1. Go-Arounds from Unstable C-5 Approaches

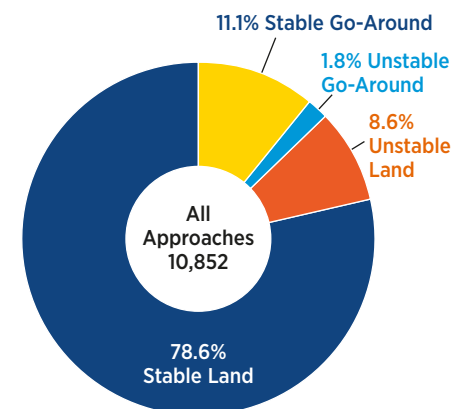


Figure 2. C-5 Approach Results (12 Months)

training requirements influenced a vast majority of go-arounds from stable approaches, it follows that an undetermined number of unstable approaches were also predisposed to go around for training.

Regardless of the reason, if you have ever executed a go-around on an operational mission, you are part of an exclusive club. Figure 3 classifies all approaches by mission type using the associated Air Force Technical Order Form 781 mission symbol. This new analysis tool indicates that approaches are 11.4 times more likely to go around on training missions than on operational missions. Training missions foster a go-around-tolerant environment due to a missed-approach currency quota combined with the absence of perceived mission


pressure, enemy threat, unfamiliar missed-approach procedures, or fuel reserve concerns.

Furthermore, Figure 4 shows that training approaches are five times more likely to go around when unstable. Conversely, go-around rates on operational missions more closely mimic that of the commercial industry. Crews on operational missions are not burdened by training requirements allowing us to make straightforward, two-category assumptions regarding their go-around rationale, similar to the crews on airline flights.

Aggregate analysis of all mission types (training and operational) is vital to fleet and airfield trend detection. When it comes to go-arounds, however, focusing on operational missions

The worst thing crews can do is to assume the risk of disregarding a mandatory go-around and not report the reasons for doing so.

provides a more accurate indication of the crew force's attitude toward approach stability policy. The analysis focused on C-5 statistics in this article; however, these statistics illustrate trends observed across the MAF. With that said, it appears we need to study the findings in more detail.

Why did 96 percent of the unstable approaches on operational missions land instead of going around? Did those crews perceive landing from an unstable approach as a safer alternative to a compulsory go-around? Perhaps they believed the stabilized approach guidance did not apply to their mission or that compliance would create a tactical disadvantage. The worst thing crews can do is to assume the risk of disregarding a mandatory go-around and not report the reasons for doing so. If you land from an unstable approach, particularly on an operational mission, share your experience with an Airman Safety Action Program report. Provide a short narrative of the circumstances so the appropriate authority can clarify or adjust expectations for *everyone*. 

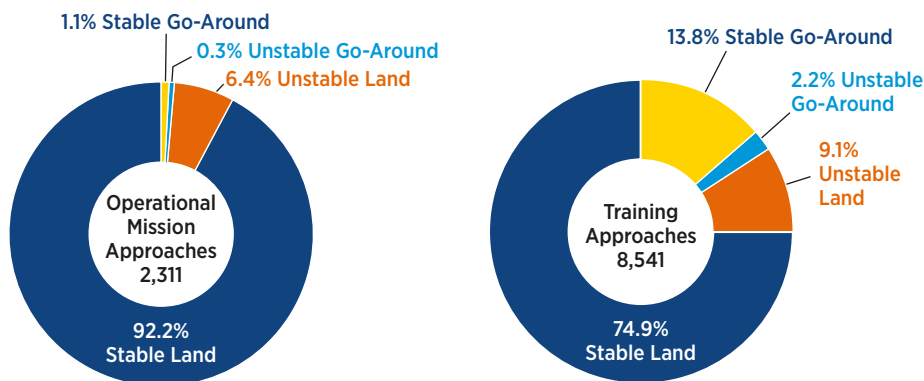


Figure 3. C-5 Approach Results by Mission Type (12 Months)

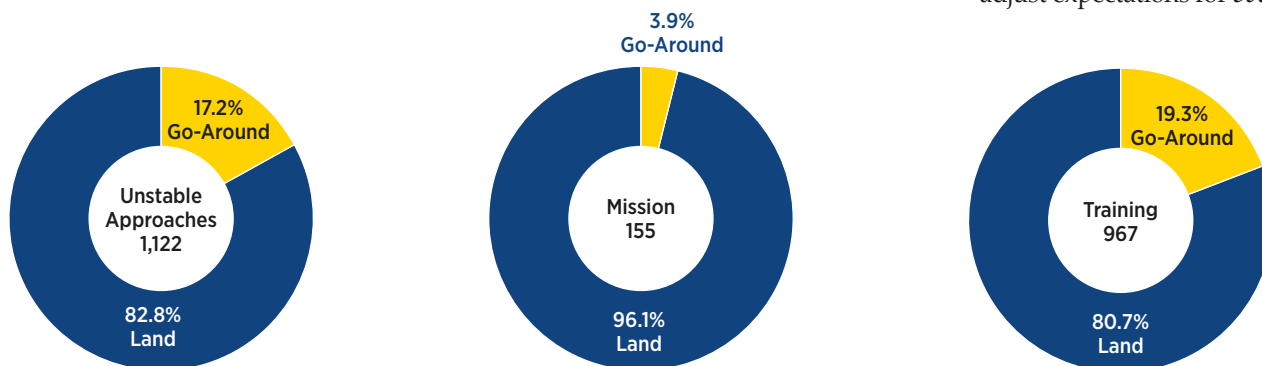


Figure 4. C-5 Unstable Approach Results (12 Months)

Crash Landing Contributes to Improvements in Procedures

BY MS. KATHY ALWARD, STAFF WRITER



Kevin Sluss, Acting Division Chief of Flight Safety for Air Mobility Command

Sometimes it takes a tragedy for positive changes to occur. Mr. Kevin Sluss, Acting Division Chief of Flight Safety for Air Mobility Command, was an Air Force C-130 Navigator in 1989. He provided testimony to this concept as he described his experience surviving a Class A mishap that prompted a procedure change in an emergency situation for airdrop crews.

As part of a C-130 crew from Dyess Air Force Base (AFB), TX, in 1989, Sluss flew to Pope AFB, NC, to conduct a week of airdrops as part of a five-ship formation. At this time, global positioning systems, night vision goggles, and self-contained navigation systems did not even exist. The crew included the aircraft commander, a former first assignment instructor pilot (IP) who had recently completed school and was new to flying in the left seat. At that time, some resources allowed the highly experienced IP to fly in the right seat. Sluss was the navigator and had

been an instructor for about a year. The onboard flight engineer had experience and planned to separate later that year after completing his current enlistment. According to Sluss, the primary loadmaster, TSgt Charles Alfred, had considerable experience, and the secondary loadmaster had approximately 2 years of experience.

This mission was to drop three ships of personnel in support of an Army Emergency Deployment Readiness Exercise and drop two Sheridan armored reconnaissance vehicles that weighed more than 38,000 pounds. After the drop, the aircraft was to land at Mackall Army Airfield, NC, to load more paratroopers, and a crew chief flew on board to marshal the aircraft there.

According to Sluss, when loaded, the Sheridan fits precisely within the back of a C-130, leaving only small crawl spaces for transit to the back of the aircraft. At that time, Sluss said that many crews, including this one,

believed that the deployment of the two extraction parachutes would create enough force to overcome the cargo locks and safely support the massive weight of the cargo to a predetermined drop zone.

The desired points of impact were marked with cerise-colored panels in the shape of block letters—C for equipment, A for personnel. From the air, Sluss said they could see the personnel block letter A, but they could not see the C panel because a shadow fell between the A and the C on the drop zone. They had no radio contact directly with the drop zone, so because they could not see the C for equipment, the lead ship stated that the absence of the pre-briefed mark was considered a no-drop by Sluss and his crew.

The only plan in place for a no-drop was to return to Pope by escaping to the north. When they started heading north, they discovered the error that the equipment C panel



USAF C-130H 74-1681 at McGuire AFB, NJ, June 1980.

Photo by Bob Stewart

“Although this mishap was a tragedy in many ways, progress was made.”


was visible, and they actually could see both block letters. According to Sluss, after the right seat pilot called the accompanying aircraft in the formation, they learned it had not yet arrived at the initial point about 20 miles north of the drop zone. The right seat pilot determined that they could accomplish a racetrack. This procedure was designed to be used when the entry into a reversal procedure is not practical and enables the aircraft to reduce altitude during the initial approach segment. Drop checklists were run after both crews agreed to turn to accomplish the racetrack.

According to Sluss, there was a problem with their aircraft because the left-hand locks remained engaged, preventing the release of the 38,000-pound cargo, and the aircraft now had two extremely large parachutes

deployed, causing drag, which necessitated a crash landing. Sluss called for the crash landing as the pilots tried to keep the aircraft out of the trees, alerting the crew chief to sit down and strap in on the crew bunk. Sluss said the landing was “harder than the worst assault landing you have ever experienced” due to the initial impact and ground run that were quite rough.

The five crew members in the front of the aircraft evacuated quickly before the pooling fuel near the aircraft caught on fire. The loadmasters were pulled from the aircraft with the help of an Army pilot and the Army medics that were supporting the exercise. Sadly, as the load broke free, the secondary loadmaster lost part of his right leg. TSgt Alfred was in critical condition and died from his injuries.

The crew believes he died attempting to crawl to the back of the aircraft to cut the extraction line with a knife to release the parachutes before the crash.

Sluss said that although this mishap was a tragedy in many ways, progress was made. Post-event simulations discovered that a sustained 30-second pull on the “simul” handle would release the locks rather than short, repeated attempts. The sustained pull is now a standard emergency procedure. Also, they likely would have attempted the 160-degree turn to land on the Pope AFB runway had they known that the aircraft could have safely if turned at the proper airspeed, stated Sluss. 

A C-17 Globemaster III aircraft Loadmaster assigned to the 816th Expeditionary Airlift Squadron, Al Udeid Air Base, Doha, Qatar, looks over a passenger manifest in the U.S. Central Command area of responsibility, April 12, 2021.

USAF photo by
SrA Brandon Cribelar

ASAP 16786:

The Importance of Verifying Passenger Accepted for Movement Against the Manifest

BY MS. KATHY ALWARD, STAFF WRITER

In August 2021, a passenger-manifest conflict occurred. An Airman, trying to get home, jumped on an available flight without the required paperwork. In this day and age, overlooking this regulation can result in serious risk to crews. This incident is a lesson in how to prevent a potentially dangerous situation because not everyone may be who they claim to be. This event prompted Mr. R.R. Rizzo Jr., Air Terminal Manager in the 721st Aerial Port Squadron (APS), Ramstein Air Base (AB), Germany, to submit an Airman Safety Action Program (ASAP) submission.

The aircraft flew from Al Udeid AB, Qatar, to Ramstein AB, Germany.

According to Rizzo, the crew conducted their morning ops brief and discovered four people on the aircraft, although the manifest listed only three. Rizzo said, "It sounded like the individual had met up with the crew somewhere at Al Udeid, saying that he needed a ride home. They told him to show up to the terminal, but not understanding that he didn't understand the process himself regarding how to get on the mission. So, he basically found his way to the aircraft and was dropped off by another person that was in his unit who had access to the flightline."

The problem was that, according to the ASAP submission, "Only three of the four individuals were

Rizzo's advice to crews who encounter the same situation is, "Don't be afraid to question."

manifested and processed through Qatari Immigrations. The three members verified this [information] by producing the stamps on their Orders, indicating they were properly processed through Immigration Agents. The fourth individual, [a] USAF SSgt, was unable to produce any sort of documentation to 721 APS members and claimed he 'just boarded the aircraft prior to departure.' Consequently, ATOC [Air Terminal Operations Center] contacted 86 SFS [Security Forces Squadron] to detain the stowaway and determine further action. The three remaining passengers were released for onward movement."

According to Rizzo, a person who is not on the manifest is a stowaway. "In today's environment, a stowaway is a stowaway, and you just don't know who it is."

"He had commercial tickets, and he was trying to find a way home by any available resource. He happened to stumble across that crew, and that was his ticket home. If anybody wanted to track that guy, they would have never been able to find him, so there was a huge gap in his travel," said Rizzo.

The ASAP submission also stated that "Although the three remaining


passengers were released for onward movement, upon SFS arrival, the stowaway finally produced a copy of DD1610 [Defense Travel System] orders indicating authorizations to use military travel. Although Ramstein wasn't listed on the itinerary, the member had variations authorized on the travel order. Therefore, the member was released for follow-on commercial travel out of Frankfurt International Airport, Germany. The 379 AEW/PERSCO [Air Expeditionary Wing/Personnel Support for Contingency Operations] and Host Nation Coordination Cell was notified the individual was no longer at Al Udeid."

The recommended corrective action listed on the ASAP submission included that Rizzo should speak with the aircraft commander on the severity of not verifying a passenger accepted for movement against the manifest. According to Rizzo, a young captain was in charge, and he probably had never experienced or been reprimanded for this type of situation.

Rizzo's advice to crews who encounter the same situation is, "Don't be afraid to question." When the passenger agent informs the aircraft commander that there are 20 people on the manifest, the commander should

confirm there are 20 people on it; if there is a discrepancy, settle it at the aircraft. The crew's mindset is usually "Do what you need to do to get it done," said Rizzo. Although he understands that rationale, he also emphasized that it is still essential to follow the rules at the end of the day.

Rizzo said that he has been in the aerial port for 30 years, and, although you never want these kinds of things to happen, if you let your guard down and bend the rules, it will eventually happen to you. His advice is, "So, becoming that soft target makes it very easy. Just do what you know, what you are supposed to do." No shortcuts, because, one day, shortcuts may land you in a bad situation.

Many thanks go to R.R. Rizzo Jr., at the 721st Aerial Port Squadron for taking the time to submit an ASAP. Please keep in mind that ASAPs can be submitted anonymously and are taken very seriously to help improve safety for all Airmen. 

2021 Air Mobility Command Phoenix Spark Tank



BY MS. KIM KNIGHT, STAFF WRITER

Anyone who has been to the Airlift/Tanker Association Convention in recent years knows that the annual Air Mobility Command (AMC) Phoenix Spark Tank is a major event. Each year, entries flood in for the highly competitive, command-wide innovation challenge for a chance to pitch creative ideas to a panel of judges. These ideas cover a variety of resourceful projects that save time and resources or prevent injuries. The winner and runner-up receive the opportunity to move on to the next level and compete in the Air Force-wide competition to be held in early 2022.

This year's competition was held in Orlando, FL, on October 30, 2021. The winning entry was the Spotty Bar, invented by Mr. William Spotkaef and MSgt Joseph Lathwood from the 735th Air Mobility Squadron, 515th Air Mobility Operations Wing, Joint Base Pearl Harbor-Hickam, HI.

What was the winning pitch? Spotkaef and Lathwood submitted a design modifying the deck extension on a Turner 60K Loader to increase safety and efficiency for aerial port Airmen. In addition, this adjustment costs only \$50 each.

The knowledgeable and experienced Port Dawgs identified an issue that occurs when extending the 300-pound deck extension of a Turner 60K Loader during the loading and off-loading of



Left to right: Lt Gen Brian Robinson, Air Mobility Command (AMC) Deputy Commander, 2021 AMC Phoenix Spark Tank winners MSgt Joseph Lathwood and Mr. William Spotkaef, CMSgt Brian Kruzelnick, AMC Command Chief, and Mr. Cody James, Founder and CEO, Open X.

USAF photo

cargo. They decided to do something about it because the equipment is used daily by those in the aerial port community. Currently, it takes two people to extend the deck fully, and during the process, numerous pinch points have caused injuries to Airmen's hands. One particular mishap cost \$147,000 in expenses and 47 lost workdays. Of course, expenses and lost workday numbers cannot reflect how the incident ultimately changed the Airman's life. Sadly, these mishaps are entirely preventable.

Adding the Spotty Bar to the extension deck alleviates hands-on contact around

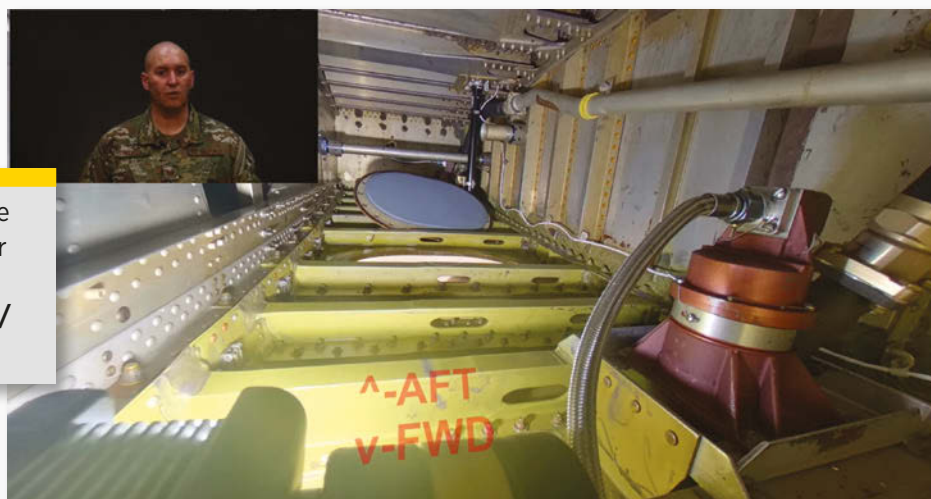
the tricky moving parts. This simple innovation saves Port Dawgs' fingers, is easy to leverage, is efficient and effective, and does not affect operations. Additionally, the bar is easier to use and saves time when extending the deck. Another bonus of this modification is that, at around \$50 to make each bar, it is inexpensive to manufacture. It is estimated that the logical innovation would only cost approximately \$16,000 to be fitted on all 318 Turner 60K Loaders in AMC's inventory.

The 2021 Phoenix Spark Tank runner-up was from the 92d Maintenance Squadron, Fairchild Air



Check out the Spotty Bar demonstration video featuring MSgt Joseph Lathwood, SrA Grady Mark, SrA Sage Linsky, and Mr. William Spotkaef that can be found at <https://www.dvidshub.net/video/818574/spotty-bar>.

See the pitch for the 360-degree KC-135 Fuel Systems Virtual Tour at <https://www.facebook.com/theofficialairmobilitycommand/videos/604372634250682/>.



Force Base, WA, with the 360-degree KC-135 Fuel Systems Virtual Tour, which aims to increase safety and efficiency for the Airmen who maintain the aircraft. The innovation was submitted by TSgt David Pfleger and will also compete in the Air Force-wide competition.

The 360-degree KC-135 Fuel Systems Virtual Tour is an excellent solution for training and maintenance primarily because the fuel system, housed in the wing of the KC-135, is narrow, difficult to maneuver around, and even when empty, contains hazardous chemicals and fumes. This tool, enabled by a 3D Vista program, allows for a clear

visual of the confined fuel tank and all the parts it contains without having to suit up in specialized gear (such as respiratory equipment) to climb inside. The program allows the creator to use hot spots in the images that trigger a question or quiz to pop up on the screen for training.

Because the fuel tanks are compact, Pfleger created the virtual tour for Airmen to use on a daily basis, allowing for quicker repair times, decreased exposure to hazardous chemicals, and increased the level of expertise the Airmen deliver while maintaining the aircraft. The virtual tour helps Airmen become proficient

in their duties and enables a quick refresher to visualize which tools they may need during a maintenance scenario. The virtual tour also helps supervisors show Airmen what tools are needed. The training aid helps Airmen visualize what to expect and what obstacles to overcome before climbing into the confined space in the narrow wing. According to Pfleger, the virtual tour could be used for any confined space training.

Congratulations to the Spotty Bar and KC-135 Fuel Systems Virtual Tour innovators, and best of luck at the Air Force-wide Phoenix Spark Tank competition! 🏆

Distracted Driving: Unlawful and Deadly

BY MS. TIFFANY L. TOLBERT, STAFF WRITER

Defined as any activity that draws a driver's attention away from safely steering a vehicle, distracted driving is deadly. According to the National Highway Traffic Safety Administration (NHTSA), distracted driving caused more than 26,000 deaths between 2012 and 2019.

One of the most widely known and common forms of distracted driving is texting—using a phone to read, type, or send a text message. Typing and reading a text is known to divert a motorist's attention away from the road for at least 5 seconds; NHTSA affirms, at 55 mph, that is like driving the length of an entire football field with one's eyes closed.

Distractions come in many forms; some forms may come as a surprise

to motorists as they are simple, ordinary practices and movements. They include—

- › Talking on the phone or talking with other passengers within the vehicle;
- › Attempting to communicate with persons outside the vehicle;
- › Operating a vehicle's radio, navigation system, and climate controls;
- › Listening to audio (for example, music, talk radio, and audiobooks);
- › Attending to kids, passengers, and pets;
- › Retrieving items from the floor or other areas of the vehicle;
- › Holding and eating or drinking food and beverages;
- › Grooming (for example, applying make-up, combing hair, and shaving);
- › Daydreaming;
- › Reading maps, navigation screens, road signs, and billboards; and
- › Gazing at scenery and accident scenes.

Unfortunately, this is not an exhaustive list as additional driving distractions exist. If a driver is not giving all his attention to driving, then he is driving distracted. When drivers drive distracted, their chances of being seriously injured or involved in a fatal accident increase.



Every driving distraction can be classified into one of the four types of driving distractions: (1) visual distractions (looking at something other than the road), (2) manual distractions (touching something other than the steering wheel), (3) cognitive distractions (thinking about something other than driving), and (4) auditory distractions (paying attention to sound unrelated to driving). A single driving distraction, such as texting, can fit into one or more of these categories. For example, sending a text while driving involves touching a phone (a manual distraction), looking at the phone's screen or keyboard to type a message (a visual distraction), and thinking about what the message should convey (a cognitive distraction).

Distractions are not only associated with automobiles, but they can also lead to severe injuries or deaths across other modes of transportation. Such terminologies as distracted boating, distracted biking, and distracted

walking may not be as widely familiar, but they—and the associated risky behaviors—exist.

Across the country, the distractions most coupled with cell phones have yielded the implementation of rules, regulations, and laws. For example, within the aviation industry, there is the sterile cockpit (or flight deck) rule. This rule states that “no certificate holder shall require, nor may any flight crewmember perform, any duties during a critical phase of flight except those duties required for the safe operation of the aircraft.” Similarly, the United States Coast Guard outlines when vessel operators and crew members serving specific functions can and cannot use cell phones. In Honolulu, HI, distracted walking—traveling on foot while using a phone or electronic device—is illegal while crossing the street (with a few exceptions). In Georgia, school bus drivers are prohibited from using a cell phone while carrying out their most

critical duties (loading and unloading passengers) or when the school bus is in motion. It is illegal for bicyclists in Chicago, IL, to talk and text on cell phones while cycling. Additionally, in 2010, the Federal Railroad Administration prohibited use of cell phones and electronic devices by rail operators while on duty.

Each April is National Distracted Driving Awareness Month, during which organizations collectively raise awareness about the dangers of driving distracted. During this time, motorists are exposed to safe traveling tips such as remain sober and drug-free; incorporate time in your trips for food breaks, rest breaks, phone calls, and other activities; be aware of your surroundings and what others (inside and outside your vehicle) are doing; and obey traffic laws. These yearly reminders strive to influence the daily behaviors of motorists to reduce all forms of distracted driving and eliminate the preventable injuries and deaths that may result. 🚓



What You Do Not See CAN HURT YOU

BY MAJ GEN TIMOTHY M. ZADALIS (RET., USAF)
AND DR. DON ERBSCHLOE, SENIOR EXECUTIVE SERVICE

Any in-flight engine loss is concerning, but when you lose them all...

In 1989, KLM Flight 867, a Boeing 747 jumbo jet, took off from Anchorage, AK, enroute to Narita, Japan. During the climb out, it encountered a cloud of volcanic ash from the active eruptions of Mount Redoubt along Alaska's Cook Inlet. Shortly after passing flight level (FL) 250, all four engines shut down. The crew attempted several restarts and were able to light engines 1 and 2 descending through FL130 and the remaining two at FL110. The aircraft limped back to Anchorage, and the post-landing inspection confirmed that all four engines required replacement. When combined with additional damage to the aircraft, the total repair cost reached \$80 million.

Volcanic ash has disrupted air mobility operations many times, including the eruptions of Mount St. Helens, Washington State (1980); Mount Pinatubo, Philippines (1991); and, significantly, Eyjafjallajökull, Iceland, in 2010. This most recent eruption affected Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom (OEF/OIF) after encroaching ash clouds forced a shift from Northern European bases to Southern European bases. Eventually, the entire European airspace shut down, and AMC was forced to open a western airbridge via the Pacific Ocean to

support Central Command. In all, nearly 800 missions were affected, with an average delivery delay of 40 hours.

These events served as a catalyst for advanced research on impacts from various environmental particulates (EPs), including salts, sand/dust, and smoke/pollutants, emphasizing their effect on engines. Under a long-standing cooperative research program, Air Force Research Laboratory (AFRL) and North Atlantic Treaty Organization researchers conducted a 3-year study to catalog EPs' effects on aircraft systems, existing and future mitigation technologies, and resultant operational changes. The study was completed in 2019 and was approved for release in October 2021.¹ One promising mitigation technology identified in the report, with significant implications for civilian and military aviation, is compressor blade coatings (CBC) for engine compressor sections.

CBCs are not new, and the first rudimentary coatings appeared in the 1980s. It could be argued, however, that coatings can trace their origin to early aviation, when metal strips

were placed on the leading edge of early propellers to prevent erosion of the wood. That same concept applies to compressor stages that are vulnerable to EP erosion and corrosion. Today, the technology has become so advanced that innovative protective coatings of less than 15 microns, or approximately one-third the thickness of a human hair, are applied element by element to specific portions or entire compressor blades in high-vacuum plasma chambers. This process results in coated compressor blades of previously unimagined strength that resist EPs, allowing engine performance retention, reduced maintenance, greater fuel efficiency, and reduced emissions during an engine's time on wing.

Before any in-depth discussion of CBC benefits, it is essential to understand the basic geometry and physics of compressor blades or, more accurately, "compressor airfoils." Simply put, each compressor blade is an airfoil like an aircraft wing. The blade's camber, thickness, and chord define the blade's performance, and each compressor section consists of numerous blades that manipulate the airflow for optimum performance. Unfortunately, the shape of the blades (chord, thickness, or camber) is degraded by EPs over time, and the airflow

¹ The report is titled *Gas Turbine Engine Environmental Particulate Foreign Object Damage [EP-FOD]*. Report reference number: STO-TR-AVT-250. Available at <https://www.sto.nato.int/publications/>.



KLM 867 shortly after making an emergency landing at Anchorage International Airport, AK.

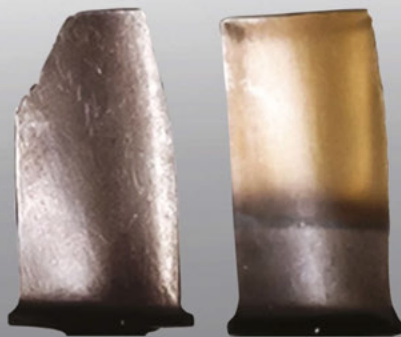


Figure 2: Two T64 compressor blades from a CH-53. The uncoated blade (left) has approximately 113 hours or 3 months of flying time. The coated blade (right) has 2,022 hours or approximately 40 months of flying time in Iraq.

becomes sub-optimized. That change in design flow leads to insidious performance reductions, loss of fuel efficiency and increased emissions and eventually necessitates maintenance to replace the compressor blades.

The U.S. Marine Corps CH-53 fleet experienced a combat example of EP erosion impacts during OEF/OIF. Compressor blade erosion due to sand and dust (see Figure 2) was so great that engine changes were required after a fleet-wide average of approximately 100 hours. The tremendous maintenance burden and shortage of spares threatened CH-53 combat operations. To stem the attrition, a CBC from MDS Coating Technology was expedited into service. The impact was immediate and dramatic as engine time on wing soared and, in some cases, reached more than 20 times the initial fleet average, with numerous engines exceeding 2,000 hours of engine time on wing. Fleet-wide, coated engine time on wing averaged a 10-fold increase to more than 1,000 hours in the harsh Iraqi combat environment. This success story set in motion additional research that resulted in today's next-generation coatings with broad applications across the entire fleet of military aircraft—from fighters to heavy-lift aircraft.


Despite the operational success of the U.S. Marines, timely adoption of advanced CBCs by sister services lagged. Although the Department

of Defense was slow to adopt the advanced coatings, the commercial sector was not. Spurred by rising fuel costs and high maintenance costs, investments in blade coatings provided a rapidly implemented and inexpensive solution with a short return-on-investment timeline. The business case was simple—if coated blades retain their shape longer, performance and fuel efficiency will also improve compared with non-coated engines. This point was proven by a commercial carrier when they adopted an advanced coating from MDS Coating Technology for their Boeing 737 fleet. A side-by-side 38-month comparison of an uncoated and a coated CFM-56 (the commercial version of the KC-135R's CFM) revealed a performance and fuel efficiency divergence at the 19th to 20th month of monitoring. By month 34, the fuel efficiency difference was a staggering 1.3 percent, and it was approximately 0.7 percent average during the 34 months of operations in favor of the coated engine. It is important to remember that time on wing for modern turbofan engines can exceed 10 years, and maintenance and fuel savings are significant. For this commercial carrier, the fuel savings alone more than justified the investment.

For years, AFRL has researched and investigated CBCs. Their insightful work kept pace with recent advancements and, combined with strong support from the Air Force

Operational Energy Office, generated a renewed emphasis on fielding the next generation of compressor blade coatings. That emphasis has led to the competitive selection of MDS Coating Technology's next-generation "BlackGold" coating as the CBC for the Air Force. The final certification process of BlackGold is underway with the support of original equipment manufacturers (OEMs) of the KC-135's CFM-56 and the C-17's F-117 engines. This selection is beneficial for many in the Air Force, particularly the Air Mobility community.

The numerous future benefits of advanced CBCs will be a valuable improvement for everyone involved.

The operator will gain performance retention, a guarantee that, when you need it, the engine thrust will be at its peak. The maintainer will see significant reductions in maintenance generated by compressor blade replacements due to EP erosion. The accountants will benefit from reduced sustainment costs, freeing up funds to support other needed programs. It will enhance OEM's outstanding engines and strengthen their reputation of supporting the warfighter. In addition, it will benefit society by reducing emissions, thereby reducing atmospheric carbon and other pollutants. 

An aircrew assigned to the 816th Expeditionary Airlift Squadron, Al Udeid Air Base, Doha, Qatar, prepare to load qualified evacuees aboard a C-17 Globemaster III in support of Afghanistan evacuation at Hamid Karzai International Airport, Afghanistan, Aug. 21, 2021.

USAF photo by SrA Taylor Crul



Airlift/Tanker Association Convention: Leveraging Our Legacy to Aggressively Forge Our Future

BY MS. KIM KNIGHT, STAFF WRITER

The 53rd annual Airlift/Tanker Association (A/TA) Convention Symposium and Technical Exposition was held October 28-31, 2021, in Orlando, FL. This year's theme was "Leveraging Our Legacy to Aggressively Forge Our Future." The main topic of conversation for the mobility Airmen in attendance, however, was Operation Allies Refuge (OAR), which was Air Mobility Command's (AMC) recent record-breaking airlift out of the Hamid Karzai International Airport, Kabul, Afghanistan.

In 17 short days in August, AMC grey tails provided the wings of salvation for 124,000 evacuees following the collapse of the Islamic Republic of Afghanistan. The historic airlift was the focus of the final keynote event that featured a panel of speakers. The panel consisted of Maj Gen Daniel DeVoe, Commander of the 618th Air Operations Center, Scott Air

Force Base (AFB), IL; Col Adrienne Williams, Commander of the 521st Air Mobility Operations Wing, Ramstein Air Base, Germany; Col Colin McClaskey, Deputy Commander of the 821st Contingency Response (CR) Group, Travis AFB, CA; Lt Col Susie Lonsberry, Commander of the 7th Airlift Squadron, McChord AFB, WA; and SMSgt Melanie Lamb, C-17 Maintenance Superintendent of the 8th Expeditionary Air Mobility Squadron, Al Udeid Air Base, Qatar.

One question posed to the OAR panel by moderator Lt Gen Brian Robinson, Deputy Commander of AMC, was particularly interesting for the safety community. He asked, "Can you talk briefly from your operating perspective about how we communicated or managed risk?"

DeVoe replied, "Managing risk was particularly important in this scenario. I cannot stress enough just how

dynamic and how rapidly changing the advance of the Taliban and the fall of the Afghan country was, and the deployment of our combat power, or the policy changes that drove how we could implement doing what you all do so very well."

He remarked that, due to the extremely fast-paced ops tempo, difficult decisions had to be made by Airmen very quickly in many instances. He stressed that there was no disconnect between command and control; there simply was not enough time to seek guidance. At every echelon, spanning numerous time zones in multiple countries, "Everyone was constantly making outstanding decisions in a complex environment."

Speaking frankly, DeVoe said, "Was it messy at times and chaotic? Was information flow and communication difficult at times? Yes, but that's exactly why we do mission command, and we



An Airman from the 521 AMOW holds a sleeping child during Operation Allies Refuge.

USAF photo



Airmen attend AMC Commander Gen Mike Minihan's keynote speech during the 53rd Airlift/Tanker Association Convention in Orlando, FL, Oct. 28th, 2021.

USAF photo

“When that first plane landed, that could have broken our aircrews out there, but instead, it gave them the needed power and resiliency to say this [mission] is bigger than us. We are going to keep moving forward.”

need to do it more because conditions are going to get harder in the future, but I am wholly confident based on the experience that we just went through, and I just witnessed, that our strongest component of that force, our people, are absolutely primed, ready, and capable for any challenge.”

Williams spoke regarding the risk of resiliency by stating, “Throughout the mobility command, whether we were maintainers, port dawgs, CR forces, the crews, or back at the 618th, we as a team took a great risk with our resiliency. After 20 years in Afghanistan, we brought it home to Al Udeid, to Ramstein, and now to the U.S. We brought it home with the understanding we were saving lives. Commanders talked a lot about the risk to our Airmen on the line. When that first plane landed, that could have broken our aircrews out there, but instead, it gave them the needed power and resiliency to say this [mission] is


bigger than us. We are going to keep moving forward.”

To further support resiliency, Williams ensured there was a chaplain on the flight line at Ramstein, supporting Airmen by simply asking, “How are you doing?” and the reply often was, “We are doing great and, we are making this [mission] happen.”

McClaskey, Commander of the CR Force deployed to run airfield operations at Kabul, added, “Risk is in our lives every day. This week, we talked about lower risk or acceptable risk, but when you are there on the ground, [it] doesn’t matter if you are at Ramstein or a crew enroute, there’s risk. How do you access that and identify it?”

He stated that some factors make it challenging to recognize risk in ourselves, such as fatigue. One way to mitigate those risks is understanding

your environment and the capabilities or limitations of those around you. McClaskey said, “For me, I was fortunate to have a 5,000-hour loadmaster out there I hadn’t met before, but he said, ‘Sir, go to bed’ ... and he was right.” He added that the Airmen looked out for each other, watching for fatigue or any other factor that could affect sound decision-making as well as psychological or endurance risks.

Robinson closed out the question by stating, “There are countless stories that all of you and your peers and wingmen have. These are stories that need to be shared and reflected on in your squadrons. We have built our resiliency that is based on experiences our global mobility Airmen went through with this operation. I’m very proud to be on this team. I sleep well at night knowing this team is capable of doing what we have done and will do it again tomorrow.” 

2021 *Critical Days of Summer* Wrap-Up

BY MR. ANTHONY MCKEE, HQ AMC OCCUPATIONAL SAFETY


After spending time with our friends and families this past Labor Day weekend, autumn and winter are upon us as the days are getting shorter and the nights are getting cooler. This change of season also marks the conclusion of the Critical Days of Summer (CDS) safety awareness campaign. The purpose of the CDS campaign was to encourage everyone to enjoy those warm summer days safely. We focus particular attention on the summer season because we see an increase in accidents and incidents during those months. Air Mobility Command (AMC) continues to promote the CDS every year to highlight the need for safety awareness and areas of increased risk to our Airmen.

Unfortunately, the Air Force lost a total of 18 Airmen this past summer. Private motor vehicles accounted for nine of the 18 fatalities this year, and three of those nine were from AMC. That number is one-third of the private motor vehicle fatalities. Most of these accidents could have been avoided had the members taken the time to apply personal risk management and sound decision-making.

The theme for this year's campaign was "What Makes You Tick?" What is it that you enjoy? Is it traveling, outdoor activities, sporting events, or barbecuing with friends and family? Whatever it is that makes you tick, take a few seconds to identify, assess, and mitigate all the risks associated

with these activities. Too often, we overlook minor details or ignore the risks, which could lead to injuries or even death.

Although the CDS campaign has ended and the seasons have changed, hazards and risks are still present. Leaders, supervisors, and wingmen need to continue their mishap prevention efforts throughout the year and beyond. We need every Airman to stay focused and practice sound decision-making and personal risk management.

We wish you all a safe and happy New Year! 



AMC FY21 Mishap Statistics Scoreboard

FY21 AVIATION MISHAPS

AIRCRAFT	CLASS A	CLASS B	TOTAL AS OF OCTOBER 2021
C-5M	0	0	0
C-17A	3	2	5
C-130	0	0	0
KC-135R	0	1	1
KC-10A	0	1	1
Total	3	4	7

FY21 FLIGHT SAFETY NOTES

CLASS A

Air Mobility Command (AMC) had three Class A aviation mishaps in FY21, compared with one in FY20.

C-17A Landed with Nose Gear Up

The aircraft landed with nose gear not extended.

C-17A Fire on Left Side on Ground

After returning to parking, fire burned the left side of the aircraft, causing major damage.

C-17A Engine Seized Inflight

The engine indicated oil pressure loss and was shut down inflight. The rest of the flight was uneventful. Damage was confined to the engine. This is still under investigation.

CLASS B

The total number of Class B mishaps was four, compared with five in FY20. Three of the four mishaps were engine confined, however.

KC-135R Engine Power Loss

During flight, the crew experienced a loss of thrust and vibrations on the #4 engine. The crew shut down the engine inflight and landed uneventfully. This is still under investigation.

C-17A High Engine Temperature on Takeoff

On takeoff climb, the aircraft experienced high exhaust gas temperature to the #4 engine. The crew returned to base and landed uneventfully. This is still under investigation.

KC-10A Boom Impacted Ground

During maintenance, the boom hoist cable failed. The boom fell to the ground, receiving major damage. This is still under investigation.

C-17A Engine Ingested Airfield Marker

During backing operations on the ground, the #1 engine ingested an airfield marker.

MOBILITY AIR FORCE'S CLASS A MISHAPS

The following Class A mishap from the Mobility Air Force was noteworthy.

KC-46A Contact Outside the Air Refueling Receptacle

During a maintenance inspection, damage was found outside the air refueling receptacle. This is still under investigation.

FY21 OCCUPATIONAL SAFETY MISHAPS

CATEGORY	CLASS A	CLASS B	TOTAL AS OF OCTOBER 2021
PMV 2 Wheel (Motorcycle)	5	0	5
PMV 4 Wheel	0	0	0
Sports and Rec	0	0	0
Gov. Motor Vehicle	0	0	0
Pedestrian/Bicycle	0	0	0
Industrial	1	0	1
Miscellaneous	0	0	0
Total	6	0	6

FY21 OCCUPATIONAL SAFETY NOTES

CLASS A

AMC had five Class A occupational mishaps in FY21, compared with three in FY20.


PMV 2 Wheel (Motorcycle)

- A member was operating a motorcycle and lost control, resulting in a fatality.
- A member operating a motorcycle was struck by another vehicle.
- A member was operating a motorcycle and was struck by another vehicle at an intersection.
- A member failed to negotiate a curve, lost control of their motorcycle, and was run over by a vehicle, sustaining fatal injuries.
- A member was operating a motorcycle, lost control, and fell approximately 40 feet, resulting in a fatality.

Industrial

A member was run over by a forklift, resulting in fatal injuries.

CLASS B

AMC had zero Class B occupational mishaps in FY21, compared with four in FY20. 

No Airfield? No Problem.

BY MS. LAUREN SCHATZ, STAFF WRITER

Imagine landing in an austere location—no structures or people in sight. All that keeps you company in this barren stretch of land is clear blue skies, sandy soil, and your crew. In a fraction of the time normally associated with creating aircraft support areas, the Agile Combat Employment (ACE) team creates airfield infrastructure capable of supporting deployed operations. This construction was completed with relatively little equipment and materials.

Operations take place at this location for only a few months before moving on to the next spot—using agility to minimize the adversary's threat to operations. The temporary airfield is quickly pulverized, leaving hardly a footprint behind.

Although this scenario may sound far-fetched, the Air Force Research Laboratory (AFRL) is striving to make it a reality through a unique technology—biocement. The formation of this material is a surprisingly simple, two-step process. Spraying bacteria and chemicals into the soil generates a reaction causing the particles to bind together. Repeating this process can create anything from building blocks to parking ramps to, eventually, airfields. Although the procedure is fairly straightforward, the applications are endless.

Three members of AFRL, Dr. Maneesh Gupta, Dr. Chia Hung, and Dr. Christopher Tabor, are advancing this technology. The scientists are

leading several projects that could revolutionize how infrastructure is constructed. This leap forward into the future of construction is tied to taking a step back and observing the natural world. The researchers say they are utilizing the biochemistry that is built into nature to their advantage and using aggregates that are already present in the environment.

Working with the private sector, AFRL is striving to advance the use of biocement. Gupta, a research materials engineer, and Hung, a biochemist, are leading two projects—one focuses on the commercial applications for biocement and the other seeks to automate the applications. Tabor is a materials chemist who leads AFRL's advanced development team, which encompasses both of these projects.

Although the group has been interested in bioengineering for years, it was a project from the company Biomason, Inc. that spurred their involvement in biocement. Biomason aims to significantly reduce global carbon dioxide emissions by using the biocementation process, as traditional concrete production accounts for 8 percent of the worldwide carbon dioxide output. Biomason, with Department of Defense support, experimented with the Engineered Living Materials program, which used living organisms to make materials for infrastructure, such as concrete that "self-heals" when exposed to ocean water.



1Lt Alexander Compean with biocement samples produced by the AFRL team from a range of different starting materials. The team was able to make these bricks in two days without any high temperature processing.

Photo by Mr. Wesley Deer,
Materials and Manufacturing Directorate Graphics Team

This effort caught the eye of Air University's Blue Horizons program, which investigated the idea of using biocement sprayed on the ground to create hardened infrastructure for aircraft. In 2019, "Project Medusa" tested the concept, starting in small, 2-ft. x 2-ft. boxes and then expanding to a 2,500-sq.-ft. site. Both plots successfully "grew" hardened soil.

"The sustainability of that concept and the radically different way that they did this research compared to the way normal infrastructure materials are made is what really caught my interest and got me interested in what we're currently working on," Gupta said.

Through AFRL, Gupta, Hung, and Tabor continue to work with the private sector, with companies such as Biomason, remaining strongly focused on the military applications of the technology. "Our role as members of AFRL is to think into the future of what the Air Force is going to need," Tabor explained.

The projects focus on rapidly making locations operational, reducing the amount of materials, equipment, and personnel needed to set up sites. "For us, it's how can this formation be done faster with less logistics compared to conventional infrastructure type of materials?" Gupta explained. Clearly, biocement could be extremely

helpful in supporting Air Mobility Command's (AMC) mission to provide rapid, global mobility and sustainment for America's Armed Forces and is key to the Air Force's future fight.

In recent years, the Air Force has been incorporating ACE, a concept focused on operating out of multiple locations and the rapid movement between those airfields. With highly capable adversaries such as China and Russia in mind, ACE complicates the adversary's ability to defend. Biocement could play an enormous role in this evolution.

To better understand how biocement could help, the scientists' team held a workshop at the 2021 Mobility Guardian, Air Mobility Command's premier, large-scale mobility exercise, and presented their research to a group of Airmen of various disciplines.

"The workshop was really helpful for us," Gupta said. "We got an opportunity to speak with quite a few Airmen."

The Airmen had an array of questions, ranging from technical to practical:

How exactly does biocement work?

A soil enzyme, urease, reacts with urea and calcium chloride to form calcium carbonate (cement).

What kind of soil does this process work best in? *Permeable soil, such as sand. Clay does not work as well.*

How does the storing process work?

The chemicals are easily stored, as they are nontoxic and stable. When stored, the bacteria go into a dormant state, allowing for long-term storage.


They were also asked questions they had not considered before. The scientists recalled a conversation with a team of civil engineers who were eager to discuss how biocement could solve some of the problems they were facing. The Airmen identified applications in which biocement could be used, such as

stabilizing cargo storage areas. Gupta explained how these conversations have supported their research:

"I think that hearing input from field-seasoned civil engineers discussing their thoughts on additional applications, pulling from their operational experience, was really important and has been very beneficial for us. We are typically in the lab, working on materials that are pretty early in the development cycle. Oftentimes, we have to imagine how the materials will be utilized, but many of us do not have the operational background or experience to think through that. Therefore, one of the primary benefits of talking to the people who would be the ones carrying out the use was the really significant insight."

The AFRL team also wanted to learn more about current operations—how Airmen repair runways, build new facilities, connect with one another, send information on how much material is needed, and more. This information helps AFRL target their research to address the challenges in the field, which ultimately leads to better tools for the warfighter.

"Utilizing the environment is a method of lowering manpower," Tabor said. "Understanding how that can be employed by talking to the potential users and seeing what their pinch points are is where we can add in functionality through biochemistry rather than manpower. That kind of information was invaluable to us just to interface with that community."

Tabor said he looks forward to a day when this technology is fully automated and not viewed as "science fiction." Biocement has the potential to positively affect countless areas—both public and private. Whether it is support to AMC or its positive environmental impact, biocement will help support the warfighter of the future. 



Biocement bricks made from commercial play sand.



Biocement bricks made from commercial paver base.



Biocement bricks made from soil obtained from a test range.

Photos by Mr. Wesley Deer, Materials and Manufacturing Directorate Graphics Team

Readers, are there any issues you face that could benefit from this solid solution? Do you have any ideas for applications? The team is always seeking and welcomes insight. They can be emailed at afrl.pa.inquiry@us.af.mil.



A Modern-Day Rosie the Riveter at the 911th Airlift Wing

BY MS. KIM KNIGHT AND MS. BETTY NYLUND BARR, STAFF WRITERS

Several years ago, *The Mobility Forum* had the honor of interviewing Ms. Elinor Otto, one of the original Rosie the Riveters. She began working in a California aviation factory in 1942 for 65 cents an hour, building airplanes to support the war effort. Throughout her long career—until she was 95 years old—Ms. Otto helped build the 279 C-17s that the U.S. Air Force flew in times of war and for countless lifesaving humanitarian airlifts. Ms. Otto, and the many other women who stepped up to answer the call during World War II, did more than build aircraft—they inspired a movement and provided the groundwork for the next generation of young women.

One of these young women is Airman First Class Bethany Dacus, Aircraft Maintenance Squadron Crew Chief

at the 911th Airlift Wing, Pittsburgh Air Reserve Station, Pittsburgh International Airport, PA. Dacus is a former barber who has been with the Air Force for a little more than 1 year. She shared that she always intended to join the Air Force and finally decided not to put it off any longer. One of her goals was to work directly with the aircraft, so Dacus met with an Air Force recruiter to begin a new career path. Although Dacus claims that she is not mechanically inclined, she did not let that dissuade her from becoming an aircraft mechanic. With enough motivation and determination to learn, “You can set your mind to anything, and you can do it,” she said.

Dacus attended tech school for 3 months to prepare for her position. “I definitely had to work harder because I didn’t know anything about aircraft

maintenance!” she insisted. “They [the other students] knew all the mechanical terminology and all the tools already, and I definitely didn’t, so I’d have to go back to my room, and I’d have to make flashcards and study, whereas they didn’t have to do that.” Undaunted, Dacus did what was necessary to achieve her dream. “If you have a strong work ethic and good drive, you can do whatever you put your mind to.”

When she first started, there were very few female aircraft mechanics. She quickly learned the ropes, however, and had support from a great team at the 911th. She also said she developed a thick skin and proved herself by mastering the skills needed to lead a crew. The most important things she has learned, according to Dacus, are to stand up for herself, speak her mind, and be tough.

With enough motivation and determination to learn, “You can set your mind to anything, and you can do it.”

Like Elinor Otto, Dacus works on C-17 Globemaster IIIs, which she describes as “the second largest military cargo plane.” The 911th’s maintainers provide maintenance exclusively on its fleet of eight C-17 Globemaster IIIs. She described her position as Crew Chief as being a member of the pit crew—performing inspections, changing tires, and troubleshooting issues to determine the proper fix. Because of their more in-depth knowledge of specific aircraft systems, the Specialists are considered the experts in their field and take the lead on repairs requiring their attention.

The huge emphasis on safety permeates everything they do—from constant on-the-job training to the precautionary procedures to the suits and equipment they wear. “When we’re inspecting inside the inlet of the engines, we put these white coveralls on. We are required to wear them to lessen the chances of foreign objects being ingested by the engine.”

The attitude toward women in the military has evolved far beyond the days when the Rosies worked in factories to support the war effort during World War II. When that war ended and the men returned home, the Rosies lost their jobs as the demand for warfighting aircraft decreased.

Fast-forward to the current day. The Commander of Air Mobility Command, Gen Mike Minihan, accepted the position when the former Commander, Gen Jacqueline Van Ovost, was nominated to serve as Commander of the United States Transportation Command—the first woman in history to serve in this position and a true inspiration as the highest ranking female in the military today. Before Gen Van Ovost, Gen Maryanne Miller was the AMC Commander, also the first woman to serve in that prestigious position.

Ms. Elinor Otto stated, “There was a time when men said women can’t do this or that, but we’ve proved ourselves in every way. We’ve come a long way!” 🇺🇸



All photos: A1C Bethany Dacus, Aircraft Maintenance Squadron Crew Chief at the 911th Airlift Wing, Pittsburgh Air Reserve Station, Pittsburgh International Airport, PA.

USAF photos by Joshua J. Seybert



Airplane Icing Is No Laughing Matter

BY MS. BETTY NYLUND BARR, STAFF WRITER

When I hear the word *icing*, I think of cake; to pilots, however, icing is something they definitely want to avoid when flying. When ice forms on aircraft, it introduces a whole new level of risk.

The two basic forms of aircraft icing are structural icing, which occurs on the exterior of the plane, and induction icing, which—as the term implies—affects the induction system.

Structural icing occurs when an aircraft in flight comes in contact with supercooled water droplets—droplets that are still liquid although they are below freezing temperature. The National Weather Service lists the following factors that influence the occurrence and severity of icing:¹

- Particle size—Large drops strike the wing and spread farther, whereas small drops go with the airflow along the wing.

- Particle concentration—The heavier the concentration of water droplets, the more droplets the aircraft will strike.
- Shape of aircraft surfaces—Thin wings catch more water droplets than thick wings.
- Aircraft speed—As an aircraft's speed increases, the number of water droplets it hits in a given time increases.
- Environmental temperature—Generally, the static air temperature is between +2°C and -20°C.²
- Aircraft surface temperature—The temperature at the point where the aircraft collides with the water must be 0°C or colder.³

Three forms of structural icing can occur. *Clear*, or *glaze*, *ice* is potentially the most hazardous form of icing. It

occurs when the temperature is close to freezing. The relatively warmer temperature causes the supercooled droplets to flow aft before freezing, creating a solid sheet of clear ice with no air bubbles, making removal difficult. As the droplets mingle and freeze together, they often form single or double “horns” that project ahead of the wing or other surface on which the ice is accumulating; that irregular buildup significantly affects the airflow over the wing.⁴

Rime ice is milky white and occurs at colder temperatures when water freezes on impact with the aircraft, forming wedge-shaped accretions.⁵ The rapid freezing causes air bubbles to form in the ice, causing it to look opaque and to be porous and brittle. Because of its brittleness, rime ice can be easily removed with de-icing equipment.

Mixed ice forms when the supercooled water droplets vary in size or mix with snow or ice particles. The ice particles freeze into the clear ice and create a very rough, whitish surface

¹ National Weather Service. *Icing*. https://www.weather.gov/source/zhu/ZHU_Training_Page/icing_stuff/icing/icing.htm.

² NASA. “Basic Icing Physics.” In *A Pilot's Guide to Inflight Icing: Module I—Before You Fly*. https://aircrafticing.grc.nasa.gov/1_1_2_2.html.

³ Federal Aviation Administration. “Icing.” Chapter 10 in *Aviation Weather For Pilots and Flight Operations Personnel*. AC 00-6A. https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%2000-6A%20Chap%2010-12.pdf.

⁴ National Weather Service. *Icing*.

⁵ NASA. “Basic Icing Physics.”



An Airman from the 19th Aircraft Maintenance Squadron de-ices a C-130J Super Hercules at Little Rock Air Force Base, AR, Feb. 12, 2021.

USAF photo by SrA Aaron Irvin

buildup—sometimes shaped like a mushroom—on the leading edges of the aircraft.⁶ The accumulation builds quickly and is difficult to remove.

The effects of structural icing are cumulative, and they include an increase in weight and drag and a decrease in lift and thrust, so the aircraft slows and is forced downward.

Induction icing forms in the air intake of an aircraft engine and can reduce the amount of air available for combustion.⁷ It occurs in both piston and jet engines. The most frequently seen induction icing in reciprocating engines is carburetor ice. Although fuel-injection engines are less apt to experience induction icing, it can happen if ice forms over the engine's air source. Turbojet aircraft draw air into the engines, reducing the pressure and, thereby, the temperature, and icing is possible.

Ice can also damage aircraft if a piece breaks off and is drawn into the


running engine; it can damage the fan blades, stall the engine compressor, or cause combustor flameout. Another problem can occur if excessive runback water from anti-icing systems refreezes on untreated surfaces of the inlet, which can reduce airflow to the engine or distort it in a manner that causes compressor or fan blades to vibrate and potentially damage the engine. Icing problems can also occur in turbine engines when the engine probes used to set power levels become iced, resulting in erroneous readings, faulty operation, or total loss of power.⁸

The National Weather Service classifies four levels of icing intensity and their potential effects:⁹

1. **Trace**—Icing is perceptible but shows no significant accumulation. The effects of this intensity are usually not hazardous even if de-icing or anti-icing treatment is not used.
2. **Light**—Significant icing accumulation occurs during a

prolonged flight (more than 1 hour). Occasional use of de-icing or anti-icing treatment can prevent or remove the accumulation.

3. **Moderate**—Significant icing accumulation occurs during a short flight. The accumulation rate is such that even short flights become potentially hazardous, and de-icing or anti-icing treatment or flight diversion is necessary.
4. **Severe**—Icing produces rapid, dangerous accumulations on aircraft. De-icing or anti-icing equipment fails to reduce or control the hazard, and immediate flight diversion is necessary.

AMC's ground crews take every precaution to make sure that aircraft have been de-iced before takeoff. During the flight, remain vigilant of the observable weather conditions and the condition of the aircraft, and monitor weather report transmissions. If conditions warrant, divert or land the aircraft—and live to fly another day. 

⁶ Federal Aviation Administration. "Icing."

⁷ Flightstudy.com. *Aircraft Icing and Types of Icing*. <https://www.flight-study.com/2021/07/aircraft-icing-and-types-of-icing.html>.

⁸ Flightstudy.com. *Aircraft Icing and Types of Icing*.

⁹ National Weather Service. *Icing*.

Cold Weather Operations— How to Prevent

FROSTBITE

BY MS. KATHY ALWARD, STAFF WRITER

We can all agree that the weather is sometimes unpredictable. According to the Armed Forces Health Surveillance Center, as cold weather is approaching, it is crucial to be prepared for and recognize the dangers of cold weather operations in the U.S. Military. One of the most common and severe cold-weather injuries to prevent is frostbite.

The Armed Forces Health Surveillance Center stated, “Frostbite is the freezing of skin tissue that can extend through all layers of the skin and freeze muscle and bone. Frozen skin may turn red and then gray-blue with blisters. In the worst cases, the skin dies and turns blue-black, often requiring amputation. Deep frozen skin feels ‘wooden’ to the touch, with zero mobility of the affected body part. Instantaneous frostbite can occur when [the] skin comes into contact with super-cooled liquids, including petroleum, oils and lubricants, antifreeze, and alcohol, all of which remain liquid at temperatures as low as minus 40 degrees Fahrenheit.”

The Armed Health Surveillance Center previously stated, “Frostnip is the freezing of the top layers of the skin and is considered the first degree of frostbite. Frostnip usually results from short-duration exposure to cold air or contact with a cold object, such as metal. Exposed skin such as the cheeks, ears, fingers, and wrists are more likely to develop frostnip.”

According to the Air Force Policy Directive (AFPD) 48-1, “Aerospace Medicine Enterprise emphasizes the need to ‘optimiz[e] the safety and health of AF personnel in the performance of their duties in any circumstance or location.’ Moreover, it directs the Air Force Medical Service to identify and reduce the risk of injury and illness through appropriate surveillance, prevention, and control programs. This Air Force Instruction supports AFPD 48-1 by providing commanders, supervisors, individuals, and medical personnel with guidance on collectively implementing an effective Thermal Injury Prevention Program to prevent and manage heat and cold injuries and illnesses among Air Force personnel. Failure to prevent and manage heat and cold injuries and illnesses can have a disastrous impact on mission capability through degraded human performance and potentially result in the prolonged or permanent incapacitation or death of Airmen and civilian workers.”

According to **Health.mil**, the official website of the Military Health System, from July 2018 through June 2019, there were a total of 513 active (446) and reserve (67) service members who had at least one medical encounter with “cold injury” as the primary diagnosis. The background of these findings mentions that the ears, nose, cheeks, chin, fingers, and toes are most frequently affected by frostbite. Factors that increase the risk of cold-weather injuries include “outdoor exposure,

inadequate and/or wet clothing, cold water submersion, older age, exhaustion, dehydration, inadequate caloric intake, alcohol use, smoking (frostbite), previous cold injury (frostbite or immersion foot), chronic disease (e.g., peripheral vascular disease, diabetes), and medications that impair compensatory responses (e.g., oral antihyperglycemics, beta-blockers, general anesthetic agents). Situational factors that increase [the frostbite] risk of immersion foot include immobility, wet socks, and constricting boots.”

Health.mil findings also stated that frostbite was the most common cold-weather injury among active component service members in 2018–2019.

According to Health.mil methods, it was noted that “the U.S. Armed Forces require expeditious reporting of these reportable medical events (RMEs) via one of the service-specific electronic reporting systems; these reports are routinely incorporated into the Defense Medical Surveillance System (DMSS). For this analysis, the DMSS and the Theater Medical Data Store (which maintains electronic records of medical encounters of deployed service members) were searched for records of RMEs and inpatient and outpatient care for the diagnoses of

COLD WEATHER LAYERING



A 5-year study found that young soldiers had a far higher rate of cold injuries than older troops.

interest (frostbite, immersion injury, and hypothermia)."

The five signs of frostbite are¹—


- Loss of feeling and color in the extremities;
- Redness and pain of the skin;
- White or greyish-yellow skin areas;
- Skin begins to feel firm or waxy; and
- Numbness.

According to this same article, the Centers for Disease Control and Prevention suggests that you seek emergency medical attention immediately if you experience any signs of frostbite. If medical care is not

available, other suggestions include getting into a warm room, removing any wet clothing, and either warm the affected area using body heat or immersing it in warm (not hot) water. To prevent burning the affected area, it is best to avoid heating pads, stoves, fireplaces, heat lamps, and radiators. It also is recommended to wear warm clothes, multi-layered clothing, a hat or hood, and gloves to help stay dry so that frostbite can be prevented.

The Military News noted that most cold-weather injuries occur when it is cold and wet, but the temperature is only one factor.² Another factor includes exposure time. A 5-year study found that young soldiers had a far higher rate of cold injuries than older troops. This research revealed that soldiers under the age of 25 were

diagnosed with frostbite at a rate of "76 per 100,000 'per-years'", a term the military uses to include population while [also] factoring in [the] time at risk. By comparison, the rate for soldiers in their early 30s was 38 per 100,000." This same study found that frostbite remains the most common cold-weather injury. Frostbite is graded the same as burns in severity and can affect the nerves. It is imperative to prevent nerve damage because a nerve injury may not be reversible.

One thing is for sure; you should always be mindful of cold-weather injuries and the prevention and treatment of such injuries, including frostbite. Frostbite is a common cold-weather injury, so it is essential to take precautions to protect yourself and educate others as well. 

¹ <https://www.airforcemedicine.af.mil/News/Display/Article/582920/five-signs-of-hypothermia-and-frostbite/>

² <https://www.military.com/daily-news/2018/12/21/military-frostbite-cold-weather-injuries-little-explanation-why.html>

Safety:

The Most Important Item to Bring With You



BY MS. SOFIA SCHATZ, STAFF WRITER

Traveling to various parts of the world can be an exciting experience. There are so many places to explore and create memories. It is important, however, to keep safety in mind and not let your guard down. Traveling may be an adventure, but it is wise to have safeguards in place. There are many ways that you can travel safely and still have a good time. A savvy traveler is a safe traveler and knows how to navigate their surroundings.



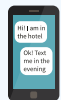
CHOOSE THE RIGHT CLOTHING

You may have heard that it is good to pack light, but it is also important to pack right. Pay attention to what people are wearing in the country or region where you are planning to travel. This research will help you to get an idea of what you should wear while traveling. Tourists are easy targets for crime-related incidents, and fitting in with people who are local to the area you are visiting will lower your risk of being the victim of a crime.



MAKE A COPY OF YOUR PASSPORT

Copying your passport is a wise idea just in case you lose your original passport. It is even better to make more than one copy of your passport and store it in a different spot, just in case you lose the first copied version of your passport. It may sound overly cautious, but having your passport is essential, and losing it can have dire consequences, including not being able to return home.



KEEP PEOPLE UPDATED

If you decide to travel somewhere alone, or even if you will be with another person, make sure to contact at least one person you trust and tell them your plans and where you are traveling. This precaution is a must because someone will know to contact the authorities and tell them where you are if you go missing. At the very least, knowing your itinerary may comfort your loved ones.



AVOID PUBLIC WI-FI

When you are traveling and you need Wi-Fi, try connecting

to a private Wi-Fi service. Connecting to public Wi-Fi makes you a target for someone who can hack into your personal information with bad intentions. Be aware of what Wi-Fi to use, and consider setting up a virtual private network in advance.



ASSESS YOUR HOTEL ROOM

You may think that the hotel you are staying in is safe, but you may want to think again. Travelers could be at risk for break-ins or harm. Before settling down in your room, look around to ensure there are not any cameras or suspicious items. Then, if you are leaving the hotel to explore, leave on some of the lights to make it look like you are still in the hotel room. Lastly, do not let strangers into your room. If they say they work in the hotel, check with the staff to make sure.



KNOW YOUR BASIC SELF-DEFENSE

Everyone who travels should know some basic self-defense skills. This precaution is essential because someone could catch you off



guard and try to abduct, rob, or harm you. You may be able to overpower one other person, but tourists are often attacked by more than one person, so bringing all you can to an assault could be lifesaving. Taking a self-defense class before your trip can prepare you just in case something happens.



KEEP YOUR BANK UPDATED

Before going on a trip, contact your bank and tell them you are going out of the country. This safeguard is essential because, if your bank is unaware you are on a trip, they may mistake you as a thief due to an unusual purchase, which can create inconveniences and other problems. Taking a few minutes to notify your bank will help to make your trip stress free.



HAVE EMERGENCY CASH

It is not a bad idea to always have emergency cash with you everywhere you go—just in case something unexpected happens. There are ways to hide your money, such as rolling it up in an empty lip balm tube, under your hairbrush, or in a secret clothing pocket. Having a money belt

can also be a sure way of keeping your cash close.



DO NOT GET LOST IN TRANSLATION

Every place you visit will not have the same language and gestures you are used to in your culture. When traveling, do some research on the place you are visiting because there will be differences from where you are from originally. For example, giving someone a thumbs-up is considered offensive in the Middle East but widely accepted as a positive gesture in other countries.¹ Language barriers can be avoided by brushing up on the language and gestures of the region you are visiting, having a translation app on hand, and being patient in your communication. Do your homework so you do not mistakenly insult someone or get yourself in trouble.



BE SMARTER THAN THE TRAVEL SCAMMERS

Many travel scams are pretty obvious, but there are times

Educating yourself on how to identify a scam will help you not fall into being tricked by scammers.

you can come across a scam that is quite clever and can trick you into giving money. Educating yourself on how to identify a scam will help you not fall into being tricked by scammers.

The bottom line is that traveling is mostly a safe experience, but it is also important to keep in mind that sometimes, no matter how cautious you are, things can still happen. Although traveling may be a risk worth taking, make sure you reduce the risks through preparation. 🛡️

¹ <https://www.businessinsider.com/hand-gestures-offensive-different-countries-2018-6>

Cybersecurity Tips

to Keep You Safe This Holiday Season

BY MS. ARYN KITCHELL, STAFF WRITER

Throughout the year, we see many news stories about cybersecurity breaches in large companies. Of course, we all get worried when we learn that a company—or a bank—we use has been breached because that means our personal information has been at risk. This violation can heighten our awareness for a short time; we check our bank accounts, keep a close eye on our credit score, and change our passwords at the drop of a hat. Unfortunately, these large-scale breaches are not the only time our personal information is at risk. As we start shopping online more and more—particularly to grab all our holiday gifts—we need to be careful about our personal cybersecurity or risk having our information stolen.

There are many ways hackers attack systems, ranging from large attacks on companies down to attacks on individuals. A couple of types of cyberattacks that affect individuals are phishing and malware attacks. *Phishing* is a common attack often done through email. With a phishing attack, hackers will send fake messages that are formatted to look official. These emails may look like they come from a reputable company or someone you know and have emailed before. In a phishing attack, hackers are trying to steal your sensitive information like your passwords or credit card information, or they might be trying to install malware on your device.

Malware is a term used for malicious code or malicious software, such as spyware, ransomware, viruses, and worms. It is used to describe many types of unwanted software installed on your devices without your consent or knowledge. Hackers will commonly send malware using email attachments or risky links. Once installed on your device, malware will invade your system and give hackers access to your personal data or even allow them to track your activities.

What can we do to protect ourselves and our personal information? Fortunately, many different techniques are available to keep our systems and our data safe.

First, always make sure that your devices are updated. How long have you been clicking “remind me later” on that software update notice on your device? Using a device with out-of-date software can leave you exposed to cyberattacks. Many software updates will close any gaps in systems that hackers have used to access your devices and information. If you do not update your device, that gap stays open and leaves you vulnerable. Set your device to update during “non-active” hours. That way, your device will update when you are not using it.

You should also always use best practices when it comes to your passwords. Make sure the passwords you use are not just a word followed by a couple of numbers, and definitely keep away from using names and birthdays! Simple passwords are

simple for hackers to guess. Make sure passwords are lengthy, have no actual words or names, and use numbers, symbols, and a variety of capital and lowercase letters. We tend to make passwords simple so we can remember them easily, but programs are available that can keep track of our passwords for us. Do some research on password managers, and find one that best suits your needs, then let the password manager do all the hard work of remembering those passwords for you!

Also, try to use multifactor authentication, or MFA, whenever possible. MFA is a security feature that requires you—or anyone trying to log in using your information—to provide evidence of your identity. Sometimes, a website will send you an email or a text with a code to authenticate that you are the individual trying to log in. If you have secondary contact information saved to a site, such as another email or your phone number, you may be able to request that the site always asks for authentication when you log in or when you try and log in on a new device.

In addition to updating your devices and using secure passwords, you should take a few precautions while shopping online to make sure you are safe. Shop only from stores you know are legitimate: common online shopping sites like Amazon, Walmart, eBay, or Target can sometimes be spoofed. Hackers may make a dummy site that looks real, but it is only there to get you to input your personal



In addition to updating your devices and using secure passwords, you should take a few precautions while shopping online to make sure you are safe.

information so they can steal it. If you are trying to shop from a small business or local store, verify that you are using the correct site. Always look for “https” or a lock symbol in a site’s URL. These indicators mean the site has been verified, your connection is secure, and the information you send to the site stays private.

If you are using a shopping app on your phone, always check the app’s permission terms and conditions. A shopping app does not need access to your photos or contacts, and using an app that accesses personal information on your phone is very risky. Apps can also be spoofed, meaning they look like an official app from a trusted store, but they are fake and simply there to steal your information or install a virus on your device.

Never shop or access sensitive sites while on public Wi-Fi. Public Wi-Fi is not secure, and hackers use public

Wi-Fi to get that much closer to accessing your personal data. Any information you send over public Wi-Fi has the potential to be accessed by hackers. Only use your private, password-secured Wi-Fi for online shopping. Also, shop only on your own devices. Never use public computers when you shop.

When checking out at an online store, do not save your information to every site. Allowing a site to store your personal information—including addresses, emails, and phone numbers—can leave you vulnerable if that site is hacked or if the site sells your information to advertisers.

If you have a credit card, it is often better to use it instead of a debit card when shopping online. Credit cards usually offer better protection than debit cards if your information is stolen and the card is used. Credit card companies will often credit you

the money quickly, whereas, with debit cards, you may have to wait for your money while your bank investigates the claim. Having your debit card used fraudulently also means that money is being taken directly from your bank account. You may also have liability with fraudulent purchases on a debit card, meaning you may have to pay a certain amount of money depending on the claim and how soon you report it.

Lastly, keep records of your purchases, such as the confirmation pages, and use that information to check against your bank or credit card statements. Report any suspicious activity quickly.

Always be careful online and be mindful of how much information you are sharing. Taking action to keep your information safe will help you stay secure online without putting any damper on your holiday spending. 🚔



AIR MOBILITY COMMAND WELL DONE AWARD

Presented to



Top row: Capt Micah Newmann and Capt Ryan Sheive. Middle row: SMSgt Ryan Thrasher and SSgt Sean Litvin. Bottom row: SSgt Cameron Stoker and A1C Kevin Long

Photos by SSgt Nathan Eckert, McConnell Air Force Base, KS, Public Affairs

While participating in the Red Flag exercise at Nellis Air Force Base, NV, the crew of GULF 07 showed exceptional situational awareness, airmanship, and emergency responsiveness. Upon landing and while taxiing to park following a B-52, the crew of GULF 07 noticed the right main landing gear on the B-52 catch fire and quickly begin to spread about the exterior of the aircraft. The copilot alerted the crew members aboard the B-52 of the emergency, of which they were unaware, allowing them to quickly and safely evacuate the aircraft. The Aircraft Commander quickly analyzed the situation and alerted Ground Control of the emergency to allow maximum response timing of emergency responders and vehicles. The Boom Operator maintained control of checklists and situational awareness inside the KC-135 while the pilots were handling the emergency situation. The crew's actions ensured the safety of not only GULF 07 but also all five crew members aboard the B-52 and enabled the recovery of an \$84 million aircraft. The distinctive accomplishments of GULF 07 reflect credit upon themselves, the 22d Air Refueling Wing, and the United States Air Force. 🇺🇸



MISHAP-FREE FLYING HOUR MILESTONES

UNIT AWARD

96th Airlift Squadron, Minneapolis ARS, MN

65 Years • 225,640 Hours

2,090 FY21 Mishap-Free Flying Hours

65 Years Since Last Class A or B Mishap: November 3, 1955



7,500 HOURS

164 AW, Memphis, TN

CMSgt Kenneth MacFeggan
MSgt Donald Russum

349 OG, Travis AFB, CA

SMSgt Stephen Burke

6,500 HOURS

79 ARS, Travis AFB, CA

SMSgt Jeffrey Burnaman
MSgt Christy Jeffreys
MSgt Douglas Lewis

96 AS, Minneapolis-St. Paul ARS, MN

Lt Col Kenneth C. Rogers
CMSgt William D. Rudgers
SMSgt Shannon R. Moerke

164 AW, Memphis, TN

Maj James Taylor
MSgt Deanne Davis

301 AS, Travis AFB, CA

Lt Col Jason Biggs

349 OG, Travis AFB, CA

Lt Col Jill Sliger

5,000 HOURS

79 ARS, Travis AFB, CA

Lt Col Nicholas Bollum
Lt Col Dean Hudson
Maj Ryan Kindseth
SMSgt Michael Parks
MSgt Jesse Farley

96 AS, Minneapolis-St. Paul ARS, MN

Col Timothy W. Wollmuth
Maj Andrew L. Thomas
Maj Chad M. Versteeg
SMSgt Brian K. Goebel

164 AW, Memphis, TN

SMSgt Brian McDonald

179 AW, Mansfield, OH

Lt Col Steve Shilliday
Major Dan Brown

301 AS, Travis AFB, CA

Lt Col Troy Ogle
Maj Shane Evans
CMSgt Jennifer Pope
MSgt Steven Chick

349 OG, Travis AFB, CA

Col Scott Meyer

3,500 HOURS

96 AS, Minneapolis-St. Paul ARS, MN

Col Christopher E. Sedlacek
Lt Col Ethan E. Bryant
Lt Col Bryan W. Granger
Lt Col Joel A. Loomis
Maj Kevin A. Eklund
Maj Michelle L. Furcron
Maj Lee D. Place
SMSgt Dean W. Grothem
MSgt Austin K. Kleinschmidt
MSgt Nathan J. Raab

164 AW, Memphis, TN

Col Matthew Brancato
Col Brandon Evans
Lt Col Sean Gildea
Lt Col Garrett Gilmore
Lt Col Cynthia Higgins
Lt Col Craig Kinkade
Lt Col Joseph Lindsley
Lt Col Matthew Murphy
Lt Col James Pearce
Lt Col Jeremy Tutor
Lt Col Zachary Young
Maj Keith Ashford
Maj Joshua Daus

MISHAP-FREE FLYING HOUR **MILESTONES**



A C-130H Hercules from the 96th Airlift Squadron, Minneapolis-St. Paul Air Reserve Station, MN, flies over Minnesota, July 16, 2019.

USAF photo by TSgt Amber E.N. Kurka

Maj Cory Dewaters
Maj William Hodge
Maj Chad Kennedy
Maj Alexander Lammi
Maj Justin Mackey
Maj Russell McNab
Maj Cole Merrick
Maj Justin Robinson
Maj Brandon Toms
SMSgt Jeffrey Brown
SMSgt Jason Gonzales
MSgt Paul Garner
MSgt Stephen Gast
MSgt Robert Kinsley
MSgt Timothy Peck
MSgt Brett Regel
MSgt Kyle Walker

179 AW, Mansfield, OH
MSgt Shawn Cavanaugh

2,500 HOURS

96 AS, Minneapolis-St. Paul ARS, MN

Lt Col Joseph T. Quillin
Capt Maxwell T. Gillmer
Capt Justin M. Gort
Capt Theodore A. Persing
MSgt Kelly M. Engel

164 AW, Memphis, TN

Lt Col John Vaughan
Maj Matthew Cooley
Maj Eric Greene
Maj Donald Lindberg
Maj Susan McDonald

Maj George McMillen
Maj Lee Wilson
Capt Billy McCann
Capt Brandon McCormick
Capt John McCormick
Capt Jody Sullins
MSgt Marcus Rountree
MSgt Jacob Simmons
MSgt John Voss
TSgt Dustin Carmack
TSgt John Reibel

179 AW, Mansfield, OH

Major David Stephens
CMSgt Daniel Brake
MSgt Jerod Indorf
MSgt William Klotzbach
MSgt Brendyn Slapnicker



TO SUBMIT MISHAP-FREE FLYING HOUR MILESTONES:

Send your request to mobilityforum@us.af.mil

HQ AMC/SEE, 618.229.0927 (DSN 779)

Please submit as shown in the listings above (first name, last name, sorted alphabetically within rank).

QUICKSTOPPERS

Assumption + Miscommunication = Aircraft Damage

BY MR. LALO MAYNES,
HQ AMC FLIGHT SAFETY

In a recent event on the flight line, maintenance personnel were prepping an aircraft for an engine run. The jet engine mechanic performed the Inlet and Exhaust (I&E) inspection on the number one engine. He purposefully left the inlet mat in the inlet so the oncoming 7-level trainer could train a 3-level on conducting the I&E inspection. After completing the training, the trainer also purposefully left the inlet mat in the inlet, assuming the engine mechanic would go back and re-accomplish the intake inspection. The engine mechanic trusted the experience of the trainer, however, and chose not to re-accomplish the inspection prior to the engine run but did not communicate this decision to the trainer. Also, the trainer did not communicate to the engine mechanic

that the mat was still in the inlet. For the engine run to take place, an engine run supervisor was needed. The supervisor conducted a "walk-around" inspection, made sure the chocks were in place, and ensured nothing was below or around the engines. During the engine run, the engine mechanic and the supervisor did not notice anything out of the ordinary, and there were no abnormal engine indications from the flight deck. Once the operational check was complete, they shut the engines down. When the engine run supervisor performed the post-engine run I&E inspection, he discovered remains of the inlet mat in the exhaust and damage to the number one engine. During aircraft maintenance, do not assume anything and question everything. 🛩️



Airmen assigned to the 860th Aircraft Maintenance Squadron, Travis Air Force Base, CA, and 105th Maintenance Squadron, Stewart Air National Guard Base, NY, work together during routine maintenance on a C-17 Globemaster III July 14, 2021, at Travis AFB.

USAF photo by
Chustine Minoda

A DAY IN THE LIFE



An Afghan child sleeps on the cargo floor of a C-17 Globemaster III, kept warm by the uniform of a C-17 Loadmaster, A1C Nicolas Baron, during an evacuation flight from Kabul, Afghanistan, Aug. 15, 2021. Operating a fleet of Air National Guard, Air Force Reserve, and active duty C-17s, Air Mobility Command, in support of the Department of Defense, moved forces into the theater to facilitate the safe departure and relocation of U.S. citizens, Special Immigration Visa recipients, and vulnerable Afghan populations from Afghanistan.

USAF photo by Capt Mark Lawson