Air Force
Civil Engineer
By Engineers. For Engineers.
Vol. 26 No. 1 Spring 2018

RESTORING READINESS

TO WIN ANY FIGHT, ANY TIME

Thank you!

More than three decades ago, I took an oath to serve our country and defend our freedoms, to preserve America's enduring values and uphold its founding principles.

For a young man from West Texas and a Fightin' Texas Aggie, taking this oath was not only the start of a career, but also a promise to keep and a mission to serve — one that would allow me to be a part of something much greater than me.

Today, a little more than 30 years later, after serving in garrison and deployed, after leading squadrons and working all across the globe, and now preparing to retire, I look back in wonder. The Airmen, the mission, the friends — the journey — all exceeded my dreams.

Of course, the essential ingredient was and is, you, the best Airmen engineers in the world. I stayed in the Air Force because I love serving with you! I am eternally grateful for your service and perpetually amazed at what you have done and can do. Thank you for your leadership, effort, skill and intellect.

It is your talent and commitment that allows the Air Force to provide agile, innovative Airmen engineers to the joint fight, and to build and operate resilient installations across the globe to project power in air, space and cyberspace. We "lead the way" because of you.

Moving forward, we must continue to "lead the way." The challenges our nation faces are serious and real, and each of you has a role to play in ensuring we are able and ready to face them. The strategic context of near-peer adversaries and great power competition, coupled with our renewed efforts to be ready and lethal, should inform not only our thinking but also our actions as we go about our business in the civil engineer enterprise.

For these reasons, this edition of the Air Force Civil Engineer Magazine focuses on our Air Force's top priority — restoring readiness to win any fight, any time. Readiness is not just a buzzword, it is a posture that we must embrace. Every individual Airman, unit and organization must be prepared to conduct and sustain operations in a high-end, high-intensity fight. It means knowing and performing our core competencies while responding to or recovering from events that impede air, space or cyberspace operations. It means being ready for all contingencies.

That is why I'm excited that Brig. Gen. (Select) John J. Allen Jr. is set to become the next Director of Civil Engineers this summer. He is a warfighter and engineer with outstanding depth in the Air Force. I first met then-Lt. Col. Allen when he commanded the 332nd Expeditionary Civil Engineer Squadron. He and his team grew U.S. combat capability through their incredible work. They were rock stars! General (Select) Allen brings a high level of energy, discipline, technical competence and mission focus as your next director. He will continue to be an outstanding leader for the Air Force as we face an increasingly complex security environment, and he will make our Air Force more ready and lethal.

In closing, thank you all for all you do, and for leading the way for our nation and our Air Force. It has been an honor to serve with each of you.

Timothy S. Green
Major General, USAF
Director of Civil Engineers

RESTORING READINESS

Features

Vol. 26 No. 1 Spring 2018

On the cover

Senior Airman Stephanie Sochin with the 773rd Civil Engineer Squadron checks the seal on her protective mask during chemical, biological, radiological and nuclear defense training at Joint Base Elmendorf-Richardson, Alaska.

Where's the Almanac?

The publication of the annual CE Almanac, a compendium of who's who and what's what in the CE enterprise, has moved to the fall. This change in the publication schedule allows the Almanac to better align with staffing movements throughout the civil engineering community.

Look for the 2018 CE Almanac this fall.

Civil engineers...Lead the way!

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Air Force
Civil Engineer
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RESTORING READINESS

Training aides

Mildenhall CBRN training enhances readiness in European theater

By Senior Airman Alexandra West
100th Air Refueling Wing Public Affairs

The air is cold and crisp, but my face is red hot. I'm sweating, wearing an extra heavy layer of protective gear and inhaling the unmistakable rubber stench from my gas mask.

That's right, I'm in mission-oriented protective posture, better known as MOPP, gear.

The protective gear is hot, sweat-inducing and most certainly cumbersome to get into. But, as an Airman, I understand the importance of putting on the equipment properly and quickly.

Today's warfighting climate can be unpredictable, and it's a priority of the Air Force to maintain readiness for all possibilities. Driving that message home, Gen. Tod D. Wolters, commander of U.S. Air Forces in Europe-Air Forces Africa, recently stated, "Warfighting readiness is the cornerstone of our deterrence posture in Europe."

Part of that readiness is making sure Airmen are up to date on chemical, biological, radiological and neurological, or CBRN, defenses.

That's why I'm here — in my suit, boots, mask and gloves — at the CBRN defense survival skills class, making sure I am confident in my skills and ready for any scenario.

Here at RAF Mildenhall, the 100th Civil Engineer Squadron emergency management flight is responsible for providing this critical training for all Airmen on the installation.

U.S. Airmen assigned to the 100th Air Refueling Wing conduct a post-attack reconnaissance sweep during a chemical, biological, radiological and nuclear defense survival skills class at RAF Mildenhall, England, Jan. 30, 2018. During a PAR sweep, Airmen perform searches around their facilities for unexploded ordnance and evidence of chemical agents. (U.S. Air Force photo by Senior Airman Alexandra West)

U.S. Air Force Tech. Sgt. Nicola Adams, 100th Air Refueling Wing Command Post noncommissioned officer in charge of console operations, listens to a CBRN survival skills class instructor at RAF Mildenhall, England, Jan. 30, 2018. (U.S. Air Force photo by Senior Airman Alexandra West)

U.S. Airmen assigned to the 100th Air Refueling Wing put on M50 gas masks during a CBRN survival skills class at RAF Mildenhall, England, Jan. 30, 2018. M50 gas masks are part of the protective gear worn during mission-oriented protective posture levels three and four. The M50 gas mask is a key part of protection against airborne contaminants. (U.S. Air Force photo by Senior Airman Alexandra West)

A U.S. Airman inspects the filter of his M50 gas mask during a survival skills class.

"It is crucial that we have 4,000 Airmen fully CBRN trained at all times," said 1st Lt. Eugenio Vives Alvarez, 100th CES readiness and emergency management flight commander. "Our enemies are out there, and we're just being aggressive toward being ready for that, because we never know when that rapid response will be happening to support our sister services, U.S. military branches or NATO allies."

The training course covers basics about protective gear, CBRN detection and decontamination equipment, and running a CBRN reconnaissance route around a facility.

"I think it's important because it helps us stay sharp," said Airman Justin Skiver, 100th Force Support Squadron food service apprentice, who also attended the training. "It's been a while since basic training and it was a good experience to get back into it."

Since readiness is a high priority for the Air Force and for the 100th Air Refueling Wing, Airmen must be current in CBRN operations at all times.

West is a broadcast journalist with the 100th Air Refueling Wing Public Affairs at RAF Mildenhall, England. Watch her video story at http://www.mildenhall.af.mil/News/Video/videoid/582752/dvpcc/false/#DVIDSVideoPlayer6392

ABOVE: *U.S. Airmen assigned to the 100th Air Refueling Wing listen to an instructor during CBRN training at RAF Mildenhall, England, Jan. 30, 2018.*

LEFT: *U.S. Air Force Staff Sgt. Bryan Foley, 100th Civil Engineer Squadron NCO in charge of plans and operations, leads a CBRN survival skills class at RAF Mildenhall, England, Jan. 22, 2018. (U.S. Air Force photos by Senior Airman Alexandra West)*

Airmen assigned to the 436th Civil Engineer Squadron practice land navigation skills Sept. 21, 2017, during a field training exercise at Fort Indiantown Gap, Pennsylvania. These skills can be used to survive and operate in remote locations around the world. (Courtesy photo)

Dover's engineers

Leading the way in mission readiness

By Master Sgt. Charles Patterson
PRIME Beef Manager, 436th Airlift Wing Mission Support Group

DOVER AIR FORCE BASE, Del. — In September 2017, 82 members of the 436th Civil Engineer Squadron from Dover AFB championed a four-day field training exercise at Fort Indiantown Gap, Pennsylvania — the first of its kind within the Air Mobility Command in more than a decade. This Total Force Integrated Training event also included members of the 512th Air Force Reserve Civil Engineer Squadron and proved to be a resounding success, receiving stellar reviews from participants and completing more than 1,000 contingency training requirements.

Now, Dover's engineers are eager to return to the field. Focusing more on Air Force Specialty Code-specific training this time, the Prime Base Engineer Emergency Force, or Prime BEEF, team developed a training plan specifically aimed at enhancing wartime equipment training proficiency while surviving and operating in a chemically contested environment.

General objectives include the maintenance and reconstitution of airfield pavement, runway launch and recovery assets, high-powered generator equipment, contingency heat and air conditioning systems, water purification and command and control procedures. The capstone, which is an increasingly thorough field excursion, will test and evaluate the engineers' readiness capabilities with a full-scale 24-hour ability to survive and operate exercise; complete with a wing inspection team-constructed schedule of events and grading systems.

Lt. Col. Travis Guidt's vision for establishing a squadron of contingency-ready engineers, which he shared when taking command of the 436th CES in July 2017, is coming to fulfillment. Focused on restoring readiness, the engineers reinvigorated their squadron's warrior ethos through Guidt's "road to war" training plan for each Air Expeditionary Force team. Chief Master Sgt.-select Damien Seals, readiness and emergency management flight chief, noted that "for a paradigm shift such as this to occur, buy-in from the top down has to occur, and it's paid dividends toward building a squadron of battle-ready engineers."

Master Sgt. Charles Patterson, Dover's Prime BEEF manager said, "Balancing mission requirements and restoring lethality to our force can be quite the daunting task. But with the proper leadership mindset amid a culture of innovation, Dover's Airmen meet this challenge with unmatched vigor and resolve through constant deployments, an aging infrastructure and manpower shortages. They are battle-tested problem solvers who truly lead the way."

Effective training is the key.

"Colonel Guidt's intent is to ensure that the Airmen we send to combatant commanders are ready to execute the mission, and his job here is to train them in preparation," said Seals. "My mission as the flight chief is to create a plan to meet our commander's vision, and this field training exercise was a great step toward meeting this goal."

Squadron personnel had only 37 days to plan the fall 2017 field training exercise, or FTX. Now, with more than four months of preparation leading up to the Spring FTX, Team Dover will be more than ready when it's time to demonstrate to Air Force leaders what it means to train and be ready to fight and win.

"Our Prime BEEF office did an exceptional job putting our training together and coordinating with the staff on-site," Seals said. "They put together a great plan with little to no downtime, which was phenomenal. Additionally, our experts stepped in and made sure our training was top-notch. Their expertise meshed very well with the schedule, and the result was a great training experience."

"It's kind of hard for us to practice our contingency operations training at home station, so moving to a separate location allowed us to focus solely on mission readiness," Seals said. "The biggest advantage of training off-site was the availability of equipment."

"Air Force bases no longer have contingency equipment," Seals said. "It's all stationed at Grissom Air Force Base, Indiana. Fort Indiantown Gap, however, had everything the squadron needed to accomplish all of their training objectives."

The fort, managed by the Pennsylvania National Guard, is the state's only live-fire maneuver military training facility. Its 17,000 acres house 140 training areas and fully equipped facilities capable of supporting year-round training, and it's only about a 2½ hour bus ride from Dover AFB.

"[Team Dover's] CE Airmen are fully prepared to support any tasking, from humanitarian relief to contingency operations in a contested environment because of training initiatives like the one our engineers just executed," Guidt said.

While squadron leadership was pleased with the outcome of this FTX, the team is already establishing plans for the next Air Expeditionary Force deployment cycle.

"For many of our guys, this was their first chance to see what they do in a deployed setting," Seals said. "Not only that, it was their first time really seeing what all the other shops do and how they work together to accomplish the mission. We all saw a lot of 'aha' moments during the FTX, and when these Airmen returned they told everyone about how great it was. Training initiatives like these coupled with leadership support have set the standard for ensuring our engineers are ready to lead the way."

Members of the 436th Civil Engineer Squadron explosive ordnance disposal flight practice individual movement techniques during a field training exercise Sept. 20, 2017, at Fort Indiantown Gap. More than 80 members of the 436th CES attended the hands-on training event. (Courtesy photo)

Setting priorities

Tactical MDI aligns facilities to mission

By Russell Weniger
Air Force Installation and Mission Support Center

The Mission Dependency Index is a metric used by the Air Force to evaluate the relative importance of facilities and infrastructure on a base and plays a large role in project prioritization and funding. Therefore, it also has a significant impact in aligning current and future mission needs.

The Air Force adopted MDI in 2008. From the beginning, the index served a valuable purpose, linking facilities to mission and supporting risk-based decision-making. Also from the beginning, limits of these MDI scores were recognized because they did not account for specific mission requirements at the individual real property level.

The current MDI process assigns scores at a general category level (all runways are assigned one score, all dormitories are assigned one score, etc.). However, this method does not account for specific mission risks at the individual facility level because it does not take into account local operational risks and needs. For example, a runway at a bomb wing may be more vital to the mission than a runway at a space wing; or a child development center at a remote and isolated base has more importance to the mission than one at a base in a populated area where alternative child care options exist.

To solve this problem, in March 2017 the Air Force Installation and Mission Support Center, working with Jacobs Engineering Group Inc., began a pilot program aimed at improving the MDI across the Air Force.

This new scoring process will help manage limited resources and enhance Air Force operational readiness at the wing, or tactical level. Tactical MDI allows wing commanders to influence their facility's MDI scores (and therefore project prioritization and funding) by gathering input from their group and squadron commanders about what facilities are the most critical for mission execution. In short, Tactical MDI better communicates a unit's mission needs.

U.S. AIR FORCE MISSION DEPENDENCY INDEX

MDI

Question 2 REPLICABILITY: How difficult would it be to relocate or replicate the mission-enabling capabilities of the real property asset if they were interrupted?	Question 1 INTERRUPTABILITY: How fast would the response action be if the real property asset's operations were interrupted?			
	IMMEDIATE	BRIEF	SHORT	PROLONGED
IMPOSSIBLE	100	88	76	64
EXTREMELY DIFFICULT	92	80	68	56
DIFFICULT	84	72	60	48
POSSIBLE	76	64	52	40

Mission Dependency Index Survey Questions:

Question 1 – Interruptability

How fast would the response action be if the real property asset's operations were interrupted? (Assume complete unavailability).

Question 2 – Replicability

How difficult would it be to replicate the mission-enabling capabilities of the real property asset if they were interrupted?

How MDI Works

MDI applies the simple risk management concepts of "probability of failure" and "consequence of failure." To evaluate the Air Force's mission dependency on individual facilities, MDI replaces these terms with the terms "interruptability" and "replicablity." Interruptability is based on time; it measures how fast an organization's mission would be impacted if the facility's function were interrupted. Replicability is based on capability; it measures how hard it would be to relocate, replicate or reconstitute the facility's function.

Tactical MDI is scored by surveying wing, group and squadron operators regarding the interruptability and replicability of their buildings and infrastructure. The answers to the survey questions (along with standardized redundancy and inheritance rules) are scored using the MDI matrix.

The critical aspect of Tactical MDI is that input is obtained from the operator's mission-execution perspective rather than from the base civil engineer or community planner. The operator is the decision-maker, or decision-making board, responsible for achieving the unit's mission objectives and making resourcing decisions. This approach considers a true operational perspective that is dependent on the unit's mission, operational capabilities and unique circumstances. Note that this approach does not replace input and analysis provided by civil engineers and community planners; instead, it adds a direct and unbiased operational view to be considered in resource decision-making.

U.S. Air Force photo by Senior Master Sgt. Don Perrien

Field pilots were conducted at five Air Force installations, including Peterson Air Force Base, Colorado. (U.S. Air Force photo)

MDI improvement initiative

The 2017 MDI improvement initiative conducted field pilots at five Air Force bases including six wings (two bomb wings, a special operations wing, a fighter wing, a missile wing and a space wing). These group tests were conducted at Dyess Air Force Base, Texas (Air Force Global Strike Command); Cannon AFB, New Mexico (Air Force Special Operations Command); Seymour-Johnson AFB, North Carolina (Air Combat Command); Minot AFB, North Dakota (Air Force Global Strike Command); and Peterson AFB, Colorado (Air Force Space Command).

The MDI improvement initiative has led to changes to the Air Force's Comprehensive Asset Management Planning Playbook. It also has broader implications to improve budget formulation, strategic basing and other decision support systems. The MDI improvement initiative was championed by Maj. Gen. Brad Spacy, Air Force Installation and Mission Support Center commander, who leads efforts in providing installation and mission support capabilities to Air Force installations worldwide.

The group tests included 220 participants ranging from wing commanders to squadron members. The tests gathered data on 1,834 facility and infrastructure assets. The tests were used to develop and evaluate MDI methodologies, which were compiled in an Air Force MDI Improvement Playbook and will be deployed across the Air Force enterprise within the next year. A number of survey, risk-management, decision-making and calculation methodologies were evaluated as part of the group test activity.

The group test products were used to evaluate how asset-specific MDI scores may improve prioritization of military construction and sustainment, restoration and modernization; force protection; operational readiness; and general risk management.

A major finding that came out of the group tests is that the current method that links MDI to a category code has very little correlation when compared to the Tactical MDI scores that resulted from the input at the operator level. Because MDI accounts for 60 percent of the consequence of failure score of a project during the Integrated Priority List, or IPL, process, the impact of Tactical MDI will be significant.

However, group test products will not affect the IPL or the budget-build activities this cycle. In all cases, current Air Force-approved MDI scores will be used in accordance with the AFCAMP FY18-20 Playbook. Separately, based on the group tests and the related findings and observations, AFIMSC is formally advancing MDI improvements. An implementation strategy is being developed to support fair and equitable MDI improvements across the Air Force enterprise.

Shaping the Air Force of the future

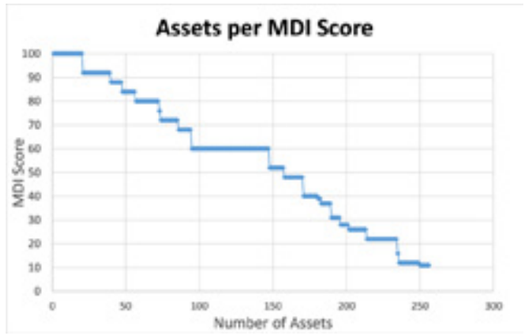
The Tactical MDI surveys will be conducted across the Air Force throughout 2018. The MDI improvement effort will involve a significant number of Air Force members and result in a strong communication tool to better align mission with facilities.

After the initial MDI re-baselining efforts, the metric will be owned by the bases, and specific triggering events will require a new MDI survey (for example, a change of command or change in mission needs).

As the global threats faced by the Air Force continue to evolve, having a force laydown structure that meets the needs of Airmen worldwide is critical to success. Improving this key metric to better align mission needs is a significant step toward funding alignment and improving Air Force infrastructure.

The Air Force fights from its bases; therefore, improving the feedback loop from the mission enablers at the base level to the strategic decision makers at the major command and Headquarters Air Force levels will significantly enhance the overall readiness and effectiveness of the Air Force as a whole.

Screen shot of MDI survey tool shows the prioritization of assets. The tool collects the data as the surveys are conducted and then displays it in a prioritized view for the out brief and command review.



Distribution of MDI assets per MDI score is shown in this chart. The MDI Matrix provides scores from 100-40.For the assets below 40, a low-scoring MDI rule is applied to provide distinction between the assets.

Sample of Dyess AFB pilot data showing inheritance rule with systems of assets.

Weniger is the chief of the AFIMSC Operations and Planning Branch and project sponsor of the Air Force MDI Improvement Planning project. Senior Master Sgt. Garey Payne, program manager for the AFIMSC Installation Engineering and Air Force MDI Improvement Planning programs, and Josi Heron, asset management consultant for Jacobs Engineering and project manager for the Air Force MDI Improvement Planning project, contributed to this article.

Electrical distribution – are underground systems better?

Crewmen from the Rio Grande Electrical Cooperative place new electrical cables underground at the south end of the flight lines as part of the overhead-to-underground electrical distribution conversion project at Laughlin Air Force Base, Texas, in November 2012. Underground systems can be beneficial near airfields. (Courtesy photo)

By Blaine Benson
Air Force Civil Engineer Center

Some believe converting overhead electrical distribution lines to underground is a cost-effective way to provide a more reliable power system with fewer outages and less downtime. Advantages to underground systems are primarily airfield obstruction removal, transportation corridor clearances, security and about one-third the weather-related outages of unhardened overhead systems.

The desire to replace overhead lines with underground lines (called "undergrounding" in industry literature) is increased after a major weather event such as a hurricane or ice storm. The electrical power industry has studied undergrounding for more than 20 years. An Edison Electric Institute report, Out of Sight, Out of Mind, updated in 2012, states, "No study has ever come close to showing an economic justification for undergrounding."

While underground systems have fewer weather-related outages, they take an average of three times longer to repair than overhead systems. The total downtime may be the same or more than an overhead system due to the increased time to find and repair the fault.

From an asset management life-cycle approach, overhead systems are the more cost-effective alternative. Underground systems are two to four times more expensive than overhead systems, based on recent Air Force project costs. Overhead systems have a life expectancy of more than 50 years, primarily because individual components (poles, transformers, etc.) are easy to replace, where underground cables have a life expectancy of only 30 years.

What about maintenance savings? Per UFC 3-701-01, Department of Defense Facilities Pricing Guide, Table 3, the sustainment costs for overhead systems are 28 cents per linear foot compared with 71 cents per linear foot for underground systems. The facts are underground systems have a higher initial cost, higher maintenance costs and a significantly shorter life expectancy, which results in a much higher life-cycle cost than overhead systems.

What about resiliency to weather-related events? Oklahoma officials determined they could have an ice storm with the magnitude of the 2007 ice storm every year for the next 30 years, and it would not be cost-effective to place lines underground. Similarly, officials in Florida determined hardening an overhead system is a more cost-effective method for providing system resiliency in hurricane-prone areas. In addition, underground systems are subject to water damage in flood-prone areas. See the companion article on hardening overhead electrical systems on the next page.

Because of the high life-cycle costs for underground systems, justifying the conversion of overhead systems to underground is difficult, if a new overhead system will meet the mission requirement.

The applications where undergrounding is more easily justified is near airfields or transportation corridors (safety/obstruction removal), to meet security requirements and in special high-visibility areas where a high aesthetic value adds to the mission benefit.

Bottom line — underground systems cost more to install, cost more to maintain and have a shorter life expectancy than overhead systems. In most cases, the benefits of going underground are not sufficient to justify the significantly higher cost.

For more information on this topic, contact the AFCEC Reach-Back Center at AFCECRBC@us.af.mil or go to the common access card-enabled CE DASH website at https://cs.eis.af.mil/sites/10159. Benson is an electrical engineer with the AFCEC Operations Directorate asset visibility team.

97th Air Mobility Wing emergency management personnel talk with Dan Scott of the City of Altus and Mike Hagy of Southwest Rural Electric to discuss the downed power lines outside the Jasmine gate at Altus Air Force Base, Oklahoma, on Jan. 30, 2010. A devastating ice storm that hit Jan. 28 left more than 30,000 people without power in the Altus area. (U.S. Air Force photo by Senior Airman Leandra D. Hernandez)

Hardening strategies can improve reliability of overhead electrical systems

By Blaine Benson
Air Force Civil Engineer Center

Electrical distribution systems are expected to perform without failure. In an ideal state, the base electrical system would never go down except for scheduled maintenance. An electrical system with a "3-9s" reliability means the system would be up 0.999 of the time, or would be down 8.76 hours a year.

Various industry studies have found it is more cost effective to provide reliability via a "hardened" overhead system, rather than convert to an underground system. When weather-related outages are a concern, bases should consider several strategies to harden the overhead portion of the electrical system.

The first strategy is to improve the strength of the pole line. One way to improve the strength of the pole line is to design the system with stronger poles. This can be achieved by using higher class (lower number) rated wooden poles. A Class 2 pole can withstand nearly twice the horizontal force that a Class 5 pole can withstand. A second option is to use steel or concrete poles. From a life-cycle perspective, a steel pole has approximately a 10-year longer life expectancy than a wooden pole, and a concrete pole has a 15-25 year longer life expectancy. Both provide resistance to wildfire threats. However, metal poles may not be suitable for all climates, and concrete poles may not be economically justified, especially if they are not commonly used by the local utility. But in areas where concrete or steel poles are economical, their longer lifespan may provide a lower life-cycle cost than a wood pole system. A third option to improve the strength of the pole line is to decrease the span length of the conductors. This will result in more poles being placed closer together.

ABOVE: *A pad-mounted transformer is a ground-mounted electric power distribution transformer in a locked steel cabinet mounted on a concrete pad.*
LEFT: *Steel poles last 10 years longer than wooden ones. (Courtesy photos)*

A second hardening strategy bases should consider pertains to their transformers. An industry-recommended approach is to keep the distribution lines pole mounted, by way of pad-mounted transformers with underground services to facilities. This hybrid solution allows for quicker repair time of the main distribution circuit to provide underground services to individual facilities. By removing the weight of the pole-mounted transformers, the overhead circuit is able to withstand high winds. However, this strategy should not be used in flood-prone areas.

Third, a frequent cause of outages on overhead systems is contact by wildlife or vegetation. We can reduce outages through the use of insulated overhead conductors, sometimes called tree wire. The insulation on tree wire is not as thick as that on underground cables, but will normally prevent outages from contact with wildlife or vegetation. In addition, insulated overhead cables are typically bundled with spacers between poles; preventing outages caused from conductors slapping together during high winds.

The most overlooked hardening strategy is proper vegetation maintenance, i.e. tree trimming. While no national code regulates tree trimming, the Unified Facility Guide Specification recommends clearly trimming trees for 15 feet on both sides horizontally and beneath the conductors for distribution circuits.

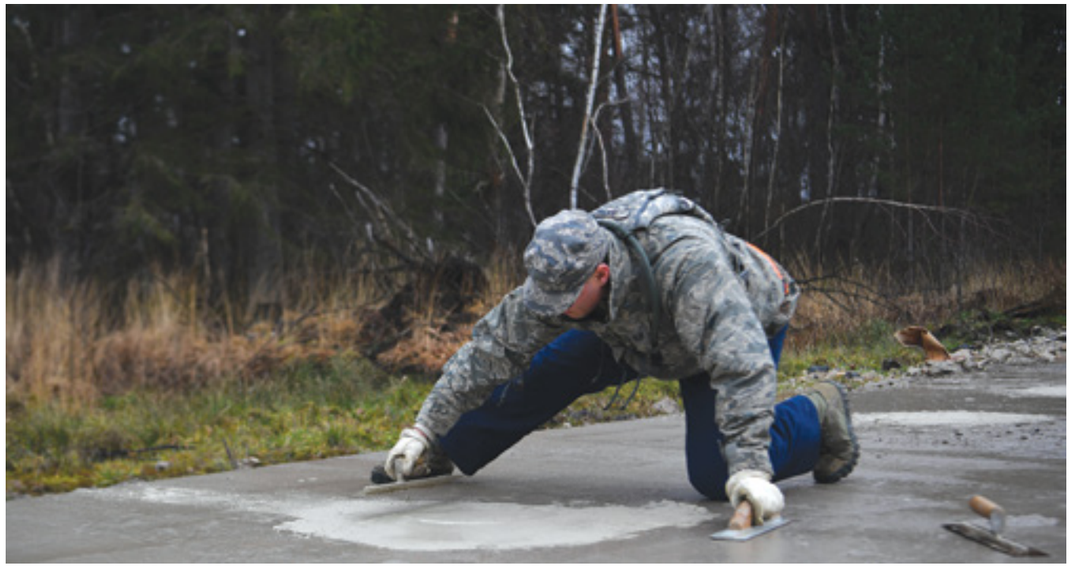
While no electrical distribution is 100 percent reliable, by implementing effective maintenance practices (including tree trimming) and implementing other options during new construction/system upgrades, an overhead electrical system can better withstand the effects of weather, wildlife and vegetation and reduce the frequency of outages.

For more information on this topic, contact the AFCEC Reachback Center at AFCECRBC@us.af.mil or go to the CE DASH, common access card-enabled website at https://cs.eis.af.mil/sites/10159.
Benson is an electrical engineer with AFCEC Operations Directorate's asset visibility office.

U.S. Air Force Senior Airman Jonathan Pike, 773rd Civil Engineer Squadron power production journeyman, rests during a Rapid Airfield Damage Repair training exercise on Ramstein Air Base, Germany, Jan. 25, 2018. (U.S. Air Force photo by Senior Airman Devin M. Rumbaugh)

RESTORING READINESS

Honing skills with hands-on approach



U.S. Air Force Tech. Sgt Corey Gates, 773rd CES heating, ventilation and air conditioning craftsman, fills a small hole with quick-drying concrete during a RADR training exercise on Ramstein Air Base, Germany, Jan. 25, 2018. Airmen were placed into predesignated roles based on career field to complete the task of repairing and reopening the simulated airfield.
(U.S. Air Force photo by Senior Airman Devin M. Rumbaugh)

435th CTS Hosts RADR training course

By Senior Airman Devin M. Rumbaugh
Air Force Materiel Command Inspector General, Managing Resources Branch

Time and time again, Air Force leadership pushes for innovation. The 435th Construction and Training Squadron training flight innovated how they train Airmen with the newly modernized process to repair damaged aircraft runways in more efficient ways, in less time.

435th CTS training flight Airmen are now training civil engineer Airmen through the Rapid Airfield Damage Repair training course, which replaced the outdated Airfield Damage Repair course. Airmen from across the Air Force will travel to Ramstein to attend the training.

RADR encompasses all actions required to rapidly repair runways and runway support structures to recover operations on an airfield after an attack. RADR may be conducted during conditions such as inclement weather, chemical, biological, radiological events, and degraded environments.

"The instructors took all of us random career fields within the civil engineer career field and implemented this Dirt Boys (pavement and equipment civil engineers) mentality. It's a lot of Dirt Boy-specific jobs that other career fields were doing," said Tech. Sgt. Patrick Brooks, 611th Civil Engi-

U.S. Air Force Staff Sgt. Antonio O'Campo, 773rd CES electrical systems journeyman, mixes flowable fill concrete for a RADR training exercise on Ramstein Air Base, Germany, Jan. 25, 2018. O'Campo was part of the first class to be trained in the updated RADR course. (U.S. Air Force photo by Senior Airman Devin M. Rumbaugh)

neer Squadron pavements and equipment noncommissioned officer in charge.

Some of the teams involved in the process include the debris removal, pavement, breaker, excavation and fill teams. Civil engineer Airmen fill predesignated roles and teams based on career field. Most of the Airmen involved can play multiple roles as needed during the repair.

RADR capability requires multiple critical tasks be accomplished with seamless integration. These are often accomplished within overlapping and simultaneous timeframes.

> ***"The instructors took all of us random career fields within the civil engineer career field and implemented this Dirt Boys mentality, It's a lot of Dirt Boy-specific jobs that other career fields were doing."***
>
> **Tech. Sgt. Patrick Brooks, 611th Civil Engineer Squadron pavements and equipment noncommissioned officer in charge.**

"For the Airmen, the hardest part I think initially was just shock," Brooks said. "We were asking an Airman first class from the plumbers shop to drive a piece of heavy equipment. But when they started learning how to drive it, I think the younger guys were really enjoying it."

As part of the training, the 435th CTS trainers subject the students to a simulated enemy attack on the airfield. The explosive ordnance disposal team clears the airfield of any unexploded ordnance, and the debris removal team clears the areas around the craters. Then two pavement teams begin cutting through the runway tarmac. The pavement teams then jump to the next crater and continue cutting until they accomplished their part of the mission.

"This new system is like a dance, there are a lot of parts," said 2nd Lt. Emily Steele, 611th CES chief of project management and RADR course student. "It's almost like a factory process."

After the pavement team makes their way down the runway, the breaker team and excavation team come through and clear out the holes in the runway. Airmen then verify the depth of the hole and the warehouse and fill teams begin to fill the holes. Teams of Airmen mix the flowable fill concrete and cap it with quick-drying concrete or asphalt. With this process, the team is able to fill 120 craters in 6½ hours in perfect conditions.

The training course is five days long and gives Airmen time to learn the controls to their equipment.

"They progressed in a walk, crawl and run and displayed proficiency level as intended," Warnock said. "The second day they practiced completing the repair of three craters. By the fourth day of training they completed six craters faster than it took them to complete three on the second day."

To wrap up the training course, Airmen completed a full-length training exercise on a section of taxiway on Ramstein.

"People were definitely pushed outside their comfort zone having to learn things they never learned before," Steele said. "It wasn't hard to learn, but it was important having a week to practice, where multiple days were spent learning how to drive the equipment. At the end of the day, we had the majority of the job done in about

four hours and it showed the Airmen got the training they needed."

With the highest levels of Air Force leadership identifying the gap in capabilities, the new training process was put in place to counter the emerging threat of enemy attacks. Due to the leadership directive, all civil engineer Airmen are required to attend the training course.

"Leaving here, I think we all have the skills to be able to execute, and it is just a matter of maintaining those skills from now on," Steele said.

ABOVE: *A U.S. Airman watches as his counterparts fill a hole in the runway during a RADR training exercise on Ramstein Air Base, Germany, Jan. 25, 2018.*
TOP: *Airmen would tag in and out of the exercise to rest after mixing flowable fill concrete.*
(U.S. Air Force photos by Senior Airman Devin M. Rumbaugh)

BIRD PROBLEMS

CEs jump in to tackle pest problem in hangars at Dyess AFB

By Stephanie G. Martinez
Texas A&M Natural Resources Institute

Tech. Sgt. Hugo G. Bernal and Staff Sgt. Juan S. Martinez spray methyl anthranilate inside a hanger at Dyess Air Force Base, Texas. (Photo by Stephanie G. Martinez, Texas A&M Natural Resources Institute)

The aircraft hangars at Dyess Air Force Base, Texas, had been overrun by pigeons, posing a serious safety and health hazard to Airmen working in and around the facilities.

Civil engineers had to get creative in their efforts to do away with these troublesome birds. They took an academic approach and began with extensive research into the problem. They discovered a combined method of fogging and shooting would show the best results.

Aircraft hangars are great places for birds — including pigeons, European starlings, house finches, sparrows and barn owls — to nest and roost. The hangars have high structures allowing birds to settle and nest without the disturbance of predators. However, these birds are unwelcome inhabitants in an active aircraft maintenance hangar for many reasons. For instance, bird droppings can cause severe corrosion damage to aircraft and be a source of disease-causing pathogens including histoplasmosis and candidiasis. Many Air Force installations struggle with the problem of birds settling in their hangars and similar buildings, and it has been difficult finding a truly efficient method to discourage them.

In the recent past, methyl anthranilate, or MA, has been used in large case studies and experiments. The eye and mucous membrane irritant is dispersed as an aerosol to discourage birds from settling in buildings such as hangars. The chemical is a naturally occurring compound found in flowers and grapes, which is safely inhaled and consumed in a variety of human and animal foods and products.

To humans, it smells strongly like artificial grapes — think of grape soda or any grape-flavored candy. To birds, it burns like a hot chili pepper. It works as a repellent by stimulating the trigeminal nerves in the birds' nostrils, eyes and throat. Even though humans, and most other animals, also have these nerves, research has shown that MA has a temporary painful effect in bird species. Because of this painful stimulus, birds typically learn to avoid areas where MA has been applied.

Engineers with the 7th Civil Engineer Squadron proposed MA fogging in combination with shooting as a bird-eliminating option for Dyess AFB in spring 2017. By the summer, MA fogging was fully approved by the major command's pest manager for use at Dyess. Upon approval, the pest management team purchased and received the required equipment. Four-day application operations were performed starting Oct. 23 and Dec. 4, 2017, in coordination with the 7th Bomb Wing Safety Office and Maintenance and Mission Support groups.

For consecutive nights while birds were settling, Tech. Sgt. Hugo G. Bernal Jr., Staff Sgt. Juan S. Martinez, Staff Sgt. Tyren B. Ball (of pest management) and I conducted fogging and shooting at five aircraft facilities afflicted with pigeons, house finches and barn owls. As expected, the birds were repelled from inside the buildings during harassment. Repeated applications and harassment discouraged the birds from returning. Since the start of MA application, there have been minimal reports of birds settling inside and around the buildings. Team Dyess

Tech. Sgt. Hugo G. Bernal prepares the Golden Eagle Electric Start XL for fogging before entering the hangar. He is suited in full-body protection in order to comply with safe integrated pest management plan practices. (Photo by Stephanie G. Martinez, Texas A&M Natural Resources Institute)

engineers concluded that MA fogging coupled with shooting resulted in the desired learning effects and discouraged further settling or nesting of birds in the aircraft maintenance area.

As a robust mitigation plan, pest management and the wing safety office encouraged the 7th Aircraft Maintenance Squadron to keep facilities pigeon-free by shooting any pigeon that may enter to settle or nest. The 7th Maintenance Group is authorized to perform these control duties with an approved bird depredation Memorandum for Record routed through security forces, wing safety and the civil engineer squadron. As part of the overall plan, the 7th CES developed and provided training in-line with procedures spelled out in the local integrated pest management plan, or IPMP. In addition, pest management will continue to proactively monitor and apply multiple IPMP tactics, such as trapping, to keep the overall pigeon population under control.

The bird suppression tactics are proving to be effective and slowly dwindling the overall pigeon population. Fogged hangars still remain, for the most part, bird-free four months after the initial application and fewer pigeons settle on roofs where traps have been deployed. MA application caused minimal mission interruption, and its strong grape odor diminished in a matter of days. In providing excellent mission support across the installation, this approach combined teamwork and efforts among squadrons to continue keeping hangars and other aircraft facilities bird free.

For any questions or concerns regarding the application of MA, and the processes of MA base approval, please contact Bernal or the AFCEC Reach-Back Center at AFCEC.RBC@us.af.mil.

A 366th Fighter Wing Airman undergoes mask confidence training during chemical, biological, radiological, nuclear defense, or CBRN, and explosives training Dec. 20, 2017, at Mountain Home Air Force Base, Idaho. (U.S. Air Force photo by Janae Capuno)

SMALL FLIGHT BIG IMPACT

Emergency management team leads readiness exercise charge

By Master Sgt. Karen Bennett
366th Civil Engineer Squadron

MOUNTAIN HOME AIR FORCE BASE, Idaho — The sound of the giant voice wailed across the high desert. The 366th Fighter Wing came to a halt as Airmen responded to the exercise message. Within minutes, Mountain Home AFB Gunfighters took cover and donned protective masks and gloves, ensuring all were in the highest level of protection for a simulated chemical attack. In the face of emerging chemical, biological, radiological and nuclear threats, the emergency management team led the charge to ensure Airmen were equipped to survive and operate in a contested environment.

Gunfighters reacted to various attack scenarios that tested their ability to respond to simulated threats during Exercise Gunslinger 18-4, Feb. 5-9.

The five-day exercise was a culmination of several months of planning and training, challenging the Gunfighter community to increase readiness in order to perform as a well-oiled machine, much like operational readiness inspections years ago.

Exercises don't just happen. A well-developed team of exercise planners, wing inspection team members and trusted agents have been testing the installation's readiness capabilities for the past year. This included weeklong, unit-level contingency task training events, which gave squadron commanders the flexibility to focus on specific areas.

In line with the Air Combat Command commander's vision to revitalize squadron readiness, Gunfighters accepted the challenge by testing readiness training initiatives and survival operations. Airmen were tasked to complete chemical, biological, radiological, nuclear defense survival skills, self-aid and buddy care, M-4 and M-9 weapons qualification, explosive ordnance reconnaissance and law of armed conflict, prepping the Gunfighter team both physically and mentally.

Just like a munition needs guidance to hone in on a target, Airmen need direction from leadership to propel their efforts and resources to accomplish the mission. This is precisely why the next step was a focus on senior leaders. A combined team of subject matter experts from the Air Force Installation and Mission Support Center and the Air Force Civil Engineer Center came to Mountain Home to deliver the most up-to-date information on CBRN operations, crisis response and base defense. Simultaneously, emergency management Airmen provided training on various exercise components as well.

"Everyone saw what happens during an attack," said Tech. Sgt. Troy Zimmerman, emergency management team lead. "We prioritized resources, gained valuable experience and we are all better prepared to execute should the need arise."

While challenges occurred, the base generated sorties at an optimal rate and Airmen were able to survive and operate in the high-stress environment, in fact many even responded by saying, "thank you, may I have some more!" But that really wasn't a surprise being a Gunfighter, a wing with a long heritage of ingenuity and overcoming obstacles to ensure mission success. Ride hard, shoot straight and always speak the truth.

Bennett is the superintendent of the readiness and emergency management flight.

***TOP:** Tech. Sgt. Brian Medley, 366th Equipment Maintenance Squadron metals technology section chief, places a plastic cover over a vehicle during the CBRN and explosives training.*
***MIDDLE:** Tech. Sgt. Troy Zimmerman of the 366th CES assists Tech. Sgt. Jason Parvon, fabrication flight chief of the 366th Equipment Maintenance Squadron, during the exercise.*
***BOTTOM:** Staff Sgt. Michael Williams, a weapons load crew chief with the 366th Aircraft Maintenance Squadron, performs a buddy check on Staff Sgt. Anthony Slone, an armament technician with the 336th Equipment Maintenance Squadron.*
(U.S. Air Force photos by Janae Capuno)

What Air Force inspections mean to you

Assessments improve the unit, help assure the mission

By Jeffrey Seeloff
Inspector General Team

What does the Air Force Inspection System have to do with you? Everything! Under AFIS, every Airman (officer, enlisted, civilian and contractor) is a sensor. You are the one accomplishing the mission, day in/day out. If you see or know of something that isn't right, report it to your supervisor or chain of command. If you suspect fraud, waste or abuse, report it to your local Inspector General. Leadership can't fix problems they don't know about.

Air Force Instruction 90-201, The Air Force Inspection System, Chapter 4, covers the Unit Effectiveness Inspection, UEI, and Chapter 5 covers the Commander's Inspection Program, CCIP. Bottom line — commanders are responsible for managing their inspection program. AFI 1-2, Commander's Responsibilities, says a commander's duty and responsibility is to manage resources, lead people, improve the unit and execute the mission. This is where the four major graded areas, or MGAs, of AFIS come from. When the IG team visits your base, they are evaluating these four areas and looking hard at the unit's CCIP.

There are 57 civil engineer (32-series) AFIs. The Management Internal Control Toolkit has 48 Self-Assessment Communicators, or SACs, containing 411 questions pertaining to civil engineers. There are also a few 10-series AFIs and the Environmental, Safety and Occupational Health Compliance Assessment and Management Program, or ESOHCAMP, Stage 1 – All Shops SACs that apply to civil engineers. Not all toolkit SACs or questions may apply to your unit. Your unit commander and self-assessment program manager (with input from shop supervisors, branch chiefs and local IG) will decide which SACs apply to your organization and how often they will be assessed. However, SACs are only a sampling of questions and are not all inclusive.

Several other directive documents apply to civil engineers. Engineering technical letters, unified facilities criteria, National Fire Protection Association codes and state and federal laws are documents the IG may reference as they conduct an inspection. Any "must, shall or will" statement that applies to your organization is subject to inspection.

The IG does not show up with the intention of writing up deficiencies. They want to understand how you manage your programs and whether they are effective, efficient and in compliance with governing directives. They must provide commanders an unbiased assessment of the four MGAs and the effectiveness of their CCIP.

How can you help? Know and understand the directives that govern your job. Read each AFI and other documents that apply to your section and highlight every "must, shall or will" referenced under the base civil engineer's responsibility. If you are not in compliance, say so, then start working on a plan to get into compliance or seek a waiver from the proper authority. Answer applicable SAC questions honestly. Explain how you comply and attach supporting documentation (artifacts) that supports your response. Your artifacts should be relevant and timely. Weak responses to questions and outdated artifacts will usually guarantee a visit by the IG during an on-site Continual Evaluation or UEI capstone event.

Commanders should appoint their best people to their IG's Wing Inspection Team. These are the individuals who will help your IG build realistic exercise scenarios. They should have the technical expertise needed to identify areas that may need improvement when performing inspections of your organization. Again, you can't fix problem areas if you don't know they exist.

It may be a cliché, but as the IG saying goes, "We're here to help." Helping you understand AFIS and how you can support your commander's inspection program is a start. The rest is up to you!

Seeloff is assigned to the Air Force Materiel Command Inspector General team's Managing Resources Branch, at Wright-Patterson Air Force Base, Ohio. He is a retired chief master sergeant with 30 years of military and more than 13 years of civil service experience within the civil engineer career field.

Staff Sgt. Manoj Williams, 375th Civil Engineer Squadron electrical systems craftsman, greases framework knife blades and tightens loose conductor connections in April 2016, at Scott Air Force Base, Illinois. The base required a scheduled power outage to repair critical high-voltage electrical components. A recent grid security exercise tested North America's preparedness plans.
(U.S. Air Force photo by Airman Daniel Garcia)

National grid exercise tests cyber, physical security

By Douglas Tucker
Office of the Deputy Assistant Secretary (Environment, Safety and Infrastructure)

WASHINGTON, D.C. — In December 2017, 32 Air Force installations and representatives from Headquarters Air Force took part in the two-day national Grid Security Exercise IV, or GridEx IV, to simulate a coordinated response to cyber and physical security threats to North America's electricity grid and other critical infrastructure.

GridEx IV, the largest exercise of its kind, brought together more than 6,500 participants from 450 government agencies and private industry from the United States, Canada and Mexico. During the exercise, participants from the Department of Defense, civilian federal agencies, state and local entities, banking and telecommunication sectors and utilities simulated how they would respond to, recover from and facilitate the restoration of damaged grid infrastructure.

"The Air Force recognizes the resiliency of the energy grid, but also understands both nature and adversaries could separate our missions from the electrons they need," said Mark Correll, deputy assistant secretary of the Air Force for Environment, Safety and Infrastructure. "Participating in exercises like GridEx IV allows us to test our preparedness plans and ensure the Air Force has resilient energy capabilities to assure our critical defense missions continue during a real-life crisis."

One of the main objectives of the exercise was to identify communication friction points and look for possible solutions.

Staff from Joint Base Langley-Eustis, Virginia, were among the Air Force participants in the exercise.

"Our participation in GridEx provided a great forum to work with our key mission partners and utility service provider," said Dan Porter, 633rd Civil Engineer Squadron base energy manager. "It helped to improve our lines of communication, increased our collaborative efforts and elevated the importance of JBLE's energy assurance plans."

"We are stronger when we put our capabilities together," Correll said. "Sharing information and coordinating resources among public and private efforts will increase the readiness of our installations now and will improve their resiliency in the future."

The North American Electric Reliability Corp., a not-for-profit international regulatory authority whose mission is to assure the reliability and security of the bulk power system in North America and the sponsoring organization for GridEx IV, is working on a public report of recommendations and lessons learned.

For more information on how the Air Force is improving resiliency, visit the assistant secretary of the Air Force for Installations, Environment and Energy's website at: http://www.safie.hq.af.mil/Programs/Energy.
Tucker is the senior operational and facilities energy engineer in the office of the deputy assistant secretary of the Air Force for Environment, Safety and Infrastructure.

Airman 1st Class Paul Seamen, right, of the 773rd Civil Engineer Squadron Emergency Management team evaluates mission-oriented protective posture level 4 gear worn by Senior Airman Stephanie Sochin at Joint Base Elmendorf-Richardson, Alaska. Prime Base Engineer Emergency Force managers are key players in developing and implementing a squadron readiness strategy.
(U.S. Air Force photo by Airman 1st Class Crystal A. Jenkins)

Teamwork is key to maintaining preparedness

By Maj. Brian Wernle
Prime BEEF Program Management Team

Full-spectrum readiness — posturing and presenting a credible, prepared and trained force capable of competing, deterring and winning against near-peer nation states — has returned to the forefront. Our National Defense Strategy reset our priorities toward inter-state strategic competition, rather than terrorism, as our primary concern in U.S. national security.

We must ensure Airmen engineers are ready not only for the predictable, rotational deployments we've become accustomed to over the past decade, but also for major power conflict. What can our civil engineering commanders do to prepare their Airmen to meet this shift in effort?

While we are all faced with multiple, competing priorities and resource challenges, commanders have choices within their control to increase squadron readiness. First, commanders must realize that combat readiness is our No. 1 priority, and must leverage the capabilities and expertise within the entire squadron. Developing and implementing a squadron readiness strategy to increase and sustain readiness is step one. A key player in that effort is the squadron's unit Prime Base Engineer Emergency Force, or Prime BEEF, manager. The Prime BEEF manager acts as the commander's focal point for implementing a squadron's readiness strategy, as outlined in AFI 10-210: "The Prime BEEF manager will ensure all Prime BEEF team members are organized, trained, and equipped to perform their contingency roles and all equipment is on-hand and ready to deploy."

The Prime BEEF manager's objectives include:

- Develop and coordinate a training schedule
- Establish a team of subject matter experts to ensure a "ready state" with contingency materials and equipment
- Advocate for contingency and home station training, or HST, as a top priority in the squadron
- Document Prime BEEF training using the Air Force Information System

Prime BEEF capabilities are optimally developed through a combination of in-garrison experiences, the HST Program, Silver Flag training and Mission Essential Equipment Training, or MEET, for proficiency. The combination of hands-on experiences with garrison facilities and infrastructure systems and expeditionary equipment, plus classroom training provides the range of competencies required to meet the challenges our Airmen engineers will face across the full spectrum of conflict. Prime BEEF managers need to ensure that personnel remain current in all facets of training, to include filling their allocated Silver Flag and MEET slots, in order to maximize combat readiness. There may be times when slots for desired Air Force Specialty Codes are not available, but proactive managers can advocate and receive unclaimed slots 60 days before a class start date.

Air Force Col. Michael Staples, commander of the 673rd Civil Engineer Group, speaks to Airmen during a monthly Prime BEEF training day Feb. 8, 2018, at JB Elmendorf-Richardson. Prime BEEF training days ensure service members are adequately trained and prepared to maintain a readiness posture.
(U.S. Air Force photo by Airman 1st Class Crystal A. Jenkins)

The majority of readiness requirements will be executed through the unit's HST program. Each base faces a unique problem set in trying to implement a successful and relevant program with varying factors such as training sites, home station ops tempo, weather and available training equipment, which all add to the complexity of meeting objectives. The Prime BEEF manager's major impact will be felt in outlining the squadron's requirements based on its tempo bands and building an annual training plan to execute these requirements. Recurring (ideally, monthly) Prime BEEF training days should provide both relevant and hands-on training. We continue to look for innovative solutions to accomplish this training effectively.

One innovation that has proven successful in the past is the establishment of a squadron "A-Staff," which fully leverages leadership at all levels to manage all facets of the squadron's readiness program, rather than rely on just the Prime BEEF manager. One model utilizes company-grade officers and senior noncommissioned officers to lead the different A-Staff structure: an A1 for personnel and medical readiness and UTC assignments; an A2/6 to oversee pre-deployment intelligence materials and communications equipment; an A3 to run the monthly training days and week-long field training exercises; an A4 to manage logistics support; and an A5/8 to develop an annual training plan and required resources to fund training activities. Using the A-Staff structure spreads responsibilities for the Prime BEEF program across the entire squadron and provides leadership development opportunities for more Airmen engineers, rather than heaping all those responsibilities on a single person (the Prime BEEF manager).

Although the Prime BEEF manager is a commander's lead for readiness, they cannot be successful without a supporting team. The most vital team member is the commander. The commander's emphasis and enforcement of Prime BEEF training will directly affect success or failure of the unit's strategy. Without that backing and energy, the unit will not take readiness seriously. And using an organizational structure for readiness activities like the A-Staff leverages expertise from across the squadron while simultaneously creating leadership opportunities for our Airmen. Working together, we can increase readiness, enhance lethality and enable combat power in air, space and cyberspace for our joint team and international partners.

Wernle is the chief of the Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers expeditionary programs. The National Defense Strategy summary document is available at https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

READY TO GO

By Randy Jones
Air Force Civil Engineer Center

Joint Enterprise Fielding and Surveillance Air Force Mask Inspection and Repair Program technician, Mack Hall, right, conducts a final inspection and gives a briefing on a portion of the process in which a daily goal of 400 M50 masks are processed at the southwest Georgia facility. That translates to an average goal of 8,000 masks per month. Receiving his briefing are, from left, JEFS AFMIRP lead James Aultman, director of the JEFS Directorate Robert Wilson, AFCEC Emergency Management Division Chief Mike Connors, AFCEC Emergency Management Organize, Train and Equipment Manager Chief Master Sgt. Steven Daggett, and JEFS AFMIRP technicians Chase Price and Paul Davis. (U.S. Air Force photos by Brian Goddin)

The Air Force Emergency Management division of the Air Force Civil Engineer Center's Readiness Directorate at Tyndall Air Force Base, Florida, teamed with Air Force Materiel Command and the Joint Enterprise Fielding and Surveillance, or JEFS, directorate to develop processes to restore the Air Force's stock of M50 Joint Service General Purpose Masks to factory-like condition. This effort led to the creation of the Air Force Mask Inspection and Repair Program, or AFMIRP, located in a 50,000 square-foot warehouse in the JEFS facility in Albany, Georgia.

AFMIRP has a robust program within the Air Force that inspects serviceability, extends the service life of Air Force equipment and saves millions of dollars every year. Men and women work every day in a warehouse to ensure our Airmen's gear is serviceable and ready to go. Especially in today's environment, that's important.

AFMIRP technicians set up a factorylike inspection and repair process where masks are shipped from Air Force units, inspected, cleaned, sanitized and tested. Replacement masks are sent to units before they are required to ship assets for repair to ensure the unit has 100 percent of its authorized assets at all times. The masks go through nine different stations, with all maintenance and repair actions scanned and collected. The process allows an in-depth trend analysis on the condition of assets throughout the individual mask life cycle. Nearly 60,000 M50 masks have been processed since mid-spring 2017. Of those, about 97 percent needed some type of physical repair beyond just cleaning and sanitation. Occasionally, a mask that has been evaluated is beyond repair and is condemned and destroyed. The goal by summer 2018 is to process 8,000 masks per month.

With a new M50 costing the Air Force as much as $390 each, being able to salvage so many and restore them to a "like-new" condition at a fraction of the cost is a huge cost savings. The number of masks refurbished since the program started in April 2017 would have cost around $23 million if purchased brand new.

Video

See video journalist Brian Goddin's report at https://www.dvidshub.net/video/548197/air-force-mask-repair-facility-saves-millions

The professionalism of the JEFS employees is displayed daily as they inspect, clean and prepare the M50 masks for our Airmen. Because of these dedicated workers at the JEFS facility, when Airmen put on an M50 mask, they can be sure it is operational and ready for use.

Jones is the AFCEC Emergency Management Sustainment Section lead. Rodney Whaley, Emergency Management Shelf Life Program manager, contributed to this report.

RESTORING READINESS

The Air Force relies on its installations — both enduring and expeditionary — to be the foundational platforms enabling its core missions.

Air Force civil engineers are critical components in ensuring installations can perform as the power projection platforms essential to combat readiness and execution of combat operations.