

Intensive ATC Training

THE USE OF AIR FORCE TOWER SIMULATOR SYSTEMS ALLOWS FOR ANY CONCEIVABLE SCENARIO TO BE TRAINED ON.

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MT2 CORRESPONDENT

Air traffic control (ATC) is a critical link in the primary Air Force mission as it enables the process of aviation to occur with a significant level of confidence for safety. "By providing the most highly skilled controllers, we enable all facets of the Air Force mission to be accomplished," said Lieutenant Colonel Jeffrey S. McClemore, commander, 334th Training Squadron, Keesler Air Force Base. "Whether supporting training missions in the CONUS environment, mobility missions globally, humanitarian support and disaster relief, or deploying into the tactical/combat environment, a safe ATC environment and confidence in our controllers is that key element that allows our aircrew to keep focused."

The Air Force has an intensive training program that consists of 72 academic days of tech training instruction. During this time, young airmen will undergo a strenuous amount of knowledge-based instruction to teach them the basic concepts and regulations for controlling aircraft safely. "They are taught the airspace structures, aircraft characteristics,

phraseology for communicating via radio and the safety criteria required by FAA, USAF and some International Civil Aviation Organization partners," said McClemore. "Using a stair step approach to learning, the students then take the information they have learned and implement it through practical application in radar and tower laboratory environments. These labs are top-of-the-line technology and use voice recognition and some next-generation air traffic capabilities."

Upon graduation from the Keesler AFB tech training environment, airmen proceed to their first assignment, where they once again are entered into extensive training. At this time, McClemore said, the air traffic controllers will learn local airspace criteria, radio frequency usage, local aircraft criteria and missions while being trained and monitored by a qualified air traffic controller. "This happens each time an ATC member PCS's [permanent change of station] to a new location or gets deployed. Basically, the ATC community is a never-ending training cycle from one location to the next," he said.

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TECHNICALLY PROFICIENT CONTROLLERS

For a long time, the military focused on producing controllers that met the standard of the Federal Aviation Administration. "Our controllers were, and still are, some of the most technically proficient controllers in the world. However, in the past 10 years, it has become evident that technology is available that could help reduce the training times incurred by controllers in the schoolhouse as well as in the operational unit," said McClemore. "The use of our tower simulator systems (TSSs) allows for every imaginable scenario to be trained on. The equipment is only limited by the experience level of the individuals creating the training programs."

The radar labs the Air Force utilizes have been able to address the lack of equipment familiarity that airmen were faced with in the past. "Although we only teach tasks and skills here at Keesler, the familiarity with the equipment allows airmen to focus on local requirements immediately upon arrival at that first assignment," said McClemore. "There are many vendors actively creating learning management systems that would most likely increase the probability of success while reducing the attrition rate of those who are unable to grasp the ATC concept as fast as we need them to."

The young men and women being accepted into the USAF air traffic control training program today are some of the most intelligent and technologically savvy individuals the Air Force has seen. "They grew up in the computer generation and adapt to tech changes easily. As our airspace system undergoes changes and new technology is added to our inventory, I am confident that the USAF air traffic control community will continue to provide the civil and military communities with that level of safety the pilots need to perform their missions," McClemore concluded.

ATC is so important in military life because there is no other career field in the military that trains and empowers an 18 year old to provide control instructions to high performance airplanes, traveling at high speed and carrying live ordnance over populated

areas. "Mission accomplishment, whether in peacetime or wartime, is dependent on the ability of the aircraft to traverse safely from one point to another, particularly in congested airspace around domestic areas, airports and mission corridors," said Tom Evers, director, marketing and communications for Adacel. "Air traffic controllers help provide that assurance."

Becoming an air traffic controller in the military starts well before a person enters boot camp. Individuals are required to obtain high scores on the Armed Services Vocational Aptitude Battery test in order to be considered for the air traffic control career field. "Each DoD branch operates their own ATC training academy, but with similar curriculum. The intense training averages 16 weeks in duration and washout rates tend to be high," said Evers. "Graduates then face even longer training programs lasting months at their first duty location and at each subsequent unit they transfer to. Qualification and refresher training is needed to maintain operational status for each control position that they are required to man."

Field training consists of a blend of classroom, self-learning, computer-based simulation, and live supervised OJT. "The tempo is fast and trainees are expected to study as much outside the training environment as they do inside the facility. Candidates are evaluated by master trainers on their performance and ability to handle stress, to work in a team environment and to make fast-paced decisions," said Evers. "It is not a field for the faint of heart."

Similar to the civil sector, the key challenge facing the military is maintaining sufficient qualified people to achieve the mission. The added wrinkle is that the military and military personnel move around a lot more, which necessitates more training to maintain operational status. The key is moving people through the training system efficiently to improve success rates and reduce training times while maintaining necessarily high qualification standards. Evers said that is where simulation shines.



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ADACEL ATC SIMULATORS

Adacel ATC simulators in use by the DoD, as well as by other militaries including Canada and Australia, have dramatically changed the training landscape both at the academies and field units. "Live air traffic, weather, unusual situations and other conditions that prospective controllers must learn to deal with generally do not cooperate with an effective, progressive learning experience," said Evers. "Too much, too soon and too little, too late greatly extends costly training periods and discourages trainees."

Employing tools that match simulation fidelity to the phase of training and allow individual, self-paced learning at appropriate stages have been successful in building student confidence and in establishing a strong foundation of knowledge and skill. Operational training periods have been reduced by as much as 40 percent and success rates have improved with graduates exhibiting experience levels beyond their years.

"For example, as the only officially accredited ATC simulation system, U.S. Army standards now permit training time on Adacel simulation systems to replace up to 50 percent of a controller's live operational training requirements," Evers concluded. "This helps units expedite and maintain controller unit qualification and proficiency."

VT MÄK'S VR-VANTAGE TOOLKIT

Air traffic management (ATM) is critical to the military to enable the 'Flight to the Fight.' "The vast majority of military flights include legs through civilian airspace, in the U.S., Europe and elsewhere, requiring close coordination between pilots and civil air traffic controllers. The U.S. airspace is controlled by the FAA with some of the airspace, particularly around military airbases, being assigned to the military to control," said Peter Swan, business development executive at VT MÄK. "The U.S. military must therefore be equipped and trained to participate in



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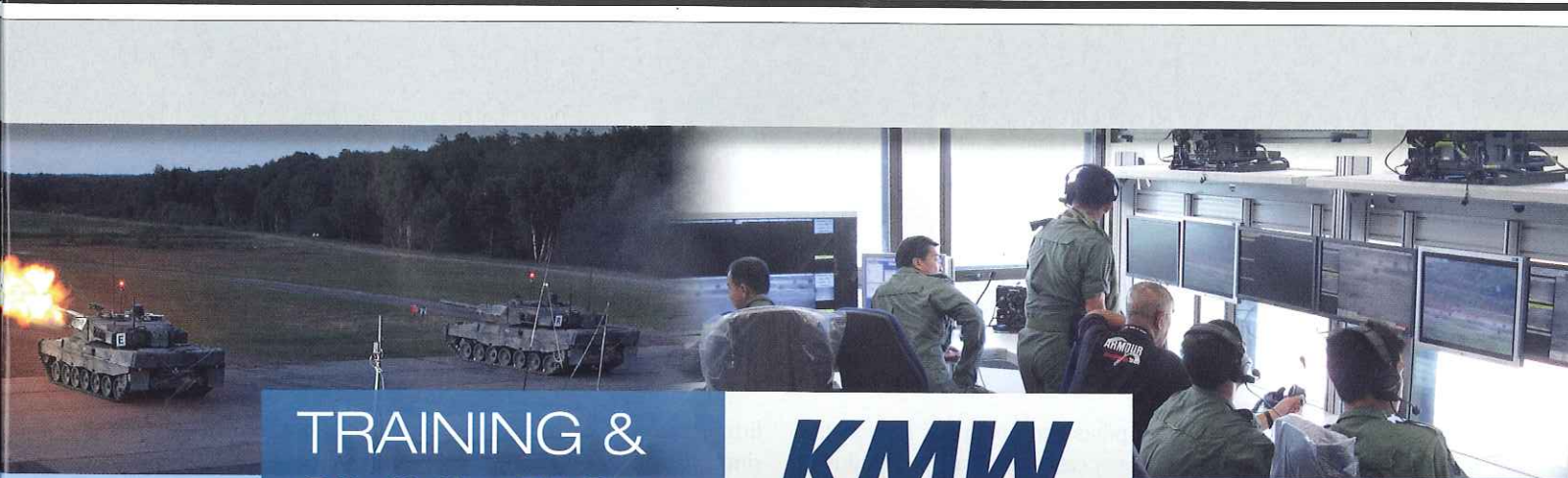
the next-gen ATM systems being developed in the U.S. and Europe. This requires not only upgrading ATC systems to be compatible, but also aircraft avionics and the associated ATC trainers and flight simulators."

In addition, Swan said the U.S. military is making greater use of unmanned aircraft systems (UAS) that must also fly through the commercial airspace and mix with civilian air traffic. The FAA's intent is to treat these UASs exactly like any other air traffic. "This will take several years to achieve and requires significant ongoing research and development, as well as collaborative efforts between the FAA, U.S. military, NASA and prime contractors," he said. "What is required is a collaborative, distributed modeling and simulation environment ideal for simulating and visualizing the next-generation ATM systems and airspace. VT MÄK's suite of products is ideal for this."

The FAA's William J. Hughes Technical Center has selected MÄK's VR-TheWorld terrain server to provide streaming terrain to its flight simulators for various experiments. It is also using VR-Vantage for human-machine interface studies and has standardized on MÄK's high level architecture implementation, the MÄK run time infrastructure.

MÄK's VR-Vantage Toolkit can be easily used to create custom applications to visualize the experiments from the cockpit and the airport tower, including a global view. "MÄK's VR-Forces simulation toolkit has been used for many military UAS applications and could be readily integrated into this environment. MÄK's VR-Exchange universal translator can be used to readily integrate operational systems and simulations using different protocols [such as DIS] into the distributed collaborative environment," Swan concluded. ★

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