



Operators help define the next tanker.

The KC-46 Enlisted Team

By Marc V. Schanz, Senior Editor



A KC-46 fuels F-22s in this artist's illustration.

The KC-46 Pegasus is an Air Force top modernization priority and receives a high degree of funding and attention from senior service and Pentagon leaders. A small team of experienced enlisted airmen—working from the program office at Wright-Patterson AFB, Ohio, since the early days of the program—is also helping keep the tanker on track. They serve as one-of-a-kind subject matter experts and program advisors as the project advances into the flight testing phase.

Much hinges on the KC-46, formerly known as the KC-X. Without tankers, USAF's ability to project power with its fighters, bombers, transports, and intelligence aircraft would be severely degraded. The bulk of the tanker fleet comprises KC-135s that, though updated and re-engined over their 55 years, have long outlived their predicted life expectancy and must be replaced with Pegasus tankers as swiftly as possible. Thus, the Air Force has done everything it can to ensure the success of the KC-46. One of those precautionary measures was to add the enlisted maintainer's perspective to the acquisition process.

The KC-46 team's eight enlisted advisors—in a program office of some 190 personnel—explained their unique role influencing KC-46 development in a series of November interviews.

MSGt. Luis Rodriguez-Asad, the superintendent of KC-46 test operations on the team, came from JB McGuire-Dix-Lakehurst, N.J., where he worked in boom operations on KC-10s.

"It's a different angle from working in the boom," said Rodriguez, who also worked in F-16 avionics earlier in his career. He explained that his day-to-day effort now involves working with development engineers in the KC-46, going over issues like "center of gravity" operational limits relating to the boom—where, when, and how it can be safely operated—as well as matters relating to cargo and fueling.

They talk a lot about "how we use a tanker in an operational environment, just to see if we got it right, ... to meet the needs of the guys in the field," he said.

Bringing in experienced enlisted airmen and putting them alongside acquisition officials, contractors, and program managers provides a more holistic perspective on numerous aspects of the tanker effort, from avionics to environmental systems to boom operations. The enlisted airmen have also played an important role in the choice

and development of aircrew training systems for the tanker, Air Force Materiel Command officials said. They will assist in the design and development of training systems to ensure missteps and problems are caught early on. The extra eyes and experience will help a smooth transition as USAF steadily replaces its tanker fleet with future tankers, under the notional, future KC-Y and KC-Z programs.

The team has "a good mixture of everything," said SMSgt. Steve Hesterman, AFMC Tanker Directorate superintendent. The directorate oversees the command's entire workforce involved in the management and care of the legacy tanker fleet—the KC-135 and KC-10 (at Tinker AFB, Okla.)—as well as the KC-46 division at Wright-Patterson.

Hesterman is a veteran crew chief who has worked with C-130s, C-17s, C-5s, and even gunships. He was deployed as the superintendent of the aircraft maintenance unit, 379th Air Expeditionary Wing, at Al Udeid AB, Qatar, when he got the word he would then go to Air Force Materiel Command at Wright-Patt to supervise the KC-46 enlisted team program.

"You take all of us together, and we cover a large portion of knowledge in the Air Force for heavies, and we take that influence and experience and put it into the product," he said.

The knowledge of these enlisted airmen—with skill sets and background ranging from fuels to boom operations to environmental systems and life support—is tapped daily to influence the development of both the Pegasus aircraft and its subcomponents from design through testing, production, and sustainment practices.

Putting a team of enlisted advisors and subject matter experts inside a program office is not unprecedented in USAF's acquisition community. The "Big Safari" rapid acquisition office and the MQ-1 Predator and MQ-9 Reaper programs each have small elements of senior enlisted personnel involved in daily operations.

The origins of the KC-46 enlisted team can be traced back to April 2007, Hesterman said. The first two members were a boom operator and a loadmaster. From there the team grew steadily as the program progressed, adding members and aiding in delicate "source selection" acquisition work leading up to Boeing's contract award in February 2011.



When then-Brig. Gen. Christopher C. Bogdan assumed leadership of the KC-X program in 2009, he oversaw and encouraged the growth of an enlisted cadre inside the program office to serve as dedicated subject matter experts on a range of topics. Bogdan wanted the program office to get “a sense of the [view of the] maintainer who was going to handle this aircraft,” Hesterman said.

The office sought out experienced enlisted airmen with backgrounds in hydraulics, electronics, electro-environmental systems, fuel systems, avionics, boom operations, and load-master duties.

Today, six airmen with maintenance expertise and two with other aviation

specialties work side by side with AFMC procurement officials, contractors, and engineers on development and potential sustainment problems as they emerge.

BOTTOM LINE SCRUTINY

Those challenges have evolved as the program has progressed from initial concept to flight testing. MSgt. Brian Cantrell, the team’s superintendent of KC-46 development matters, arrived at Wright-Patt in the summer of 2011. With a background in flight systems on both C-130s and B-1Bs, Cantrell helped guide the development of the avionics specifications with an eye toward how maintainers would interact with them.

“Boeing knows how to build an aircraft,” Cantrell explained. “But we want to help better equip our maintainers to work with this new multirole tanker,” to have input from an operational view to help others understand what would or would not work, “to better understand the program, and pass that on to our customer.”

With so much scrutiny on the bottom line of the program—Boeing is widely viewed as having submitted a “lowball” fixed-price bid—the view of experienced aircraft maintainers in the program office has helped keep the effort on track.

“I just came back from [meeting with Boeing officials in] Seattle,” Cantrell



Photo by Sagar Pathak



Boeing photo

Tanker Time Line

The first 767-2C—called a “provisioned freighter” because it has all the plumbing, decks, and connections needed to eventually make it into an all-up tanker—flew on Dec. 28, 2014. Another 2C and two all-up KC-46s, fully equipped with refueling booms and related equipment, will join the test force as well.

Last year, Boeing recognized it had a problem with the KC-46 in that it had run some redundant wiring in bundles with the main wires. Rearranging those wires so they would be physically separated, and restringing them in test and production aircraft, added a delay to the program, the scope of which was still under discussion in late December.

US Transportation Command chief Gen. Paul J. Selva told reporters in early December he remained optimistic that the KC-46 program will meet its goal of delivering the first 18 airplanes by 2017. However, he conceded that the initial schedule was “aggressive” and that a slip is possible.

The Air Force expects to achieve a maximum production rate on the KC-46 of 15 airplanes a year, finishing out the KC-X program of 179 airframes by 2027.

At some point before that, Air Mobility Command will decide how it wants to proceed with KC-Y—replacing the remainder of USAF’s KC-135 fleet—and KC-Z, replacing the KC-10.

At left: Enlisted airmen have been brought onto the KC-46 program office team at Wright-Patterson AFB, Ohio. Here, a crew chief marshals a KC-135 at Transit Center Manas, Kyrgyzstan, in 2014. Even after the KC-X program wraps up in 2027, most KC-135s will still require replacement under future KC-Y and KC-Z programs. Below left: A bird’s eye view of Paine Field, Wash., shows the size of the 767-2C destined to become a refueler (center), compared to a 777 (at top) and a 787 (foreground). Below right: The engineering and manufacturing development KC-46 takes off for its first flight, Dec. 28, 2014, from Paine Field.

said in a November interview. There, he and SMSgt. Derek Monroe, the KC-46 sustainment superintendent, went over development issues regarding environmental safety and occupational health parameters on the aircraft, looking to head off potential hazards. Topics included fire extinguishing systems, working in confined spaces, and performing centerline drogue operations around certain instruments. With flight-test operations soon to be underway, many of these issues got close scrutiny from the team.

“If a certain cable becomes [detached], what happens with maintainers” to fix it? Cantrell asked. His view is, “we’ve been around [these systems so]

we know these things happen, and want to make sure these things work well.”

From the program’s inception, the team engaged in verifying key performance parameters (KPPs) at the working group level and are now involved in helping stand up the first KC-46 operating bases in both Air Mobility Command and Air Education and Training Command. With 390 KPPs, the task was formidable. Some involve the ability to refuel both by boom and probe-and-drogue aircraft during the same flight, while others involve global air traffic control standards, fuel load capacity, multiple aircraft fueling capability, and provision to carry cargo and passengers or be configured as an aeromedical evacuation transport, among others.

A critical task for the team is making sure the first tranche of KC-46 maintainers are effectively prepared as flight testing gets underway.

“My role as the Type One training lead is to make sure those initial crews can do their jobs,” said MSgt. Sonya Jones, the superintendent of KC-46 maintenance and training efforts. She’s worked on the enlisted team since August 2012. Jones said training for the maintainer developmental test team wrapped up in November.

“They have to make sure everything is ‘maintenance friendly’ [and that] they can do their job with the tech data and resources available. And if they can’t, they have to provide us input,” she said.

That input to the program office will help to effect changes or even fixes.

The vast experience of the maintainers becomes crucial as the program progresses into flight testing.

“We are in a program that is going to fly this aircraft and test some things that would have been tested in the lab” on the ground, Cantrell said, describing the KC-46’s concurrent testing model that USAF hopes will enable a quicker delivery into the force.

“We’ve partnered with the development engineers to make sure there’s maintainability. Is it easy for me to change” a part out if needed, said Monroe. He’s been on the KC-46 enlisted team at Wright-Patt since July 2010—longer than anyone else. Two milestones during that period were the preliminary and critical design reviews. The next big juncture after flight test will be Milestone C, at which Boeing will be authorized to build KC-46s at a low rate of production.

“Between here and next year is a lot of testing and verification and specification requirements” that will have to happen, he said. “It’s going to be a busy, busy time.”

The stakes are high. The KC-46 program is a fixed-price contract; both USAF and Boeing need to keep costs and schedules as close to projections as possible. As of late November, Boeing’s costs were estimated by the program office to exceed the contract’s ceiling value by more than \$1 billion.



Left: The Pegasus tanker will employ both flying boom and probe-and-drogue refueling methods. Here, two US Navy Super Hornets get in place for a refill. Below left: MSgt. Luis Rodriguez-Asad, superintendent of KC-46 test operations, tries out a KC-46 boom operator demonstration at McConnell AFB, Kan.

Boeing artist's concept

USAF photo by A1C Colby L. Hardin



traffic back and forth. It also demands paying close attention to ensure proper rules and channels are followed, from the government side to the contractor side and up and down leadership chains.

“Not everything can be solved at the working level—and not everything at the senior level, either,” Hesterman said. “It’s a host of professionals discussing what needs to happen” and what the appropriate level of understanding is. In many interactions, the enlisted team members serve as a connection between the contractor, the test community, or others.

“We are here to disseminate information, to give subject options, to find people, and find and ‘up channel’ problems as they arise,” Hesterman said. Just as often as having the right answer at their fingertips, the team serves as a resource to find others who might know better.

“Let’s say for right now, I’m the only boom operator in the program office,” Rodriguez said. “I get a call from Edwards [the testing cadre in California] or Seattle [the contractors] on a boom issue. ... If I don’t know the answer, the best thing to do is call some of the experts.” That may mean a call back to colleagues at McGuire, or a subject matter expert on the staff at AMC headquarters at Scott AFB, Ill., to find answers.

“If I don’t give the right answer, I’m doing more damage than good” because that affects the user. “That comms line is so important,” Rodriguez asserted.

The link at the program office also runs the other way, he pointed out, from the maintainers, aircrew, and operators in the operational force.

“When I first got here, I heard from the booms [that] they weren’t sure what was going on” with the program, Rodriguez said. “I gave them my contact and said, ‘Hey, if you have a question, call me and I will find an answer from the engineer. ... Ninety-nine percent of the time, I got the answer on the same day.”

The Air Force won’t have to bear any overages—Boeing believes it will make up the losses by future international sales and by being well-positioned for KC-Y—but it’s still in USAF’s interest to keep costs as low as possible.

The enlisted team’s work on the front end will pay off in the long run, several team members noted. Their involvement early on will help prevent expensive fixes later, on problems that typically might not be revealed until operations begin.

An access door might be poorly positioned to reach from a hardstand, or a bulkhead might prevent access to an area needing routine inspections. The operator perspective often means that these problems can be avoided before metal is bent and designs become hard to undo. “It’s not something that is easily understood” outside of the acquisition community, Hesterman said, but the experience will allow the airmen to be able to “speak acquisition” with Boeing counterparts and others as they move on to other assignments.

“We can pass down this [experience] down the line to somebody else,” he

said. Since its creation, several senior enlisted airmen have been promoted from the office—and are passing on their lessons learned in senior enlisted billets elsewhere in the Air Force. For example, since its inception, the KC-46 enlisted team has seen four of its members promoted to chief master sergeant, three while serving in the office and one after departing.

A HOST OF PROFESSIONALS

The experience is also a master class in teamwork for an experienced enlisted airman. The number of agencies involved in KC-46 and that have stakes in its outcome are numerous. The Office of the Secretary of Defense, AFMC, Air Force Life Cycle Management Center, AMC, AETC, Government Accountability Office, and Defense Contract Management Agency are among some of the organizations having inputs and needing regular updates about what’s happening inside the program.

“We’ve all got working group-level counterparts, ... within the AFMC, within the Boeing Corporation,” Hesterman said. This requires a lot of message