

# ER

Fall 2016

**The Anatomy of a Toxic Follower**

Maj Michael Boswell

**Thrust...Better with Vector**

2LT Justin Hemken

**KC-135 PDM Structures Gate:**

Peace Through Superior Processes!

Mr. Brandon Copeland

**KC-46 Pegasus to “Meet Intent” of FAA Standards:**

Understanding Continuing Analysis and Surveillance System (CASS) in a Military Environment

Mr. Francis P. Crowley

**Utilizing Scrum with USAF Maintenance Planning**

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# THE EXCEPTIONAL RELEASE

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# President's LOG (ISTICS)



**Dennis P. Dabney**  
President, LOA

Logistics Leaders,

I hope you all had a great summer and are excited for October! Your Logistics Officer Association National Board and Symposium Chairman have been busy gearing up for the 2016 Logistics Symposium in Washington DC, 11-14 October. On a personal note, I retired from the United States Air Force on July 29, 2016 after 26 years. I am very thankful for the professional development, friendships and camaraderie that the LOA family has provided me every step of the way. I fully intend to continue my focus on LOA so that others may benefit as well.

**Leadership.** LOA is expanding our global presence, thanks to the leadership of logisticians around the world. We recently stood up our newest LOA chapter, the Flying Circus Chapter at Al Dhafra Air Base, named for their WWII heritage with the 380th Bombardment Group. We are also celebrating the standup of our 90th chapter, a joint chapter at US Army Garrison Yongsan, South Korea.

**Innovation.** I'd like to take a moment to highlight a chapter for promoting innovation. For the second year, the LOA Flying Tigers Chapter at Moody AFB has hosted a local LOA Symposium and invited regional chapters to attend. This year their symposium is providing speakers to include: the 23rd Wing Commander, leaders in Operations, a Chief's panel, information on career broadening, and logisticians speaking about their experience operating in combat zones. Your innovation has provided local education and professional development for members in the region and provided a stepping stone to the National Symposium.

**Velocity.** LOA is moving outside the box! We are transcending the standard e-mail communication and website material and moving into the world of social media. We distributed a

survey to find out how we can better connect with the most important asset to LOA....YOU! Our social media team will analyze your feedback and launch a full-scale effort to connect and communicate with each and every one of you.

**Excellence.** Your LOA board is on the home stretch for planning and executing this year's Logistics Symposium, October 11-14. The theme that ties it all together is L.I.V.E (Leadership, Innovation, Velocity and Excellence), representing the four pillars of our organization. We will have an entire day of LOA University courses on a variety of topics; we will host top leaders in government and industry as keynote speakers; and present breakout sessions to target topics requested by our membership. We look forward to seeing you in Washington DC or online in our Virtual Symposium. The LOA National Symposium is listed on the USAF approved recurring conference list. The current USAF guidance and conference list is attached [here](#).

Finally, this summer we hosted elections for LOA National's Vice President and Chief Information Officer. Please join me in welcoming Lt Col Sarah Franklin, our new VP and Ms. Tesa Lanoy, our new CIO. They will officially take office at the conclusion of the 2016 Logistics Symposium. We appreciate their dedication to this organization and look forward to their leadership in the upcoming years.

In closing, thanks to the LOA and AOA chapters for leading your organizations; for promoting innovation; for being the velocity that makes LOA thrive; and for excellence in all you do for the Logistics Officer Association.

Looking Forward,

Dennis P. Dabney  
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# LOGISTICS OFFICER ASSOCIATION SYMPOSIUM 2016

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## About the Symposium

This premier event brings together senior logistics leaders, industry, and logistics operators to identify grassroots problems, discuss possible solutions, as well as discuss future opportunities and needs in the logistics field.



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## About LOA

The Logistics Officer Association (LOA) is comprised of nearly 80 active chapters and a membership base of nearly 4,000 military officers and civilians in the logistics field around the world.

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**Lt Gen John B. Cooper, Deputy Chief of Staff for Logistics, Engineering, and Force Protection Headquarters U.S. Air Force, Washington, D.C.**



## Some More Logistics Truths

Greetings Log Nation! Over the past few ERs I've been writing a series of articles about our LOG TRUTHS- what I believe are the most important logistics 'good ideas' Airmen have learned over 70+ years and if our actions followed these ideas, we tended to succeed. In the last "E-Ring" article I shared some thoughts with you about LOGTRUTHS 1 through 3, which focus on enabling activities like communication, methods and training. Today I'll expand on LOGTRUTHS 4 and 5, which are about the prep-work needed to be the best Air Force on the planet. Launching sorties where you want, when you want, is the result of an effective logistics enterprise. But there is more to Air Force logistics than

### LOG TRUTHS

- 1** Rear operations must be connected and respond to forward operations
- 2** You don't have to own it to use it / benefit from it
- 3** A better trained Airman is a more capable Airman
- 4** Accurate requirements = effective logistics
- 5** AF Logistics cannot succeed without Joint Logistics
- 6** All good logistics work is done in process

launching sorties. Wherever we work in the Log Nation we are part of something bigger. We are a vast enterprise of capability linked together to generate mission--from the program offices and ALCs to the military and commercial transportation systems--from DLA and Air Force warehouses, to flightlines at home and deployed. If we're all working together

and understand each other's needs, our system works well. If not, our system fails. Before we can provide effective airpower, we must plan and resource our Air Force and Joint requirements so we can provide the right capability at the right time and the right place.

**LOGTRUTH4: Accurate requirements = effective logistics**

Our Air Force is consistently called upon to support our nation through a range of core capabilities such as strategic airlift, close air support, and ISR overwatch. As logisticians, understanding the requirement at the point of need is crucial to supporting this full spectrum of operations. Let's use the B-52 Stratofortress bomber preparing to conduct a successful strike mission as an example. Prior to maintainers readying the aircraft for launch, intelligence crews are validating specific targets for the mission and operators are building the mission profile that will include number of aircraft, weapons configuration, fuel loads, etc. The goal is to have those requirements correct the first time so that we can manage our Airmen and equipment efficiently to ensure the aircraft is ready for crew show. We've all experienced last minute changes to requirements that result in confusion, extra work, and the potential for a delayed launch. The more accurate the requirement is upfront, the easier it is to ensure we have crew chiefs ready to preflight, AGE technicians in place with the right equipment, POL Airmen ready to refuel, and Weapons loaders prepared to load the right munitions. It is this synchronized effort that ensures the aircraft is inspected, loaded, and ready for flight.

LOGTRUTH4 In Action: Accurate Requirements for B-52 Bomber			
Maintenance inspection	Ready to load	Brake Pad Install	Depot Maintenance
 <p>MSgt Jeremy Michael Hord, the 379th Aircraft Maintenance Squadron aircraft section chief, inspects a B-52 Stratofortress bomber at Al Udeid Air Base, Qatar, May 20, 2016 in support of Operation INHERENT RESOLVE.</p>	 <p>SSgt Stefano Cothran, a 2nd Aircraft Maintenance Squadron weapons load team member, secures a GBU-38 Joint Direct Attack Munition to a B-52H Stratofortress pylon.</p>	 <p>A1C Rafael Padin, left, TSgt Robert Berg, and SrA Cory Sanden, install a brake pad to the #3 wheel of a B-52H Stratofortress on Barksdale Air Force Base, LA.</p>	 <p>John Smith works trunnion repair on B-52s at Tinker Air Force Base, OK. The B-52 routinely comes to Tinker every four years for programmed depot maintenance.</p>

Material Availability is Key to Flying Operations: Now let's look upstream in the logistics process, long before that B-52 sortie was ever planned. At the center of our success in logistics is material availability, meaning that supplies and parts are there when maintenance needs them. Have you ever wondered how that B-52 LRU or tire was on the shelf waiting for you? The answer...careful planning by Units, MAJCOMs and AFMC to build accurate requirements, and then the Air Force Sustainment Center (AFSC) and DLA to deliver the goods. In our B-52's example, two years before that sortie was flown, HQ Global Strike Command tallied up their MAJCOM's most accurate estimate for B-52 training and combat flying hours for the next two years, then worked the Life Cycle Management Center and Sustainment Center who calculated the material needed to provide the parts in each of those years to meet the flying hours desired. This is tough business and the calculations are complex, using flying hours, engine cycles, each item's mean time between failure, and more. Once AFSC has the calculations complete they begin to place the material on order with industry, and hire technicians into the depot workforce if needed. This same process works for every weapons system.

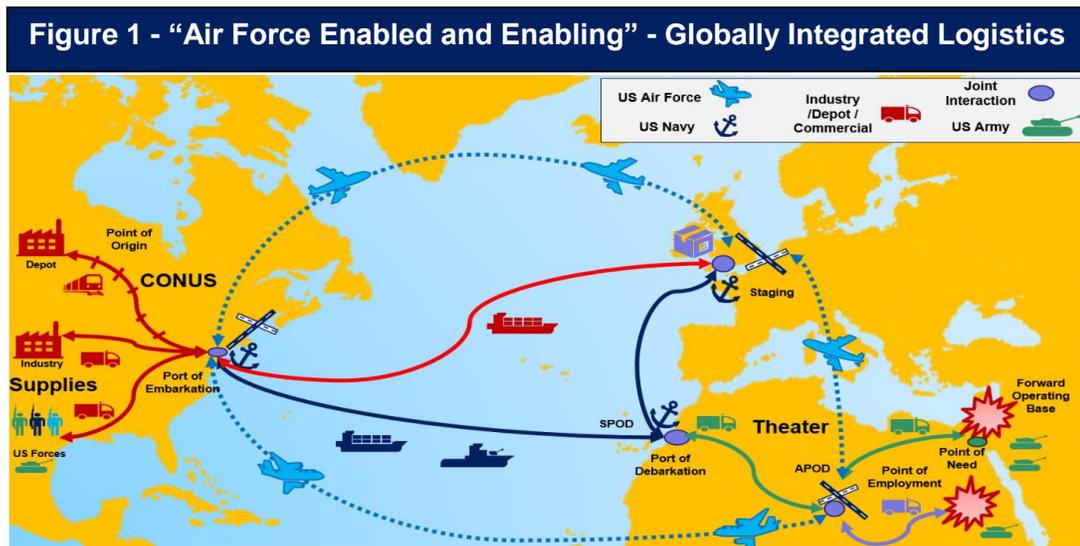
The bottom line--at whatever level in the enterprise you are working--from an AMXS to the Sustainment Center or DLA, and everywhere in between--your inputs into the requirements matter, and must be accurate for two reasons. First, if you want the parts you need for operations, the requirements must be accurate. Second, this is big business--the USAF's 2016 budget included \$19.2B for Weapons Systems Sustainment and Flying Hours. If we're just 2% off in our calculation of the requirement--think about the amount we've wasted in precious Air Force resources!

## **LOGTRUTH5: AF Logistics cannot succeed without Joint Logistics**

Gone are the times when the Air Force can "go it alone" to achieve its mission. The "New Normal" challenges us to approach issues like multiple simultaneous contingencies, fiscal constraints,

and emerging threats by leveraging capabilities each Service and Agency possesses. We've been growing and learning in Joint operations since the 1980s and it's safe now to say we're experts along with our Service and Agency teammates.

Well-known examples of Joint-in-action are the capabilities provided by the DLA, USTRANSCOM and the Services. DLA is the nation's combat logistics support agency; in addition to the large amount of our aircraft parts and supplies they supply, they act as an integrated materiel manager, serving as a central provider of food, uniforms, equipment, fuel and construction material, and more, to all Services and other federal agencies. USTRANSCOM moves the goods (personnel, equipment and materiel) across the globe by air, land and sea. Each Service contributes to the effort. If there are things the Air Force can't move by air, we rely on the Army to handle surface movement and the Navy to handle movement via water. If it weren't for these Joint partners, our ability to provide Global Vigilance – Global Reach – Global Power would not be possible.



Some not-so-well known capabilities continue to grow, and we continue to look for ways to improve support through combined (interagency, nongovernmental agencies, multinational) and industrial teaming. Some very creative examples of leveraging the power of the larger team are already fielded, increasing our operational capabilities in a very efficient manner. Striking agreement with our NATO partners to leverage the Heavy Airlift Wing (HAW) relieves some burden on US strategic airlift by utilizing a



A RAAF KC-30A tanker transport completing inflight refueling trials with a USAF F-16.

small fleet of the consortium-owned C-17s, and then contracting the airlift service. In the F-35 program we're leveraging the capabilities of many nations and industry to provide a large fifth-generation fighter fleet at a reasonable cost. We also continue to push the limits of interoperability with our partners to become more agile. In December 2015, we completed inflight refueling trials where the Royal Australian Air Force (RAAF) KC-30As refueled USAF F-16s. A relationship now exists whereas RAAF can now refuel other USAF boom-capable aircraft during combined operations and exercises. These interoperability opportunities are critical to ensuring our success in future operations.

The next big area we're focusing our efforts is in Operational Contract Support (OCS). OCS leverages services and goods in a COCOM's region by creating relationships with country vendors before a contingency occurs, understanding each nation's capabilities, and keeping the relationship (and the contracts) "warm". We've just started this effort with the Joint team and see a great opportunity to reduce our deployed footprints, be more efficient, and provide even better logistics support.

LOGTRUTHS 4 and 5 are inextricably linked. Our understanding of requirements as a two-way relationship will ensure we provide effective logistics for all of our stakeholders. As we own and directly manage less of "X" and our reliance on our Joint and industry communities increases, we must have clear, defensible and accurate requirements that capture what is needed, where it is needed and

when it is needed, for our units to meet their operational requirements. Effective logistics is getting the right resources to the right place at the right time and our logistics partners help us achieve effectiveness through the capabilities and capacity they bring to the table. The more integrated and synchronized our Air Force can be with our partners, the better we are able to optimize our capabilities to support our Nation.

In the next ER article, I will finish my LOGTRUTHS series with #6 “All good logistics work is done in process.” As always, I would love to hear your stories as they relate to these LOGTRUTHS. I encourage you to discuss them with your local LOA chapters and don’t hesitate to send me your inputs via Twitter [@AFCoopA4](#). Thanks for all you do every day for Air Force Logistics!

**Lt Gen John B. Cooper,**  
**Deputy Chief of Staff for Logistics, Engineering, and Force Protection Headquarters**  
**U.S. Air Force, Washington, D.C.**



**With Mr. Jeffrey Allen, Executive Director, Air Force Sustainment Center, Air Force Materiel Command, Tinker AFB, OK.**



*Success comes in many forms and through many different paths, but over the years I have seen a pattern of behavior and qualities among those who reach the highest echelons. First and foremost is to have integrity, on and off duty. Secondly, is to always do the best you can at the job you are in. Guard yourself against becoming so focused on the next opportunity that you lose sight of the one you have. Finally, get comfortable being uncomfortable. If you have mastered your job and are not learning every day, it is probably time to move on to a new challenge. A great way to do that is through career broadening. Career broadening provides civilians, officers and enlisted personnel an opportunity to learn and do things outside the scope of their normal jobs. For the purpose of this article, I will focus on civilian and officer career broadening.*

### **Civilian Career Broadening**

The Air Force has a voluntary civilian career broadening program designed to develop and shape the civilian logistics workforce. Career broadening assignments are competitive, short term, complex and demanding positions aimed to increase and broaden experience. The experience and knowledge I gained in my career broadening assignments at the Logistics Civilian Career Enhancement Program have made me a more effective leader. Mr. Steven Alsup, Director of the Air Force Sustainment Center Logistics Directorate, recommends folks “go for it and don’t be intimidated if you don’t have background in the new position, you will get the training you need to be successful.” He adds, “Don’t be afraid to move, or be scared of the unknown, it’s not as scary as it seems. Take advantage of the opportunity.”

Civilian career broadening opportunities exist at the local and enterprise level. Assignments may be within or across program lines and are usually positions in the General Schedule (GS) grades of GS-12 through GS-14. The purpose of civilian logistics career broadening is to provide an

*“Career broadening helped prepare me at every level of command.”*

*– Brig Gen Mark Johnson*

introduction to logistics functions, to include maintenance processes and supply chain management.

Eligibility requirements can be found on MyPers and applications are submitted through the USAJOBS website.

There is also an organizational-level civilian career development rotation program for GS-12 and above (or equivalent level) personnel. This program provides voluntary, lateral rotations to increase breadth of knowledge and experience.

### **Commissioned Officer Career Broadening**

The purpose of commissioned officer career broadening is to develop well-rounded senior leaders with diverse experience and breadth of knowledge. Brigadier General Mark K. Johnson, Commander of the Oklahoma City Air Logistics Complex, says “career broadening helped prepare me at every level of command and exposed me at an early point in my career to the basics of Air Logistics Complex operations.”

Career broadening provides development through rotation of assignments across functional areas. According to Colonel Robert Jackson, Commander of the 76th Commodities Maintenance Group at Tinker AFB, career broadening made him a more effective leader and integrator in numerous roles. Col Jackson’s tour in the Logistics Career Broadening Program provided him an opportunity to learn the logistics and sustainment business of the Air Force early in his career.

Career broadening offers deliberate development programs that expose officers to challenging work assignments to develop and refine their leadership skills. Colonel William Roberts, Commander

of the 848th Supply Chain Management Group, believes that career broadening opened up job opportunities that he would not otherwise have received.

Junior 21X officers are competitively selected by the Development Team for Special Experience and Exchange Duties (SPEED) Programs such as the Logistics Career Broadening Program (LCBP), Acquisition and Logistics Experience Exchange Tour (ALEET), Education with Industry (EWI), and Base Level Broadening Program (BLBP). LCBP is a developmental program established to grow materiel officers and future leaders. ALEET is designed to facilitate career broadening between Acquisition and Operational Logistics career fields. EWI is a program built to bridge the gap between the Air Force and industry leaders. BLBP is a program to develop officers at the base/unit-level by deliberate cross-flow into another Logistics specialty.

Officers interested in career broadening programs should check on the specific program eligibility requirements, speak with their leadership about their interest, and ensure comments in their Airman Development Plan accurately reflect their desires.

### **Advice for Current Career Broadeners**

Col Jackson recommends treating career broadening like a foreign language immersion...“live, breathe, and think it for the time you are in the program. Learn everything you can, from the tactical aspects to the big picture.” Don’t be afraid to get your hands dirty and apply what you are learning-- this is where the real learning happens. He advises to read key documents and seek out mentorship from subject matter experts at every rank and across functional areas. The application of the knowledge you gain through career broadening will make you a valuable and effective officer in future assignments.

You may not appreciate it at the time, but later in your career you will be able to communicate better and solve problems faster. Be a “sponge”--soak up as much knowledge as you can because you don’t know what you will need in the future.

### **Advice for Future Career Broadeners**

Career broadening is not a guaranteed ticket to a fast-tracked promotion, but it does provide you the opportunity to learn and apply your knowledge in ways that can help solve some of our Air Force’s toughest challenges. If you are interested in career broadening seek out people who have career broadened or are currently in a career broadening program to get their perspective. Career broadening is a valuable and rewarding experience for those who apply themselves and will help shape the future of the Air Force logistics and sustainment enterprise.

### **Closing Thoughts**

The foundation of our service to the nation lies in our integrity. Service before self means blooming where you are planted, but there are many opportunities to excel in current and future positions. Officer and civilian career broadeners bring back to their career field the unique perspective and experience they have gained. Armed with this knowledge, they become more effective leaders who

*“I see career broadening as one crucible to either make you great or prepare you for greatness.” – Mr. Jeff Allen*

can propel their organizations to new

heights. Step outside your comfort zone and push yourself to be more than good, strive to be great! I see career broadening as one crucible to either make you great or prepare you for greatness. Our nation needs well-rounded, versatile leaders to push the envelope and pursue innovation and excellence in our armed forces and industry.



#### About the Author:

**Jeffrey C. Allen, a member of the Senior Executive Service, is the Executive Director, Air Force Sustainment Center (AFSC), Air Force Materiel Command, Tinker AFB, OK. He is responsible for assisting the commander in providing operational planning and execution of Air Force Supply Chain Management and Depot Maintenance missions for a wide range of aircraft, engines, missiles and component items in support of Air Force Materiel Command missions. He assists in overseeing operations which span three air logistics complexes, three air base wings, two supply chain management wings and multiple remote locations that incorporate more than 32,000 military and civilian personnel. In addition, he helps ensure installation support to more than 75,000 personnel working in 140 associate units at the three AFSC bases. Mr. Allen is a career logistician who has served in a wide range of positions during his tenure with the federal government.**

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# FOCUS ON A CHAPTER LEADER

## Capt Francis “Frank” Rupert



### Vital Statistics

**Name:** Francis “Frank” Rupert

**LOA Chapter:** 380 AEW Flying Circus

**Position:** President

**Hometown:** Spokane, WA

**College:** Washington State

**Degree(s):** BA is History

**Family:** Wife – Michelle,  
Children – Abigail (2)

**Technical Training:** LRO Technical School (2009), ASBC (2010), IDO Course (2010), JAOPC (2014), SOS (2014)

**Professional Duty Title:** 380 ELRS  
Director of Operations

**Commissioning Source:** ROTC

**ER:** *What do you like most about being a loggie?*

**Capt Rupert:** The breadth of everything the Logistics community touches, and the innovation that our young Airman comes up with to improve and enhance their missions

**ER:** *What was your biggest learning moment?*

**Capt Rupert:** I was a young Lt and I had been pushing back on a request pretty hard. We ended up supporting and did phenomenally, but our leadership’s takeaway had been the resistance. I learned that some problems are not as difficult as they sometimes appear, and that you gain more from saying “yes, *if*” than “no”

**ER:** *What are you most proud of in your time on active duty?*

**Capt Rupert:** I am probably most proud of my first deployment. I got the opportunity to lead a small RAT team in Djibouti. We were only gone a short time, but it was my first time participating in an OCO and it really drove home the point that nothing happens without logistics!



**ER:** *As a recognized leader in your local LOA Chapter, what activities/events are you most proud of?*

**Capt Rupert:** I am most proud of the founding of the Flying Circus Chapter! You seldom get the opportunity to see a vision all the way from conception through to fruition. I am humbled and proud to work with such amazing and dedicated Logisticians and Airman.



**ER:** *What trips and tours do you plan on taking with LOA?*

**Capt Rupert:** As a new Chapter, we've made it our goal to take advantage of the logistics community at our location. We plan on visiting a local port that is operated by the Navy and visiting our WRM contractor to see their storage and distribution system. As we move forward, we'll look for opportunities to visit local companies, such as Fedex, to see distribution commercial distribution systems and bring in guest speakers to talk through some of the more strategic aspects of logistics.

**ER:** *Do you have any shout-outs?*

**Capt Rupert:** I'd like to shout out all my Flying Circus loggies!!

# FOCUS ON A CGO

**Capt Benjamin T. Lowry, Maintenance Operations Officer,  
380 EAMXS Al Dhafra AB**



## IN THEIR OWN WORDS...

There's no doubt about it... logistics is a dynamic profession. If one thing remains constant though, it is the need to be flexible and adaptable. This is true at home and abroad. Leave it to the Company Grade Officer (along with many other valued service members) to face that

challenge with gusto and get the job done right the first time. It is not always the loggie with the most years in service that is called to the job either. It is time to throw them a bone by putting them in the spotlight. Take for example...Capt Benjamin T. Lowry.

Capt Lowry is from Bluffton, Ohio, and graduated from The Ohio State University with a Bachelors of Arts degree in History and commissioned through the Air Force Reserve Officer Training Corps. He also holds a Masters of Arts in Transportation and Logistics Management from American Military University. He began his journey in the Air Force at Fairchild AFB as the

Fabrication Flight Commander of the 92 MXS. He married mil-to-mil to his wife Tricia; they have two kids, and one on the way.

The *ER* asked Capt Lowry to share his thoughts on being a leader...in his own words.

*ER: What has been your proudest moment?*

**Captain Lowry:** I find a real sense of pride in my family. The heritage that I have of my Great Grandfather working at then Wright field Machining shop, to my Grandpa serving in the Army Air Corp and newly established Air Force as a crew chief, my father serving as a B-52 armaments specialist during Vietnam, and my wife serving as a maintenance officer alongside me at Fairchild AFB. It reminds me I am not alone in this endeavor and gives me a sense of belonging beyond what is tangible to just service to

our country. Over the past couple years as my family has grown from just me and my wife, Tricia to our two young daughters. They are what keep me grounded to continue on in the hardest of times.



*ER: How do you keep your leadership skills honed?*

**Captain Lowry:** I enjoy reading history books and articles concerning the early years of aviation and articles on new technologies in various industries. The determined ideals and ingenuity that drove pioneers to do new and exciting things makes me think about what I am doing at what particular job I am doing differently than I did before I started. The recent book “The Wright brothers” by David McCullough really made me think about the about new technologies evolve from the impossible and how many times the DoD might be not paying attention to the people we need to pay to I find the right answer to our problems. Leadership isn’t just about the day to day, but about fixing the long term problems in organizations that we accept as things we cannot change at our level. Continuous Process Improvement programs are great, but if we as leaders never acknowledge the elephants in the rooms for example, paper aircraft 781 forms and Maintenance Information System entries are duplication of effort we will never fix the wasted time and effort.

*ER: What leadership skills/traits are most important to logistics officers?*

**Captain Lowry:** Problem solving is the number one priority for skills that I find useful. I have the luck of being involved or have been involved with a lot of innovative programs like the Continuous Process Improvement, Defense Innovation Unit Experimental in conjunction with Silicon Valley, and AF Academy Department of Management with AMC/A4 staff to help develop new technologies to fix problems inside of logistics. Some of them have turned out better than others, but the important thing is to keep trying in solving our problems.

*ER: What are your personal aspirations?*

**Captain Lowry:** Right now my aspirations are fairly simple. My wife is due with our third child and I am making sure I am home for the birth.

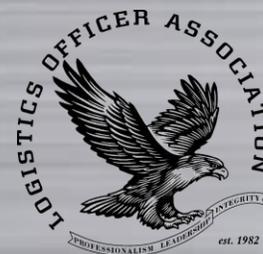
*ER: Do you have any shout outs?*

**Captain Lowry:** Capt Dave Loska for getting the ADAB “Flying Circus” LOA chapter up and running.



# The Anatomy of a Toxic Follower

By: Maj Michael Boswell



In my opinion, there are two immutable qualities of an effective follower; loyalty and humility. While this short list is not all inclusive, they are qualities that are vital to a leader and followers within any organization. Arguably, Toxic Followership or members who display these characteristics can prove to be very dangerous to a group's success. As such, it is critical that leader's and follower's, alike, understand this emerging concept. In the previous article [ER, Summer 2015, pg 43-49], "Toxic Followership: Who and What is it?" a loose definition of this concept is presented but there were no clear characteristics outlined for the everyday leader. So, how can you truly identify these individuals within your organization? This article will further refine the Toxic Follower model and definition, as well as suggest a categorical method of understanding these subordinates. Furthermore, suggestions will be made on how to address these subordinates that embody this form of followership.

As previously mentioned, the idea of Toxic Followership is loosely based on Dr. Robert Kelly's followership typology known as the Alienated Follower. In his research, Dr. Kelly suggested that an

Alienated  
Follower is  
"critical and

*This article will further refine the Toxic Follower model and definition, as well as suggest a categorical method of understanding these subordinates. Furthermore, suggestions will be made on how to address these subordinates that embody this form of followership.*

independent in their thinking, but fulfill their roles passively." While this definition fits neatly into his followership paradigm, there is a need to further refine this concept for the field. In academia, there is a

considerable body of work regarding leadership and effective followership. However, little exists on negative followership and its effects.

So, what is a Toxic Follower? In introducing this concept, I noted that a Toxic Follower is, “highly functioning, a critical thinker, self-absorbed, manipulative and disruptive to the organizational greater goals. Their agenda is to push, what they deem to be, in the best interest of the organization at the cost of good order and discipline. These individuals seek an audience and use others to undermine leadership, as well as validate their toxic views. The greatest tool at their disposal is group-think and band-wagon discussions.” While this definition is a good starting point, it does not provide a concise description of this follower.

To further improve upon this concept, I propose the following refined definition for a Toxic Follower. A Toxic Follower is an individual who consciously and deliberately hinders specified or overall organizational goals, for their personal gain, through their actions or inactions. One critical assumption for the purpose of this article is that a leader's direction or stated objectives are designed to accomplish a greater organizational goal. When a subordinate deliberately does not execute any one of these requirements, this may lead to hindering the overall mission.

Within the redefined Toxic Follower model, it is important to understand a few key points that

*A Toxic Follower is an individual who consciously and deliberately hinders specified or overall organizational goals, for their personal gain, through their actions or inactions.*

separate this type of follower from an ineffective subordinate.

First, an individual that fits this model is very aware of their actions, as well as the potential consequences. As previously stated, these members prove to be highly functional in executing their duties and they typically operate on a conscious or subconscious belief that they know what’s best for the organization's success vice the directives of those appointed over them. Second, they either deliberately choose to act adversely or not follow-through on tasks that would enable the overall success of the greater organization. Finally, a Toxic Follower’s actions are directly tied to an unhealthy need for self-gain or a distorted sense of self-preservation. This hubris may manifest itself in many ways. In one instance these followers make

the choice not to act on a task, thus allowing it to fail by deliberately refusing to garner the needed resources or visibility for success. They may attempt to discredit a leader by attacking the individual and/or their ideas thus creating negative dissension within the organization and hindering the leader's effectiveness. Another example is a subordinate may withhold vital information in the belief that they are doing so for job security or to appear that they are the sole subject matter expert. There are countless examples of Toxic Follower activities, but the overarching theme is that their choices are driven by a need to protect their self-interest at the expense of the organization and others around them.

Now that we have refined the definition of a Toxic Follower, we must move onto identifying these individuals within an organization? Attempting to narrow down common traits of a Toxic Follower was challenging and problematic at best. Unlike Dr. Kelly's typology, the Toxic Follower does not reside on quadrennial axis with major subsections. Rather, I propose that this concept is linear and lies on a plane. As discussed earlier in this article, a Toxic Follower's intention is to influence negatively or affect the organization's goals for their own self-interest. I would propose that this occurs through Active or Passive Organizational Resistance. See figure #1 as a visual representation of this continuum.



For this article, I'll define Passive Organizational Resistance as: actions or inactions that are perceived as stopping or fighting against the organization's aims by intentionally allowing circumstances to occur which would hinder an organization's activities or successes. Conversely, Active Organizational Resistance is defined as: actions perceived as stopping or fighting against the group's aims by deliberately working toward hindering an organization's activities or success. Within the Toxic Follower model, I

propose that four distinct typologies exist. They are: the Slow-Roller, the Consummate Objectioneer, the Covert Saboteur, and the Escapist. See figure #2 for a visual representation.

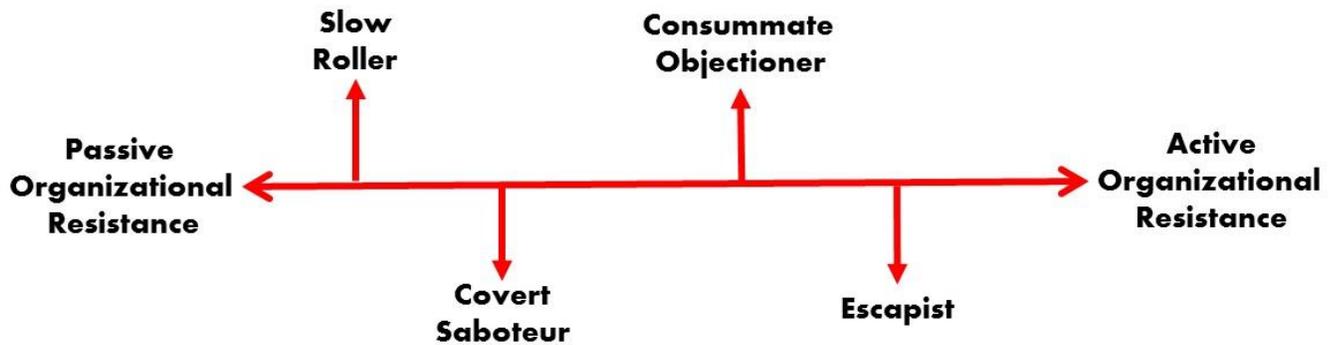


Figure 2: Toxic Follower Continuum

This list is not all-inclusive, as there are likely many types of Toxic Followers that may reside on this continuum. Below are concise definitions for each typology within this model:

- **Slow-Roller:** subordinate that makes the conscious choice not to act upon or fulfill tasks based on the assumption that they will not be held accountable; the superior will ultimately forget about the requirement; or supervision will change duties or assignments thus nullifying the need. The quintessential “battle cry” for these members within in the military establishment is, “The boss will move in the next few months, so I will wait them out.” These subordinates operate passively by their inactions, choosing not to accomplish needed activities that would assist in the

organization’s success. These followers are

*These subordinates operate passively by their inactions, choosing not to accomplish needed activities that would assist in the organization’s success.*

typically motivated by the need to maintain the status quo. They view organizational change as negative and will prevent this change by deliberately not performing, thus slowing the change or process thereof.

- **Covert Saboteur:** subordinate that deliberately undermines or attempts to damage a leader’s credibility or the organization’s goals. These Toxic Followers are arguably the most dangerous, and they tend to be informal leaders and power holders that are well established within an organization. They typically use their referent power, working behind the scenes to cripple the leader’s intent in a myriad of different ways. The most prevalent, in my experience, is through the bandwagon approach. Bandwagoning, as used in this context, has been defined as using an emotional argument to persuade others to join a cause. This typology uses negative decent and emotional appeal to garner as much covert support as possible in an attempt to derail a leader’s objective or cause doubt towards the leader’s credibility, thus negatively impacting the greater organizational goals. These individuals typically are motivated by the desire to maintain their referent or informal power and see their leadership as a threat. As such, they attempt to discredit the leader and in doing so, believe that they secure their place or strengthen their influence.
- **Consummate Objectioneer:** subordinates that openly object to a leader’s direction or intent in public forums. These members tend to be the most vocal of the Toxic Followers. They are typically the dissenting voice in any conversation. Better known as the “Naysayer” or the individual that openly finds fault with most, if not all decisions, that are made by leadership. Supervisors know them as the subordinate who will likely say “No” to a decision. Of note, leadership will typically spend a considerable amount of time and political capital attempting to convince this subordinate that the selected course of action is in the best interest of the organization. The belief that typically motivates this individual is that they are more capable of leading and thus openly challenge authority. An alternate rationale for their actions is that they too resist organizational change and publicly object in premeditated forums as a means to seed doubt within the group.

*Better known as the “Naysayer” or the individual that openly finds fault with most, if not all decisions, that are made by leadership.*

- ***Escapist***: subordinates that are highly functional and very selective towards taskings that they accomplish; regardless of the risk to the greater organization or the fact that it is a requirement as part of their duties. These individuals typically lack boundaries and see themselves as potential “professional-equals” to their superiors. They hold the belief that some taskings are beneath their position. This type of Toxic Follower will refuse or escape from performing specific objectives, unless it garners the visibility that they desire or that they deem to be worthy enough to execute.

They are typically motivated by public validation for their

*This type of Toxic Follower will refuse or escape from performing specific objectives, unless it garners the visibility that they desire or that they deem to be worthy enough to execute.*

actions or sense of accomplishment towards completing a task that they view to be fitting for their professional capacity.

As previously mentioned, this list is not all-inclusive, but rather an attempt to qualify the characteristics and motives that make up a Toxic Follower.

In transition from the typology for the Toxic Follower, this next section will discuss a few methods of addressing these forms of followership within any organization. The essence of the individual that exhibits these characteristics lies in hubris and selfish desires rooted in insecurity. I would argue that these subordinates feel that their opinions and desires are what are best for the organization. They become a fixture or a part of the establishment and feel that their opinion should carry more weight than the opinions of the organizational leaders. These individuals may overcompensate for past injustices by their superiors or supervisors. They exhibit hubris because they have developed this coping mechanism

*The essence of the individual that exhibits these characteristics lies in hubris and selfish desires rooted in insecurity.*

due to a lack of validation from previous or present leadership. Conversely, these individuals may openly seek and have

been given tremendous validation to the point of placation in the past. Now that they are facing a leader that does not provide the same level of support, the followers in turn, cannot handle the change and

compensate by believing that the leader is wrong. They further justify their stance and cope by exhibiting prideful behavior. Regardless of the reasoning, a leader will need to find proper methods to validate this subordinate without placating their every desire.

Selfish desires are also an essential attribute of a Toxic Follower. Whether motivated by self-preservation or a need for self-glorification, these subordinates have a need to fulfill a desire that is rooted in insecurities. As a leader, it is vital to take the time to understand what makes your subordinate effective. The need to take care of one's self at the expense of the greater organization's effectiveness is learned behavior. You must seek to understand the cause of these negative attributes and deal with the source and not the symptoms. These Toxic Followers may have been overlooked for promotions or have

*As a leader, it is vital to take the time to understand what makes your subordinate effective.*

not received any public recognition previously.

Whether intrinsically or extrinsically motivated,

determine the source of the insecurity, and you can potentially negate the self-serving behavior. Of note, in subsequent writings, I will seek to develop a model similar to the Hersey-Blanchard Situational Leadership Model that provides a point-to-point methodology to counter this pervasive form of negative followership.

In closing, nineteenth century author Helen Keller once wrote, "The world is moved not only by the mighty shove of heroes but also by the aggregate of the tiny pushes of each honest worker." While most subordinates may identify more with the tiny pushes aspect of this quote, it is the Effective Follower and not the Toxic Follower that can move the world by their actions. A leader's goal should be to work toward rehabilitating these types of followers and make them productive members of their organization. In this article, Toxic Followership was redefined to a succinct definition that captures the real intent of this type of subordinate.

*"The world is moved not only by the mighty shove of heroes but also by the aggregate of the tiny pushes of each honest worker."*

Furthermore, four typologies were presented to address Toxic Followers that maybe a part of any organization. They are the Slow-Roller, the Consummate Objectioneer, the Covert Saboteur, and the Escapist. Finally, a few suggestions were made on ways to deal with Toxic Followers with the

understanding that subsequent research will yield a model specifically addressing how to make these individuals valued members of any organization.

**About the Author:**

**Major Michael L. Boswell is the Commander of the 96th Logistics Readiness Squadron, 96th Test Wing, Eglin Air Force Base, Florida. He commands a squadron of 580 military and civilian personnel enabling expeditionary forces through the full spectrum of logistics operations. The squadron supplies all ground fuel requirements for base support functions as well as aviation fuel and cryogenic products to service all locally assigned and transient aircraft. In addition, the 96 LRS provides complete logistics readiness and transportation services to include base support planning, passenger and cargo movement and vehicle management for all assigned units. Prior to arriving at 96 TW, he was the commander for the 100th Logistics Readiness Squadron, RAF Mildenhall, England.**

# Thrust...Better with Vector

By: 2Lt Justin Hemken



In October 2015, I arrived at Dyess AFB, my first duty station, as a freshly minted Second Lieutenant and was assigned to the Propulsion Flight in the 7th Component Maintenance Squadron (7 CMS) supporting the B-1B Lancer and its F101 engine. As directed by my supervision, I immersed myself into the operation and gained appreciation for the work our engine mechanics perform daily. After a few weeks, I began to get a feel for the organization's processes, metrics and challenges. As events unfolded, and with much support from the Senior Non-Commissioned Officers (SNCOs) in the flight, we determined that we didn't really know the rate at which we were fixing, and ultimately producing, F101 engines. We didn't have realistic and achievable goals for production. However, given an opportunity to excel, we quickly established goals, improved processes, reinforced the importance of "knowing your business" throughout all ranks and skill levels, and F101 engine production soared!

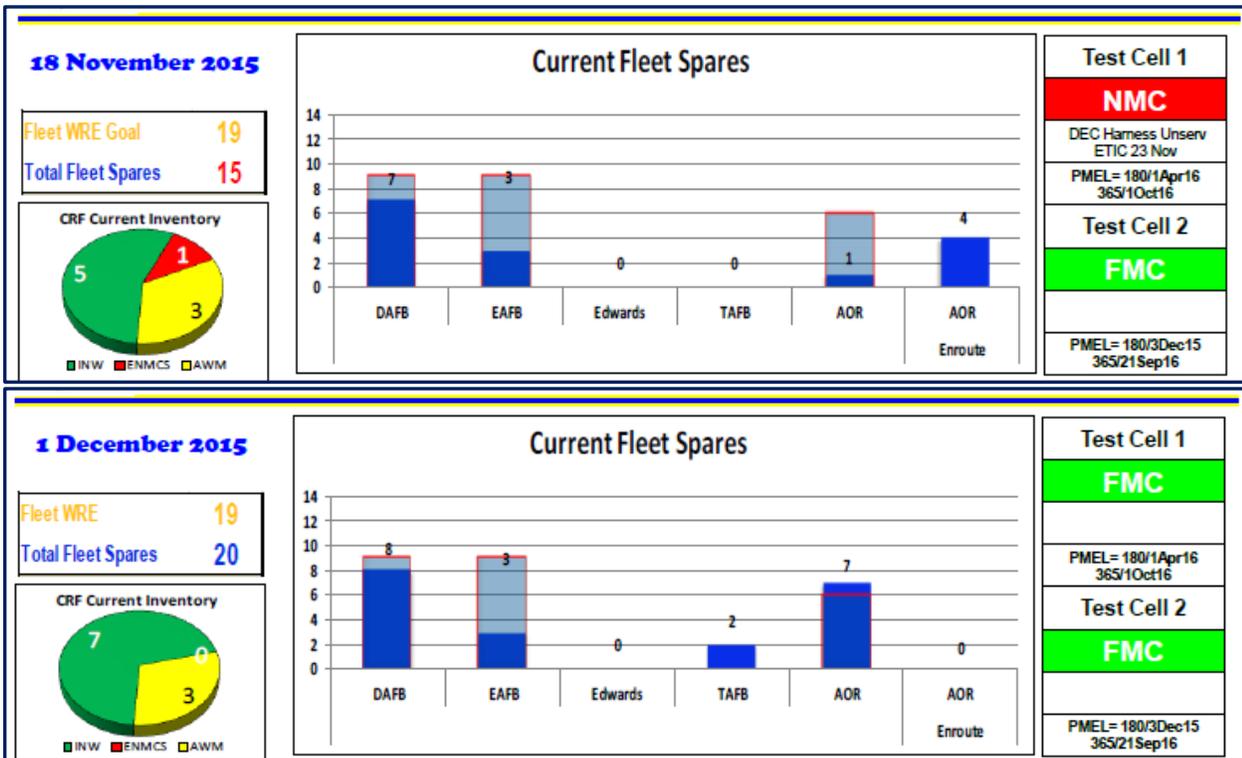
As a community, the F-101 War Readiness Engine (WRE) fleet ebbed and flowed like most spare engine stocks, but remained consistently between 21-24 spare engines.

Unfortunately, within the first three



U.S. Air Force Airmen push a repaired B-1B Lancer/F101 engine out of Dyess' F101 Centralized Repair Facility Dec. 22, 2015, at Dyess Air Force Base, Texas. Each engine typically takes about 20 days to repair, but after eliminating redundancies in the inspection system, 7th CMS Airmen have projected that number to about 15 days. (U.S. Air Force photo by 2nd Lt. Lauren Linscott/Released)

weeks of November 2015, we witnessed the WRE spare total drop down from 22 to 15; at one point we had only one remaining spare in the AFCENT Theater supporting overseas contingency operations. For the F101 engine team, this was a call to arms. The 7 CMS's Centralized Repair Facility (CRF) was energized and surged to round-the-clock operations to support the Warfighter! After a few tough weeks, the WRE total was back to 20, and all was right with the world. During that same quarter, we produced 19 engines, which is four more than any other quarter in that year...a remarkable story of success by itself. But how did we do it? Did we miss an opportunity to capture a process improvement event that was happening right before our eyes?



This drop in engine spares solidified what we had long suspected, but failed to realize. We needed to look at our processes from start-to-finish, to include our critical tracking metrics. Many metrics were in place to track various portions of the engine repair process and multiple agencies required independent reporting, however, there wasn't one overarching measure that provided the community with a pulse of engine repair activities. As part of an CPI event in December 2015, we dove into the task of defining this overarching metric and quickly realized it could be done by breaking down the days the engine had

been possessed in the repair cycle. The critical piece was determining how many days: we worked the engine, were waiting on parts, and were not working on the engine. Once we compiled and analyzed that information, we decided to track the portion of the repair cycle we could control – total in-work days. It wasn't perfect, but it was standardized and allowed us to baseline our overarching production activities.

In addition to metric definition, the CPI team refined the entire engine repair process. The event identified 121 of 260 steps in our processes that were to be removed. These steps were either non-value added or completely redundant. We estimated that five in-work days could be saved by implementing these recommendations. The new process was immediately adopted and by the middle of February 2016, the F-101 engine WRE totals had climbed back to the mid-twenties. Little did we know, these totals would continue to climb.

*The event identified 121 of 260 steps in our processes that were to be removed.*

While the CRF was laser-focused on meeting their engine production goals and propelling B-1 operations globally, a deployed squadron of B-1s from Ellsworth AFB was about to return home from the AOR. Our refined engine repair processes, combined with reduced engine consumption from the



Airmen from the 7th Component Maintenance Squadron stand with spare F101 engines June 10, 2016, at Dyess Air Force Base, Texas. The 7th CMS is responsible for intermediate-level maintenance of the F101 engine, the main engine on the B-1B Lancer. (U.S. Air Force photo by Airman 1st Class Quay Drawdy/Released)

AOR allowed our team to concentrate on timely production and this resulted in a steady increase in WRE spares. As the number of spare engines increased from 26 to 30 to 35...a new goal emerged: 40 spare F101 engines for the B-1 fleet. It's more than just a number or some irrelevant goal.

This goal directly correlates to Warfighting capability. It's very realistic for the B-1 community to consume 6-8 engines in a week. Having the capability to provide engines on demand is the key to keeping this workhorse aircraft in the air where it is most lethal. Having a healthy spare level and managing it appropriately minimizes the impact of an unscheduled engine drop and wait-time for parts. In April 2016, the F101 community had amassed 39 spare engines: a 30-year high, and by June 2016, the once seemingly unreachable goal of 40 spare engines was reached...and quickly climbed to record-breaking 41 spares. However, this isn't a story about accumulating engines. This is the story about improving processes. This is a story about not being happy with the status quo and challenging yourself and your organization. This is a story about an engine shop continuously trying to improve, picking their targets, adjusting their sights, and pulling the trigger.

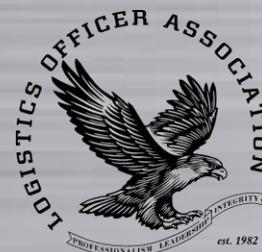
As a new maintenance officer, I was able to witness something that I had only heard about in leadership courses over my first 15 years in the Air Force. Always be working towards something. Don't be afraid of challenges and do not be afraid to apply the right kind of pressure. The SNCOs and NCOs in 7 CMS possess a unique ability to motivate their Airmen. They are able to translate engine maintenance processes to Warfighting capability in order to ensure Airmen understand the value of their work. Have a goal and work towards it. Thrust...is better with vector.

### **About the Author:**

**After serving 15 years as an enlisted logistician, 2Lt Justin Hemken was commissioned in 2015 after completing Officer Training School. 2Lt Hemken is the Maintenance Flight Commander, 7th Equipment Maintenance Squadron, Dyess AFB. Prior to assuming this duty, he was the Propulsion Flight Commander, 7th Component Maintenance Squadron, Dyess AFB.**

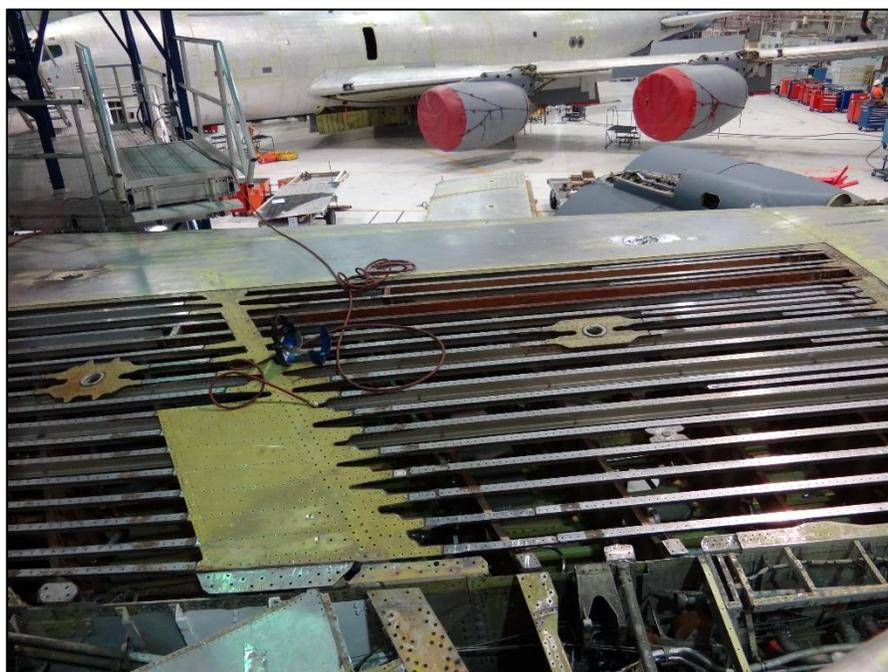
# KC-135 PDM Structures Gate: Peace Through Superior Processes!

By: Mr. Brandon Copeland



The KC-135 Stratotanker is not an overly glamorous weapons system. It does not carry bombs or missiles, is not equipped with state of the art listening devices or radar equipment, and does not fly at supersonic speeds. Despite this, the KC-135 is one of the most important tools enabling our nation's Global Strike and Global Mobility requirements and providing refueling support to US Navy, Marine Corps and allied forces. This 50-year old airframe, built to fight the Cold War, has seen its value increase exponentially since the 1990s. As a result, the aircraft requires additional maintenance and logistics support to ensure we can meet national defense commitments. Programmed Depot Maintenance (PDM) is an essential part of KC-135 fleet health, with requirements increasing as the aircraft ages. As the KC-

135 continues to grow older, increased inspections and repairs are required to maintain the fleet. The majority of these repairs are structural in nature, and fall within the structures build-up gate of the KC-135 production machine. Since



KC-135 P2 skin replacement

2009 the 564 AMXS had operated a two-track structures gate consisting of two different types of structural repair plans: “Speedy” or Extended Flow Aircraft (EFA). Speedy aircraft completed the structures gate in less time as opposed

to EFA. This enabled the aircraft with fewer issues to proceed through the PDM process quicker, thereby maximizing resources. When the two-track flow began, Speedy aircraft were those tails with no Major Structural Repairs (MSRs). Speedy aircraft did not require use of jacks or special shoring configurations to repair items such as landing gear trunnions or load-bearing aircraft structure. EFA required jacking and shoring to support MSR work. Speedy aircraft could complete the structures gate in roughly 40-days and EFA were initially planned at 82-days. As the 564 AMXS increased its workload and perfected its process, the average days for Speedy gate fell to 35-days and EFA to 63-days.

The 564 AMXS and System Program Managers expected only half of the aircraft to come in requiring MSR resulting in an EFA gate and the other half to flow through the speedy gate for FY16.

FY15

finished

with 70%

*FY15 finished with 70% of the aircraft being EFA, therefore driving up the numbers of docks to complete the work and the time the aircraft were on station*

of the aircraft being EFA, therefore driving up the numbers of docks to complete the work and the time the aircraft were on station. With this analysis completed, 93% of aircraft projected were EFA in FY16, and the AMXS had to create a new plan to execute the all organic workload.



Left and right belly skin removal and replacement

At the end of FY15 the 564 AMXS Structures gate had 12 aircraft in work against a planned number of 10. The increase in major structural repairs drove up the jacking and shoring requirements and kept aircraft in the dock longer. To overcome this increasing demand the squadron turned to the Art of the Possible methodology and aggressive Continuous Process

Improvement (CPI) events to address the increased workload. The first step was to develop a new

production machine. The new production machine anticipated a 100% major structural repair rate. The two-track production path was removed and flow days for the structures gate changed from the targeted 63-days to a data driven target of 53-days for all aircraft. Aircraft with minimal major structural repair may produce from the structures gate under the 53-day requirement. An additional tool to overcome the increase in MSRs was to implement a “queue” to manage the workload. “Queueing” aircraft is a deliberate decision not to apply resources to a particular jet. This ensures resources such as personnel and equipment are not spread too thin and enables the unit to efficiently manage Work in Process. This

technique

ensures one

aircraft

*The two-track production path was removed and flow days for the structures gate changed from the targeted 63-days to a data driven target of 53-days for all aircraft.*

completes a particular process prior to an additional aircraft starting the same process. To date in FY16, there have been up to three aircraft queued to the structures gate.

The 564 AMXS also used subject matter experts and CPI events to refine the overall PDM process and maximize the number of repairs that can be completed at the same time. One of the most successful projects was the MSR Concurrency Work Event.

Structural maintenance subject matter experts worked together with KC-135 System Program Office engineers to create a plan to maximize concurrent structural repairs, resulting in more work getting done safely in the same amount of time. These solutions are captured in a “Concurrency of Work Matrix” that identifies tasks that can be completed concurrently and the number of flow days required to complete the job. This matrix is a living document, and is adjusted on a regular basis to capture new tasks or new capabilities that would allow concurrent work.

As a result of the event, the

*These solutions are captured in a “Concurrency of Work Matrix” that identifies tasks that can be completed concurrently and the number of flow days required to complete the job.*

structures build-up gate has reduced flow days from 72-days at the end of FY15 currently to 52.7-days and is driving it down to a high 40-days average. *Significant process improvement in the structures portion of KC-*

*135 PDM has enabled the structures gate to meet the increased workload requirement with an average flow time for 38 aircraft below the targeted 53-day goal since 22 January 2016.* Refinements in the structures gate are key as this is the most complex and labor intensive of the five production gates used to move a KC-135 through PDM. Process improvements across the PDM line resulted in one record breaking year already, with 70 aircraft completing PDM in FY15. The KC-135 enterprise is postured for an even higher goal of 76 PDM aircraft in FY16.

The 564 AMXS is part of a diverse team that includes fellow Maintenance Groups at Tinker, Hill and Robins AFBs, the Defense Logistics Agency, 10<sup>th</sup> Flight Test Squadron, the System Program Office, the Air Force supply chain and a host of motivated personnel seeking to push high quality aircraft safely through PDM as quickly as possible. CPI and regular maintenance of those processes is essential to keep the “machine” in tune and producing aircraft with the common goal of maximizing available aircraft to the Warfighter.

## **About the Author**

**Mr. Brandon Copeland is the Lead Management Analyst for the 564th Aircraft Maintenance Squadron, Tinker Air Force Base, Oklahoma. He serves as an advisor and analyst to squadron leadership in matters relating to aircraft production, budget, manpower and various programs. He has been employed with the United States Air Force for 10 years and has a Master of Science in Aerospace Administration and Logistics from Southeastern Oklahoma State University.**

# KC-46 Pegasus to “Meet Intent” of FAA Standards: Understanding Continuing Analysis and Surveillance System (CASS) in a Military Environment

By: Mr. Fran Crowley



## INTRODUCTION

How does anyone know if they are doing things properly? The short answer is that it takes one’s conscience or awareness. But how does a commercial air transportation provider know if it is doing things properly, especially if such deficiencies will result in aircraft that are not airworthy being placed in flight service. The short answer is that it takes an operator’s Continuing Analysis and Surveillance System (CASS) program. This article seeks to explain the purpose, history, and requirements of the Federal Aviation Administration-required CASS program for commercial domestic, flag, and supplemental air carriers.

While the Federal Aviation Administration (FAA) grants airworthiness certificates to commercial aircraft and requires commercial airlines to maintain a CASS system, it does not grant Airworthiness Certificates to public aircraft, including military aircraft. Nor does the Air Force need such authorization to fly their aircraft.

*The KC-46 Program has decided to “meet the intent” of FAA regulations*

However, to leverage the benefit of over 30 years of Boeing 767 engineering, experience, and industrial base, the KC-46 Program has decided to “meet the intent” of FAA regulations. This proposed arrangement would allow the Air Force to incorporate FAA and industry-developed maintenance programs, Airworthiness Directives and Service Bulletins, etc., into the KC-46 fleet to enhance safety and reduce costs.

## **REGULATORY REQUIREMENT**

For domestic, flag, and supplemental air carriers, Title 14 of the Code of Federal Regulations (Part 121.373) states that “each certificate holder shall establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventive maintenance, and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by the certificate holder or by another person.” This responsibility means that commercial domestic, flag, and supplemental air carriers are accountable for overseeing maintenance done on their aircraft, whether they do it themselves or not.

## **HISTORY**

Federal authorities first published CASS requirements in the Federal Register in 1964. “The rulemaking responded to safety concerns and discoveries of weaknesses in the maintenance programs of some air carriers revealed during accident investigations and FAA surveillance of air carrier maintenance activities.”

## **WHAT IS CASS**

FAA Advisory Circular (AC) 120-79A deals with the CASS program. “A CASS is a system that air carriers and commercial operators use to monitor, analyze, and optimize the performance and effectiveness of their air carrier maintenance programs.” The maintenance program includes these 10 elements: airworthiness responsibility, maintenance manual, maintenance organization, maintenance and alterations, maintenance schedule, Required Inspection Items, maintenance record keeping, maintenance providers, personnel training, and CASS.

Consider CASS the conscience of an organization, with its first priority to increase awareness and clarity in the highly complex world of global air transportation. The ultimate goal is to take corrective action to fix or avoid emerging problems before they become too troublesome.

## **WHY CASS**

Air carriers and their passengers alike have a vested interest in air transportation safety. It is therefore vital that FAA regulators are not the sole line of defense in assuring that safety. While the FAA monitors air operators on a daily or weekly basis, depending on their size and scope, passengers and the operators themselves rely on the carrier's awareness or conscience, their CASS, to detect and correct issues before they are caught by the FAA, or worse, before they cause a disaster.

To increase awareness, air transportation operators must use information to reduce uncertainty, which can be a very disruptive or even destructive force (e.g., flight delays or aircraft mishaps). Fortunately, human uniqueness gives people the ability to gather and analyze information and, to a fair extent, use it to predict future conditions. CASS uses information and analysis of that information as the core of its cyclic process for verifying both the performance and effectiveness of an air carrier's maintenance program.

### **VERIFYING the PERFORMANCE of MAINTENANCE**

Verifying maintenance performance generally involves audits. Audits of maintenance work, work areas, records (e.g., logs and training), manuals, and transactions comprise a portion of CASS's initial step of a cyclical process that includes surveillance, analysis, corrective action, and follow-up.

### **VERIFYING the EFFECTIVENESS of MAINTENANCE**

Determining the effectiveness of a maintenance program, in turn, involves data collection of people, processes, and things that pertain to the sustainment or operation of the fleet. Again, the idea is to do surveillance, analysis, corrective action and follow-up on the following types (among others) of activities: corrosion prevention, inspections, alterations, repairs, engine condition monitoring, vendor or maintenance provider information, component teardown, pilot reported discrepancies,

Service Difficulty Reports, mishaps, Foreign Object Damage, in-flight shutdowns, delayed take offs, and air aborts.

## **FLEET MANAGEMENT TOOLS**

While people are invaluable at defining requirements and methods for data analysis, computer-based data management tools allow work to be done in bulk. In today’s era of “Big Data,” organizations can do data visualization and predictive analytics quickly and effortlessly. This capability enables organizations to use human intervention for the most critical part of data management: taking action to reduce uncertainty and achieve long-term problem resolution— which again, is the ultimate goal.

The FAA’s CASS guidance, however, does not stipulate the use of sophisticated data management systems to comply with requirements, but most certificated air carriers use them as the benefits and efficiencies are innumerable. Additionally, through the study of empirical data, people quickly learn that the information obtained is often counter-intuitive—all of which necessitates thinking about situations and solutions in new ways.

## **RISK**

As with many human endeavors, uncertainty is the bane of all maintenance operations. Through the use of software tools, organizations can capture and analyze data more completely and easily to help determine risks.

*This capability enables organizations to use human intervention for the most critical part of data management: taking action to reduce uncertainty and achieve long-term problem resolution— which again, is the ultimate goal.*

Negative trends or conditions need to be assessed and prioritized based on the likeliness and consequence of a hazard occurring.

Not all hazards, after all, have the same risk. Furthermore, the existence of even an effective CASS program with sophisticated algorithms and tools should not lull one into believing that a system can capture or predict all risks. While software programs do good work at identifying previously unknown information (i.e., known-unknowns), there is no way to unearth all eventualities. Hence, teams should continue to build conservatism into their corrective action plans so as to avoid the calamity of outliers (i.e., unknown-unknowns).

### **KC-46 CASS**

In the KC-46 program, we view our future CASS program as our conscience. We will gather and analyze data from all our Air Force legacy systems (e.g., G081, SBSS, D043, and AFTOC). For information that is in narrative form (e.g., audits), we hope to quantify the results for tracking and trending. We are planning a fleet management tool that will do sophisticated data gathering, trending, correlations, visualization, self-alerting, and predictive analytics for our CASS section to analyze disparate data near real-time.

The Air Force's KC-46 CASS section will be composed of operations research analysts, engineers, cost estimators, and logisticians. Assigned personnel will be largely independent from the day-to-day operations of the maintenance program.

When our CASS section identifies urgent issues, they will work with other Program Office officials (e.g., engineers), our MAJCOM customers (i.e., Air Mobility Command and Air National Guard units), and product support providers (e.g., depot, item managers) to rectify the situation. Our plan includes hosting a monthly CASS meeting, called the CASS Board, with Program Office officials, our customers, and product support providers to identify, track, address, and follow-up on airworthiness or cost issues.

## SUMMARY

The KC-46 plans to “meet the intent” of FAA CASS requirements in a robust fashion, not simply because it is required, but because it will enable us to proactively identify and correct important issues in support of

Warfighters. We will use a

*In the KC-46 Program Office, our goal is to build a proactive, conservative, “antifragile” CASS program*

comprehensive and highly capable

Fleet Management Tool to assist us. Even so, we will need to apply conservatism to our CASS methodology because outliers happen! Rather than discounting outliers, we need to develop an “antifragile” CASS program so we can not only endure system stressors, but actually benefit from them—i.e., improve performance and effectiveness.

## CONCLUSION

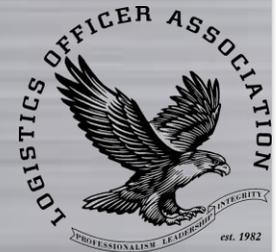
According to the FAA Academy’s CASS course training material “a nonfunctional CASS” was listed in “every recent air carrier fatal accident.” In the KC-46 Program Office, our goal is to build a proactive, conservative, “antifragile” CASS program that enables us to avoid onerous issues. Furthermore, we aim to improve conditions for our service men and women who will operate and maintain our nation’s newest aerial refueling platform, the KC-46 Pegasus.

## About the Author

**Mr. Francis P. Crowley is the Product Support Manager (PSM), KC-46 Program, Tanker Directorate, Air Force Life Cycle Management Center, Wright Patterson AFB. As PSM, he assists in leading KC-46 sustainment efforts in developing and managing the maintenance, training, supply and product support of one of the Air Force’s number top acquisition programs—i.e., fleet of commercial-derivative aircraft to provide advanced aerial refueling, airlift, medical evacuation, and net-centric capabilities in support of global, Joint war fighting and U.S. national interests. Mr. Crowley is responsible for developing strategies relative to total life cycle cost (valued at \$238B), performance, and schedule for making KC-46 program decisions.**

# Utilizing Scrum with USAF Maintenance Planning

By: Capt James P. Guthrie



Agile development is a process initially created to increase the speed at which software development took place in the 1990s. Over the last 15-20 years, Agile has morphed into a number of different methodologies, one of which is called Scrum. Scrum has further evolved and is now used, not just for software development, but for manufacturing as well. It is my belief that key aspects and assumptions of the Scrum methodology can be successfully applied to an Air Force Aircraft Maintenance Unit's (AMU) production model in order to better meet the sortie generation needs of the customers – the flying squadron

*Scrum “is a framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value... Scrum employs an iterative, incremental approach to optimize predictability and control risk.”*

charged with achieving tactical proficiency and the maintenance unit in meeting the strategic goals inherent in fleet management.

Agile development started with the realization that communication between the developer and the customer had to be constant and that making fixes to the final product once it was in production was time and cost prohibitive. Scrum “is a framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value... Scrum employs an iterative, incremental approach to optimize predictability and control risk.” (<http://www.scrumguides.org/scrum-guide.html>) It is this iterative approach coupled with the regular planning of Scrum that provides the greatest opportunity for exploitation

within the Air Force community, in part because we already have an existing iterative process between customer and developer in the annual, monthly, and weekly scheduling process between operations (OPs) and maintenance (MX). Further, whether realized or not, most AMUs are already

*Ultimately, the goal of this article is to introduce Scrum concepts to the USAF aircraft maintenance community and hopefully begin discussions on how we can utilize these concepts and the Scrum framework to better meet the needs of our customers.*

positioned for an iterative process of feedback and

correction between their leadership and production teams that work similar to how Scrums are supposed to function. By tweaking these existing processes and cycles and implementing Scrum methodologies, the OPs and MX units can better focus their efforts and potentially increase effects-based output. Ultimately, the goal of this article is to introduce Scrum concepts to the USAF aircraft maintenance community and hopefully begin discussions on how we can utilize these concepts and the Scrum framework to better meet the needs of our customers.

Scrum was designed to be used to manage ongoing, complex product development, primarily software. However, as stated above, this management framework has evolved and is now also used in manufacturing circles as well. I believe it can also be utilized to assist in managing the ongoing, complex and adaptive process called sortie generation. One cornerstone of Scrum is the iterative process or Sprint, which is basically laid out as follows:

**Evaluation/Prioritization → Detail Requirements → Product Design and Analysis  
→ Implementation and Developer Testing → QA/Acceptance Testing →  
(Deployment→) Restart Cycle**

While every component of this cycle cannot be exactly copied in the OPs and MX relationship, key aspects of it can be, and in many cases perhaps, already are copied. For example, **Evaluation and Prioritization** are things that should happen in an AMU/Flying Squadron's weekly scheduling

meeting. In fact, the weekly scheduling meeting serves as a “Sprint planning meeting” and is critical to Scrum. A Sprint is “The heart of Scrum...”, a time-box of one month or less during which a “Done”, useable, and potentially releasable product Increment is created.”

(<http://www.scrumguides.org/scrum-guide.html>)

Prior to the scheduling meeting, the AMU Officer in Charge (OIC) and/or Chief should have either a formal or informal meeting with the lead production superintendent to get a feel for fleet health and scheduled maintenance load for the upcoming week so as to get an early indicator of what is supportable. During the meeting (usually on a Monday), stakeholders from the maintenance side, to include section chiefs, production (in the form of the Lead Production Superintendent), the unit scheduler, and unit leadership (either the OIC or the Chief) should be present and able to speak intelligently to their LimFacs and areas of opportunity for the upcoming weeks. When the OPs representative [ideally the flying squadron Director of Operations (DO)] arrives, previous week’s performance should be shared and evaluated in a frank manner. If previous LimFacs were identified they need to be shared between customer (flying squadron) and developer (AMU), especially if those LimFacs are caused by interplay between the two sides or if clarification on cause is required. During this meeting, priorities for the next two week’s flying should be organized and set. The flying squadron should also be able to tell the AMU what specific systems are going to be most important to get meaningful training so that those systems can be thoroughly tested before they lead to mission success or failure. By identifying these key systems to upcoming training the customer is **Prioritizing** items for the final product. Once the OPs and MX discussion is complete, the maintenance representatives need to continue the meeting to discuss internal LimFacs as well as internal processes that could be tweaked in order to maximize the unit’s ability to create the desired product. This continued discussion is the beginning of **Detailing Requirements**, establishing where efforts will be directed and how assets will be utilized to meet the needs of the customer

within the given timeframe. The AMU scheduler and the Lead Production Superintendent should then go adjust the planned flying and scheduled maintenance based on these expectations and inputs, which is basic **Product Design and Analysis**. The required **Testing** phase is completed by the AMU OIC and the flying squadron DO over the next two days as they vet the schedule prior to their signatures and then by the Maintenance and Operations Groups commanders when they further review it prior to their approval. Finally, the schedule is flown as planned the following week, which is the **Deployment Phase**. The iteration starts over again with the next AMU/Ops scheduling meeting the following week.

This example of an iterative planning cycle (or Sprint) takes place over the course of a week and opportunities for communication between OPs and MX are not limited to the steps listed above. In a healthy MX and OPs relationship, the AMU OIC and the DO should speak regularly outside of the scheduling meeting about how things are going and feedback should flow both ways.

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The developer (AMU) needs to know if the product

they are providing is meeting the customers' (primarily the OPs unit but also the AMU management team) needs and the customer needs to know if what they are asking for exceeds the capabilities of the developer as well as understanding exactly what is required for effective training rather than just what they want. Both sides need to be clear on wants versus needs, as well as, what the actual capabilities of both MX and OPs to effectively set goals and plan to meet those goals.

The other iterative cycle that is somewhat inherent in most maintenance organizations but can be tweaked to get maximum performance is the production cycle. These shorter cycles are akin to the Scrum that gives the Scrum process its name. A Scrum is “a 15-minute time-boxed event for

the Development Team to synchronize activities and create a plan for the next 24 hours. This is done by inspecting the work since the last Daily Scrum and forecasting the work that could be done before the next one. The Daily Scrum is held at the same time and place each day to reduce complexity.” (<http://www.scrumguides.org/scrum-guide.html>) In a given work day, there is one macro-cycle (an actual Scrum, for the work day itself) and three micro-cycles (one shift equals one cycle) that happen in the Production Office. While an AMU’s daily meetings or macro- and micro-cycles don’t necessarily line up exactly with

*While an AMU’s daily meetings or macro- and micro-cycles don’t necessarily line up exactly with Scrum, there is still fertile ground here for exploitation.*

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Looking at the micro-cycles first, each shift revolves around the relationship between the Production Superintendent (Pro Super), the Expeditors, and the communication between them. When a Pro Super comes on shift, one of the first things they should do is to review the schedule for both the current and next day and assess the present aircraft status (**Evaluation/Prioritization**). After reviewing the current and next day’s flying schedule, the Pro Super should get turnover and discuss previously established large scale priorities from the previous shift’s Pro-Super (**Detailed Requirements**). The Pro-Super should then establish clear priorities for their shift that support the large scale priorities and maximize the maintenance effort. These priorities must be clearly communicated to the Expediter(s) (also **Detailed Requirements**). At that point the burden shifts to the Expediter to allocate their resources to meet operational requirements and to clearly communicate these priorities to their personnel. Flightline maintenance is then performed based on the established priorities and requirements (**Implementation and Testing**). Throughout the shift but especially as it comes to a close, the Pro Super needs to review the maintenance performed, both independently and with the Expediter, to confirm that their established requirements were

effectively met, and if not, what led to the failure. This constitutes the **Acceptance Testing** phase of the micro-cycle and leads the Pro-Super into their turn over with the next shift, starting the cycle over again.

In reviewing the micro-cycle, the question will inevitably be asked, “Where is the customer in this process?” Most operations squadrons don’t have 24-hour operations, so how are they represented? In this case, as well as in the macro-cycle we will look at next, the Pro Super (as well as the Lead Pro Super plus the AMU OIC and Chief) take on dual roles, as both the leaders of the development team and as representatives of the customer, charged with ensuring the contract established between the two organizations is met. The macro-cycle is very similar to the micro-cycle, only the role of the customer’s representative is played by the Lead Pro Super, the AMU OIC and the AMU Chief and the leader of the development team becomes the Pro Super. The same cycle of reviewing aircraft status versus requirements and establishing priorities will take place, only now this review and establishment takes places daily in the morning AMU production meeting. It is coupled with the **Acceptance Testing** of the previous day’s flying. It is just as important that upon leaving this meeting, the Pro Super understand the priorities as it is when the Expediter leaves their meeting with the Pro Super. These priorities, especially those communicated from Lead Pro Super to Pro Supers are the **Detailed Requirements** necessary to develop the product (the flying day) and as the flying day unfolds there are ample opportunities for leadership to do vector checks on how things are shaping up (QA). As previously mentioned the **Acceptance Testing** ultimately takes place in the Production meeting the following morning as performance is reviewed, shortfalls are corrected, and best practices are pointed out.

One significant difference between the original goal of the Scrum process and that of USAF flightline maintenance is that Scrum was created to create parts of a larger whole, where there is a

definable “end product” that will ultimately stand-alone as a piece of a “final product.” Sortie generation is an ongoing process. While we could define a single flying day as an “end product” that is part of the Flying Hour Program as an “end product,” that would be a bit like trying to put a square peg in a round hole. Scrum was developed to create things. Sortie generation is utilized to create effects. How do we create the effects that allow us to eliminate the danger of a radar station to a bomber with a time critical payload? We give the aircrew that will target/engage the radar station enough training sorties with functional systems so they are comfortable with the aircraft, the involved systems, and the armament required. Extend that to a flying squadron full of aircrew with myriad requirements and differing levels of proficiency and it becomes apparent there can’t always be a clear beginning and end to maintenance’s production development effort as is assumed in the Scrum. However, those best tools from Scrum, like the daily Scrum, the concept of a Sprint and Sprint planning meetings can be utilized to maximize maintenance performance as well as improve the communication between the OPs and MX domains to best allow us to achieve the effects required for successful pursuit of our various missions.

## **About the Author**

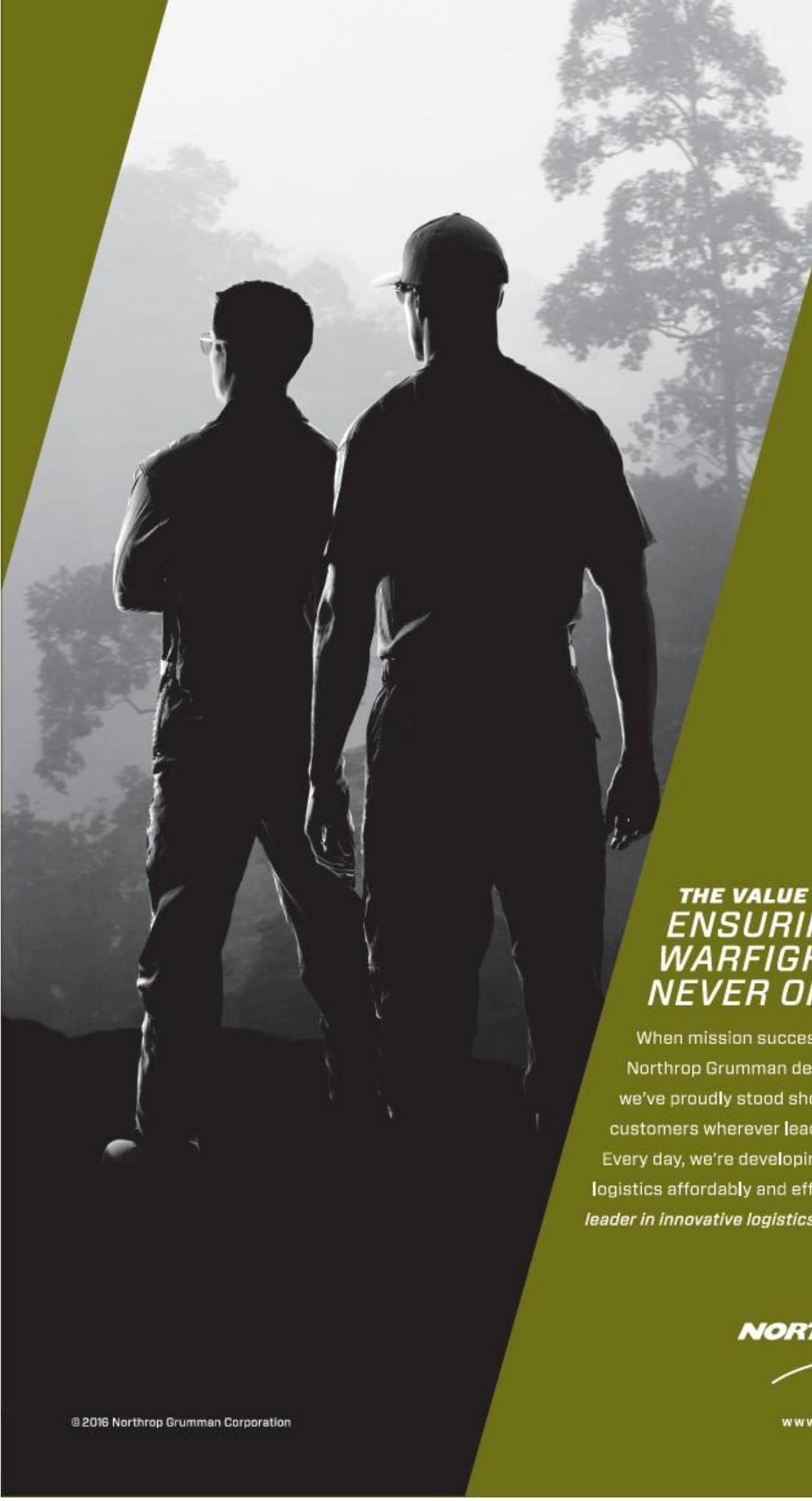
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