

ER

Fall 2015

LOA:

The Founders

Col Logan "Jay" Bennett, USAF (Ret)

Vehicle Management ...

The Struggle is Real:

A Glycol Recovery Vehicle Story

1st Lt Jamey Shuls

Equipment Challenges of an Organic Transition

Capt David Roth

The Magic behind the Curtain:

Takeaways from a Depot Tour

Maj Joshua Downing

Shifting the Bottleneck:

Logistics Lessons from Nepal

Capt Brint Ingersoll

Beale AFB High Flight Chapter Tours

Sierra Nevada Brewery

Maj Jerry L. Ottinger II

**Enabling Global Agility Across
the Joint Logistics Enterprise**

Maj Jonathan E. Menashi

For the Want of a Nail

Maj Gen Warren Berry

Lt Gen Micheal E. Zettler, USAF (Ret)

KC-46A Tanker Increases

Maintenance Efficiency

**Ms. Pam Valdez, Maj Gen Warren Berry, and
Lt Col Liz Clay**

Split-AMU Operations:

How I Learned to

Stop Worrying and Love the Job

Capt Aaron W. Darty

THE EXCEPTIONAL RELEASE

FALL 2015 - CONTENTS



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Professionals Shaping the Military Environment

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PO Box 2264 - Arlington, VA 22202 Issue No. 135 - Fall 2015
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President's Log	1
From the E-Ring	5
Lt Gen John B. Cooper	
Senior Leader Perspective	8
Brig Gen Carl A. Buhler	
Joint Matters	22
Brig Gen Mark M. McLeod	
For the Want of a Nail	30
Maj Gen Warren Berry, Lt Gen Micheal E. Zettler, USAF (Ret)	
Shifting the Bottleneck:	
Logistics Lessons from Nepal	39
Capt Brint Ingersoll	
Vehicle Management...The Struggle is Real:	
A Glycol Recovery Vehicle Story	47
1st Lt Jamey Shuls	
Equipment Challenges of an Organic	
Transition	53
Capt David Roth	
LOA: The Founders	57
Col Logan "Jay" Bennett, USAF (Ret)	
Beale AFB High Flight Chapter Tours Sierra Nevada	
Brewery	63
Major Jerry L. Ottinger II	
The Magic behind the Curtain:	
Takeaways from a Depot Tour	68
Maj Joshua Downing	
Split-AMU Operations:	
How I Learned to Stop Worrying and	
Love the Job	75
Capt Aaron W. Darty	
KC-46A Tanker Increases Maintenance	
Efficiency	84
Ms. Pam Valdez, Maj Gen Warren Berry, Lt Col Liz Clay	
Training the Joint Loggie:	
Enabling Global Agility Across the Joint Logistics	
Enterprise	90
Maj Jonathan E. Menashi	

President's LOG (ISTICS)



Emily A. Buckman, Col, USAF (Ret)
President, LOA

Hello LOA Family,

I hope you have enjoyed the glorious summer.

It has been a great couple months for LOA and continues to be an honor to serve thousands of members around the world.

Chapter President Elections and moves. We have brought on several new Chapter Presidents with the summer moves. Thank you to those who have served so well and thank you to those who will carry on. One of our Chapter Ambassadors, Capt Carrie Kerner, hosted the most well attended quarterly Chapter President meeting in my tenure. Not only was the showing great, but hearing all of the exciting updates humbled the entire Executive Board. Our Chapters continue to support the Professional Development of our officers and civilians around the globe. They hold scholarship fundraisers. They visit other bases, and they continue to form excellent relationships with industry in an attempt to benchmark, innovate and create new ways of supporting warfighters. Thank you, Carrie, for taking this role so seriously. Our Chapters are the heartbeat of LOA.

LOA's L.I.V.E. Symposium: 19-22 October 2015. Late last month, the USECAF approved our upcoming event. We are so excited. Registration has opened: www.LogisticSymposium.org. We have an excellent lineup of leaders from our Air Force, our Joint Community, and Industry. This year's theme – "Leadership; Innovation; Velocity; and Excellence" will add a new excitement to the main stage. Why L.I.V.E.? Leadership is the jumping-off point for success in logistics...Innovation is not new, bright and shiny--it is accomplishing the mission more effectively at a lower cost...Velocity applies to ideas, education, people, processes and certainly logistics...and, finally, Excellence is making changes, implementing new ideas and rapidly conducting logistics while adhering to high mission-centric quality standards.

Executive Board visits around the globe.

~ AF Logistics Officer School (AFLOS). In May, our Chief Information Officer, Lynn Arias, and Chief Learning Officer, Colonel Dennis Dabney, made a visit to the new combined Logistics Officer School at Sheppard AFB. They had the opportunity to talk about LOA and present AFLOS graduates with one-year memberships to LOA. Thank you, Lynn and Dennis, and thank you to AFLOS for partnering with us. Our goal with this partnership is to enhance integration and strengthen networking at the junior officer level.

~ Tinker AFB Air Logistics Complex visit. In June, I had the opportunity to meet with this robust LOA Chapter. Tinker is known as the proving ground for officer professional development and the Center of Logistics Excellence. The energy in this chapter was exciting and inspiring. Lt Gen Lee Levy, the new Air Force Sustainment Center Commander, even

joined the meeting and shared a few thoughts on the power of an energetic LOA Chapter. Thank you, Gen Levy!

Following Gen Levy's comments, I had the opportunity to sign an MOU with Mr Steven Alsup, the PALACE Acquire Program (PAQ) Champion, during the Brown Bag luncheon. Similar to awarding all new graduates of the newly combined Logistics School house with their first annual LOA membership, the MOU now awards all civilians in the PAQ at Tinker with a complimentary annual membership. We established this new partnership as a means to open up lines of communication to share more information, best practices and lessons learned as these rising civilian leaders go through certification, training and education. Finally, I had the opportunity to sit down with Brig Gen Mark Johnson, the Complex Commander, and visit a few of his facilities. I was truly in awe of the mission. Gen Johnson and his team are truly living out the principles set by Lt Gen Bruce Litchfield (USAF, Ret) when he was the AFSC Commander. The entire Complex is proudly living the AFSC dream. Thanks for this incredible visit, Tinker!

The 2015 LOA Executive Board Election results. I am proud to announce that Colonel Dennis Dabney will take the President's reigns at the end of the Symposium. He is currently assigned to OSD after serving successfully as a Maintenance Group Commander. I am also pleased to tell you that Mr. Brad Leonard has been officially elected our Chief Financial Officer (CFO). Brad has brilliantly served as the Acting CFO since last fall. He resides in a Program office at Peterson AFB. Both gentlemen bring a wealth of logistics experience and many years of service to LOA. I am confident in them and encouraged that they accepted the nominations to run for these important offices.

In closing, I'd like to thank Lt Gen Judy Fedder who retired in May as the Air Force's top Logistician. She was our senior advisor, friend, mentor and champion during the toughest of days when we weren't sure LOA would survive the DOD budget process. She was our advocate at the highest levels of the Air Force when associations like ours were closing their doors. LOA is stronger today because of her belief in this association and its members. Godspeed, Gen Fedder. We are eternally grateful for your support, professionalism and loyalty, and are thankful that you picked an amazing replacement in Lt Gen John Cooper.

See you all in October! Register soon—we had to turn folks away last year:

www.LogisticSymposium.org.

Very respectfully,

Emily

Emily A. Buckman, Col, USAF (Ret)

President, LOA



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



Logistics Strategy Must Deliver Results

I cannot fully describe how excited I am as I assume responsibilities as the Air Force's 30th AF/A4. Surveying the world we loggies live in, I see very challenging times, where fiscal constraints are colliding head-on with the mission growth needed to keep pace with a dangerous world.

One constant I see is an insatiable thirst for USAF airpower, and we must prepare Air Force Logistics to be even more agile in the future. For our vast logistics enterprise to be successful supporting today's and tomorrow's fight, it needs a well-developed and focused plan geared to address the challenges of both today and tomorrow. Without a plan, we run the risk of chasing the next "bright shiny object", and wasting precious time and money.

The Air Force Enterprise Logistics Strategy is now three-years old, and continues to focus on three key priorities: *evolve logistics core competencies to fully support Joint*

Operations, posture logistics resources for the current and future fight, and deliver cost effective readiness through product support & operational logistics.

For a Strategy to succeed it must deliver results in the short term, and plan for the long term. This is why I am so excited about advancing our efforts--our Strategy is delivering results today, and helping to shape efforts to improve our capabilities for the tomorrow. Here are a few interim results from initiatives we began to support the Strategy;



War Readiness Material (WRM) Centralization

OUR WORK

The WRM Global Management Office (GMO) transitioned from ACC to AFMC's 635th Supply Chain Operation Wing (SCOW) and declared Full Operational Capability (FOC) in April 2015. As part of FOC, we established the first-ever enterprise WRM Transportation Account Code providing an enterprise view of WRM transportation costs, submitted the first-ever **enterprise** WRM requirement in the FY17 POM, and discovered thousands of WRM assets that were not accurately captured in the AEF Reporting Tool (ART) by reviewing the Unit Type Codes. Lastly, we codified our work in policy with the published Air Force Policy Directive (AFPD) 25-1 and Air Force Instruction (AFI) 25-101, WRM Program Guidance and Procedures.

RESULTS BY THE NUMBERS

↑ 19%

Improvement in Base Expeditionary Airfield Requirements (BEAR) Mobility Readiness Spares Package (MRSP) fill-rate (52% to 71%)

↑ 9%

Improvement in the WRM equipment fill-rate

\$495K

Requests processed by WRM GMO using the Government Purchase Card (GPC) to support global WRM requirements



COST EFFECTIVE READINESS (CER)

OUR WORK

CER is comprised of three major initiatives including Cost of Logistics (CoL), Accurate Supply Requirements, and Aircraft Availability (AA) Surge. CER is focused on our ability to define and understand the costs of our business so that our enterprise can make informed data-driven decisions.

CoL seeks to (1) accurately identify and explain the cause and effect relationship between logistics funding and operational readiness measures; and (2) understand how to use cost information to make decisions across the enterprise. The Accurate Supply Requirements initiative seeks to identify driving sources of variability in the spares requirement computation and control that variability for a more accurate computation. Lastly, the AA Surge initiative seeks to develop a common definition for Peak, Steady State, and Training AA levels and enable us to prove or disprove the hypothesis that the Air Force can surge from a reduce steady-state to wartime AA requirements.

Most recently, we integrated weapon system logistics cost tools, called Logistics Cost Models (LCM), into LIMS-EV (A4 Business Intelligence gateway for data reporting and analytics) to help our community understand logistics costs, what drives them, and how those costs contribute to readiness.

RESULTS *BY THE NUMBERS*

280+

Total Force operating locations now have visibility into their logistics costs

2

Prototype AA surge models; KC-135 successfully modeled and simulated to quantify our ability to surge aircraft; currently conducting data collection analysis for F-15E



STRATEGIC SOURCING

OUR WORK

Strategic Sourcing is a simple concept--rather than have each base contract for a particular service, a larger, strategic contract could be used by all bases. The larger contract leverages quantity buys, driving both the cost of the contract, and the cost of material down for the customer. Bottom line-- Strategic Sourcing gets the most out of our dollars at no risk to the customer. It is small business friendly and focuses on the total cost of ownership. The Strategic Sourcing team's first initiative was to develop a Hand Tool Blanket Purchase Agreement (BPA) and test it at Offutt, Nellis, and Tyndall AFBs. The test was so successful HQ ACC has mandated the use of the Hand Tool BPA across their Command, and other MAJCOMs are reviewing its applicability to their MAJCOM.

The second Strategic Sourcing initiative is Transient Alert (TA), where they are working with the Air Force Installation Contracting Agency (AFICA) to develop a Performance Work Statement and evaluate the best approach for implementing a TA strategic sourcing agreement. The projected implementation date is Spring 2016.

RESULTS BY THE NUMBERS

\$50K	\$2M
Savings as a result of Hand Tool Blanket Purchase Agreement(BPA) pilot between GSA and Nellis and Tyndall AFBs	Projected savings per year through contract management process improvements and efficiencies associated with Transient Alert (TA) initiative

These are just a few of the many successes to date. These are not “home runs”, but collectively, the multiple efforts in work and planned will make AF Logistics a more capable enterprise. We have more initiatives on the horizon that I am very excited about and you will

hear about over the coming year. One major effort underway is to address how AF Logistics will operate in contested and denied environments. Another initiative is the Deliberate Continuum of Learning (DCoL). Part one of the DCoL was to consolidate our Logistics readiness, munitions and maintenance basic training efforts to Sheppard AFB, which we completed this year. We're now working to build career-timed training, like a core competency course for Field Grade officers, and an Advanced Logistics Course replacing AMMOS and ALROC. There we'll challenge our officers to think through and develop ways to operate in contested/denied environments. This is exciting stuff, and just what we need to prepare the Log nation for the future.

As Yogi Berra once said, "If you don't know where you're going, you'll end up somewhere else." I believe the Enterprise Logistics Strategy is helping us forge the path forward for Air Force logistics.



With Brig Gen Carl A. Buhler, Commander, Ogden Air Logistics Complex, Hill Air Force Base, Utah.

Raptors come of age against ISIS...

...and forge a new bond to sustain its fighting spirit into the future.

With: Col Stan Springer, Lt Col Rod Steven, and Col (Ret) Brett Haswell

In the dark skies over Syria on September 22, 2014, the F-22 Raptor joined the ranks of other combat veteran aircraft after unleashing its lethal power in a joint air attack against ISIS targets. First reaching Initial Operational Capability (IOC) in December of 2005, this fifth generation fighter peacefully and confidently defended the skies over our homeland, trained fifth generation fighter pilots and reliably deployed worldwide at the ready to answer an ally's call. Since entering the battlefield arena last fall, theater commander demands for F-22s continue to increase.

With 17 years behind us since the Raptor's first flight, is this fleet postured to sustain the increased OPTEMPO sure to follow in the coming years? Taking stock of today's F-22 challenges reveals a fairly steep climb ahead for this air dominance machine. The fleet currently sits at 59.5% aircraft availability against an Air Force standard of 72.6%. Given the evolving demands of the combat environment today, instead of the planned 50 aircraft not available to fly we'd actually find approximately 73 aircraft unavailable to the Warfighter.



“It's amazing what the airplane can do. While airborne, the F-22 flew its strike mission, but was also re-rolled five times during flight, meaning its main objective changed. The F-22 flew surveillance missions tracking fighters on the ground, used its advanced sensors to redirect other aircraft and call for additional strikes, passed along data on its missions and escorted bombers to their targets. While in flight, the F-22 required seven refuelings.”

General “Hawk” Carlisle, COMACC, ACC commander predicts up to seven-year fight in Iraq, Syria, AF Times, 2 Jun 2015

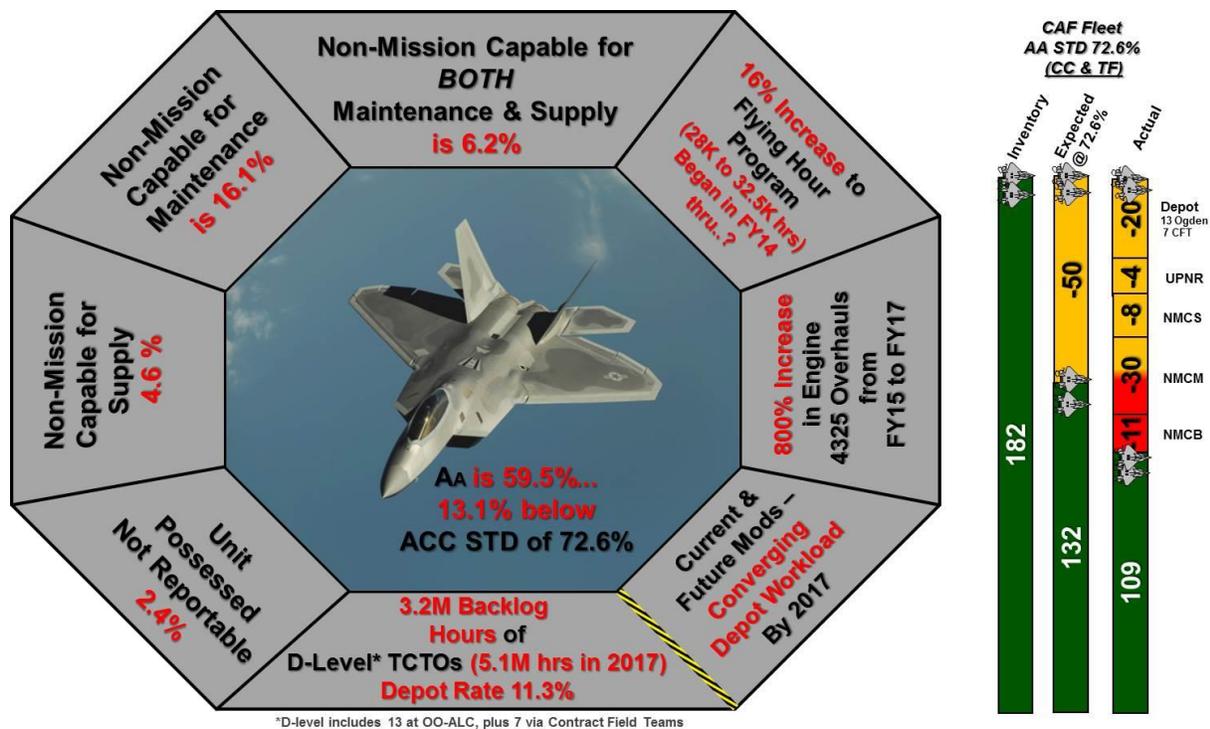
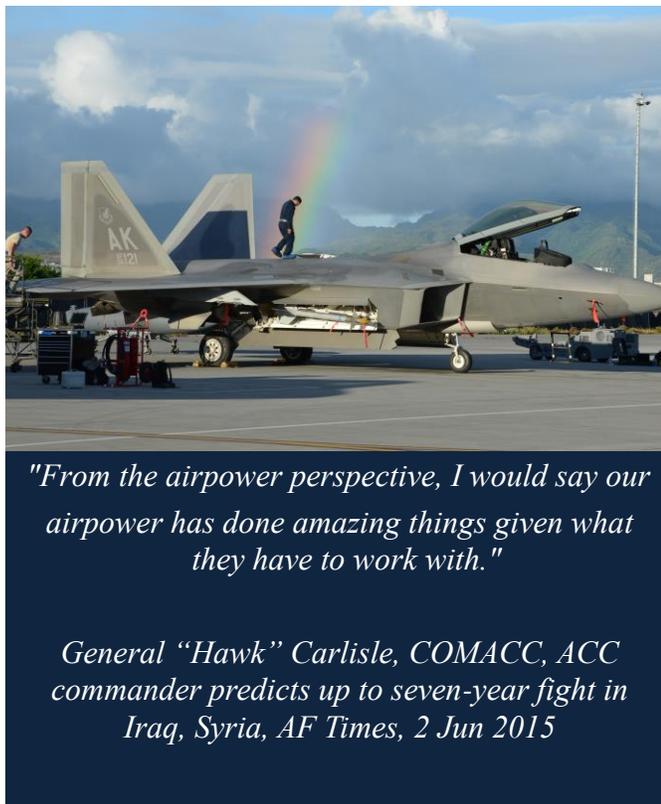


Figure 1: Aircraft availability breakout and fleet impacts

Balance this airframe availability against a 16% growth in the annual flying hour program from roughly 28,000 hours to 35,000 hours and the strain increases yet again. Finally, this relatively small fleet of 187 aircraft is carrying a backlog of over 3.2 million hours of necessary sustainment modifications which is expected to grow to an estimated 5.1 million hours by



FY18. Based on these realities, the F-22 fleet’s viability at its current size appears tenuous if the status quo remains.

Fortunately
for the F-22 fleet,
the Air Force

Instead, AFSC leaders embrace the “continuous” portion of continuous process improvement and are comfortable with setting tough goals and marching towards them.

Sustainment Center’s (AFSC) approach to achieving “Art of the Possible” results doesn’t include settling for the status quo. Instead, AFSC leaders embrace the “continuous” portion of continuous process improvement and are comfortable with setting tough goals and marching towards them. Always driving for higher velocity within each production line, AFSC tenets are used to focus depot leaders, at all levels, to balance the need for increased speed with the



“Without continual growth and progress, such words as improvement, achievement and success have no meaning.”
Lieutenant General (ret) Bruce Litchfield, the first AFSC/CC, Art of the Possible, 1Sep 2014

requirement to produce a quality asset in a safe manner. The 309th Aircraft Maintenance Group (AMXG) fulfills its mission of delivering airworthy, combat ready aircraft to our Warfighters by keeping a close watch on quality and safety while driving up velocity.

However, overhauling the F-22 fleet requires more than just a single organic depot unit like the 309 AMXG to

deliver on this mission. F-22 depot workloads fall under a Private-Public Partnership (PPP) agreement with Lockheed Martin Aeronautics (LM Aero) that has been in-place for nearly a decade. This PPP brings key players together by working towards a common goal focused on

sustaining the Raptor fleet. Having just shuttered the F-22 portion of LM Aero’s Palmdale facility, the Ogden ALC/LM PPP site remains fully engaged on tackling the myriad of operational challenges outlined above.

Recognizing the perfect storm approaching coupled with the Raptor’s entry in combat ops, Lieutenant General Bruce A. Litchfield (former AFSC/CC) forged a senior leader alliance with Mr. Orlando Carvahlo (Executive VP, LM Aeronautics Business Area) in late September 2014. With an October 2014 change in leadership at the helm of the AF Life Cycle Management

Center
(AFLCMC),
Lieutenant

He challenged the Ogden-LM team to shave 30% from the current depot production line flow by the end of FY16; and the “Road to 30 percent depot flowday reduction” initiative was born.

General John F. Thompson (AFLCMC/CC) enthusiastically joined the alliance. Shortly thereafter, AFSC, AFLCMC, and LM began realigning their collective efforts to transcend previous partnership friction points and focused support on clearing roadblocks and constraints.

Blazing ahead with these leading-edge commitments, the AFSC/CC threw down the gauntlet. He challenged the Ogden-LM team to shave 30% from the current depot production line flow by the end of FY16; and the “Road to 30 percent depot flowday reduction” initiative was born.

This 30% reduction became the F-22’s new Art of the Possible (AoP) goal. Now, the question became, how do we best tackle the challenge?

Fresh from the DoD awarding Ogden’s 574th Aircraft Maintenance Squadron (F-22s) the 2014 Mason Award for best depot maintenance in the Department, the team recognized past successes won’t put the required iron on the ramp. With strong senior leader support, the F-22

Enterprise team of 50-plus stakeholders convened in October 2014 to kick off the first of three major Rapid Improvement Events (RIE). Brigadier General Carl A. Buhler, OO-ALC Commander, charged the team with the following inspiration:

“Focus this entire journey on increasing aircraft availability...that’s the sole measure of merit for this effort. Every team member, to include the VPs and generals, must walk away from this event with action items. That’s the only way to ensure everything is on the table. It will also ensure this effort remains larger than one focused solely at the local level with only tactical actions.”

Now, focused with the end goal in mind, the team “blew up” F-22 depot production by

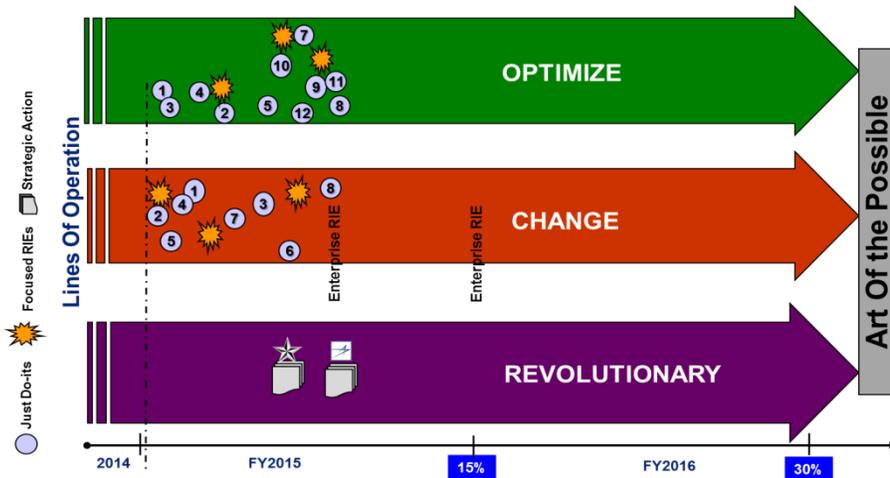


Figure 2: RIE 1.0 Lines of Operation

leveraging the 360-degree field of view made possible by the team’s wide array of experts. RIE members ranging from LM Aeronautics, DLA, AF supply chain, F-22 SPO,

AFSC and OO-ALC fully detailed, then dissected, the F-

22 depot production machines. Viewing the major & minor tasks within an unconstrained support environment, the team crafted a new depot flow approach that could meet the AoP goal...but only if massive changes occurred.

To refine the changes needed, various RIE members fanned out on the production floor and interviewed more than 100 technicians and wage-grade leaders. Gathering 213 inputs, their ideas covered an even broader spectrum to include quality of life, tooling, training and safety-focused thoughts on

streamlining the operation.

The RIE team then focused on the inputs, “bucketized” them into three different categories, and then took the

unique step of providing

immediate feedback to the

entire workforce before

closing down the event. This

rare step reflected the value

placed on everyone’s

thoughts and reinforced the

leadership team’s commitment to each team member.



“The F-22 Depot Team is a World-Class Partnership with a common goal: reducing depot maintenance spans by 30 percent over the next two years. Achieving this goal will improve aircraft availability across the high demand, low density F-22 fleet,” said Scott Gray, Integrated Fighter Group vice president of sustainment for Lockheed Martin. The 309th Aircraft Maintenance Group, F-22 Program Office, and Lockheed Martin Aeronautics are all working side-by-side to enhance the capabilities and extend the life of the F-22 fleet.”

In wrapping up RIE 1.0 three weeks later, the team settled on 62 distinct opportunities for improvement with 17 of them clearly reflecting immediate, positive impact to the network’s critical path. Outlined in three distinct lines of operation, they named these lines of operation ‘Optimize,’ ‘Change’ and ‘Revolutionary.’ These names helped to identify the level of commitment needed to make necessary changes required to optimize F-22 depot flow and meet the AoP challenge.

For anything in the ‘Optimize’ band, these changes fell largely within the scope of **one organization** to handle. Items in the ‘Change’ line of operation reflected a need for **multiple partners** to tackle the change as a team to achieve success. Finally, the most difficult changes

fell into the

Outlined in three distinct lines of operation, they named these lines of operation ‘Optimize,’ ‘Change’ and ‘Revolutionary.’ These names helped to identify the level of commitment needed to make necessary changes required to optimize F-22 depot flow and meet the AoP challenge.

‘Revolutionary’ line of operation and reflect aspects such formal policy changes, wide-ranging contractual barriers and other items of a like nature. Tackling these issues successfully would require direct engagement by the 3-member team at the **executive level**.

CPI implementation can take a long time to see even a glimmer of success but this team’s enthusiasm blew past that paradigm. Posting clear victories early across every line of operation demonstrate the commitment from the shop floor to the executives’ doors. Out of the ‘Optimize’ band, OO-ALC streamlined internal Low Observable (LO) processes while LM Aero took the lead on solving specific engineering issues identified in the ‘Change’ line of operation. Finally, the SPO accelerated efforts to take a quantum leap forward by driving robotics into the F-22 production line. Let’s look at a detailed example of each.

LO coating restoration on an industrial scale presents challenges rarely seen in the field and fell within the ‘Optimize’ line of operation. Leveraging the wide-ranging capabilities at a USAF depot like OO-ALC can inject a velocity boost simply not available elsewhere. In this case, OO-ALC combined the 309th Commodities Maintenance Group’s Computer Numerically Controlled (CNC) cutting machines to automate a mind-numbing LO boot cutting task. With CNC cutters cranking out standard pieces of LO boot, the 574 AMXS freed dozens of LO

technicians to speed up other LO processes requiring a human touch. Launching from this success, the depot line could now “kit” the LO boot application needs for each aircraft and slash the time team members would have to spend searching for the right parts to finish an LO task.

Through
applying OO-
ALC’s own

With CNC cutters cranking out standard pieces of LO boot, the 574 AMXS freed dozens of LO technicians to speed up other LO processes requiring a human touch.

organic capabilities in new ways, the F-22 team’s made it nearly three-quarters of the way towards the 30 percent AoP goal on the Inlet Coating Repair production machine in less than 6 months!

While the Ogden team focused on streamlining LO work, the LM Aero team led the way towards refining the Supplier Quality Assurance Requirement (SQAR) process for engineering dispositions. Taking anywhere from 3 days to 3 weeks, the SQAR process needed its own overhaul to increase response speed and lessen work-stoppage impacts. The multi-partner nature of this project put this opportunity into the ‘Change’ line of operations since restructuring the

By championing a Standard Depot Repair (SDR) approach, LM Aero eliminated unnecessary wait time for common structural aircraft issues.

process
required
awareness and

support from the many affected organizations. By championing a Standard Depot Repair (SDR) approach, LM Aero eliminated unnecessary wait time for common structural aircraft issues. Conservatively estimated at a 75-day per year savings, this project will continue to yield gains in speed, over the life of the Raptor.

Finally, immediately following RIE 1.0 wrap up, the SPO team redoubled efforts to field a \$12M Small Business Innovation Research (SBIR) project to automate intake coating

processes for the F-22. Falling within the ‘Revolutionary’ line of operation, the SPO secured executive-level support to push this advanced robotics effort to contracting’s forefront. By October 2016, the SPO expects to field three intake robotic paint systems into the main F-22 depot hangar and eliminate at least 50% of the flow days to recoat the intakes. Additionally, this approach frees technician support that was dedicated to two continuous operations spanning more than 60 hours and can now work other tasks or other aircraft, as needed.



“This combined AFSC/AFLCMC/LM initiative to significantly reduce the F-22 depot span is absolutely essential to our collective effort to affordably increase F-22 operational availability. The 30% challenge is an incredible undertaking, and I am counting on the team to continue building on its early successes to simultaneously deliver unprecedented Warfighting capability and operational availability in a cost-effective manner. Our ongoing examination of the F-22's sustainment enterprise builds from the results of this initiative as we continue to look for opportunities to meet the Air Force's most demanding operational requirements in an increasingly austere funding environment”

*Brigadier General Eric T. Fick, Program Executive Officer for Fighters and Bombers,
Air Force Life Cycle Management Center*

As a testament to the commitment of this re-forged partnership, the same stakeholders reconvened in April 2015 for RIE 2.0 with the goal of identifying emerging friction points

Although the final tally for FY15 will come at the end of the year, the F-22 team has already dropped 38 total flow days on this year's total goal of 79 with two inlet coating repair (ICR) jets already meeting the 30% goal.

generated by
this increased
speed. A total

of 104 opportunities for refinement emerged and the team agreed to an additional reduction of 34 flow days across the depot lines. With the commitment holding strong, a June 2015 RIE 2.5 focused on exchangeables recently wrapped up finding more changes to test out in the supply and commodities arenas. Although the final tally for FY15 will come at the end of the year, the F-22 team has already dropped 38 total flow days on this year's total goal of 79 with two inlet coating repair (ICR) jets already meeting the 30% goal.

As our F-22 Partnership and the associated support systems evolve, this dedicated team will surely burn down the backlog and deliver more iron back to F-22 flightlines. After overcoming these hurdles, the F-22 depot team looks forward to adding more features and Warfighting capabilities to the newest combat-proven airframe. The question remains...just *how much* combat capability can this invigorated team return to the combatant commanders?

Brigadier General Buhler addressed how we'll answer this question as he provided guidance to the team before the kickoff for the F-22 RIE 2.5 effort with the following thoughts... "By following the three lines of operations laid out in RIE 1.0, **this** combined team will 'Optimize,' 'Change' and 'Revolutionize' F-22 operations for our nation. Our unified efforts between LM, the SPO, Supply Chain, Engineering, Maintenance and all other contributors provide the solid foundation to propel combat training sustainment forward. Although seemingly disconnected at times, we're all pulling towards that common goal at the center of

AFSC's leadership model; increasing aircraft availability through achieving the depot's Art of the Possible Goal."

With a dedicated, *Enterprise* approach, the three F-22 partners will have the tools to achieve Art of the Possible objectives previously unobtainable in our resource-constrained environment.

ABOUT THE AUTHOR:

Brig Gen Carl A. Buhler is the Commander, Ogden Air Logistics Complex, Hill Air Force Base, Utah. As commander, he leads a team of approximately 8,100 personnel to perform depot repair, overhaul, and modification of the A-10, C-130, F-16, F-22, F-35 and T-38 aircraft, the Minuteman intercontinental ballistic missile system, and a wide range of commodities."

JOINT MATTERS



With Brig Gen Mark M. McLeod, Commander, Defense Logistics Agency Energy, at Fort Belvoir, VA.



Brig Gen Mark M. McLeod

Rebalancing fuel support in the Pacific

I'm no stranger to the Pacific and the rebalance of assets in the region after serving as the director for Logistics, Engineering and Security Assistance at U.S. Pacific Command Headquarters. Coming from PACOM to the Defense Logistics Agency Energy, rebalancing fuel and its infrastructure is now the name of the game.

The rebalance has been happening for a while now and it's been happening in a couple of different ways. A lot of it is looked at through our partners' eyes as force movements and major shifts in capability, but from a logistics standpoint we've been working for several years to rebalance assets in the Pacific. In my prior life as PACOM's director of the Logistics, Engineering and Security Cooperation Directorate, we were already asking the question of if we had enough fuel capability in the region. Now as the DLA Energy commander, I can now help address those questions.

We can trace this all the way back to 2009 when PACOM, DLA Energy, U.S. Transportation Command, military service components, and the Air Force's Space Applications Program offices took part in a study assessing PACOM's operations. Results of that study led to a Type III business case analysis to optimize PACOM bulk petroleum support. That same study also recommended DLA Energy turn to commercial alternatives to rebalance war reserve petroleum stocks in the Pacific.

We can also look back to a wargame under DLA's leadership for PACOM in the fall of 2014, and in that wargame we asked a few questions. Does PACOM have the capacity to do the job? Is there enough fuel? Is the fuel in the right locations? Are our strategic reserves and infrastructure enough to support the Pacific rebalance?

We found some interesting things through that process, but to answer those questions in a nutshell: Yes, but we can definitely do better.

We inherited the World War II infrastructure of the Pacific with locations based on where we've been in the past. Going through these wargame scenarios and taking a look at other locations or capabilities can help enable us make the warfighter be more resilient.

DLA must address whether we're flexible enough to do everything we need to lean on commercial contracting to

achieve these results.

There's fuel all over the world that we in DLA

Energy have the ability to take advantage of through commercial contracts. That's the heart and soul of what we do in DLA Energy every day. That's the ability to get tankers and products, move them into the theater and integrate them into our infrastructure.

Does PACOM have the capacity to do the job? Is there enough fuel? Is the fuel in the right locations? Are our strategic reserves and infrastructure enough to support the Pacific rebalance?

If you go back to the WWII timeframe, the military was already taking advantage of all of these means. Ultimately, the lessons of the Pacific don't really change. It's still a long way between locations in a maritime environment, so many of the lessons of our predecessors can be brought back to the table today.

The wargame taught us that we have plenty of fuel all around the world, and through our commercial contracts we can take advantage of that fuel very quickly. As for where the fuel is, it is mostly in the right places. However, some could be repositioned forward in the theater, such as in places like Guam where we're working on a commercial contract to expand storage there to

There's fuel all over the world that we in DLA Energy have the ability to take advantage of through commercial contracts. That's the heart and soul of what we do in DLA Energy every day.

meet the requirements of our combatant

commanders. We're also seeing if there are any locations where we can take our existing capabilities and push them forward to be closer to where they're needed.

Another big piece of the rebalance is a sort of "phase zero" shaping where we're building confidence between the U.S. and our partner nations. Posturing fuel is absolutely necessary to setting the stage for capabilities to surface, and those capabilities need the logistics behind them to be effective. DLA Energy plays a strong role in that.

Subject areas involved in making sure assets are where they belong are similar both for smaller regions and when it comes to a vast area like the Pacific. In the wargame, we found out that our existing infrastructure was less resilient than we needed it to be, and could be enhanced through a better location. Distance in this case is less important than addressing our other lessons learned.

So, how do we create the resiliency and redundancy needed in the Pacific? We adapt how we operate.

DLA Energy uses a combination of setting up major nodes and making sure they're strong, but redundant in case the situation calls for it. DLA Energy already has presences in Hawaii, Alaska, Korea and Japan, and we're exploring new options in Guam, the Kwajalein Atoll and Australia. We're also using commercial contracts for bunker fuel storage in Vietnam and the Philippines.

What's good about this economically is that we can create contracts where we need them and not have government infrastructure. They tend to be very flexible and very affordable. If we need it, we can use it.

Our reliance on the commercial supply chain also assists with resiliency. While our dependence on the global commercial supply chain may be seen by some as a vulnerability in the Pacific, we see it as a strength. DLA Energy can rely on

DLA Energy uses a combination of setting up major nodes and making sure they're strong, but redundant in case the situation calls for it.

the commercial supply chain since so much of our business revolves around having great relationships with our suppliers around the world. A solid relationship is important as a foundation for working to expand the availability of military and commercial-specification fuels to new locations in the region. We are diversifying our requirements and growing our capabilities in the Pacific.

DLA Energy is also talking with our counterparts in other nations in the Pacific to see how we can address factors that are important to all of us, like lowering costs, increasing cooperation with the commercial supply chain, efficiently sharing fuel and fixing aging

infrastructure. For example, we're discussing a fuel exchange agreement and increasing storage with Australia. Working with our partner nations not only has military benefits for the U.S., but also builds the nation's homeland defense and provides economic benefits to the areas supported by contracts we put in place.

Cooperation with our partner nations will continue as we reposition fuel and take advantage of everything the commercial supply chain has to offer so we can build capacity. The more capacity you build in, the more capability you build in as well, and the more you begin to create partnerships between companies, nations, products and global supply chains. Rebalancing the Pacific this way can build confidence and collective security to ensure that the nations in the region and the commerce between them can be protected.

ABOUT THE AUTHOR:

Brig Gen Mark M. McLeod is the Commander, Defense Logistics Agency, Energy, at Fort Belvoir, VA. In this position, he is responsible for providing the DoD and other U.S. government agencies with comprehensive energy solutions in the most effective and efficient manner possible.

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For the Want of a Nail

By: Maj Gen Warren Berry, AMC/A4
Lt Gen Micheal E. Zettler, USAF (Ret)



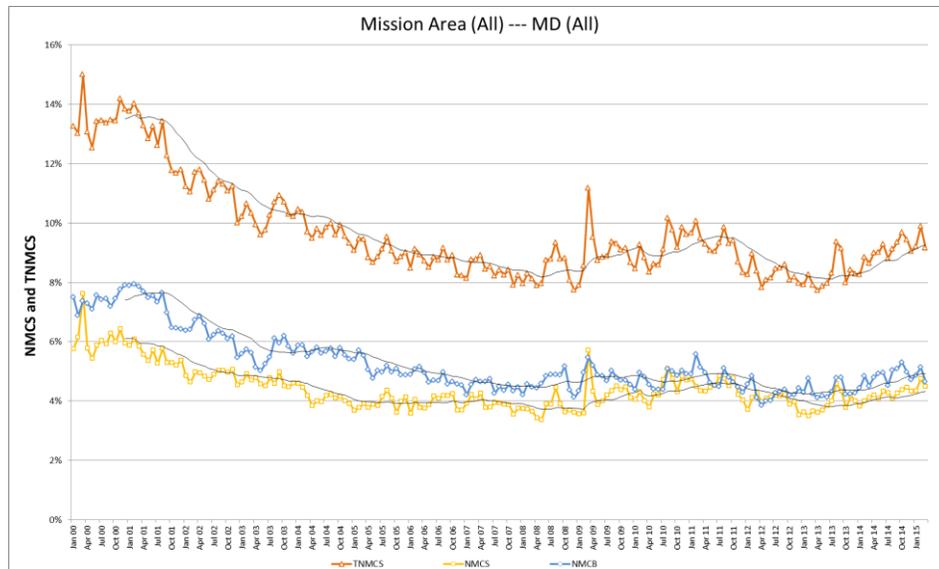
Maintenance manpower is grabbing the “headlines” of late as the AF struggles with maintenance manning shortages, to include skill level imbalances, as we bring new weapon systems into the Air Force fleet. Depending upon the weapon system you’re working, you’ve likely felt the impacts of those manning issues as you try to generate sorties, wondering how you can improve Total Non-Mission Capable Maintenance (TNMCM) rates, much less keep them stable. Yet what’s often lost in this conversation is the fact that our supply rates have largely kept mission capable rates afloat.

That is a huge testament to our supply chain managers and repair cycle experts across Air Force Materiel Command, and the men and women on the line who work tirelessly to stock and expedite parts to the flightline. Many logisticians who’ve been in the Air Force for a while remember the days

when we centralized the supply chain, feeling a

...our supply rates have largely kept mission capable rates afloat.

certain level of angst. Yet, it’s hard to argue with the results. Our Total Non-Mission Capable Supply (TNMCS) rates are the best they’ve been in years; in the vein that a picture is worth a thousand words, just glance at the chart below:

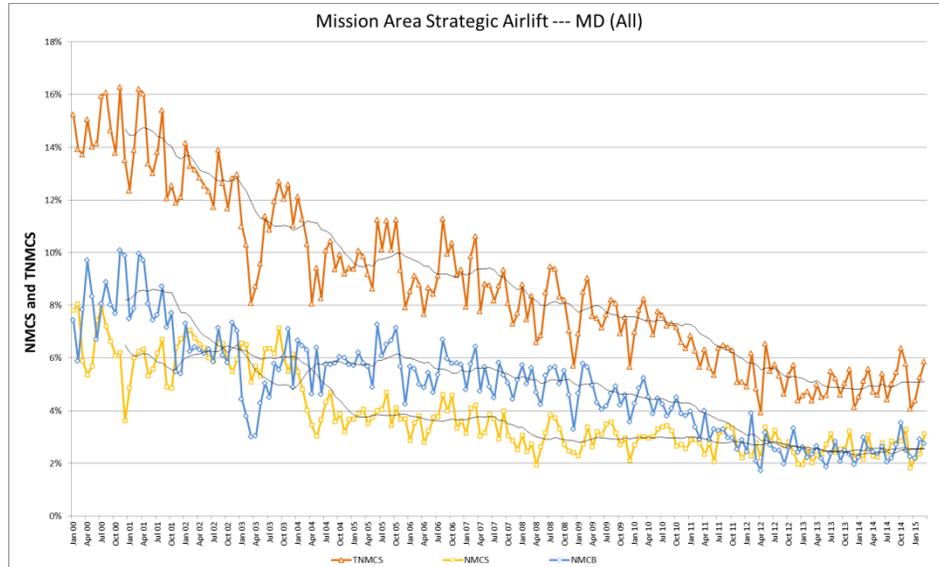


Our fleet-wide TNMCS rate was a whopping 15% in March 2000. Now, 15 years later, it stands at 9.2%. And that’s with aging fleets, diminishing manufacturing sources, and very few truly “new” weapon systems in the inventory (after all, our oldest C-17 is now 20 years of age).

To appreciate this success, you also need to appreciate the process by which we plan and program for spares. That process is complex, but has at its core some very basic principles that drive the USAF supply chain. It takes key stakeholders across the AF, Defense Logistics Agency (DLA), and other partners including the customer to review future part requirements. The requirements review process is a series of reviews that integrates future mission projections, funding allocations, procurement, and repair capacity for multiples year across the Five Year Defense Plan (FYDP). This review is continually refined as the year of execution nears. Integrating depot/contract repair capacity into the review postures the industrial work centers to align the resources to accomplish the repair. In the procurement arena, the AF has made great strides to negotiate strategic sourcing contracts with vendors to not only quickly drive part

procurement but also share information on future part requirements. The AF saves money by preparing the entire network versus paying for unscheduled requirements.

That process has generated some impressive results. The strategic airlift portfolio has undergone remarkable reductions in S rates.

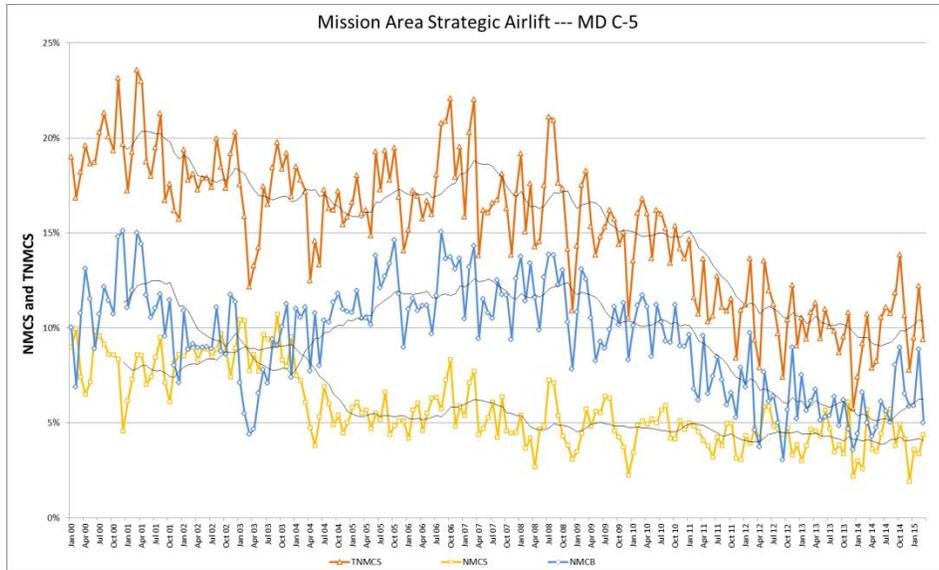


Before we all jump to the conclusion that this is the direct result of the C-141 retirement and Contractor Logistics Support (CLS) with the C-17, those figures only incorporate C-17 and

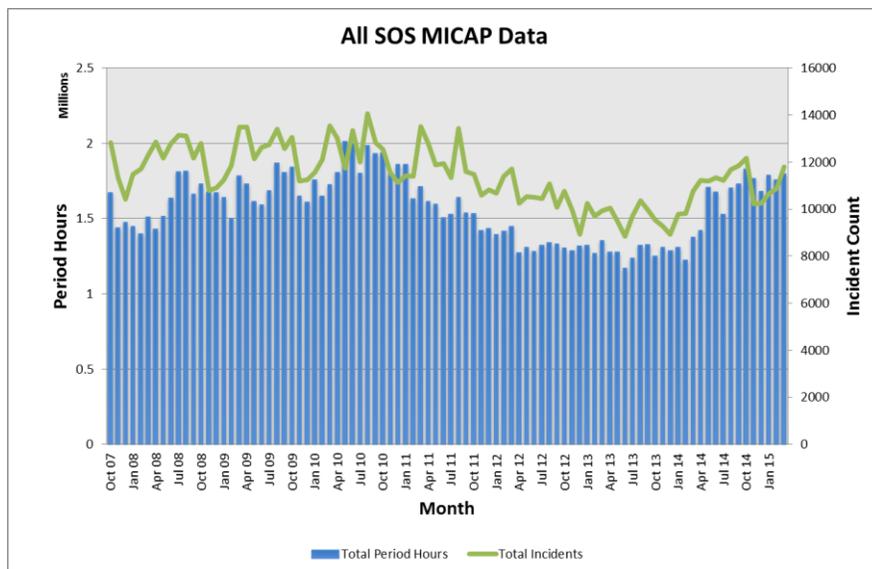
The AF saves money by preparing the entire network versus paying for unscheduled requirements.

C-5. Then, remember our C-17 has actually had relatively stable TNMCS

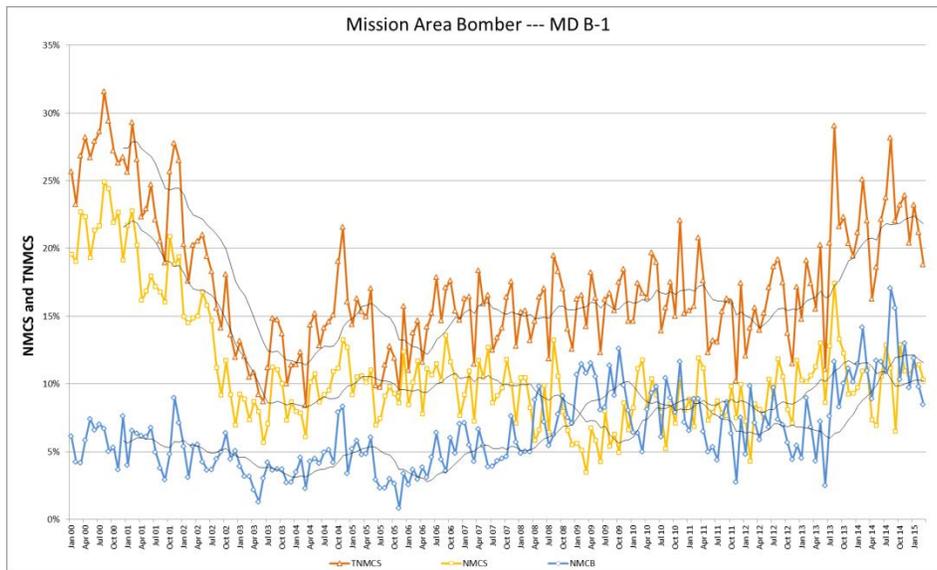
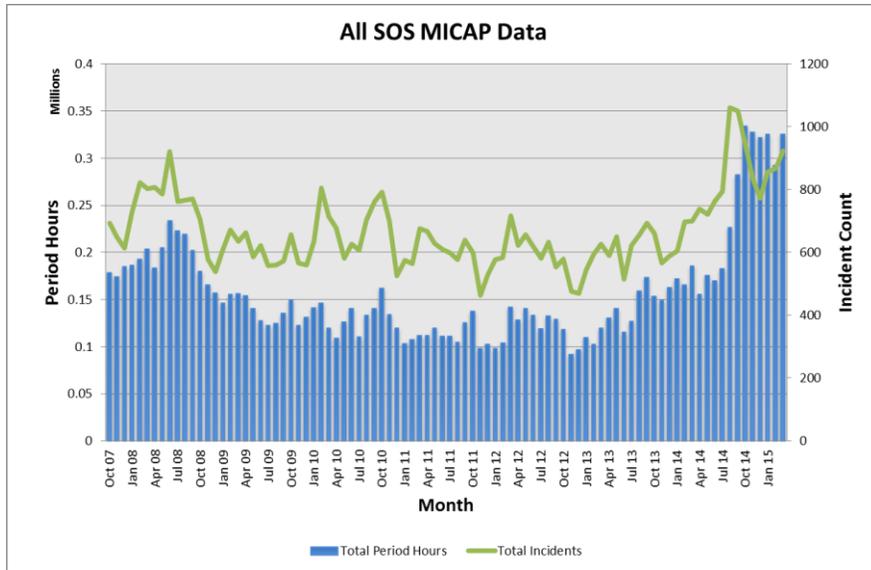
rates throughout its history, hovering between 4% and 6% for the last 15 years. So when I tell you that improvement is largely the result of C-5, which sports about a 50% reduction in S time, you might begin to appreciate the accomplishments in our supply arena.



Of course, that’s not to say every weapon system is “green,” nor is every weapon system where we might want its supply performance to be. In fact, the skeptics reading this will quickly look at chart 1 and note the slight upward trend in TNMCS rates for the past year. True, overall rates have risen from 7.9% just 1 year ago to the 9.2% this past March. MICAP hours are up slightly across the fleet...



...and some weapon systems, such as bombers, have some pretty steep slopes:



Those kinds of trend lines can be the result of any number of factors, many of which aren't "new." Many can be caused by an interruption in the supply chain from diminishing sources, where industry decided it's no longer economical to be in that business space. In those cases, we will often contract for a "lifetime buy" to fill inventory shelves, or perhaps we'll bring that workload into the depot, both of which take some lead time and result in short-term S spikes. Some are the direct result of an engineering surprise, where a part simply doesn't have the mean

time between failures that we had projected based on engineering analyses. More can be driven by unexpected technical failures of a sub-component, often characterized by large-scale replacements that weren't expected and, as a result, couldn't have been predicted during the budget development cycle.

The good news is that we've also learned valuable lessons from our past to help us mitigate wide swings in our supply readiness. We reached out to Lieutenant General Michael E. Zettler, USAF (Ret), who served as the Air Force's Deputy Chief of Staff for Installations and Logistics from April 2000

until January 2004, to help us understand the

...we've also learned valuable lessons from our past to help us mitigate wide swings in our supply readiness.

differences in supply support from then to now. During his tenure, the Air Force had several "campaigns" on-going to improve the spare parts processes. [Note: coincidentally, the charts in this article correlate to when Lt Gen Zettler took over as the AF/IL (now the AF/A4).]

The fact that maintainers want parts readily available, and are frustrated when they aren't there, certainly isn't new. Lt Gen Zettler commented that there have always been occasions where the parts just weren't available. In the very early 70s, he recalled large numbers of F-111As at Nellis AFB being down for Inertial Navigation Units, even though the repair house had complete units stacked up wall-to-wall, floor-to-ceiling. Spare circuit cards kept all of those repairable Line Replaceable Units (LRUs) from becoming serviceable and, in-turn, stopping daily cannibalizations and grounded aircraft. As Lt Gen Zettler recounted, "...for want of a nail, the horse..."

Lt Gen Zettler also related in the late 1990s the Air Force was in a readiness “challenge” mode. Spare parts weren’t available across multiple fleets, and strong aircraft mechanics weren’t re-enlisting, citing the lack of spare parts as the number one irritant that culminated in their separation from the Air Force. General Michael E. Ryan, the Air Force Chief of Staff at the time, chartered a Readiness Executive Group to look at all aspects of the readiness equation. Spare parts evaluations were a critical part of this Executive Group Charter task.

The Executive Group found there were indeed disturbing trends in spare part availability. While there was no single cause of parts shortages, a combination of factors were taking the fleets down. There were budget decisions made in the 1994-96 timeframe which started a bow wave of underfunded purchases and repairs. Qualified mechanics were indeed leaving in large numbers, and inexperienced maintainers tended to “R²” parts without thorough troubleshooting, resulting in some serviceable parts being removed prematurely. Much like the F-111A story, some fleets were experiencing a critical part shortfall and resultant disproportionate impact to the fleet.

The readiness impact received widespread attention. Lt Gen Zettler vividly remembers -- to this day -- giving a recorded interview to Jamie McIntyre of CNN on the readiness issues. McIntyre’s last question was, “General, what are you going to say to the aircraft maintenance people who want to know where the parts are?” Lt Gen Zettler’s reply was a resounding, “the Air Force leadership is well aware of what parts you have and what you need. We are working the issues very hard...the parts will come...have faith in us, there is no quick fix, but there is a fix.” And fix it the Air Force did. Certainly the trends since March 2000 bear this out.

Over the period of 1998-2000, the Air Force improved the parts budgeting processes and fully funded the aircraft spares. The Air Force commissioned a “Spares Campaign” to fix systemic issues and activated a propulsion systems review to improve spare parts to the propulsion community, which had always been a challenge. As a result, spares improvements began to be seen in late 1999 through 2001. When 9/11 occurred, Air Force readiness was again on a strong footing...“for want of a nail” was largely solved.

Many of the lessons Lt Gen Zettler helped us “learn” during those years have found their way into today’s spares provisioning processes. Our Aircraft Availability Improvement Programs endeavor to stay ahead of those diminishing manufacturing sources problem areas, developing solutions well before they’re needed (i.e. aircraft modifications or lifetime

... we’ve learned the lesson of underfunding the spare parts component of the flying hour program, a practice that has compounding and long-lasting impacts on our spares pipelines.

buys of certain sub-components). Our forecasting tools have matured to the point where accuracy in our spares demands have been approaching the high 90-percentiles, increasing confidence in our budget needs during the Program Objective Memorandum (POM) cycle. Perhaps most importantly, we’ve learned the lesson of underfunding the spare parts component of the flying hour program, a practice that has compounding and long-lasting impacts on our spares pipelines. Those lessons are a very large reason why our rates are as good as they are today, even as we strive to make them better tomorrow in a budget-constrained environment.

As Lt Gen Zettler likes to say, there is nothing more frustrating to a mechanic than to not be able to put their hands on the part they need when they need it. All of the processes and budget discussions manifest themselves in success or failure on the flightlines, when the last

airplane cannot be turned Mission Capable (MC) because a part isn't available. We'll never be 100% across the board for a number of reasons, not the least of which is that it's completely unaffordable. But Air Force leaders are committed to learn the lessons from the past and strive to meet TNMCS goals across every individual weapon system...this is what the aircraft mechanic has the right to expect...and this is what the supply chain managers strive to achieve.

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Lt Gen Michael E. Zettler retired in 2004 as the Deputy Chief of Staff for Installations and Logistics, Headquarters U.S. Air Force, Washington, D.C.

Shifting the Bottleneck: Logistics Lessons from Nepal

By: Capt Brint Ingersoll

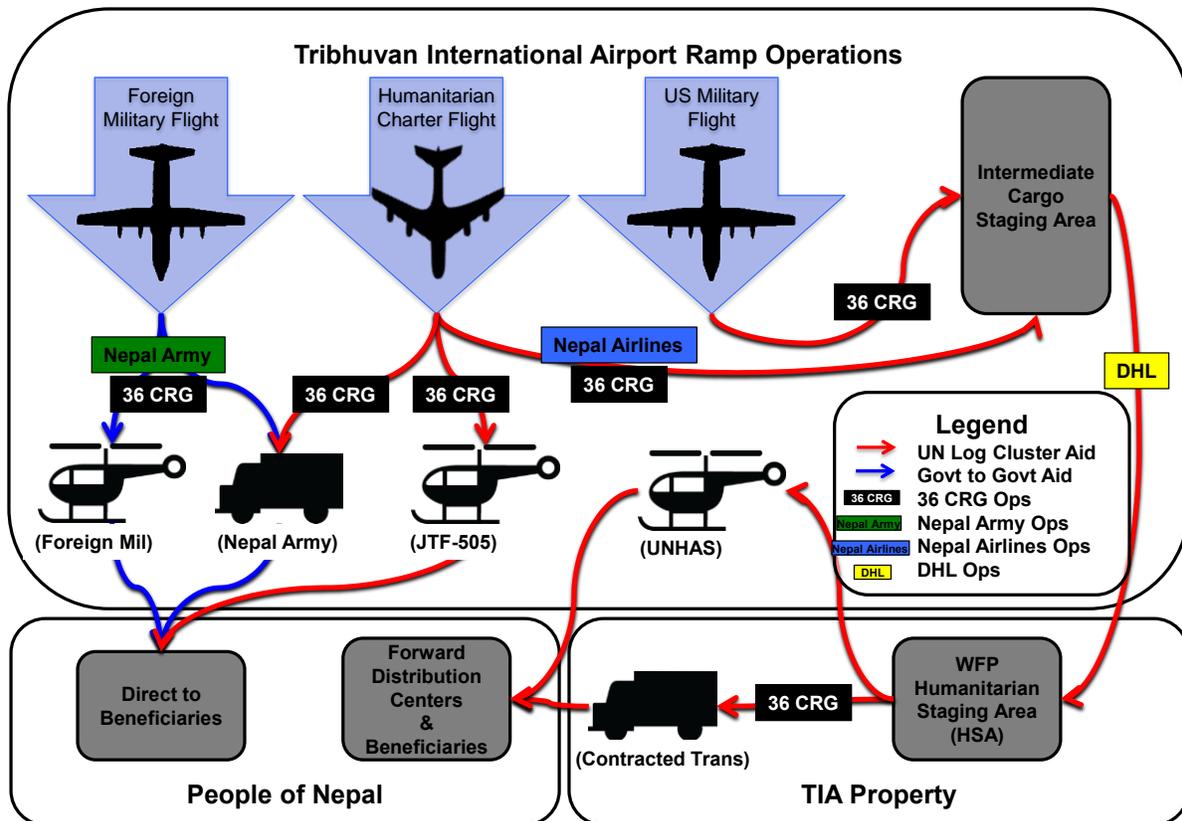


Everyone wants to help. A major natural disaster has just killed thousands of people, and affected millions more. Those with resources want to help - they have aircraft, they have supplies, even they themselves want to show up and lend a hand. All good intentions, but a lack of understanding of the broader logistics picture usually creates an even bigger problem, and hinders help getting to the people who need it most. This is exactly what we saw during the disaster relief effort in Nepal following the 7.8 magnitude earthquake that rocked the country on April 25th, 2015.



A complex logistics system emerges during a natural disaster relief effort that is totally unique to that event. The situation in Nepal brought together an international community of responders, such as the United Nations, 18 foreign governments including the United States, and 121 non-governmental organizations.

...but a lack of understanding of the broader logistics picture usually creates an even bigger problem, and hinders help getting to the people who need it most.



Our unit, the 36th Contingency Response Group, was tasked to increase logistics throughput at Tribhuvan International Airport (TIA) in Kathmandu. Simply put, our mission was to unload aircraft, quickly and efficiently. Our unit provided a huge increase in capability, but only to one part of the system. To really accelerate aid to the people of Nepal, the entire system's capacity would need to increase. This remained our goal throughout the mission, but our approach had to constantly evolve to achieve success.

We only had 38 Airmen on our team – the Government of Nepal did not want a large footprint and so they limited our total personnel numbers. Despite our understanding that this mission would be focused on cargo movement, not all were dedicated flightline personnel, in fact most were not. We needed 20 different specialties to operate and support an entire airfield which

included air traffic control, engineering, command post, airfield management, and aerial port. Our team had to be self-sustaining so we also brought our own communications, medical, security, and maintenance personnel. Most, despite their specialty, had forklift driving qualifications and experience which was a huge help. All told, only 12 members were dedicated to downloading aircraft



and the entire team covered 24 hours a day, 7 days a week and brought in over 5 million pounds of aid over a 3 week period.

When we arrived and began unloading aircraft, we quickly learned that strengthening one link in the chain just revealed the next weakest link. We called this ‘shifting the bottleneck’. As we devoted resources to clear up one bottleneck, another would emerge somewhere else in the system.

The first bottleneck was at the international

When we arrived and began unloading aircraft, we quickly learned that strengthening one link in the chain just revealed the next weakest link.

parking ramp. Although Civil Aviation Authority of Nepal (CAAN) officials carefully managed slot times for incoming aircraft, the overwhelmed ground-handling contractors couldn’t download or move the cargo fast enough. Cargo was piling up on the ramp and aircraft were backed up on the taxiways. Some of these aircrews got impatient and simply dumped their goods on the taxiway instead of waiting for a parking spot. Ground times for most aircraft

exceeded 6 hours which delayed aircraft even further. This was the situation we walked into when we arrived on May 5th.



Our four forklifts and one aircraft K-loader quadrupled the amount of functioning equipment at the airport and we began downloading aircraft immediately upon our arrival. Our equipment was not designed for most of the aircraft types (mostly commercial chartered IL-76s, A330s, etc.), and cargo packaging (loose load and wooden skids) we encountered. Our load teams created some innovative techniques utilizing two commercial forklifts donated to the World Food Program by the United Kingdom to address these challenges. The first method used one commercial forklift to take the small wooden skids off and set them down without turning. Our 10K A/T forklifts, which go fast over longer distances, would pick them up from the side and drive them down to the end of the ramp. The result is one forklift simply going back and forth and three others in a constant cycle. The second made use of a baggage conveyor to download loose-load cargo off the plane and onto a pallet, in a sling-load bag or directly into a truck. This method was even adopted by the Nepal Army soldiers to expedite downloads into trucks. With this adaptation, we were able to handle multiple aircraft at once and could perform the cargo downloads quickly.

Despite the expedited download of incoming humanitarian aid aircraft, parking had not changed much. The ramp was still congested because contracted airport personnel were still struggling to refuel aircraft and push them back when they were ready to depart. Although not



our responsibility, we were committed to accelerating operations and getting people the aid they needed, so we began to tap other resources to reduce aircraft ground times.

Our air traffic controller and airfield manager were expected to integrate with the local authorities, but were not allowed access to TIA’s facilities when we arrived. We paired them with an Airman we brought that spoke the local language to coordinate these ground services. This enabled aircraft refueling to be worked in advance of aircraft arrival. Tugs with towbars were also pre-positioned to push back aircraft when the download and refueling were complete. By expanding our logistics team with under-utilized personnel, we finally started to see reduced ground times and empty parking spaces.

Where does it all go? That was the big question and source of our next bottleneck. All of our downloading efforts were a clear improvement, but they also highlighted the next weak link: cargo storage. The United Nations Logistics Cluster (facilitator for the movement of all

humanitarian aid)
already had a
Humanitarian

By expanding our logistics team with under-utilized personnel, we finally started to see reduced ground times and empty parking spaces.

Staging Area (HSA) set up before the earthquake hit – part of a Disaster Risk Reduction effort. Unfortunately, the HSA was over one kilometer away from the ramp.

We decided it would be a bad use of our resources to transport the cargo to the HSA. Our forklifts could make the trek, but would diminish our capability on the ramp and would be a slow and inefficient way to get the cargo moved. Instead, we established an intermediate cargo staging area at the end of the ramp. This consolidated the cargo on the ramp at the beginning of the road to the HSA, but didn't solve the problem of getting the cargo moved off the ramp and where it needed to go. Again, we would need to utilize other resources.

DHL (a private shipping company) was already at the airport with a seven-person

As this intermediate cargo staging area filled up, they agreed to tackle the transportation to the HSA.

Disaster Response Team when we arrived. We had been meeting with them daily

to coordinate our efforts. As this intermediate cargo staging area filled up, they agreed to tackle the transportation to the HSA. The DHL team contracted four trucks to shuttle cargo from the ramp to the HSA. Both the DHL team and our team would load the trucks at the intermediate staging area. They were a huge help and a great civilian partner during the relief effort. Cargo was then steadily moving from the ramp to the HSA.

With all this cargo flowing to the HSA, we were bound to find another weak link and we did: the distribution of aid out of the HSA. At our peak, we were offloading a half



a million pounds of humanitarian aid a day. Aircraft were arriving between 20 and 24 hours a day. Planes were unloaded and cargo flowed to the HSA the same day. The HSA, however, only operated 10 hours a day. The HSA was also slower to push cargo out the more cargo it had; overflowing warehouses spilled into the only place trucks could be loaded. Additionally, cargo

Cargo leaving the HSA had to be carefully sorted and shipped to dozens of different organizations in a hundred different locations.

coming off the ramp could move quickly – it all had the same destination: the

HSA. Cargo leaving the HSA had to be carefully sorted and shipped to dozens of different organizations in a hundred different locations. Basically, humanitarian aid was coming in twice as fast as it could go out, and the faster it came in, the slower it went out.

We determined that our efforts to push cargo faster from the ramp were part of the problem. We asked the World Food Program (WFP), who ran the Logistics Cluster’s HSA, what we could do to help. We met with them daily along with DHL to synchronize our efforts. Both organizations are comprised of true logistics professionals that do this kind of operation much more often than any of us in the military. Based on this partnership, we offered to augment the HSA with some additional personnel and one forklift.

Allocating resources to the HSA had added benefits outside the obvious increase in capability. As discussed earlier, many of our personnel are forklift qualified including spotting and other load team duties. This meant we could allocate communications, maintenance, and other personnel to the HSA along with a traditional forklift driver (aerial porter). This kept more of our primary aircraft handlers on the ramp. Reducing some capability on the ramp also slowed the flow of cargo to the HSA, allowing for more space to load trucks and an overall more

efficient operation. All of these things worked to balance the airfield's logistics capability and maximize the amount of humanitarian aid getting to the people of Nepal.

The lesson gleaned from this operation is simply this: logisticians need to take ownership of the entire process and focus on results. We could have easily downloaded aircraft and left the storage and distribution challenges to others. But the overall result would have been less humanitarian aid getting to the people we were there to help.

My experience in Nepal, while unique, is certainly not the only disaster relief mission encountered by an Air Force Logistics Readiness Officer. It is, however, a great example of how a broad view of the overall logistics picture and working with other logistics professionals can make a difference in the lives of millions.

AUTHOR'S NOTE:

I'd like to thank MSgt Shane Reed for his advice and guidance. He has been a great sounding board for this article, as well as our mission in Nepal. I couldn't have done it without him.

ABOUT THE AUTHOR:

Capt Ingersoll is a Logistics Readiness Officer assigned to the 36th Contingency Response Group, Andersen AFB, Guam. As the 36 CRG Chief of Current and Future Operations, he coordinates and plans expeditionary air mobility missions throughout the Pacific Command Area of Operations. While deployed to Kathmandu, Nepal, Capt Ingersoll served as the Day Shift Operations Officer, directing and supervising earthquake relief support at Tribhuvan International Airport.

Vehicle Management...The Struggle is Real

A Glycol Recovery Vehicle Story

By: 1st Lt Jamey Shuls



Background

Ellsworth AFB is one of the northern tier bases which experience wind, cold, snow and more wind on a frequent basis. For those who have never had the pleasure of being stationed here, you may picture the frozen tundra: a barren landscape that is cold and miserable eleven months out of the year. In reality, Ellsworth is in an amazing part of the country and would be an oasis—if someone could figure out how to turn off the wind. So, what do cold and wind have to do with Vehicle Management, the Vehicle Supply Chain, and Glycol Recovery Vehicles (GRV)? In short: everything!

In December 2014, as most organizations across the Air Force were preparing for some much deserved downtime, the 28th Logistics Readiness Squadron's (LRS) Vehicle Management Flight was no different... at first. As mentioned, Ellsworth is known for wintery weather, and while it may not snow here nearly as much as Alaska or Minot, we still experience a few brutally cold days. This means that our B-1B Bomber fleet often requires deicing prior to take off.

Deicing is the process where a glycol chemical mix is sprayed on the aircraft to not only remove snow and ice but also to help prevent further buildup. While technically the glycol mix is non-toxic to the environment, state law and Ellsworth's Storm Water Pollution Prevention Plan require us to recover and dispose of the spent glycol in a manner which eliminates as much

seepage into the ground and non-industrial waste stream as possible. In other words, the GRV is

While technically the glycol mix is non-toxic to the environment, state law and Ellsworth's Storm Water Pollution Prevention Plan require us to recover and dispose of the spent glycol in a manner which eliminates as much seepage into the ground and non-industrial waste stream as possible.

a critical asset to flightline operations, and if we fail to recover expended glycol, the 28th Bomb Wing (BW) Commander can personally face fines of up to a \$25K per day.



The Problem

Luckily for Ellsworth, the base is equipped with two GRVs (valued at \$225K each). If one were to become Non-Mission Capable (NMC), we always have the other one as a backup. As the newest officer to the LRS team and having just taken the reins in Vehicle Management, I thought “what would happen if the other GRV also went NMC?” This innocent question proved to be a precursor to a rough few weeks for our team. Right after a production meeting with the BW Commander where I briefed the status on the NMC GRV, I learned the second GRV was also NMC. However, thanks to our Vehicle Maintainers, we were able to turn the first GRV back to our customer within 24 hours. While we are now sitting at Minimum Equipment Level

(MEL) for the vehicle, we still had a daunting question: “What happens if the second one goes down?” As these vehicles provide a critical support function to Ellsworth’s mission, this is a pretty important question, and having a proactive plan is essential to our success.

While we are now sitting at Minimum Equipment Level (MEL) for the vehicle, we still had a daunting question: “What happens if the second one goes down?” As these vehicles provide a critical support function to Ellsworth’s mission, this is a pretty important question, and having a proactive plan is essential to our success.

This is the point where most who have never worked in the vehicle maintenance realm believe the vehicle supply chain has to be simple, especially in comparison to the B-1B which has a plethora of supply chain issues. We can quickly solve our problem by just running to a local auto parts vendor, right?



Unfortunately, the Air Force only has a few GRVs in the fleet; two are at Ellsworth, and the third is located at McChord AFB. This limited amount of GRVs is due to high procurement costs and the fact that most northern tier bases have a built-in drainage system, allowing the glycol to drain directly into their industrial sewage pipes. There is no stockpile of excess parts, and due to model specific limitations, no cannibalizing of parts is possible.

This limited amount of GRVs is due to high procurement costs and the fact that most northern tier bases have a built-in drainage system, allowing the glycol to drain directly into their industrial sewage pipes.

Compounding the problem, there are limited local/in-house manufacturing capabilities and no local vendor support for these types of vehicles.

We tried to combat the limited vendor availability by contacting every heavy equipment parts vendor within a seven state radius. This was unsuccessful and the manufacturer was our sole source for replacement parts. Additionally, the manufacturer would only communicate and sell through their distributor. To make matters worse, the manufacturer was closed for the holidays. This meant we would have no updates on costs and shipping for almost two weeks.

Fast forward past the holidays—after identifying the entire clutch assembly required replacement, we coordinated with the distributor in Sioux Falls to get estimated costs and delivery timeframes. The total was \$12K plus the shipping cost and would require eight weeks for delivery. With some additional research, we learned this asset had only been ordered once in the past six years and the customer was—you guessed it—Ellsworth.

Cost of Deicing

Glycol, while not technically dangerous, is harmful to our environment, so it's vital we react quickly to recover it. When utilized in large amounts, the cost to perform the recovery quickly skyrockets. To quantify this expense, I spoke with MSgt Gregory Austin, 28th Aircraft Maintenance Squadron. During normal operations with minimal precipitation, Ellsworth averages 200-300 gallons of glycol per aircraft. At a rate of \$11.88 per gallon, these critical deicing operations cost \$2,376-\$3,564 per sortie. If the precipitation is active (snowing/sleeting), we can use up to 1,000 gallons per aircraft (\$11,880). In comparison to aircraft operation expenses this may seem minimal, but we have to realize the costs will vary significantly based on the weather. FY15 had an extremely mild winter in contrast to previous years, so Ellsworth only spent \$93K on deicing fluids and another \$35K on repairing deicing vehicles/GRVs. However, it would not be unimaginable for our installation to spend upwards of \$500K in a single month should we have a harsh winter.

Courses of Actions (COA)

We cannot just identify a problem and walk away. In our organization, the general expectation is to deliver at least three COAs that provide an 80% solution. We developed the COAs below in coordination with Logistics Readiness, Civil Engineering, and Aircraft Maintenance Squadrons. Once reviewed and ranked on viability, we presented them to 65 BW leadership.

COA 1: Utilize an urgent, compelling contract until a long-term solution is available allowing Ellsworth to rent a GRV to supplement our fleet should both GRVs go down again. We were able to locate a company in Denver which rents GRVs. While it's great we have this option, it's far from cheap. The rental company requires a two month minimum rental at \$8K per month, and this does not include the \$900-\$1,500 in shipping expenses. After two months, we would be able to reduce it to a month-by-month agreement. Additionally, Ellsworth would be responsible for all maintenance issues which arise while in possession of this rented GRV. The upside is that we could have this replacement vehicle in 2-3 days.

We developed the COAs below in coordination with Logistics Readiness, Civil Engineering, and Aircraft Maintenance Squadrons. Once reviewed and ranked on viability, we presented them to 65 BW leadership.

COA 2: Order and utilize absorbent pads. These items are padded tubes which would be able to soak up the glycol after deicing an aircraft. Once the glycol has been retrieved, the pads can be disposed. This could be an option if absolutely necessary, but it would be costly. Aircraft maintainers would quickly exhaust the supply of absorbent pads, and it is a very manpower-intensive undertaking. The more personnel required for manual glycol recovery operations, the less we have to fix aircraft.

COA 3: The least desirable option would be employing hand pumps to vacuum the glycol. This would not only be a very tedious process, but the most manpower intensive. Also, this option presents the greatest chance for the glycol to enter the ground and sewer system.

Resolution to our GRV problem

One of Ellsworth's seasoned civilian experts Mr. Scott Nixon, manager of our Special Purpose Vehicle Maintenance function, was able to locate the manufacturer's vendor and utilized

By working with this vendor directly, we were able to get the parts necessary to assemble a new clutch ourselves. His efforts cut six weeks of delivery time and over \$7K in costs.

them as an alternate parts source. In essence, he skipped over both the

distributor and manufacturer to locate the company who provides the parts and pieces to the vehicle manufacturer. By working with this vendor directly, we were able to get the parts necessary to assemble a new clutch ourselves. His efforts cut six weeks of delivery time and over \$7K in costs.

In the end, this issue seems likely to continue at Team Ellsworth until we make significant system updates or procedural changes. As with any major change or initiative, the discussion needs to happen now if there is any hope of securing future funding, as that will ultimately be the largest obstacle.

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Equipment Challenges of an Organic Transition

By: Capt David Roth



As the Department of Defense (DoD) continues to emphasize the importance of organic weapon system support, Program Managers (PMs) of the Air Force Life Cycle Management Center (AFLCMC) are faced with the challenges of implementation. A transition to organic support often involves the transfer of Government Furnished Equipment (GFE) from the contractor back into the DoD inventory. Once these assets are returned to the DoD inventory, they are no longer solely dedicated to the PM's specific program. Rather, they become assets for the USAF or DoD to use in support of any applicable weapon system to best support the operational Combatant Commanders. Does this then, become the trigger point for a battle between the PM and Item Managers (IMs) to ensure assets are not reassigned from one program to support another? The answer is no, yet that may be the case without a solid relationship between the PM and the IM.

The true crux of the matter comes down to identification of the appropriate process. Rarely within our organizations are we doing something for the first time, and managers at all levels should seek out the established processes early, and improve upon the processes in the planning stages. Using the A-10 as a case study, a Source of Repair Assignment Process (SORAP) was approved in September of 2009 which authorized a transition of the weapon system's Systems Integration Lab (SIL) from Lockheed Martin to the Ogden Air Logistics

Complex at Hill AFB. In late 2014, the 309th Software Maintenance Group held a ribbon cutting ceremony and the organic SIL began operations with its full suite of required equipment. What process was followed to accomplish this? A few months prior to the ribbon cutting ceremony, the PM contacted the contractor (with IMs included in the message traffic) asking for returned GFE assets to be sent directly to Hill AFB. Silence implied consent, and the organic SIL was established. The PM “made it happen” with zero gap in mission accomplishment (Great!), but unfortunately, without established process and without IM involvement, thousands of dollars of government assets were now outside of the established DoD supply chain (not so great).

In this case, the necessary process was owned by the respective Supply Chain Managers while being executed by the PM. Every PM cannot be expected to fully understand the DoD supply chain. This is why IMs manage individual assets and logisticians are assigned to integrated process teams. Additionally, the supply chain is a process owned by the Air Force Sustainment Center (AFSC), while PMs are assigned to the AFLCMC. Uncertainty and differences in the chain of command also contribute to the PM’s hesitancy associated with the assets no longer being solely dedicated to the specific program as GFE. As a case in point, the inability to test software could potentially ground the entire fleet, yet the SIL’s priority is lesser than that of an aircraft. If the assets have global visibility, how will the SIL’s component parts not be taken to support a single aircraft’s mission capability (MICAP)? A-10 equipment is generally scarce

and does not report excess in supply accounts,

This expertise would have explained the benefits of Special Purpose Recoverables Authorized Maintenance (SPRAM) accounts and appropriate hold codes for traditional equipment accounts.

so how will the PM convey the importance of maintaining spares?

The step missed in the process identification hinged on the lack of a relationship between the PM and IM. The five centers reporting to Air Force Materiel Command (AFMC) each play a role in providing support to the Warfighter, however they must communicate and forge relationships down to the lowest level. The supply chain expertise that the System Program Office (SPO) lacked was held by the individual Supply Chain Management Squadrons (SCMS). This expertise would have explained the benefits of Special Purpose Recoverables Authorized Maintenance (SPRAM) accounts and appropriate hold codes for traditional equipment accounts. Additionally, the depot is better off with appropriate authorizations in the supply system for getting equipment backfilled. The IM's interjection just a few weeks before the ribbon cutting ceremony did not allow sufficient time to correct accounting methods without delaying the establishment of the capability. Had the relationship been established and maintained during the SORAP process five years earlier, the conditions for an efficient equipment turnover to the depot would have existed.

So what is the big deal? Even though processes were not followed, there was no degradation of capability and the Warfighter was fully supported throughout the transition. The "big deal" surrounds the concept of efficiency. Airmen at the AFSC live by a document, *The Art of the Possible*. The document emphasizes the need for constant improvement, due to the importance of the mission, and provides a roadmap for achieving efficiencies by accelerating production through studied, repeatable processes. While production may mean something different to PMs in AFLCMC and maintainers in AFSC, the value of efficiency remains the same. While the Warfighter was always supported, rework was required, man-hours were spent looking for courses of action, and assets lacked the necessary visibility from their owners

potentially driving further inefficiencies. This costs time, and as we all know, time is money that could be directed towards other projects. This time, the process breakdown hinged on a lack of early communication and an established relationship between the PM and the IMs.

The A-10 SIL has been operational for several months and is a tremendous success story for cost savings achieved and expertise gained internally through the establishment of an organic capability within the DoD. While the PM is still concerned that the depot may temporarily lose an asset due to a MICAP requirement, the likelihood is small due to the nature of SPRAM accounts, and should this

have a large scale impact, leadership is prepared to defend the

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SIL's retention of the relevant asset at the appropriate level. This concern is small however, and the benefits of globally visible assets will more times than not provide better support to the combatant commander and the Warfighter.

ABOUT THE AUTHOR:

Captain David Roth is a Logistics Career Broadening Officer assigned to the Ogden Air Logistics Complex at Hill AFB, UT, and President of LOA's Wasatch Warrior Chapter. He is currently working to activate a depot-level Production Support Squadron within the 309 AMXG, and previously, he was responsible for securing software and avionics acquisitions within the A-10 Systems Program Office. Prior to this assignment, he served as the Installation Deployment Officer and Flight Commander of Deployment and Distribution at Offutt AFB, NE.

LOA: The Founders

By: Logan “Jay” Bennett, Col, USAF (Ret)
Editing by: David W. George, Lt Col, USAF (Ret)



Well, to begin, it wasn't the LOA that was first envisioned. It was a Maintenance Officer's Association (MOA) that four of us had in mind to challenge AF policies and procedures in maintenance and eventually other support areas. We also wanted to keep the best and brightest in a career field rather than facing increased competition for promotion from a "Rated Supplement." That comes later. First, let me tell you a little about who these MOA founders were: Jay Bennett, that's me, Dick Watson, Luke Gill [all retired Colonels] and Larry Matthews [Lt Col (Ret)]. Larry and I began our service in the same commissioning class at Officer Training School (64A) but didn't know each other then. Larry was assigned to the Maintenance Officer's Course at Chanute AFB and I went to Lowry AFB to attend the Avionics Maintenance Officer's Course. Dick was already a captain and Luke came on board through OTS in 1965 and then attended the Munitions Maintenance Officer's Course, also at Lowry AFB. We continued on our separate careers until Luke and I came together at the Air Force

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Military Personnel Center at Randolph AFB in 1974-75. Now a Major, I became the Palace Logistics Maintenance Team Chief and Captain Gill worked for me and ran the Munitions Officer Section. Luke and I were “hot” on the remote list, both having had a previous remote tour in SEA, and in 1977 Luke assigned himself to the 51 TFW at Osan AB, Republic of Korea

Because of this tutelage, we all returned to CONUS bases ready to challenge AF policies and procedures in aircraft maintenance.

and I came to the 51 TFW six months later, but that’s another story.

Now a colonel, Dick

Watson had been the 51 TFW Deputy Commander for Maintenance (DCM) in 1976-77 and our other founding mate-to-be, Larry Matthews, was his Maintenance Control Officer (MCO). Both were gone by the time Luke and I arrived at Osan AB. Dick was followed by Col Crawford O. Murphy, aka Alpha One. If I had the time or talent, I’d try my hand at a book about Crawford Murphy -- there needs to be one written. During the year Luke and I spent under Alpha One, Luke was the Equipment Maintenance Squadron Commander (EMS/CC) and I was the Aircraft Generation Squadron commander (AGS/CC), and it was easily the most valuable career experience. Larry Matthews who served under Col Murphy for half his tour felt the same, as did many other officers who had worked for Murphy. Because of this tutelage, we all returned to CONUS bases ready to challenge AF policies and procedures in aircraft maintenance.ⁱ

Luke Gill went to Holloman AFB as AGS/CC and I landed at McChord AFB and during the next 3 years, held different positions in maintenance: commanding two squadrons and then the Assistant DCM. Larry Matthews wound up at Norton AFB on the AF IG team. By then, early 1980s, Luke, Larry, and I often communicated about how Murphy’s tutoring was affecting our jobs and our careers, with Dick chiming in from his more experienced viewpoint. We used

PROFS (a very early forerunner to e-mail) and over time came to the conclusion that we needed to create and sponsor a more formal association of maintenance officers to pass on lessons learned, trade ideas and assist in career management, as well as more directly impacting AF policy and procedures as needed. Actually, Dick and Larry sparked the idea and reached out to

Luke and me because of our experience and managing assignments for the entire

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maintenance/munitions officer resource group (over 4,000 officers in the mid-1970s). Larry Matthews came up with the title of our newsletter, *Exceptional Release*, which in AF jargon was the release of an aircraft to fly by taking a maintenance officer's signature to permit it. Another key participant was Colonel Tommy Richardson, executive officer to the AF Deputy for Logistics, Lieutenant General William R. "Dick" Nelson, giving us helpful access to that top maintenance and logistics policy director. Earlier, I referenced the "Rated Supplement," pilots and navigators without cockpits (in a sense), generally field grade officers who were placed in positions occupied normally by dedicated career maintainers. While there were plenty of good officers in the "Rated Supplement," maintenance officers saw the handwriting-on-the-wall spelling lost opportunities to climb-up the maintenance ladder to top positions. Many chose instead to move into other career fields, notably the logistics Air Force Specialty Code, 66XX. Luke and I saw this while running the Palace Log team at Randolph, leaving the AF short of experienced field grade maintainers. One of our objectives for MOA was to restore and maintain

comradery among maintainers and boost retention, as well as use the association's forums to inspire younger maintenance officers to stay the course as maintainers. The association's

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meetings were used for this, as well as education and improvements in maintenance, which to an

extent were based on what had been handed-down and implemented -- thanks to Crawford Murphy's impact on -- us, the founders of MOA.

Early on, Larry Matthews' wife, Marion, was the leading force in organizing and running MOA, serving as the association's secretary while we held our regular AF jobs. Luke, Larry, and I eventually worked together for Lieutenant General Leo Marquez, then the Deputy for Logistics (AF/LE). With Marion's persistence and hard work, the four founders were able to talk together regularly and that facilitated our MOA planning and participation. The early meetings or open sessions were generally in Washington DC. MOA meetings saw good attendance from all MAJCOMs, as well as wide interest and participation from related defense industry and often included general officers and colonels working in maintenance and logistics (supply, transportation, and logistics planning). These senior leaders, most MOA members themselves, attended sometimes as guest speakers, but often sat as involved participants during an entire meeting.

Association members who attended included many retirees

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whose contributions were also highly valued. As you might guess, a constant topic of interest was career progression, which involved discussing current opportunities and the maintenance career field as a long-term place to land. Our founding group of officers stayed involved to varying degrees; as Dick Watson retired, Luke Gill was assigned as Aircraft Director at San Antonio ALC, and I went to Ogden ALC to run the Maintenance Division -- we were active with MOA. Larry was next to retire, prematurely in our opinion, but stayed active in MOA longer than the rest of us. Lt Gen Marquez became a supporter of making MOA more inclusive for all logisticians and helped push the movement toward its current organization. There were pros and cons about the necessity and wisdom of this transition from MOA to what it has become and they were often expressed openly at sessions and inevitably the association was transformed to mirror the Air Force's course in logistics management.

In my view, the proper summary is this: four maintenance officers saw changes needed in the processes and policies of primarily maintenance but also in logistics. We also saw the need to keep our best maintenance officers in the business. Our mutual experience and networking lent to having contacts throughout the Air Force within the tactical fighter community and

eventually service-wide. Three of us were mentored by

The MOA and eventually the LOA owed its continued existence to these dedicated senior officials. In the end, we believe what we began influenced positive change in maintenance as well in meeting retention goals.

the very best, beginning with Col Crawford O. Murphy, in our opinion clearly one of the most knowledgeable and outspoken senior officers in the tactical fighter maintenance world. I've mentioned two generals here as well, but there were many more at the general officer level who I could list, but won't -- knowing they aren't seeking recognition. The MOA and eventually the

LOA owed its continued existence to these dedicated senior officials. In the end, we believe what we began influenced positive change in maintenance as well in meeting retention goals.

Later on others would continue to use this forum to improve logistics management overall. From what I know about your organization today it is having this same positive impact on logistics in defense community across the board. Nice going!

¹ Read more about the legendary Crawford O. Murphy in my article “Murphy’s Law” in the compendium “2002 Logistics Challenges, Issues and Strategy for Today’s Air Force,” Air Force Logistics Management Agency, page 8.

Beale AFB High Flight Chapter Tours Sierra Nevada Brewery

By: Major Jerry L. Ottinger II



In April, the Beale AFB LOA High Flight Chapter went to the Sierra Nevada Brewery in Chico, CA to study the logistics of brewing beer and see how a garage microbrewery grew into a major distributor (Sierra Nevada will produce over 350,000 barrels of beer in 2015). Our group witnessed the company's dedication to its founding principles, strict quality control, and ability to keep sustainability at the core of

Sierra Nevada Brewery maintained its organizational vision and passion for the craft over 45 years, not allowing expansion and modernization to separate the brewery from its core beliefs

its business model. More importantly, we learned how Sierra Nevada Brewery

maintained its organizational vision and passion for the craft over 45 years, not allowing expansion and modernization to separate the brewery from its core beliefs of innovation, attention to detail, and commitment to the environment and community.

Sierra Nevada Brewery discovered early the challenges of maintaining a supply chain. Its founder Ken Grossman understood that a quality product requires quality ingredients and tools. He traveled around the northwestern United States to find ingredients and to Germany for a brewhouse. The ingredients had shelf lives and the transportation and reassembly of the brewhouse took over three years, but the brewery's unrelenting focus on continuous improvement paid off as the company grew tremendously. Anticipating that growth, Sierra Nevada's transportation and supply processes kept pace and moved the company forward without reducing the company's focus on sustainability and the environment.

The company's commitment to the environment drove an aggressive investment in alternative energy. This investment manifested in the form of four 250-kilowatt hydrogen fuel cells and then evolved three years later as the brewery ventured into solar power. Since the initial solar panels were installed, the brewery has expanded its solar array to what is now one of the largest private arrays in the United States. Sierra Nevada is now able to produce 60 percent of its energy needs through its hydrogen fuel cells and 10,573 solar panels, altogether creating roughly three megawatts of electricity.

These successes are impressive, but what I found most interesting throughout the tour was the similarity of Sierra Nevada's challenges and opportunities to those that we face as US Air Force logisticians. Force structures, energy costs, environmental concerns, and supply chain management are all issues impacting us, so what can we learn from them? I'd like to focus on just a few items.

First is the common issue of balancing the demands of today's challenges with tomorrow's vision and anticipated requirements, all without sacrificing our core values. Sierra Nevada Brewing Company and all industries must face this or risk financial loss, but the military faces it with human lives, massive taxpayer dollars, and the American way of life on the line if we get it wrong. Despite the disparity in consequence, however, there are still some lessons we can observe, especially in the idea of maintaining our core values.

Sierra Nevada Brewing Company exploded from a garage operation into an enormous business and did so while maintaining its beliefs. The company might have expanded faster or been more financially successful had it given a little on its need for only top-quality ingredients or softened its requirement for low environmental impacts and sustainable energy, but the brewery stayed the course. Though the tour guides did not clearly state it, I suspect that major business decisions were always balanced against the company's core values. The US Air Force's core values (*Integrity first, Service before self, and Excellence in all we do*) and mission (to provide *Global Vigilance, Global Reach, and Global Power for America*) are clear, concise and boldly published. Like Sierra Nevada, we will do well to ensure that our decisions, both large and small, are always weighed against our core values and

mission. Whether the issue is force shaping, weapon system modernization, or a simple reorganization, it would be difficult to contest any action clearly tied to our mission and supported by our core values.

A look at the history of Sierra Nevada Brewing Company might also help both US Air Force and logistics leaders appreciate the need to continually adapt our strategic tactics, techniques, and procedures. Had Ken Grossman kept the brewing operation in his garage, it would not be what it is today. The desire to grow and be innovative brought forth new ideas that enabled efficiencies and expansion while ensuring the core mission of the brewery was never lost. I believe that the US Air Force is full of opportunities to be innovative, and that every Airman should not only have a voice but be assertively researching and

Whether the issue is force shaping, weapon system modernization, or a simple reorganization, it would be difficult to contest any action clearly tied to our mission and supported by our core values.

voicing ideas that will make us better. For instance, here are some areas for discussion and potential innovation:

- *Can we recapitalize logistics personnel after 2014's Force Shaping cuts by centralizing supply support into AFMC-managed, DLA-partnered warehouses by weapons system or type of airframe (i.e. MAF and CAF), and exploiting modern transportation companies like UPS, FedEx, and DHL to provide nearly the same velocity of support while providing centralized training for all new accession supply personnel?*
- *Should logistics forces be reorganized so that the whole of Joint Publication 4-0 fall within a unified group where some officers and enlisted professionals can progress toward being experts in logistics, rather than AFSC-specific stovepipes?*
- *If the Department of Defense were created from scratch today, which logistics and support functions would be centralized (MILCON-type engineering support, acquisitions, contracting,*

fuels management, etc.), and which would be considered specialized or unique enough to be built into individual components?

I am as guilty as anyone of getting caught up in my daily work and not reading, writing, and publishing my thoughts so we can debate their merit, but as military professionals we need to do better. It seems we often wait for austerity in manning or money to drive evolution in our processes, rather than seeking out and insisting on new efficiencies to preempt austerity. Instead, we should constantly review our US Air Force from both the micro and macro levels with the focus on moving our service forward rather than solely being compliant with current processes. There are already many great ideas out there; we just need to flesh them out and push them up for consideration.

Finally, I find it incredible that Sierra Nevada Brewing Company has worked so diligently to take itself “off the grid” in order to consume less electricity from combustible-petroleum sources. As I walked through the brewery, the solar panels made me consider how few bases I

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have seen with even a single operating alternative energy source. Our system requirements make it more difficult, but our infrastructure lends to the idea. We have huge warehouses and massive amounts of land for solar and wind generation. We have secure bases that could host nuclear-based power generation. The challenges of moving in that direction are enormous and burdened by regulations, Congressional-approval, and limited fiscal resources, but what if we prioritized it and bases were able to become self-sufficient? Where is that break-even point? These are the types of questions we should be investigating. I am just a logistician, but there must be more the Department of Defense and US Air Force can do in these areas.

Beale AFB LOA High Flight Chapter experienced a great tour of the Sierra Nevada Brewery. We saw an impressive production capability and modern, sustainable, value-driven operations that grew from one man’s passion for beer. I saw a lot more than that, however, and it fed an idea that the Logistics

Officer Association—a group of over 3,000 military officers and civilians focused on the Acquisition, Technology, and Logistics fields around the globe—might be a group that is able to lead not just our individual specialties but the US Air Force forward.

The Logistics Officer Association’s purpose is to enhance the military logistics profession and provide an open forum to promote quality support and officer and civilian professional development. Although I am not entirely sure on how we do that, I am challenging you all to join me in writing down and discussing potential solutions in this forum. Let us start a discussion and debate here, and see what good we can do... and if you decide to crack open a Sierra Nevada IPA as part of your creative process, just reference the brewery’s logistics mindset and I’m sure nobody will judge you too harshly.

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Major Jerry L. Ottinger II is the Commander, 9th Logistics Readiness Squadron, Beale AFB. He is responsible for ground and aircraft fueling operations in support of the U-2 Dragonlady, RQ-4 Global Hawk, MC-12 Liberty, T-38 Talon, and all transient aircraft. He also manages the 9th Reconnaissance Wing’s the War Reserve Materiel program, \$385,000 in Support Agreements, and deployment functions in support of exercise, contingency and higher headquarters requirements.

Picture Captions:

- 1 – Sierra Nevada Brewhouses: The Sierra Nevada Brewery in Chico, CA, grew from a garage microbrew in 1978 into a distributor that will distribute over 350,000 barrels of beer in 2015.
- 2 – Solar Array: The Sierra Nevada Brewing Company’s solar array numbers over 10,000 panels and is one of the largest private solar arrays in the United States.
- 3 – Sierra Nevada Box and Wrap: The packaging line uses automated systems to ensure that production can meet demand.
- 4 – Sierra Nevada QA Lab: Quality Assurance has remained a major focus for Sierra Nevada Brewery as it has expanded.

The Magic behind the Curtain: Takeaways from a Depot Tour

By: Maj Joshua Downing



For the past three years I've had the unique experience to work back-to-back assignments on both the operational and sustainment sides of the E-3 Sentry, first in the 552 MXG, then in the Oklahoma City Air Logistics Complex (OC-ALC), both at Tinker AFB. The perspective gained through this transition has been one of the most enlightening of my career, and has greatly broadened the scope of my understanding of sustainment processes.

The E-3 Sentry is a High Demand/Low Supply (HD/LS) airframe, whose small fleet size and proximity to its depot lends to frequent interaction between the two organizations. The aircraft has a five year Programmed Depot Maintenance (PDM) cycle, which means each aircraft is sent to the depot to be inspected and overhauled every five years. Additionally, the E-3 depot performs major modifications on the airframe, such as the current Block 40/45 upgrade. The mod is incorporated into the PDM cycle, and delivers greater visual radar interpretation and manipulation capabilities to our Air Battle Managers.

My transition from the 552 MXG to the ALC came at a unique time. The 552 MXG had recently taken possession of an aircraft after the most delayed PDM / Block 40/45 modification in recent history due to several setbacks encountered by depot technicians. This late delivery was the latest in a series of delayed deliveries, and my general feelings toward our depot were frustration and low expectations.

My limited perspective of depot operations was based on the formal training I'd received and occasional interactions as their customer. Depot was the "magic behind the curtain," where aircraft went to be overhauled and have all defects repaired. Occasionally, depots also sent field teams out to repair problems that were beyond the scope of our technical expertise.

With that background, I entered what became the most eye-opening job of my career. The OC-ALC was a much more complex “machine” than I’d imagined, and though the repair processes were similar, I couldn’t help but feel like a lieutenant learning maintenance. Now, having worked on the PDM side of the E-3 for nine months, I have a better understanding and appreciation for this production “machine.” Although there’s much left to be learned, I’ve highlighted the top three things I wish I’d known prior to moving to the ALC.

Depot doesn't fix *everything*.

As a “Wing Guy” (the term my co-workers used to describe my life before ALC), my concept of the depot was threefold. First, depot overhauled aircraft to ensure longevity of service and safety of flight. Second, depot performed significant modifications to advance the capabilities of the weapons system. And third, depot was the organization that fixed all our nagging problems, especially the unsolvable or time-consuming ones. Because of the expectation set by that third paradigm that “depot fixes everything,” any uncorrected discrepancy on a returned aircraft evoked a sense of frustration. Why would the depot **not** replace a worn seal or burnt out bulb when they had the aircraft for eight months?

Therein lies the first lesson I learned in the ALC. Each PDM program is budgeted to accomplish a set amount of inspections and repairs; anything that exceeds that workload must be paid for above the dollar amount already set aside for each aircraft. For example, an E-3’s initial bill is \$18M, paid by the owning MAJCOM. A senior leader once said, “You *want* the 60,000 mile service, but you *paid* for the 45,000 mile service.” Sure, seals and bulbs can be replaced on top of that, but those repairs would come at a much higher cost than it would take to replace them in the field.

The idea we have that depot should fix everything they find is reinforced when we try to apply an Operational repair mindset on a depot process. In most cases, when a flightline maintainer discovers a

Each PDM program is budgeted to accomplish a set amount of inspections and repairs; anything that exceeds that workload must be paid for above the dollar amount already set aside for each aircraft.

problem, he researches the repair, coordinates with

outside agencies as necessary, and fixes the problem, with little regard to cost. Depot technicians do not have that luxury. PDM packages are planned and scripted into tasks, and each task includes a set number of hours required to accomplish it. This work package also includes an estimated time required to repair unforeseen defects discovered during carded inspections – called “over-and-above” work. Technicians complete the tasks and sign off the cards to get credit for the hours they worked – a process called “selling hours.” Those hours are then multiplied by the labor rate and that dollar amount is subtracted from the overall budget for the aircraft. Selling hours ensures the ALC is “paid” for the work accomplished on an aircraft. Tasks not already calculated into the PDM package as over-and-above work must be coordinated and paid for by the owning MAJCOM.

In application, this process can go one of two ways. First, if a discrepancy is discovered that must be corrected to ensure safety of flight, the Systems Program Office (SPO) coordinates funding with the owning MAJCOM. For example, an engine discrepancy requiring the replacement of an E-3 engine drives an additional \$1.8M bill. Second, if an aircraft is inducted with known issues that are not discussed prior to induction; are not included in the PDM package; and do not affect safety of flight, they will not be corrected because the bill will not be paid. This work is deemed “Non-Project Related,” and can lead to a frustrated customer when they receive an aircraft back with the expectation that all defects should be repaired.

Maintainers in the field can help alleviate the frustration in this process by communicating all potential issues with their depot prior to an aircraft’s induction. This is the first tenant of High Velocity Maintenance (HVM): establishing a known condition of the aircraft before induction. That information enables work to be planned effectively, and ensures a better product is delivered post-PDM. A year ago, leaders in the 552 MXG and 566 AMXS – the operational E-3 unit and the PDM squadron, respectively – began pre-induction meetings for each depot

Maintainers in the field can help alleviate the frustration in this process by communicating all potential issues with their depot prior to an aircraft’s induction.

input. Participants included active duty technicians in multiple skills: a Pro Super, Plans & Scheduling, Analysis, depot planners, schedulers, and second-line supervisors for each skillset. These meetings allowed airmen who regularly worked on the aircraft to provide insight into any issues they'd encountered since the aircraft's last induction. This communication has helped establish an excellent working relationship between both organizations, and ensured depot planners and technicians had critical information about discrepancies that may be unclear; ultimately accomplishing HVM Tenant #1.

It's an enterprise effort.

The second takeaway was a better understanding of the working relationship among these enterprise units (i.e. Wing, MAJCOM, SPO, and ALC squadrons). Prior to my depot tour, I didn't fully appreciate the coordination effort that takes place among these four organizations to sustain an airframe.

The process starts with the wing, where operational level maintenance keeps aircraft flying and helps identify potential problems affecting the fleet. Periodic maintenance such as Isochronal or Flying Hour-based inspections look deeper into the aircraft for the same purpose. These inspection intervals are planned into the airframe sustainment cycle to identify and prevent component failure before it risks safety of flight. Finally, at a set interval, maintenance units send aircraft to depot for a more in-depth look.

The second takeaway was a better understanding of the working relationship among these enterprise units (i.e. Wing, MAJCOM, SPO, and ALC squadrons).

The SPO's role as fleet manager is to ensure the sustainment of the fleet. They work with the wing, MAJCOM and ALC to coordinate PDM requirements; and solve fleet-wide issues identified by maintenance units or depot inspections. Along with their supporting cast of engineers and input from the depot, the SPO builds the PDM work packages and induction schedule, plans and incorporates modifications, and coordinates the budget with the MAJCOM for fleet sustainment. They also act as the intermediary between the MAJCOM and depot for "over-and-above" repairs.

The MAJCOM, which directs operational requirements and monitors overall aircraft availability, works with the SPO to make decisions on how to best support and sustain the airframe. They help balance operational requirements with sustainment objectives, and provide funding for both.

The depot plans out the flow of the PDM work packages, and accomplishes the inspections and major modifications. Daily engagement with the SPO occurs to provide status on the production machine, coordinate parts and engineering support, and gain authorization for repairs outside the budget. The depot's customer is the wing, and good communication with the owning Maintenance Group is key to a successful process.

The understanding gained through firsthand experience working with the E-3 PDM line has given me a much greater appreciation for the complexity of this overall coordination effort, particularly regarding the decision-making process to resolve challenging defects. The ability to interact regularly with the wing from a depot standpoint has proven invaluable for both parties.

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While this has been made much easier by the proximity of our two organizations, the same great depot-wing relationship can be built by any wing with the right amount of effort and good communication.

All production machines are not identical.

All aircraft maintenance squadrons in OC-ALC incorporate the same gated process to manage and monitor aircraft flow. In layman's terms, this process involves dividing tasks into five gates: Pre-Dock, Inspection, Repair, Buildup, and Post-Dock. Aircraft cannot transition from gate to gate until all

Aircraft cannot transition from gate to gate until all tasks within that gate have either been accomplished, or a definitive plan developed to accomplish the remaining work in the next gate.

tasks within that gate have either been accomplished, or a definitive plan

developed to accomplish the remaining work in the next gate. Implemented correctly, the gated process

creates a disciplined maintenance system within which work can be scheduled, progress monitored, and constraints identified and resolved. Although these gates are the same, their execution looks different across different airframes.

Prior to this job, my only true exposure to the gated process came from two trips to Tinker during Aircraft Maintenance Officer Course (AMOC) and Maintenance Officer Intermediate Course (MOIC). During those trips, the KC-135 PDM line was proudly on display, alongside the story of how leaders implemented continuous process improvement initiatives to transform the struggling PDM process. Previously, aircraft were assigned a dock while maintenance crews rotated among them to accomplishing inspections. Any delays halted the progress of the crews. Recognizing these constraints, leadership converted each gate into a physical dock, with aircraft transitioning docks as they transitioned gates.

The process that has proven so successful for the KC-135 fleet is executed differently for E-3s due to the smaller fleet size and reduced induction rate. As an HD/LS asset, the E-3 fleet is 92% smaller than the KC-135 fleet, meaning that E-3 aircraft flow through the 5-year PDM cycle at the rate of about 5 aircraft per year as opposed to the KC-135 rate of 70 plus aircraft per year. The E-3's slower induction/production rate creates a wider gap between aircraft inductions. If the KC-135 model were applied to the E-3 PDM process, it would induce excessive downtime – weeks of no work – while technicians waited for the next aircraft to pass through their gate.

Instead, the E-3 production machine uses stationary docks and shares resources – our squadron's technicians – among them. This model requires efficient synchronization of skills and close management of tasks within the gates to ensure the timely flow of aircraft through the gates.

No matter how it is applied, the key to making any process improvement endeavor, gated process, or production machine successful in an organization is to develop people to identify constraints and be problem solvers.

Leaders must adjust manpower requirements among the gates to prevent skill constraints, which can quickly affect aircraft flow.

No matter how it is applied, the key to making any process improvement endeavor, gated process, or production machine successful in an organization is to develop people to identify constraints and be problem solvers. I've witnessed this fact across multiple depot squadrons as leaders worked to accomplish production goals, and the experience has been enlightening. No matter how many proven results a plan has demonstrated in other organizations, the key to successfully implementing any process improvement initiative is the ability of our people to identify and solve problems.

Final Thoughts

Now at the tail end of my short depot tour, I've reflected on my initial perceptions about this organization and the major takeaways from my time here. After nine months, I've only scratched the surface of understanding depot operations, but I've gained a much greater appreciation for the complexity of the production machine and the overall sustainment process. The system is not perfect, but we've got great leaders and technicians constantly working to improve it, and that desire and attitude is what will ensure its continued improvement and success.



Split-AMU Operations: How I Learned to Stop Worrying and Love the Job

By: Capt Aaron W. Darty



Editor's Note:

This article comes from my squadron. When I first took over, there were no separate flights in a 502 authorized squadron. There was not even a support flight. Everyone except for commander's staff reported directly to one lone Captain in the single AMU. I encourage everyone to read the article with a sense of humor and take away the key nuggets of information. Aaron uses his sense of humor to add a little levity to what was truly a major undertaking. Enjoy.

In today's Air Force, chances are your unit is experiencing the same challenges that mine, the 92d Aircraft Maintenance Squadron, does: limited manning, high ops-tempo, aging aircraft, and above all, not enough hours in the day to accomplish everything that needs to be done. Fully-

limited manning, high ops-tempo, aging aircraft, and above all, not enough hours in the day to accomplish everything that needs to be done.

qualified manpower doesn't magically appear, ops-tempo is not going to slow down, our

aircraft aren't getting any younger, and 24 hours is always going to equal one day whether we're finished with our work or not. With that being said, how can we as Logistics leaders effectively accomplish our mission and maintain our sanity at the same time? Some would say that we need to streamline our processes to be able to do more with the time we've got. Others would say that effective time-management strategies are the key, or that stress-management is the most important strategy to deal with challenges. I won't dispute that these are sound concepts, but I

propose a different tactic: rather than trying to do more things in a more efficient manner, I say- do less, but do it better.

You're probably saying to yourself right now, "I can't do less, I'll just end up with more of a backlog than I have now, and eventually I'll end up having to do it anyways at some point." First off, you shouldn't be talking to yourself; people will think you're crazy. Secondly, most often you'd be right, however in the case I'm about to describe we found a way to both reduce our span of control (translation: do less stuff) and increase the quality of our work.

To begin, some backstory on my unit and how it was organized until January 2015: I became the AMU OIC at Fairchild AFB in September 2014. At the time, my Aircraft Maintenance Unit (AMU) consisted of 35 aircraft and over 400 personnel, making it far and away the largest single organization on base. I had two SMSgts acting as AMU Chief and Assistant, a MSgt Lead Pro Super, and a 1st Lt Assistant OIC. It was hectic, to say the least. Between us, we had to deal daily with not only the local flying schedule, but deployments, TDYs, TACC missions, exercises, personnel issues, and a myriad of other concerns that come with the territory of leading a large organization. In addition to this already seemingly overwhelming workload, we, as is the case in most units these days, were facing a shortage of SNCOs and NCOs but possessing a disproportionately large number of junior Airmen.

Although we were authorized by UMD as a two-AMU unit, manning forced us several years ago into a merger, and we'd been waived by MAJCOM to operate as a single-AMU unit ever since. Altogether, this inevitably led to task-oversaturation, for all of the key personnel charged with leading the unit. With such a large aircraft fleet and so few people overseeing it, things were, if not missed, not given the proper amount of needed attention. Delayed discrepancies were far too high, repeat/recurs were not acceptable, and 12-hour fix rates were not

consistently met. So, we began think about ways to improve the situation. Cloning was discussed as a possibility, but ultimately dismissed as we're not aware of progress in the human-cloning field, and filling Pro-Super billets with Dolly the Sheep seemed counterproductive (Airfield Management wouldn't allow them to graze next to the runway). Another discussion was asking for augmentees from Security Forces to help us out. We figured, well, every time we have an exercise we send people over to them to keep the base safe with flashlights and radios (HUAH!), why can't they return the favor? Turns out, that's not a two-way street. So, we were back to square one.

With adding personnel out of the question, we needed to look for a different way to improve. After several more failed schemes, we were preparing to sacrifice a goat when we started to look for kindling for the ceremonial bonfire and happened across a copy of our unit manning document... of all places, the answer was right there all along. We released the goat into the wild (read: crew chief office) and started to read the UMD and found two things. First, we're under-manned (we knew that already). Second, even though we weren't fully-manned, we were in the position to be able to "undo" the merged AMU concept and return to split-AMUs. It was never an ideal situation to become one AMU in the first place, and had only been done out of necessity. But by 2015, we had become healthy enough in key positions (especially Production) that we knew we could make the split, and make it work.

That was an intriguing idea: two AMUs equaled half the aircraft, half the personnel, and

...two AMUs equaled half the aircraft, half the personnel, and approximately all the common sense.

approximately all the common sense. So, beginning on January 5th,

2015 we split from Tanker Mega-AMU into Blue AMU and Green AMU. It took some doing, but it was well worth it.

Here's what we did:

First, leadership had to be in the right place. This was probably the most difficult initial hurdle to cross. We didn't have enough people to fill all of our authorizations so we had to make smart decisions on who, by name, needed to go where. Many moves were made to match not only rank but experience to key positions. Each AMU got an Officer and a SMSgt (acting as AMU Chief), a Lead Pro Super, and two each Specialist and APG Section Chiefs. It was not an easy project. We had to balance experience levels, promotion eligibility, and scope of responsibility as evenly as possible to make it work. Even

...my SMSgt had to assume a dual role as both Lead Pro Super and AMU Chief.

so, some less-than-ideal compromises had to be made. For example, my SMSgt had to assume a dual role as both Lead Pro Super and AMU Chief. If you're looking to split your organization, realize that this process will probably be the hardest part of the whole deal, but is the crucial step to ensuring success.

Second, we had to ensure that Production was both fully-manned and fully-qualified. While we were operating as one AMU, we technically needed only one Pro Super per shift. Our requirement in this area doubled once we split. It would have done us no good whatsoever to split aircraft and technicians if the Production Team still had to manage the fleet as a whole. After all, the intent of splitting was to reduce the span of control to a manageable level. Certain other areas had to be reduced in size in order to ensure Production was healthy enough to split. For instance, we pulled from our Section Chiefs and Lead Techs to fill both Pro Super and

Expediter billets, but it was a worthwhile trade-off. Production is where the rubber meets the road, and we could live without three-shift Section Chief coverage temporarily, but certainly not without Production. We did have to invest in more clipboards, coffee mugs, and mustaches for all the new Production members, but it was money well-spent.

Third step was to split our AB – TSgt level manning. This was also quite a task, and one which we relied heavily upon Lead Techs to assist. Once you start looking at the finer details, you notice that not every 7-level is created equal. Just as any unit with a Flying Crew Chief commitment, we had to ensure that our FCCs were evenly split, and that our up-and-coming AICs/SrA were split with not only their current qualifications but their potential as well. Specialists were even more difficult to evenly divide. With the myriad of special qualifications and system experiences spread throughout the AFSCs, it took some time to ensure we had built

two independently
capable AMUs. If
you're going to split

With the myriad of special qualifications and system experiences spread throughout the AFSCs, it took some time to ensure we had built two independently capable AMUs.

your unit's manning, don't arbitrarily divide your people. Let your frontline supervisors tell you what the best solution is, cross-check, and follow through with it.

Fourth was the question of Support, i.e. tools and equipment. In a perfect world, each AMU would be 100% manned, with enough people to fill two geographically separated CTKs, run all the associated programs, and the necessary amount of tools and equipment for both. In our case, that was entirely out of the question. At any one time, approximately a third of our people are deployed or TDY, as is much of our equipment. We simply do not have enough of either (mostly people) to support two full-up CTKs. So, our best option was to keep Support/CTK as one standalone entity, separate from either AMU while falling administratively

under the Maintenance Supervision/Squadron umbrella. It made sense, as most of the programs Support is responsible for fall under the Squadron in the first place. It could also have introduced non-standardization between the two CTKs if that had been the route we took. The physical location of Support is important as well; if your AMUs are geographically split it makes sense to place the CTK in a central location. If one AMU has only to walk through a door to get tools while the other has a two mile drive to get there results could be less than stellar.

On that subject, a fifth consideration is location of the separate AMUs. Everyone at first had the idea that geographic separation was the biggest obstacle to splitting up; when in reality it was the easiest issue to tackle. It would be great if each AMU had its own building, but when it came down to actually performing the split we found that this was a “nice-to-have” not “essential” concern. The solution to this challenge was really quite simple...move desks. That’s it. We took the space we already had, called half of the space Blue and the other half Green, and moved. There was a bit of trepidation involved. To make it work we had to change the Specialist and Crew Chief ready rooms into Blue and Green AMU ready rooms, which meant that Specialists and Crew Chiefs would be sharing the same space (gasp...). I had pictured something akin to releasing a bunch of half-starved wolverines into a baby rabbit factory, or wherever it is that baby rabbits live, but it actually turned out just fine.

With leadership, manpower, and facilities split, the next step was to

...our subfleets deploy and burn hours at different rates. MPRS/ROBE aircraft are in particularly high demand in the CENTCOM AOR.

get down to the whole reason for this project in the first place: dividing the iron. This part can be a little tricky. At Fairchild, we have four subfleets within our total fleet. Our KC-135’s are either slicks, Roll-On Beyond-line-of-sight Enhancement (ROBE), Multi-Point Refueling

System (MPRS), or MPRS/ROBE. It was vitally important to make sure we got the division of aircraft right for several reasons. First, is that our subfleets deploy and burn hours at different rates. MPRS/ROBE aircraft are in particularly high demand in the CENTCOM AOR. It wouldn't do well to have one AMU responsible for that subfleet by itself. Their jets would always be deployed and the only time they would see them would be when they returned from the desert to complete major scheduled inspections. Second, is if depot inputs/phase flow/deployment cycles aren't balanced you could end up with a situation in which one AMU has all the on-station iron (which would mean all the local flying) while the other is idle. A sure recipe for disaster is to have one AMU being overworked while watching their peers do nothing. So, to avoid that situation, go see your friendly local lead scheduler. They can steer you in the right direction. If you play your cards right, you might even be able to bribe them to give your AMU all of the "good" jets... if that's your thing.

So, now that your people and iron are in place, you're all set to begin doing less work. You're past the planning phase, and can begin the execution. The first couple of weeks are crucial. This is where you want to set the precedent for just how effective your newly-split operation is going to be. Without a doubt, the single most important factor in making this work is COMMUNICATION. This goes for everyone from the top down to the youngest Airman. Everyone needs to know what the new structure is, who they report to, which jets are theirs, and what the expectations are. It was a little bit confusing at first. Imagine a young Airman working an inspection; he needs backshop assistance, so needs to coordinate through his Expediter. He sees the same Expediter he's worked for over the last six months,

Without a doubt, the single most important factor in making this work is COMMUNICATION. This goes for everyone from the top down to the youngest Airman.

flags her down, and is told, “I’m not your Expediter anymore, I’m Blue 7, and you need to call Green 7.” Thanks to effective communication prior to and in the critical first weeks of the split we didn’t have any issues like this. Everyone knew their role, or at least knew who to talk to when questions arose. One way you can really do your unit a favor when splitting is to utilize a Line Chief; that is, a person working directly for Squadron Supervision who can act as an intermediary if and when

disputes arise between AMUs. Each AMU is naturally going to have

Case in point, the month after we went to a two-AMU concept our repeat/recur rate at homestation fell significantly... I’m fully convinced that giving people fewer things to focus on has directly led to better quality maintenance.

their own set of priorities for the day, but you can’t forget that the key is overall mission success—not merely a “good” AMU. The Line Chief can be instrumental in balancing individual priorities in support of overall mission goals. So, for example, if for some reason my AMU is not flying at all today, and my counterpart’s AMU has ten lines, I may want my folks to go Armor-All the tires on my jets (because I like pretty things) but the overall mission dictates that I utilize my people instead to support the other AMU (I can always Armor-All on the weekends—seriously, I *really* like shiny objects). The Line Chief is there to make sure the right priorities are met.

There you have it; personnel, facilities, and aircraft are split, you’ve communicated the plan to all your people, everyone knows their job, and you’re focusing on overall versus individual priorities. So, what benefits can you expect to reap? Well, first off, expect morale to increase. If you were to tell a classroom full of high-schoolers that they only had to read half of their assignments every night, imagine how happy they’d be. Transfer that mental image of happiness over to your growling, cursing, mustachioed Production team and you’ll understand the benefit. Second, expect the quality of work to increase. The fewer things you’ve got to do,

the more attention you can spend on each one individually. Case in point, the month after we went to a two-AMU concept our repeat/recur rate at homestation fell significantly... I'm fully convinced that giving people fewer things to focus on has directly led to better quality maintenance. Finally, expect more time in the day (not actually *more* time, you'd need a TARDIS for that, but the feeling of more time). The fact that you're reading this now is proof of this fact: seven months ago I certainly wouldn't have had time to write this article.

I hope you've found this informative, or at least mildly amusing.

No animals were harmed in the writing of this article.

ABOUT THE AUTHOR:

Capt Aaron Darty is currently the Maintenance Operations Officer for the 92 MXS. Previously, he was first the mega-AMU OIC in the 92 AMXS then the Green AMU OIC after the split.

KC-46A Tanker Increases Maintenance Efficiency

By: Ms. Pam Valdez, Maj Gen Warren Berry, and Lt Col Liz Clay



Sometimes, things aren't quite what they seem. A horned "toad" is actually a lizard, a "lead" pencil is actually filled with graphite, and a koala "bear" is actually a marsupial. And I have yet to figure out the Escherian stairwell (sorry, you'll have to look that one up). In the same vein, a KC-46A isn't quite a Boeing 767 by another name.

Make no mistake, the KC-46A is a derivative of the Boeing 767 airframe...but to call it a "767" seems to sell it just a little short. The KC-46A has a 767-200 body with more capable 767-300 freighter wings. It has the tried and true PW4062 engines, but substitute in the Boeing 777 integrated drive generator (IDG). The cockpit has the larger Boeing 787 glass panel

displays. Beyond that, of course, are the military-unique systems like the 3-D refueling operator

station that truly make this

the Air Force's next-generation tanker, a tanker that will soon revolutionize aerial refueling for Air Force, Navy, Marine Corps and allied coalition aircraft.

This aircraft will also be much easier to maintain utilizing improved troubleshooting based on enhanced, built-in test capability. That all translates into greater reliability, higher mission capable rates, and improved availability. Those are attributes every logistician can be excited about!

Yet for all of the KC-46A's fanfare, one story has gone largely untold. For all of the amazing capabilities this weapon system will provide the Warfighter: increased refueling capability, improved efficiency, and inherent cargo and aeromedical evacuation capabilities.

Pam Valdez, Boeing KC-46 Support and Training director, said during the design process, the program's chief engineer and chief mechanic voted on every design decision, mindful of the impact to Air Force mechanics.

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Following contract award in 2011, the Boeing/Air Force team worked hand-in-hand to design and incorporate maintainability and reliability improvements that ultimately will help mechanics on the ground. Boeing was also able to leverage 75 years of tanker manufacturing and maintenance expertise.

Boeing took its highly reliable 767 platform, conducted more than 700 trade studies, and developed a tanker that should deliver unprecedented availability and mission effectiveness.

Pam Valdez, Boeing KC-46 Support and Training director, said during the design process, the program's chief engineer and chief mechanic voted on every design decision, mindful of the impact to Air Force mechanics.

“The chief mechanic had full veto rights to send a design team back to the drawing board if the design wasn’t maintainable,” Ms. Valdez said. “In the end, more than 200 design changes were incorporated to improve maintainability, increase mechanic accessibility to parts, simplify maintenance actions and decrease support equipment. Air Force mechanics and other maintainers will see the benefits for years to come.” Danny Wright, Boeing KC-46 chief mechanic and champion for maintainability design changes, echoed Ms. Valdez’ sentiments, “The team carried the maintainability philosophy forward while integrating the mission systems. We set the bar very high to provide the Air Force a purpose-built, maintainable, and reliable aircraft.”



Boom Down Access



Boom Up - Aux Access Doors

A new “door within a door” allows maintainers to access and service the auxiliary power unit without having to lower the aerial refueling boom. The improvement saves four hours per action and reduces unnecessary systems wear

Ms. Valdez highlighted a few of the KC-46A maintainability improvements.

-A new “door within a door” that allows maintainers the ability to access and service the auxiliary power unit (APU) without having to lower the aerial refueling boom. According to MSgt Noah Shedd, KC-46 Weapons System Manager and former KC-135 Crew Chief, “the improvement saves four hours per action and reduces unnecessary systems wear. This is a huge savings when you take into consideration that the APU oil has to be verified and serviced after every flight. Not only does it save time, but by avoiding extra positioning and repositioning of the boom stand, it minimizes exposure which could damage equipment and potentially injure personnel.”

-Engineers relocated the aerial refueling receptacle surge accumulator port and gauge from the exterior crown of the aircraft to the nose landing gear wheel well. This eliminated the need for support equipment and extra personnel to elevate the maintainer while removing a panel for pre-flight inspection and servicing. Now, a maintainer will be able to accomplish his/her task from the ground in minimal time.

-Single-point refueling receptacles and the fueling control panel were relocated from the underside of the wing to near ground level. This change allows flightline personnel to fuel the aircraft without support equipment, saving one hour of work during refueling/defueling operations.

-The team added a centerline drogue system access door to facilitate system inspection and maintenance. Access into the compartment has been improved with the incorporation of a new large, mechanically operated door allowing ground level access. From a flightline crew chief perspective, MSgt Shedd knows first-hand that opening a door versus removing an access

panel is a smart timesaving design. He said, “By eliminating the removal/installation of 100 fasteners and follow-on maintenance for pressurization checks, the task now takes an estimated 10 minutes vs 8 man-hours. When you are on a time crunch to generate missions, every minute saved counts.”

These are just a few of the more than 500 pages of reliability and maintainability

...the APU servicing door has the potential to save approximately 670 man-hours per aircraft, per year...that’s more than 114,500 hours total savings per year once we get the full 179 aircraft.

improvements Boeing and the Air Force Material Command team incorporated into the KC-46 design to provide an aircraft that truly factored maintainers, their time, and their safety into the equation. To put those few improvements into perspective, the APU servicing door has the potential to save approximately 670 man-hours per aircraft, per year...that’s more than 114,500 hours total savings per year once we get the full 179 aircraft. While the drogue system access door could mean 48 fewer man-hours per aircraft per year. That’s not just time saved on those tasks, but time that can then be invested into other productive maintenance work, to include training.

At the end of the day, the KC-46A isn’t “just” a commercial-derivative Boeing 767...it’s far, far better. Things aren’t always as they seem, after all.

AUTHOR’S NOTE:

As part of a contract awarded in 2011 to design and develop the Air Force’s next-generation tanker aircraft, Boeing is building four test aircraft – two 767-2Cs and two KC-46A Tankers. Boeing eventually will build 179 KC-46 Tankers for the Air Force.

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Pam Valdez is director of the KC-46A Tanker Support & Training Integrated Product Team. Ms. Valdez is responsible for Logistics Engineering, ILS Planning, Sustainment Information System, Depot Planning, Technical Publications, Supply Support, Maintenance Engineering, Maintenance Operations, Support Equipment, Type 1 Aircrew & Maintenance Training, and the Simulator Data Package for the USAF KC-46A Tanker.

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Training the Joint Loggie: Enabling Global Agility Across the Joint Logistics Enterprise

By: Maj Jonathan E. Menashi



My Education With Industry (EWI) assignment at Amazon has provided insight into a unique professional development model they use to develop their future operational leaders. In line with ideas advanced by the *Capstone Concept for Joint Operations (CCJO): Joint Force 2020*, this paper recommends adopting Amazon’s model (or a similar version) of leadership development and applying it to how we grow the Logistics Officer (21X) personnel destined for joint leadership positions. It touches on the notion that the existing 21X workforce does not possess the skills needed to expertly enable “Global Agility” and to lead and manage effectively within the Joint Logistics Enterprise (JLEnt). Most importantly, this paper attributes these lack of skills to the USAF’s collective sluggishness to properly change how we train, educate, and support the joint logistician, rather than a failure of the workforce.

The USAF
Enterprise Logistics
Strategy’s (ELS)

In line with ideas advanced by the Capstone Concept for Joint Operations (CCJO): Joint Force 2020, this paper recommends adopting Amazon’s model (or a similar version) of leadership development and applying it to how we grow the Logistics Officer (21X) personnel destined for joint leadership positions.

strategic priorities all lead to the vision of the USAF “leading ready, affordable logistics in a

Joint world.” To that end, and as the JLEnt evolves, the USAF 21X career fields must concurrently evolve by targeting a select handful of officers for an educational program focused on developing proficient joint logisticians whose core competencies are aligned with ELS strategic priorities and who are prepared to lead across various positions within the JLEnt.

Amazon has a leadership development program designed to accelerate the growth of future senior leaders through challenging field leadership experiences that stretch individual capability. As the individual learns and grows, the intensity of the challenge increases to keep them in the *crucible zone*; a situation in which concentrated forces interact to cause change or development, transforming a potential leader into a great leader. Additionally, Amazon encourages the continual mentorship of, and feedback from, the individuals selected for this program. This level of continuous feedback and coaching extracts insights and learning from experiences.

After completion
of the program,
the individuals

Amazon has a leadership development program designed to accelerate the growth of future senior leaders through challenging field leadership experiences that stretch individual capability.

are deliberately placed into specific positions within Amazon to ensure their skills are properly utilized and called upon to provide thoughts on future initiatives.

To best implement a similar program, I recommend utilizing an USAF “Hands” type program construct, like AFPAK Hands in Afghanistan and Pakistan or APAC in the Asian-Pacific. In this fashion, the USAF can identify a small cadre of high-performing 21X officers between their 9-13 year marks for entry into this elite 12-month “Joint Intermediate Developmental Education” (JIDE), Weapons School-like, or Executive Leadership Development-like program. These officers would be exposed to specific joint logistics

educational opportunities, events, and exercises spanning across the Department of Defense (DoD), US Government, multinational, private sector, intergovernmental, and/or nongovernmental partners. This education would be tailored to develop expertise and credibility

This education would be tailored to develop expertise and credibility of the officers across the full spectrum of logistics operations.

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across the full
spectrum of

logistics operations. Instead of becoming “regionally focused,” the officers who complete this rigorous program would become “functionally focused,” and sent to specific assignment billets across the end-to-end system of logistics (acquisitions, contingency response, fuels, transportation, supply chain management, maintenance, manufacturing, production, information technology systems, etc.). To ensure a proper return on investment, they would be purposefully moved into targeted assignments for the remainder of their careers which would range between leading and managing the execution of joint logistics operations, life cycle system management within the acquisition community, joint staff positions developing future initiatives, shadowing or becoming the aide to senior logisticians, advisor roles across the JLEnt partners, and/or working in a capacity with the JLEnt partners listed above. Additionally, to ensure there is sufficient reflection and feedback being shared across the future leaders of our JLEnt, the officers would reunite annually (with the DT/21X FAMs) to provide feedback and insight into their assignments, witnessed successes and failures across the JLEnt, and future enterprise synchronization opportunities.

After reading the paragraphs above someone might say, “But we have 21X officers in joint billets, and the sister-services/outside organizations love them!” While that is true, that someone should speak with more than the 21X officers who have served in joint positions. If the

officers performed well in their jobs, it was mostly due to the adaptability and determination of the officer to “get the job done.” “Getting the job done” is wonderful, but not enough anymore. For tomorrow’s fight, we need logisticians who are trained and educated on all tools and resources available across the JLEnt. These logisticians would be able to effectively plan, organize, and control logistics support to take advantage of the force multiplying effect of interdependent logistics capabilities across the national security enterprise.

Strategic level questions must be answered as the USAF moves forward with this effort. The majority of those initial questions and thoughts might initially steer the community in a direction as to why the USAF shouldn’t develop a program like this. These could include: Why should the USAF spend its limited financial resources on education? What is the need for expertise like this

if the mission is currently being

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accomplished? Why would a 21X officer sign-up for this? What would we do with the remainder of the 21X community?, etc. While this paper cannot directly address these questions, there is no debating that to ensure affordability and efficiency across the JLEnt and to capitalize on the tremendous opportunities for enterprise synchronization, we need to expose and educate our future leaders to/on the whole Joint Logistics Enterprise immediately.

Additionally, the need for a program like this has been addressed by our senior leaders. The CCJO mentions the requirement to “Continue to develop and implement the JLEnt.” Developing proper training for the JLEnt operators (logisticians) is critical. Plus, the A4/7 made the task of developing joint life cycle logisticians, capable of operating in the joint environment, one of the top 3 Enterprise Logistics Strategy priorities. Also, a program like this can be linked

to the critical requirement for force modernization and productivity. In January 2015, the Pentagon's Defense Business Board recommended slashing \$125 billion in spending over the next five years. Following in line with this, Deputy Secretary of Defense, Robert O. Work, wanted an approach to quantify "the economic value of modernization on a productivity basis," and how modernizing department business practices would help it gain further efficiencies. Secretary Work's October 2015 memo stated the DoD spends about \$100 billion annually on "core business processes," which he identified as human resources, healthcare management, financial management, logistics and supply, and property management. "My goal is to modernize our business processes and supporting systems, and create an agile enterprise shared services organization in order to reduce costs, maximize return on investment, and improve performance," he

wrote. One can debate that an initial step in

One can debate that an initial step in logistics enterprise modernization is the importance of exposing leaders to the current processes across the JLEnt so they can better influence and shape the future.

logistics enterprise modernization is the importance of exposing leaders to the current processes across the JLEnt so they can better influence and shape the future.

While the best solution would be to train the entire 21X community, a program of that scale would be too costly. Consequently, the remaining 21X officer core would continue to operate in the same manner. We still have a need for USAF logistics leaders who are able to expertly field, generate, and sustain power in air, space, and cyberspace. While these officers could find themselves in joint billets or deployments, they would not be coded to fill key joint developmental and leadership positions. Possible variations in the program construct could be:

officer enrollment simultaneous to a 2-3 year joint assignment, and opening the school/assignment to our sister-services and additional JLEnt partners.

In conclusion, Amazon identifies and invests in future strategic leaders by giving them experiences and exposure to targeted challenges in their respective fields. The USAF could apply this best practice to their future logistics leaders because there is an immediate need for enterprise change. The USAF should provide the best prepared logisticians to lead in the future fight; which will be even more joint than today. We should seize the opportunities presented by the requirement for synchronization of the logistics workforce, in order not to lose the battle to lead the effort for a stronger, more efficient, and innovative JLEnt.

ABOUT THE AUTHOR:

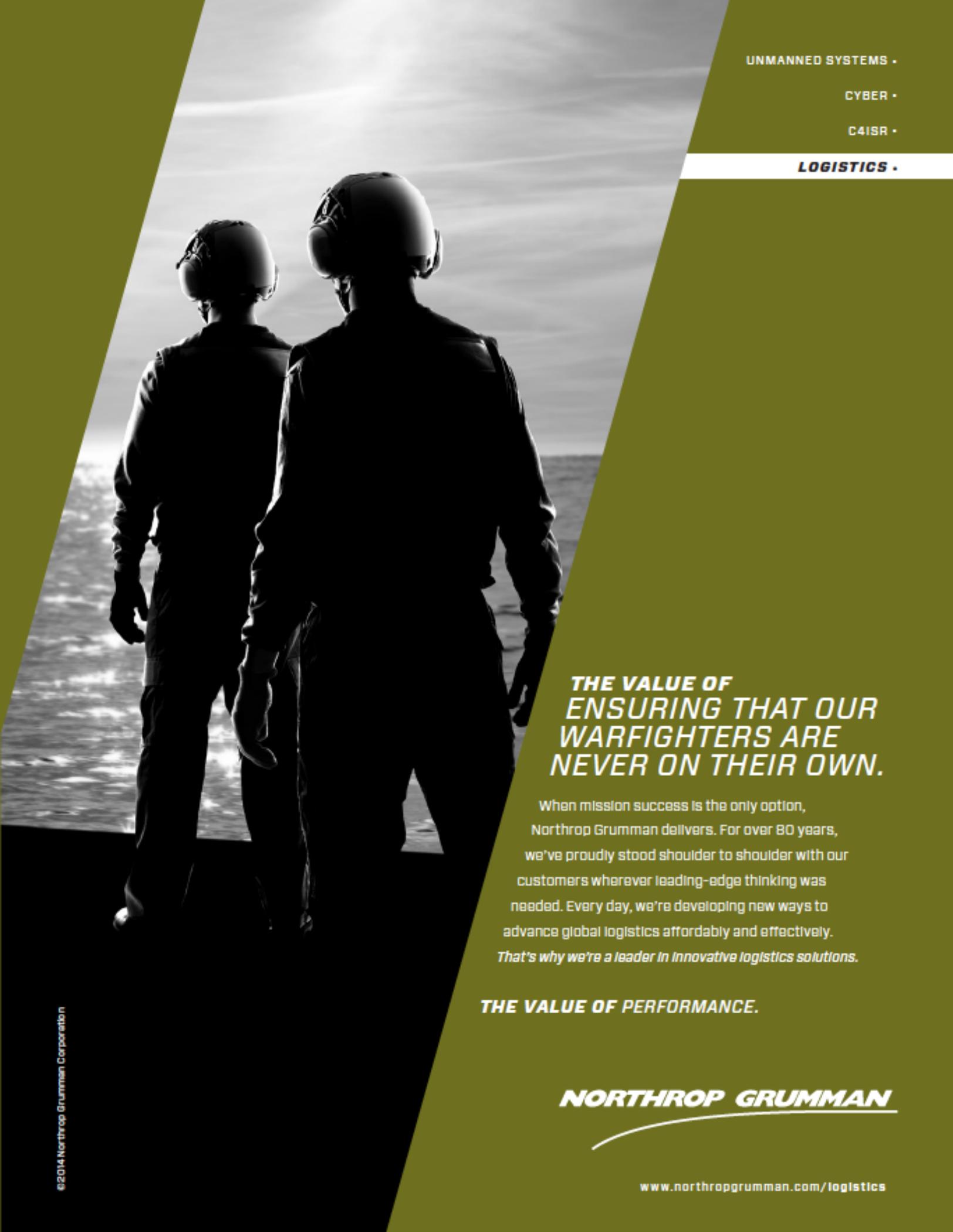
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