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A Transition in Training Philosophy

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The Doctrine Division, Directorate of Training and Doctrine (DOTD), U.S. Army Aviation Center of Excellence (USAACE), Fort Rucker, AL 36362 produces the *Aviation Digest* quarterly for the professional exchange of information related to all issues pertaining to Army Aviation. The articles presented here contain the opinion and experiences of the authors and should not be construed as approved Army policy or doctrine.

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ABOUT THE COVER

A change in aviation training philosophy is illustrated with depictions of transitioning resources from the schoolhouse to the field.

Editor's Note

"Leadership and learning are indispensable to each other."
- President John F. Kennedy

The future operational environment (OE) will demand Army Aviation be capable of rapidly providing operationally decisive forces with the capability to arrest future cascading challenges at the speed of human interaction. As an indispensable component of air-ground operations (AGO), Army Aviation is the decisive force that provides the overmatch capability necessary in the air-ground team (AGT) through its agility, lethality, depth, survivability, and speed. The ability to maintain overmatch is an enduring challenge.

We know that Army Aviation will face significant challenges affecting the ability to train its Soldiers. Furthermore, traditional methods of training will face increasing restraints involving the use of equipment, munitions, and maneuver ranges. Let us not forget, while these challenges are taking place, continuing technological advances are expected to increase the skill requirements and raise the operating and support costs associated with equipment and maneuver-intensive training. Army Aviation must respond to these problems in an environment with future changes in the Army mission, force structure, and deployment posture; all of which affect choices among training approaches.

Nonetheless, organizations greatly benefit from taking hard looks at themselves in order to raise the level of their performance. Aviation formations will only maintain their leader and training overmatch by improving Soldier performance through well-developed and thought-out home-station and combat training center (CTC) training opportunities so the Army can achieve decisive victory in the future. We can immediately help ourselves by dedicating our training towards the knowledge that matters, is relevant, rigorous, and leverages the incredible technology available. Soldiers and Aviators receive this knowledge best at the point of need, home-station and the CTCs.

At the heart of this challenge is leadership. In order to pivot Aviation toward the correct training focus and effort, leaders need to establish a sound professional foundation for subordinate leaders. Secondly, leaders need to increase subordinate leaders' abilities to conduct the crucial training tasks of their profession. Finally, leaders need to increase leaders knowledge of the art and science of combined arms warfare and air-ground operations gained through well-prepared and executed training events.

As you read the articles found in this edition, you will quickly realize that many of our leaders already clearly understand the new direction training needs to take. Proper training philosophy allows Aviation units to train hard, train efficiently, train realistically, and train often in order to remain relevant in future warfare. Simply put, it is about training smarter to fight smarter.

ABOVE THE BEST!

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The Command Corner

Our newly published Army Operating Concept entitled "Winning in a Complex World," challenges all of us to optimize human performance. As we enter a period of increasing uncertainty and operational complexity, we must adapt to maintain our asymmetric advantage of training and leader overmatch against the increasing number of adversaries around the world. It's time to step back and evaluate the way we train our aviation leaders, and take a system that has served us well in Aviation, and raise it to the next level.

One of the initiatives the Branch is undertaking in the realm of the human dimension is called "Defragging the Hard Drive." Removing the less important information filling our "human hard drives," and replacing it with knowledge that matters; knowledge that will allow us to fight, survive, and win on any battlefield. In short, we must operationalize what we train and how we evaluate that training so that we are focused on things that will help us be better combined arms warfighters.

As Army Aviation came into its own in Vietnam and beyond, we developed a strict methodology for training our aviation leaders…all for good reason. The world was less complex and the threats more monolithic. We had analog aircraft that required the aviator to read the instruments, interpret the data, and make decisions based on that interpretation. Rote memorization will always be a part of becoming an aviator, but it is less important in the digital age. Over time, our aircraft have become more complex and capable, allowing situational awareness that was unthinkable even a few years ago. However, while technology and the environment have changed around us, we have been relatively static in the way we train and evaluate our aviators. How we optimize human performance through aviation training and evaluation in this new environment is at the heart of this concept.

Our Soldiers will do well what our leaders check. So, the question is, are we checking the right things? How important is it to memorize information about our machines that our modernized aircraft already tell us? How important is it that we be able to diagram the eyeball, know the stages of hypoxia, or be able to regurgitate endless amounts of non-warfighting related technical or "nice to know" information that really serves no operational or flight safety purpose? Isn't it more important that we have a deeper understanding of how we (and our combined arms teammates) fight as a joint combined arms team, and that we know the critical aspects of our tactical standing operating procedures, doctrine, and threats? With the world outside the cockpit becoming more and more complex, we can no longer afford to be "intellectually heads down" and enamored with knowing the magnification values of our sensors or at what temperature the oil bypass comes on at the expense of maintaining training and leader overmatch as Combined Arms Professionals.

I am challenging the entire Aviation Branch to do some critical self-analysis and look for ways to improve our training and leader development. We can't grow the size of the human hard drive but we can certainly make sure we're only putting what's important in it. We must adapt and spend more time honing our warfighting knowledge and skills in the institutional and operational training domains. The intent is to shift the load, not lighten it or make check rides easier.

Training begins with the generating force, and we are making changes at the United States Army Aviation Center of Excellence to drive the paradigm shift. The Directorate of Evaluations and Standardization and the Directorate of Training and Doctrine, the lead agents for this effort, are altering the examination process to apply the new model and take the change effort to the field. We are comprehensively reviewing aviation doctrine, aircrew training manuals, how we train our instructor pilots, and restructuring programs of instruction to focus on combined arms warfighting while preserving the mission essential technical knowledge and skills required for safely operating and fighting our machines.

But none of these changes matter if commanders and senior aviation leaders don't own this at home station. You must break down the cultural barriers to change – its common sense and we will lose our most important asymmetric advantage of training and leader overmatch if we continue to ride the same dead horse into the next fight! The enemy continues to adapt and we owe it to the Soldier on the ground to do the same.

Above the Best!

Mike Lundy
Major General, USA Commanding

U.S. ARMY AVIATION

STANDARDIZATION

Defragging The Hard Drive

A Change in Aviation Training Philosophy

This article is re-published here, with permision, from the March 2014 issue of the FlightFax Newsletter

By LTC Josh C. Sauls

One of the most grating problems that we deal with in today's business environment is a computer that is so bogged down with extraneous information that it is no longer able to perform even the most mundane tasks in a timely manner. We can feel our blood pressure rise as we watch that hourglass spin and spin when we are simply trying to open an email. Only a year earlier, this very same computer probably worked with lighting-like speed but slowly over time, we have bogged it down with information so that it is now an actual hazard to our health because of its blood pressure elevating properties.

Given how exasperating this is, it is amazing that we, the aviation branch, do the very same thing to our Aviators' organic hard drives – their brains. We at DES routinely observe instructor pilots demanding that their aviators commit to memory every pressure, temperature, and voltage possible on their aircraft. We have observed pilot in command (PC) oral evaluations that lasted two hours and never got beyond the performance planning card and the electrical system. Given that these PC evaluations were for AH-64 PCs, I was surprised that the instructor pilots were so concerned that their students could regurgitate the voltage required to operate a pressure regulator shut-off valve (PRSOV) but did not ask them any questions regarding tactical employment.

Let's face it, today's aircraft are so technologically advanced that they can and will provide vast amounts of information to the pilot that formerly had to be committed to memory. I can still remember the days of memorizing every conceivable pressure and temperature of the AH-1 because that venerable old airframe was instrumented with nothing but steam gages with slippage marks on the glass. The lack of technology required that an aviator memorize that type of data. However, today's aircraft are equipped with digital indications that warn an aviator of impending exceedences with everything from count-down timers to color codes to human voices. We have systems that record temperatures and pressures out to the third decimal point and times out to the millisecond. We even have systems that will display emergency procedures to the aircrew automatically.

With that being the case, why are we not unburdening our aviators of the requirement to fill up their hard drives with this type of information – information that the aircraft is quite capable of managing on its own? Why are we not spending more time requiring our aviators to know and understand aviation doctrine and tactics? Apache pilots should spend the vast majority of their study time ensuring that they are experts at employing weapons systems. Blackhawk pilots should spend the majority of time becoming subject matter experts at conducting air assaults. We as standardization leaders should be creating tactically proficient war fighters as opposed to competitors for the show "Jeopardy."

We started to embrace technology when we first fielded the AH-64D. DES sent a memo to the field that relieved aviators of the responsibility of memorizing a significant amount of data because the aircraft did an excellent job of managing that information. However, over time, the community slid back to the old habits of playing "I'm a drop of oil" again.

It is time that we embrace the advantages that our advanced technology offers. We have to break the bonds of inertia and unburden our aviators of the requirement to spend so much time with rote memorization. Instructor pilots must shift their focus and require their pilots to become true subject matter experts in their mission and the associated doctrine, tactics, techniques and procedures. Does an aviator really need to be able to recite each and every monocular cue from memory or be able to draw the eyeball? We believe that the branch would be much better served if our aviators had a good general knowledge of this type of information and spent more study time on how to tactically employ their respective aircraft.

Obviously, there are things that we will continue to have to commit to memory. Underlined steps of emergency procedures are a good example. Pilots will always have to have an intuitive understanding of how to manage aircraft emergencies. This level of knowledge will require some rote memorization no matter how much technology resides on an aircraft. However, if the aviator can't use a particular piece of information from the cockpit, did he ever really need to commit it to memory in the first place?

There is no doubt that this is a topic that will require some focused discussions within the standardization community. DES will be taking a very hard look at how we can manage effective change in this area. We are interested in hearing from the field on this subject and are challenging the branch to take an honest look at our training philosophies and make a real effort to figure out how we can use our technology to more efficiently unburden the most important processor on the aircraft….the aviator's brain.

LTC Josh C. Sauls is currently assigned as Deputy Director and AH-64D Instructor Pilot, Directorate of Standardization and Evaluation. His previous assignments include Professor of Military Science, University of North Dakota; Deputy C3 Air, U.S. Forces -Iraq/I Corps; Director of Operations, Plans, and Logistics U.S. Army Kwajalein Atoll; S-3/XO 3-101st Aviation Regiment; Combat Aviation Training Team Chief/Instructor Pilot, 21st Cavalry Brigade; Company Commander/Instructor Pilot, A Company 1-14th Aviation Regiment Mesa, AZ and Fort Rucker; Deputy TRADOC Systems Manager, Apache Longbow; Commander, B Troop, 1-6th Cavalry; and S-1 and Platoon Leader 4-6th Cavalry. LTC Sauls has completed two deployments to Iraq. He has 27 years' service with 24 years as an aviation officer. LTC Sauls is qualified in the UH-1, AH-1, and AH-64A/D.

Avoiding The Crush:

Aviation Flight Company Training Management

By CPT (P) John Bolton
and MAJ Jason Wyant

Today, life for company commanders often seems like a flood of emails dictating shuffling priorities and non-negotiable responses to requirements from headquarters. There seems to be an unrealistic sense of the immediacy created by technology, and further exacerbated by budgetary uncertainty and under-developed garrison operating procedures. Many non-essential requirements take time away from the company commander. One commander described the challenge:

> The trend I've noticed lately is a shift in responsibilities from higher echelon staff sections down to the company level. AR 350-1 training [is] the tip of the iceberg… By the time I get done training OICs [officers-in-charge] and NCOICs [non-commissioned officers-in-charge], I don't have anyone left to fix or fly helicopters. However, that doesn't stop expectations, or even delay it for that matter; hence you end up with an aerial gunnery only 30 days after an IG [Inspector General] inspection and concurrent with an ARMS [Aviation Resource Management Survey] inspection, DES [Directorate of Evaluation and Standardization] visit, and field problem.[1]

Commanders' concerns center on what they perceive as expectations that overload companies and reduce predictability. To succeed, commanders must "lead through the crush," applying a dedicated focus and prioritization to effectively train their units.[2]

The commander's job is to train the company. This is a non-negotiable requirement to produce an effective team that is trained and proficient in assigned mission essential tasks. The scale of the overwhelming requirements placed on commanders is beyond the scope of this paper. What we will try to do, however, is offer some advice to current and incoming commanders as they seize the reins. We will provide an overview of several techniques that help organize, focus, and enhance company-level training. Our target audience is company commanders and standardization instructor pilots, but it also applies to instructor pilots, battalion staff officers, and platoon leaders.

Today, many junior officers assume they will take command and simply manage their units through pre-determined events. Due to deployment operational tempo and the prescriptive Army Force Generation process, the trend of walking units through predetermined events became the norm over the last decade. Confusing management with leadership, many junior officers fail to comprehend the seriousness of the training challenge and the responsibility inherent in command.

The flight company is truly the bottom line; it is where resources (equipment, personnel, facilities, time) come into play to produce trained Army aviators.[3] Utilizing resources in an organized, systematic manner while avoiding distractions requires a hardnosed focus on planning and prioritization. To commanders, we offer five suggestions aimed at improving company training: develop a battle rhythm, use flight hours effectively, ruthlessly enforce training schedules, and train systematically, all within the context of a professional development program. Holistically, these suggestions help create an effective training enterprise.

Battle Rhythms

Battle rhythms help commanders implement training plans. Battle rhythms serve two functions. First, they provide an overarching structure to company operations, which translates to predictability for Soldiers and families. Second, battle rhythms build teamwork by concentrating efforts.

An established battle rhythm focuses the unit on a published agenda, making effective use of training time. For flight companies, the first of these events is rotor stables. In the same manner that Armor, Mechanized Infantry, or Transportation companies use motor stables to focus on vehicle maintenance and procedures, flight companies should focus on aircraft maintenance and run-ups through rotor stables. The first step: commanders, get your aircraft outside! Too often aircraft stay in the hangar far into the workweek. If it flies, aircraft should be staged on the ramp and ready to go. This effort is necessarily a battalion effort, requiring support from the maintenance company. Units will have to balance rotor stables with motor stables, which should occur later in the week. Since aviation companies only have two or three vehicles, however, priority is in the hangar.

Rotor stables must have an agenda consisting of a mission brief, a command team overview of the week, maintenance status, and any administrative notes. This structure ensures the unit addresses administrative taskings early to prevent them from becoming distracters later in the week. It also allows the commander,

first sergeant, and maintainers to identify potential conflicts. The company then performs a run-up as a team in accordance with (IAW) standing operating procedures (SOP). After the run-up, the company departs in a formation flight of

varying length, from 10-30 minutes with companies staggering launch times across the battalion. Training flights can break-off from the formation for individual tasks as appropriate. Granted, the companies will unlikely have all aircraft in a flyable condition; however, simply getting pilots in the aircraft for a run-up maintains proficiency in aircraft systems and procedures. Rotor stables require aviators to participate in a mission briefing, run-up, and launch at least weekly. It reinforces teamwork across the company and is a great occasion to develop junior aviators and provide pilot in command (PC) and/or air mission commander (AMC) candidates leadership opportunities. Lastly, rotor stables accomplish all the critical aspects of a mission: briefing, run-up, multi-ship launch, and flight in a comprehensive manner while using flight hours effectively.

Flight Schedule Management

Commanders must understand that training involves more than simply placing aircraft and pilots together on a schedule. Commanders are responsible for collective proficiency; it matters how well units perform as a team, not as individuals. Commanders cannot wait for the next combat training center rotation to train and assess the company; the work starts with effective home station training, utilizing all the available resources and a priorities-driven, well-organized training plan.

Aviation training management begins with the weekly flight schedule. Many times, schedules simply list flights as "Training Flight." This is overly simplistic and reflects an undisciplined approach, particularly in a limited resource environment. Well-developed training plans, reflected in flight and simulator schedules, with nested tasks and goals flown in multiple flight modes (instruments, terrain flight, and night vision devices)result in collective proficiency. At no point should two aviators meet in front of the schedule and ask each other, "What do you want to do today?" The flight schedule should reflect guidance for the aviators to conduct the flight, while leaving the specifics of execution up to the PC/AMC.

The flight schedule shown below is a simple example of this approach applied to cross-country flights. While these flights are valuable, some units restrict the local flying area to the military reservation while others are enormous. Most restrictions derive from an assumption that aviators will simply fly cross-country to get lunch and therefore waste time. However, we should be less concerned with what aviators do on the ground than the training tasks performed in the air. Cross-country flights, if properly performed, are excellent training opportunities. Aviators interact with multiple air traffic control facilities, perform navigation, and negotiate unfamiliar airports; all of which are critical tasks. While an SOP or reading file entry could clarify requirements, a well-developed training plan that results in a clear, task-based flight schedule gives aviators guidance without dictating exact details.

Directing tasks on the flight schedule is not micro-management, it is mission command coupled with a detailed approach to training management. The commander provides mission guidance and resources and expects the PC/AMC to execute within the commander's intent. Commanders should emphasize fewer, longer duration multi-ship missions that focus on collective tasks as opposed to many single ship missions of shorter duration. Guidance on the flight schedule reflects a tie-in between flights and the unit training plan (UTP). Each non-progression flight must link to a collective task from the company's mission essential task list (METL), which, itself, is nested with Higher's training guidance.

To accomplish this tie-in, the company needs a catalog of scenarios to enable training. Even simple scenarios, employing notional supported units are useful. Of course, we always prefer to train with actual ground units and a higher headquarters. Scripted scenarios allow PCs and AMCs to simulate events, which then drive the training. Scenarios can vary in depth from simple grab and go missions, such as aerial reconnaissance, to more deliberate air assaults or interdiction attacks requiring in-depth planning. Increasing complexity at the company level leads to effective battalion exercises. Therefore, a library of scenarios allows commanders to plan effective training, utilizing available resources such as the Aviation Combined Arms Tactical Trainer (AVCATT).

MISSION DESCRIPTION	PC	PI	A/C	A/C Type	ETD	ETR	Remarks	Hrs Est
MONDAY								
ROTOR STABLES	CREW 1		TBD	AH-64D	1400	1700	Multi-Ship T/O Terrain Flight	1.0
ROTOR STABLES	CREW 2		TBD	AH-64D	1400	1700	Multi-Ship T/O Terrain Flight	1.0
CALFEX ISO 2/16 IN	CREW 1		TBD	AH-64D	1730	2030	Instrument Flight afterward	2.0
CALFEX ISO 2/16 IN	CREW 2		TBD	AH-64D	1730	2030	ATM Maneuvers afterward	2.0
ROTOR STABLES	CREW 3		TBD	AH-64D	1400	1700	Multi-Ship T/O	1.0
APART	CREW 1		TBD	AH-64D	1730	2030		3.0
GUNNERY TABLES	CREW 1		TBD	LCT	0730	0930	Table V	2.0
AA RECONNAISSANCE	CREW 1		TBD	AVCATT	1400	1600	NTC Terrain Data Base	2.0

Example Flight Schedule with Task Guidance

A diverse catalog of well developed scenarios which progresses from virtual/constructive simulation to a live environment is the framework for a comprehensive training program. Lastly, scenarios should include maintainers in order to incorporate sergeants' time training as a component of the training plan. For example, the company could conduct a tactical ground movement to establish an assembly area while a team of aircraft provides reconnaissance and cover.

Ruthlessly Enforced Training Schedule

Too often, commanders let administrative requirements and 'flavor of the day' demands overwhelm the need to systematically plan and manage training. Commanders must prioritize. Simply put, there is not enough time to get everything done and we are being dishonest to say otherwise. Army researcher Dr. Leonard Wong illustrated the dilemma - "Company commanders somehow have to fit 297 days of mandatory requirements [AR 350-1] into 256 available training days."[4] Given these conditions, administrative requirements tasked against the personnel in our flight companies are significant. Therefore, the need for effective training meetings is clear.

The training meeting is the 'soul' of the company. It is the commander's platform for assessing the company's proficiency, planning and resourcing training, prioritizing tasks, and issuing guidance. The training meeting agenda should be inclusive, but flexible enough to keep the meeting under an hour. The Leader's Guide to Company Training Meetings, formerly TC 25-30, is a great reference. Additionally, there are several videos available on YouTube and the Army Training Network (ATN) demonstrating effective training meetings.[5] To ensure maximum use of time and avoid additional meetings, the training meeting should include the entire chain of command from the commander to squad leaders as well as the warrant officer leaders. Commanders should also make the training meeting open to everyone who wishes to attend to foster teamwork and increase situational awareness. During this time, the commander addresses the previous week's training, upcoming events, resources, and administrative requirements.[6]

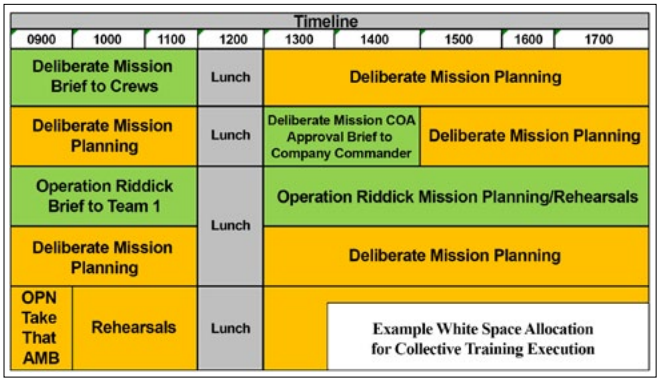
Covering administrative issues during training meetings may seem counterintuitive, but doing so pays dividends. Commanders should take the opportunity to address *ankle biter* topics such as medical readiness and inventories. Regularly incorporating these small disciplines into training meetings ensures they are visible and addressed, while ensuring they do not take away from training time and focus. Using a single tool to assess these allows the unit to rapidly answer questions that arise.

An often misunderstood aspect of training management is allocating 'white space.' Many commanders view white space as time during which Higher will not task them. However, commanders should not simply expect free time; rather, they must demand the freedom to train their units effectively. This requires planning and preparation. Often overlooked, this time is critical, particularly for major training events. For example, an attack reconnaissance company preparing to execute a multi-ship interdiction attack utilizing the AVCATT should release participants from other requirements. This gives the trainees a level of freedom and the time in which they can receive the mission, plan, and rehearse, rather than simply showing up and, only then, developing a plan. Furthermore, allocating this time reinforces the importance of training as opposed to administrative requirements.

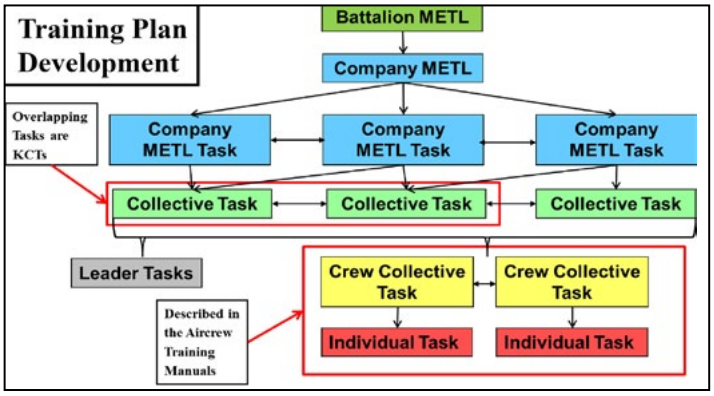
Commanders must be proactive and create white space, rather than waiting for it. Command teams accomplish this by taking the initiative in planning and earning the trust of higher echelons. This trust is paramount in an age of rapid-fire changes enabled by technology. The trust between battalion and company goes both ways. Battalions must enforce an expectation of well-developed training plans from subordinates. The battalion staff resources company training events and structures requirements as to not interfere with training. Companies, in turn, must ruthlessly defend the six-week training lock-in.[7] Companies can build trust by specifically and accurately reporting training plans and collective proficiency. The result is a positive feedback loop in which commanders earn white space by demonstrating a solid understanding of the training management process.

Building the Training Plan

The commander should begin with the relevant Training and Evaluation Outline by using the Combined Arms Training Strategies



tool.[8] Also available on ATN, the Leader's Guide to Unit Training Management outlines the methodology for building a UTP. Leaders identify the collective tasks that support their METL and then find the supporting individual tasks. When



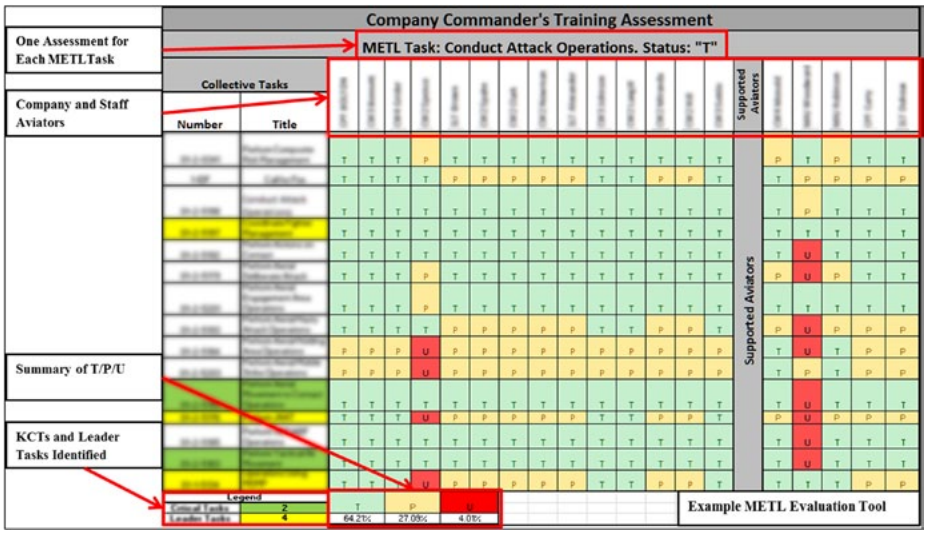
developing the UTP, leaders must reference quarterly training guidance to ensure their training plans nest with Higher's METL. Nesting ensures that commanders create a unity of effort and do not waste time with overlapping or competing training events. Detailed analysis is critical to this process, as the training plan will become the basis for the company's operations. As Army Doctrine Reference Publication (ADRP) 3–0 warns, "Faulty conclusions drawn from hasty or abbreviated analyses can adversely affect operations, waste critical resources, and incur undue risk."[9]

Collective tasks that apply to multiple METL tasks are key collective tasks (KCTs); these give the unit the most 'bang for the buck.'[10] They indicate the most effective use of training time and resources. In a close second effort to identifying KCTs, the commander must identify leader tasks. This will help focus training for junior aviation officers and AMCs. In this manner, the units can tailor training to all participants, rather than just a few. Incorporating virtual training tools in this process can greatly enhance the program's effectiveness.

The AVCATT, as a collective training tool for Army aviators, is often underestimated. It is a team and multi-aircraft trainer, which provides an interactive environment capable of complex scenarios. Aviation leaders are able to closely monitor every aspect of the mission and conduct detailed exercise evaluations using the AVCATT's command module. The AVCATT is the perfect rehearsal tool in preparation for live execution. Its effectiveness has been validated through numerous pre-deployment aviation training exercises at Fort Rucker.[11] Execution in the AVCATT allows commanders to more easily assess unit proficiency as well as train AMCs.

Tracking Training

The commander must track individual proficiency and experience within the company METL and a 'dashboard' or graphic such as the one shown below that summarizes the unit's training status is a useful tool. It should be an easily relayed graphic, which can then be posted in the company area alongside the training schedule. It also allows the commander to assess the unit's proficiency IAW ADRP 7-0 and adjust the UTP as required.



Mission Essential Task	Status	T+P	Current Assessment	90-day Projection
Critical Tasks	U: #% P: #% T: #%	#%	T	T
[illegible]	U: #% P: #% T: #%	#%	T	T
[illegible]	U: #% P: #% T: #%	#%	T	T
[illegible]	U: #% P: #% T: #%	#%	P	P
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[illegible]	U: #% P: #% T: #%	#%	T	T
Physical Training	Weapons Qualification		Crews Available	Drivers
Training 'Dashboard	#: Req: # Qual: # Average: # Max: #		7	LMTV:3 HMMWV: 18 HEMMT: 3
	Req: # Qual: # Average: # Max: #			

While the Digital Training Management System (DTMS) works sufficiently for individual training such as weapons qualifications, AR 350-1 training, and Army physical fitness training scores, it is lacking for aviation collective training. An aviation unit's collective proficiency is the summation of individual aviator proficiency. Since Army Aviation does not typically crew aviators in fixed pairs, experience and competence must be shared across the company team, to include staff aviators. Units could use DTMS to track these scenarios; however, Aviation is unique in how individual aviator performance occurs simultaneously with collective tasks. The commander's training plan is the bridge between the basic individual tasks outlined in the aircrew training manual and the collective tasks prescribed by the UTP. Aviation is unique in that it is a 'team of teams.' A company must provide qualified, competent aviators who can 'plug and play' into teams ranging from two to eight aircraft as appropriate for the mission. Therefore, tracking aviation training requires an increased level of specificity and localization. The example products shown here use Microsoft Excel; however, the process of tracking aviator proficiency and assessing the training plan is much more important than the software used.[12] A whiteboard could work just as well.

Soldier Training

An obstacle to team effectiveness in aviation companies, especially attack reconnaissance companies/troops, is integration of Soldier tasks with the aviator training plan. Since Army aviation companies execute aviation and maintenance tasks collectively, they must train accordingly. Units can accomplish this simultaneous training by integrating sergeant's time with aviator training. Integration and nesting of tasks facilitates the company's team performance and maintains the battle rhythm.

Individual Soldier Training 10JAN 13 - CBRN and Mask Operations

- **17JAN13** - Radio Operations
- **24JAN13** - Maintenance Topic
- **31JAN13** - Downed Devil STX
- **07FEB13** - Land Navigation/React to Contact/Move under Fire
- **21FEB13** - Downed Devil STX
- **09MAY13** - Combat Life Saver Training (**Perform First Aid**)
- **16MAY13** - Field Craft/Field San (**Company FTX**)

Soldier Training Integrated with Aviator Tasks during STXs. Train as a Company Team.

AVIATOR CLASSES

- **07JAN13** Snow Qualifications/Lot 13.1 (**Company IP**)
- **14JAN13** Area and Zone Reconnaissance Route Classification (**Company Aviator**)
- **22JAN13** Call for Fire/CAS (**Company Commander**)
- **28JAN13** None AH-64E Ferry Flight
- **04JAN13** Deliberate Planning Exercise (**Company Aviator**)
- **11FEB13** Call for Fire (**BN FSO**)
- **18FEB13** ASE (**Company AMSO**)

Sample Aviator Classes

Professional Development

Incorporating an agenda of aviator classes in the battle rhythm allows for company training and professional development. Too often Army Aviation has focused solely on the annual requirements outlined in Army Regulation 95-1. While these are mandatory requirements, they barely skim the surface of the true depth we must have as professional military aviators and maintainers. By developing a comprehensive list of classes/topics, we can further our professional knowledge and tie-in to the comprehensive training plan. Incorporating these classes into the battle rhythm fosters a culture of continual learning.

Professional development is more than a list of classes; it is a tool to encourage self-study. Staff rides, counseling, courses, etc. are all part of professional development. The company commander establishes this climate through classes, but also enforces it through counseling and the example of senior mentors throughout the unit.[13] This will eventually establish a culture that encourages professional development without prodding.

Conclusion:

Unit Training is a complicated process, requiring serious thought and consideration. Leaders cannot rush training, nor can they create effective teams simply by throwing resources at units and expecting results. Effective training is the result of comprehensive training plans that are iterative, specific, and leverage multiple resources. To ensure training plans are successful, commanders must implement battle rhythms in order to provide stability and focus for their units. Coupled with professional development, this approach ensures that units make the most of available time, minimize distractions, and develop competent teams. Failure to adhere to these principles results in wasted efforts, ineffective teams, and a lack of support to our ground brothers. The scope of the effort and the inherent responsibility is why company command is truly 'the bottom line' and the best job in the world.

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Major Jason Wyant is currently a student at the U.S. Army Command and General Staff College. His most recent assignment was the Mission Command Training Program as an exercise controller. His previous operational assignment was as Commander of C Troop, 6-17 Cavalry Squadron. A branch transfer from Military Police (MP), MAJ Wyant served as a Platoon Leader and Battalion Assistant S-3, 300th MP Company. He has served in the Aviation Branch as a platoon leader, headquarters, headquarters troop commander, and attack reconnaissance troop commander. MAJ Wyant has served as a pilot in command and air mission commander in the OH-58D.

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2. Company Command, "The Crush of Requirements from Higher Headquarters," Army Magazine2012.
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4. Leonard Wong, "Stifled Innovation? Developing Tomorrow's Leaders Today" (U.S. Army War College, 2002), 9.
5 https://www.youtube.com/watch?v=zqJokWXYdXw
6. Leader's Guide to Company Training Meetings available from the Army Training Network https://atn.army.mil.
7. Though ADRP 7-0 does not specify a 6-week lock-in, it refers to near-term training. The Leader's Guide to Company Training Meetings does prescribe the T-6 model for Company Training.
8. https://atn.army.mil/
9. ADRP 3-0, May 2012, 4-4.
10. The Army Training Network has several examples of this process.
11. Melinda K. Seibert et al., Developing Performance Measures for Army Aviation Collective Training May 2011. 1.
12. If interested in this particular METL Task Tracker, please contact CPT Bolton via AKO.
13. MAJ Lee Robinson, conversation with the author 13NOV14.

Acronym Reference

ADRP - Army Doctrine Reference Publication
AMC - air mission commander
ARFORGEN - Army Force Generation
ATN - Army Training Network
AVCATT - Aviation Combined Arms Tactical Trainer
DTMS - Digital Training Management System
MDS - mission, design, series
METL - mission-essential task list
SOP - standing operating procedure
UTP - unit training plan

Aircraft Mission Survivability Training:

Preserving the force

By CW5 Michael S. Kelley

As we begin a long overdue process of placing Army Aviation training topics under the magnifying glass and prioritizing what we really don't need to know, what is nice to know, and what is essential to know, we are going to end up with (theoretically) gaps or holes in the training schedule vacated by the stuff we really don't need to know and some of the stuff on the lower end of the what is nice to know. Those gaps or holes in the training schedule WILL be filled. It is critical that we fill those gaps with essential training that will develop skills that will allow us to cover down on the ground units we support by preserving the aircrew and aircraft that will take the fight to the enemy.

Army Aviation can boast the most combat experienced aircrews since just after operations in Vietnam. There are limits, however, to the experiences currently held by today's aviation force because tasks and skills not needed were not exercised. No surprise. It has been a matter of prioritizing unit training resources for the current fight. As we exit counterinsurgency operations, we need to face the reality of possible future entanglements with enemies armed with more sophisticated and lethal weapon systems – a peer or near peer threat.

We conducted operations in Afghanistan and Iraq against limited surface to air threats. The primary aircraft survivability system, the aircrew, studied the threat, grew confident in their use of the aircraft survivability equipment (ASE) systems, and flew solid tactics when required. This resulted in tremendous aircraft survivability statistics. The challenge Army Aviation faces now is ensuring these experiences and capabilities are retained and passed on to new aviators. We need to ensure that our training is against advanced threat systems employing current ASE and employing tactics, techniques, and procedures (TTP) evolved from lessons learned and technological analysis.

The Aircraft Shoot Down Analysis Team (now the Aircraft Survivability Development and Tactics Branch) was formed to evaluate all aspects of aircraft shoot downs. Their tasks included analyzing aircrew actions on contact and TTP to evaluate aircrew responses to engagements. The need to create a training program for aircrew to use ASE during routine flight procedures was identified during a capabilities based assessment conducted between Fiscal Years 2005 and 2009. The analysis documented solutions to address aircraft survivability concerns in a variety of operational environments. The assessment also identified the most critical component of the aircraft survivability equation as the aircrew's reaction time and the accuracy of their reactions with respect to maneuvers and ASE employment during the threat engagement sequence.

The future of ASE training will include embedded aircraft system processors programmed via the aviation mission planning system (AMPS), allowing aircrews to plan, rehearse, and refine combat operations against simulated hostile forces, regardless of where they are operating. The Air Force and Navy have installations that are capable of supporting an extensive network of real threat capabilities on terrain that supports Army Aviation maneuver. However, the Aviation Combined Arms Tactical Trainer (AVCATT) is likely the best solution for ASE training immediately available to most units providing accurate threat, current ASE integration, and the ability to maneuver in conjunction with ASE indications. If the non-rated crewmember manned module is incorporated into the training scenario, the AVCATT presents a total aircrew ASE simulation training solution. Efforts are currently underway to provide the same ASE capability presently available in the AVCATT in aircraft compatible simulators.

Commanders should focus their aviation mission survivability (AMS) training programs on ensuring aircrew reactions are as reflexive as responding to an engine fire or any other emergency experienced in flight where delayed reactions have potentially deadly consequences. Effective reaction to increasingly sophisticated threats will require a combination of maneuver, ASE countermeasure employment, and suppressive fires from on-board weapons, escort aircraft, or suppression of enemy air defense assets. Commanders, leveraging the expertise of their aviation mission survivability officers (AMSO), derive vast benefits in capitalizing on the AVCATT's

resources where the AMSO develop the crew and collective scenarios. The AMSO can adjust the complexity of the mission and adjust the threat aggressiveness and proficiency to challenge aircrews at any skill level.

A primary focal point of the AMS crew and collective training program should be the actions on contact and the ability to maneuver while maintaining environmental obstacle clearance and maneuver space from other aircraft in the flight. After all, a crash into terrain as a result of faulty maneuvering or a midair experienced during flight break-up serves the enemy's purpose just as well as a direct missile hit. Aviation training programs have long held that hands on emergency procedure training is required to ensure aircrew instinctively react to the underlined steps outlined in chapter nine of the aircraft operator's manual. Practice and repetition develop instinctive reactions in the face of circumstances which normally would result in panic. This is the same mindset that must be applied to aircraft survivability training solutions to preclude an inappropriate response to an air defense threat. This is the essential knowledge and flight skills that need to fill the gaps or holes in the training schedule vacated by the stuff we really don't need to know and some of the stuff on the lower end of the what is nice to know.

Still high on the competitive list of information to fill voids remaining in the training schedule is the ability to positively identify the threat system based on the visual signature of the weapon system presented to the aircrew. The maneuver designed to defeat one system could have disastrous results if used against another system – specifics are more appropriately discussed in other literature; however, these training solutions, developed by the Missile and Space Intelligence Center (MSIC) in cooperation with the National Ground Intelligence and National Air and Space Intelligence Centers , are integrated into the AVCATT to reflect real world capabilities.

Advanced AMS training scenarios, involving multiple aircraft, will include flight breakup procedures basically similar to an inadvertent instrument meteorological conditions flight breakup. Obviously, instead of climbing to clear terrain, every aircraft in the flight will most likely be reducing altitude, maneuvering in a pre-determined fashion based on threat type, and searching for masking terrain. This complicates breakup patterns as all eyes are searching for other things (like missiles attempting to share the same airspace) besides the wingman. Successful mission completion of the maneuver will be dependent on practice, practice, practice. Adding to the challenge, the event must also be practiced to proficiency at night (under night vision devices). These maneuvers are crucial and need to be applied to all doctrinal aviation employment techniques and reactive TTP.

The good news is that an effective AMS training program is not a dedicated training event. As a matter of fact, to make it as realistic as possible, it must be incorporated into a regularly scheduled mission. Some portion of planning the training event will involve a threat briefing, analysis, and a discussion of aircrew actions on contact but that is standard operating practice. The cost to the overall mission of including ASE training may be the time to perform a flight break-up, recover, and rejoin the flight, and report the incident. The AMSO, in conjunction with the standardization instructor and master gunner, is capable of creating dynamic and integrated training events to maximize every flight and simulator hour. Although an effective AMS training program requires academic instruction, it represents a minimal cost of time as a resource. The application of critical individual and collective skills to identify, react to, and defeat the air defense threat can be easily integrated into the unit and aircrew training program while simultaneously completing other mission training requirements – the cost of time as a resource in application is negligible. The aircraft survivability skill sets are essential if we are to field an effective aviation force to support the ground commander.

So – as we evaluate our approach to aviation training and look to remove the stuff we really don't need to know and some of the stuff on the lower end of the what is nice to know and replace the gaps with stuff we need to know – I make my case for aircraft survivability training!

CW5 Michael S. Kelley is the Branch Aviation Mission Survivability Officer. He has over 29 years of active duty service with duty at Fort Wainwright, AK; Fort Sill, OK; Fort Campbell, KY; Camp Humphreys, ROK; Giebelstadt, FRG; and Fort Rucker, AL. He has one combat deployment to Iraq and three to Afghanistan as a CH-47D pilot and Aviation Mission Survivability Officer.

Acronym Reference

AMPS - aviation mission planning system
AMS - aviation mission survivability
AMSO - aviation mission survivability officer
ASE - aircraft survivability equipment
AVCATT - Aviation Combined Arms Tactical Trainer
MSIC - Missile and Space Intelligence Center
TTP - tactics, techniques, and procedures

Changing the Paradigm:

UAS Institutional Training is Leading the Change in How We Train and Learn

By MAJ Adam Keown

The Aviation Branch is at the leading edge of developing and training critical-thinking, adaptive leaders in our training institution, including flight school, maintenance training, and professional military education (PME). Training and developing these characteristics in our unmanned aircraft system (UAS) Soldiers and leaders requires a significant effort and poses some unique challenges. The 2-13th Aviation Regiment, 1st Aviation Brigade at Fort Huachuca, AZ is at the forefront of changing the paradigm of how we train and learn in initial military training (IMT) and PME. While there is a lot to do yet, the changes that this unit has made will ensure UAS soldiers and leaders of the future will be comfortable adapting to change and will be better prepared to execute disciplined initiative in support of the ground commander's intent.

The 2-13th Aviation Regiment operates the Army's flight school for UAS. The unit trains over 1600 students in a year to become UAS operators, maintainers, instructor operators, and 150U UAS Warrant Officers. There, the mission is to teach students the fundamental knowledge, skills, and attributes required for service at their first unit of assignment. For some, their first unit will be an aerial exploitation battalion in a Military Intelligence unit. Others will be assigned to a brigade combat team in a Shadow platoon, a special operations unit, or a combat aviation brigade. The unit also trains the Marine Corps UAS operators. Because of this, we have to prepare our operators, maintainers, and leaders for a wide variety of assignments. The culture for succeeding in a changing operational environment is established early and drives the training foundation at the 2-13th Aviation Regiment.

As we continue to determine how to best free up 'hard drive' space with our operators and leaders, one of the common dilemmas that our training base faces is the balance between what we need to commit to memory and what skills or techniques we need to readily solve problems and tactically employ the capabilities that we have. With constraints on time and resources, this balance is not easily achieved. The 2-13th Aviation Regiment consistently assesses training to ensure students have the required UAS "operating system" (essential elements of UAS operations) while refraining from cluttering the hard drive with rote memorization of information not required for effective UAS operations. We want to provide the context for learning the UAS "operating system." Therefore, the 2-13th Aviation Regiment introduces students to the more complex concepts of aviation doctrine, tactics, techniques, and procedures (TTP), and operating in a decisive action environment. It is a challenge to find the appropriate balance of instructing to build the "operating system" and introducing students to more advanced aviation concepts. The additional time required to introduce students to these advanced

concepts does not come without cost. In a no growth environment, reduction of those areas that were deemed to be "hard drive" clutter enabled the 2-13th to produce operators, maintainers, and leaders that are ready to be true combat multipliers.

As an emerging capability in U.S. Army Aviation, the UAS training culture has some distinct advantages over traditional Army Aviation. The advantages are largely due to advances in technology and a corresponding acceptance of that technology. The current Army UAS have technology in place that do not allow the operator to inadvertently exceed limits, and instantly provide feedback to the operator if any limits are exceeded to enable the operator to execute the appropriate emergency procedure. As a result, Gray Eagle operators are not required to memorize limitations because of the technological advantages of the system. The Shadow system has the same capability, but has not yet made the leap to not requiring the memorization of limitations and de-fragging the hard drive.

It is essential to embrace the benefits of new technology and relieve the UAS operator of artificial mandated responsibilities thus enabling the operator to focus on the tactical employment of their system. The UAS operators are in a better position to do just that as the UAS are generally manned by a generation that grew up relying on technology to perform everyday functions, and therefore they are more accepting of technologies that make their jobs easier. The instructors at the 2-13th Aviation Regiment were trained and developed as new technology emerged in UAS over the last decade. As a result, they are not encumbered by a traditional reliance on rote memorization and utilize the latest Army Learning Model 2015 approaches to impart the same mindset to the students.

There are also disadvantages to being a new and emerging culture in Army Aviation. The UAS maintainers, operators, and leaders generally lack institutional knowledge of aviation doctrine and TTP due to the recent transition from the Military Intelligence to the Aviation branch in 2006. Through a decade of deployments, UAS operators and instructors have become significantly more familiar with aviation doctrine and tactics with a focus on reconnaissance and security operations. Combat experience with UAS systems enabled the training base to determine what information is essential as the training foundation and what should be focused on by the operational force. By using lessons learned and placing those experiences in operation context, the 2-13th Aviation Regiment exposes students to aviation doctrine, TTP, and institutional knowledge at the earliest stages of learning.

The 2-13th Aviation Regiment aggressively pursued changes to their methods of instruction to familiarize students with more advanced aviation concepts while maintaining the basic elements of UAS operations appropriate to initial UAS operators, maintainers, and the Tactical Unmanned Aerial Systems Operations Technician (150U). This was done through a very deliberate process that implemented new training, reinforced existing training to focus on areas of identified weakness, and reduced training that was determined to be less relevant. In support of this effort, the 2-13th Aviation Regiment implemented the use of ground commander concept of the operation based on a single common operating picture utilizing the latest decisive action training environment scenarios to provide task and purpose for all UAS flight school training missions. This methodology enables UAS operators to be familiarized with the concepts of supporting a ground commander, operational graphics, standard intelligence products, and most importantly the tactical employment and integration of their UAS. We also implemented and immersed students in aviation gunnery academics and the foundational gunnery principles that our manned counterparts have refined over the last 10 years of conflict. The implementation of UAS gunnery training was an evolutionary step for UAS, which has enhanced its overall capability as a maneuver platform that is prepared to provide fires while conducting reconnaissance on the battlefield.

The 2-13th Aviation Regiment further addressed the need to increase exposure to aviation doctrine and TTP to create a more tactically proficient UAS operator with introduction of manned unmanned teaming (MUM-T) throughout training. Students are first exposed to MUM-T and the levels of interoperability during their review of UAS regulations during the 10 week Common Core instruction. The MUM-T concepts are further emphasized with the teaching of cooperative engagements during the gunnery portion of Common Core and specific UAS training. Manned - Unmanned team training culminates with a combined training exercise conducted with Apaches from the 1-285th Arizona National Guard. The 2-13th Aviation Regiment is currently conducting coordination with the Army Research Institute to incorporate a MUM-T computer simulation to provide increased tactical training. The simulation allows the UAS operator to interact with both Army and Air Force assets with tactical reporting and supporting missile engagements.

The 2-13th Aviation Regiment also addressed similar of tactical knowledge deficiencies in the 150U UAS Warrant Officer Course. The course underwent a re-design to create a more in-depth focus on key topics with an overall reduction of classroom lessons. The 150U course re-design initiatives incorporated a self-paced interactive media instructional (IMI) training as an independent study and a capstone simulation exercise (SIMX). The independent study enables all students to have a base line of knowledge before arriving to the 2-13th Aviation Regiment. This provides an opportunity to focus in much greater detail on important subjects than ever before. The SIMX provides a hands-on tactical scenario for the 150U to operate, employ, and manage a Shadow

system in combat. These changes greatly increased the level of 150U expertise on aviation doctrine and the employment of their systems. The 150U course is six short weeks, but the current initiatives allowed the 2-13th Aviation Regiment to get graduate level learning on subjects identified by the 150U community as areas of weakness. As we continue to grow the capability of the 150U, the 2-13th Aviation Regiment is exploring options to qualify all 150U on the UAS of their assigned unit.

2-13th Aviation Regiment is incorporating new changes to the Instructor Operator (IO) Course. Similar to the other initiatives, these changes included an increase of IMI training throughout the course. Specifically, an initial phase of distributed learning (dL) is being added to address the large percentage of failures on the initial proficiency flight evaluation. The dL ensures students are ready to attend and pass the course by providing a review of IO subjects and facilitating a more in-depth review of historically weak subjects. The time of instruction saved with DL also allowed for the addition of a gunnery module focused on establishing and running a unit gunnery program.

Another initiative of the 2-13th Aviation Regiment is working in conjunction with United States Army Aviation Center of Excellence, Directorate of Evaluations and Standardization, and Directorate of Training and Doctrine to continue to refine UAS instrument flight rules (IFR) training that will enhance our capability to use the National Airspace System (NAS). The IFR training will continue to improve the skills of future UAS operators as more proficient and well rounded aviators. The ability to transit the NAS will also provide commanders increased training opportunities with the flexibility to self-deploy to training areas to conduct gunnery and other training to include executing aerial data relay.

The 2-13th is at the forefront of changing the paradigm of how UAS Soldiers are trained and learn in PME. This was not as simple as just eliminating the requirement to memorize aircraft limitations in Chapter 5. It was a time and resource intensive process that required a very deliberate planning cycle in order to achieve an honest assessment of what results in the most tactically proficient UAS Soldier. It is essential for training to evolve based on lessons learned with doctrinal changes. It is also important to embrace technology whenever it is to our advantage in order to create free space for the hard drive. The 2-13th Aviation Regiment was successful in transforming training to provide a more tactically proficient operator that is ready to support the ground commander. The future UAS Army operators, maintainers, and leaders deserve training that provides the necessary skills for today and for the future regardless of the operational environment.

MAJ Adam R. Keown is currently assigned as the 2-13th Aviation Regiment Executive Officer. His previous assignments include S-3, 2-13th Aviation Regiment, International Security Assistance Force Joint Command Counter Narcotics planner; North Atlantic Treaty Organization Rapid Deployment Corps, Italy; and Iraqi Army Military Transition Team leader. He has completed two deployments to Iraq and one to Afghanistan. MAJ Keown is qualified in the OH-58D.

Acronym Reference

dL - distributed learning
IMI - interactive media instruction
IMT - initial military training
IO - instructor operator
MUM-T - manned-unmanned teaming
NAS - National Airspace System
PME - professional military education
SIMX - simulation exercise
UAS - unmanned aircraft system

By CW4 Scott Morgan
and MAJ Patrick Taylor

THE MODERN ARMY INSTRUCTOR PILOT: DEFRAGGING THE ORAL EVALUATION

> "Rational in its broad concepts, the Combined Bomber Offensive foundered on the details."
> - Christopher R Gabel's "The Combined Bomber Offensive, 1943"[1]

The "defragging the hard drive" initiative is a highly rational idea- in fact we've encountered no one who opposes it. It's the 110th Aviation Brigade's goal to alter the way instructor pilots are trained to teach and evaluate as a function of the 'Defragging the Hard Drive Initiative[2].' However, the devil is in the details. Who, exactly, gets to decide what is defragged and what remains status quo? Many Instructor Pilots (IP) today still like to slough through the mire and get bogged down in a systems engineering level of detail. That's unfortunate, especially with so many real world, battle-focused questions that an IP has at their disposal. But in order to really rethink our oral evaluation strategies, we have to determine what the end state of a readiness level one aviator looks like. If we want to change the way aviators study, then we have to change the way our instructors evaluate. A good place to start is with defragging the oral evaluation. Get rid of the minutia, focus on tactics and doctrine, and memorize that which is relevant and meaningful to an aviator during planning, pre-flight, and flight operations.

THE 'ORAL KNOWLEDGE EVALUATION'

For most pilots, the oral evaluation can be the most stressful portion of any check-ride. But why is that? Is it merely because of the enormous amounts of information that we have to memorize; or is it because of the lengthy laundry lists of what many of us perceive to be superfluous information that we're expected to rotely regurgitate at the speed of a Core i7 processor? Is it because no matter how much we study, we can never be sure exactly what the IP is going to ask? Certainly an aviator is responsible for possessing the knowledge outlined in the appropriate aircrew training manual (ATM) or flight training guide /course management plan, but the way in which the IP asks the questions, or the subtopics therein are seemingly endless, and quite often, not germane to the task at hand.

Imagine this, an IP asks a student pilot: "So tell me Lieutenant, what do acronyms, initialisms, and mnemonics have in common?" The lieutenant looks back quizzically for a moment before the eyes start shifting back and forth looking for the answer tucked away in some deep recess of the brain. The experienced IP astutely realizes that the answer he's looking for isn't readily residing in the lieutenant's cerebral cortex, and it's certainly not residing in working memory for quick access. Rather than "stumping the chump" on the first question out of the gate, the IP says, "Let me rephrase. Give me some examples of memory devices you used to prepare for your evaluation today". The lieutenant, who's already about to break into a cold sweat, looks back at the IP in the Santa suit, offers up a nervous, though somewhat embarrassed smile, and breathes a short sigh of relief because he knows the IP just gave him the answer to the first question in his second question. And so it goes…. aerodynamics, aeromedical factors, meteorology, airspace, performance planning, mission planning, publications, regulations, operator's manual Chapters 5 & 9*, etc…. did any one even mention gunnery or movement to contact?

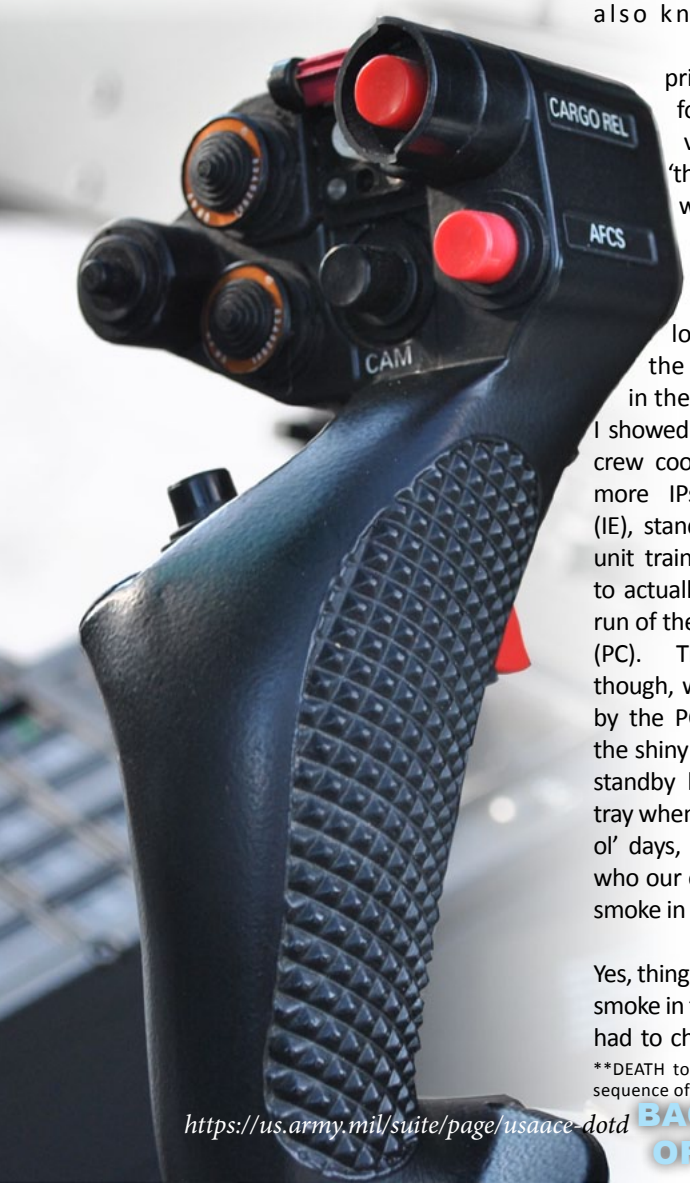
PUSHING AND PULLING

Unless it's a pure oral evaluation or no-notice written, all check-rides include a flight in the aircraft or in some cases a flight simulator. For most of us with experience, after we've graduated flight school and have pinned those silver wings of the Army aviator upon our chests, we rarely sweat the flying portion of an evaluation. And if we have, it's only been for one or two tasks at most. The professional in us forces each of us to work hard at maintaining proficiency in what are known as performance tasks. After all, that's our job. That's why we're getting paid. Of course, it helps that the pushing and pulling aspect of our job is the fun part of being an aviator.

* A reference to the chapters of the aircraft operator's manual pertaining to operating limits (Chapter 5) and emergency procedures (Chapter 9).

Through repetition, chair-flying, and the magic of muscle memory, even that last touchdown autorotation, instrument landing system approach, day-system bag flight, or roll-on landing in the Initial Entry Rotary Wing (IERW) Aviator Course couldn't have been performed better by our check pilot. We're tactile beings. Learning and proficiency comes from hands-on practice. We get good at what we do because we love it. We live it. We're fulfilling our dreams of being Army aviators. It's just that sometimes all that bookwork, or oral knowledge, seems to take some of the fun out of it. And because we're good at flying we spend more time answering questions than actually pushing and pulling.

But, it's not all the bookwork, or academic knowledge, that were supposed to keep tucked away for recall on a moment's notice that brings us from 120 knots at tree-top level with 'Flight of the Valkyries' playing in our heads to a screeching flight idle halt. It's the seemingly endless stream of nonsensical information that fights for any vacant spot of grey matter among all the real need-to-know, need-to-recall information. Seriously, why do I need to know how many rivets are in the tail boom? What I need to know is: what do I do when the tail boom falls off, or is riddled with bullet holes? Do we need to know what kind, or how much oil goes in a gear box? Probably not, unless you're a maintenance officer. We just need to know at what level it's supposed to be on the sight glass when we preflight. And if it's good, we can go push and pull!



GREEN IS GOOD…

…Yellow, get out the check list. Red, land! The primary consideration in any emergency is aircraft control. That's pretty much the civilian mentality to 5&9 in a nutshell. But before anyone goes knocking that mindset because 'they' are civilians, and 'we' are the military, let me remind any nay-sayers out there that the Army adopted the Federal Aviation Administration's (FAA) way of teaching, also known as Fundamentals of Instruction, along with the FAA's printed version of instrument flying for Army aviators, AND the civilian version of crew coordination. So 'they' can't be all bad. Of course you would've had to have been around in Army aviation for more than 20 years to know about the latter. Sidebar: Things have changed a lot, for the better I may add, since the onset of crew coordination back in the mid 90s. I can remember when I showed up at my first unit in 1985 (pre-crew coordination), and after flying with more IPs, instrument flight examiners (IE), standardization instructor pilots, and unit trainers, I was so excited to be able to actually go flying with just an ordinary, run of the mill, everyday pilot-in-command (PC). That excitement quickly waned, though, when I was told in the crew brief by the PC to "just sit there, don't touch the shiny knobs and switches, monitor the standby load meter, and empty the ash tray when we land." Ah, the 80s. The good ol' days, Reagan was president, we knew who our enemies were, and you could still smoke in the cockpit.

Yes, things have changed. We can no longer smoke in the cockpit. But besides that, they had to change. Back in the post-Vietnam, pre-Gulf War, cold-war era, where Ronald Reagan's motto was "Peace, through superior firepower", complex system intensive aircraft were in their infancy, at least as far as Army aviation was concerned. We were flying single pilot capable Hueys, Cobras, and 58 alpha/chucks. While the Chinook had been around for a while, the alpha model Blackhawks were just beginning to slowly infiltrate the ranks, and the first Apache wasn't delivered to the Army until 1986. As the demands on the crew became more intense with these new dual pilot aircraft, our way of managing the cockpit had to change; hence crew coordination.

The aircraft we fly today have continued to evolve. But our way of thinking, when it comes to oral evaluations and the knowledge we're required to maintain in working memory, really hasn't. After all, the enemy doesn't care that if I were a drop of oil, I'd know where to go.

DEATH to ROY G. BIV, et.al.**

In a White Paper recently published by the Directorate of Training and Doctrine (DOTD) Flight Training Integration Branch (FTIB), the author, Crystal Dillard, discusses training issues "such as, the rote memorization of information now managed by onboard aircraft data monitoring systems…", and why the focus of an aviator's core competencies must be shifted to more critical thinking with focus on the mission while still maintaining a knowledge base of fundamental information. These issues were originally brought to light in a *Flight Fax* article by LTC Josh Sauls from the Directorate of Evaluation and Standardization (DES)[2], reprinted in this issue.

But we can only do this by starting with the modern IP. With rare exceptions, we can all agree that while the commander sets the course for training at the unit level, and while the PC may be the unit's primary trainer in the aircraft, everyone, including the commander, takes their flying and aviation knowledge cues from the unit's IPs. Training, or retraining, as the case may be, our IPs on an appropriate depth of knowledge standard for a given topic is a fundamental process in determining mission focused oral evaluation requirements.

When we have acronyms nested in acronyms, or when we need to have acronyms to help us to remember other

**DEATH to ROY G. Biv are mnemonics for Drugs, Exhaustion, Alcohol, Tobacco and Hypoglycemia and for the sequence of hues commonly described as making up a rainbow: Red, Orange, Yellow, Green, Blue, Indigo and Violet.

acronyms or mnemonics (can anyone say GRAM, or LAV***?), we're tipping on the precipice of a cliff once supported by a bedrock foundation of core knowledge. Over the years, though, even this seemingly tough

foundation hasn't weathered well and has begun to crumble under the intense weight of all the memory devices it supports. The reason is the unnecessary knowledge base that we're required to memorize. Acronyms can be a great tool, when used to abbreviate long phrases such as DOTD, or United States Army Aviation Center of Excellence (USAACE). But when we're forced to use them as a crutch simply to pass an oral exam, then they may have outlived their original, intended usefulness. Haven't we all been in pilot classes where the instructor spent more time teaching the mnemonic rather than the information the mnemonic was supposed to help us remember?

Here's an example of ***rotely*** memorizing something for memory's sake: if the extent of our flying is in and around Fort Rucker, Fort Bragg, Fort Campbell, etc., why would one need to know what the cloud clearance requirements are when flying above 10,000 feet mean sea level and above 1,200 feet above ground level? The answer is, one doesn't, unless preparing for an oral evaluation. Now, if you are re-assigned to Colorado or Alaska, or head there for temporary duty, you should tuck that information into the tool bag, because at some point, I ***understand*** that information will be important, but until then, it needs to take a back seat. The thing is, as a professional aviator, we know that information is important, and we know it exists, but it's not apropos until we're flying in an area where we really do need to know it and have it committed to memory. After all, we cannot ***apply*** that knowledge until we're there. Besides, when flying in a new area of operation, we're not going to get cut loose on our own until we've been through the whole local area orientation scenario which should include at a minimum an appropriate oral knowledge discussion for the mission. Top notch IPs who have worked the line at more than a couple of duty stations have figured this out. They've been able to ***correlate*** the distinction between the required, instant recall knowledge and good to know, keep it in reserve knowledge. The problem is, without a retooling of our initial IP training, it can take years to come to that realization.

The Instrument Flight Examiner's Course has, for well over a decade, had the philosophy of training IPs to ask only pertinent and relevant questions during an oral evaluation. Questions that are thought provoking and scenario based. They teach IPs to steer away from ambiguous questions and those that have yes/no type answers. Sidebar: I can remember in one of the early oral evaluations I gave as a left-seater. I asked my right-seater, "Can you tell me what the tick marks on XYZ's airport symbol means?" He responded with, "Yes." In my mind, he was being little Mr. Smarty Pants. But when I pressed him for the answer I was looking for, my IP stepped in and said, "Asked and answered, move on." Lesson learned. The more appropriate question, I later found out during the debrief, would've been to ask, "What types of services are available at XYZ airport?" In the Examiner's Course, we weren't permitted to ask laundry list type questions, or questions where one had to rely solely on rote memorization. Although it's been many years since, and as tough as the course was, I can't for the life of me remember one acronym I had to learn to get me through the course. My oral evaluation had been defragged, and the way I've conducted oral evaluations has forever been changed. But again, it took a few years to get to that point, and only after attending a post IP-graduate course. Until that point, the number of rote memorization questions I asked on an oral evaluation far outweighed the number of scenario based questions.

Let's take, for example, the old standby questions that young IPs will ask to start an oral evaluation such as, "what are your engine oil pressure limits?" Does this matter? Because green is good. Every one of us, when we're in the cockpit, initially looks at the colors, not the numbers. If the needle, chicklet, or bar is in the green, we're good. If it's in the yellow, we've probably entered a time limited operation, and most of our modern aircraft today, especially the really smart ones like the Apache and Lakota, recognize that fact and start a timer for us; and if it doesn't, then those are the kind of numbers I have to memorize. If it's red, we're going to land. And really, it's that simple. Outside of, possibly, an environmental or engine state consideration, the actual number, in the cockpit, means nothing to Joe Pilot. In many instances, the manufacturer will take the raw numbers of a monitored system and convert them into a percentage, or add or subtract a bias to allow the existing gauge to display a reading that is within its readout limitations. This is proof that in those cases the displayed value in the cockpit has no real bearing on aircraft performance or malfunction analysis. Instead of spending a lot of time rotely memorizing numbers and ranges of numbers, isn't it more important to focus on how certain indicators may or may not affect the mission? I think the answer to that is a resounding "Yes."

Show of hands: who has busted a 5&9 written exam because they failed to add degrees Centigrade (^{O}C) after a temperature? I have. And when I complained to the DES check pilot (back in their black-hat days), his contention was that writing in ^{O}C was attention to, or inattention to, detail. My point was, I'm qualified in five different Army aircraft, and not one of them has had temperature ranges graduated in anything but ^{O}C. That's the kind of thing that gives IPs a bad name because ^{O}C in no way affected my ability to perform the mission. And it's those kind of things that bog down the grey matter.

In an emergency, the most important single consideration is helicopter control. Anyone that flies any aircraft has that sentence, or

*** Mnemonics for Geometric perspective, Retinal image size, Aerial perspective, Motion Parallax; Linear perspective, Apparent foreshortening, Vertical position in the field.

a paraphrase thereof, memorized. Even without being told, our instinctive reaction to an emergency is just that — aircraft control. But successful aircraft control in an emergency doesn't come naturally. It has to be practiced, and memorizing underlined steps has no bearing on whether a pilot will successfully perform an emergency procedure (EP). If that was the case, we wouldn't spend two weeks of IERW primary training on how to nail down standard autorotations, simulated engine failures at altitude, and hovering autorotations. If memorizing underlined steps made you proficient in a task, then that's all we'd have to do. Study. Memorize. Crash averted. Lives saved. Encountering inadvertent instrument meteorological conditions does not constitute an EP. There are no underlined steps in any operator's manual. Yes, it's in everyone's ATM, it's usually talked about in depth on every oral, every crew brief, and it's practiced in the aircraft. The point is that simply memorizing an EP won't prevent a crash, or even save a life. Just because WO1 John Q. Aviator can ace his 5&9 without error doesn't mean he can perform the steps in either an actual or simulated emergency in the aircraft. It takes practice. Talking about the condition, analyzing cockpit indicators, and practicing, if not in the aircraft, then in the appropriate simulator is how EPs are learned and executed to standard. The fact of the matter is, EPs are executed in reaction to the situation and in accordance with the EP or task description, not the underlined steps or some acronym.

DEFRAGGING THE ORAL

I'm sure at this point some IPs' heads are spinning, and the rest are rolling over in their graves. The progressive IPs and many IEs however are yelling, "Right On!" A modern, relevant, and ready Army needs a modern, relevant, and ready aviation force with modern instructor pilots teaching from a relevant and ready platform. We need to concentrate, teach, and test on standing operating procedures and relevant doctrine. Indeed, what difference does it really make what the number is at the end of the green arc as long as the parameters are, in fact, in the green? Let's talk about something more important, like, "What are you going to do if the needle is in the yellow?" or "What are the indications for single engine failure?" Then, instead of expecting to hear what the underlined steps are, have a real discussion as what the pilot will do to maintain helicopter control. Indeed, what is more important to a tactical commander - a pilot who can recite engine limits or a pilot who can explain the meaning and differences between an area, zone, or route reconnaissance, and how those operations relate to a partnered brigade combat team's screen, guard, or cover mission?

WHERE DO WE START?

Of course we can't do away with all the numbers and acronyms we've become accustomed to memorizing over the years, but we can sure get rid of a lot of them. We have to help today's aviation force manage, reorganize, and prioritize information that needs to be ready for quick access; that's what defragging is. In collaboration with the DES and the DOTD we are identifying and codifying what is critical to aviation operations and what should be placed into the 'immediate recall section' of our memory. We have to find a way to pare things down into more manageable chunks for our memory sectors to categorize. The present method of aviation knowledge management, know everything, is no longer valid. But make no mistake, the intent isn't to make being an aviator easier, the intent is to free up memory space for what is relevant in a fight: tactics, doctrine, and unit standing operating procedures.

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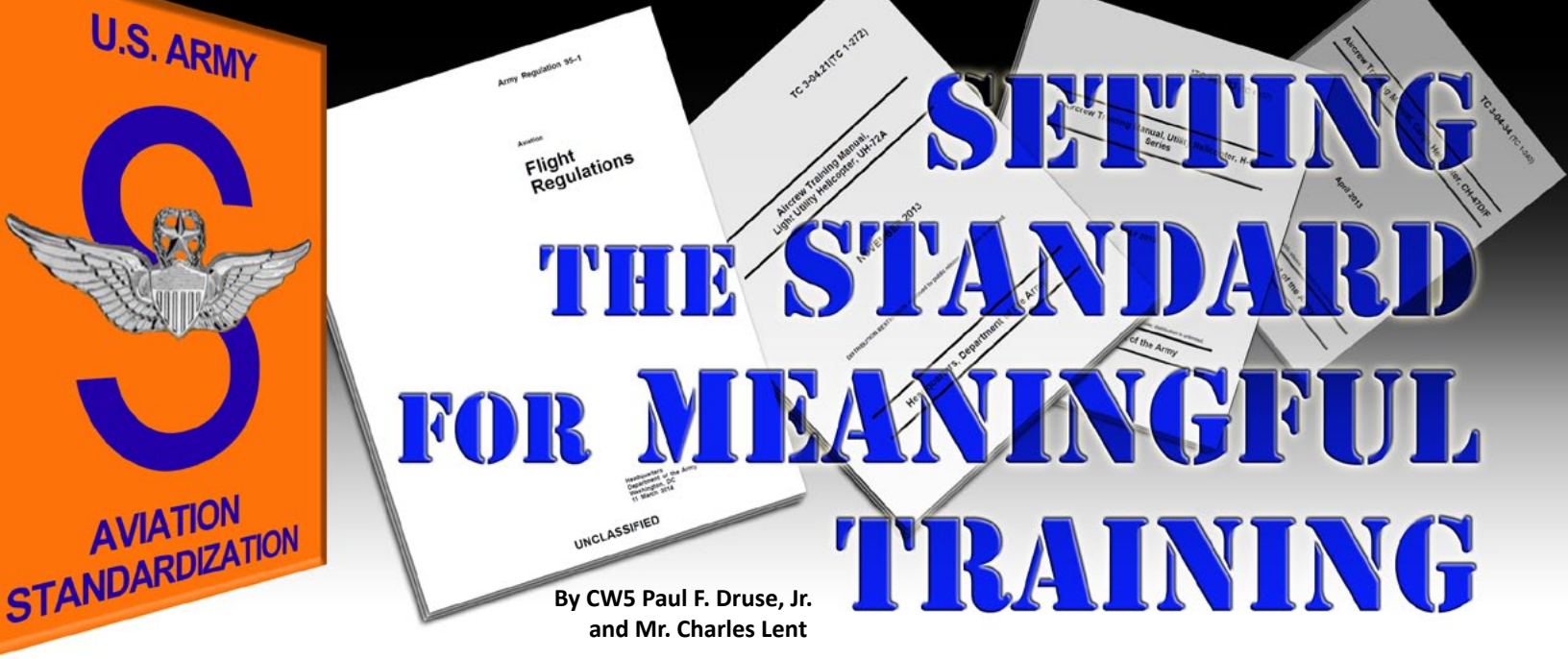
1 Gabel, Christopher R. Military Review 73 (June 1993): 73–77. Reprinted from H200 Book of Readings, Military Innovation in Peace and War, August 2011. CGSC, Fort Leavenworth, KS.

2 LTC Sauls, Josh "Defragging The Hard Drive: A Change in Aviation Training Philosophy," FlightFax Newsletter. May 2014

Acronym Reference

ATM - aircrew training manual
°C - degrees centigrade
DES - Directorate of Evaluation and Standardization
DOTD - Directorate of Training and Doctrine
EP - Emergency Procedure
FAA - Federal Aviation Administration
FTIB - Flight Training Integration Branch
IE - instrument flight examiner
IERW - Initial Entry Rotary Wing
IP - instructor pilot
PC - pilot-in-command
USAACE - United States Army Aviation Center of Excellence



SETTING THE STANDARD FOR MEANINGFUL TRAINING

By CW5 Paul F. Druse, Jr. and Mr. Charles Lent

The Aviation Branch Chief, MG Lundy, has recently initiated a campaign called Defragging the Hard Drive based on LTC Josh Saul's article in the Aviation Digest (July-September 2014, p46). The intent of this initiative is for aviation units in the field and the organizations at Fort Rucker responsible for designing Initial Entry Rotary-Wing training and professional military education courses to focus efforts on meaningful training in order to increase warfighting skills and ensure limited time and resources are spent wisely and efficiently. Army aviation has demonstrated a unique ability to quickly adapt to unique environments like the deserts of the Middle East and rugged mountains of Afghanistan making Army aviation an essential force multiplier to combatant commanders. As we transition from counterinsurgency operations to the unknown fight in the future, our goal must be twofold. First, we must train and be prepared for the next fight and second, retain the warfighting skill sets we have honed in Iraq and Afghanistan. Our success will rely on the ability to maintain unique skill sets and acquire new skills required to fight and decisively win future battles. Establishing meaningful war fighting centric training is one of the ways we can meet this goal.

As the Branch Chief's executive agent for standardizing Army aviation units worldwide, the Directorate of Evaluation and Standardization (DES) is tasked with developing specific initiatives to achieve the vision both in the field and at the United States Army Aviation Center of Excellence. The DES will continue to ensure compliance of doctrine and standardized training of Army aviation units through the continued assessment of the aircrew training program. It will provide subject matter expertise to the Directorate of Training and Doctrine in the development of realistic and relevant training for aircrews, as well as by ensuring training is effectively implemented at the primacy stage of training by conducting evaluations at all Army aviation training sites (AATS). The basic framework of the vision incorporates the following tenets:

- *Refocus individual evaluations on warfighting skills.*
- *Change our evaluations to focus on a higher level of learning.*
- *Test at a higher level than rote.*

Specifically, in regards to the aircrew training program (ATP), changes must be made to the way we currently evaluate aviation crewmembers (ACM). Traditionally, annual evaluations have included a test of rote memorization of aircraft systems and limits. Due to the recent acquisition of more technologically advanced aircraft and related systems, evaluators must refocus the evaluation to determine if an individual understands the technology. A challenge we face in the standardization community is the definition of "working knowledge." The term is used as an evaluation criterion, yet not clearly defined in the aircrew training manual (ATM). This leads to a subjective interpretation by the individual evaluator and may change the standard based on the view of the instructor. It is important that the evaluator select the appropriate subjects listed in Chapter 3 of the ATM. The goal should be for the evaluation to be conducted at the understanding level or higher. Evaluators must also refrain from making a personal "area of expertise" a dominant topic during the evaluation. Ultimately, it is the ATP commander's responsibility to determine what is important to complete their mission. The ATP Commanders must take initiative to review their academic and training programs to maintain the focus on war fighting skills rather than focusing on the rote memorization of the academic subjects listed in each ATM.

Once an ACM progresses to readiness level (RL) 1, the commander must continue to develop the crewmember through a collective training program. This program must include simulation (synthetic flight training system/Aviation Combined Arms Tactical Trainer), crew drills, and rock/sand table drills. Commanders must understand that the RL process is an individual process and upon progression to RL1 ensure that collective proficiency and sustainment training begins. Evaluators must also understand that the annual proficiency readiness test is tailored to the unit's mission essential task list (METL). The end state is to evaluate an RL1 ACM on their ability to meet the commander's METL tasks and successfully complete the mission thru the knowledge of their unit's standing operating procedures (SOP) and doctrine.

Another specific change that DES has

made to influence this philosophy is a redesign of written evaluations given during assessment visits. The tests have been reworked to incorporate scenario based questions with the intent of testing an ACM's understanding versus a rote regurgitation of aircraft system limits and emergency procedures. The most noticeable change is the presentation of the emergency procedure. In the past, the emergency procedure was presented as fill in the blank. Now the test utilizes actual indications from the cockpit displays and caution panels to ensure a realistic representation of what actually happens in the aircraft. The most important process in any emergency is to "Identify" the correct malfunction and our test now achieves that. In the past, a Chapter 9 emergency procedure that was missed may have instantly resulted in an ACM being designated RL 3. The test now aligns with the ATM task standard to identify the procedure and perform the underlined step out of the aircraft operator's manual. Aircraft limitations and system limits are now evaluated at the understanding level. However, not all questions on the test can be scenario based and some questions such as SOP and doctrine questions are still tested at the rote level.

The institutional instructor courses are the "first line" that will influence the field and achieve the Branch Chief's vision. Courses must be revised to ensure that instructors and evaluators are trained in this new philosophy in order to maximize effect. Currently, the courses teach the "how to" conduct an evaluation very well. Emphasis must be placed on tailoring the individual evaluations versus a one size fits all oral and flight evaluation. Asking a 20 year CW4 the types of hypoxia may not be appropriate; however, a question related to SOP requirements may be perfectly justifiable if the unit has a mission set that requires high altitude operations. A WO1 on his first assignment out of flight school would be tested initially on knowledge gained at flight school but the goal must be to evaluate at a higher level as training progresses. Commanders are responsible to ensure their assigned instructors and evaluators are effective and involved to keep training and evaluation relevant to the unit mission.

Recently, there have been many positive technological improvements for Army aviation allowing us to move forward and incorporate positive changes instead of retaining outdated methods. As we move forward, we must embrace and rely upon new systems that allow us to take advantage of these technological advantages which, in turn, will provide more time to develop essential warfighting skills. It is important not to negate the benefits of the technology because "we have always done things that way" or "we don't trust the technology." Performance planning is one example of how automation provides accurate performance data and saves our most important resource - time. The time savings gained by automation allows commanders to ensure a crewmember's time is better spent discussing contingencies and mission specific data rather than deciphering performance charts. Another example is the Aviation Mission Planning System, which has eliminated the old "triple check" of flight planning and saves countless hours of aircrew mission planning. These are just two examples that show how technology has given us the opportunity to focus limited mission planning time on pertinent mission information and not conducting business the same as we have always done. The good news is these automated systems are being fielded and refined resulting in even more efficient use of time to allow us to better focus on the critical elements of mission planning.

In summary, the DES is charged with developing initiatives which are going to change our aviation culture and ensure meaningful training. The changes are designed to refocus evaluations and move from rote memorization to understanding and application of knowledge focused on warfighting skills. The DES will continue to influence change through assessment visits to units in the field, staffing of literature/doctrine, and standardization oversight at all AATS.

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Acronym Reference

AATS - Army aviation training sites
ACM - aviation crew member
ATM - aircrew training manual
DES - Directorate of Evaluation and Standardization
METL - mission essential task list
RL - readiness level
SOP - standing operating procedures

Training Operational Adaptability in Aviation Leaders

By CPT Dan O'Donnell

It is essential that Army Aviation leaders constantly review unit training plans (UTP) and their effectiveness. Effective training must be replicated whereas ineffective training must be overhauled immediately. When planning training, commanders must consider learning models and the best instruction methods available so that Soldiers can assimilate useful information and turn it into knowledge. Training this way will "defrag the hard drive" of an aviator's brain by filling it with useful tactical information instead of the aviator memorizing seemingly endless technical facts. During aviation officer professional military education (PME), there are two training events during which students gain the most useful knowledge. The first is the Aviation Leadership Exercise (ALE) during the Basic Officer Leader Course (BOLC) and the second is Anvil Operations during the Aviation Captains Career Course (AVC3). ALE and Anvil Operations are effective because the events utilize simulations to replicate diverse combat operating environments (OE) while training relevant tactical employment and operational adaptability.

Preparing to graduate Flight School XXI in 2008, I had forgotten more information than I retained from 18 months of classroom and flight line bombardment. I found the rote memorization method of learning to be effective for short-term recall of knowledge but not long-term retention. The training events I remember most were ones that provided concrete experiences to apply my knowledge. The three weeks of BOLC, culminateing flight school, is where I received the training that best prepared me to fly in combat. As part of the BOLC curriculum in 2008, lieutenants and warrant officers conducted a week of company aviation planning and terrain model rehearsals. This led to a series of simulation exercises conducted in Reconfigurable Collective Training Device (RCTD) simulators. Our BOLC instructor tested the limits of my leadership by designating me as the air mission commander for one mission. During that mission, the instructor repeatedly called me on five different radios in five separate accents while my team tactically maneuvered and engaged enemy air defense targets. The instructor achieved his goal of replicating the confusion and chaos of combat he experienced as a deployed aviator. Three months after graduating flight school I was flying combat missions in support of Operation Iraqi Freedom. The skills that I relied on the most during those combat missions, and still remember six years later, were skills I gained from hands-on training in BOLC.

Upon becoming a BOLC instructor in 2013, my goal was to recreate the same intense and memorable training I received in BOLC as a lieutenant. Over the course of five years, the invaluable BOLC training I received was improved and had transformed into ALE. To prepare for ALE today, students receive four days of aviation tactics classes. While many practical exercises have been added to the lessons, the instruction method for aviation tactics relies mostly on lecturing. There are numerous limitations to PowerPoint lectures in a classroom setting. The most common result of long classroom lectures is that students receive the necessary training but cannot recall or utilize most of the information after the exam.

To combat students "braindumping" aviation knowledge, BOLC and AVC3 adapted instruction methods to Army Learning Model (ALM) 2015 standards. ALM 2015 focuses on experiential learning and teaching Army leaders operational adaptability. The experiential learning model is useful for Training and Doctrine Command (TRADOC) instructors but is also practical for home station trainers who want Soldiers to retain knowledge. TRADOC Pam 525-8-2, The U.S. Army Learning Concept for 2015, gives guidelines to trainers on how to adjust their instruction. Those guidelines include, "converting most classroom experiences into collaborative problem solving events led by facilitators (vice instructors)."[1] Instead of sitting back and absorbing a lecture, students learn better by immersing themselves in collaborative events. To meet this intent, BOLC is now structured so that aviation tactics classroom instruction comes at the end of flight school. This classroom instruction leads directly into four days of ALE training on company planning cells, multi-ship operations, and tactical employment executed in RCTDs. As a result, ALE

provides students collaborative team participation and a problem solving event from which they gain the most memorable training. The endstate of ALE is to produce professional aviators who understand operational adaptability and are introduced to tactical employment of their advanced aircraft.

The experiential learning model also advises instructors to, "Dramatically reduce or eliminate instructor-led slide presentation lectures and begin using a blended learning approach that incorporates virtual and constructive simulations, gaming technology, or other technology-delivered instruction."[2] Reducing presentation lectures meets the intent of not teaching students marginally useful information. Simulations provide more realism and operational relevance than any training conducted in a classroom environment.

In AVC3, the training that receives the most positive feedback is two weeks of planning and simulation exercises called Anvil Operations. During Anvil Operations, captains are given three battalion task force missions to plan and execute. Missions are

conducted in twelve RCTDs while student task force leadership exercises mission command over the operation from a command post. Anvil Operations differs from ALE in that aviators fly Army mission design series (MDS) aircraft on which they are not qualified. Flying other MDS aircraft gives students a broader understanding of all Army Aviation missions and exposes them to different tactics, techniques and procedures (TTP). Of the 120 students in the last two AVC3 classes to execute Anvil Operations, 80% rated the training "excellent" or "good" while 19.2% rated the training as "average" with only 0.8% rating the training as "poor."

So why do ALE and Anvil Operations receive generally positive reviews from students and what makes them effective? It is useful to reference doctrine to determine how these events are meeting the Army's intent for training Soldiers. Army Doctrine and Training Publication (ADP) 7-0, Training Units and Developing Leaders, states that, "training must be relevant, rigorous, realistic, challenging and properly resourced."[3] ADP 7-0 goes on to list 11 principles of unit training that commanders must apply. Of these principles, three closely apply to the success of ALE and Anvil Operations; "train as you will fight," "train to develop adaptability," and "understand the OE."

Ultimately, the most important reason ALE and Anvil Operations are valuable to students is that the training is relevant for them. These are the two training events in Aviation PME that most closely represent the principle of train as we will fight. No matter their rank, Soldiers and officers are more engaged when training applies to their military occupational specialty. This valuable training can be replicated at home station by first focusing on objectives and limiting the amount of minutiae information. Of course, commanders must not neglect basic warrior tasks and drills in their UTPs. However, commanders must focus a majority of time and resources on training key collective tasks on the unit mission essential task list because that is how units will fight. Following this line of thinking, if a unit attempts to train too many learning objectives at once, then trainees will have trouble retaining the sheer amount of information covered. The majority of an aviation officer's brain space should be occupied by relevant tactical aviation knowledge.

The ALE and Anvil Operations also succeed in training to develop adaptability. This principle of developing adaptability closely ties to the purpose of ALM 2015-focused training. The goal of ALM 2015 training is not to train facts and numbers but to meet the intent of TRADOC PAM 525-3-0 which states, "Above all else, future Army forces will require organizations, Soldiers, and leaders who can understand and adapt to the complexity and uncertainty of future armed conflict."[4] Simulation exercises teach aviators to think on their feet and quickly develop contingencies when the enemy reacts to first contact. Simulation exercises present a challenge for trainers because the scenario never occurs exactly the same way twice. Trainers must establish clear learning objectives and drive the scenario so that trainees meet those objectives. The training objectives of ALE and Anvil Operations focus on leaders developing creative thinking which must continue to be the most important advantage of the U.S. Army. In order to win future conflicts, agile and adaptive leaders must possess the skills to react, adapt, and seize the initiative regardless of the situation.

The third principle of unit training that ALE

and Anvil Operations achieve is, "understand the OE." It is extremely challenging to simulate the OE of Iraq or Afghanistan at Continental United States home stations. Simulators allow aviators to mentally put themselves in an OE where environmental factors, civilian considerations, and mission variables are far more realistic. For example, both ALE and Anvil Operations are set in decisive action training environment (DATE) scenarios against a near-peer military

force. The DATE scenario is much harder to conduct than counter insurgency operations training because it requires more terrain, more enemy personnel, and more vehicles. Simulations also allow trainers to run multiple iterations of training in a short time frame with little effort or money needed for maintenance or resetting of training aids. The increased number of training iterations leads Soldiers to better understand the OE. The ALE and Anvil Operations effectively utilize simulations to achieve as realistic an environment as possible while maximizing time, resources, and cost.

Of course, no training event is perfect and both ALE and Anvil Operations have limitations. First, in order to take advantage of simulations, the training devices must be available. If the training devices are not located at home station, then commanders must demand that they be made available – the Aviation Combined Arms Tactical Trainer (AVCATT) is mobile and is the Army's tool for aviation collective simulation training. Second, in a world with no monetary constraints, all aviation training should lead to full dress rehearsals with aviators training in their assigned aircraft. However, when flight hours are reduced, launching 12 AH-64s to conduct an interdiction attack training mission may not be a feasible option. A training event for 12 AH-64 crews in simulators is extremely cost-effective while still achieving training objectives. Third, collective training simulators such as RCTD and AVCATT cannot and should not replace the cockpit trainers such as the Longbow Crew Trainer (LCT) for tasks such as flight maneuvers, instrument flight, weapons engagements, or emergency procedures. However, the AVCATT can link multiple cockpits to collectively train multi-ship and multi-MDS missions. The AVCATT can also link with Close Combat Tactical Trainers to provide aviators an opportunity to concurrently train combined arms operations in a virtual environment with ground Soldiers.

When I was an attack reconnaissance company commander, I failed to utilize the AVCATT to its fullest extent in my UTP. Even though I had an excellent experience with simulations in BOLC, I shunned AVCATT training in favor of LCT or aircraft training because the flight hours were available. With flight hours reduced, commanders must make tough choices as to what portion of their training will utilize aircraft and what portion will utilize simulations. Witnessing numerous successful training exercises as an instructor has shown me the AVCATT is the best resource available for aviation collective training and should be utilized by all aviation commanders in their UTPs.

As a result of ALE and Anvil Operations, future aviation platoon leaders in BOLC and future company commanders in AVC3 are introduced to the effectiveness of simulation training. Students get to see first-hand the model of planning simulations training, executing that training, and conducting a thorough after action review with audio and video playback. In addition to experiencing simulations training, AVC3 students now receive five days of instruction on home station training to include building a company UTP and how simulations fit into that UTP. The intent of this training is to give future company commanders a better doctrinal and foundational base from which to develop UTPs and effectively train Soldiers.

In conclusion, ALE and Anvil Operations are successful because they train Army aviators relevant tactics and adaptability through simulation exercises that replicate real-world OEs. The goal of Army aviation leaders at all levels should be developing realistic and relevant training which allows Soldiers to retain knowledge. To meet this goal, simulations help attain realism so Soldiers can train as they will fight and also understand the OE in which they will fight. Effectively training operational adaptability produces tactically competent Soldiers who will lead the Aviation branch in a fiscally uncertain future.

CPT Dan O'Donnell is currently a Small Group Leader in the Aviation Captain's Career Course. CPT O'Donnell previously served as a Platoon Leader, Attack Reconnaissance Company Commander and Aviation Maintenance Company Commander in the 1st Attack Reconnaissance Battalion, Combat Aviation Brigade, 1st Infantry Division and as a Team Leader/Instructor in the Aviation Basic Officer Leaders Course. He has deployed twice to Iraq during Operation Iraqi Freedom and Operation New Dawn. CPT O'Donnell has eight years of military service. He is a qualified in the AH-64D and OH-58 A/C.

1 TRADOC Pam 525-8-2. The U.S. Army Learning Concept for 2015. 6 June 2011. pg. 26.
2 TRADOC Pam 525-8-2. pg. 26.
3 ADP 7-0, Training Units and Developing Leaders. August 2012. pg. 5.
4 TRADOC Pam 525-8-2. pg. 11.

Acronym Reference

ADP - Army doctrine and training publication
ALE - Aviation Leadership Exercise
ALM - Army Learning Model
AVC3 - Aviation Captain's Career Course
AVCATT - Aviation Combined Arms Tactical Trainer
BOLC - Basic Officer's Leadership Course
DATE - decisive action training environment
LCT - Longbow Crew Trainer
MDS - mission, design, and series
OE - operational environment
PME - professional military education
RCTD - Reconfigurable Collective Training Device
TRADOC - Training and Doctrine Command
TTP - tactics, techniques, and procedures
UTP - unit training plan

GOING BACK TO THE FUTURE

A Change to Aviation Basic Officer Leader Training

By LTC Marcus Gengler,
MAJ Aaron Heath,
and MAJ Morgan Laird

For the past several years, 2LTs and WO1s received the exact same training at the Aviation Basic Officer Leaders Course (BOLC) and the Aviation Warrant Officers Basic Course (WOBC). During the climaxes of Operation Iraqi Freedom and Operation Enduring Freedom, the number of qualified warrant officers being assigned to instruct WOBC dwindled and so classroom instruction for BOLC and WOBC had to be exclusively conducted by pre and post command Captains. The unintended consequence of combining the two courses has been a generation of young officers who arrived at their first unit of assignment with little to no job specific mentorship, no specific training on their future roles and responsibilities, and no tailored instruction for the specific needs of each cohort. Based on lessons learned, feedback from the field, and leadership guidance, it was time to go back to the future with regards to basic officer leader training.

The first steps were taken in late 2012, when we reinstituted a 4-day capstone exercise at the conclusion of flight school that would allow 2LTs to play the roles of platoon leaders and air mission commanders, and WO1s to function as flight leads and pilots-in-command in a culminating collective training exercise. Because this was not part of the approved program of instruction (POI), much of the training was conducted while students were clearing Fort Rucker prior to graduating flight school and en route to their first duty assignment. Obviously this was not the ideal learning situation.

As part of a holistic review of our basic officer leader development program, a multi-focused effort was made to find new ways of enhancing the adaptability, creativity, and critical thinking skills of our junior officers. In an effort to meet these objectives, as well as improve instructor to student and peer to peer mentorship, student management responsibilities were split for 2LTs and WO1s resulting in an increase in the number of qualified, tracked, senior warrant officers assigned to 1-145th Aviation Regiment to support a critical divergence of BOLC and WOBC.

On 14 October 2014, BOLC and WOBC Class 15-001 began as the first classes with a split program of instruction. As part of this split, the POI was also divided into two parts, one conducted upon initial arrival and the other conducted after initial flight training. This model replicates how BOLC/WOBC had been taught in years past and allows each course to have its own unique learning objectives and training outcomes tailored to the specific functions they will perform in their first unit.

The initial five weeks of BOLC Phase 1, consists of Training and Doctrine Command-mandated common core and basic officer training. During this phase, 2LTs gain an understanding of topics such as the operating environment, cultural awareness, unified land operations, property accountability, and maintenance. They receive tailored small group instruction, focused on using peer-to-peer learning and instructor led discussions, not just PowerPoint lectures, to enable an adaptive learning environment that better prepares them to "learn for themselves." Additionally, 2LTs qualify at the Combat Pistol Qualification range and the Basic Rifle Marksmanship range while also gaining invaluable insight on ground combat operations during a convoy exercise. By 2nd Quarter 2015, these field events will be planned, prepared, executed, and assessed by student officers in order to provide structured leadership opportunities and give a valuable introduction on how to conduct training (Train-to-Train).

BOLC Phase 2 begins after students complete their advanced aircraft qualification course, just weeks before embarking to their first unit. During this phase, 2LTs receive focused instruction on aviation missions, tactics, and leader development. The first week is dedicated to instruction on the organization of the aviation company, battalion, and brigade and their specific mission sets. Additionally, they get the opportunity to organize and conduct an

play as future platoon leaders and air mission commanders. Lastly, during the final week, lieutenants receive various professional development classes in topics ranging from officer and non-commissioned officer evaluations, leader development, training management, counseling, career management, and mentorship prior to graduation and receiving their aviator wings.

Paralleling BOLC's Phases, WOBC has a Part A and B that are 3-weeks respectively. The purpose in establishing a separate and distinct course for warrant officers was twofold. First, to reduce the amount of redundant training they received in Warrant Officer Candidate School and Initial Entry Training, and second to focus on the more technical aspects of their future roles as professional aviators and advisors to their commanders. Qualified warrant officer instructors now facilitate much of the POI in a small group setting, utilizing directed discussions and peer learning to maximize the greater experience level of our junior warrant officers. Many tasks previously performed during BOLC such as the M-16 range, convoy training, land navigation, and other overlapping tasks have been removed from the POI which accelerates WO1s into the Helicopter Overwater Survival Training and Survive, Evade, Resist, and Escape Courses ahead of their 2LT counterparts prior to beginning Initial Entry Rotary Wing (IERW) training.

WOBC Part B is nearly identical to BOLC because of its focus on aviation specific skills and the ALE exercise. However, the focus for WO1s is on the more technical aspects of aviation mission planning and pilot-in-command/ flight lead duties. This is facilitated by a cadre of tracked warrant officer instructors who provide critical feedback before, during, and after each mission. This focused mentorship is invaluable in integrating the piloting skills learned at the flight line with the tactical skills required to be an Army aviator. During the final week of training, WO1s receive focused instruction on professional development topics such as warrant officer career progression, evaluations, briefing techniques, and a review on Army doctrine as it applies to the operating environment.

In order to complete this journey back to the future, 1-145th Aviation Regiment needed a highly professional group of senior to mid-grade warrant officers to be assigned as WOBC instructors. Earlier this year, several qualified flight line instructors were reassigned to support this true broadening assignment. Broadening assignments have always been an option for Army officers; however, with the competitiveness of

Air Mission Coordination Meeting, Air Mission Briefing and act in various roles as brigade/battalion-level staff officers providing a valuable experiential learning experience. This training is the foundation for the next phase, the Aviation Leadership Exercise (ALE). During this week-long exercise, students are grouped together based on assigned aircraft and work in conjunction with their WOBC counterparts to plan and execute several deliberate aviation missions. Those missions include air interdiction, route and area reconnaissance, air assault, and air movement operations in either Reconfigurable Training Devices or the Aviation Combined Arms Tactical Trainer. Students rotate through different roles and share several responsibilities for each mission and conduct instructor facilitated and student led hot washes after each flight. In the absence of instructor pilots in the cockpits, this is a steep learning curve. The exercise culminates in an O-6 led formal after action review that helps students "operationalize" the lessons learned during each simulated mission, and puts in perspective the role they will

the post surge military the concept has moved from a non-desirable option to a near requirement for promotion. In 2000, the Chief of Staff chartered the Army Training and Leader Development Panel, which recommended that the Army needed to better integrate warrant officers into the larger officer corps. One of those broadening assignment options available to Aviation Warrant Officers is to develop, teach, and mentor the newest generation of Aviation Warrant Officers in the WOBC. Assigned officers are able to provide guidance and mentorship to the largest population of student aviators in the world. Instructing WOBC is not only a broadening assignment which will set them apart from their peers, it is also a unique opportunity to help mold the next generation of Army aviators.

The way in which Army aviation trains and prepares junior leaders has evolved rapidly over the last 12 months. In many ways we have gone back to the future by transforming the pre-IERW eight week POI, shared by both 2LTs and WO1s, and modified it to better meet the needs of the evolving aviation force. We have diverged WOBC and BOLC, we have re-established an effective and collaborative capstone exercise, and we have dramatically improved the one-on-one mentorship that is received for both cohorts resulting in a more competent, flexible, adaptive, thinking, and agile officer. We look forward to hearing from brigade, battalion, and company commanders as these young officers complete this improved course and report for duty. We welcome your honest assessment on our product and solicit any recommendations to improve.

LTC Marcus Gengler is Commander, 1-145th Aviation Regiment, 1st Aviation Brigade at Fort Rucker, AL. Prior to taking command, LTC Gengler served as the Experimentation Chairman in the Air Maneuver Battle Lab in the Concepts, Experiments, and Analysis Directorate at Fort Rucker. He has deployed in support of Operation Iraqi Freedom and Operation Enduring Freedom with the 1st Air Cavalry Brigade. LTC Gengler is a Senior Army Aviator with 18 years' service and is qualified in the UH-1, OH-58A/C, and UH-60A/L.

Major Morgan Laird is Commander, B Company 1-145th Aviation Regiment, 1st Aviation Brigade at Fort Rucker, AL. Previous assignments include Small Group Leader in the Aviation Captain's Career Course, Fort Rucker, AL; Commander 1-2nd Attack Reconnaissance Battalion; and Assistant S-3 and Platoon Leader, 4th Attack Reconnaissance Battalion 4th Combat Aviation Brigade. He has deployed in support of both Operation Iraqi Freedom and Operation Enduring Freedom with the 4th Combat Aviation Brigade and 25th Combat Aviation Brigade respectively. MAJ Laird is a Senior Aviator with 9 years' service and is qualified in the AH-64D and the OH-58A/C.

MAJ Aaron E. Heath is presently serving as Commander, D Company, 1-145th Aviation Regiment. MAJ Heath's previous assignments included Small Group Leader at the Aviation Captain's Career Course; Commander, D Company 2-82nd Aviation Regiment; and numerous leadership positions in 5-101st Aviation Regiment culminating as Commander, Headquarters and Headquarters Company. He has two deployments in support of Operation Enduring Freedom; one with the 101st CAB and one, most recently, with the 82nd CAB. MAJ Heath has 10 years' service. He is qualified in the UH-60 A/L.

Acronym Reference

ALE - Aviation Leadership Exercise
BOLC - Basic Officer Leaders Course
IERW - Initial Entry Rotary Wing
POI – program of instruction
WOBC - Warrant Officers Basic Course

Reformatting the Hard Drive

At the Marine Corps Weapons and Tactics Instructor Course

By CW2 Charles M. Myers

As this issue of *Aviation Digest* focuses on "Defragging the Hard Drive," the consideration of what information we replace the newly vacated sectors with should be evaluated and monitored at the highest training levels of Army Aviation. The bits and bytes of information placed into those finite sectors should be specific and relevant to missions supporting the ground commander.

A likely effect of this evolving change in training philosophy will be the careful evaluation of every block of instruction managed by the United States Army Aviation Center of Excellence for information not as relevant as once thought. The result being shorter blocks of instruction or the backfill of emerging and pertinent information not previously taught because of limited training resources (time, instructors, temporary duty funding, etc.) Also likely will be the scrutiny of training and regulatory literature to rid the evaluator of the requirement to grill the examinee on marginally useful information.

As the 5th Battalion, 101st Combat Aviation Brigade Aviation Mission Survivability Officer (AMSO), I feel the training provided in the Tactical Operations Officer's Course is optimized. The course provides the aviation unit commander with an advisor with a solid foundation in managing the Aviation Mission Survivability Program within the unit. I can make little meaningful recommendations for improvement without significantly lengthening the course or adding a graduate level course to broaden the AMSO's knowledge and enhance his usefulness to the commander. In the present environment of extreme cost cutting measures, neither of these options seems viable.

There is additional critical information that I think the AMSO, and possibly other key training personnel, in the unit should have, however, as their careers progress and their experience base grows. Information that, if offered following the AMSO's first or second utilization assignment, would significantly increase his value to the commander. Thinking just slightly out of the box, the Army should consider other service schools as a source of graduate level training. A possible source of such training is the Marine Corps Weapons and Tactics Instructor (WTI) Course conducted at Marine Corps Air Station (MCAS) Yuma, Arizona. The WTI Course provides detailed instruction on Air Force, Marine, Navy, and Army aviation weapons and munitions; joint tactics, techniques, and procedures; threat; mission planning considerations; joint air-ground operations; and instructional techniques - information that supports every facet of the Army Aviation mission.

Students and Cadre

Approximately 250 students attend this biannual training. The students are primarily comprised of Marine Corps

aviators to include FA/EA-18, AV-8B, EA-6, MH-46, MH-53, VH-22, UH-1, and AH-1 pilots. Student selection for this course is extremely competitive and the certification received upon graduation carries one of the highest and most prestigious qualifications offered by the Marine Corps. The cadre is composed of current WTIs from the Marine Expeditionary Force, Army aviators from the 160th Special Operations Aviation Regiment, Navy and Air Force instructors, and civilian experts. All military instructors have been selected from currently qualified instructors serving in high operational tempo units as the best, most qualified, and senior aviators in their respective disciplines. This training is offered to Army, Air Force, Navy and even multi-national aviators in very limited slots. This mix of experience enhances the course and offers a unique joint perspective to the Marine Corps by leveraging the capabilities of the other services and allied nations to maximize combat potential on the ground, sea, and air.

Facilities and Courseware

The facilities at Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) are impressive. The Marine Corps has made the creation of the WTI Course one of their highest and well funded training endeavors. The training facility has recently been expanded into a brand new, state of the art, secure training complex. Every room in the complex is equipped with secure Wi-Fi, high definition projectors, and integrated audio systems with full digital control.

Ruggedized Android tablets are issued to every student upon arrival at MAWTS-1. These tablets access secure Wi-Fi in the building allowing students to follow along with the instructor and take notes on slides as they are being briefed. The tablets enhanced the learning experience and allowed students who need more time on certain areas to either stay on that slide longer, or mark it as a review item for self study.

Course Subjects

The WTI Course topics include many of the same subjects offered in the Tactical Operations Officer's Course but are examined in more detail suitable for graduate level studies. Instructors focus on friendly and enemy tactics and orders of battle, aircraft survivability equipment strengths and weaknesses, and the employment of specific plans and tactics to maximize combat effectiveness.

Course subjects are presented in three distinct phases referred to as Generics, Commons, and Specifics. During the Generics phase, all students attend the same classes as subjects are broad enough to apply regardless of mission, design, and series aircraft. Subjects include:

- Air Ground Integration
- Joint Air Operations
- Intelligence Preparation of the Battlefield
- Electronic Warfare Employment
- Unmanned Aircraft System (UAS) Support
- Aviation Ground Support
- Ground Combat Element Capabilities
- Rules of Engagement
- Targeting and Fire Support Planning
- Air Assault Operations
- Urban Operations
- Surface to Air Threats
- Fixed Wing Threats
- Rotary Wing Threats
- Missile and UAS Threats
- Spectrum Warfare
- Personnel Recovery

During the Commons phase, students work in slightly smaller groups to share the capabilities, strengths, and weaknesses of their aircraft on the battlefield. Classes include:

- Tactical Risk Management
- Ethics, Leadership, and Moral Perspectives
- Human Factors
- Aerodynamics
- Assessing Core Competency
- Training Management
- Missile and Space Intelligence Center Brief
- Envelope Management
- Radio Frequency Surface to Air Missiles (SAM)
- Suppression of Enemy Air Defense
- RF SAM Survivability
- Night Vision Device Technology update
- LASER Threats
- Air Intercept
- Fighter Tactics
- HAVEQUICK and SINCGARS
- Forward Arming and Refueling Point Operations
- Aviation Mission Planning System Training
- Air Mission Commander Responsibilities
- Rapid Response Planning Processes (Similar to 96 Hour Planning Process)
- Objective Area Planning
- Execution Checklists
- Air Assault Raid Planning
- Non-Combatant Evacuation Operations
- Casualty Evacuation
- Tactical Recovery of Aircraft and Personnel
- Special Operations
- Infrared SAM Threat to Assault Support Aircraft
- Air Defense Artillery Threat to Assault Support Aircraft
- Attack Helicopter Threat to Assault Support Aircraft
- Fixed Wing Threat to Assault Support Aircraft
- Evasive Maneuvers and Counter

Tactics
Rotary Wing Offensive Air Support
Assault Support Escort Tactics
Vehicle Interdiction
Collateral Damage Estimation
Close Air Support (CAS) and Close Combat Attack (CCA)
TACP Integration
Urban CAS
AC-130 Capabilities
Fixed Wing Offensive Air Support Capabilities
CAS Weapons and Ordnance
Joint CAS/CCA Capabilities

The Specifics phase, the last academic phase, is tailored to the student's specific platform and is the time that the student will learn how to most effectively employ the aircraft, weapons and sensor capabilities. Classes include:

Assault Support Planning
Precision Guided Munitions (PGMs)
Weaponeering
Reconnaissance Tactics, Techniques and Procedures
Expendables Update
Digital Interoperability
Commanders Perspective
Call for Fire
Forward Air Controller (Airborne)
AV-8B Ordnance Delivery Demonstration
Rockets
Sensor Employment
Tablet Training
Mountain Area Operations
Gun Systems
Yuma Proving Ground Threat Tour

The WTI Course is a six week training program encompassing academics and flight instruction. Accommodations are made for a three week academic only option for inter-service and allied students. Academics typically run from 0700 to 1800 six days a week. Although

not typically available to Army aviators in conventional aviation units, slots can be obtained. This course should not be attended by inexperienced aviators and I would recommend tactical training, particularly the AMSO course, be completed as a prerequisite. I would also recommend that senior instructor pilots at the battalion level and above and perhaps brigade aviation officers attend this training. The WTI Course will challenge the experienced aviator, so potential students must be motivated and possess an interest in weapons and tactics to be successful in this course.

I don't view this course as a panacea to Army Aviation tactical instruction. However, the material taught in the WTI Course is generally not available at this level of detail in any course that I am aware of in the Army. I think that MAWTS -1 provides us the opportunity to place incredibly useful information into the sectors we clear while defragging the hard drive of information that has been automated by sensors on our increasingly sophisticated fleet of aircraft. While seats may be limited, we should rush to fill every training slot available in this course. This course has changed my opinion on how I and my unit conduct tactical training within the battalion. The benefits to the commander, the mission, and the supported ground commander are significant.

CW2 Charles M. Myers is currently assigned as the 5-101st Aviation Regiment Aviation Mission Survivability Officer (AMSO). CW2 Myers' previous assignments include C Company, 6-101st General Support Aviation Battalion AMSO, Fort Campbell, KY; 3rd Armored Cavalry Regiment Tactical Operations Officer, Fort Hood, TX; U.S. Southern Command as a Global Command and Control System-Joint Sun Solaris 8 and UNIX System Administrator; and as an SQL and Oracle Database Manager and Computer Programmer at Maxwell Air Force Base, Montgomery, AL. He has deployed in support of Operation Enduring Freedom and Operation Iraqi Freedom/Operation New Dawn. CW2 Myers has 18 years military service (11 with the U.S. Air Force and 7 with the U.S. Army) and is qualified in the UH-60A/L/M and the HH-60M.

Acronym Reference

AMSO - aviation mission survivability officer
CAS - close air support
CCA - close combat attack
MAWTS-1 - Marine Aviation Weapons and Tactics Squadron - 1
MCAS - Marine Corps Air Station
PGM - precision guided munitions
SAM - surface to air missile
WTI - weapons and tactics instructor

Multi-Echelon Training

Maximizing the Use of Flight Training Hours

By MAJ Jason A. King

In 1925 Army Air Corp Pilot, Brigadier General (BG) "Billy" Mitchell wrote an opinion editorial (OPED) that was picked up in newspapers across the nation. It was a time of mass budget cuts and infighting within the War Department (Predecessor of the Department of Defense and the National Security Act of 1947). Brigadier General Mitchell's OPED was a very public warning shot for the War Department and its services in the misuse and underfunding of air assets and the future of air power. His OPED earned him a court martial and media attention for the era that rivaled the frenzied coverage of the OJ Simpson case. Fast forward to 2014 where history is repeating itself with harsh decrements in military budgets and increasing instability on a global scale. The major difference between 1925 and 2014 is that current leaders at all levels acknowledge the need for Army Aviation to maintain its superior vertical lift, attack and unmanned capability. A capability made of people, initiative, technology, and the delicate balance of priorities of each. The Aviation Branch Chief Major General (MG) Michael Lundy's article "Seize the Initiative," in the *Army Aviation 2014 Blue Book Directory*, provides a clear and concise concern for Army Aviation priorities.

"The longer we wait to accept this (fiscal) reality, the greater risk we take of ceding the initiative by allowing the environment to drive a force that is not modernized, ready, or sustainable."
— MG Michael D. Lundy

Strategic leaders like MG Lundy manage capacity (number of units, force structure) and capability (modernization, readiness, and sustainment). Conceptually, operational leaders resource and tactical leaders execute the given capacity and capability. In short, all Aviation leaders and professionals are stakeholders. As stakeholders, in this fiscally challenging environment, it is up to the operational and tactical leaders to increase efficiencies with the resources allocated. Bottom line: What can we, as leaders, do to implement the Branch Chief's priorities within the operational training domain?

We can start by looking at the commercial aviation industry and the economics they face on a daily basis. A common quote for the industry is "We only make money when the plane is in the air." The premise is simple, if the income generating resource is on the ground and we are funding the systems that maintain it, we lose money. The world of economics would take this dilemma a step farther by specifying the positive and negative outcomes caused by a canceled flight (lost opportunity). A positive outcome might be the Soldier who got to spend a couple extra days at home because his flight into theater was canceled. A negative outcome would be the business leader who didn't get to their destination to finalize a global business deal. Negative outcomes from lost opportunities cost millions. As with major airlines, the negative outcomes and associated lost opportunities are ruthless antagonists for Army Aviation training.

How ruthless? Every day the Army wastes money on inefficient training. Aviation training is linked to an aviation commander's unit training management (UTM) plan. Infantry training is linked to an infantry commander's UTM plan. In the majority of units, multi-echelon training is only linked on an exercise basis. These conditional links cost the Army millions of dollars every year in lost opportunities and, let's not forget, where there is a lost training opportunity there is a lost leader development opportunity as well. It is easy to visualize and quantify the opportunity cost of an aircrew scrubbing a flight due to a minor maintenance issue. Unfortunately, due to our *Raison d'etre*, it is not appropriate to limit the lost training opportunities to that of pilots and crews. Every time an Attack/Scout Weapons Team is simulating the ground element while flying or a Blackhawk crew is executing infiltrations and exfiltrations with no passengers, the lost training opportunity cost is adding up. While the crews in these situations (which we have all seen multiple times) pat themselves on the back for their ability to improvise multiple players over the radio, the truth is an infantry squad or team somewhere on the installation would have benefited from and added realism to the now spent flight hours. The result, an increasing (lost) opportunity cost due to the lack of a systemic multi-echelon training plan. By definition, multi-echelon training "optimizes the use of time and resources to train more than one echelon simultaneously."

Multi-echelon training is a training technique that allows for the simultaneous training of more than one echelon on different or complementary tasks. *It optimizes the use of time and resources to train more than one echelon simultaneously. Commanders ensure subordinate units have the opportunity to train their essential tasks during the higher unit's training event while still supporting the higher echelon's training objectives. Planning for these events requires detailed synchronization and coordination at each echelon.* Army Doctrine and Training Publication 7.0 paragraph 2-16.

Do we stop with the opportunity cost to the crews and maneuver element or does it go further? What about the lost opportunity at the staff planning and synchronization level or the current operations battle tracking level? It doesn't take long to see lost training opportunity cost increase exponentially. Can we calculate

the cost of lost training opportunities? If we set aside the operational risk of semi-trained maneuver elements, yes. We know the average (published) cost of a flight hour for Army airframes. We also know the hours allocated for individual and collective training from Readiness Level (RL) 3 to RL 1. For an Apache pilot, RL2 to RL1 is defined as mission training and allocated 20 hours (TC 3-04.42, May 2013). At roughly $4,600 a flight hour for the AH64D, the estimated mission training cost is $92,000. Mission training is normally done in teams so the cost is doubled. For one pilot, the mission training cost is now $184,000. What is the annual lost opportunity cost if 50% of the mission training hours for every new Apache pilot, RL progressed after leaving Fort Rucker, fail to be multi-echelon? This amount doesn't even begin to address semi-annual training at the multi-echelon level, integrating ground elements into the Table VI – VIII gunneries, and the possibilities for realistic proficiency evaluations similar to those of a joint tactical air controller. The obvious question is - how does Army Aviation as a whole minimize these lost training opportunity costs?

The first and most important step toward the minimization of the lost training opportunity cost is active division and brigade leadership making air-ground operations not just a priority but a system. Division training guidance that prescribes training events encompassing air support must be published, adhered to, and most importantly audited in the processes that make up the quarterly training brief (QTB) - processes that have laid dormant in many organizations. The Army Force Generation process was exceptional for rapid force generation in an environment providing nearly unlimited resources. That process pushed units, by virtue of these massive resources, from untrained to trained on a dictated mission essential task list (METL). Conversely, the QTB process with customized METL cross walks (critical in a regionally aligned construct) and tasks linked directly to training objectives at the lowest maneuver unit will allow subordinate commanders to visualize improvements to their unit training plan. The end of the QTB process is a training plan agreed upon from division to the lowest maneuver unit. It is much easier for a battalion commander and his staff to understand and adhere to mission command priorities for the quarter if he feels there is a contract between himself and his senior rater.

The QTB process while the most important, is just the first step in the equation. The second step is to take "air to ground operations" (AGO) from a concept to a system that occurs as a normal operation as it has over ten years and two wars. The phrase AGO itself implies two separate entities that need to expend additional energy to accomplish the mission. The basic mission planning and execution elements required in a combat environment do not change in a Continental United States training environment (with the exception of certain armament and flares!). Known commander priorities for support and published integration protocol prior to

an aircraft lifting off the ground make the concept of AGO an established, verifiable system instead of a vague entity.

As we move further into fiscal uncertainty with tightening purse strings, the question becomes how to maximize AGO (conceptually, synchronization of ground and air elements)? It begins with aviation battalions no longer scheduling flight training from week to week. The aviation culture prides itself on flexibility and the launch – recover – launch concept provided unprecedented mission success in an unconstrained combat environment. In a constrained environment, it behooves us to take a few tips from our sister services to maximize our training flight hours. The Marine Corps uses a system to maximize flight training hours called the Frag Conference (a quarterly air support scheduling conference at the Marine Expeditionary Force level with all stakeholders and O6 level officer oversight), the Air Force uses a system known as Joint Airborne Air Transportability Training (JAATT), and the U.S. Special Operations Command uses the Joint Air Asset Allocation Conference (JAAAC).

What do the Frag Conference, JAATT, and JAAAC have in common that makes them systemically more mature than the typical divisional air mission request process? Each of these scheduling conferences represents a continuation of the procedures we operate with every day while deployed using established protocols to ensure mandatory requirements are adhered to with a transparent auditing channel. The Air Force JAATT system goes a step farther with a point system for training mission approval. This point system is designed to ensure the benefits of training exceed the cost of the flight. That phrase is worth repeating: **The benefits of training exceed the cost of the flight.** The system is audited by personnel outside of the wing structure in a dedicated negotiation phase. How many brigade aviation officers or battalion operations officers have received a call from division saying "Your planned training event doesn't pass muster. Increase the level of training or you don't get air."

The Air Force system may be a step too far but what can Army Aviation gain by adding a systemic check to the scheduling of flight training and support? Two words - efficiency and predictability. Efficiency gained in the form of multi-echelon training and predictability due to the inherent requirement to schedule and plan training. This systemic check can be audited and validated in a well-organized QTB. In addition, a professional organization requires the scheduling of aircraft and training at a level capable of enforcement. This level is not inherent within the combat aviation brigade (CAB). Unlike the armored cavalry regimental design of the past, the CAB has no organic authority to ensure the integration of ground elements. This lack of an effective audit tolerates inefficient use of training resources and puts our sacred trust to support Soldiers on the ground at risk. The only way to ensure the flight hours being spent within the CAB are efficiently exercised is to have full visibility on the flights at the division level. When a division commander is briefed the number of quarterly flight hours flown in the QTB, the first question asked should be how many hours were flown in direct support of the brigade combat teams and maneuver units. The second question should be how have the spent flight hours increased the training readiness of the division as a whole, not just that of the CAB. (Note, a multi-echelon flight hour metric could also be worked into unit status reporting on a monthly basis)

Inefficient training is putting our ability to generate trained and ready combat aviation forces at risk. In the current fiscal reality, we will not cede the initiative and we will ensure the next generation of aviators and Soldiers are prepared, maintained and sustained. We must improve and in some cases develop a system that audits and validates the expenditure of flight training hours. We must get back to the basics of QTB processes and METL based training that takes full advantage of multi-echelon opportunities with ground forces, like we have proven we can do in combat.

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Acronym Reference

AGO - air-ground operation
BG - Brigadier General
CAB - combat aviation brigade
JAAAC - Joint Air Asset Allocation Conference
JAATT - Joint Airborne Air Transportability Training
METL - mission essential task list
MG - Major General
OPED - opinion editorial
QTB - quarterly training brief
RL - readiness level
UTM - unit training management

Making Every Repetition Count

"We aint talking about the game ... we talking about practice."
- Alan Iverson Philadelphia 76rs

By CPT Jeff Meinders

One of the most important things we get to do in the Army is honing our craft through practice. With the deployment pace slowing and funding of flight hours on the chopping block every year, we have to make every repetition count. Junior Soldiers, aviators and officers in the future may only get the opportunity to practice, and these opportunities may be fewer and fewer. The last decade of Soldiers and leaders who trained and shaped the performance of subordinates never faced the challenges of tomorrow. So how do we make every shot count when we only get one 'practice'?

The military forces of other countries are facing the same resource constraints as the U.S. military. The multinational aviation forces conducting training at the Joint Multinational Readiness Center understand the restrictions and have adapted their training plans to manage resources. Like ours, their budgets are constrained and flight hours are at a minimum. Their perception, however, is that every maneuver, every takeoff, and every landing are critical to the training and mentorship of junior aviators. They take the time and resources to facilitate a full debrief and after action review (AAR) of their performance, even after a 15 minute flight. Capitalizing on aircrew training or 'practice' is a collective (read commander) responsibility. Too often, in the U.S. Army aviation community, a readiness level progression flight ends with this example conversation;

> "You must learn from the mistakes of others. You can't possibly live long enough to make them all yourself."
>
> ~Sam Levenson

"You got anything for the flight?"
"Nah, nothing big"
"Ok, I'll close out with operations."

While this conversation might suffice for Maverick and Goose, who fly together every day, those of us who will be flying with a constrained budget well into the future will have to do better. In fact, Aircrew Training Manual Task 1262 Participate in a Crew-Level After Action Review, requires us to conduct this often overlooked training, using such words as 'will' to emphasize the non-negotiable aspect of this task.

United States Army Aviation prides itself as being a very capable, professional organization. Continuously striving to improve performance is one characteristic of professionalism. While maybe some things in Army Aviation require less focus, our ability to grow in our profession should be one of the most important things we do daily. If we are making one decision on where to spend our most valuable resource of time, serious consideration should be given to a well executed AAR. The learning that results from a carefully structured and detailed AAR allows all participants to see the "big picture" and how their performance either contributed or detracted from the outcome of the mission. The AAR is an "economy of force" operation in that the benefits derived from the AAR are probably more beneficial than the flying portion of the mission. Additionally, the AAR creates confident, adaptive leaders.

Just because something is simple, does not imply that it is easy. Here are five ways to improve your debrief or after action review and get the most out of the repetitions afforded.

1. Set the time during pre mission planning to conduct an AAR/debrief.
An AAR or debrief has maximum effects when it is timed correctly. After the conclusion of a six hour flight, few people have the energy or duty day to sit down and go over the details of their performance. The flipside of that argument is if you wait too long, the details become fuzzy. It is important to consider Maslow's Hierarchy of needs, more specifically the physiological needs. No one wants to debate their performance if they have to use the restroom or haven't eaten or drank anything in eight hours – plan the AAR accordingly.

One of the most disciplined aviation units I observed at JMRC, the Austrian UH-1 platoon conducting a structured debrief within minutes of landing at Hohenfels training area in Germany.

2. Take notes, take photos, record quotes.
This implied task is that copious notes must be taken, because those observations are going to detail exactly what happened, when it happened, why it happened, etc. All recommendations for improvement must be based on hard, cold facts. For example, reading or playing back radio calls to the command post can be quite an eye opener to the crews and command post personnel – I said what!?

3. Focus on your performance.
Too many times we critique the higher headquarters, the supported unit, operations, or air traffic control; however, it is important to remember that this is our AAR, not theirs. If errors occur in practice (training), do you think they will happen during a real combat mission? How do *WE* get better? What could *WE* have done to correct the misunderstanding or confusion?

If cause for the confusion is truly outside the organization, then invite them to the AAR and get their input as well. By focusing on the group at hand, we can identify not only what needs to be fixed, but what we can fix.

4. How can we make a change?
'Belling the Cat' is a fable about a group of mice who debate how to quiet a marauding cat. As they come up with the solution to tie a bell around the cat so it can be heard coming, one of the mice asks "who will bell the cat?" The story is used to teach not only the wisdom of evaluating a plan, but also on how it can be executed. This can be done by assigning responsibility or by rewriting a standing operating procedure to include the fix in the planning process. This is usually the hardest part of the AAR. It is where the critical thinking of adaptive leaders must be involved and applied.

5. Share your actions
Summarizing the "improves" and "sustains" you identified in the AAR is all fine and dandy, but don't just throw them away just after the sun has set. Sharing them before the next operation or with adjacent units can help stop problems before they start, or at least give them an experience base for those that have never done the task. This is also a great way to share your story to the challenges and opportunities of your training to your higher headquarters.

Following these simple rules is not easy or quick. They will take time to master and teach in order to make them routine and substantial. So when Alan Iverson, who plays 82 basketball games a year, complains about practice, he might have a valid point. For Army aviation, we rarely get 82 repetitions of anything and must make every practice count, because our playoff performance could mean life or death.

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Marking With Chalk is Alright, ... if You Are Cutting With an Axe

By CW5 James R. Massey

Maximizing human potential through training depends on understanding the role of training in the enterprise, determining what is important, and determining to what level of detail we should train. This article will explore each of these in future training development and execution.

The Role of Training

Before solving a problem, one must properly identify and fully understand it. This prevents solving symptoms of a problem rather than the problem itself. Failing to take these steps could result in solving the wrong problem altogether. Training, alone, may have areas for improvement, but if we ignore the rest of the system, we are bound to have to revisit the problem.

Purpose

Training exists to drive business outcomes. The Army invests in training with the goal of improving performance in achieving objectives[1]. This single concept can provide guardrails during the training development process, but to understand achievement improvement fully we must consider the entire system to which training belongs. Because training exists to improve mission accomplishment and Soldiers use equipment to achieve objectives, we must consider them both along with their relationships to training.

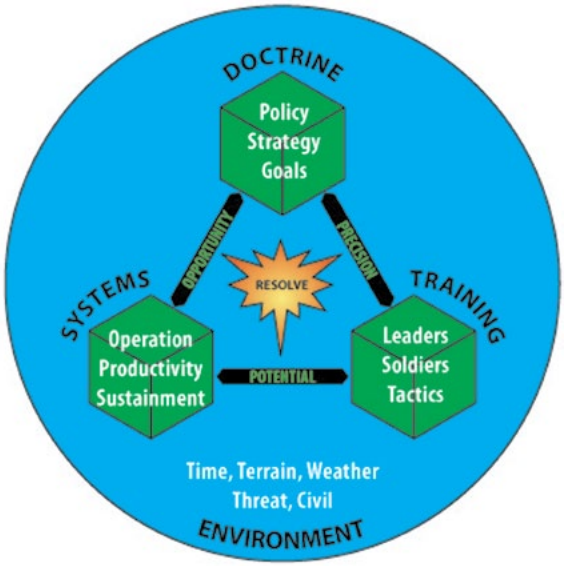
Relationship to the Enterprise

Although this article focuses on training, it is helpful to understand the relationships between the three components of the enterprise: doctrine, system design, and training. The components form three capabilities: precision, potential, and opportunity. Training (leadership, Soldiers, and techniques and procedures) and systems provide potential. Doctrine (policy, strategy, and tactics) and systems (operation, productivity, and sustainment) enable opportunity. Training and doctrine enable precision. Resolve is the catalyst that sparks the synergy of all doctrine, systems, and training[2]. This entire system operates within the context of environment. Other models of mission, environment, terrain and weather, troops and support available, time available, and civil considerations and the man, machine, mission, medium/environment, and management model of accident investigation can overlay the enterprise model[3]. Training interconnects with everything.

Soldiers accomplish business objectives by using systems and processes. In the military, doctrine defines the business objective or mission. More accurately stated, the ground commander's objectives are the business objectives. Assuming doctrine is sound, the next place to improve performance is system and process design. While system designers strive for maximum productivity and sustainability, system operation often falls short.

System Design and Cognitive Loading

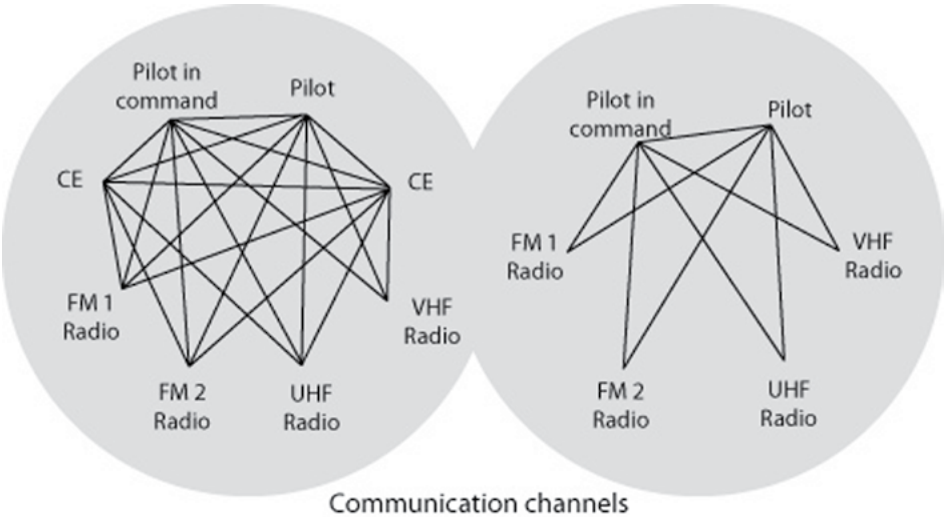
System designers should place simplicity of the human interface as top priority. A "system" could be a piece of equipment, a process, or a product of a process. Soldiers must be able to use their systems in austere conditions and while experiencing severe stress and sensory overload. Because operational complexity and required training are directly proportional, leaders should apply this standard to all phases of operation from planning and maintenance through mission execution and reset. Designing to this standard will shrink the need for training considerably since training exists only to enable system operation in pursuit of objectives.



System simplicity is important because each operator has a finite amount of memory and processing power – just like a computer – available to apply to accomplishing the mission. Remember that accomplishing the mission requires operating the system and dealing with the

environment. All three require a portion of available resources. Maximizing resources to apply toward the mission should be the ultimate human performance goal. Two major factors affect mental performance: processing load and memory load. Presenting data to the "man in the loop" must be useful, actionable with minimal interpretation, available when needed, and in the proper context. In other words, avoid data clutter.

Data clutter also happens with increases in communication channels. The number of channels or entities to monitor is equal to n(n-1)/2 where n is the number of communication devices or people in the system[4]. For example, each crewmember in a crew of two with four radios has six entities. Therefore, the equation becomes (6x5)/2=15 channels to monitor. For a crew of three, the communication channels increase to 21 and a crew of five has a whopping 36 channels to monitor. Managing who monitors which channels can go a long way in decreasing cognitive overload.



Communication channels
(n(n-1)/2) assumes all channels talk to each other

Numerals are a major threat to mental performance. In this context, numerals are symbols that represent numbers. Hopefully the number has some kind of meaning and can communicate value. The digital age has vastly increased the ability to compute and display a great deal of data – usually represented by numerals. Using numerals is efficient because they save physical space. However, numerals take time to process. For example, when crosschecking airspeed, a pilot reads "107" on a digital display. He does this after determining a need to consider airspeed and recalling where to find that information. The pilot interprets the numeral "107" then must compare it to a desired airspeed of "110," which is stored in memory. The pilot compares the two values in order to determine if the situation requires action, and if so, develops a course of action. Compounding the issue, the analysis must consider both magnitude and direction of any required correction. A graphic representation, whether "steam gauges" of the past or space-saving digital display strip, is much quicker for the pilot to process. The pilot immediately sees which side of the desired speed the indicator is on and instantaneously calculates both direction and magnitude – and can more quickly estimate rate of change. Aircraft displays are not the only example of more easily interpreted graphics. Pilots can process graphical instrument flight procedures better than textual ones.

Smart systems design is just as important to human performance as proper crew selection is to complex missions. Commanders choose the best (more experienced and or proficient) crews to execute complex missions because they are able to apply more mental capital to the mission than a less experienced crew that may expend more mental effort to operate the system. The power of smart system design is that it can increase every crewmember's available mental capital for mission accomplishment.

Streamlining training can still provide benefits even without optimally designed systems since training is a separate and standalone facet of performance. However, for maximum gains, leaders must consider the entire performance system.

Determining Importance

Not everything in our profession is of equal importance and relative importance is usually a matter of opinion. A brief consideration of our training tasks is a quick way of examining what is important – at least important enough to measure. Oddly enough, training developers develop tests (think standards) before composing lesson content. They then design the class to teach the material found in the test. Although this sounds like heresy, it is a good practice that prevents "lesson creep" and extra information from finding its way into the training. Since our training is task based, tasks deserve a critical look.

Some people have a mindset that an aircrew training manual should make up a one-stop shop for all things a crewmember needs to know. The idea of depending upon a one-source document – at least in aviation and likely in any discipline – is fraught with problems. Documents like operator's manuals and doctrinal publications are just a couple of examples of references published by separate agencies. Pasting information from multiple sources into one training task is begging for outdated material to be incorporated and leads to confusion and distrust of the training documents.

Going back to the basics of a training event's task and purpose can keep us on track. Like the Chinese proverb says, "If you do not change your direction, you will end up exactly where you are headed."[5] According to TRADOC Pamphlet 350-70-1,

> *"An individual task is a clearly defined and measurable activity accomplished by an individual. It is the lowest behavioral level in a job or duty that is performed for its own sake. Individual tasks provide the detail to design and develop individual learning products and provide the framework for individual skills and knowledge to support collective training."*[6]

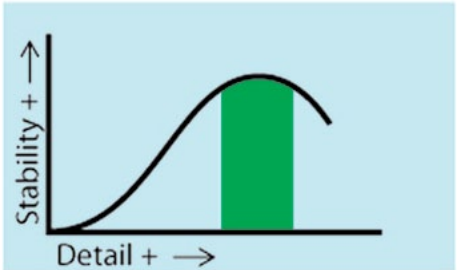
In other words, an individual task provides only enough detail to determine training

status while the individual learning products contain the other details. Tasks help leaders determine whether a crewmember is trained, and if not, what training may be needed.

For example, a shared task to track targets with an electro-optical sight would contain the required actions and standards to accomplish the task and what to do with the target information – like report, designate for an engagement, handover to a wingman, etc. Of course operators must know how to operate their respective equipment (implied task), but the "business" outcome of that task (specified task) is what is important. The commander does not care what equipment the aircrew use or what switches they operate to designate the target for engagement – only that they prosecute the target successfully (track, report, engage, and destroy as required in the commander's intent).

A task should not provide so much detail as to negate the need for an instructor. The instructor is available to initially train any task. The task structure provides the outline for what the individual performing the task is to accomplish and how well to do it. The purpose is to determine if sight operators are proficient in tracking targets, and if not, what they have to do to become proficient. Other products put the "meat on the bones" of the task. The task provides structure to train Soldiers to the minimum acceptable standard of performance – action that provides a result – not individual tactics, techniques, and procedures (TTP). It is the commander's responsibility to train the unit in doctrine as well as TTP. The individual tasks prepare Soldiers to be able to accomplish collective tasks that train units to execute doctrinal missions.

In considering again our target-tracking task, an operator must know his equipment limitations and be able to perform certain skills to accomplish the task steps. Task developers identify the requisite knowledge and skills that ultimately result in lesson plans and classroom materials. In this example, the task would remain the same for all target trackers, but training for the individual sight used would still address unique operational characteristics. The unmanned aircraft system (UAS) sensor operators would receive training on their



Task Stability Curve

particular optics payload and the AH64 aviators would receive training on theirs. Similarly, if the Army fielded a new sight, materiel and training developers would work together to produce new equipment training for the device but the task would stay the same unless there was some new capability that demanded a new or revised task.

Building tasks at a fundamental level to apply as broadly as possible (without losing meaning), keeping in mind that instructors initially train and evaluate tasks, and that commanders train TTP will provide the necessary litmus test of what is important to include in aircrew tasks.

Less is More

The first aircrew training manual (ATM) tasks were very simple and concise. Over time, the enterprise has added "functionality" to the tasks. Some items were focused on crew coordination, some were required due to the introduction of new aircraft, and some were opinion-based injections. The result was an expansion of a two page task with six standards in 1984 to three full pages with seven specific standards plus common standards plus 19 "wills," and four "musts." This is an improvement over the last version of the same task that took four pages to cover six specific standards and 25 "wills" and "musts."

One of the risks with sharing tasks is removing lessons learned. The capability of applying specific airframe lessons to all aircraft as appropriate offsets the risk, which does not happen "in the stovepipe." Paring our tasks down to fundamental requirements will emphasize those important lessons by removing unneeded information.

Perhaps flight school also includes too many details too early in a career. Details come with time and no one is a pilot-in-command the day they leave flight school. How much better would our pilots be if we could focus more on the fundamentals they need on the day after graduation rather than "nice to know" information (like pressures and temperatures) they don't need but may acquire AS NEEDED when the time is right. Rather than "infoboarding" our students maybe we could use institutional time to progress them from conscious unskilled performance through conscious skilled and maybe even to unconscious skilled performance[5]. Building a solid foundation makes for a sturdy house and building on an unprepared foundation requires a lot of future work and significant follow-on effort.

There are several ways training developers can help adjust training to just "the good stuff:"

- task consolidation
- managing acceptable levels of precision
- practicing proven instructional systems design principles
- improving responsiveness through process improvement
- crowdsourcing (gasp!)

Crowdsourcing, in reality, is involving the right subject matter experts from the field during task development. Technologies like Defense Connect Online allow people to participate in a synchronous, but geographically non-contiguous, environment – take part in the discussion from the comfort of your own home station! The easiest way to get involved is to register your qualifications and experiences in the Directorate of Training and Doctrine (DOTD) Subject Matter Expert Network by taking a short profile survey at https://www.us.army.mil/suite/page/691190.

The Right Level of Detail and Precision

Many times, human nature sees perfection as not being able to add anything else, i.e. – keep adding until you cannot add any more. Antoine de Saint-Exupery, an aviator and designer, said, "A designer knows he has achieved perfection not when there is nothing else to add, but when there is nothing left to take away."[7] We have seen this in action with mousetraps. Some "better mousetraps" really just do not work like the classic design. The design is at its irreducible level of complexity because if any part is removed, it no longer functions

– period. When adding information, we should follow the example of Toyota and ask "why" enough times until we receive a satisfactory answer.

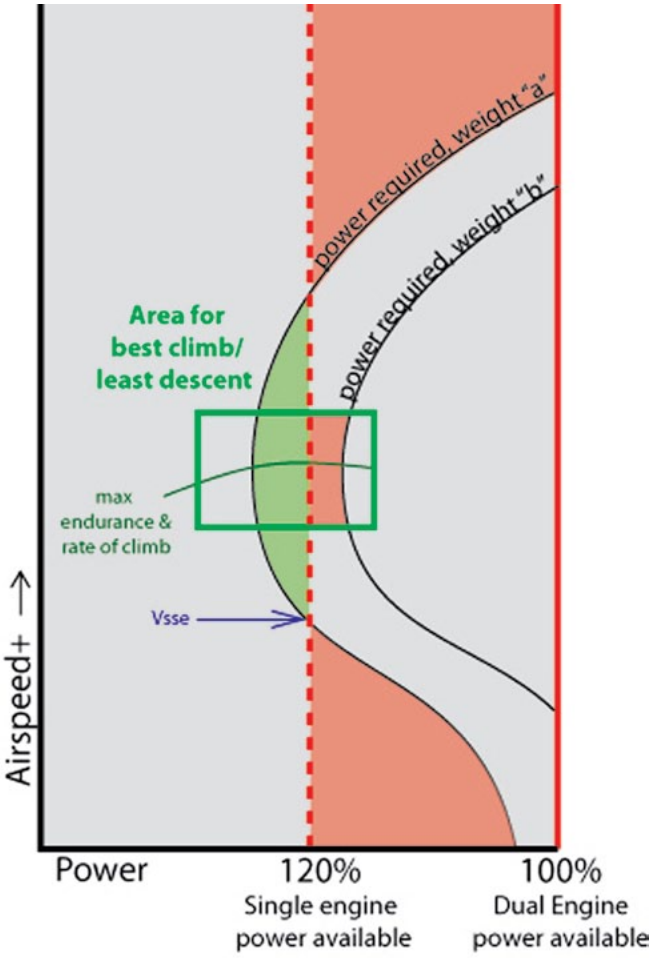
Even if we, as an enterprise, get our mousetraps (tasks) back to basics, the result will not achieve the desired effect of defragging the hard drive as long as people in the field insist on knowing the metallurgy of the hammer, the number of twists and dynamic tension in the spring, and other such material that proves "a depth of knowledge" about the mousetrap. Instead, training should focus on how to catch mice, not the engineering-level details of the tool used to accomplish the mission.

So what is the right level of precision? When do we need to measure with a micrometer? When is marking with chalk close enough? When is cutting with an axe appropriate? The answer to all of these questions is that it depends on the context. The idea of constantly working at the micrometer level is probably a little too precise considering that we operate heavier-than-air machines with six degrees of freedom in a dynamic gas.

For example, consider performance planning. Does the addition of flat plat drag for common missile warning system electro-optical missile sensors (hundredths of a square foot) really matter? Keep in mind that the performance planning calculation is a prediction that is rarely realized. The thin slice of time to which it would apply exists only for a few moments, if at all! Assuming that at exactly the moment we observe the performance we met the planned criteria, it will still not likely match exactly due to less than sterile conditions. That is not to say that there is no value in performance planning – it is important but equally important is how we approach it.

Look at one specific performance item: safe single engine airspeed (Vsse). The derivation of Vsse comes from a cruise chart that presupposes the aircraft is flying straight and level and out of ground effect. The approach to land requires descent – obviously requiring less than maximum power at Vsse. The termination and roll out is in ground effect – again, requiring less than maximum power at Vsse. The point is, how precise should numbers like Vsse be? The solution resides in mindset – why fret over a number that is a ballpark anyway? There are some parameters that one can and should look at – ones that matter. For example, the idea of adjusting to max endurance airspeed during a single engine failure works in any case. Max endurance airspeed is the best-case airspeed even when there is no single engine capability because it results in the least rate of (forced) descent.

Comparing power applied to power available is a close second. A quick comparison of flight profile to power applied will paint a picture of available options. Any time the pilot applies more than half of the max single engine torque available, he knows some adjustment to torque will be required (in terms of airspeed and or load and or landing area) should an engine failure occur. This all sounds like a detailed explanation of why we may not need details, but illustrates that a simple change in mindset can reduce the amount of time we spend looking for unnecessary precision. It is doubtful that anyone deciphers a numeric value of single engine airspeed during the onset of an engine failure anyway – and if it is computed, the figure is only a snapshot prediction. Marking with chalk is alright if we are cutting with an axe.



Typical Helicopter Cruise Chart
Shading denotes single engine power required compared to power available

Better Practices for Better Training

The two most important changes in the newly rewritten Training Circular (TC) 3-04.11 Commander's Aircrew Training Program For Individual, Crew, and Collective Training are the digital Aircrew Training Modules (dATM) and standardized tasks. The new manual includes other additions like integrating UAS into the aircrew training program, integrating Centralized Army Flight Records System digital Individual Aircrew Training Folder, a formal definition and limits on standardization communications, and establishing flight activity category four. For full details, see our videos at https://www.us.army.mil/suite/page/691190.

The dATM enables faster turnaround for the field by eliminating the formal, TC-based manual as a container for aircrew tasks. The last revision of the ATMs took an unacceptable average of 342 days each in the publishing queue following DOTD writing, staffing, and editing. The Army's Training and Doctrine Command dictates task writing and approval policy, which is completely separate from Army publishing requirements. In other words, putting tasks in a printed manual is wasted effort that only delays implementation since they are approved in a much faster process in digital format.

Each aircraft having its own separate tasks also creates waste and decreases standardization. The task inventory of legacy ATMs is over 1,000 tasks with about a 75 percent overlap of "common" tasks. The tasks that appear the same in multiple manuals are only the same in number and

title with only some similarities in content. This is a result of previous practices of developing tasks in "pure" communities. Aviators with multiple aircraft qualifications are presented different ways of doing the same numbered and titled task in each ATM. Imagine a qualification course in which the student can concentrate on aircraft and mission differences and be able to apply lessons learned across aircraft types while at the same time getting rid of the unjustifiable cobwebs of "we've always done it that way in this aircraft."

Several ways exist to decrease the cognitive load and increase human performance to realize better business (mission) outcomes. Redesigning our systems with operation in mind, focusing on what is important, and determining the right level of precision are all ways to increase human performance. Designing our training to the fundamental level and standardizing our training across the fleet, and building in responsiveness are some easy ways to "get after that low hanging fruit."

CW5 James R. Massey is currently assigned as the Chief, Flight Training Branch, Directorate of Training and Doctrine (DOTD). Previous assignments include battalion master gunner; brigade standardization instructor pilot; and Tactics Developer, DOTD. CW5 Massey deployed for Desert Storm, and Operation Enduring Freedom. He has 26 years' service. CW5 Massey is qualified in the UH-1, OH-58A/C, AH-64A, and the AH-64D.

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Acronym Reference

ATM – aircrew training manual
dATM – digital aircrew training manual
DOTD - Directorate of Training and Doctrine
TC – training circular
TTP – tactics, techniques, and procedures
UAS – unmanned aircraft system
Vsse – safe single engine airspeed

TRAINABILITY

SETTING THE CONDITIONS FOR FUTURE SUCCESS

By Wade B. Becnel

The recently released Combined Arms Center (CAC) publication, "The Human Dimension White Paper: A Framework for Optimizing Human Performance," notes that the U.S. faces a growing challenge of greater security uncertainty and operational complexity than at any time since the end of the Cold War. In decades past, our nation exploited its superior industrial base to maintain a decisive edge over any adversary. Since 9/11, the Army has rapidly fielded new systems to correct readiness gaps. These shortfalls were mostly identified through urgent operational need statements generated by commanders prosecuting combat missions. Unfortunately the rapid fielding of new technology to meet our warfighters' requirements did not provide for an equally viable training program to support the development and retention of user skills and knowledge.

While time constraints and urgency driven by ongoing combat operations have led to rapid system fielding, training development and our understanding of the training implications of new or modified systems often lagged behind. As a result, the increasingly sophisticated systems that have provided our Soldiers more information, power, and control have inadvertently created an increased training burden on our users. Instead of creating simplified operational processes or user friendly interfaces, these new systems have more complex learning requirements which only make the retention of user skills and knowledge more difficult. The absence of upfront training analysis has only increased the level of cognitive work necessary to operate our systems in today's complex operational environment. To answer the challenge of this new paradigm, the Army must invest, or perhaps reinvest, in its most valuable resource, its people.

While the Army must continue to invest in long-term technological and equipment solutions to address current gaps and future uncertainty, it must also invest in efforts to ensure our Soldiers can retain their skills and knowledge. People are our most agile and adaptive capability. While preserving a technological edge will remain important, developing better equipment without developing better people is an insufficient strategy to retain overmatch in the face of highly adaptive adversaries. By investing in effective training programs to enhance skill and knowledge retention, the Army will be capable of fielding a future force that maintains and exploits a decisive edge. Army leadership realizes that we cannot continue to field increasingly

complex systems that require near constant refresher training to sustain Soldier competencies for operations and maintenance. To close the gap between technical and cognitive superiority, the Army wants to ensure "trainability" is embraced as a key criterion in capability development efforts. So what is trainability? Trainability is the set of principles that simplifies system design so that Soldiers can easily learn and retain the knowledge to effectively operate the system without requiring frequent refresher training to meet training standards. The trainability and usability of a system is improved by reducing tasks, steps, and memorization requirements, as well as by providing job aids, performance support, and integrated training support.

Trainability describes the degree to which a system can be easily learned, operated, and sustained by the Soldier without frequent refresher training. The goal is to reduce the training burden placed on soldiers while increasing collective training time that is more focused on the "operational art" vice the "science." The trainability concept focuses on three distinct but interconnected attributes: learnability, usability, and skill/knowledge retainability.

• ***Learnability***: the ease with which a system may be learned by those who are expected to operate it. It is focused on the untrained Soldier who is gaining the skills and knowledge required to operate the system for the first time.

• ***Usability***: the ease with which a trained Soldier can operate the system to accomplish mission tasks.

• ***Skill/knowledge retainability***: the ease with which a Soldier can remember how to operate the system. It measures the retention of skills and knowledge over time.

Army senior leaders understand that a move towards trainability requires a corporate change in our approach to capability development; more specifically

in our Capability Development Document and Capability Production Document stages of the Joint Capabilities Integration Development System (JCIDS) process. The JCIDS requires designation of a Training Key Performance Parameter (KPP) for all potential Acquisition Category 1 programs and stipulates that a Training KPP shall be considered for all systems under development where one of the major components of the system is dependent on operators, maintainers, and leaders to be properly trained to fully utilize the capability of the system.

A recently approved white paper from CAC, endorsed by the Commanding General, Training and Doctrine Command (TRADOC), addresses the need for trainability being inclusive within the JCIDS process and recommends adding Trainability Criteria to the Training KPP in JCIDS. By formally expanding these training-centric considerations into JCIDS documents during solution identification and prior to system development and acquisition, the Army will ultimately improve Soldier readiness through more effective and efficient system training across the Army. This same CAC trainability white paper identified eight specific trainability criteria design characteristics (see table below) that must be considered early in the capability development process.

To validate this concept, TRADOC established a working group that conducted a proof of principle (PoP) that demonstrated the utility of incorporating trainability criteria early in the system design process. The PoP discovered that incorporation of trainability enhancements, if accomplished early in system development, resulted in significant savings to lifecycle training costs with no measurable increases to system hardware or software development costs.

Trainability Criteria Design Characteristics

Job & Memory Aids. System job and memory aids will enable the typical Soldier/operator to perform system tasks with little additional information or help to facilitate Soldier performance of required system tasks and minimize the need for recall. Job and memory aids will be written at a level that the expected Soldier user/operator can comprehend and will tell the Soldier more than just what to do but how to do it.

Simplicity. Major system tasks to set up and operate the system (not assisted by a job/memory aid). This criterion focuses on assessment of system tasks that the Soldier must memorize without step by step assistance (such as would be found in a checklist or similar aid).

Feedback Capability. A percentage of tasks provide built-in task performance feedback to the Soldier/operator to enhance skill retention. On computer-based systems, this feedback will include error prompts and instructions that are understandable to the expected user/operator.

Time Standards. A percentage of Soldiers/operators performing system tasks with a required time limit will be able to meet the standard under test conditions. This criterion requires an assessment of both the expected time standard associated with the task and the training time required for the average user/operator to attain this standard. The standards for task performance and training time allocated to the task will be system specific and will vary significantly by MOS and skill set identifier.

Maximum Retention. Soldier/operators retain knowledge of major system tasks (to standard and under test conditions) for at defined period of time after initial system training and without receiving refresher training. This criterion ensures that retainability is assessed prior to system fielding.

Minimize Memorization. Major system tasks require the Soldier/operator to memorize no more than a certain level of discrete facts, terms, names, rules or ideas in order to do the task. This requirement does not apply to fact, terms, etc. that are available to the Soldier/operator through job/memory aids. This criterion is focused on memorization requirements specific to the system under development.

Minimal Movement. Reduce the number of required motor movement demands for major system tasks so Soldier/operators will be able to meet system operation standards under test conditions.

Low Overhead. Reduce system training support requirements so that a percentage of major system tasks may be trained through an embedded system training capability or other low overhead training solutions.

The consensus of the PoP work group participants was that the notional changes to materiel solutions would be practical and effective if implemented early on in the capability development process.

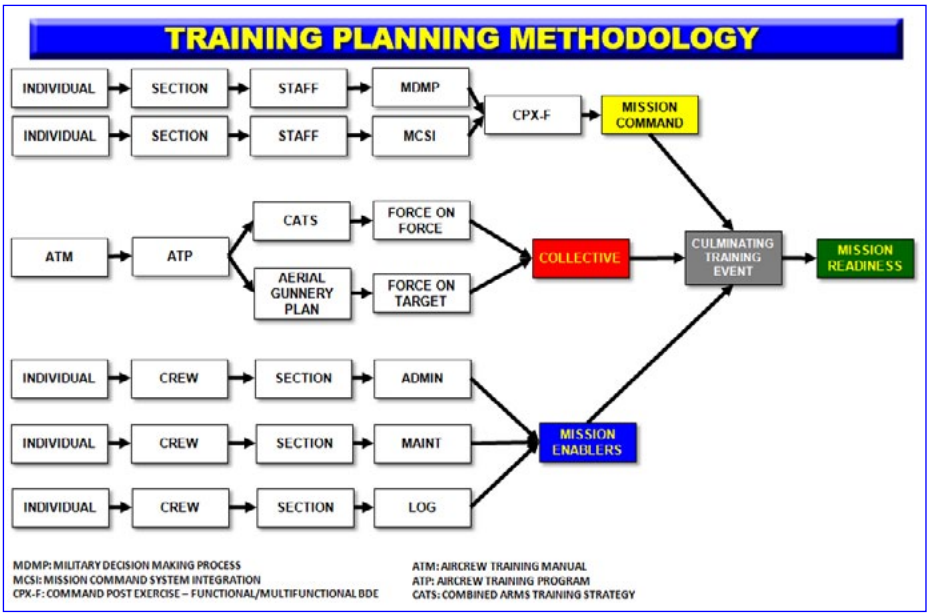
To start this cultural change process, the soon to be published TRADOC Regulation (TR) 71-20, "Concept Development, Capabilities Determination, and Capabilities Integration" will add the trainability consideration requirements. CAC-Training is currently evaluating all JCIDS documents that come through for review for their consideration of trainability and providing feedback as necessary to requirements writers through the worldwide staffing and validation process. While the trainability criteria shown on the previous page is currently not incorporated in the draft TR 71-20, it will be added to the TRADOC Writer's Guides after the new JCIDS manual is published.

Readers may be somewhat skeptical of this trainability "good idea piñata" and wonder what this long-term solution will do to mitigate their training challenges today. It will take time and effort to change the environment within the Army to address this challenge. To those leaders who are trying to overcome the complexity of training today with equipment that lacks trainability, the problem is as daunting as the proverbial "how do you eat an elephant?" Perhaps the traditional answer of "one bite at a time" can give us insights into how to address the lack of trainability in our systems today.

It may be that our trainability challenge is magnified because many of our junior and mid-level leaders don't appreciate or understand effective unit training management practices. Using the figure shown below (Training Planning Methodology), how many of our leaders today understand the progressive nature of training and the need for developing individual and unit skills and knowledge over time? In the near term, we have to build progressive training plans built upon realism, relevance, and repetition; the latter being a key factor in mitigating current trainability shortfalls. Using relevance to link the unit's key collective tasks to mission accomplishment and supporting training with realism will help define the amount of training repetition to achieve success.

Perhaps another factor in our trainability challenge is informational task saturation for our junior and mid-grade leaders. In today's ubiquitous digital environment, it seems that leaders at all levels are continuously disrupted by a constant barrage of superfluous administrative taskings or requests for information. While some of these taskings are essential or necessary, many are generated by some staff officers who believe they have the freedom to bypass normal staffing protocols to gather data. While an admirable concept, this unnecessary information overload only detracts from mission focus. Senior commanders have to protect their key subordinate leaders' time and attention so the training plan can be conducted to the required standard.

There is no quick fix for today's dilemma of inadequate trainability in our modern systems. The best answer, albeit longest to achieve, is changing our overall capability development process. An essential first step forward is to recognize and embrace trainability as a critical factor. While the Army works this strategic readiness challenge, it is incumbent upon today's leaders to employ innovative training plans to overcome current task challenges. We can start to mitigate some of these trainability shortfalls but it will require a keen focus on our unit training program that employs a commonly understood and enforced plan, prepare, execute, and review methodology.



Mr. Wade Becnel (Colonel, Retired) is currently the Deputy Director for the Directorate of Simulation (DOS) at Fort Rucker. He has served in variety of functions within aviation units worldwide to include Company Commander and Battalion S-3, 10th Mountain Division (Light); Squadron Executive Officer and Aviation Brigade S-3, 24th Infantry Division (Mechanized); and Commander 1-145th Aviation Regiment, Fort Rucker, AL. As a Simulation Operations Officer, Mr. Becnel was the Commander of the USAREUR/USAFE Warrior Preparation Center in Germany and Director of the Army War College Strategic Experiential Education Group responsible for the integration of simulations to enhance the war college's experiential education curriculum. He established the Commander's Initiative Group prior to assuming duties as the DOS Deputy Director

1 Combined Arms Center, "The Human Dimension White Paper," 9 October 2014, page iii.
2 FINAL DRAFT TRADOC Regulation 71-20, "Concept Development, Capabilities Determination, and Capabilities Integration."
3 TRADOC White Paper, "Incorporating Trainability Criteria into the Training KPP in JCIDS Documents, 19 April 2013
4 JCIDS Manual, Page: B-G-1 Appendix G to Enclosure B [Para 2.b], January 19, 2012.
5 CAC-T Trainability Proof of Principle - Final Report, undated.

Acronym Reference

CAC - Combined Arms Center
JCIDS - Joint Capabilities Integration Development System
KPP - key performance parameter
PoP - proof of performance
TR - TRADOC Regulation
TRADOC -Training and Doctrine Command

Unburden Aviators with Available Technology

In order to avoid mishaps, pilots aviate, navigate, and communicate in that order. When pilots do not spend sufficient time attending to the "aviate" task and devote too much attention to the "navigate" and "communicate," tasks they are setting themselves up for a loss of situation awareness, which can cause a mishap.

By MAJ Sandra Van Horn,
Dr. Ben Lawson, and
Dr. Angus Rupert

The term "situation awareness" was coined during World War II to describe the pilot aviation task and to connote that the pilot has an accurate mental model of his environment and situation at the present time and into the immediate future. However, it is difficult to maintain situational awareness when one is engaged in a high workload situation. For this reason, the attitude indicator is in the central portion of the instrument cluster since it is the instrument referred to most often in order to maintain spatial orientation. To update their attitude under dynamic flight conditions, pilots frequently scan their instruments and the outside horizon. Unfortunately, this limits attentional capacity for other aspects of situation awareness in flight such as those directly related to the mission at hand.

This is especially true in situations of decreased visibility and increased workload, during which the visual system fails to relay the true attitude of the aircraft accurately and the brain must rely upon vestibular and skin-muscle-joint systems that are providing false information concerning the "down" direction. Hence, it takes little time for the aircraft to drift into an attitude from which the pilot cannot recover or to collide with the ground before the pilot is aware of his unsafe attitude/altitude. Even with new visual display technologies and increased pilot training, mishaps involving spatial disorientation (SD) and controlled flight into terrain continue due, in part, to visual distraction. A United States Army Aeromedical Research Laboratory (USAARL) survey of U.S. Army helicopter accidents by Col. Malcolm Braithwaite et al.,[1] spanning 1987-1995, found that the number of accidents due to SD had not decreased when compared to previous years. A 2011 study by Col. Randy Gibb, U.S. Air Force Academy, summarized a review of 30 research studies and 10 mishap cases by stating, "[A]lmost three decades later, the aviation community has still not substantially reduced the likelihood of SD-related mishaps."[2]

In the lead article of this issue, LTC Josh Sauls asked, "Why are we not unburdening our aviators?" He continues by saying we have the opportunity to embrace new technology that can reduce pilot workload because "today's aircraft are so technologically advanced that they can and will provide vast amounts of information to the pilot that formerly had to be committed to memory."

Possible solutions to the SD dilemma include automation, better flight laws, or betterment of the human-machine interface to provide continuous veridical flight parameters not dependent upon gaze, thus allowing the pilot to perform flight tasks intuitively and devote more visual attention to military mission-related tasks. One such technology is the Tactile Situation Awareness System (TSAS), which received positive reviews in the June 2014 issue of *Flight Fax*, by Jon Dickinson, Aviation Directorate, United States Army Combat Readiness Center.[3] The TSAS uses the sense of touch to provide situation awareness information. Vibrating tactors located in the seat, shoulder straps, and a belt worn by the pilot provide tactile cueing of attitude, velocity and altitude information. Pilots experience this tactile feedback through patterns of varying vibrations producing buzzing sensations in various locations along the belt, seat, and shoulder harness. Once familiarized with the system, pilots are more able to attend to other visual tasks because they can intuitively and non-visually perform the basic skills of aviating, thus increasing situation awareness and reducing mental stress and workload (according to USAARL 2012 experiment by Dr. Amanda Kelley and colleagues).[4] Another study conducted at USAARL by Col. Ian Curry and colleagues indicated that even after 31 hours of sleep deprivation, pilots were better able to control drift during takeoff and hovering tasks with the TSAS belt than without it.[5] The pilots reported a substantial decrease in visual and physical workload with the belt.

In Dr. Amanda Kelley's 2012 study, the USACRC/Safety Center asked five independent mishap investigators to review all Class "A" Army flight mishaps from 1992 to 2010 (330 mishaps). These highly experienced investigators had an

average of 3600 hours of military flight time. Each investigator received a full TSAS demonstration in USAARL's UH-60 flight simulator to familiarize them with the technology. The investigators determined that TSAS technology could have prevented 24% of the studied mishaps, resulting in a total cost savings of $730 million. Most importantly, the use of such a technology could have saved 63 lives.

Modern cockpit design is intended to reduce crew workload. While this may be the case, the "free time" provided by modern technology is quickly consumed by a multitude of intense additional mission tasks that take away from the business of flying resulting in lapses of momentary attention, spatial disorientation, and the inevitable accident. The USAARL and industry recognize the need for advanced equipment to unburden pilots, improve situational awareness, and eliminate fatal aircraft mishaps caused by SD. The TSAS is just one example of emerging technologies that can allow pilots to better aviate and focus on the mission, thus saving lives and money.

MAJ Sandra Van Horn, MC, USA, is the Chief Research Physician at the USAARL Aircrew Health and Performance Division. She has 6 years of active duty Army service with former duty assignments at Tripler Army Medical Center (TAMC) as psychiatry resident-in-training, then at the TAMC Department of Clinical Investigations. Past research and publications include subject areas such as technology's role in behavioral health efforts, biofeedback for pain control, and the comparison of interactive technologies with standard technologies for behavioral modification (e.g., virtual reality, video games). She is currently involved with research protocols that aim to improve pilot safety, as well as the detection of balance disorders, through new technologies at USAARL.

Ben Lawson's education includes a B.S. in Biological Psychology from the University of California at Davis, and Ph.D. in Experimental Psychology from Brandeis University. He has carried out full-time research with the Department of Defense since the early 1990s, executing projects in the laboratory, at sea, and during flight. His interests include spatial orientation, balance, motion sickness, cognitive performance, human factors, pharmacological countermeasures, and mishap evaluation. Dr. Lawson has done research in support of the needs of the U.S. Army, Navy, the Marine Corps, Special Operations Command, Pentagon, and the National Aeronautics and Space Administration (NASA). In addition to his government job, Dr. Lawson has served as an Adjunct Professor at three universities, in departments of Military Medicine, Aeronautical Human Factors, and Applied Psychology. He has served also on Editorial and Advisory Boards for one journal, two books, and three annual symposia. During his last five years of employment with the Army, Dr. Lawson has contributed approximately 25 publications.

Following a Ph.D. in neurophysiology from the University of Illinois and MD from University of Toronto, Dr. Angus Rupert joined the U.S. Navy in 1985. He served operationally as a Navy flight surgeon in the Azores before joining the Naval Aerospace Medical Research Laboratory. He developed programs to explore the vestibular psychophysics and neurophysiological responses to unusual acceleration experienced by pilots, astronauts, and operators of high performance military platforms. In 1993, he served as a military detailee to the National Aeronautics and Space Administration, Johnson Space Center, to develop countermeasures to sensory motor problems, including spatial disorientation and space motion sickness, as encountered by astronauts. He invented the Tactile Situation Awareness System (TSAS) as a device to reduce the incidence of spatial disorientation mishaps and to enhance the performance of pilots, astronauts, and divers. In 2008, CAPT Rupert retired from the Navy to join the U.S. Army Aeromedical Research Laboratory where he continues to develop practical solutions to the problems faced by personnel operating in sensory deprived or altered environments.

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Acronym Reference

SD - spatial disorientation
TSAS - Tactile Situational Awareness System
USAARL - United States Army Aeromedical Research Laboratory

Another Milestone—

ATM AIRCREW TRAINING MANUALS

TC 1-134, Commander's Guide for Utilization of the ATM's
TC 1-135, ATM, Utility Helicopter
TC 1-135-1, ATM Utility Helicopter (UH-60) Draft
TC 1-136, ATM Attack Helicopter
TC 1-137, ATM Observation Helicopter; Scout Helicopter
TC 1-139, ATM Cargo Helicopter
TC 1-144, ATM Surveillance Airplane
TC 1-145, ATM Utility Airplane

Major Ronald K. Lovejoy and **William N. Presley, DAC**
Directorate of Training Developments
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AFTER 4 YEARS of coordination, draft publications, errata sheets and in-process reviews, the aircrew training manuals (ATMs) are in the final stages of production. The manuals are scheduled to be fielded in Department of the Army (DA) print through pinpoint distribution by mid-fiscal year (FY) 1981. Before launching into a brief summary of the ATMs, it may be helpful to discuss their historical development.

• With the introduction of the Aviation Career Incentive Act of 1974, Congress and the General Accounting Office made it clear that only through well-planned justification would the Army's flying hour program funding be acceptable. In June 1976 the Comptroller General of the United States submitted a report to Congress entitled "Flying Hour Programs of the Military Services: Opportunities for Improved Management." The Army received the most criticism because it was unable to defend its flying hour program as well as the other services, who were able to show a definitive program that carried the aviator through qualification, mission and continuation training with specific tasks being required in each phase of training. The Army, on the other hand, could only point to a flying hour program that required 80 hours for each aviator and could not satisfactorily explain how and to what benefit these hours were being used. As if to reinforce that report, the Army's flying hour program budget was cut in 1976 and again in 1977.

• As a result of the Comptroller General's report, the Vice Chief of Staff of the Army directed the formation of a task force to develop a flying hour program structured around readiness. A task force from the Army Training and Doctrine Command was created in late 1976 to formulate and write the first draft aircrew training manuals. The initial philosophy was that individual aviators should be given that amount of training required to bring them to a predetermined level of readiness and then to sustain them at that level—no more, no less. With the philosophy established, the task force set out to:

✔ establish specific annual training criteria;
✔ establish tasks for individual aviators by type aircraft; and
✔ define annual training requirements and relate each to flying hours.

• The first draft aircrew training manuals, effective October 1977, became the basic training documents for Army aviators. These manuals identified tasks, conditions and standards for the training and evaluation of the aviator force. They also were to be used in conjunction with the Army Training and Evaluation Program (ARTEP) and unit collective training programs as a systematic training management tool for the commander.

• Although readiness was addressed in the first edition of the ATMs, no method was established to quantify readiness and equate it to a unit readiness rating. To correct this serious shortcoming, the next draft edition, effective in October 1978, included a definite method for equating individual aviator training with aviation unit readiness. By assessing the training

status of all aviators assigned to their units, commanders could apply a formula to compute both the aviator's and unit's combat readiness rating.

The readiness of aviators to engage in battle depends largely on their self-confidence and faith in their comrades. This confidence can only be gained through realistic training. For instance, an aviator sitting at the controls of an aircraft for a given number of hours only to meet an hour requirement provides very little in terms of training value and aviator readiness. It is vital that aviators train like they fight and fight like they train. This realistic training in pursuit of an established training goal can enhance aviation readiness. Aviation is expensive, and it is therefore imperative for the Army to show where and why aviation training dollars are being spent. The ATMs attempt to achieve the best of both worlds—combat-ready aviators at the lowest cost—by mandating flying hour requirements, tasks to be practiced and the required frequency of task iteration. While portions of the program are mandated, sufficient flexibility to permit commanders to develop training programs tailored to their units' specific needs has been incorporated.

The current family of ATMs consists of the following publications:

TC 1-134, "Commander's Guide for Utilization of the Aircrew Training Manuals"

TC 1-135, "ATM, Utility Helicopter"

TC 1-135-1, "ATM Utility Helicopter (UH-60) (draft)"

TC 1-136, "ATM Attack Helicopter"

TC 1-137, "ATM Observation Helicopter; Scout Helicopter"

TC 1-139, "ATM Cargo Helicopter"

TC 1-144, "ATM Surveillance Airplane"

TC 1-145, "ATM Utility Airplane"

The final version of the ATMs has been revised to address many of the unanswered questions from the draft publications. For example, if an aviator is assigned duties in both a rotary and fixed wing aircraft, what are the flight requirements in each aircraft? What are the requirements (hours and iterations) for aviators in refresher or mission training? What happens if an aviator does not complete the semiannual flight hour requirements but does complete the task list? By having a one-source document at their disposal which addresses these problems, much of the frustration commanders and aviators have experienced should be eliminated. Together the individual aircraft ATMs and Commander's Guide for Utilization of ATMs form a solid basis for a complete system of training in which the maintenance of individual proficiency is the foundation, focus and driving force.

Specific requirements have been established within the ATMs for the qualification, refresher, mission and continuation training phases. Time constraints for progression of the individual aviator between the training phases are 90 days for active Army aviators while Reserve Component aviators are given 1 year. Recognizing that unusual circumstances may preclude meeting established time limits, waiver authority is given the major Army commands (MACOM) to adjust the requirements on a case-by-case basis. Specific task and flight hour requirements are also established for each phase of training. The program is given impact by the fact that unit readiness reporting for training is tied to the number of aviators who have completed the required training and are maintaining proficiency in the continuation phase of training. In this phase, specific semiannual tasks, flight hours and iterations of tasks are established. The performance of these tasks is recorded on the ATM training record which is maintained as a basis for the commander's certification that the individual aviator has completed the required training and evaluations. The evaluation requirements of the Aviator Annual Proficiency and Readiness Test (AAPART) constitute in effect an SQT (skill qualification test) for aviators. The AAPART includes a written examination, physical examination and hands-on performance test administered by the unit's instrument flight examiner (IFE), standardization instructor pilot (SIP) or instructor pilot (IP), and a commander's certification. Because of the presence of the IFE, SIP/IP in the unit, the AAPART is administered at the unit level. Mandatory evaluation tasks are established by the ATM; however, commanders are encouraged to select additional tasks for evaluation from the task list appropriate for their units. Because the program is administered at the unit level, it allows for local variations in terrain, weather, geographical location and unit mission. Successful completion of the AAPART is required by Army regulation for the aviator to retain flight status.

Because of the diversity of aviation unit missions and individual aviator duty positions throughout the Army, training requirements were further defined by Flight Activity Category (FAC) which defines the duty position. FAC 1 aviators perform combat, combat support or combat service support missions. FAC 2 aviators are maintaining basic flight skills. The continuation training program for the individual aviator is predicated on the FAC, which in turn establishes the flight hours and task requirements.

The adverse effects that personnel turbulence has on training are reduced by the Armywide standardization in the ATM program. Aviators trained to the same standard on identical tasks are more capable of moving from one command to another with minimal adjustment in skills. Standardization and quality assurance are provided by the unit's school training and/or certified instructor pilots monitoring the training and conducting flight evaluations. Standardization and quality assurance are further enhanced by the Army Aviation Center's Directorate of Evaluation and Standardization (DES) through its conduct of evaluation/assistance visits to MACOMs and subordinate commands. Many times these visits are in support of the

continued on page 13

continued from page 3

MACOMs' aviation resources management survey team visits.

As costs of flying today's complex aircraft rise, it becomes more important to ensure each training dollar is invested wisely. To this end, the ATMs require units to achieve a high degree of integration of collective and individual training. In fact, all individual training required by the ATM, except those high risk emergency procedures, can be accomplished during collective training and mission support flying.

Flying Hour Program. The ATM also serves as the basic document for developing the Army's Flying Hour Program (FHP). It is developed annually starting at the aviation unit level and progresses through each succeeding command to Headquarters DA. The FHP consists of the number of hours necessary for each aviator and type aircraft in the Army inventory. These hours are related to operational and maintenance costs and are used by the DA staff in preparing budget and logistical estimates.

Each unit commander possessing aircraft must formulate a workable flying hour program necessary to accomplish training and mission support. As commanders begin the initial preparation of the FHP, they consider the following:

- Average number of aviators authorized/assigned.
- Annual aviator personnel turnover.
- Aviation mission support their units will be expected to provide.
- Number of hours necessary for maintenance.

Actual computations of flying hours required for training are relative to the number of assigned aviators. The total number of training hours required for each aviator, based on each phase of training, is listed in the specific ATM related to the aircraft mission.

In units where a synthetic flight training system (SFTS) is available for training, commanders must substitute the SFTS hours for aircraft flying hours.

The ATMs also recognize that not all aviators require equal amounts of training to maintain proficiency. Experienced aviators may require fewer hours to maintain proficiency than aviators with limited experience. They also may be able to achieve acceptable proficiency in the required tasks more quickly. Therefore, the commander may on a case-by-case basis adjust the mandatory flying hour requirements by reducing up to 15 percent for experienced FAC 1 aviators and transferring those hours to other aviation training or mission support requirements. The ATMs do not provide guidelines here; criteria for these adjustments are the commander's prerogative. However, the task iteration levels are not proportionally reduced; and the unit's flying hour program will remain unchanged.

While another milestone in the development of the ATMs has been met, new developments in hardware, training and employment doctrine will necessitate future revisions, all with the aim to make the ATMs the best training publications available. To accomplish this, users' comments and recommendations are not only welcomed, they are essential. Those can be forwarded to Commander, U.S. Army Aviation Center, ATTN: ATZQ-TD-TL-DS, Ft. Rucker, AL 36362.

Administrative Note. Pinpoint distribution of the revised ATMs is scheduled to be completed by the end of FY 1981(2Q). TCs 1-134, 1-139, 1-144 and 1-145 should be distributed during FY 1981(1Q) and TCs 1-135, 1-136 and 1-137 during FY 1981(2Q). Units should take immediate steps to ensure sufficient copies of the new ATMs are received. Specifically, update DA Form 12-11A, Requirements for Army Doctrinal Publications, Quantity Requirement Block 8.

As previously noted, TC 1-134, "The Commander's Guide," is scheduled to be distributed prior to revised TCs 1-135, 1-136 and 1-137. As such, the administrative instructions in the revised TC 1-134 will effectively supersede like instructions in the second draft TCs 1-135, 1-136 and 1-137.

TURNING PAGES

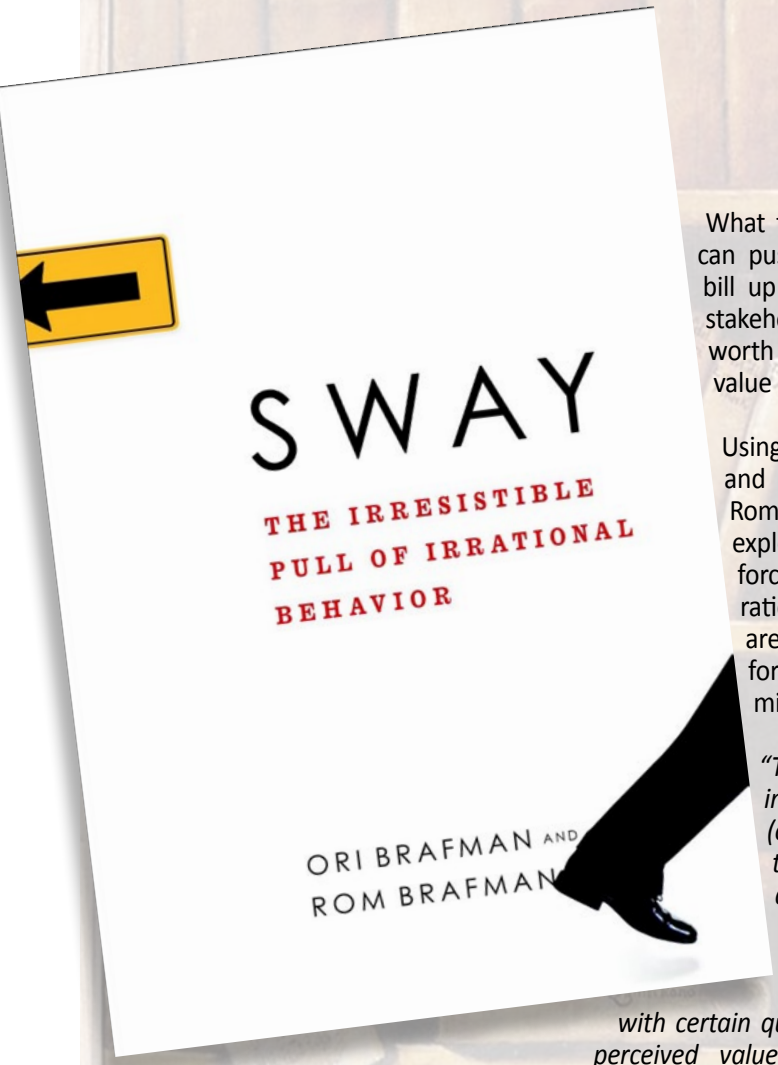
~ book reviews of interest to the aviation professional

Sway:

The Irresistible Pull of Irrational Behavior.

By Ori Brafman and Rom Brafman. New York: The Doubleday Publishing Group, a division of Random House, Inc., 2009. Available in hardcover, paperback, and Kindle formats at http://www.amazon.com/Sway-Irresistible-Pull-Irrational-Behavior/dp/0385530609. 206 pp.

A book review by MAJ Jason A. King



On March 27th, 1977 at Los Rodeos Airport in the Tenerife Canary Islands, the pilot of KLM Flight 4805 collided with Pan Am flight 1736 killing 583 people. What caused the Captain (a seasoned pilot and the Safety Officer for the airline) to make a fatal error?

Why did the French audience of "Who Wants to be a Millionaire" intentionally mislead a game contestant when he used his lifeline? What shared value is it that makes groups unite with no overt collaboration?

What force of human nature can push the value of a $20 bill up to $200 even though stakeholders know it's only worth $20? Where does value really come from?

Using the above illustrations and many more, Ori and Rom Brafman expertly explore the psychological forces that overturn rational thinking, why we are susceptible to these forces, and how we can mitigate their pull.

"These hidden forces include loss aversion (our tendency to go to great lengths to avoid possible losses), value attribution (our inclination to imbue a person or thing with certain qualities based on initial perceived value), and the diagnosis bias (our blindness to all evidence that contradicts our initial assessment of a person or a situation)."
- Ori and Rom Brafman

The goal of proposed changes in the Army aviation training philosophy is to leverage technology so pilots can more rapidly ascend the levels of learning from rote memorization to full correlation. As Army aviation leadership researches the potential of these training philosophies, there will be conflict and constructive criticism within the generating and operating forces. The concepts carefully illustrated by the Brafman brothers have current and relevant application to opinions on the recommended changes. The first step in leveraging technology is to ensure we are making the right changes.

To do so, "Sway" would have us ask a few questions. What elements of the Army aviation training culture are valued most? How hard have organizations and individuals worked to attain excellence within these training requirements? The answers to these questions will give leaders an indication of the level of loss aversion they will encounter from the force. To circumvent the aversion to loss, we must make a conscious effort to set aside the hubris associated with accomplished excellence. Then, as a force we will be able to ascertain the current value of each individual training requirement, determine if the assumptions supporting those requirements are valid, identify where technology can be leveraged, and assess new values accordingly.

As changes are recommended and deliberated, all stake holders must be aware of and internally assess the forces of loss aversion, value attribution, and diagnosis bias. Marginal conflict is good and preferred within any organization but failure to have awareness of the forces outlined above inadvertently leads to subversive behavior that contributes to delays, poor use of intellectual capital, wasted financial resource, and in extreme cases, the loss of life. In short, to resist the pull of irrational behavior Army aviation must acknowledge the past, accurately assess the present, and leverage the future.

Aviation Digest 2014 Article Of The Year

We hope that the Aviation Digest is providing you with information that is informative and insightful. Without the contributions of the Aviation Digest's authors, you would have one less resource to learn from and one less opportunity to not repeat the errors of others. If our authors did not take time to share their thoughts and experiences, the Aviation Digest wouldn't exist as Army Aviation's Professional Bulletin.

With this in mind, MG Michael D. Lundy, Commanding General (CG), United States Army Aviation Center of Excellence acknowledges each author's contribution with a Certificate of Appreciation and a printed copy of the Aviation Digest containing the author's article. The Certificate of Appreciation represents our token of thanks for sharing your professional thoughts and ideas with Army Aviation.

At the end of each year, the Aviation Digest Editorial Review Board, reviews all articles from the year's four issues and selects three articles that are forwarded to the CG for selection of one as the Aviation Digest Annual Writing Award. The CG is not restricted to the three selected by the Editorial Review Board and may select any other article he deems more qualified. The author of the article selected will receive a Certificate of Appreciation annotating his article as the Aviation Digest Article of the Year and a coin from the CG.

The author selected for the 2014 Aviation Digest Annual Writing Award is: LTC Scott Halter, author of "*Developing Adaptive Air Mission Commanders*", published in Volume 2/Issue 2, 2014 (April-June 2014, pg. 35).

Congratulations LTC Halter!

What criteria are used to make selection of an article for the Aviation Digest Article of the Year?

The Aviation Digest Editorial Review Board uses these three criteria.

(Note that none of the criteria indicate a requirement to be a professional writer. The Aviation Digest staff will wear the internet pipeline out working an article back and forth with a contributor to insure the presentation is as good as we are collectively able to prepare.)

Does the article have a purpose?

- Has the author identified an issue within the Aviation branch requiring command attention/action to improve existing procedures or operations?
- Has the author recommended revised TTP for commonly accepted operational practices that simplify and increase efficiencies?
- Has the author presented an article that improves audience knowledge of doctrine or other established operational procedures?
- Has the author related an experience that others may benefit professionally or potentially prevent an aircraft accident?

Does the author present researched, factual information to support the article?

- Has the Author recommended a realistic solution to remedy or improve those conditions causing a perceived deficiency?
- Has the author presented a discussion based on facts and not suppositions, generalizations, or vague innuendoes?

Does the author present his article as an organized discussion – introduction to the issue, background information, and meaningful presentation of discussion points, summary, conclusion?

- Was the article easy to read and follow the discussion points?
- Did you understand the author's message?

On a wreath of the colors argent and azure issuant from a wreath of rice or and palm vert tied of the second demi-dragon gules.

The oriental dragon symbolizes the units wartime service in Vietnam and participation in eleven campaigns. Red refers to the Meritorious Unit Commendation: the rice alludes to the Republic of Vietnam Civil Action Honor Medal, and the palm represents the awards of the Republic of Vietnam Cross of Gallantry with Palm.

A gold color metal and enamel device 1 1/8 inches (2.86 cm) in height overall consisting of a shield blazoned: Per fess nebuly azure and argent and per chevron counterchanged, in chief a pair of wings elevated and displayed or. Attached below the shield a gold motto scroll inscribed "VIGILANTIA AETERNA" in blue letters.

Ultramarine blue is traditionally associated with aviation units. The curved nebuly partition line is a heraldic representation of clouds. The triangular edge rising above the line stands for Mount Rainier with its peak above the clouds. Mount Rainier is a landmark of the unit's place of activation. The golden eagle's wings above the peak and clouds refer to the unit's aviation function. The motto translates to "Eternal Vigilance."

The distinctive unit insignia was originally approved for the 4th Aviation Battalion on 15 November 1963. It was rescinded on 8 July 1976. It was reinstated on 15 May 1980. It was amended to change the color of the shield on 15 May 1980. The insignia was redesignated for the 4th Aviation Regiment with the description revised on 10 July 1987.

4TH COMBAT AVIATION BRIGADE

The 4th Aviation Company was activated on 1 April 1957 and assigned to the 4th Infantry Division, Fort Lewis Washington. It was reorganized and redesignated as Headquarters and Headquarters Company, 4th Aviation Battalion on 1 October 1963.

The 4th Aviation Battalion deployed to the Republic of Vietnam in September 1966 where it established its base of operations at Dragon Mountain (later renamed as Camp Enari) near Pleiku in Military Region II in support of the 4th Infantry Division. The battalion relocated to An Khe in 1970 and remained there until redeployment to Fort Lewis, Washington in December 1970. The unit was inactivated on 4 December, 1970.

The unit was reactivated on 21 November 1972 and redesignated as Aviation Company, 4th Infantry Division at Fort Carson, Colorado. It was reorganized and redesignated on 17 March 1980 as Headquarters and Headquarters Company, 4th Aviation Battalion and reorganized and redesignated again on 16 August 1987 as 4th Aviation Regiment. In 1995, the 4th Aviation Regiment was relocated to Fort Hood, Texas with the 4th Infantry Division.

While assigned at Fort Hood, the Combat Aviation Brigade, 4th Infantry Division deployed in 2005 and 2008 in support of Iraqi Freedom and deployed in support of Operation Enduring Freedom in 2010.

The 4th Combat Aviation Brigade was inactivated on 1 September 2011 at Fort Hood and initially intended to be reactivated as Combat Aviation Brigade, 1st Armored Division at Fort Bliss, Texas. A subsequent decision was made to reform the brigade under the 4th Infantry Division where it was reactivated on 2 July 2013 at Fort Carson, Colorado.

Campaign Participation Credit

Vietnam
Counteroffensive, Phase II
Counteroffensive, Phase III
Tet Counteroffensive
Counteroffensive, Phase IV
Counteroffensive, Phase V
Counteroffensive, Phase VI
Tet69/Counteroffensive, Summer-Fall 1969
Counteroffensive, Winter-Spring 1970
Sanctuary Counteroffensive
Counteroffensive, Phase VII

Iraq
War on Terrorism.

Decorations

Meritorious Unit Commendation (Army), Streamer embroidered VIETNAM 1967-1968
Meritorious Unit Commendation (Army), Streamer embroidered IRAQ 2005 - 2006
Meritorious Unit Commendation (Army), Streamer embroidered IRAQ 2008 – 2009
Valorous Unit Award, Streamer embroidered AFGHANISTAN 2010 - 2011
Army Superior Unit Award, Streamer embroidered 1996 – 1997
Republic of Vietnam Cross of Gallantry with Palm, Streamer embroidered VIETNAM 1966 – 1969
Republic of Vietnam Cross of Gallantry with Palm, Streamer embroidered VIETNAM 1969 – 1970
Republic of Vietnam Civil Action Honor Medal, First Class, Streamer embroidered VIETNAM 1969 - 1970

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Directorate of Training
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Look For The April - June, 2015 Issue:

Our Featured Focus Will Be on

Joint Operations .....

... and Much, More

Featured Topics In 2015 Issues-

July - September 2015: *Airspace and Airfield Management*

October - December 2015: *Multi-National Operations and Interoperability*

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