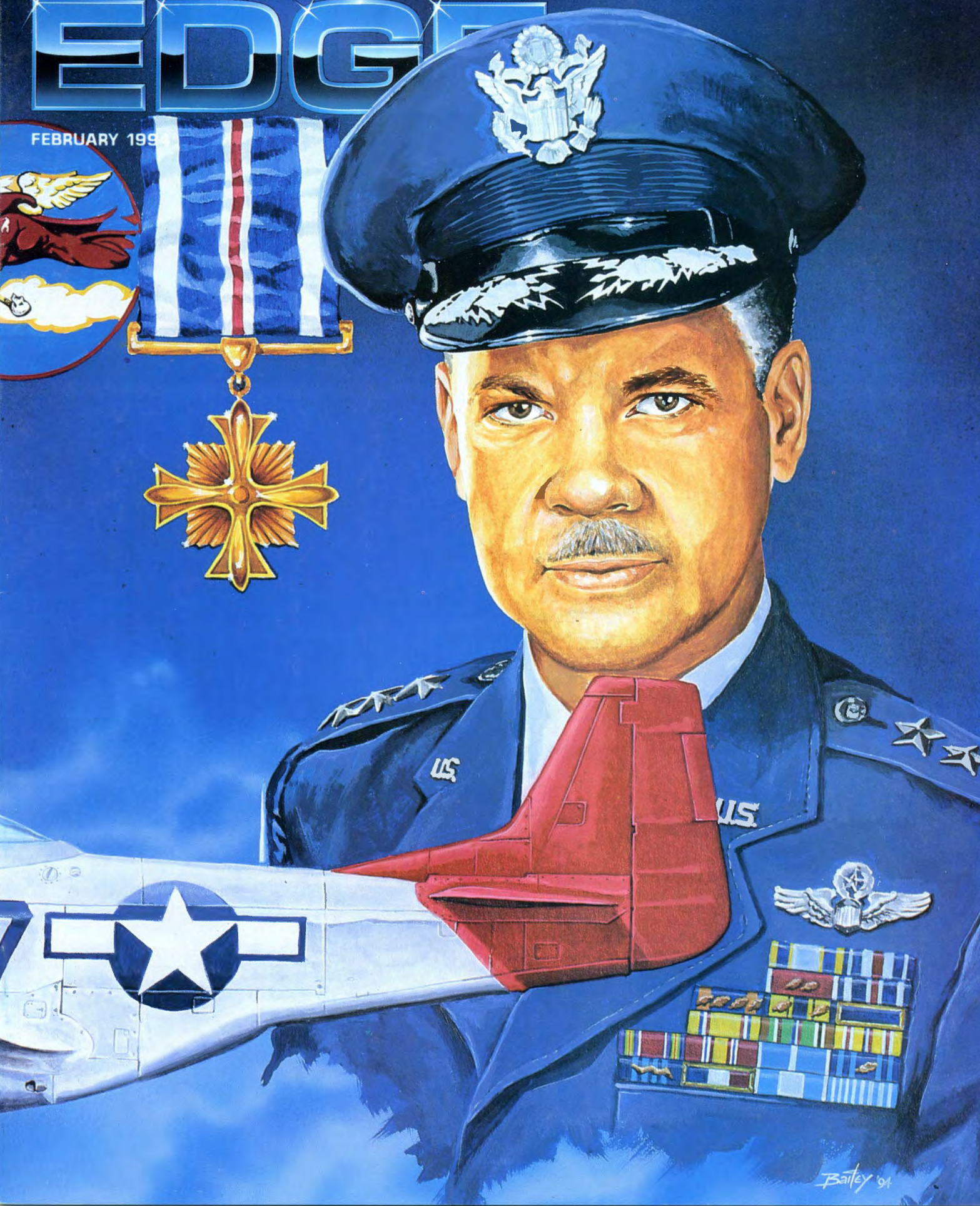


THE COMBAT EDGE

FEBRUARY 1994

the combat edge
February 1994



Bailey '94



Gen John M. Loh
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THE COMBAT EDGE

Air Combat Command
Safety Magazine

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AN OUNCE OF PREVENTION

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HQ ACC/SG
Langley AFB VA

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CREW COORDINATION IN THE 2-SEAT FIGHTER:

The Human Factors community defines "liveware" simply as the human in the cockpit, as opposed to the hardware, software, and environmental components of human factors. The "liveware - liveware" interface addresses crew teamwork, group functions, group influences, and behavior.

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ABOUT THE COVER

The February cover is a tribute to a black aviator, Lt General Benjamin O. Davis, Jr. (Ret). General Davis was commander of the 332 nd Fighter Group from 1943-1945. On June 9, 1944, the 332 nd escorted B-24s to bomb targets in Munich, Germany. That day, with General Davis leading, the 332 nd took on more than 100 German fighters, destroying five Me-109s and damaging another. General Davis earned the Distinguished Flying Cross for his leadership and bravery during this mission.

FEB 94

ACC SP 127-1 VOLUME 2 ISSUE 9

ACCENT on Safety

First, congratulations on a noteworthy safety performance over the Christmas and New Years Holidays! ACC was virtually mishap free in all disciplines -- a truly superb effort on the part of all personnel, supervisors and workers alike. As I said in last month's article, we're entering the winter "dark ages" where depression, malaise, and give-a-care attitudes can take hold. We all need to be alert for the signs of attitude shifts in our friends and subordinates. "We Care" should be more than the title of one of our important people programs in safety it should be a cultural attitude that permeates us all!

To continue our drive to get more proactive in our mishap prevention efforts, the Command is institutionalizing the Safety Day program. I'm pleased to announce that General Loh has approved two Safety Days per year -- one in May just prior to the start of the 101 Critical Days of Summer, and a second Safety Day in September at the close of the fiscal year. Both of these days will contain a theme this year and in the years to come; however, they will also contain enough flexibility to allow commanders in the field to tailor them to the needs of their units. We're already hard at work on the May Safety Day -- much more to follow shortly!

Finally, we've published our Command Safety objectives for FY 94 and I wanted to provide a Stakeholders' Report on how we are doing thus far with one fiscal quarter already past. In the Flight arena, we set very tough objectives of an overall mishap rate of less than 1.6 (mishaps per 100,000 flight hours) and a command-control (read that someone could have stepped in and broken the chain) rate of less than 1.0. Thus far, our overall rate is 1.3 and our command-control rate is 0.7. In the Ground Safety area, we set a tough-to-achieve mishap objective of less than 0.8 (mishaps per 20,000,000 man-hours). So far, we're at a rate of 0.7. In Weapons Safety, we set an objective of less than 0.5 (mishaps per 100,000 flying hours) and we're at 0.7 as I am writing this article. As you can see, a super start this year -- unfortunately, the rates still aren't all zeros. As we continue to get better and see the continuous improvement we're all after, the objectives will seem to get tougher as we look at them, but should be easier to achieve -- it will just take what we are all **VERY** good at -- trust and teamwork! Keep up the **GREAT WORK!!**

*Colonel Bob Jones
Chief of Safety*



An Ounce Of Prevention...



Brigadier General Thomas D. Gensler
HQ ACC/SG
Langley AFB VA

Preventive medicine is the branch of medicine involved with keeping injury and illness from occurring. In our Air Force system of medicine, prevention is the bailiwick of Team Aerospace.

With an understanding of the enormous cost of treating disease and injury as compared with the relatively small expense of preventing it, the Air Force was historically among the first to enter the arena of prevention. The World War I creation of Flight Medicine was due to a need to prevent aircraft accidents. From there, Flight Medicine has branched out to a wide range of occupational medicine issues, including provision of medical care while deployed. More recently, Military Public Health joined the team to analyze illness patterns and prevent the spread of epidemics. Bioenvironmental Engineering's task is collection of a sophisticated data set that quantifies and predicts risk to our troops in the environment - and then designs solutions to reduce the risk. Aviation Physiology is devoted to training flyers by demonstrating the dangers of special environments, including high altitude and high G-force. Most recently, Health Promotion specialists have been added to the team to encourage healthy lifestyles and give feedback on the results of exercise. These members, and the specialized technicians that work in each area, form a team that acts in synergy to "keep 'em flying!"

A perfect work day in the life of a clinical physician involves patients. Most patients are sick, some are mending, a few are returning to finish their therapy. In contrast, a perfect work day in the life of a preventive medicine specialist involves education, investigation, analysis, and not a single patient illness or injury. Unfortunately,



perfect days are not common enough in prevention. The tragedy, to which this magazine is dedicated, is that many serious illnesses and most accidents are preventable. Each one is a mishap.

The three main tools of the preventive medicine specialist in preventing mishaps are investigation, education, and environmental improvement. It's not coincidence that these are the same tools used by the flight safety officer. An investigation is triggered by a sudden event and proceeds over several days or weeks to answer a series of "WHYs." The results of the investigation are then considered for use in education efforts focused toward keeping the mishap from happening to others. Finally, changes in hardware and rules are recommended.

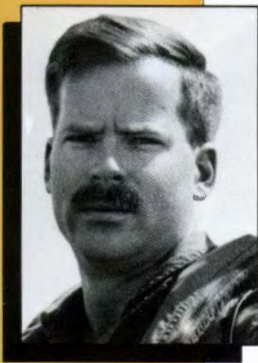
In aircraft accident prevention our medical focus has been on defining and promoting understanding of "human factors." We find it is all too easy when investigating an incident to eliminate hardware and environmental and training factors and come to the conclusion that an accident is due to "PILOT ERROR." Understanding the "WHY" of pilot error allows educational efforts to be focused on preventing those errors in the future.

Ten years ago, we and the operations community began to develop training in human centrifuges to demonstrate the effect of G forces and to train aviators to avoid G induced loss of consciousness (GLOC). In the last two years, the Aircrew Attention Awareness Management Program (AAAMP) and Cockpit Resource Management (CRM) were

developed to operationalize an understanding of human factor work-arounds and to improve safety and performance.

We have also become deeply involved in promoting the development and fielding of equipment designed to minimize the adverse effects of human factors. These efforts resulted in fielding of the Combat Edge pressure breathing for G protection system, development of the Advanced Technology Anti G Suit, and development of a prototype Auto Ground Collision Avoidance System. Command elaboration of a list of User-Focused Aeromedical Research Requirements has helped to focus laboratory efforts toward these high pay-back programs.

As we enter 1994, preventive strategies developed for aircraft accidents need to be generalized to prevent other incidents and mishaps. Unfortunately, American society is at an elementary level in its understanding of prevention. Everyone grows up knowing that "An ounce of prevention is worth a pound of cure." But it's difficult to know how to apply this advice. We are beginning to scratch the surface in prevention of illness through promotion of physical fitness, tobacco avoidance, and moderation of drinking. Certainly, we have started educational efforts to promote healthy lifestyles. Ahead lies the challenge of integrating research and machinery to produce a robust accident and illness prevention environment to enhance performance of each member of the Air Force community. ■



PILOT SAFETY AWARD OF DISTINCTION

Capt David Collins, 94 FS, 1 FW, Langley AFB VA

"I was leading an F-15C two-ship defensive counter air combat mission over Iraq. Thirty minutes after sunset and 150 miles into Iraq, the master caution panel illuminated with total utility hydraulic failure. I immediately turned south toward the friendly nation of Kuwait. My flight controls switched to back up systems and I had no radar, supersonic capability, or ability to air refuel. The landing would require alternate gear extension, a night arresting cable engagement, and emergency brakes. The closest suitable airfield with an approach-end cable was my home field 435 miles away. Once clear of hostile territory, I began to coordinate with air traffic control for a night approach-end cable arrestment. En route to the field, my jet fuel starter low light illuminated which meant that both the alternate gear extension and the emergency brake

systems were unreliable. I successfully accomplished an alternate gear extension and confirmed with the supervisor of flying that the BAK-14 arresting gear was in the up position for the cable engagement. My missed cable plan included additional attempts until I caught the cable. Landing challenges included poor approach-end lighting, an incompatible barrier in the over-run, and no cable location lighting. On my first approach I touched down well prior to the cable in proper position and on-speed, but the hook skipped the cable and I executed my missed cable plan. I flew a configured radar pattern and on the second attempt, touched down slightly offset from the runway centerline and successfully engaged the cable with no further damage to the aircraft."



CREW CHIEF EXCELLENCE AWARD

A1C Chad M. McGowan, 2 ACCS, 55 WG, Offutt AFB NE

While A1C McGowan was performing a thruflight inspection on his EC-135C, deployed to Pope Air Force Base, North Carolina, he detected a burning smell coming from an electronics rack inside the aircraft. Upon further investigation he discovered the aircraft battery swelling, venting smoke and fumes. He quickly took action by evacuating everyone from the aircraft, then disconnected aircraft electrical power and uncoupled the overheating battery. He then donned protective equipment and removed the battery from the aircraft to

an isolated location. The malfunctioning nickel cadmium battery was going through thermal runaway inside one of its cells, an extremely dangerous condition. His actions in the face of imminent danger averted the possible explosion of the battery preventing aircraft damage and injury to personnel. The professional performance of A1C McGowan reflects the personal integrity, skill, and courage required of our crew chiefs. For his exemplary behavior, A1C McGowan is awarded the Crew Chief Excellence Award.

AIRCREW SAFETY AWARD OF DISTINCTION

Lt Col Joseph P. Mullen, 646 MG, Eglin AFB FL

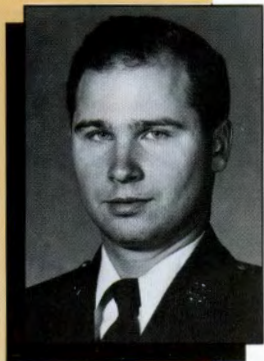


Lt Col Mullen, Flight Surgeon; and Lt Col Bovenizer, Aircraft Commander, were scheduled for a routine four-ship cross-country from Eglin AFB FL to McConnell AFB KS. After a 45-minute maintenance delay, they launched single-ship in their F-16D. One hour and 30 minutes into the mission, while cruising on autopilot at FL 390, Col Bovenizer told Col Mullen that he was going off the intercom to relieve himself. Unknown to either crew member, the canopy seal had failed and the cabin altitude was more than FL 250. When an air traffic control request went unanswered, Col Mullen noticed that the aircraft commander was having severe difficulty in replacing his oxygen mask. Realizing that the aircraft commander was in jeopardy and not responding, Col Mullen quickly took control of the aircraft, overrode the autopilot, and declared an in-flight emergency with air traffic control. While turning the aircraft

directly towards McConnell (now the closest facility), Col Mullen contacted another member of the original flight using his auxiliary radio and informed the flight leader that his aircraft commander was incapacitated due to probable hypoxia. He expeditiously began a descent to a lower altitude and coordinated a rejoin with the other member of his flight. Col Mullen continued flying the aircraft while shouting at the aircraft commander to "put the mask back on and gang load the oxygen system." Col Mullen's efforts were rewarded as the aircraft commander began to respond by replacing the mask and going 100 percent oxygen. Col Mullen continued to fly the aircraft, joining with the chase until the aircraft commander became more coherent. Once revitalized, the aircraft commander took control of the aircraft and with Col Mullen now monitoring his approach, they landed uneventfully.

GROUND SAFETY INDIVIDUAL AWARD OF DISTINCTION

Sgt Troy B. Bisbee, 475 TSS, 475 WEG, Tyndall AFB FL



Sgt Bisbee has taken over the ground safety programs for both the 475th Weapons Evaluation Group (WEG) staff and the 475 Test Support Squadron (TSS). In just six months since the group reorganized, Sgt Bisbee has helped set up the ground safety office and defined requirements for this new staff function, maintained the overall ground safety program for the 475 WEG and 475 TSS, and assisted the four other squadrons in the group with their preparation for the USAFAWC staff assistance visit. He organized and assembled a continuity folder for the "We Care About You" program...a program which identifies to the commander

and the first sergeant individuals who may be in a high-risk category. His drive and attention to detail resulted in the achievement of overall ratings of outstanding from both the USAFAWC inspection and the 325 FW/SE host base ground safety inspection. During this period, Sgt Bisbee was also responsible for the 475 TSS maintaining a zero percent reportable mishap record through timely information dissemination and by ensuring all individuals had been properly briefed on job-related and off-duty hazards. For his ceaseless efforts, Sgt Bisbee is awarded the ACC Ground Safety Individual Award of Distinction.

FLIGHTLINE SAFETY AWARD OF DISTINCTION

Mr Lawrence J. Simek, 325 MS, 325 FW, Tyndall AFB FL



While performing a thorough Egress System Final Inspection on an F-15 aircraft, Mr Simek discovered a potentially dangerous egress condition. Inspecting beyond the requirements outlined by technical data, Mr Simek detected a cable assembly on an aircraft external canopy jettison initiator tangled around the handle. This condition would cause the canopy to be fired when the handle was pulled only a few inches, instead of the required 8-foot extension. During an emergency ground egress, rescue personnel performing an emergency jettison of the canopy would be highly susceptible to in-

jury or death due to inadequate distance between the individual and the aircraft. Mr Simek, after seeing the potential for disaster, immediately notified his supervisor and Quality Assurance to initiate a one-time inspection of the fleet. Eight additional aircraft were found to have incorrectly routed cables. Flightline personnel were briefed on the hazard and trained on the proper way to route the cables. Mr Simek's attention to detail while performing a routine task possibly prevented serious injury or the loss of life of personnel attempting to externally jettison the F-15 canopy.

UNIT SAFETY AWARD OF DISTINCTION

93d Operations Support Squadron, 93 BW, Castle AFB CA

The flights of the 93 OSS are geographically spread over 5 locations incorporating 14 duty sections with 240 personnel. This includes such areas as Base Operations, Flight Records, Weapons and Tactics, Aircrew Scheduling, and Intelligence. The combination of the various duties and functions makes our squadron especially sensitive to the safety needs of our professionals. Over the last year there have been no reportable safety mishaps. At the 93 BW Safety Day, our safety awareness was enhanced with the addition of a squadron safety program following the morning wing safety briefings. Since our squadron has a large percentage of

young airmen, we focused on high interest items for the newer Air Force members. A documentary concerning motorcycle safety entitled "California Focus" was presented to get the point across. Also provided were some valuable tips for the upcoming fog season since our base resides in a historically dense fog region. The briefing was concluded with a discussion of ACC mishaps for the quarter. Commander and First Sergeant involvement, proactive mishap prevention efforts such as "We Care," and a genuine concern for fellow squadron members have earned the 93 OSS the ACC Unit Safety Award of Distinction.



**I
WANT
YOUR
ARTICLE**

**There are thousands
of stories out there
waiting to be told.
Send them to us and
let us spread the word!**

**Editor, The Combat Edge
HQ ACC/SEP
130 Andrews St Ste 301
Langley AFB VA 23665-2786**



ONLY HUMAN!

What does AEDA mean to you? A high school sweetheart's name? Just another military acronym?

No, it should mean Ammunition Explosives and Dangerous Articles, items which must be kept out of the scrap redistribution system. According to the Air Force Safety Agency, we haven't been doing our best lately. The number of AEDA incidents attributed to the Air Force during the first half of CY 93 doubled from that reported during the last half of CY 92! Fortunately, none of these incidents resulted in fatalities or property damage; however, the most recent incident injured a Defense Reutilization and Management Office (DRMO) employee. He was assisting in the redistribution of scrap generated from a range clean up when a BDU-33 spotting charge functioned.

How can that happen, you may ask. Procedures for the inspection, certification, and turn-in of such residue are clearly spelled out in T.O. 11A-1-60 and should eliminate any possibility of AEDA getting into DRMO channels. This incident is still under investigation, so I won't make any assumptions; but I do know that we can't always eliminate the human factor. After all, we've all used the phrase "we're only human" to explain a weakness or a mistake at some juncture in our career.

We gather possible AEDA from various sources during the daily mission. Some of the "EXPENDED" items we process, such as the BDU-33 practice bomb, are difficult to certify

"inert" because of the condition they're in after range impact. The key here is: if there is ANY DOUBT, ensure they are "rendered safe" before certification. "EXPENDED" ejection cartridges, small arms brass, and aircraft gun brass are small and usually processed in very large quantities. This can make for a long and tedious inspection/certification process. The technician must realize he or she was selected as an inspector/certifying official based on personal integrity. That integrity must form the basis for a quality inspection.

"EMPTY" munitions containers have created problems in the past. Complete round munitions such as CBU-71 and AGM-65 missiles have been found in certified "EMPTY" containers at the most inappropriate places. Containers, empty or full, all feel like the same weight when handled by forklift. Again, integrity dictates opening them before certification. A CBU-71 detonation at a civilian scrap metal crushing contractor facility is not what is meant by providing our customer a quality product!

Supervision and training with frequent follow-up are the keys to preventing these incidents. The other aspect of preventing possible injury or property damage from AEDA is identifying what you may feel is a weakness in either Air Force or local procedures for the physical handling of these items. Those of you who are involved in the overall system of inspection, certification, and turn-in of AEDA must take a hard look at your program. After all, we're only human; the operative word being ONLY! ■

Fleagle

MAN, WIT MOST OF TH'LEAVES GONE, I CAN DO SOME LOW FLYIN' AN' CHECK OUT TH'LANDSCAPE.



© TIAN HARRISON 2022

WOW! THAT OLD LAKE SURE DO LOOK SLICK.



THEM TOWERS LOOK KINDA INTERESTING.



GAG!

HARRISON

FLEAGLE'S REGARD FER DISCIPLINED FLYING SLIPS HIS MIND 'BOUT THIS TIME EACH YEAR.

SEEMS HE'D REMEMBER.



ACColades

QUESTIONS OR COMMENTS
CONCERNING DATA ON THIS
PAGE SHOULD BE
ADDRESSED TO HQ ACC/SES,
DSN: 574-3814

	TOTAL			ACC			ANG			AFR		
	DEC	THRU DEC		DEC	THRU DEC		DEC	THRU DEC		DEC	THRU DEC	
		FY94	FY93		FY94	FY93		FY94	FY93		FY94	FY93
CLASS A MISHAPS	2	4	6	1	2	3	1	2	2	0	0	1
AIRCREW FATALITIES	2	3	5	1	2	4	1	1	1	0	0	0
* IN THE ENVELOPE EJECTIONS	1/0	2/0	4/0	0	0	2/0	1/0	2/0	1/0	0	0	1/0
* OUT OF ENVELOPE EJECTIONS	0/1	0/1	0	0/1	0/1	0	0	0	0	0	0	0

* (SUCCESSFUL/UNSUCCESSFUL)

CLASS A MISHAP COMPARISON RATE

(CUMULATIVE RATE BASED ON ACCIDENTS PER 100,000 HOURS FLYING)

ACC	FY 93	2.0	3.1	2.2	1.6	1.7	2.1	1.7	1.7	1.7	1.6	1.6	1.8
	FY 94	0	1.1	1.5									
8 AF	FY 93	0	5.2	3.7	2.7	2.1	1.6	1.4	1.2	1.0	0.9	0.8	2.3
	FY 94	0	0	0									
9 AF	FY 93	6.7	6.5	4.4	3.3	3.9	3.1	2.7	2.3	2.7	2.4	2.2	2.0
	FY 94	0	0	0									
12 AF	FY 93	0	0	0	0	0	0	0	0	0	0	0	0
	FY 94	0	0	2.1									
DRU	FY 93	0	0	0	0	0	2.8	2.4	4.2	3.7	3.3	4.4	4.0
	FY 94	0	14.9	9.9									
ANG	FY 93	0	0	0	0	0	0	0	0	0	0	0	0
	FY 94	0	2.2	2.9									
AFR	FY 93	0	2.2	2.9	2.1	3.5	2.9	3.1	2.7	3.4	3.0	3.2	3.3
	FY 94	0	0	0									
TOTAL	FY 93	0	0	8.0	5.9	4.8	4.0	3.4	3.0	2.7	2.4	2.2	4.0
	FY 94	0	1.4	1.8									
MONTH		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

* (HOURS NOT AVAILABLE)

Flight Safety Award of the Quarter



Sergeant Beasley's short time as the 49th Fighter Wing Flight Safety NCO is full of distinctive accomplishments. He's quickly become the base expert on the Aerospace Safety Automation Program (ASAP), and he personally trained all base ASAP users. Sergeant Beasley was hand-picked to be a Tiger Team member on the blue ribbon F-117A Combat Capability Working Group. His ideas were loud and clear—he strongly encouraged the wing commander to renew the F-117A dedicated crew chief program. He also proposed that the wing gain more experienced F-117A maintainers, and to increase their time on station. Sergeant Beasley's suggestions were instituted. His new trend analysis program helps identify potential problem areas in aircraft maintenance. He aggressively tracks and pursues the wing's F-117A maintenance problems. He sends his simple,



Sgt Donald E. Beasley
49 FW
Holloman AFB NM

easy-to-read maintenance analysis letters where they are needed most — to the flying squadron commanders. His mishap investigations are models that Flight Safety Officers follow. One of his recent investigations uncovered a Tech Order mistake that called for the wrong fastener on

the F-117A intake. These incorrect fasteners were causing severe foreign object engine damage. His keen attention to detail uncovered an extremely expensive printing error, and potentially saved us hundreds of thousands of dollars. Aiding in another investigation, he conducted a maintenance survey concerning critical F-117A exhaust system maintenance. His survey helped to establish the new F-117A Exhaust System Maintenance Shop, which has significantly reduced the number of exhaust system mishaps. Through Sergeant Beasley's close working relationship with Sacramento ALC, he determined the cost of rudder end cap damages was significantly less than previously thought, and eliminated the need to report them as Class C's. Sergeant Beasley's proactive attitude, commitment to quality, and professionalism have earned him the Flight Safety Award of the Quarter.



Ground Safety Award of the Quarter

As the Chief of Ground Safety for the 965th Airborne Warning and Control Squadron (AWACS), TSgt McGraw developed a comprehensive safety program that focuses on the personal health and safety of all assigned personnel, both on and off duty. He transformed his unit's safety program from a "satisfactory" to an "outstanding" program. TSgt McGraw compiled a functionally efficient and comprehensive Ground Safety Management Book that is in the process of being adopted by the Wing Safety Office for use Wing wide. Each of the 18 workcenters within this unit has Safety Management Books tailored to their specific needs. He established Safety Liaisons in each of these workcenters for the purpose of having a central point of contact on matters relating to safety. Each of the Safety Liaisons assists the workcenter supervisor in providing annual AFOSH briefings, completing mishap reports, rec-



*TSgt Joseph E. McGraw
965 AWACS, 552 ACW
Tinker AFB OK*

ommending nominees for safety award consideration, maintaining the workcenter's Safety Book, conducting regular safety briefings, and assisting with any other safety related activities. His experience and expertise in the safety field have been felt throughout the 552d Air Control

Wing, providing assistance, conducting courtesy inspections, and assisting the Wing Safety staff with many functions and activities. Constantly searching for new ways to protect TSgt McGraw's workers, he designed, coordinated, and implemented a Driving Under the Influence (DUI) Reduction/Prevention Initiative titled, "We Care Enough About You to Get You Home." The program provides organizational personnel with taxi rides home by a local taxi service, with the organization picking up the tab. The program is supported by organizational fund raising efforts. Since implementation in Jun 91, his organization has had a 500 percent reduction in DUI incidents. TSgt McGraw's efforts have resulted in the removal of over 100 intoxicated drivers from the streets and highways of Oklahoma. TSgt McGraw is the all around safety professional the ACC Quarterly Ground Safety Award was meant to recognize.

Weapons Safety Award of the Quarter



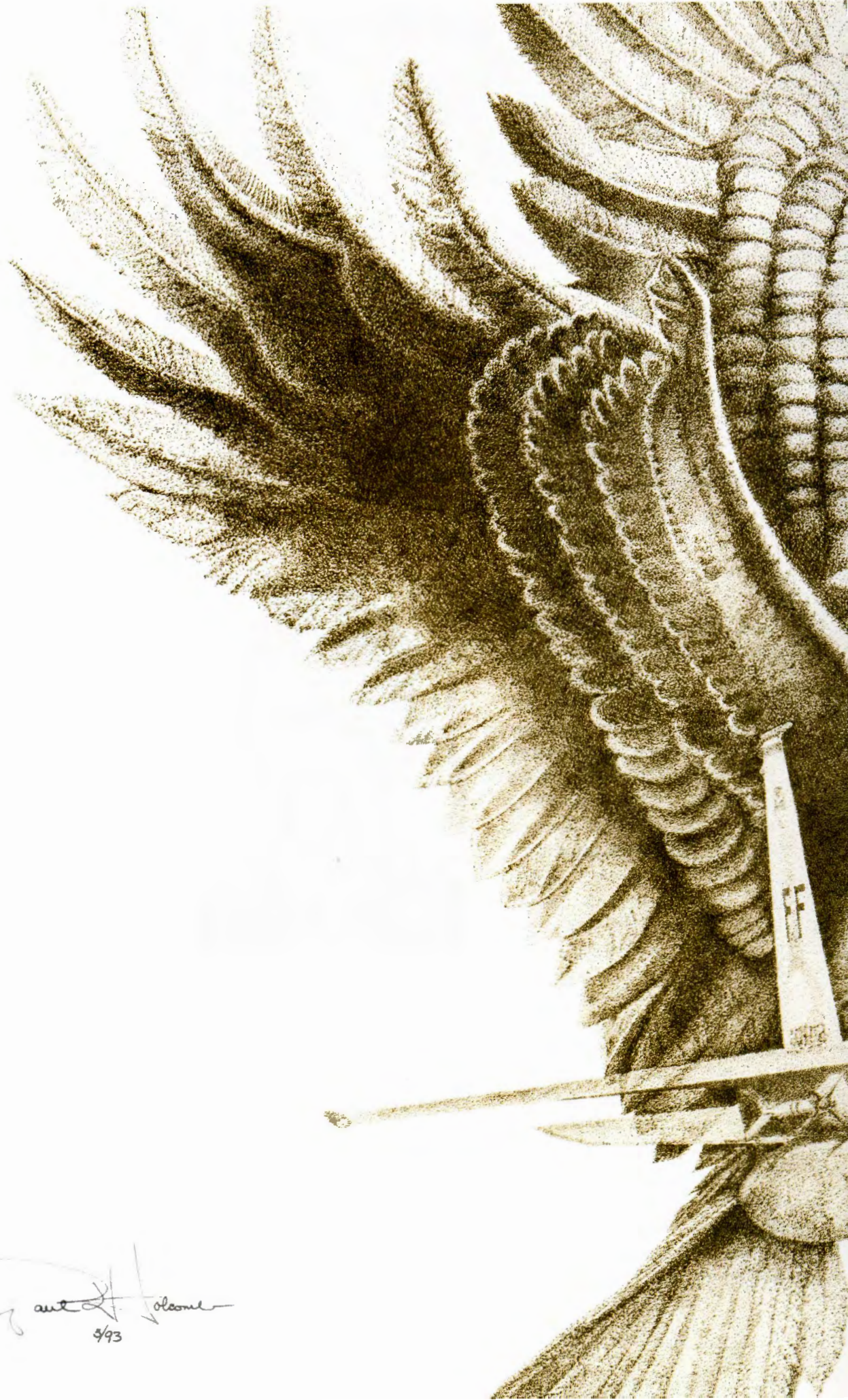
As the primary Weapons Safety Monitor for the 86 FWS, MSgt Convertine is responsible for ensuring squadron personnel comply with established weapons assembly and handling procedures. His program also encompasses units deploying to Eglin AFB in support of Air-to-Ground Weapon System Evaluation Programs and Air Ground Operations School exercises. During FY 93/4, the 86 FWS hosted five separate units deploying to Eglin involving F-16, F-15E, F-111, and A-10 aircraft. This included supporting the buildup, handling, and loading of over 200 BDU-33s, 30MM ammo, numerous chaff/flare dispensers, 24 GBU-10, 42 GBU-12, 2 GBU-24, and 26 AGM-65 munitions. MSgt Convertine's outstanding management of the Weapons Safety program resulted in all successful and effective deployments without a single weapons mis-



*MSgt James J. Convertine
86 FWS
Eglin AFB FL*

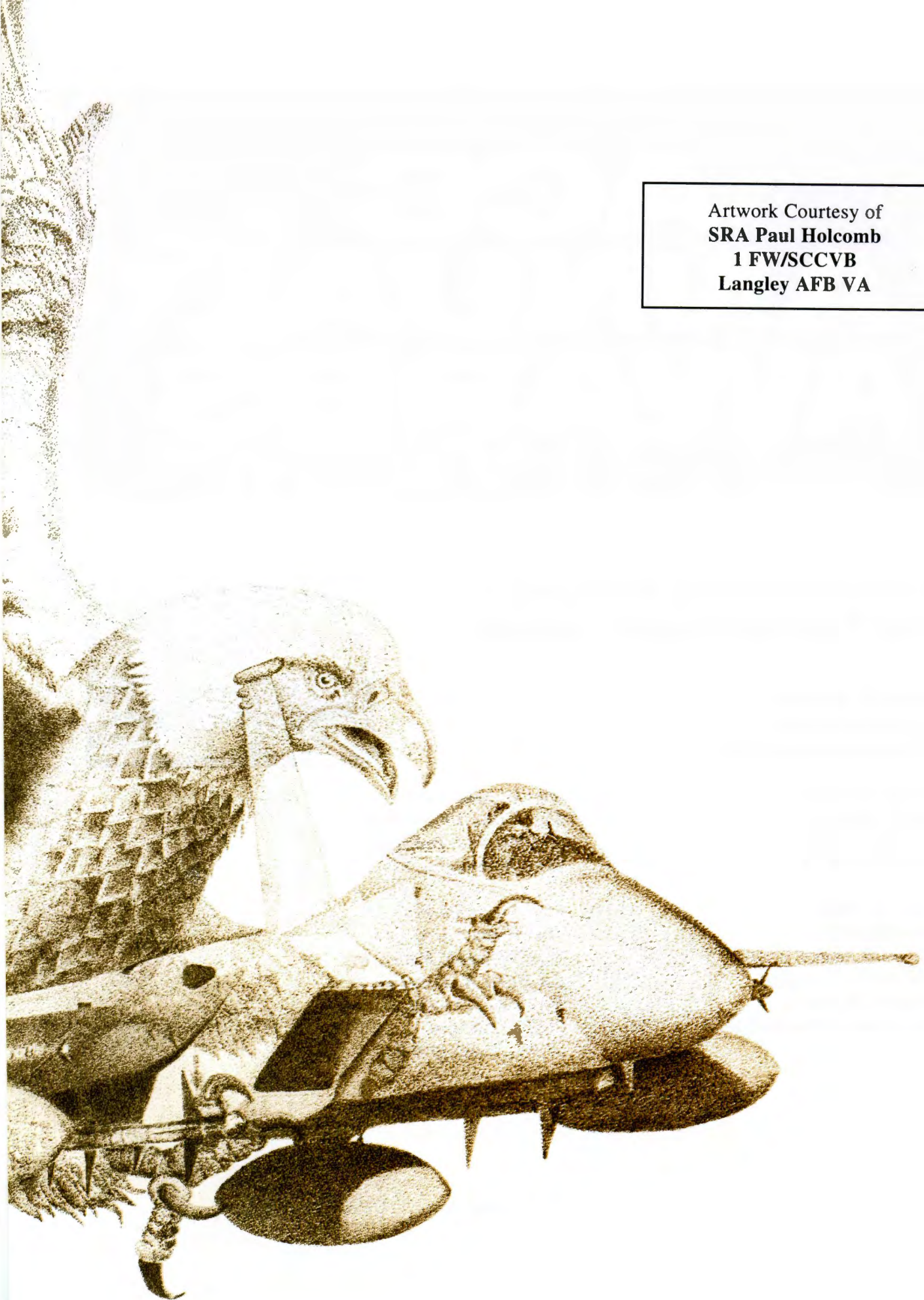
hap or incident. He manages his program through in-depth monthly munitions assembly/handling spot inspections and weekly safety briefings that are tailored to the unit's needs, i.e., munitions storage/assembly problems and munitions deliver-

ies that hamper mission effectiveness. He implemented a Weapons Safety read file for personnel who were absent during the information dissemination. He exceeded the usual "posting of literature" by aggressively gathering safety material to develop training aids and to assemble a comprehensive Weapons Safety book. Using the standard guidelines for setting up a safety book, he expanded it to include an informative hands-on newcomer's orientation checklist that covers munitions storage/maintenance areas, specific channels for mishap reporting, and easier access to vital safety information. Astute attention to his Weapons Safety program is evident by the "Outstanding" rating received on the USAF Air Warfare Center Annual Safety Inspection. This directly contributed to the squadron's overall "Outstanding" rating.



aut. J. H. Cole
5/93

Artwork Courtesy of
SRA Paul Holcomb
1 FW/SCCVB
Langley AFB VA



ACC ANNUAL AWARDS

DISTINGUISHED FLIGHTLINE SAFETY ACHIEVEMENT AWARD

TSgt Donald A. Souza, Jr.
SSgt Lawrence J. Paquette
355 WG, Davis-Monthan AFB AZ

SSgt Samuel C. Coco
Sgt Daryl J. Littleton
SrA Mario E. Mendez
58 FW, Luke AFB AZ

TSgt Scott W. Floyd
SSgt Donald Piercy
SSgt Patrick R. Seeley
SrA Christine L. Beaudion
Amn Keith E. Mounts
366 WG, Mountain Home AFB ID

SSgt Michael T. Rungee
SSgt Michael V. Nabholz
SSgt Robert J. Debrecht
131 FW, Bridgton MO

SSgt Robert Starkey
SSgt Michael A. Abeyta
SSgt William R. Rutter, Jr.
Sgt Walter R., Detweiler, II
Sgt Elwin L. Longnion
Sgt Clay Morgan
57 WG, Nellis AFB NV



Recognizes the outstanding individual(s) of the monthly Flightline Safety Award of Distinction winners from the previous fiscal year.



COMMANDER'S AWARD FOR SAFETY

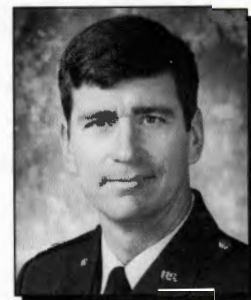
12 AF, Davis-Monthan AFB AZ

Recognizes the NAF that best promotes mishap prevention through education, publicity, awards and proactive efforts in all applicable safety disciplines.

DISTINGUISHED CHIEF OF SAFETY AWARD

Lt Col Daniel R. Eagle
366 WG, Mountain Home AFB ID

Recognizes a Chief of Safety for significant contributions to intermediate headquarters, unit, ACC or USAF mishap prevention program (excludes NAFs and Sectors).



SAFETY SUSTAINED SUPERIOR PERFORMANCE AWARD

TSgt Michael R. Moon
384 BW, McConnell AFB KS

Honors an individual for sustained superior performance.



DISTINGUISHED FLIGHT SAFETY OFFICER AWARD

Capt Thomas A. Jones
93 BW, Castle AFB CA

Recognizes a person for significant contributions to an established unit, intermediate headquarters, ACC or USAF flight safety program.



SAFETY OFFICE OF THE YEAR AWARD - CATEGORY I

93 BW, Castle AFB CA

Recognizes a DRU/wing/group safety office for the most effective overall safety program.



SAFETY OFFICE OF THE YEAR AWARD - CATEGORY II

388 FW, Hill AFB UT

Recognizes a DRU/wing/group safety office for the most effective overall safety program.

DISTINGUISHED PILOT SAFETY AWARD

*Capt Richard G. Williams, Jr.
169 FG, McEntire ANGB SC*

Recognizes the outstanding pilot of the monthly award winners from the previous fiscal year.



DISTINGUISHED AIRCREW SAFETY AWARD

*Capt Anthony J. Smith, Capt Quinten L. Miklos
Capt James D. Labombard, Capt Kenneth G. Bock
28 BW, Ellsworth AFB SD*

Recognizes the outstanding aircrew of the monthly award winners from the previous fiscal year.



DISTINGUISHED CREW CHIEF OF THE YEAR AWARD

*SrA Larry D. Baker
57 FS, NAS Keflavik IC*

Recognizes the outstanding crew chief of the monthly award winners from the previous fiscal year.



ANNUAL UNIT GROUND SAFETY AWARD - CATEGORY I

1 FW, Langley AFB VA

Recognizes a host unit with an exceptional ground safety mishap prevention program.



ANNUAL UNIT GROUND SAFETY AWARD - CATEGORY II

*823 RHCES
Hurlburt Field FL*

Recognizes a tenant unit with an exceptional ground safety mishap prevention program.

DISTINGUISHED ICBM CREW AWARD

*1Lt David L. Saxton, 1Lt Sean R. Conard
44 MW, Ellsworth AFB SD*

Recognizes the outstanding ICBM crew of the monthly award winners from the previous fiscal year.



DISTINGUISHED ICBM SAFETY AWARD

*SrA Scott J. Deppel
91 MW, Minot AFB ND*

Recognizes the outstanding ICBM personnel of the monthly award winners from the previous fiscal year.



DISTINGUISHED FLIGHT SAFETY NCO AWARD

*SMSgt Gary W. Johnson
384 BW, McConnell AFB KS*

Recognizes a person for significant contributions to an established unit, intermediate headquarters, ACC or USAF flight safety program.



ANNUAL TRAFFIC SAFETY AWARD - CATEGORY I

93 BW, Castle AFB CA

Recognizes a host unit with an effective traffic safety program.



ANNUAL TRAFFIC SAFETY AWARD - CATEGORY II

NE ADS, Griffiss AFB NY

Recognizes a tenant unit with an effective traffic safety program.

DISTINGUISHED GROUND SAFETY ACHIEVEMENT AWARD

*Sgt Brent A. Landrus
27 FW, Cannon AFB NM*

Recognizes an individual each for exceptional safety contributions or achievements.



EXCEPTIONAL GROUND SAFETY LEADERSHIP AWARD

*Mrs Rebecca C. Buchan
366 WG, Mountain Home AFB ID*

Recognizes a ground safety professional who has demonstrated superior leadership capability at an established unit, intermediate headquarters or MAJCOM.



SUPERIOR PERFORMER IN GROUND SAFETY AWARD

*SSgt Christopher C. Boston
366 WG, Mountain Home AFB ID*

Recognizes a ground safety member who has made meaningful contributions to his/her unit's mishap prevention program.



OUTSTANDING UNIT WEAPONS SAFETY AWARD CATEGORY I

4404 CW(P), Dhahran AB SA

Recognizes a unit with an effective program to prevent weapons mishaps.



OUTSTANDING UNIT WEAPONS SAFETY AWARD CATEGORY II

388 FW, Hill AFB UT

Recognizes a tenant unit with an effective program to prevent weapons mishaps.

CMS PAUL A. PALOMBO AWARD FOR DISTINGUISHED GROUND SAFETY NEWCOMER

*TSgt Joseph F. Semones
4 WG, Seymour Johnson AFB NC*

Recognizes a new member to the ground safety career field for exceptional performance.



EXCEPTIONAL WEAPONS SAFETY OFFICER AWARD

*Capt Kenneth D. DeLouche
351 MW, Whiteman AFB MO*

Recognizes an ACC weapons safety officer who has made outstanding contributions to the weapons safety program of an established unit, intermediate headquarters, ACC or USAF.



EXCEPTIONAL WEAPONS SAFETY NCO AWARD

*TSgt Victor R. Flores
2 BW, Barksdale AFB LA*

Recognizes an ACC weapons safety NCO who has made significant contributions to the weapons safety program of an established unit, intermediate headquarters, ACC or USAF.



DISTINGUISHED WEAPONS SAFETY ACHIEVEMENT AWARD

*MSgt Janet A. Wyatt, SSgt Jeffery L. Bryant,
SrA Shane D. Humes, SrA Martin E. Hall,
Amn Jason E. Meyer, Amn Jermain J. Peoples
2 WG, Barksdale AFB LA*

Recognizes the outstanding individual(s) of the monthly weapons award winners from the previous fiscal year.



FLIGHT WITH LATERAL ASYMMETRY

Laurence Walker

F-15 Project Pilot

MCAIR Flight Operations

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During the full-scale development of an airplane, flying qualities must be examined both with lateral weight asymmetries and asymmetric stores to determine safe envelopes not only for landing recovery but also for high angle-of-attack (AOA) flight including departure, spin and recovery characteristics. It is in the high AOA regime that airplane response to lateral weight asymmetry defies conventional wisdom and becomes of special interest.

At low AOA and higher speeds, the F-15 Eagle's response is as expected - a little bit of lateral stick or trim is required away from a heavy wing. Some rudder trim may also be required. Generally, as the aircraft slows, more lateral stick is needed to hold wings level. But - here's where it becomes interesting - as the AOA increases above 25 to 30 units, a yawing moment starts to occur **AWAY** from the heavy side, which requires rudder **TOWARD** the heavy wing to counter the YAW. As AOA increases still further, the airplane starts to roll away from the heavy wing because of dihedral effect due to sideslip (nose away from the heavy side), therefore, requiring stick **TOWARD** the heavy side.

Even though the aileron-rudder interconnect (ARI) provides some rudder deflection toward the stick, the yawing moment due to asymmetry will eventually overpower the rudder and lead to a rapid departure. Further aggravating the situation is the fact that adverse yaw from the ailerons at high AOA reinforces the yawing moment away from the heavy side.

As an example, with a heavy right wing, some left stick is needed at low AOA. As the airplane slows, still more lateral stick is needed toward the left. But as AOA increases above 25 to 30 units (depending on asymmetry), some **RIGHT** rudder is needed. At about 30 to 35 units, a **LEFT** roll starts which requires **RIGHT** stick. As AOA goes to 35 to 40 units, the yaw due to the asymmetric weight and the yaw due to right stick overpower the rudders and the airplane departs to the left. Unless AOA is reduced, this asymmetric departure can rapidly lead to a left spin.

Often I have been asked why the aircraft yaws away from the heavy wing at high angles of attack. Rather than present mathematical proof, it is easier to think of the aircraft as an arrow. With the center of gravity (CG) on the centerline, the arrow flies straight with the wind. However, if the CG were offset to the right as it would be with a heavy right wing, the CG still leads the way, but the shaft will be

cocked somewhat to the left. Now, if the arrow had swept wings attached to the shaft, the right side would have more lift and the arrow would roll to the left, provided that dihedral effect was sufficiently strong. In the airplane, dihedral effect does become stronger at high AOA. Compounding the problem, as AOA increases directional stability decreases and adverse yaw due to aileron (stick toward the heavy side to counter the roll) increases, leading to a departure at 35 to 40 units AOA.

But what about the left rudder which is required with a hung store on the right wing at high speed? This is explained by the asymmetric drag at high speeds. However, as speed decreases the asymmetric drag diminishes and is overpowered by the yawing moment due to lateral asymmetry at high AOAs. Therefore, the most important measure of asymmetric handling qualities at high angles of attack boils down to a lateral asymmetry weight calculation.

Other factors that reduce directional stability, such as a two-place canopy, LANTIRN pods, the presence of a centerline tank and high altitudes, also degrade resistance to departure.

Although TO 1F-15 ()-1 (flight manual) descriptions tend to compartmentalize lateral asymmetries, there is no abrupt change in handling qualities when crossing a boundary such as at 5,000 foot-pounds but instead, a gradual degradation and increased risk of departure as asymmetry increases. Therefore, the best guidance is not only to observe flight manual limitations, but to fly the jet and feel its response. When it starts to show sign of resisting your inputs and building sideslip (usually felt as a side force on your body), ease off on your inputs and AOA, and apply the appropriate rudder to minimize sideslip. The combination of good control technique and thorough knowledge of your aircraft and its limitations will help you to extract maximum performance from your aircraft. ■

Some Things In Safety Are

FIRE

*MSgt Lawrence E. Stulz
906 FG/SEG
Wright-Patterson AFB OH*

There are two words in the English language that can grab your attention, cause sheer chaos and incite stampedes; they are "FIRE" and "FREE." I'm going to address the topic of free as it relates to safety information.

In this period of transitions, reorganizations, and reduced funding, many safety offices have taken on the appearance of the "Maytag Repairman" office that we see on television. Offices that are waiting for something to happen or waiting for safety training and/or material to arrive from higher headquarters.

You may not know it, but the opportunities to find new ideas for your safety program, to meet others in the field of safety, to obtain free safety training and exchange safety information are all around you. The following are some of the opportunities that I've found and have benefitted from.

Local businesses. You can call or write to the safety staff of many different types of local businesses. Everything from lawn care (HAZ COM programs) to construction operations are available. You will be surprised at the willingness to openly exchange ideas. The opportunity to meet other safety people locally is a tremendous benefit to both parties.

National corporations. A letter to the safety staff of most corporations will result in a swift and positive reply. Again companies from airlines (safety programs) to breweries (responsible drinking programs) are available and normally very willing to help. Our safety office has received literally tons of material from national corporations. One corporation sent our office 5,000 pounds of safety material and handouts (true story!!). A semi truck came to our front door to deliver it. ALL FREE!

Local/State Emergency agencies and hospitals. The free training and materials available at these agencies are unsurpassed. Many local fire departments and police agencies already have safety programs and material ready and waiting for someone to use them. Some organizations may allow you to watch and/or participate in many of their training activities.

State and Federal safety agencies. Many states have their own safety agencies and conduct free training and/or inspections. Federal agencies such as the post office, AMTRAK, Federal Aviation Administration, National Transportation Safety Board and many others have information available upon request. Of course, local, state, and regional OSHA offices have many slide/tape training programs and material available upon request.

International safety agencies. Canada, Europe and South America also have

organizations that supply free safety material upon request.

Trade organizations and Federal information libraries. There are hundreds of computerized libraries with free or low cost access to their information. Their phone numbers can be obtained from either local public libraries or local companies involved in that trade (example: Compressed Gas Association for compressed gas cylinders).

Local and national safety consultants and publications. This area may require some shopping around. Many safety consultant firms have free safety newsletters that they distribute and would be all too happy to add your office to their mailing list. Many consultant firms also sponsor local "Safety Fairs" at shopping malls which are good to attend or even participate in. Most people hate the idea of receiving "junk mail" but never hesitate to add your office to "free" safety mailing lists or samples. You may be bombarded with junk, but remember, one man's junk is another man's treasure!

Now you are asking, "How and where do I contact these people?" It is up to you to scour the local directories and agencies. Many addresses are available in the back of safety publications (such as National Safety Council books.) It will take a little effort to write the letters, make the phone calls and attend the meetings; but it is there for the taking if your safety office wants to use it!

I have used all of the above avenues and acquired uncounted amounts of information and materials. In addition, the friendships and insights to how other safety operations function have been a great help in my day-to-day efforts. It just adds to the old saying, "The best things in life are free!" ■

CREW COORDINATION IN THE 2-SEAT FIGHTER:

Breakdowns of the F-4G LIVEWARE - LIVEWARE interface

The Human Factors community defines "liveware" simply as the human in the cockpit, as opposed to the hardware, software, and environmental components of human factors. The "liveware - liveware" interface addresses crew teamwork, group functions, group influences, and behavior.

-Ed.

Capt Sid Mayeux
57 WG/SEF
Nellis AFB NV

How do you explain the deaths of two highly capable flyers in the crash of a perfectly healthy fighter aircraft? When no other causal factors outside the aircraft and crew are pinpointed, what could have gone wrong? What if it was crew coordination that broke down? How can such things occur?

In this article, I will illustrate the most common bear traps found in mishaps that involved crew coordination breakdown. I'll first describe crew coordination's basic tenants, the crewmembers' roles and leadership tasks. Then, I'll discuss two different types of fighter crews and their strengths and weaknesses. Among each of the two crew types, I'll illustrate the most common modes of coordination breakdowns. Finally, I'll describe examples of hardware barriers to the LIVEWARE - LIVEWARE interface.

I fly the F-4G Phantom II -- The Wild Weasel. Naturally, the F-4 represents the setting for each situation I'm about to describe. However, with few exceptions, this article applies to all two-seat fighter aircraft as it describes crew coordination.

So what is crew coordination? In all multi-seated aircraft, crew coordination is the optimum and efficient division of all cockpit tasks and information at any given phase of the sortie. A properly coordinated crew accomplishes ALL vital cockpit tasks with NO duplicated effort. All radios are set to their own frequencies -- not the same frequencies. TACAN channels are sequenced. One guy is always flying while the other looks in the radar.

Crewmembers must delegate two types of cockpit tasks. Common tasks can be accomplished by either crewmember, while specific tasks can only be accomplished by one particular cockpit member whose equipment or environment best suits him for the task. In the F-4, for instance, only the Electronic Warfare Officer (EWO) can operate the air-to-air radar from the back seat. Also, the EWO is the guy normally in charge of "checking 6," for his view of the aft quadrant is not as obstructed as the pilot's view.

By simply saying the word "radar," the EWO hands to the pilot the 6-checking responsibility while the EWO spends a few seconds

examining the radar for aerial threats. Common task responsibilities are assumed by one guy whenever the other guy must accomplish a specific task.

This coordination breaks down whenever both crewmembers duplicate the same task at the expense of another task going unseen and unaccomplished. Such is the case when both pilot and EWO frantically scan their 6 o'clock in a turning fight, then slam into a ridge line because neither aviator cleared the aircraft's flight path.

By regulation and tradition, the pilot is in charge of the aircraft and crew (after all, he signed it out). If he is the flight lead, he also owns the flight. In the Weasel, however, the EWO runs the mission -- the flight's execution of selected tactics. While these two groups of responsibilities might seem destined to clash, effective crew coordination allows both men to blend their responsibilities. Each fulfills his cockpit responsibilities while backing up the other.

Two fighter crews exist -- scheduled crews and formed crews. Two men who fly together on every sortie constitute a formed crew. Such practice is commonplace in combat operations like Operations DESERT STORM and SOUTHERN WATCH. However, if a flyer is scheduled with a different guy each sortie, he is part of a scheduled crew. Scheduled crews are most commonly used in daily peacetime home-station operations.

There are some subtle differences between formed and scheduled crews. A scheduled crew consists of two individuals seeking to accomplish their sortie and mission. Coordination between the two is overt -- both guys openly back each other up. Few items are left to assumption, few questions go unasked (What's in your TACAN? Is the missile illuminator turned on? Who will punch the radio back and forth -- pilot or EWO?).

Formed crew coordination, on the other hand, is very covert. Time and experience answer most questions about each other's flying hab-

its and techniques. A formed crew very quickly becomes a team seeking to accomplish their mission. Yet even formed crew teams started out as two individuals.

Crew coordination in two-seat fighters starts before their first crew brief. This brief includes such items as emergency procedure execution, emergency ground egress and inflight ejection procedures, radar and air-to-air weapons employment... right down to who runs the TACANs. However, individual briefings are based on pre-acquired perceptions of the guy with whom they are about to fly. Is he experienced? Is he a fairly new guy? A blithering idiot? This perception writes their initial crew briefs for them. Then, with time, crew briefs for subsequent flights become shorter and shorter until, finally, the formed crew brief becomes "standard."

Likewise, their inflight execution of cockpit tasks becomes "standard." The administrative tasks become well-defined and delegated between the cockpits. The crew functions flow smoother. Less guesswork of the other guy's actions exists.

Consider the USAFE F-111 formed crew that met a large bird head-on in England's low-level structure. The bird entered the right windshield quarter panel and struck the Weapons System Officer (WSO) in the upper torso, leaving him badly blinded and disoriented. As they had briefed many times, the injured WSO placed his hand on the ejection handle and began his three-count. Then also as briefed, the pilot grasped the blinded

Individual briefings are based on pre-acquired perceptions of the guy with whom they are about to fly. Is he experienced? Is he a fairly new guy? A blithering idiot? This perception writes their initial crew briefs for them. Then, with time, crew briefs for subsequent flights become shorter and shorter until, finally, the formed crew brief becomes "standard."

WSO's wrist to let him know the aircraft was still under control. Just as flying the aircraft must become second nature to a pilot, familiarity between a formed crew is its most valuable strength.

But familiarity can breed over-familiarity. When a formed crew becomes so accustomed to each other's tasks and actions that they stop backing each other up, the mishap report will likely include the word complacency. Picture an experienced EWO scheduled with a new pilot for a 500' low-level ingress to the bomb range. The EWO will not allow that young pilot below the 500' AGL minimum, nor will he sit quietly while the pilot presses below the minimum "pickle" altitude during weapons delivery.

The same experienced EWO will say nothing when his formed-crew experienced pilot presses down to 300' on the 500' low level. He's built enough confidence and trust in the pilot's abilities that he's even willing to tolerate broken rules. Complacency has historically become the most common breakdown in formed crew coordination.

Then how does scheduled crew coordination break down? Let us return to the crew brief where, as before, crew coordination has already begun. Unlike formed crews, however, scheduled crews never allow the crew brief to become "standard." Crew briefs are always thoroughly covered, for the two do not fly together often enough for the brief to become "standard." But just like the formed crew, the briefing's content will depend on the crewmate's experience level.

Fighter crewmembers must understand experience as a double-edged sword. They almost always equate an experienced crewmate as being someone automatically worthy of trust in the air. Experience does not always equal competence. As unfair as they may seem, one's perceptions of the other's abilities are very valuable for effectively gauging the required level of crew coordination.

The crew brief is over, and the scheduled

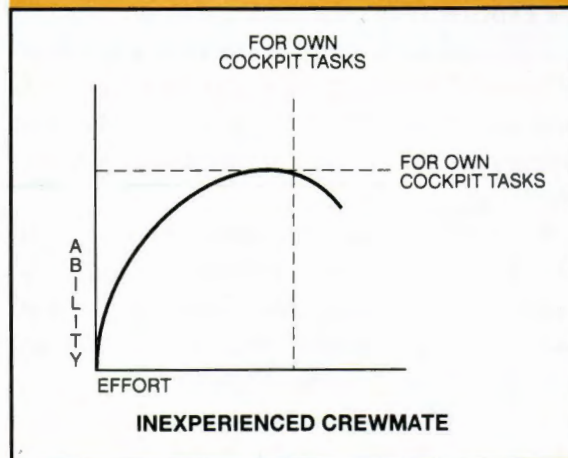


FIGURE 1

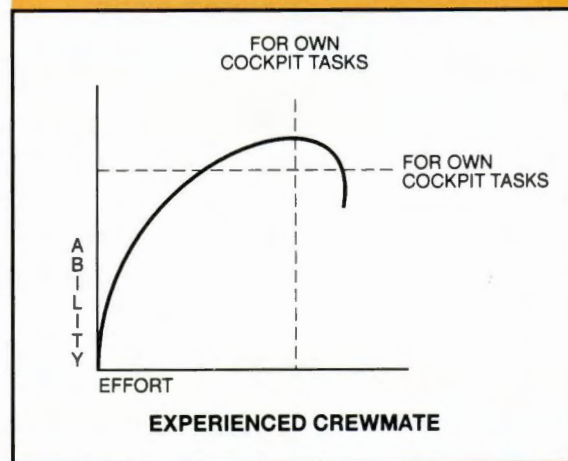


FIGURE 2

crew has launched. Inside the jet, two men are conducting exhaustive efforts to fulfill two vastly different numbers of tasks.

Our inexperienced man, Illustrated in figure 1, has been trained well enough to fulfill the tasks required from his own cockpit. Any additional work load will overtask his abilities, and his performance curve will shift into the task saturation zone. He will peak out while accomplishing only his own jobs. He will not be able to check his partner's performance -- only his own.

His experienced crewmate may be overtasked as well (see figure 2). He is certainly able to accomplish his own cockpit duties. However, he spends much of his time checking and rechecking his inexperienced partner's performance, trying to ensure that everything in his aircraft is performed correctly.

The results should be obvious. One flyer can just accomplish his own duties, while the other is trying to do two men's work. Such a situation was best described by Lt Col Jean-Marc Jouas, Assistant Operations Officer at the 561st Fighter Squadron, with over 1900 hours in the F-4: "In fighters, two brains are always better than just one. But a great brain in one pit plus a slug in the other is worse than a single-seat fighter. One guy is doing two jobs."

The McDonnell-Douglas design team did little to help the crew coordination dilemma. The HARDWARE - LIVEWARE interface in the F-4G is only just sufficient to allow effective crew coordination, but it leaves much room for improvement.

For starters, the pilot and EWO cannot see each other. Capt John Fanning put it best when he compared it with his 500 hours in the F-111: "You need two maps of the same route, not just one." All communication goes through the intercom system; one can't just point at something, like the radar or the Master Caution light.

Therein lies another potentially deadly bar-

rier to crew coordination. The rear cockpit has one major warning light -- the Master Caution light. All major telights (including engine fire and overheat lights) reside with the pilot in the front cockpit. If the intercom system fails, the pilot is entirely on his own to handle the emergency situation. He cannot solicit help from his crewmate to resolve the emergency.

The crew fares little better in the tactical arena. In the F-4G, the EWO has full control of the radar and the APR-47 emitter targeting system. His displays consist of large CRTs filled with tactical information. The pilot's displays, however, are but small repeaters of the main screens in the rear. Of them, the APR-47 repeater scope is about 30% as large as the rear scope. Without adequate communication flow from the EWO to the pilot, he cannot adequately back up the EWO's tactical plan and execution.

Newer aircraft like the F-15E enjoy such panacea as multiple MFDs, redundant warning systems, and unobstructed views of each crewmember. But for the F-4G, the million-dollar phrase goes something like: "Excuse me. What are you doing back there?"

Crew coordination can never be automated. The SOFTWARE - LIVEWARE and HARDWARE - LIVEWARE interfaces do enhance crew coordination. But they never will replace the LIVEWARE - LIVEWARE connection. Each of the two types of crews has its strengths and weaknesses. Formed crews must be aware of complacency, while scheduled crews must ensure the mission's demands don't surpass the individuals' capabilities. And, all crews must understand and work with the hardware constraints built into their aircraft's cockpits.

Despite these shortcomings, show me a single-seat fighter that can check 6 and 12 at the same time. Or get a 35-mile radar lock and intercept while never taking eyes off the wingman. ■

