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"Say Again, You're Garbled & Stupid"

MARCH 1993

THERE I WAS

Editor's note: We came across this "There I Was" story in some old Flying Safety *files. Since it's anonymous, we have no way of verifying the accuracy although some retired "Voodoo" pilots swear they heard the same thing while sitting alert.*

■ McDonnell Douglas' F-101 "Voodoo" wasn't the fastest aircraft of its day. And it certainly wasn't the prettiest. But when you had a chance to go cross-country, you could do so in a style those Hun drivers would never know. Thanks to an unneeded weapons bay, the possibilities were almost endless.

On this particular trip, I chose to escape the northern tier for the warmer latitudes. Maintenance troops had no problem loading my set of golf clubs and my overnight bag into the weapons bay. The actual process involved the rotating weapons bay and door. With a little practice, even a pilot could overcome the maintenance magic usually needed to make the bay operate properly.

Although I hadn't touched the clubs in over 6 months, I still managed to break 90. (Yes, I played all 18.) The rest of the night was spent sampling Gulf Coast seafood and southern hospitality.

The next day, I got up and verified the weather was good enough to allow a nonstop return trip home. With transient maintenance watching in bewilderment, I loaded my clubs into the weapons bay and gave it a solid thump for good luck. At least I had continued to prove to the uninitiated the "Voodoo" flew because of black magic and ancient rituals.

With both smoky engines turning, I got my clearance and started to taxi. I noticed, with more than a little jealousy, the local golfers were already out on the course. It would be two more months until the snow melted off *my* home course. There was even a foursome approaching the hole directly off the end of the active runway. I wondered if they even bothered to look up when an old "Voodoo" passed overhead.

Taking the active, I pushed the throttles forward and waited. The "Voodoo" could do a lot of things, but giving the pilot whiplash was not one of them. The warm, southern air also did nothing to enhance the takeoff roll, but eventually, the airspeed indicator began to show useful numbers. I rotated, waited (you did a lot of waiting in the "Voodoo"), and lifted off before scaring myself.

I waited for a little more speed before raising the gear handle over the end of the runway. I felt an odd bump unlike any gear door movement, but since both engines were still turning jet fuel into smoke, I continued to climb. Surely, one of the many seagulls would have done some damage if I had actually hit one.

Imagine my surprise upon landing at home station. The ops officer was waiting for me. "What can you tell me about a set of Ben Hogans raining on the golf course of a certain southern airbase?" I tried to stutter an excuse which didn't make sense to the old man (or to me, either).

Of course, I learned some valuable lessons from the experience. One, rent clubs when you go TDY. Two, ops officers don't have a finely tuned sense of humor. And three, use the parts of a jet for what they were designed. If they wanted you to have a travel pod, they would have fitted one. ■

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Flying SAFETY

MARCH 1993

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SPECIAL FEATURES

REGULAR FEATURES

CONTRIBUTIONS

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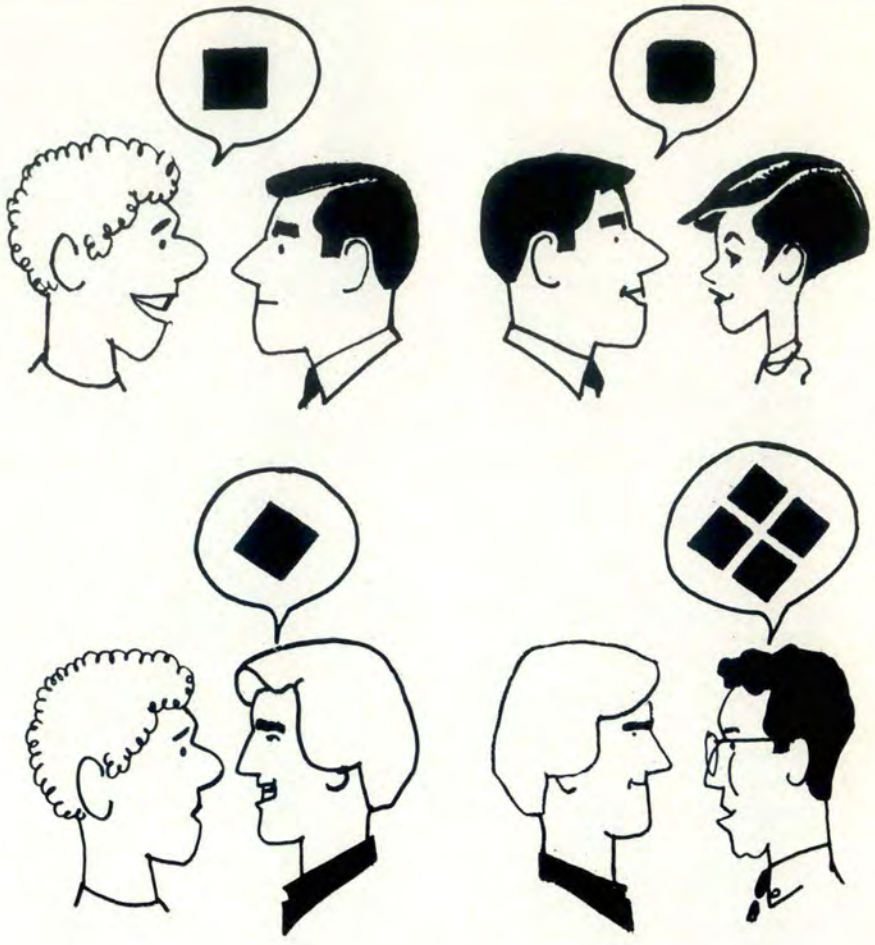
I Thought I Knew What You Thought I Said

OR SAY WHAT?

Of the many ways to communicate, language may well be the trickiest as well as the one most used



LT COL JAMES M. TOTHACER, Ret.

■ The English language is a funny thing. Sometimes you say something you don't mean only to discover what you said was understood by someone else to not be what you thought you said. On the other hand, even when you have said what you meant to say, somebody understood what they thought you meant to say and not what you said at all. And sometimes, things get downright confusing.

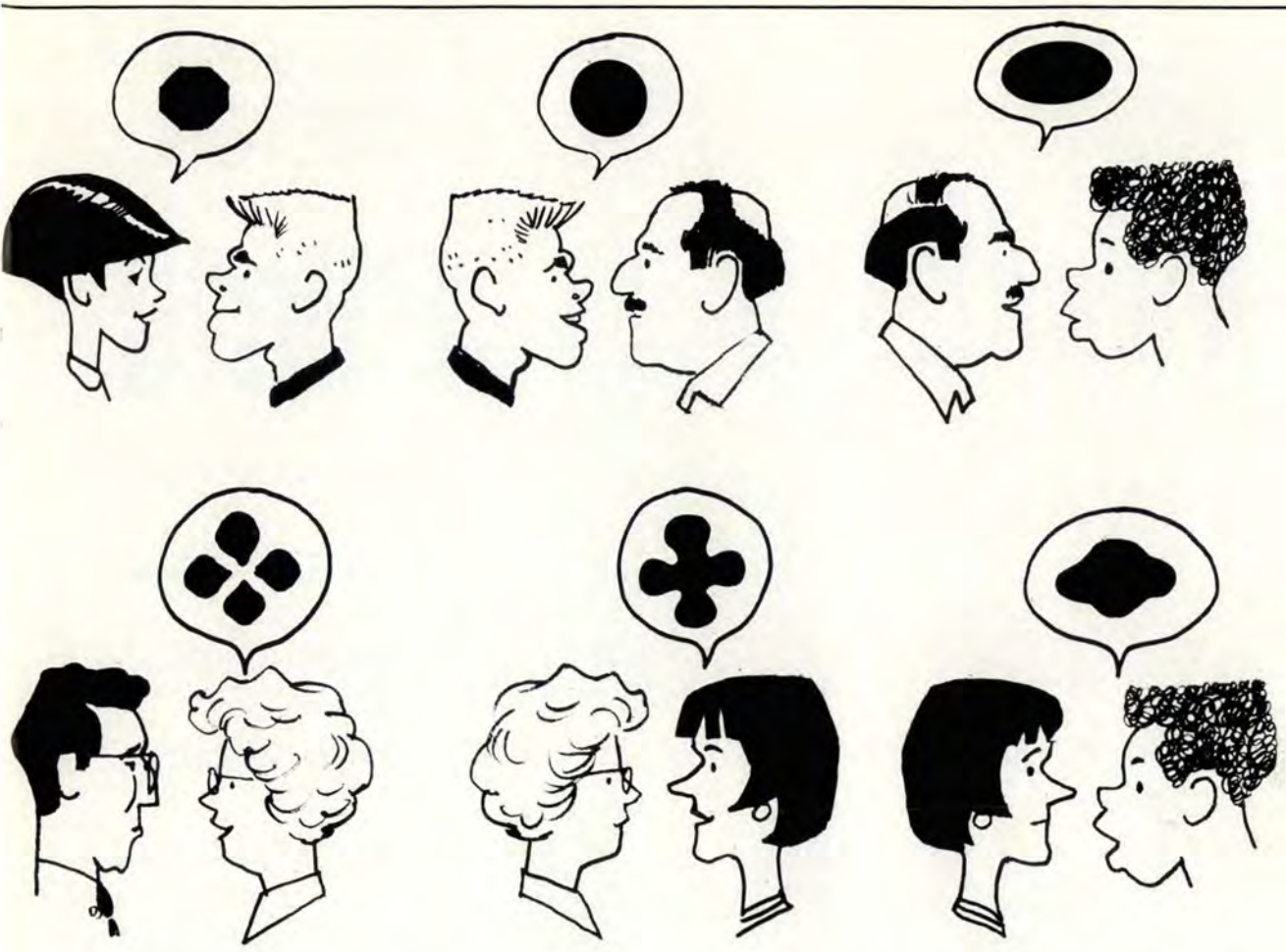
How far along in your flying career were you when you first heard the story about the copilot who was really in the doldrums one day? On takeoff roll, the aircraft commander, in an attempt to lift his copilot's spirits, told him to "cheer up." As the aircraft skidded to a stop on its belly, the copilot swore he heard the AC call for "Gear up."

Never happen in real life, you scoff? Just an anecdote to emphasize a point, you say? Well, let's look at some real life occurrences.

At an out base on a cross-country mission, a dual aircrew experienced considerable delay prior to taxi. Because of the delay, the crew elected to refigure their takeoff and landing data (TOLD) while taxiing to the active. A radio call was made to ground control requesting temperature and pressure altitude.

When ground returned the call, the frontseater said, "I've got it" over the intercom. The backseater, who was taxiing the aircraft, assumed the frontseater had taken control of the aircraft (the frontseater really meant he would compute the TOLD).

Both pilots were now focused on figuring TOLD while the aircraft took the bit in its teeth. The now uncontrolled aircraft departed the hard surface. The aircrew looked up in time to shut off the engines just as the aircraft rolled onto the grass.



Luckily, no damage was done — save maybe to the pilots' egos.

In another happening, a front canopy opened rapidly and departed a taxiing aircraft when the canopy handle was moved to the unlocked position. The Dash-1 for this aircraft contains information about checking the cabin pressure before opening the canopy. Specifically, if the cabin altimeter reads below field elevation, the cabin pressure switch should be placed to the RAM DUMP position.

The cabin altimeter was checked by the inexperienced frontseater, and he reported to the backseat instructor the cabin pressure was "down." The instructor pilot interpreted this to mean the cabin altimeter read field elevation and thus was safe to open the canopies. There was no discussion of what the cabin altimeter actually read. Post mishap investigation revealed the reading was below zero with a field elevation of over 1,000 feet.

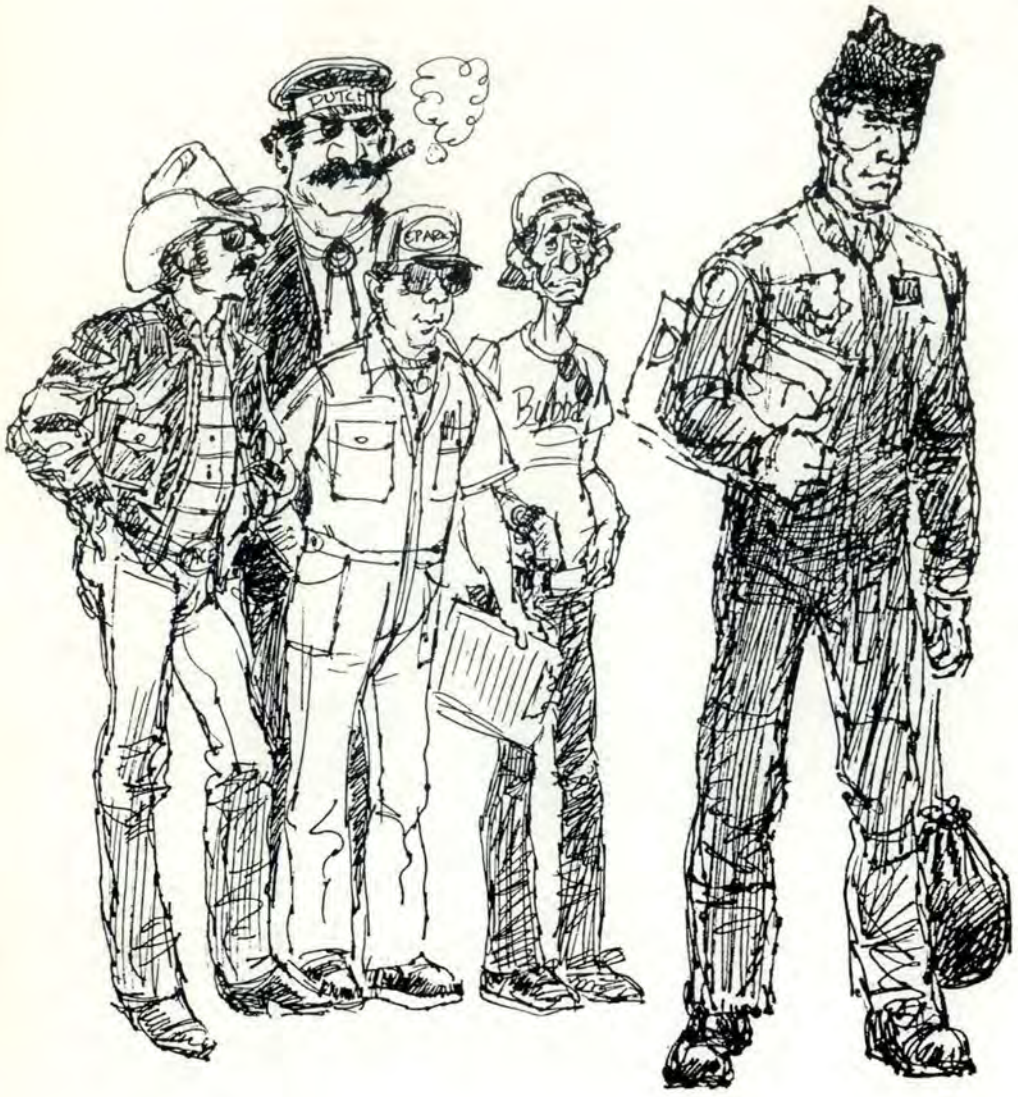
How about the infamous orientation ride a few years ago? It seems the individual receiving the orientation ride was briefed on the ejection seat and, referring to bailout, was told, "If we have to get out, we'll pull these handles." The orientation ride was wholly uneventful until it came time to exit the aircraft.

After engine shutdown, the pilot conducting the orientation ride said to his passenger, "Okay, let's get out," and looked away momentarily to perform cockpit duties. Meanwhile, the orientee, somewhat unsure of the functions of the ejection seat, but taking the pilot at his word, raised the handles and squeezed the triggers. As advertised, the seat went up the rails and deposited the occupant on the concrete flight line. Amazingly, no significant injuries were incurred, only minor bumps and bruises.

We could go on and on with stories like the fighter aircraft entering a spin, and while the backseat instructor called for "chute, chute," the frontseat pilot was frantically searching for exactly who he was supposed to "shoot."

All these scenarios reinforce the importance of proper communication. If you remember the children's party game where you whisper a phrase and then pass it on to the next child until it goes completely around the room, you will remember just how unrecognizable a phrase can become after a little personal interpretation.

Communication is difficult enough in a static environment, and it is further complicated by the fast-moving, dynamic environment in which we operate jet aircraft. The potential for disaster looms ominously large whenever aircrews fail to communicate effectively. Flying is too unforgiving an occupation to take anything for granted. Don't ever substitute assumption for clarification. ■



"Real" Pilots

There's no need to ask who's a "real" pilot. Anyone can check the flight line for real pilots and wannabes.

■ In this changing world, it may seem nearly impossible to define what a real pilot is. Too often, people look at the airplane you fly (or used to fly) and decide only a real pilot could handle one of those. As a service to our readers, we offer this tongue-in-cheek (with subliminal safety message) look at what it takes to make a "real" pilot.

Real Pilots:

— Always have nicknames like Sluggo, Speedy, Ace, Dusty, Ski, or Bubba.

— Always have personalized flight gear including helmet bags, visor covers with lightning bolts, and nametags with nicknames on them.

— Always add at least 1,000 hours to their flight time when in a bar (2,000 hours if a naval aviator is present).

Famous Real Pilots include Waldo Pepper, Wrong Way Corrigan, Slim Pickens, John Wayne, Robert Conrad, Raynor Sarnac, and Robert Duvall.

Procedures for Real Pilots:

— Never read the Dash One: "Everyone knows the Dash One is for nerds, safety pukes, and sissies."

— Don't believe in briefings, debriefs, or checklists: "Who ever learned about flying by talking about it?"

— Don't believe in aircraft preflights: "The crew chief looked at it, right?"

— Never write up discrepancies: "Let the next pilot confirm it before you bother the crew chief."

— Never submit pubs changes: "Why change something I'm not going to read anyway?"

— Never memorize all those picky operating limitations: "What for? They put those little red and green stripes on the instruments

didn't they?"

— Don't study procedures: "Procedures are for staff weenies who forgot how to fly."

— Never report over-Gs, overspeeds or overtemps: "'Cause real pilots don't *have* over-Gs, overspeeds or overtemps (besides, the engineers built in a fudge factor)."

— Never accomplish required night currency more than 15 minutes past official sunset.

Things You *Won't* Find in a Real Pilot's Flight Suit

— Current checklist.

— Earplugs.

— Flashlight (real pilots don't fly at night).

— Flight gloves (without holes or oil stains).

Things You *Will* Find in a Real Pilot's Flight Suit:

— Cross-country name tags (with wings and nickname).

— Plastic money for "unplanned" diverts.

— Afrin™ nasal spray.

— Little black book for bases with good country-western bars outside the main gate.

— One folded flight cap with the braid worn off.

— Current pay chart.

Real Pilot Diet:

— Breakfast: Bowl of cigarettes, gallon of coffee (add sugar if night flying tonight), one-half dozen donuts (except if flight physical is within two weeks).

— Lunch: Two candy bars (must be consumed while walking to aircraft), Diet Coke™.

— Dinner: Two frozen TV dinners (microwaved for one minute), one-half gallon Ben and Jerry's™ Cookie Dough ice cream, one pitcher of margaritas (salt on glass is mandatory).

The Whole Real Pilot:

— Doesn't believe in aerodynamics: "That's what you have burners for."

— Always plans annual leave during the HQ Stan/Eval visits.

— Never drinks within 50 feet of an aircraft.

— Never exercises: "You only have X number of heartbeats."

— Never flies practice approaches: "It's like practice bleeding."

Real Pilot Vocabulary and Cliche:

— Sierra Hotel ("good")

— Tango Uniform ("bad")

— Shoe clerk (a nonpilot)

— Gizmo (object in aircraft whose purpose is unknown)

— Doodad (object in aircraft used for hanging your helmet bag)

— Mayday (phrase used by Doctors in Bonanzas and most naval aviators)

— "It came off in my hand, Chief."

— "It never even got close to the redline."

— "Uh. No. I do not need an alternate."

— "The computer lost my flight plan."

Real Pilots *Never:*

— Go around.

— Go around with any zippers zipped.

— Go around thunderstorms.

— Go around anything.

Real Pilots' Famous Last Words:

— "If you don't win the fight, win the debrief."

— "It's better to die than to look bad."

— "If it's not leaking a little, then it's not a _____." (Fill in aircraft type.)

— "It's probably just the gauge."

— "The weather was fine when we took off."

— "Let me show you how it's *really* done."

— "You've got it!"

Supervisor's Guide for Mishap Board Testimony:

— "He was the best in the squadron ... a REAL pilot." ■

An impossibly young Bill Mauldin turned his impish eye on the underlying humor of WW II. His timeless cartoons embodied the spirit of the long-suffering, yet indomitable, GIs who won the war.

Bill Mauldin... SOLDIER WITH A SMILE

DAVID C. BAER, II
Art Director

■ For 50 years, the two-time Pulitzer Prize recipient, Bill Mauldin, has been recognized as the leading humorist to emerge from World War II. No one has ever captured the humor of the American GI at war so well as this irreverent, young infantryman who could target his pen better than most of his infantry buddies could aim their rifles.

His cartoons are just as fresh and alive today as they were in those dark and troubled days of the war, and the story of his life and humor is just as special.

His History

Bill Mauldin was born in 1921, the son of a veteran soldier of WW I and gas attack victim. His father suffered as much from a case of itchy feet as he did from his asthmatic lungs. As Bill grew up, his father would periodically announce, with great enthusiasm, the family was to pull up stakes and move elsewhere for a great new business venture. He would always conclude his rationale with the ready excuse that a new climate would be better for his conveniently ailing lungs.

Thus, Bill and his year-older brother, Sid, were always the new guys in school who were never truly a part of the central social hierarchy. No doubt, this imbued Bill with the clear, sharp eye of the outside observer. It may also have given him the fierce sense of independence and self-reliance which would later stand him in good stead in the Army.

In 1940, during the period the Europeans were going through the "Phony War," Bill joined the Arizona National Guard. He knew at the time the unit was going to be

among the first to be federalized by President Franklin Delano Roosevelt in preparation for the predicted hostilities. Bill's unit, the 45th Division, was made up of National Guards from Arizona, Colorado, New Mexico, and Oklahoma. They were soon combined as one body at Fort Sill, Oklahoma.

At Fort Sill, Bill was fortunate enough to meet a tough little Lieutenant Colonel named Walter M. Harrison. He was a thoroughly professional and well-respected newspaper editor from the Oklahoma City Times and the Daily Oklahoman, the state's two largest papers. Activated in the callup, he had decided to put together the first divisional newspaper in history. Harrison, normally a tough realist, made the unorthodox decision the 45th Divisional News would not be a propaganda voice for official army

continued

"Able Fox Five to Able Fox. I got a target, but ya gotta be patient.'

Perhaps the most famous cartoon of the war (above), this captionless picture of the mechanized cavalryman shooting his broken steed, was also one of Mauldin's favorites. He made two drawings of it during the war, and in later years, he sculpted it for a bronze statue (below) which adorns the entrance to his front yard.

Willie and Joe, the battle-weary heroes of Mauldin's cartoon, were always prepared to do whatever needed doing. Yet there was a very practical survival instinct closely associated with their actions that captured the hearts of everyone who read them.

Bill Mauldin...
SOLDIER WITH A SMILE continued

The 1941 debut of Willie and Joe in an early issue of the 45th Division News lacked the style identified with Mauldin's later work

"How ya gonna find out if they're fresh troops if ya don't wake 'em up an' ask?"

Cranking huge printing presses by hand was only one of many unusual approaches used to meet deadlines in a war zone.

"Joe, yestiddy ya saved my life an' I swore I'd pay ya back. Here's my last pair o' dry socks."

viewpoints or policies, but a real GI's paper with GI views and an outlet for GI gripes.

This unfettered approach was uniquely suited to the raw talents and ambitions of young Bill Mauldin. Though only a weekly paper, and strictly an extra-duty operation, it gave the entire staff a chance to hone their skills. Mauldin introduced two characters who would become heroes of his cartoons. The soon-to-be-famous Willie and Joe made their first appearance, and Bill began to establish a small, but growing, reputation.

By the time Pearl Harbor was attacked, the newspaper was a well-received entity ready to go to war along with the troops. The only flaws in the operation were no equipment and no funding.

The 45th Division was thrust into the invasion of Sicily. Mauldin and his fellow reporters were not provided with typewriters, typesetters, printing presses, or anything else necessary to publish a newspaper. Still, they were given the opportunity to try. They could continue to be newspapermen if they could somehow find a way to publish and meet their deadlines in a war zone.

By all logic, the paper should have been a casualty of the Sicily invasion. However, their shared sense of renegade independence and self-reliance met the challenge, and they found ways to do the job.

Some of the methods created to make this possible are now legendary. For example, they commandeered cars, trucks, and even a motorcycle for their own use. They operated large electric printing presses by cranking them with muscle power. They paid running costs out of their own pockets and even made printing plates from zinc intended for the lining of coffins. They did whatever it took to do the job. Their methods were invariably unique but always effective. Deadlines were met, and the paper became an important and looked-for item in the combat zone.

When the Italian campaign was launched, Mauldin covered it at Salerno, Monte Cassino, Anzio, and on through Rome. He followed the fighting as it progressed up the Italian peninsula against a very tough and determined German foe who always fought from the high ground.

It was a long, dirty job, and the harder it became, the more Willie and Joe were identified with every dogface who ever shouldered a weapon, dug a foxhole, or washed his precious socks in a helmet. Willie and Joe were now seasoned characters.

The war seasoned Mauldin, too. Already far ahead of his contem-

The prince and the pauper

"I could of swore a couple of krauts wuz usin' that cow for cover, Joe. Go wake up th' cooks."

"Go ahead, Joe. If ya don't bust it ya'll worry about it all night."

poraries in talent and dedication, the realities of war also matured him. His work attained new levels of sophistication and understanding. His cartoons were picked up by other publications and by the Stars and Stripes, the "official" military paper.

Some Sensitive Subject Matter

Nobody can please all of the people all of the time. The more his following grew, the more he gained the ability to attack perceived injustices. He drew a few pointed cartoons about the rigid application of some very harsh dress and behavior codes imposed on battle-weary GIs while on leave from the front trying to enjoy themselves in Naples.

His cartoons struck home and incurred the wrath of a Major General responsible for the offensive policies. The General began to raise some strong objections. (Complaints from a two-star general can have serious effects on an enlisted man's lifestyle.)

The young cartoonist's future looked pretty grim until General Mark Clark, the Commander of the Italian Campaign, publicly asked for a signed original of one of the controversial cartoons. After that, all attempted interference by the brass suddenly ended. The editorial slant of Mauldin's cartoons had been blessed by the big boss.

This wasn't the only instance when Mauldin took aim at sensitive targets. In addition to finding the humor in the day-to-day lives of the soldiers fighting a war, he also saw the humor of the soldiers' war against the human failings of our own operations. This sometimes laid his bull's-eye on the guys running the show, i.e., those officers who demonstrated they were pompous, self-righteous, or self-serving.

This approach naturally endeared Mauldin with his fellow GIs, but surprisingly, it was also well received by most of the officer corps. Unfortunately, there were some who took issue with Mauldin's uncensored approach to humor. The irascible and autocratic General George S. Patton once took deep offense at Bill's rapier wit. He threatened such dire consequences General Dwight D. Eisenhower had to intercede (more of this later).

Being at the center of all this high-level interest would have been a pretty heady experience for the most seasoned professional. It marked an impossible level of success for a feisty 23-year-old buck sergeant from the untamed deserts of New Mexico and Arizona.

Gaining Importance

Bill Mauldin gained importance.

continued

"Them buttons was shot off when I took this town, sir."

Mauldin's stinging jibes at the restrictive dress codes and policies imposed in Napels infuriated the commanding general of the area.

"Th' hell with it, sir. Let's go back to th' front."

"Straighten them shoulders! How long have you been in the Army?

With Stars and Stripes publishing his cartoons, copies were spread around the world and attracted the attention of *Life* magazine. They ran a spread of his cartoons for the folks on the homefront. One of his cartoons was awarded the prestigious Pulitzer Prize (see below). He was the youngest person ever to be so honored. He was now officially a *somebody*.

Not long after the award, General Mark Clark authorized him to have his own jeep and the right to write his own travel orders to visit anywhere he might find inspiration. This was an unprecedented act. No enlisted man had ever been afforded such favored treatment.

Mauldin immediately had the jeep customized into a minicamper and traveling art studio and used it until the end of the war. Never was a jeep more revered. Mauldin and his jeep were later *flown* (treatment reserved for VIPs only) to France to enable him to cover the Battle of the Bulge. (He arrived too late and wound up driving to Paris instead. Ah, things were good.)

One of Mauldin's greatest tributes was being assigned a jeep for his individual use and the authority to travel anywhere at his discretion. Some MPs found this difficult to believe but were always convinced by a phone call.

Bill was awarded the Pulitzer Prize for this cartoon. This validation of his abilities came as no surprise to his ever-growing list of fans.

Fresh, spirited American troops, flushed with victory, are bringing in thousands of hungry, ragged, battle-weary prisoners. (News item)

But all was not perfect. In France, he was informed he had offended the great General George S. Patton, a man who wore four stars on his collar and sported the favor of General Dwight D. Eisenhower. Several of Mauldin's cartoons were, in Patton's eyes, so disrespectful of officers he felt it necessary to ban the distribution of Stars and Stripes to the troops of his 3d Army. This was a serious situation.

General Eisenhower considered the political repercussions so important he interceded. He arranged for a one-on-one meeting between Patton and Mauldin to iron out their differences.

Their meeting was Patton's most celebrated confrontation with an enlisted man since his notorious slapping incident. Their face-to-face conversation turned out to be a rather one-sided discussion, and the man with the stars did the bulk of the talking.

Though it was not the friendliest meeting in history, it did suffice to end Patton's open hostilities and make a peace of sorts. It also extracted Patton from yet another problem with his public relations image, and Stars and Stripes continued to distribute their papers (complete with

continued

When some of his cartoons offended the volatile General George S. Patton, Mauldin was invited to personally meet the general.

THE SHARPEST ALWAYS OPT FOR SAFETY

Why is it the sharpest people are so safety conscious? Time and time again it proves to be true, and Bill Mauldin is one more example of the axiom.

This article was prepared as a commemoration for his WW II cartoons. But during the interview, we found there is also a very strong safety message to Bill, as well.

We knew he was a pilot. He had once done a series of humorous articles for Life magazine about his experience as a fledgling young pilot flying a Piper Tripacer around the country after the war. What came as a surprise was to find he has now logged over 7,000 hours without so much as a single ding to any aircraft or even a close call.

Mauldin credits much of this safe record to his flight instructor. He was taught by Bill Boelke, the nephew of the WW I German ace, Oswald Boelke. Bill Boelke was forever proud of the fact no student of his ever perished in an aircraft mishap. He instilled a healthy respect for aircraft and the art of flying. Mauldin says Boelke's disciplined teaching was a great part of creating safe attitudes which established safe habits and practices serving him for well over 40 years.

While we would never underestimate the importance of good safety indoctrination and training, we believe there is more to the story which should also be pointed out.

Mauldin never developed "get-homeitis." Many times he stayed another day at some waystop along his route to avoid problems, and he has never regretted it. On many other flights, he left the aircraft to take a rented car or an airline home rather than take a risk on chancy weather.

Also, he carefully chose to never consider himself anything more than an amateur pilot, even after buying perhaps the best-equipped Beechcraft Baron ever put together. Previously owned by an airline pilot, it was the first to be equipped with a radar. It also had deicing boots, RDR 100, alcohol props, and all kinds of top radio gear. Yet with all this, he still flew scared and sweaty-handed, but loving every minute of it. Seven thousand hours of safe piloting — not bad for a sweaty-handed amateur.

These cartoons were two of the several Patton pointed out as lacking proper respect for officers and sponsoring mutinous attitudes in the enlisted ranks.

"My, sir— what an enthusiastic welcome!"

"Beautiful view! Is there one for the enlisted men?"

Bill Mauldin has also used his pen for safety. These cartoons were made for a traffic safety handbook issued by the Travelers Insurance Company during the Vietnam War era.

MOLOTOV COCKTAIL

Bill Mauldin...
SOLDIER WITH A SMILE
continued

"I can't git no lower, Willie, me buttons is in th' way."

"Hullo, glamorous." "Howdy, Blitzkrieg."

"Don't look at me, lady. I didn't do it."

Willie and Joe cartoons) to the 3d Army for the rest of the war.

By the end of hostilities, Mauldin was a celebrity. He was flown home (another VIP luxury) to become a syndicated newspaper cartoonist. He also authored a series of illustrated articles for *Life* and *Colliers* magazines. Even Hollywood wanted him. He played the second lead in the movie, "The Red Badge of Courage." The movie starred Audie Murphy, the most decorated hero of WW II. The two war celebrities became fast friends for life. Later, Hollywood made a movie based on Mauldin's Willie and Joe characters.

As time passed, Mauldin took advantage of his keen sense of right and wrong and his interest in government by becoming a political cartoonist in St. Louis and later in Chicago. He was awarded his second Pulitzer Prize for his efforts. To fill his spare time, he has authored 11 books and is at work on another one.

Today, he has returned to his beloved Southwest and lives very comfortably in Santa Fe, New Mexico. He still owns a perfectly operating jeep he purchased new in 1947. Coincidentally, it is modified very similarly to a certain jeep which saw much of Europe during WW II. A touch of the old soldier is still there.

The Soldier With a Smile

Perhaps the most fitting end to this article is to note that in 1991 Bill Mauldin was honored for his work by the General George Patton Museum in Calexico, California. Bill finally had the last word in his old confrontation with "Blood and Guts," and we got another chuckle, courtesy of the soldier with a smile, Bill Mauldin. ■

Hardly old enough to shave, Mauldin became world famous through his cartoons.

Seasoned by almost 50 years since the end of the war, Mauldin's sparkling humor and common sense is as sharp as ever. Here he sits in his equally well-tuned 1947 jeep.

MURPHY'S LAW

"If anything can go wrong, it will."

■ We've all heard of Murphy's Law, and as aviators, we all believe it to be true. What do we know about this philosopher, Murphy? According to *The Official Rules*, by Paul Dickson, Murphy was a military genius. It was Captain Ed Murphy, US Army, who first announced in 1949 his profound law.

Subsequently, there have been many corollaries to Murphy's Law. The first was:

"It will go wrong at the worst possible moment."

A fuller understanding of the law and its corollaries will enable pilots and maintainers to better deal with the complexities of the modern force.

Corollary #2 Nothing is as easy as it first appears.

Corollary #3 If there is a possibility of several things going wrong, the one causing the most damage will be the one to fail.

Corollary #4 Left to themselves, things tend to go from bad to worse.

Corollary #5 If you tinker with anything long enough, it will break.

Corollary #6 Everything takes longer than you think.

Corollary #7 When things seem to be going your way, look carefully in the opposite direction.

Corollary #8 The crew bus always pulls away from the transient ramp when you pull the throttles to cutoff.

Corollary #9 If a regulation is not obeyed, another, more complicated one will be written.

Corollary #10 The most important turnpoint is on the edge of the map.

Corollary #11 Frequency changes are always made while you're folding the map.

Corollary #12 Once unfolded, maps cannot be refolded the same way.

Corollary #13 Stuck mics happen only when you happen to be singing.

Corollary #14 Two safety officers flying together, aren't.

Corollary #15 Nature always sides with the hidden flaw. ■

MAINTENANCE MATTERS

A Failure to Communicate

■ Sooner or later, just about everyone who works on the flight line will be required to call the tower to ask permission to cross an active runway. Those not required to cross the runway on a regular basis are usually somewhat apprehensive and will exercise extreme care to ensure the tower knows their intentions. However, those required to cross the active regularly often become complacent.

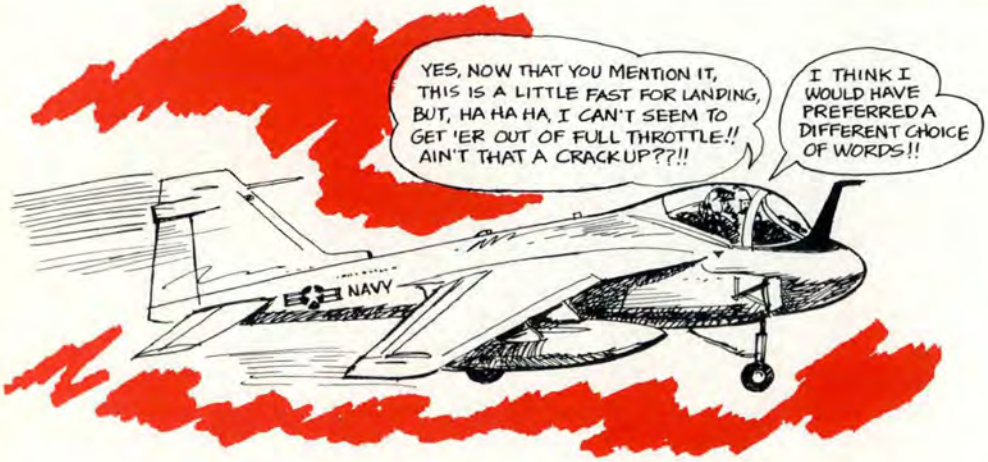
Also, the folks in the tower often assume those required to cross the runway as part of their daily routine know the rules and will follow the same procedures every time. And, as a result, communications often break down. Here's an example.

A barrier maintenance team was dispatched to perform an inspection of the cable on the approach end BAK-13. The team asked for permission to cross the active runway to get to the base side of the BAK-13. The tower cleared the team to proceed across the runway and, as usual, told them to report when clear of the active.

The tower visually observed the team's truck cross the runway and cleared an aircraft, which was in the overhead pattern, to land. With the aircraft on final, the controller saw the barrier maintenance truck back up onto the runway and directed the aircraft to go around. When asked why they went back onto the runway, the team supervisor stated they never reported being clear of the runway.

Who was at fault? The tower for not waiting for the barrier team to report, or the team for again backing onto the runway?

The issue could be argued either way. One thing is sure. Both sides contributed to this incident because of a failure to communicate. The number of runway incursions is on the increase, and with it, the potential for disaster. A review of the procedures for ground runway operations by both base ops and maintenance folks will help communication and may prevent a costly mishap at your installation. ■



Stray Bolt Equals Stuck Throttle

Editor's note: We can always use the lessons learned from any source. Thanks to the US Navy for these.

■ Imagine being trapped in a vehicle aimed at a cliff edge with inoperable brakes and the engine at full throttle pushing you toward catastrophe. Sound like good nightmare material?

This scenario is not as farfetched as it may seem. In fact, a very similar situation developed recently to a

couple of aviators in an A-6 on an aircraft carrier in the Indian Ocean. They had their tailhook wrapped around a wire which made up for not having adequate braking power, but what if they had landed on an airfield, say the airfield at NAS Alameda? Why did their throttle stick wide open? It WAS THE RESULT OF A FOREIGN OBJECT IN THE COCKPIT!!!

The mechanics found a bolt ¼ inch in diameter and ½ inch long lodged in the throttle assembly when they took it apart. This stuck throttle condition could have happened at a much worse time. The "Hazard to Flight Report" which described it could just as easily have been a "Mishap Report" describing the loss of a valuable aircraft and perhaps even a tragic loss of life.

There are times when the battle against foreign object damage seems pretty trivial. However, to these two A-6 drivers and to everyone who knows how terrible and unforgiving a misplaced tool, waste material, or fastener can be, the threat from FOD is never trivial. It is an ever-present threat to life and property. Most foreign objects which are discovered in aircraft are simply the evidence of MAINTENANCE ERROR. We cannot afford the extra dollars, time, and risk to life that FOD causes us. HELP FIGHT FOD!! ■

Cdr R. L. Baker, Flight Check Dept Head, NADEP Alameda

At Your Service

■ If you're like most of the maintenance folks in the field, you think of the Air Force Safety Agency as a group of safety specialists whose job it is to pin the blame for mishaps and to create rules and regulations which will shackle the maintenance effort.

Yes, there are safety experts in the Safety Agency, some of the best in the business. But, their job is not to fix the blame for mishaps. Rather, it is to find the cause and work out ways to prevent future mishaps.

However, the safety specialists cannot do this job alone. Safety specialists represent only a small percentage of the folks assigned to the Safety Agency. Actually, the staff consists of a variety of disciplines: high-time pilots, training specialists, medical specialists,psychologists, legal experts, educators, and some of the best engineers in the aviation industry.

If you are like most flight line people, you will be surprised to learn every member of this staff is available to answer your maintenance and safety questions. They also ***want*** to hear your ideas and comments. And folks, if they don't know the answer to your question, they will find someone who does.

The purpose of *Flying Safety* magazine is to be the medium for communication between aviators, maintainers in the field, and the staff of the Air Force Safety Agency. So, if you have any questions about aviation or maintenance safety; or, if you have an idea which will make the mission easier or safer, send a card or letter to HQ AFSA/SEDP, 918 First Avenue Suite 207, Norton AFB CA 92409-7001. Even better, give us a call at DSN 876-2633 or send a FAX to 876-2777 between 0600 and 1600 hrs Pacific time. Don't forget to also send your suggestions through the Air Force Suggestion Program. They could be worth cash. ■

OPS TOPICS

Oh, Deer!

■ There are those who go hunting with bow and arrow, those who hunt with a shotgun, and those who hunt with a rifle. Whatever the weapon, deer hunting is a popular and exciting sport. It's even more exciting when you use a 55-ton airplane to bag a buck.

While starting the second part of a planned, night touch-and-go, the crew saw a deer off the right side of the nose of their C-130. It was too late to do anything dramatic, so they aborted after apparently striking the deer with the nose gear.

After shutting down, the remains of the deer on the runway and some blood spatters on the fuselage confirmed one of the nosewheel tires had struck and killed the deer instantly. Obviously, the potential for even more serious damage (to the Herk) was great.

You don't have to go through too many pages of FLIP to discover deer and other critters like to hang around airports as much as pilots. Places like Eglin AFB, Ellington AFB, Hunter AAF, Hurlburt Fld, McGhee Tyson, Pope AFB, Vandenberg AFB, and Willow Grove NAS all have warnings about deer near the runways. Additionally, history shows deer have been hit at Columbus AFB, Mississippi, and Ft Huachuca, Arizona, to name two. There has even been a collision between a wild pig and an Air Force jet in Florida.

As long as the hours of darkness remain longer than those of light, the deer and their cousins will be out while we need to use a runway right next to their cafeteria. If you think a 3-pound seagull can ruin your day, imagine what 130 pounds of venison will do to the inlet guide vanes. ■

You Only Think You're High

■ Crewed aircraft often hold an advantage over single-seat fighters because of the immediate availability of resources to deal with problems. One tanker crew recently found itself with a flight surgeon onboard. Who could be better at avoiding physiological problems?

The tanker made a routine takeoff and climb profile until 10,000 feet. At that point, the copilot noticed the cabin altimeter was showing 6,000 feet and selected a maximum rate to maintain a better pressure during the rest of the climb.

Helping to "stir the pot" of brewing trouble was a request from Departure Control to expedite the climb to FL 260. The aircraft commander was only too willing to comply.

Passing 15,000 feet, the flight sur-

OPS TOPICS

geon felt something wasn't quite right with the pressurization. This "feeling" was relayed to the crew. Two crewmembers also responded by stating they were feeling the first signs of hypoxia.

In response, the aircraft commander directed everyone to go on 100 percent oxygen. However, since Departure had asked for a rapid climb, the aircraft commander kept the tanker heading higher.

Only when the aircraft made a level-off at FL 250 did troubleshooting begin.

During all this time, the cabin altitude was losing the battle and slowly climbed through 18,000 feet. When the aircraft commander requested a lower altitude, the air traffic control center refused due to traffic in the area. Finally, the AC declared an in-flight emergency and Center let them start down.

(Because of the confusion over getting a clearance to a lower altitude, the copilot stopped working on the "air conditioning: abnormal operations" checklist. Had the checklist been completed, proper pressurization would have been restored.)

Throughout this whole process, pressurization wasn't the real problem. Sound cockpit resource management was. The aircraft commander had a tremendous amount of resources, including a flight surgeon, available for help. Instead of using these resources, the aircraft commander made every decision as if there was only one "thinking" seat on the tanker.

Cockpit resource management is as much about listening as it is about "doing" and "directing." ■

A Squirrely Situation, or, Nuts to You!

■ Last fall, a mechanic removed the magnetos on a 285-horsepower aircraft engine for servicing. Since the job was going to take the rest of the night, a shop towel was placed over the holes in the engine case to prevent dirt from finding its way into the engine.

Dirt may not have found a way into the engine, but a squirrel in search of a storage site for acorns sure did. Apparently, this squirrel was really anticipating a long winter, because it spent the better part of the night stockpiling food in the upper part of the engine.

The next day, while the squirrel was outbound from the hangar on a resupply mission, the mechanic returned with the repaired magnetos and reinstalled them. He never did quite understand why that little squirrel was so angry at the taxiing Bonanza.

About a month later, the Bonanza was brought in for an oil change. The oil screen was removed and found to be plugged up with acorn shells. It was very close to losing all oil pressure in the engine at the very worst moment. Covering up holes and fluid lines is for more than keeping out a little dirt. It's also to keep out critters, chemicals, and curious fingers. In this case, the pilot was lucky the aircraft was hangared.

Who knows what some of the squirrel's friends might have done. You never can tell what that moose might do with your airplane. ■

The Ballad of Jethead Jones

A Narrative by
GEORGE M. GOLDBERG
Flying Safety, February 1957

The day was clear as he grabbed his gear
And Jethead's hopes were high.
He'd stayed up late with an all-night date
But couldn't wait to fly!

His hunch was right and a routine flight
Was scheduled on the board.
He made two stops, at Weather and Ops
Where Aero Charts are stored.

They forecast rough with a front and stuff
That made it IFR.
You fly it brave on a radio wave
To know just where you are.

"Best take a WAC," comments Airman Mac,
"I'll get you one for free! "
And here's a change in the radio range
"I got from the RFC."

But Jethead smiled as he casually filed
His flightplan for the trip.
He waved aside with disdainful pride
The Airman's worthy tip.

"To fly through soup, who can use such poop?
"Just let me have the book!"
So Jethead's fate, at an increased rate
Was sealed with what he took.

He watched the crew 'til its task was through
Then checked the jet himself.
Old Jethead Jones never shook his bones
Except to guard his health.

At ten past two, with his heading true
His ETAs checked fine.
But then the crest of a front due west
Grew black and formed a line.

He hit the squall like a rubber ball
The clouds were scalded steam.
But Jethead grinned as he tuned her in
And flew right on the beam.

His quick relief soon turned to grief
His headset buzzed and died.
His throat grew dry as alone in the sky
A fear grew taut inside.

He throttled back as he reached for a WAC
And nosed her towards the ground.
But with a start he recalled the chart
He'd scorned to have around.

His fuel was low, as he dipped below
His preplanned altitude.
And soon broke through for a pleasant view
Which helped to change his mood.

Right up ahead was a valley bed
With hills to left and right.
But clouds came down as he spotted a town
And shut the land from sight.

In flying blind he couldn't find
A way to save his neck.
Nor did he learn that a valley can turn
Without a chart to check.

EPILOGUE

Old Jethead Jones, may they bless his bones
Had guts and steadfast heart.
No lack of skill made him hit that hill
But lack of a proper chart!

JUST A STOOGE

REX SAYS

(for copilots only)

I am the copilot, I sit on the right,
I'm not important, just part of the flight.
I never talk back lest I have regrets,
But I have to remember what the pilot forgets.
I make out the flight plan and study the weather,
Pull up the gear and stand by to feather.
Make out the forms and do the reporting,
And fly the old crate when the pilot is courting.

I take the readings, adjust the power,
Handle the flaps, and call the tower.
I tell where we are on the darkest of nights,
And do all the work without any lights.
I call for my pilot and buy him cokes,
I always laugh at his corniest jokes.
And once in a while when his landings are rusty,
I come through with "Jove, but it's gusty."

All in all I'm a general stooge,
I sit on the right of the man I call Scrooge.
I guess you think I'm not understanding,
But maybe someday he'll give me a landing.

REX SAYS

CALL ME SCROOGE

(for pilots only)

I am a guy
Who flies in the sky
With a man on my right, all the time.

For I fly with cargo
From here to Chicago
To save the Air Force a dime.

Now this boy on my right
Who holds the flashlight
As I shoot an approach to O'Hare,

Is a guy who's a must
With a terrible lust
To fly from the left-handed chair.

He thinks he's a stooge
And he calls me Scrooge
Real un-understanding is he.

But if he takes the wheel
And louses the deal
For "No Supervision," they'll hang me.

Editor's note: Years ago, Rex Riley used to write articles for Flying Safety entitled "Rex Says." He would comment on there-I-was-type stories and add his safety message. Cockpit Resource Management may not have been named in July 1956, but the basic idea was certainly there.

ANONYMOUS

The difference between a new flying student's inertial guidance system and professional situational awareness is very interesting!

■ Situational awareness, or SA, is not natural to most pilots. In fact, SA must be developed over time. The beginnings of SA development are present in the training process of new student pilots. The following is an explanation for instructors to better understand why a new flying student's own inertial guidance system is incompatible with professional SA.

"Students know where they are at all times. They know this because they know where they aren't. By subtracting where they are from where they aren't (whichever is greater), they obtain a difference or deviation.

"The students use this deviation to generate corrective commands to fly the aircraft from a position where they are, to a position where they aren't; arriving at the position where they weren't, and now are.

"Consequently, the position where they now are is now the position where they weren't, and it follows the position where they were has become the position where they aren't. In the event the position where they are is not the position where they previously were not, students will immediately realize they have acquired a variation. (Note: Variations are caused by external factors like gravity, and the discussion of these factors is not considered to be within the scope of this report.)

"The variation is the difference (not to be confused with deviations) between where the aircraft is and where the aircraft wasn't. If variation is considered to be a significant factor, it too may be corrected for by students.

"The 'thought process' of students used to reconcile variation is as follows: Because a variation had modified some of the information which the students obtained, they are not sure where they are. However, they are sure where they aren't (within reason), and they know where they were.

"They now subtract where they should be from where they weren't (or vice versa) and by differentiating this from the algebraic deviation between where they shouldn't be and where they were, they are able to obtain the difference between their deviation and their variation, which is called 'error.' This error is then recorded in the students' gradebook by the IP." ■

BASIC PROCEDURES FOR THE

Cat and Duck Method of Flying

■ Sooner or later, pilots of light airplanes boring holes in Los Angeles smog will find themselves with too much smog between their aircraft and the ground references. At this time, they may need to use some basic instrument procedures, but alas, their aircraft is not equipped. For those rare cases when a backup instrument system is needed, survivors of the LA TCA have developed the Cat and Duck Method of instrument flying. The procedures are as follows:

Place a live cat on the cockpit floor. Because a cat always remains upright, she can be used in lieu of a needle and ball. Merely watch to see which way the cat leans to determine if a wing is low, and if so, which one.

The duck is brought along for instrument approaches and landings. Because of the fact any sensible duck will refuse to fly under instrument conditions, it is only necessary to hurl your duck out of the plane and follow him to the ground.

CAUTION

There are limitations to the Cat and Duck Method, but by rigidly adhering to the following limitations, a degree of success may be achieved which will surely startle you, your passengers, and even the tower.

■ Get a wide-awake cat. Most cats do not want to stand up at all. It may be necessary to carry a large dog in the cockpit to keep the cat at attention.

■ Make sure your cat is clean. Dirty cats will spend all their time washing. Trying to follow a washing cat usually results in a tight snap roll followed by an inverted spin.

■ Use old cats only. Young cats have nine lives, but old, used-up cats with only one life left have just as much to lose as you do and will, therefore, be more dependable.

■ Beware of cowardly ducks. If the duck discovers you are using the cat to stay upright, he will refuse to leave without the cat. (Ducks are no better in IMC than you are.)

■ Be sure the duck has good eyesight. Nearsighted ducks sometimes fail to realize they are on the gauges and go flogging off into the nearest hill. Very nearsighted ducks will not realize they have been thrown out and will descend to the ground in a sitting position. This maneuver is difficult to follow in a Cessna 172.

■ Use only land-loving ducks. It is very discouraging to break out and find yourself on final for a rice paddy, particularly if there are duck hunters around. Duck hunters suffer from temporary insanity while sitting in freezing weather in blinds and will shoot at anything that flies.

■ Choose your duck carefully. It is easy to confuse ducks with geese because many water birds look alike. While they are very competent instrument fliers, geese seldom want to go in the same direction as you. If your "duck" heads off toward Canada or Mexico, you may be sure you have been given the goose.

NOTE

For reasons which are apparent, the Cat and Duck Method of instrument flying is recommended for those pilots whose airplanes have large, easily cleaned cabins.

The Cat and Duck Method has received much publicity and is considered to have a great deal of merit by those who have not tried it. No reports have been received from those who did try it, and none is expected. Pilots are invited to assess its merits objectively.

NOTE

There is , most likely, another method of instrument flying which you may prefer. ■

AVIATION G

THROCKMORTON T. BEAUREGARD
Colonel, Confederate Air Force
(Retired)

Angle of Attack

Barrel Roll

Engine Failure

or Gliding Distance

■ *Airfoil:* Reynolds Wrap™ — for manufacturing aircraft wings.

Airspeed: Speed of an airplane — deduct 25 percent when listening to a Navy pilot.

Altimeter Setting: The place where the altimeter needle sets — usually behind the yoke on a tough instrument approach.

Angle of Attack: The angle relative to the barstool after a naval aviator says, "Real pilot wings are gold."

Arresting gear: Security Policeman's equipment.

Bank: The folks who hold the lien on most pilots' cars.

Steep bank: Banks which charge pilots more than 10 percent interest.

Barrel roll: A type of athletic event enjoyed at squadron picnics — after the barrels are empty.

Carburetor Icing: A phenomena happening to aero club pilots at exactly the same time they run out of gas.

Chase Plane: Number 4 in the monthly retreat ceremony fly-by.

Cone of Confusion: An area approximately the size of New Jersey located near the final approach fix of a back-course localizer.

Crab: The squadron Ops Officer.

Dead Reckoning: You reckon correctly, or you are.

Engine Failure: A condition which occurs when all fuel tanks become filled with air.

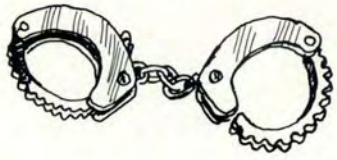
FAA: Government agency — Friendly Aviator's Association.

Firewall: Section of the aircraft specially designed to allow heat and smoke to enter the cockpit.

Gliding distance: One-half the distance from an airplane to the nearest emergency landing field.

Hydroplane

Arresting Gear



Crab

Quack

Rich Mixture

LOSSARY

Gross weight: Maximum permissible takeoff weight plus one case of beer, one set of golf clubs, and two boxes of fresh-frozen bay shrimp.

Hydroplane: An airplane designed to land on a wet runway — 20,000 feet long.

IFR: A method of flying by needle, ball, and ripcord.

Immelman: Roger Immelman, the first aviator to fall down after reaching the top of the stairs at the Auger.

Lazy Eight: An augmented crew returning from Tinker.

Lean Mixture: Nonalcoholic beer.

Mach Number: A quantity encountered in flying equal to one-half the number of reports to be filled in.

Motor: Word used by student pilots and Yankees when referring to aircraft engines.

Murphy's Law: Written by Bernoulli's evil twin brother.

Nanosecond: The delay time built into Center's altitude deviation warning system.

NOTAMs: Murphy's Law in shorthand form.

Obscuration: How a weatherman says "obfuscation."

Parasitic Drag: A pilot who bums a ride back to the states and then complains because there's a stop at Dover.

Pattern: The kaleidoscope effect seen on Tower's BRITE scope during a weather recall.

Quack: Mallard Aircraft Strike Hazard condition green (all Mallards will land upon hearing "quack, quack, qua — ").

Range: 28 miles beyond the point where all fuel tanks fill with air.

Rich Mixture: What you order at the other guy's promotion party.

Roger: Used when you're not sure what else to say (see also, Immelman).

Roll: The first design priority for a fully loaded KC-135A.

Service Ceiling: Altitude at which C-21 crews can serve drinks.

Spoiler: The return-to-fly board.

Stall: Technique for explaining to the bank why your car payment is late.

Tactics: What a clock sounds like when it needs fixing.

Turn-and-bank Indicator: An instrument highly ignored by pilots, despite the fact engineers have never improved it.

Useful Load: The volumetric capacity of an aircraft, disregarding weight.

Up: A chant used by pilots taking off from Colorado Springs who want to discover the meaning of life.

VFR: Technique for maintaining formation proficiency in the LA basin on weekends.

VOR: Radio navigation aid taking its name from the VORtex effect of pilots trying to home in on it.

Windsock: Bent, metallic funnel painted bright orange for which there is no known purpose.

WOXOFF: Ceiling and viz so low you can't see the forecaster as he walks off to the snackbar.

X-C: Logbook entry made after a pilot had to break out of the pattern and reenter.

Yankee: Any pilot who asks JAX Center to "say again."

Yaw: The ability of a student pilot to rotate an airplane around the vertical axis — usually followed by the instructor saying, "Yaw do that agin, and Ah'll break your ahm."

Zero Zero: Style and artistry points scored during a gear-up landing. ■

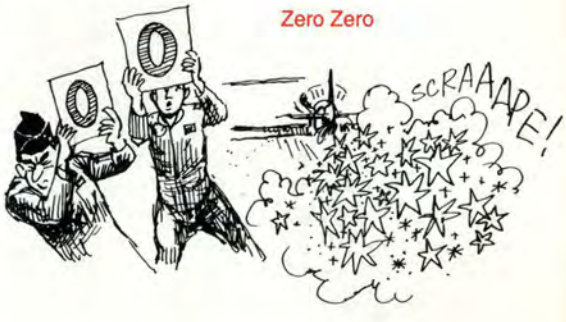
Stall

Up

WOXOFF

Yaw

Zero Zero



Honorably Retired

■ **Williams AFB AZ** Williams AFB has been a continuous member of the Rex Riley Bases list since February 1979. In the last 14 years, they have been re-evaluated five times. Each time, the base was rated very high overall, with transient alert and crew transportation consistently getting the highest marks.

Wurtsmith AFB MI Wurtsmith also made the list for the first time 14 years ago in February 1979. As a northern tier base, somewhat out of the normal Air Force mainstream, they have been given only one additional evaluation since then. In each case, the evaluator highlighted the commitment to excellence the personnel at Wurtsmith had for providing quality service whenever a transient crew had occasion to visit.

New Award Recipient

Luke AFB AZ I had a chance to do a very short-notice survey on Luke when I had to divert into there for fuel on my way into Norton AFB from Panama in a C-141. With less than 30 minutes' notice, the Luke base ops dispatchers coordinated all services for me, including customs for my passengers, transportation for the crew and passengers, and had a fuel truck standing by when we blocked in. Transient alert worked hard to minimize our ground time. It was a short but pleasant stop.

Retaining the Award

Andrews AFB MD Andrews AFB gets a lot of transient traffic, and the people work the system very hard there to make sure quality services are a way of life. ATC services were rated outstanding because of the effort RAPCON made to effect an in-flight routing change during a busy time period. Weather was also rated outstanding for having a comprehensive briefing ready upon Rex's arrival at base ops as requested the night prior.

Ellsworth AFB SD This is the second time in a little over a year

COUNTRY NOTES

Ellsworth has been surveyed, each time by a different pilot. Base ops and billeting were both rated outstanding during each survey. During this survey, dispatch personnel at base ops spent a lot of time successfully hunting for a computer flight plan which had been sent to the base. They also worked hard to process a flight plan to Central America. Billeting has outstanding quarters with every possible amenity available. Transient alert came in very early (0300) on a Sunday morning to help us meet a required departure time. My only complaint was the howling, icy wind.

Offutt AFB NE Overall, Offutt AFB provides excellent services and facilities for transient crews. Base transportation provided Rex with a U-drive vehicle for his convenience. The weather forecaster developed an excellent, thorough brief for a multistop flight plan. Everyone Rex came in contact with had a positive, courteous attitude.

Congratulations also go to Howard AB, Panama, Norton AFB CA, and Peterson AFB CO who were recertified during some recent surveys. ■

Loring AFB	ME	Dover AFB	DE	Howard AFB	PM	Travis AFB	CA
McClellan AFB	CA	Griffiss AFB	NY	Peterson AFB	CO	Norton AFB	CA
Maxwell AFB	AL	K I Sawyer AFB	MI	Moody AFB	GA	Tinker AFB	OK
Scott AFB	IL	Reese AFB	TX	RAF Lakenheath	UK	Charleston AFB	SC
McChord AFB	WA	Vance AFB	OK	Zaragoza AB	SP	McGuire AFB	NJ
Mather AFB	CA	Laughlin AFB	TX	Torrejon AB	SP	Incirlik AB	TK
Lajes Field	PO	Minot AFB	ND	Bergstrom AFB	TX	Selfridge ANGB	MI
Sheppard AFB	TX	Vandenberg AFB	CA	Davis-Monthan AFB	AZ	Nellis AFB	NV
March AFB	CA	Andrews AFB	MD	Hahn AB	GE	Hill AFB	UT
Grissom AFB	IN	Plattsburgh AFB	NY	Kunsan AB	KOR	Osan AB	KOR
Cannon AFB	NM	MacDill AFB	FL	Ramstein AB	GE	Kadena AB	JA
Randolph AFB	TX	Columbus AFB	MS	Johnston Atoll	JQ	Ellsworth AFB	SD
Robins AFB	GA	Patrick AFB	FL	Wake Island	WQ	Yokota AB	JA
Seymour Johnson AFB	NC	Westover AFB	MA	RAF Alconbury	UK	McConnell AFB	KS
Elmendorf AFB	AK	Eglin AFB	FL	Hurlburt Field	FL	Homestead AFB	FL
Shaw AFB	SC	RAF Bentwaters	UK	Carswell AFB	TX	Tyndall AFB	FL
Little Rock AFB	AR	RAF Upper Heyford	UK	Altus AFB	OK	Rhein Main AB	GE
Offutt AFB	NE	Andersen AFB	GU	Grand Forks AFB	ND	Misawa AB	JA
Kirtland AFB	NM	Holloman AFB	NM	Fairchild AFB	WA	Edwards AFB	CA
Buckley ANGB	CO	Dyess AFB	TX	Mountain Home AFB	ID	Langley AFB	VA
RAF Mildenhall	UK	Aviano AB	IT	Barksdale AFB	LA	Luke AFB	AZ
Wright-Patterson AFB	OH	Bitburg AB	GE	Hickam AFB	HI		
Pope AFB	NC	Keesler AFB	MS	Kelly AFB	TX		

IFC APPROACH
By the USAF Instrument Flight Center, Randolph AFB, TX 78150-5001

How to Build a Better Mousetrap

USAF INSTRUMENT FLIGHT CENTER
Randolph AFB, Texas

This is a test. This is only a test. In the event of an actual situation, you will know it is not a test because it will happen unexpectedly and at the most inopportune time possible.

■ Picture this: You have just flown a grueling mission in deepest, darkest Outer Limits and are RTB in the kind of goo you could use to pack fine china in.

You are using 90 percent of your functional ability to stay in a semblance of an upright attitude and 8 percent to seek out (and hopefully not destroy), secure, and try to interpret the appropriate approach plate. This leaves only 2 percent of your total capacity to carry out normal bodily functions such as breathing, blinking, growing hair, and producing enough sweat to soak the back of your flight suit. At the current rate of depletion, your adrenaline reserves won't run out until viscous rubber has come to a dead stop on the rain-slickened black asphalt.

Flash, flash, flash. Drats. The amber light in the edge of your peripheral vision, which half begs for and half demands your attention, has "Master Caution" written all over it — another war story in the making.

One more sweep through the electronic primary flight references before you divert some attention to the telelight panel shows airspeed and altitude vertical scales are steady. Good.

Now, it's time to handle the emergency and get your picture in the Well Done column in *Flying Safety* magazine. On the next scan of the primary flight references, you see the left vertical scale is moving up, and the right vertical scale is moving down — rapidly!

Here's the test

Within 3 seconds, define the motion of your aircraft (i.e., accelerating or decelerating, climbing, or diving). One Mississippi, two Mississippi, three Mississippi — time's up. How did you do?

Two factors determined your success on this test: training and display design. Since a lot of insidious training has gone on from the first time you tried to float your brother's favorite model ship in the bathroom's short white ocean with the mighty whirlpool, maybe we should take a look at designing displays which align with this training.

Display design can go a long way in breaking the chain of events leading to sweaty palms and nightmares. Pilots are all too often distracted from the basic flight requirements (i.e., pitch and bank) during dynamic maneuvers and fail to stay on top of the changing aircraft state.

For years, the scientists and engineers have been toying with systems which determine when the aircraft is in "uh-oh!" territory. Their systems are supposed to calculate the appro-

Reexamining what exists, and recognizing what would make it work better, is the father of invention, even instruments. Which is better, the round dials or the vertical scales? Which is clearer, surer, and easier to read?

priate control movements and execute them in an expeditious manner. Such systems will have to be able to monitor a jillion sensors and base their "decisions" on a logic tree which would make a 200-year-old oak look like a seedling. Why bother developing one of those synthetic systems when we already have an organic one (i.e., the pilot) in the field?

Answer: The organic one is fallible. Sometimes its sensors are overloaded and new information takes an excessive amount of time to be processed by the body's central processing unit. There is no guaranteed solution to make the present system infallible, but human factors types believe we can improve its performance by exposing it to information in a format which rings all the right bells and blows the proper whistles to make the information more readily recognizable by the brain. In short, symbology design isn't just an important part of display acceptance, it's crucial.

Let's talk "round dials" for a minute. Remember those days in grade school when you would watch the second hand on the big, round clock on the wall and try to telepathically make it move faster so you could get out to recess before your body melded with the desk? That second hand's movement gave our simple life meaning.

Now think about when you learned to fly. Almost every USAF pilot out there was trained in the T-37 and T-38 aircraft. The instruments in those aircraft are primarily round dials and, likewise, give our more complex life meaning. When the dials go counterclockwise, things decrease. When the dials go clockwise, they increase. That motion is universally accepted — at least in the part of the universe where Earthlings dwell.

Exactly what it is in our brain which makes the interpretation easy to understand, no one really knows. It could be a response developed naturally over some long evolutionary chain of events, or it could be the simple result of being exposed to a world with similar displays. The point is — it works!

The USAF Flight Symbology Development Group (consisting of pilots, engineers, and human factors specialists) is engaged in a joint project to standardize the symbology and mechanization of flight displays.

Part of their project has involved a search for the most intuitive displays available. Two objective studies have shown — under conditions requiring a rapid instrument crosscheck for maintaining altitude and airspeed — pilot performance was better using round dials than it was using "moving" scales or digits.

For example, in one test which employed simulated gusty conditions, the mean error in altitude was 125 feet with dials and 193 feet with scales. Airspeed error was 6 knots and 9 knots with dials and scales, respectively. Subjective results correlated with the objective results. In those tests, 83 percent of the subject pilots with extensive experience using electronically displayed vertical scales and 86 percent of all the subject pilots preferred the dials over vertical scales or digits. Based on these findings and their implied impact on safety, we will probably find round dials in the electronic displays of future cockpits.

The search for better ways to display critical information will go on indefinitely because new technologies will always open new avenues of research. Sometimes, as in the case with the round dials, we may find ourselves retracing steps to a more traditional display, and sometimes, we may be looking at displays which only a few years ago were considered impossible. In any case, the criteria for success do not include the date of conception of an idea, conventionality, or aesthetic appeal. Success in display development is based on performance — just like it is in flying. ■

WHAT'S YOUR IDEA?

If you have a novel idea or a comment about cockpit displays burning inside you, please share it with the Flight Operations Division at the USAF Instrument Flight Center, 24-hour DSN 487-3077, commercial 210-652-3077.

The IFC Staff thanks Mr Bill Ercoline (Krug Life Sciences) of the Armstrong Laboratory, Flight Motion Effects Branch at Brooks AFB, Texas, for his contributions to this article.

Regulations For Operation of Aircraft

Commencing January 1920

1. Don't take the machine into the air unless you are satisfied it will fly.

2. Never leave the ground with the motor leaking.

3. Don't turn sharply when taxiing. Instead of turning sharp, have someone lift the tail around.

4. In taking off, look at the ground and the air.

5. Never get out of a machine with the motor running until the pilot relieving you can reach the engine controls.

6. Pilot's should carry hankies in a handy position to wipe off goggles.

7. Riding on the steps, wing, or tail of a machine is prohibited.

8. In case the engine fails on takeoff, land straight ahead regardless of obstacles.

9. No machine must taxi faster than a man can walk.

10. Never run motor so that blast will blow on other machines.

11. Learn to gauge altitude, especially on landing.

12. If you see another machine near you, get out of the way.

13. No two cadets should ever ride together in the same machine.

14. Do not trust altitude instruments.

15. Before you begin a landing glide, see that no machines are under you.

16. Hedge-hopping will not be tolerated.

17. No spins on back or tail slides will be indulged in as they unnecessarily strain the machines.

18. If flying against the wind and you wish to fly with the wind, don't make a sharp turn near the ground. You may crash.

19. Motors have been known to stop during a long glide. If pilot wishes to use motor for landing, he should open throttle.

20. Don't attempt to force machine onto ground with more than flying speed. The result is bouncing and ricocheting.

21. Pilots will not wear spurs while flying.

22. Do not use aeronautical gasoline in cars or motorcycles.

23. You must not take off or land closer than 50 feet to the hanger.

24. Never take a machine into the air until you are familiar with its controls and instruments.

25. If an emergency occurs while flying, land as soon as possible.

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A is for Airspace

LT COL ROY A. POOLE
Editor

■ Somewhere, in all of the flight safety literature which crossed your desk during the past few months, you probably saw an announcement for the new airspace classification system (see "IFC Approach" in the July 1992 issue of *Flying Safety*).

If you're like most of us, the apparent complexity of the new system (especially when you didn't need to know it for another year) made it easy to skip over the complicated charts and articles. However, before you know it, September 16, 1993, will be here. Along with scheduling your altitude chamber, you'll also need to have the new classifications down pat.

Rather than dump the whole can of alphabet soup in your lap at one time, *Flying Safety* will spend the next few issues giving you a rundown of the new classification system in bite-sized stories. We begin this month with perhaps the simplest of all airspace — Class A.

Class A was once described by three simple words: Positive Control Airspace (PCA). Only the name was changed with the introduction of Class A airspace. All of the old "rules" are still there.

Class A airspace is defined as that airspace from 18,000 feet MSL to FL600. (Those of you operating near the extreme ends of our nation — southern Florida and western Alaska — should research FAR Part 71 closely for exceptions.)

To enter Class A airspace, you must be on an IFR flight plan and cleared into the airspace by Air Traffic Control. These two requirements naturally anticipate you are instrument rated and have working radios.

Once established in Class A airspace, aircraft separation is a primary goal of Air Traffic Control. Therefore, conflict resolution and traffic advisories should not be needed, but please don't stop looking outside the cockpit. Safety files hold a number of reports of near midair collisions which took place in the airspace we now call Class A.

Because the PCA never showed up on any of our charts, don't expect Class A designations to show either. H-1 or H-3 charts will still omit any reference to Class A airspace. However, as you will see next month, other new airspace classifications will begin to show up on new charts shortly.

Okay, once more from the top (except of course, for TR-1 pilots), Class A is for airspace, above everyone else. ■

FEATHERY FACTS FOR FLYERS

2,352

IN THE PAST TEN YEARS THERE WERE **2,352** MISHAPS INVOLVING BIRSTRIKES!

THE **IMPACT FORCE** OF A TWO POUND BIRD AT 250 KNOTS IS OVER **178,000** FOOT POUNDS.

THE HIGHEST RECORDED BIRDSTRIKE OCCURRED AT **37,000** FT.

1/2 TO 1 BILLION BIRDS MIGRATE THROUGH CONUS EACH YEAR.

SEVERAL AIR FORCE BASES ARE BUILT IN THE CENTER OF BIRD BREEDING OR NESTING GROUNDS OR ON MAJOR MIGRATORY ROUTES.

THE FIRST RECORDED BIRDSTRIKE MISHAP OCCURRED IN 1910. A SEAGULL GOT CAUGHT IN THE AIRCRAFT CONTROL CABLES. IN THE RESULTING CRASH THE PILOT WAS KILLED.

IN THE PAST TEN YEARS THERE HAVE BEEN **13** CLASS A MISHAPS INVOLVING BIRDSTRIKES

FLYERS, remember to use your visors and avoid feathery fly routes where possible.