TAC ATTACK

Tac Attack

AUGUST 1979

HARRISON

RISK ASSESSMENT
...Pg 4

TAC ATTACK (USPS 423-530) AUGUST 1979

AUG

READINESS IS OUR PROFESSION

TACTICAL AIR COMMAND

GENERAL W. L. CREECH
COMMANDER

LT GENERAL ROBERT C. MATHIS
VICE COMMANDER

CONTENTS

Angle of Attack	3
Risk Assessment	4
TAC Tips	8
Busy, Busy, Busy	10
SPO Corner	12
Aircrew of Distinction	14
Safety Awards	15
Airfield Profiles	18
Chock Talk	22
Weapons Words	24
The Simulator Game	26
Down to Earth	28
Letters	30
TAC Tally	31

COL RICHARD K. ELY
CHIEF OF SAFETY

MAJ PETE ABLER
EDITOR

STAN HARDISON
ART EDITOR

BEATRICE WAGGENER
EDITORIAL ASSISTANT

SGT DAVID GARCIA
STAFF ARTIST

TACRP 127-1

Material in this magazine is nondirective in nature. All suggestions and recommendations are intended to remain within the scope of existing directives. Articles published in this magazine represent the opinions of the authors and do not necessarily reflect the position of Tactical Air Command or the USAF. Information used to brief accidents and incidents does not identify the persons, places, or units involved and may not be construed as incriminating under Article 31 of the Uniform Code of Military Justice. Written permission must be obtained from HQ TAC before material may be republished by other than Department of Defense organizations.

Contributions of articles and photos from personnel in the field are encouraged, as are comments and criticism. We reserve the right to edit all manuscripts for clarity and readability. Direct communication is authorized with the Editor, TAC ATTACK, HQ TAC/SEPP, Langley AFB, VA 23665; AUTOVON 432-2937.

Distribution FX. Controlled by SEPP

Authority to publish this periodical automatically expires on 26 Jan 1980 unless its continuance is authorized by the approving authority prior to that date.

VOLUME 19 NUMBER 8

Angle of Attack

HOW'S YOUR LUCK?

" Good luck is a lazy man's estimate of a worker's success. "

Anonymous

Are you the lucky type or does everything you do seem to turn out wrong? There are a lot of people who believe in luck--that unseen force which brings good fortune or adversity. There are probably just as many people who believe in making their own luck.

Have you ever watched a professional card player? That poker face doesn't come from years of practice of trying to hide one's feelings. It comes from the intense concentration of keeping track of all the cards and recomputing the odds. He doesn't guess what cards the other players hold--he knows.

How about any successful major league hitter? They didn't reach that position because of luck. Each one knows the pitcher and the type of pitch he will throw in the particular situation--just as all the successful pitchers know a batter's strengths, weaknesses, and how to exploit both.

Even the folks with the more dangerous jobs, movie stunt men and women and auto racers, seldom suffer serious or fatal injuries. Many days and weeks of planning go into preparing for a stunt or a big race.

These people all have one thing in common--the thing which separates them from the amateurs--they make their own luck. They don't wait for a nonexistent force to get them out of a tight spot. They never get into it in the first place.

As with any other profession, in the military there are professionals and amateurs. The professionals, even those who are new and inexperienced, make things happen by doing the job right; the amateurs have things happen to them because they don't learn from their own mistakes and the mistakes of others--they don't seem to care. If a lot of things have been happening to you lately, maybe it's time to take charge and start making things go the right way--your way. The effort is minimal, and you won't have to wonder why someone else has all the luck.

Richard K. Ely

RICHARD K. ELY, Colonel, USAF
Chief of Safety

risk assessment

THE FIRST STEP

Risk Assessment

By Maj Alan T. Reid
104 TFG (ANG)
Chief of Safety

It may be inevitable, like taxes--risk assessment that is. The complexity of the TAC mission has taken a quantum jump, as have training requirements. An important factor which can end up left behind is supervision. We are still supervising in essentially the same way we did 5, 10, or even 15 years ago. The mission, training, and supervision must proceed hand in hand, or not proceed at all.

A lot of soul searching, after the fact, prodded me into an attempt to quantify the assumed, ever-present, but elusive element of RISK. It is a challenging subject and should be an inevitable pursuit of all fighter units. Here is a method we are currently using at our unit: (Keep in mind that the method would have to be modified for a different unit/mission combination.)

We know that some areas of flight are inherently more dangerous than others. Low level navigation, air combat maneuvering, and other missions have a demonstrated level of risk. The characteristics of our aircrews also contribute to the presence or absence of risk. Let's take a day's flight schedule and assign an arbitrary number value to a bunch of facts about the mission and the pilot assigned. Then let's modify our numbers with considerations relating to experience and proficiency and see what numbers fall out. In the method we use, the effect of each factor is cumulative. The number values are obviously arbitrary, but increase as mission complexity (risk) increases. Here's what our method looks like:

PROFICIENCY

a. Number of Days Since Last Flight — x 0.2 _____
b. Less than 3 Sorties in Last 30 Days--Add 3 _____
c. Less than 9 Sorties in Last 90 Days--Add 3 _____

MISSION ELEMENT

a. Low Level Navigation--Add 1 _____
b. Strange Low Level--Add 1 _____
c. High Threat Scenario--Add 2 _____

CONVENTIONAL WEAPONS DELIVERY

a. High Threat Tactics--Add 1 _____
b. Weather Less Than 5,000 Feet or Low Vis--Add 2 _____

EXERCISE/DEPLOYMENT

a. Any--Add 2 _____
b. Surge (or on Third Sortie of the Day)--Add 2 _____

FIELD WEATHER

a. Personal Minimums--Add 1 _____
b. Night Weather--Add 1 _____

EXPERIENCE

a. Very Inexperienced--Add 4 _____
b. Inexperienced--Add 2 _____
c. Experienced--Subtract 4 _____
d. Highly Experienced--Subtract 7 _____

TOTAL _____

Some definitions are in order. Any mission conducted away from home rates two points. Any surge, at home or away, rates two more points. The experience description would be based only partially on the number of hours in the UE aircraft. It would be a subjective decision based on acquired ability or progress in training. For instance, a captain with 2,000 hours in F-4s, but only 50 hours in A-7s, would probably be "very inexperienced," but with another 150

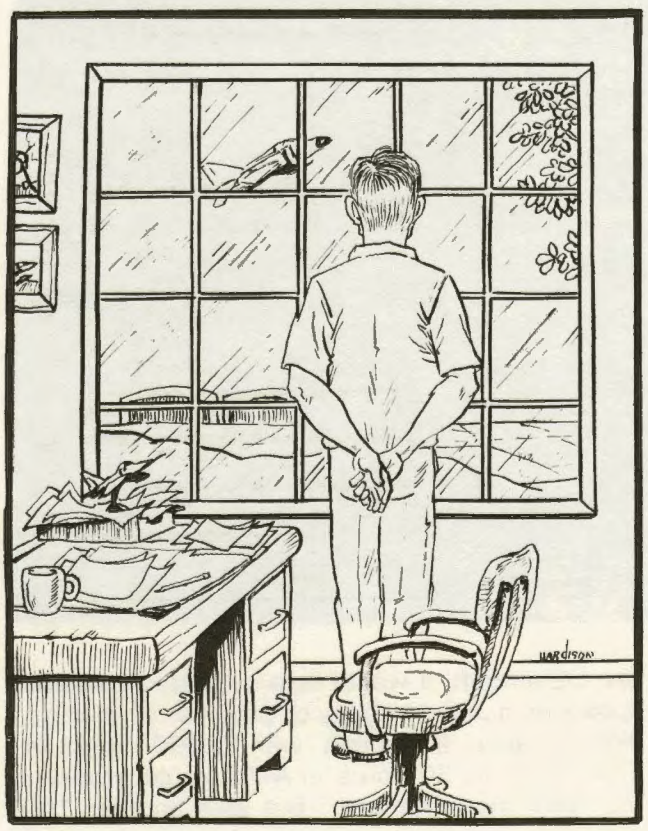
RISK ASSESSMENT

hours could move into the "experienced" category if he was above average. A major, line jock with 2,000 hours total and 500 hours UE would likely be "very experienced." Put him at a desk for six months with only minimum flying and he becomes "experienced."

"What a crock," you say. "That's something that every Ops Officer ought to be doing in his head. He doesn't need another dumb system to follow just to keep track of his people." Well, maybe. Let's further assume that a man-mission combination that compiles a score of 9 or 10 points qualifies for a closer look. An example:

a. Four Days Since Last Flight x 0.2 =.8	+1
b. Low Level Nav	+1
c. Weapons Delivery on a Tactics Range	+1
d. Weather Overcast, Haze	+2
e. Inexperienced (155 UE; 3,500 Total)	+2
f. On an Exercise	+2
TOTAL	9

If you haven't guessed by now, this data is from a real accident. I have cranked many pilot-error accidents through this system; and the results are fairly consistent, a 9 to as high as 14



Maj Alan T. Reid is this month's Fleagle T-shirt winner

points. Others miss completely. But more are on the numbers than off.

We're not trying to come up with a system to replace the Ops Officer, SOF, or anybody else. We're trying to make his job a little easier. So what do you do when you find a man-mission combination of 9 or 10 points? Yank him off the schedule? Of course not, that's self-defeating. But you do take a hard look at it. You might delete the low level portion or the tactics work. Perhaps you could cancel the aggressor which was going to attack the flight. Or you could make sure the flight lead tailors his briefing to this individual. If the flight situation deteriorated, this system could trigger a decision on the cautious side by the flight leader. Remember, you can subtract points as easily as they were added.

No, this system is not THE answer to our accident prevention problems. It would be nice if we could fit all of our aircrews into nice, neat little cubicles and select the appropriate one each time the numbers are right. We know that won't work. This system or a similar one, could provide the scheduler and Ops Officer with a checklist to use in examining the schedule. A second look could easily catch the fact that Captain A is scheduled for two tough sorties after a 10-day DNIF or that Lieutenant B is up for an early morning flight and he just brought the wife and baby home from the hospital 3 days ago. Neither is a wise move based on known facts.

Try to come up with your own system and see if it works. If you are one of those computer buffs, you could make it virtually automatic. Our system is not foolproof, but it's a start. Like it or not, it may be the coming thing. Just imagine yourself 15 or 20 years from now feeding the missions and aircrews into a computer and having the schedule come out the other end in 10 seconds. I'd be willing to bet that a system of this sort emerges in the not-too-distant future. Any takers?

Major Reid earned his pilot wings from the U.S. Navy in 1962. Besides stateside tours, he has served in Europe and the Pacific flying the T-28, T-33, C-121, and P-3A. He joined the ANG in 1970 and is currently an IP in F-100s.

For a slightly different "method" of risk assessment, Major Pete Marikle of the Safety Office at Luke AFB, AZ, came up with the following handout for the flying supervisory personnel. Remember, this is not, nor is it intended to be, a structured, formal system. Both of these methods are simply another way of examining your flying operations. They are designed to stimulate thought, nothing more.

Thought Provoker

For CCs, Ops Os, Flt CCs, Flt Leads

NOTICE: This is a gimmick designed to stimulate thought--not a cut/dry system or panacea.

ABOVE ALL - TRUST YOUR GUT FEEL (JUDGMENT)

DECREASING CAPACITY ⟶

AIRCREW ELEMENT

(HUMAN CAPACITY)

5	4	3	2	1

?--Individual currency, proficiency, judgment, discipline?
?--Quality of student--caliber of other flight members?
?--In-flight supervision?
?--Long crew day? Other fatigue factors? Hot wx? Rainy preflight?
?--Personal problems, recent divorce, birth, relatives visit?
?--Any get home pressures? Big party tonight pressures?
?--Health problems?
?--Sortie generation pressures? MEI pressures?
?--Current squadron morale, workload, pressures, stress levels?
?--Combined crew proficiency, etc.?
?--Task experience? Complacency pressures?

INCREASING DEMAND/STRESS ⟶

ENVIRONMENTAL ELEMENT

(DEMAND LEVEL)

4	3	2	1

?--Day, VFR
?--Night, weather, formation?
?--Task demand--low level, range, DACT, etc.
?--Runway condition.....NOTAMS.....
?--Traffic saturation level, quality of GCA, etc.
?--New tasks?

AIRCRAFT ELEMENT

3	2	1

?--Recent aircraft history, malfunctions, certainty of fixes
?--Code 2 systems, flyable writeups?
?--Hangar Queen?
?--Suitability of configuration to mission

TOTAL FOR THIS SORTIE

8-12 Acceptable
6-7 Command evaluation-decision
3-5 Unacceptable--revise elements

THE SCORING CODE IS ARBITRARY--HOW IMPORTANT IS THIS SORTIE??? ⟶

Major Marikle constructed this handout based on the method listed in the article, "System Safety and the Decision Maker," USAF/NAVAL STUDY KIT, April 1979. For a look at the full article, contact your unit safety office. . .

TAC TIPS

Tac Tips

...interest items, mishaps with morals, for the TAC aircrewman

He who is the most slow in making a promise is the most faithful in the performance of it.
ROSSEAU

COMPRESSOR STALL

A few months ago, we had an article on compressor stalls which talked about inlet distortion, throttle movement, etc. Now, picture an F-4 at 15,000 feet, 190 KIAS, 15 units AOA, and 90 degrees nose up. I'm sure you realize that this is not a sustainable mode of flight. Now, move the throttles from military to afterburner and what do you think might happen? If you said compressor stall, you're right. If you didn't, think about this...

When you advance the throttle on your aircraft, you add additional fuel to the combustion section of the engine. This causes more of the air in the combustion section to be used for combustion. The expanding gases drive the turbine faster, drawing more air through the compressor to sustain combustion. Now, that's an overly simplified explanation of the engine, but the principle is what's important.

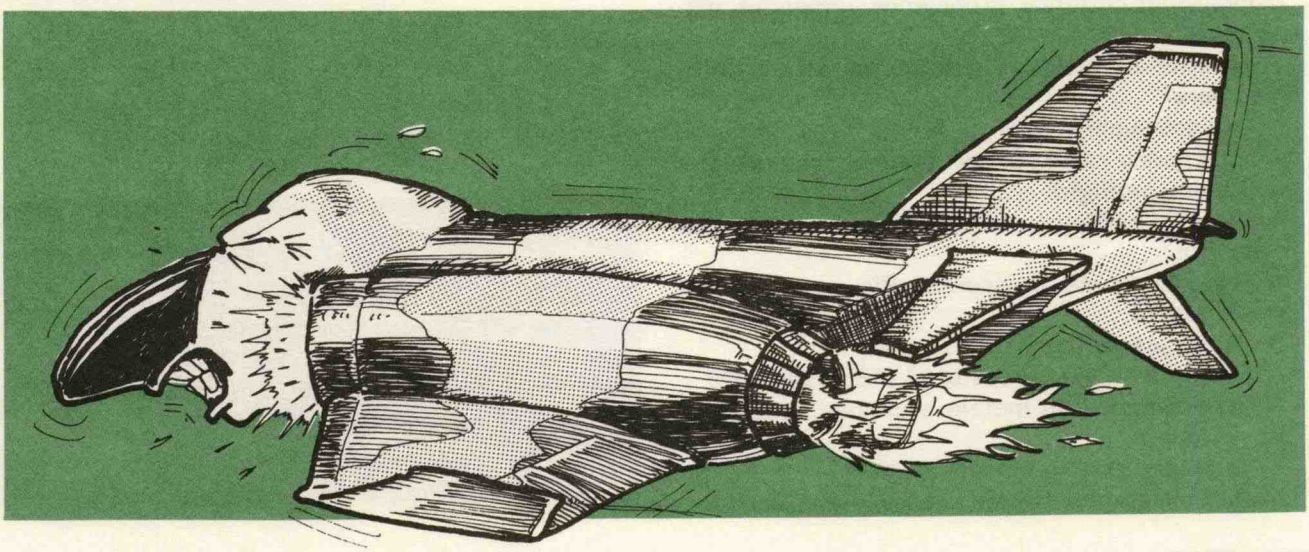
If an engine cannot draw in enough air to sustain combustion, it will flame out. Aircraft speed, maneuvering, or a combination of the two can affect an engine's ability to sustain combustion. You, as the operator, can help by not demanding more from your aircraft than it was designed to give.

POPPED TOP

The F-4 was returning to home station after an exercise CAP sortie. The mission proceeded normally until the aircraft climbed through 14,000' At that time, the rear cockpit canopy departed the aircraft.

The backseater immediately noticed that the canopy handle was in the open position.

Investigation is in progress. One possibility as to why the top popped is all the twisting and turning you do in the cockpit when you're checking six---very easy to catch a sleeve on the handle just enough to move it. Remember, it doesn't take much pressure to move that handle.



Many years ago, Thomas Paine wrote a "revolutionary" pamphlet with that title. Common sense in aircraft operations is nothing revolutionary--at least it shouldn't be. Sometimes I'm not too sure.

A flight of F-15s delayed their return to home station because of inclement weather. The pilot of one of the aircraft placed the "781" on the nose gear door to keep it out of the rain. Later on, he started, taxied, quick-checked, and took off with the forms still on the nose gear door.

When the gear was retracted, the pilot heard a thump similar to a gear door closing hard. (Guess where the 781 went) The tower reported flames coming from one of the two F-15s in the formation. Both pilots checked their engine instruments, noted nothing unusual and continued the mission. Prior to landing, one of the pilots selected afterburner to reduce his landing weight. The number two engine promptly stagnated.

If you're faced with a possible or probable engine malfunction, it doesn't make a lot of sense to use the AB unless it's absolutely required. It certainly wasn't this time around.

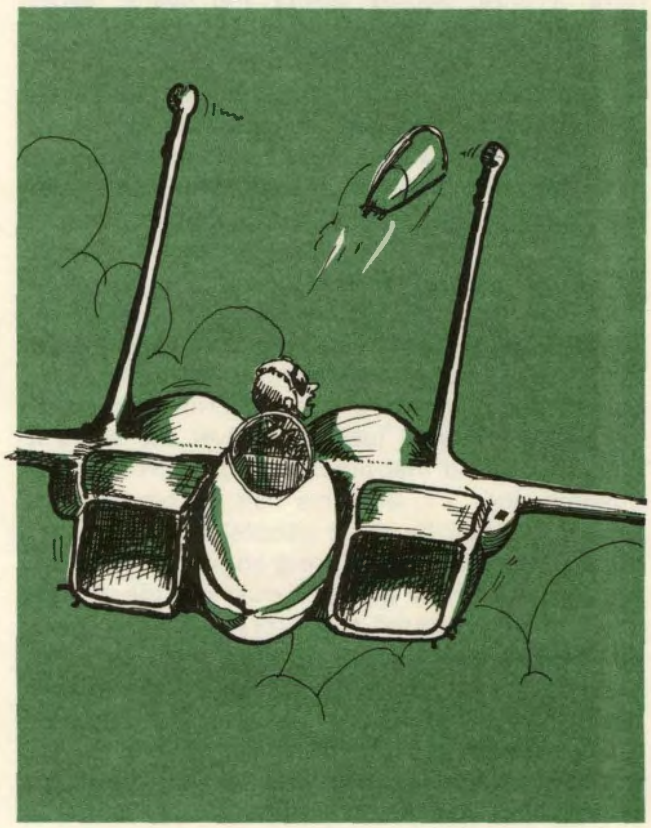
EAGLE FLIPS ITS LID

The F-15 was on a redeployment back to its home station. Several items of maintenance equipment and pilot's baggage were stowed in equipment bay 5. All were packed below the level of the canopy sills; however, the pilot's baggage was not tied down. After engine start, when the canopy was closed, it would jump back one to one and a half inches. The pilot shutdown the aircraft for maintenance trouble shooting.

The crew chief and maintenance NCOIC checked the system and the equipment bay. No problems could be found. After restart, the canopy was cycled several times without any problems.

On takeoff leg at 300 KIAS and 1800 feet MSL, the pilot heard a "pop," the canopy unlocked light came on, and the canopy departed. the pilot made an uneventful landing.

Very few problems correct themselves. Don't let your desire to fly a mission override your common sense in making sure that nothing's wrong with aircraft systems.



BUSY, BUSY, BUSY,

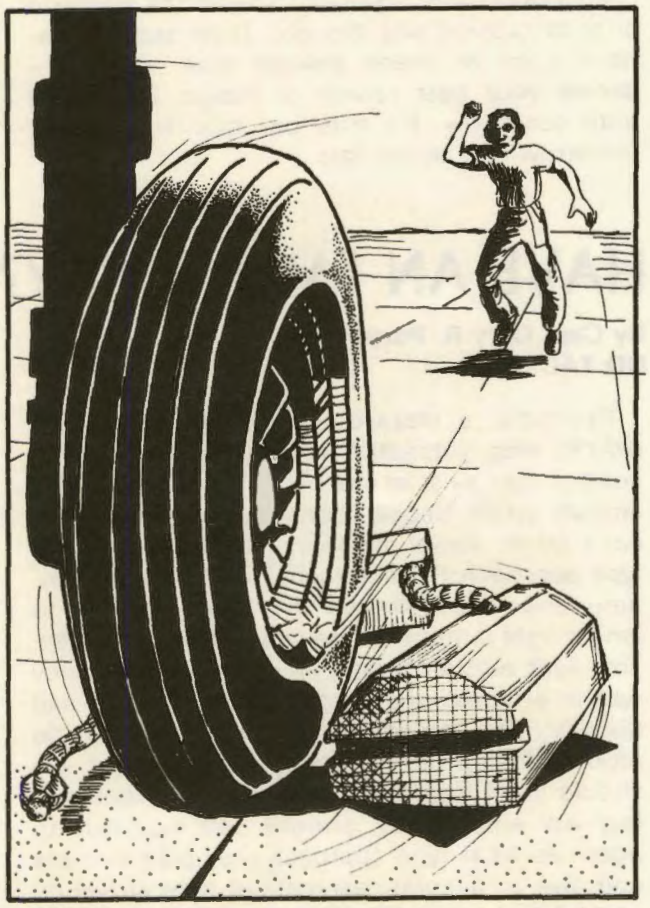
What's the busiest place on your base? CBPO? Civil Engineers? Base Supply? The Commissary on payday? They're all pretty busy, but I'll bet none of them can match the flight line for just out-and-out activity.

By TSgt Ellis Mann
HQ TAC/SEG

What do you find on your average flight line that makes it so busy? Let's make a list. You have aircraft, people (fixers and flyers), aerospace ground equipment, tools, tech orders, vehicles of every type--the list could go on and on. Additionally, the flight line is seldom comfortable. It is either too hot, too cold, too windy, or too wet. If you add all these together and throw in a teaspoon or more of extra pressure to get the job done, you have a mixture volatile enough to blow up. Here are a few examples of how things can get out of hand...

An F-4 was undergoing an engine change. The T.O. work cards required that door 22 on the belly of the F-4 be opened to verify the position of the fuel shut-off valves prior to disconnecting the engine fuel lines. Over the years it had been found that time could be saved by not opening door 22, and this had become an accepted practice by some people. When the fuel line cap was removed during engine installation, fuel ran out of the piping, saturating the airman and the area around the aircraft. A spark from an unidentified source ignited the fuel. The ensuing fire caused fatal injuries to the airman and destroyed the aircraft. This turned out to be a very expensive shortcut. It is needless to say, but procedures are included in work cards to prevent this type of catastrophe.

An area that can also be neglected when manpower and time are short is training. If we expect folks to do their job in a safe and acceptable manner, they must be properly trained. Training must include the job and associated hazards. A mishap occurred in the aircraft parking area during maintenance engine run-up operations. As the engines were being run, the aircraft jumped chocks and traveled across the ramp striking another parked aircraft. The aircraft operator had very limited experience and was not capable of handling the out-of-control aircraft. The impact and fire caused roughly 15 million dollars in damage. When engine runs are necessary, they ought to be done in a clear area, free of damaging obstacles whether an individual is experienced or not. Also, insure that only the right type of equipment is used. In this case, the chocks were too small for the aircraft.



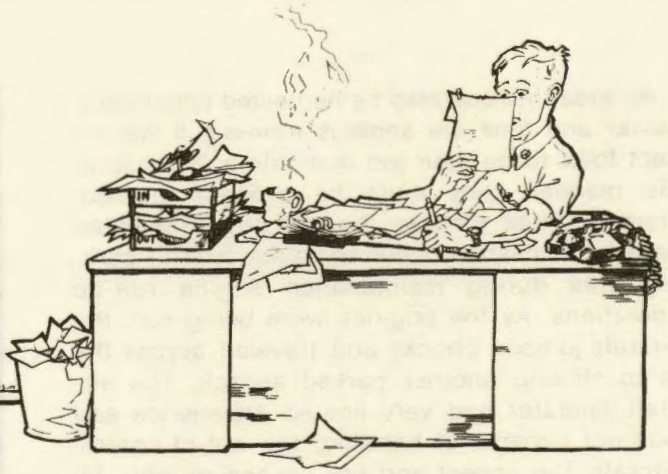
Another problem is supervision--or lack of it. A mishap occurred during an aircraft engine change. As the engine was being rolled out of the aircraft onto the engine dolly, the track stop bolts were removed out of sequence. The engine support bracket had not been connected; and as

the engine rolled back, it dropped from the mounting rails and rolled back onto the dolly crushing an airman between the engine and the frame of the dolly. The supervisor failed to insure the checklist was followed and failed to observe the positions of the crew.

The worst condition that can exist is when anyone blatantly disregards a T.O. or safety requirement. This problem arises all too often. One good example was during fuel transfer between internal fuel tanks on an F-4. In this case a high stage air compressor was used to pressurize the fuel system. The mechanic used a screw driver to override the squat switch. As transfer from each tank was completed, the fuel would vent over board onto the ramp from the fuel vent. When the fuel vented a third time, the fuel was ignited by the air compressor. The fire caused extensive damage to the F-4 and destroyed the air compressor. Over $33,000 is a lot to pay just because someone failed to follow procedures.

Things did get out of hand, didn't they? There's just too much going on out there for people to take things for granted. The next time you see a discrepancy, anything--from speeding to someone not using tech data--take some action to correct the problem. Don't let the busy pace of the flight line convince you to wait until tomorrow to set things right. You can't afford to wait.

SPO CORNER



CREW COORDINATION

By Maj Ken McBride
HQ TAC/SEF

Sure, you're sick and tired of listening to people talk about crew coordination and how important it is. After all, you fly with the same pilot/WSO/student/IP all the time; and he knows exactly what you want him to do. Are you so sure of that? Here are a few things to consider...

Two of the most hazardous areas of aircraft operations are takeoffs and landings. Yet, these two areas probably receive only cursory coverage of crew coordination. This abbreviated approach can definitely work against you in an emergency situation. In an emergency, the situation is seldom perceived the same by two different people. One will feel more or less stress than the other. The actions of each individual will be a direct result of how he views the emergency and the stress involved. You may be able to talk about it over the intercom, but don't count on it. Even if you can talk, what you may want to say may not be what comes out or what is understood.

Everyone has played the game where a story is passed around a room one individual at a time. By the time the story gets back to the originator, any resemblance between the final story and the one which started is purely accidental. So, for example, you tell the GIB that if you leave the runway at high speed, you're going to eject. What did that really tell him? Did you mean that you wanted him to initiate the ejection? Or will you? Do you mean that no matter what happens, you're going to eject if you leave the runway? How about obstacles? What did you really mean by high speed? What about fire or lack of it? The important thing is that you have to communicate exactly what you want and what you expect.

All potentially stressful situations demand prior discussion and thought. Think about situations such as these--analyze them in detail--decide your best course of action. Don't wait until tomorrow. It's trite but true to say that tomorrow may be too late.

HAVE AN EMERGENCY?

By Capt Gary R. Porter
HQ TAC/SEF

Recently, a Hazardous Air Traffic Report (HATR) was submitted which demonstrated a conflict can exist in the handling of emergency aircraft when people don't communicate with each other. Tower personnel didn't know what type approach the emergency aircraft was planning and overestimated the time available to land a light aircraft on the only available runway. The light aircraft wasn't advised an emergency was in progress and passed up an available exit taxiway. The emergency aircraft had to go around--insufficient spacing. The lessons we should learn from this are that pilots experiencing an emergency should tell controlling agencies what type approach they plan to make and give an accurate estimate of their arrival on final. Tower controllers should make maximum use of airport surveillance radars and should be sure all local aircraft are aware that an emergency is in progress. Everyone needs to be in the know when we have an emergency situation.

SWITCHING

By Maj Gerry Felix
112 TFG
Pittsburgh PA

All fighter pilots scare themselves sometime during their flying career. I'd like to relate one of my personal experiences and its lesson...

I was on a combat tour in SEA. On this particular day, I was on my third strafe pass. The target was a red-tiled hooch located in a clump of trees which was surrounded by a rice paddy. I didn't see the hooch on the first two passes, and neither did my flight lead. We were using steep dive angles in an effort to see through the trees.

I was determined to find that hooch. I was really pushing trying to do well. At about the time I should have squeezed the trigger, I caught a glimpse of red tile short of my aim point. I readjusted, shot, and began my recovery. It was then I realized that I was in trouble. I made it, but I was flat lucky. I didn't come close to hitting the target either.

Leafing through a copy of FLIGHT COMMENTS, The Canadian Air Force safety digest, the recap of a CF-104 accident caught my eye. The pilot was making 10 degree attacks--his gun camera film gave a complete visual account. After beginning the attack on the wrong target, the pilot recognized his error and switched. At release, the aircraft was 500' too close, 300' too low, 5 degrees steep and 50 knots slow. He missed the target, but not the ground. He was killed when his aircraft crashed at 12 o'clock to the target.

Another incident---an F-5E pilot on a simulated low angle-high drag pass. He picked out the wrong set of revetments on a TAC range, made a late adjustment to the right revetments, but didn't make it.

For you air-to-mudders, if you find yourself switching targets, it's time to switch modes---from ground attack to "take it around." You're not going to hit the target. Unfortunately, your chances of hitting the ground are much greater.

AIRCREW OF DISTINCTION

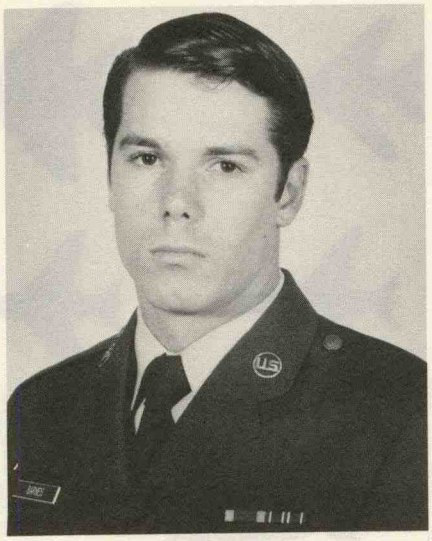
Capt Richard P. Barnett
8 TFS/49 TFW
Holloman AFB, NM

On 15 March 1979, Capt Richard P. Barnett departed Holloman AFB, NM, in an F-15A as number four in a flight of four participating in a Composite Forces Training mission. Shortly after takeoff, while rejoining with the flight, Capt Barnett heard and felt a loud explosion followed by vibrations from the left side of the aircraft. Capt Barnett immediately reduced power on the left engine while turning back toward Holloman. As the left engine approached idle, vibrations increased to a severe level and Capt Barnett shut that engine down. Next, he requested his element leader to rejoin and check for possible damage. The element lead told Capt Barnett that the left engine was on fire and smoking badly. Capt Barnett immediately maneuvered his aircraft for a straight-in approach to the nearest runway while accomplishing the fire inflight procedures. Despite this corrective action, the engine continued to burn.

With the engine on fire, and on short final at low altitude and airspeed, the aircraft pitched and rolled violently, creating severe doubt as to the airworthiness of the aircraft. Capt Barnett initiated a heavyweight single-engine go around while preparing for a possible ejection. He was able to maintain control of the aircraft and accurately analyzed this problem as a transient hydraulic malfunction. Capt Barnett then positioned the aircraft on a midfield downwind to an intersecting runway. Despite the heavy weight and limited thrust conditions, he maneuvered the aircraft to a safe landing. Capt Barnett emergency ground egressed from the aircraft after a successful midfield barrier engagement. Maintenance investigations revealed catastrophic failure of the turbine section.

Capt Barnett's quick analysis, timely reaction, and proper execution of procedures during deteriorating conditions prevented the loss of a valuable combat aircraft. His exemplary airmanship and exceptional performance during this complex situation qualify him as the TAC Aircrew of Distinction.

TAC SAFETY AWARDS



AIC Norman T. Barnes

Crew Chief Safety Award

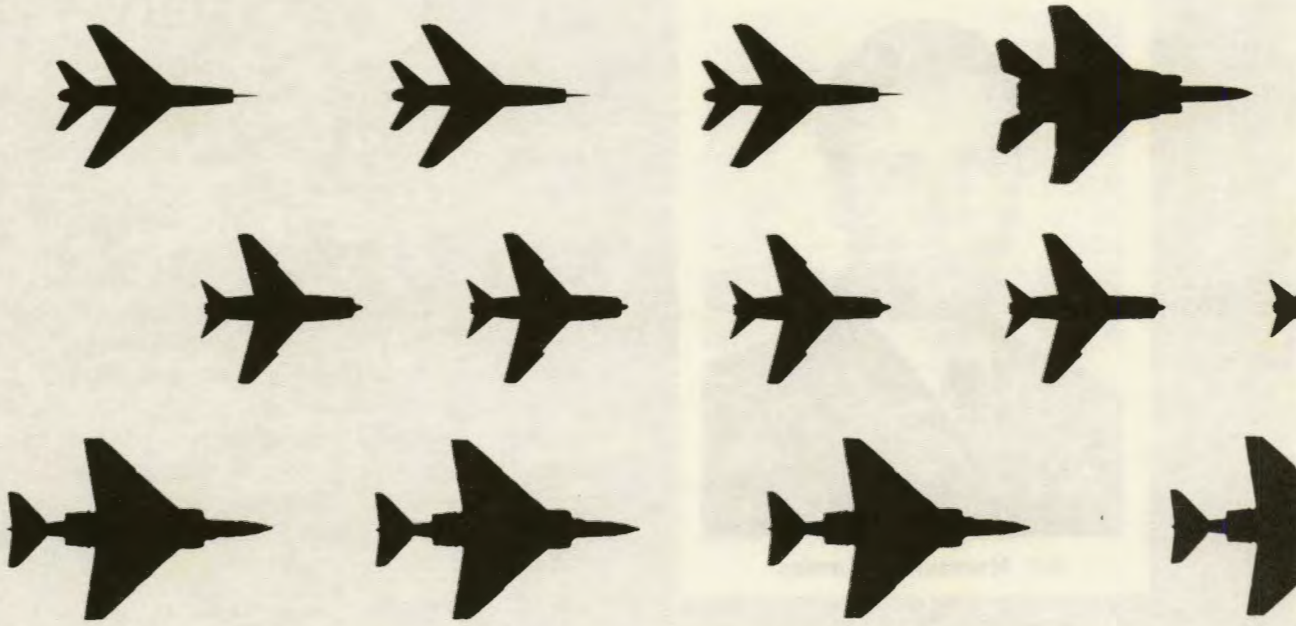
Airman First Class Norman T. Barnes, 366th Aircraft Generation Squadron, 366th Tactical Fighter Wing, Mountain Home Air Force Base, Idaho, is the recipient of the Tactical Air Command Crew Chief Safety Award for August 1979. Airman Barnes was preparing to troubleshoot a hydraulic leak on an F-111. Due to having to work under adverse weather conditions, Airman Barnes required the use of a BT-400 heater. When he started the heater, the unit blew a large fireball and then continued to burn. Disregarding possible personal injury, he pulled the heater away from the vicinity of the aircraft and extinguished the fire. His calm and rapid reaction prevented a possible explosion and perhaps damage to the nearby aircraft.

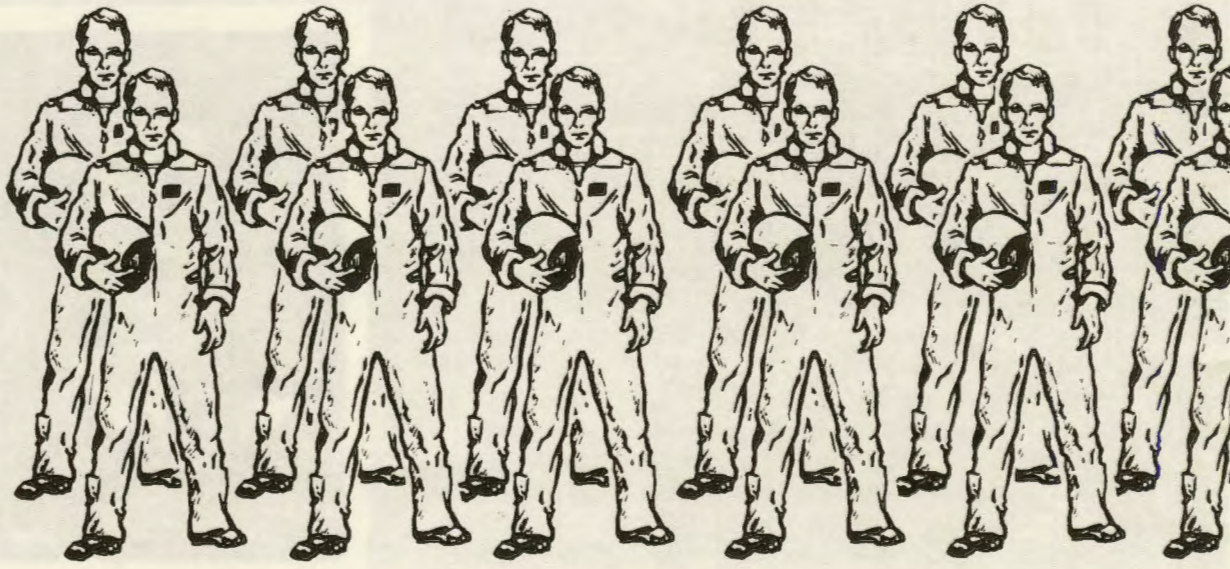
Individual Safety Award

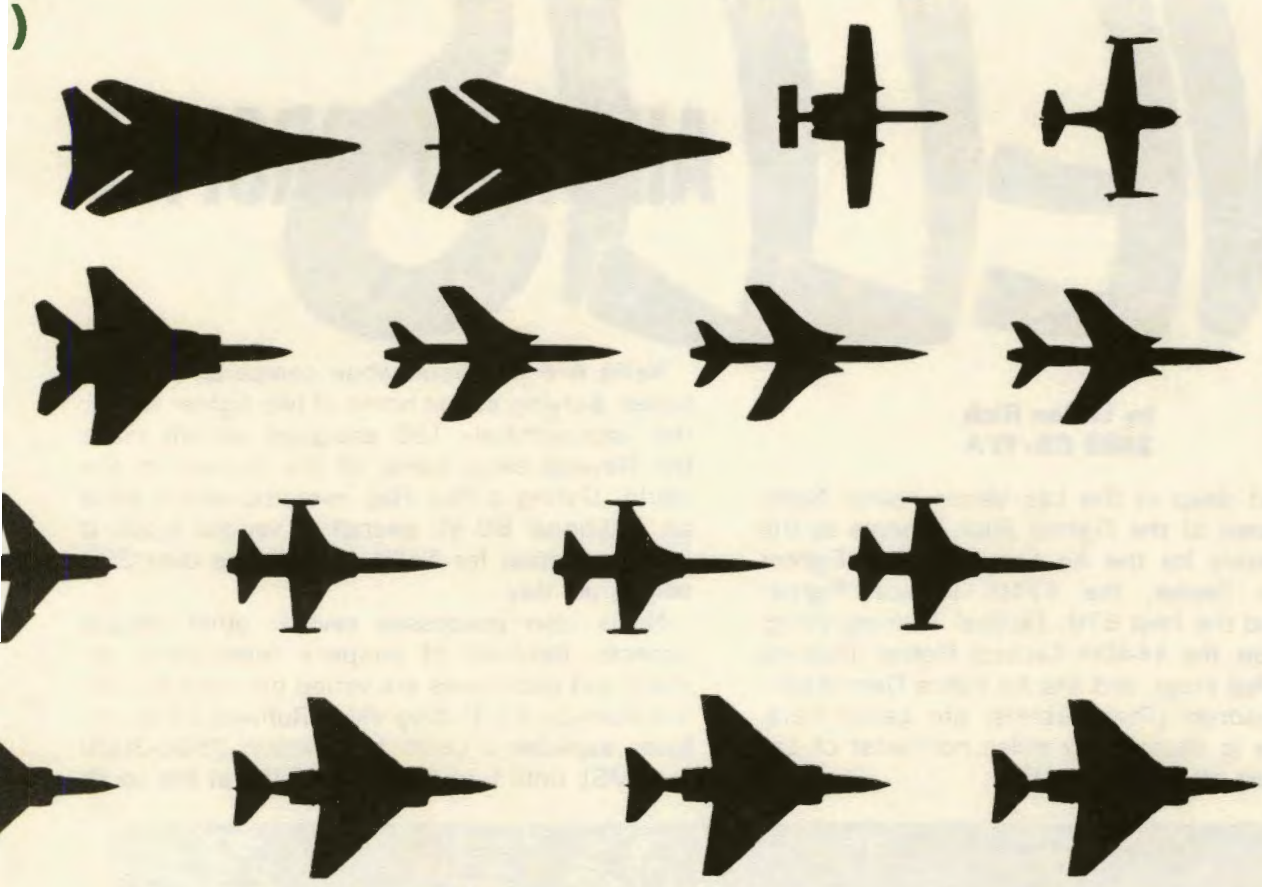
Sergeant Perry M. Ford, 35th Equipment Maintenance Squadron, 35th Tactical Fighter Wing, George Air Force Base, California, is the recipient of the Tactical Air Command Individual Safety Award for August 1979. After witnessing a multi-vehicle highway accident, Sergeant Ford quickly attended the injured and gave instructions to other people to direct the flow of traffic. Further, by administering first aid, he made a determined effort to save the life of a driver that was seriously injured and pinned under the car dash. While helping this victim, he noticed the car engine was on fire and directed bystanders in extinguishing the fire. Sergeant Ford's exemplary initiative and quick actions in aiding the crash victims and taking control of this hazardous situation are most deserving of this recognition.

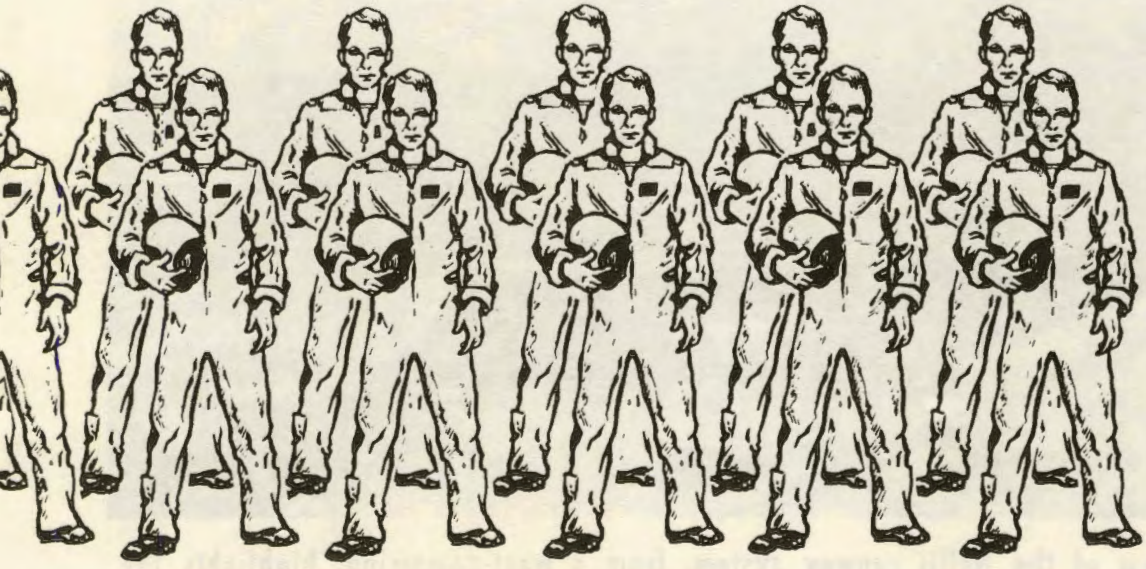
Sgt Perry M. Ford

TAC AND TAC - GAINED (ANG & AFR
LOSSES JAN - JUN 1979









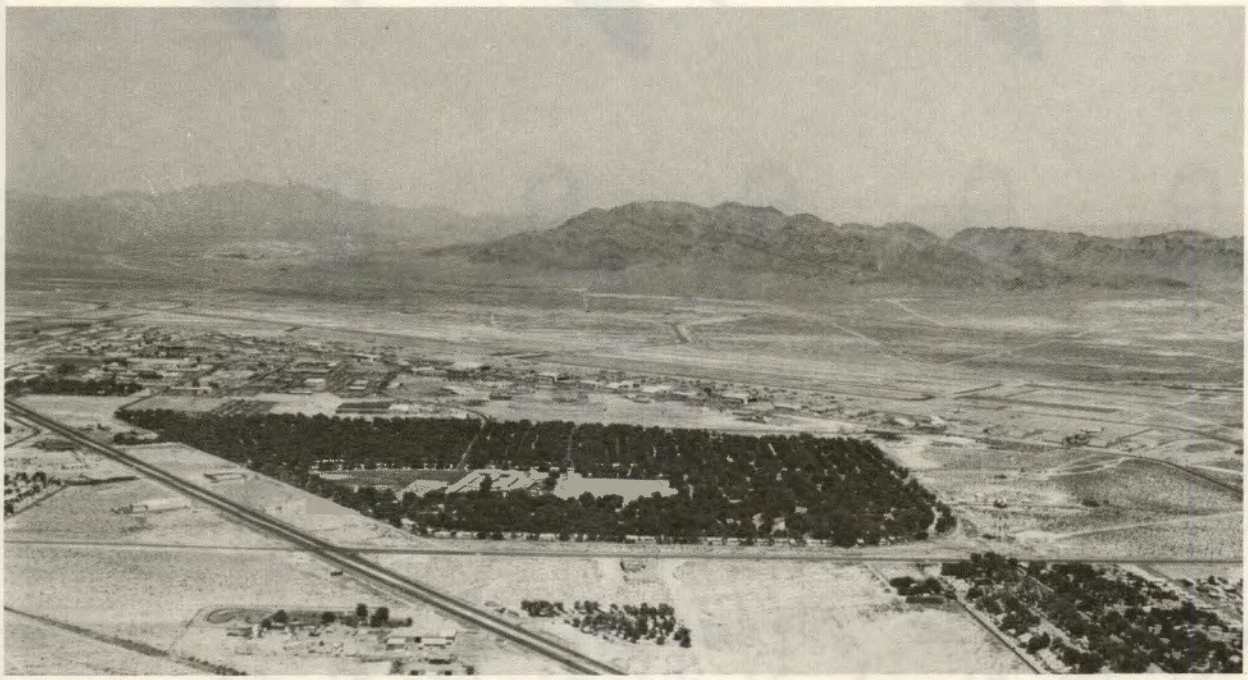
NELLIS AIRFIELD PROFILE

by Lt Ben Rich
2069 CS/FFA

Located deep in the Las Vegas valley, Nellis AFB, "Home of the Fighter Pilot," serves as the headquarters for the Air Force Tactical Fighter Weapons Center, the 474th Tactical Fighter Wing, and the host 57th Tactical Training Wing. In addition, the 4440th Tactical Fighter Training Group (Red Flag), and the Air Force Demonstration Squadron (Thunderbirds) are based here. The base is situated six miles northeast of Las Vegas, just off Interstate 15.

Nellis AFB is unique when compared to other bases. Serving as the home of two fighter wings, the approximately 180 assigned aircraft make the Nevada skies some of the busiest in the world. During a Red Flag exercise, which adds an additional 60-80 aircraft of various types, it is not unusual for Nellis to generate over 300 sorties per day.

Nellis also possesses several other unique aspects. Because of airspace restrictions, arrivals and departures are varied but normally utilize Runway 21. During VMC, Runway 21 departures expedite a climb to maintain 2500-3000 feet MSL until turning out of traffic at the south



This aerial view of the Nellis runway system, from a west-downwind, highlights the close proximity of Sunrise Mountain.

The Nellis AFB Runways, as seen from a one-mile initial to RWY 03, provide the pilot with 10,000 feet plus of concrete to operate on.

end of the base golf course. Runway 03 becomes the primary runway in the morning (avoiding the noise problem over North Las Vegas) and when weather dictates.

Additionally, aircraft with live ordnance are always required to depart Runway 03. These requirements for opposite direction operations require flight crews to exercise close attention to air traffic control instructions.

The Nellis Control Tower and Ground Controlled Approach, operated by the 2069th Communications Squadron, provide the local air traffic control. Approach control to Nellis is provided by the FAA at the McCarran International Airport, which serves the greater Las Vegas area. Nellis lies within the Las Vegas Terminal Control Area (TCA). This positive control function separates all traffic, as participation is mandatory IAW Federal Aviation regulations.

Nellis utilizes two 10,000 ft parallel runways, 1,000 feet apart. Each runway is served by a full complement of BAK-12, BAK-9, and Modified MA-1A arresting systems. Due to the location of Sunrise and Frenchman Mountains, less than four miles southeast of the base, all high-performance aircraft can expect traffic patterns to the west.

Aircraft based at Nellis fly the VFR initial at 3,500 ft MSL, maintaining 300 knots until the break. F-105s operating out of Nellis fly the pattern slightly faster, while the A-10s fly a slower, tighter pattern. With the variety of aircraft at Nellis (the 57 TTW operates six different types of aircraft), pilots are urged to pay close attention in order to avoid overtaking preceding aircraft in the pattern.

Located adjacent to the the base proper, and slightly to the east of the extended centerline of Runway 03R, is the Lake Mead Base, or Area II. Aircraft are restricted from overflying this facility.

To say air traffic in the Las Vegas area is heavy is an understatement. The McCarran International Airport ten miles south of Nellis restricts the use of Runway 03 for instrument approaches. The North Las Vegas Air Terminal, a

AT DECISION HEIGHT: Nellis arrivals are served by both TACAN and PAR approaches to both RWY 21 and RWY 03.

civilian airport seven miles to the west, generates over 200,000 operations per year. This traffic consists mainly of small, civilian aircraft, which fly basically in VMC. The traffic pattern at Nellis can become completely saturated during a Red Flag recovery. It is not unusual for 60 aircraft to recover at Nellis during a fifteen minute period.

Nellis is served by a full complement of instrument approaches and departures. Pilots who request instrument approaches to Runway 03 during VMC can expect extensive delays due to the necessity of mixing the Nellis and McCarran arrivals. Pilots who file for Standard Instrument Departures (SIDs), as the first leg of their departure from Nellis, should be aware of the steep climb requirements needed to clear surrounding terrain and avoid noise sensitive areas.

With the unlimited visibility and breathtaking landscape, the Nevada countryside offers some of the most fantastic flying in the world. However, pilots who operate through the area are urged to do so with a "heads up--eyes open," posture. >

SHAW RECCE COUNTRY, HOME OF TACTICAL RECONNAISSANCE

Shaw Recce Country, Home of Tactical Reconnaissance

by Capt Mike Peterson, 363 TRW/SEF
Lt Ben Rich, 2020 CS/FFA

As you descend over the rolling hills of the Palmetto State, you will enjoy viewing some of the prettiest country anywhere. However, do not allow this tranquil beauty to lull you into a complacent state, as you are about to enter one of Air Traffic Control's (ATC) most heavily congested areas in the United States.

Shaw AFB, located in the geographical center of South Carolina, is named in honor of Lt Irvin D. Shaw, a WWI flying ace shot down while returning from a reconnaissance mission. The aerodrome, originally built as a bomber/fighter training base, has evolved as the home of Tactical Reconnaissance. Shaw is located ten miles west of the city of Sumter. The base lies approximately halfway between Columbia, the capital of South Carolina, and Florence, one of South Carolina's largest cities.

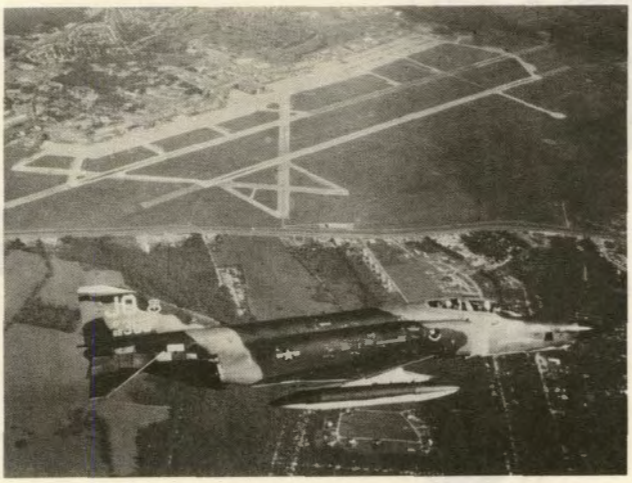
Shaw is the home of TAC's Ninth Air Force, 363d Tactical Reconnaissance Wing, and 507th Tactical Air Control Wing. Flying units based here include four squadrons of Recce RF-4C Phantoms, assigned to the 363 TRW, and a squadron of Cessna 0-2 Forward Air Control aircraft assigned to the 507 TAIRCW. In addition, a detachment of MAC T-39 Sabreliner aircraft and three H-3 helicopters round out the local units.

The Shaw Radar Approach Control (RAPCON) is the local controlling ATC agency and will vector inbound IFR aircraft for either a visual, precision, or non-precision instrument approach to one of two parallel northeast/southwest runways. Precision approach radar (PAR) is also available to both ends of Shaw's runways.

Shaw's RAPCON, operated by the 2020 CS, is the busiest in TAC and rates as fifth busiest in the Air Force. In addition to the military traffic generated by Shaw, local ATC facilities also handle IFR/VFR traffic to and from four local civilian airports and an Air National Guard Base which serves a squadron of A-7s and several Army helicopters. As you arrive, you will also be routed to avoid violating two heavily used Restricted Areas and three Military Operating Areas (MOAs) as well as the approach control airspace at two adjoining facilities.

The Poinsett Air-to-Ground Weapons range (R6002) is located four miles south of Shaw. Pilots use this facility to deliver live ordnance. Over 20 different squadrons of all branches of the military regularly use the range which operates both day and night.

Due to the heavy volume of civilian traffic in the Shaw area, the RAPCON provides Stage III terminal radar service for all VFR participants. Note that all non-IFR aircraft are assumed participants in the stage service unless the pilot specifically states "Negative Stage III."



The importance of utilizing ATC services is further increased by the IFR and VFR traffic generated by a Victor airway and Jet route, which lie two miles to the north. Shaw ATC facilities controlled over 215,000 aircraft operations during 1978. All of this indicates the need for a "heads up--eyes open" attitude when flying in our local area.

If your flight plan calls for termination with VFR work with the tower, you can expect to fly the jet overhead pattern at 2,000 feet MSL. Shaw RF-4 aircraft fly this pattern at 300 knots, with all breaks being made to the east. Note that all aircraft will maintain pattern altitude until turning base leg. Caution should be exercised in watching for radar traffic, military propeller type, and Aero Club flying rectangular patterns at 1600, 1200, and 800 feet MSL respectively. Transition work and multiple practice approaches are available, although prior coordination is advised for transient aircraft airlines. Many of these aircraft travel to and from Columbia, located 30 miles due west of Shaw. This route necessitates flying through the Shaw airport traffic area. Potential problems exist when many uninformed civilian pilots violate the tower's airspace without approval or coordination.

As noted, Shaw utilizes parallel runways separated by 1,000 feet of grass. Runway 04L/22R, Shaw's only lighted runway, is the primary instrument runway and is 10,000 feet long. Runway 04R/22L, otherwise known as the outside, is 8,000 feet in length and is served by PAR and circling approaches from the inside runway. Both landing surfaces offer a full complement of arresting systems, as well as 1,000-foot asphalt overruns.

All of Shaw's ATC facilities are operational 24 hours per day. Base Operations also provides full-time flight planning. Weather briefing service is available 1200-0100Z M-F except holidays.

Although Shaw welcomes all visitors, it is advisable that aircraft requesting transition work do so on weekends when possible. This will provide you with better service, due to heavy local training requirements.

Shaw has facilities to meet all of your needs, and we are here to serve you. Remember, when you come to Shaw, you're visiting one of TAC's busiest bases. Keep alert, there's a lot of traffic out there that you don't see.

chock talk

Chock Talk

...incidents and incidentals with a maintenance slant.

DE-CLAWED TIGER

The F-5 crew was scheduled for a training sortie. When the crew arrived at the aircraft, the crew chief told them that the left main tire needed to be changed. The crew agreed to wait rather than take a spare. The tire change was completed and preflight, start, and taxi were normal.

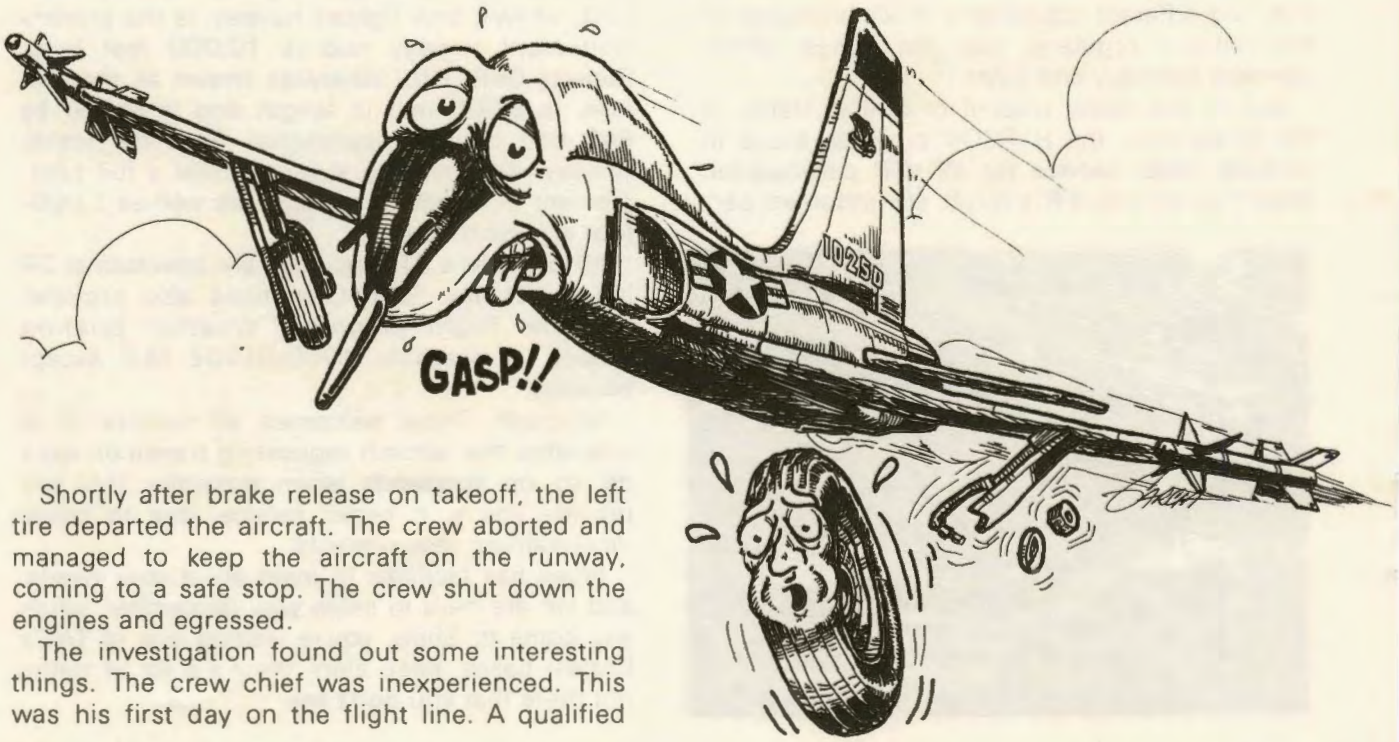
Shortly after brake release on takeoff, the left tire departed the aircraft. The crew aborted and managed to keep the aircraft on the runway, coming to a safe stop. The crew shut down the engines and egressed.

The investigation found out some interesting things. The crew chief was inexperienced. This was his first day on the flight line. A qualified crew chief assisted in the tire change. Tech data and the proper tools were on the scene. At the completion of the tire change, the forms were taken to the expeditor for inspection and sign off of the red X. The expeditor signed off the red X without looking at the aircraft!!! After the aircraft had taxied, the crew chief found the tire collar laying on the ramp. He wasn't sure what the part was, so he turned it in to the tool issue section. By the time the part was identified, the mishap had occurred.

Looks like the first line supervisor failed to do his job. If he had, perhaps this near-accident might not have taken place...

PHOILED PHANTOM

The F-4 was on a local training mission. On takeoff roll, the airspeed indicator stopped at 130 knots and then began decreasing. The crew



continued the takeoff since they were going too fast to abort. Once airborne, variations in the pitot-static instruments continued until the crew made a formation landing at a divert base.

Investigation revealed that the ends of the corrected static pressure line and pitot pressure line which terminate at the thermos bottle holder in the front cockpit, were disconnected from their capping assembly and covered with aluminum foil.

Now foil is fine for keeping food fresh, but doesn't work worth a darn on pressure lines which are supposed to be capped. Investigation revealed that the last maintenance involving the lines was done by unqualified personnel. QC inspectors didn't catch this one, but inspectors can't find everything that goes wrong.

Murphy wouldn't be involved in so many incidents if he didn't have a lot of free help.

HANG ON TO YOUR HAT

The transient alert crew was parking a T-38. The crew chief was installing the main gear pins prior to engine shutdown. The assistant crew chief came under the aircraft to assist in pinning the gear. As he moved from the main gear towards the nose gear, his fatigue hat was ingested by the left engine. The pilot was unable to shutdown the left engine before FOD damage occurred.

It's not a very good idea to wear headgear around operating jet engines. When you must, make sure it stays where it's supposed to.

2 GALLONS OF ETHYL PLEASE

Shortly after takeoff the O-2 pilot noticed fuel flowing from the fuel flow gauge--for some reason that doesn't sound quite right. All electrical power was turned off using the gang bar and an immediate recovery was made.

Investigation revealed a crack in the flare of the tubing, possibly caused by over-torqueing of the B-Nut. The fuel flow gauge had been installed the night before.

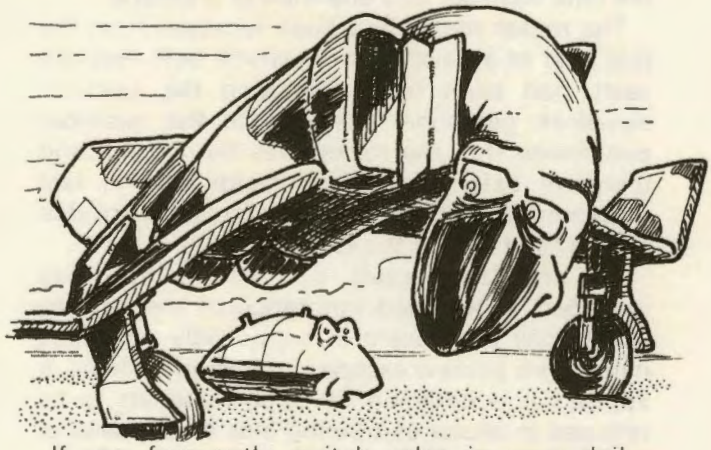
The unit is submitting an AFTO Form 22 since the current tech order does not adequately address inspection of the tubing and the installation of the fuel flow gauge to include proper torque requirements.

Sometimes the "¼-turn-past-snug" technique doesn't always cut it.

DROPPED TANK

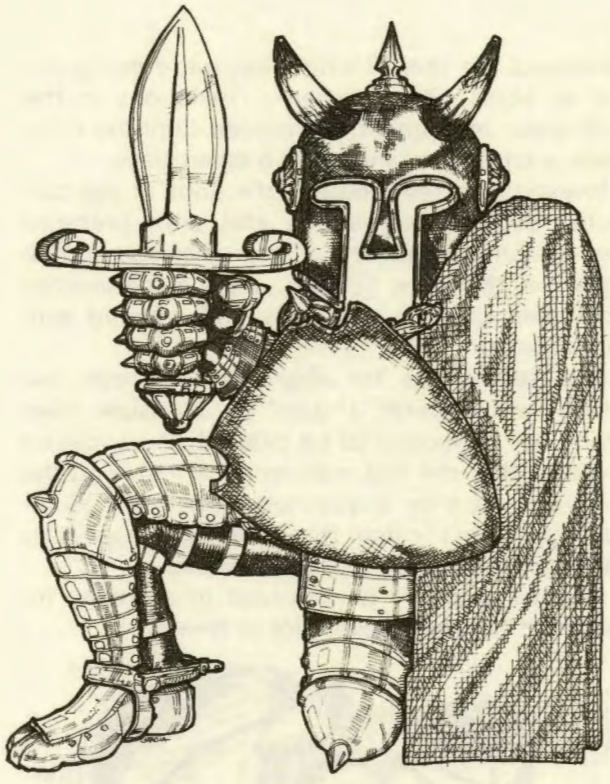
External fuel tanks are loosely called "drop tanks" because they can be jettisoned whenever necessary--emergencies, etc. Unfortunately, they can also be jettisoned when not necessary.

One load crew was sent to de-arm the aircraft following a mission. The crew cleared the armament placard and made an entry in the 781 stating that all impulse carts had been removed. Later that day, another load crew was dispatched to perform a 30-day jettison check. The crew checked the forms, did a walk around and began the check. The number one and number two members of the team each saw the centerline safety pin lying on the ground and assumed the centerline had been checked. I probably don't need to tell you what happened when the centerline jettison switch was actuated.



If you frequently switch roles in your daily tasks, you're setting yourself up for an incident such as this. You might want to take a look at the methods your crew uses in its operations.

WEAPONS WORDS



A FATAL LACK OF KNOWLEDGE

A maintenance troop in an ejection seat shop butted a cigarette in the rocket nozzle of a supposedly expended rocket motor and upended the nozzle. The smoldering butt contacted the boron potassium nitrate igniter thereby igniting the rocket motor. Immediately, the rocket cannister, propelled by 4500 pounds of thrust, ricocheted around the shop. Of the four men present in the shop, two were killed immediately and a third was seriously injured. From the instant of ignition until the rocker came to rest, the time involved was **one-third of a second.**

The rocket motor had been removed from the rear seat of an aircraft from which both ejection seats had been fired. Following the ejection, squadron personnel were led to the mistaken conclusion that the rocket was burned out and therefore safe. The rocket motor was in fact unexpended, only the catapult booster cartridge having fired during the ejection.

An ancillary result of this mishap has identified widespread ignorance of the hazards which may be present in supposedly expended items from aircrew escape propulsion systems. It appears it is common for such materials to be retained in shops as training aids or disposed of locally in a casual manner.

This mishap raises serious questions about the safety of firefighting, rescue, and related support personnel while working at the scene of mishaps involving ejection seats. These hazards should be the subject of continuing training for firefighting, rescue, medical, and accident investigation personnel as well as the maintenance folks.

IMPULSE CARTS

DON'T TAKE 'EM FOR GRANTED!

BY Captain Ken Pesola
HQ TAC/SEW

Impulse cartridges (ejector carts to you "old heads") are small, relatively cheap ($1.16 each), dependable (99.99 percent reliability), and simple devices used extensively throughout the military.

The manufacturers went to great lengths to develop and perfect an item that would be extremely reliable at strongly competitive prices. Components are manufactured to precise tolerances and are carefully assembled and sealed to assure watertight integrity.

So simple and common are these cartridges that perhaps simplicity is part of our problem. As the adage declares, "familiarity breeds contempt." Personnel have become so accustomed

to handling these cartridges that they often are carried in tool boxes and pockets as if they were shotgun shells, which indeed they can resemble in more ways than one. Another problem recently highlighted by inspectors is exposure of these electrically-fired explosives to two-way radio transmitters.

More about these problems in a minute. Let's first discuss the significance of these marvels in today's complex weapon systems...

Even with 99.99% reliability, the percentages can catch up with you. During takeoff roll, a fighter apparently ingested foreign object material and had to abort. An attempt was made to jettison the two external fuel tanks, but only one wing tank separated. The result was aircraft instability. This control problem kept the aircrew too preoccupied to permit deployment of the drag chute and arresting cable hook. The aircraft impacted an elevated road shoulder with sufficient force to cause airframe failure.

Obviously, the tank jettison failure did not cause this mishap. But it contributed to the end result. Indications were that the impulse cartridge primer fired but the propellant failed to ignite.

Was this truly that one chance in 10,000 for failure? Did the percentages catch up? We may never know; but of one thing we're certain, the odds for failure of impulse carts can be drastically increased by mishandling, such as carrying in tool boxes or clothing pockets. One of the major causes of cart failure is overuse or misuse, resulting in breaking the moisture seal. Exposure to dampness caused by rain, humidity, or from altitude and temperature cycling can and does cause condensation to contaminate the propellant.

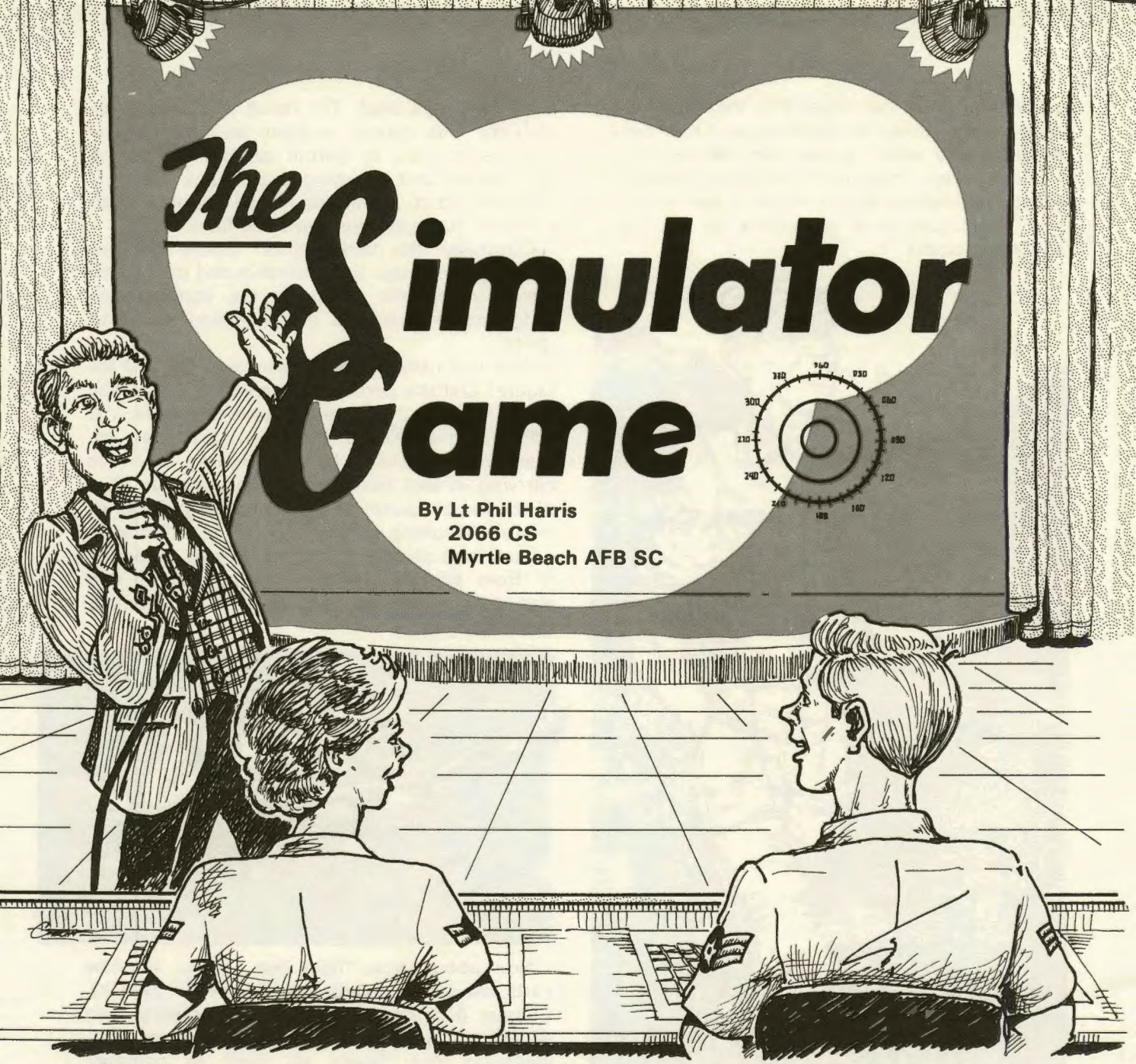
Now about those flight line radios... Impulse carts are electro-explosives. The AFR 127-100, Chapter 6 monograph details safe antenna/cart separation distances during handling and installation. But there's no need to compute specific distance requirements when in vehicles. Keep carts in their shipping containers and maintain a six-foot distance (for example, in the rear compartment of that step-van with the front mounted antenna). This procedure resolves all electro-magnetic radiation and securing problems.

Treat impulse cartridges with tender loving care because the job they perform is important, and, as we have seen, can at times be critical.

Portions of this article purloined from USAF AEROSPACE SAFETY.

The Simulator Game

By Lt Phil Harris
2066 CS
Myrtle Beach AFB SC



Aircrews flying various types of aircraft aren't the only people anymore who have simulators designed to provide initial and continuing proficiency training at reduced costs. The air traffic control folks have a new tool at their disposal. The 2066th Communications Squadron is the first in the Air Force to receive the new AN/GPN-T-4 Radar Proficiency Simulator. "Big deal," you say. Well, it really is. For many years, radar controller training has been largely dependent upon actual aircraft sorties. When a lot of instrument approaches were flown, controllers received a good deal of training. When approaches were not being used, neither were the controllers. All that's changed now.

The system was developed by Hydrosystems, Inc., for the Air Force. It is specifically designed to provide upgrade, continuation, and proficiency training for air traffic controllers by simulating aircraft targets on existing radar equipment.

The Radar Proficiency Simulator, RAPS for short, will simulate the characteristics of any type aircraft. It generates a realistic air traffic control environment on the radarscope. The generated targets are indistinguishable from real

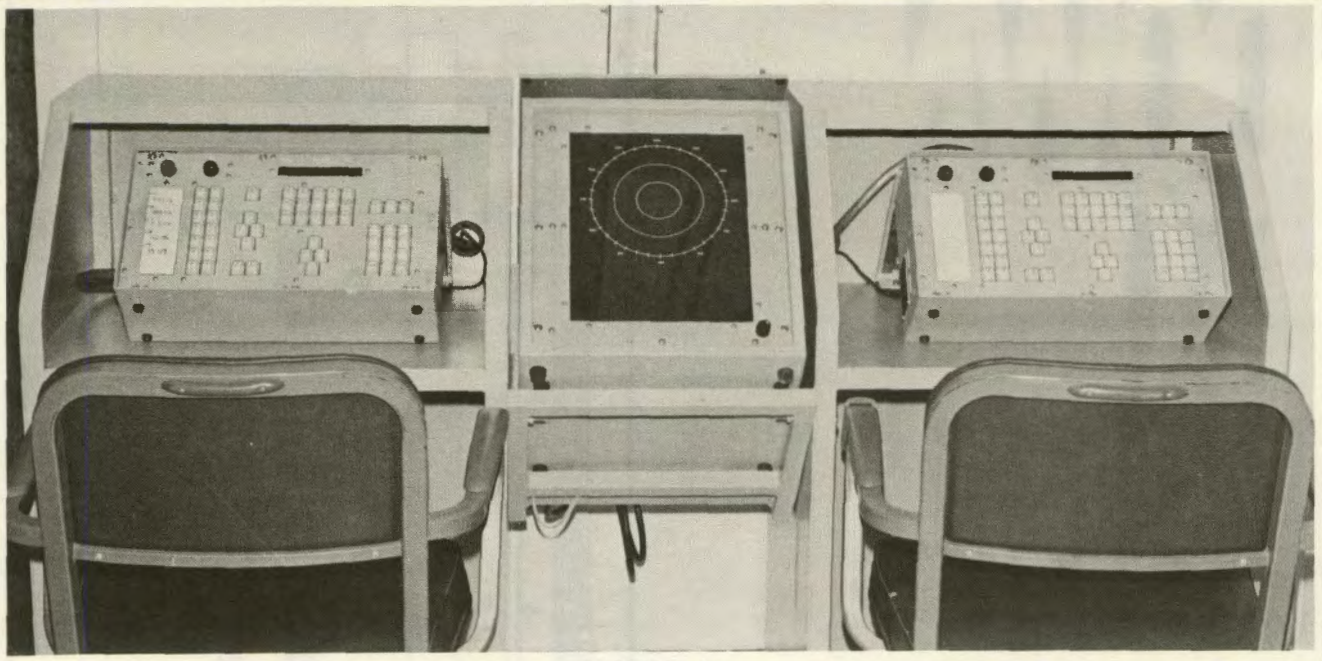


FIGURE 1.

targets. A maximum of 40 targets can be displayed as primary radar targets or in other modes such as squawks; idents, and numerical readouts with Mode C capability. Additionally, the effects of barometric pressure, wind direction and velocity, and altitude can be programmed into the problem. The simulator gaming area covers a radius of 200 NM to an altitude of 30,000 feet. If the desired mode of operation is for ASR, the radius drops to 60 NM. PAR coverage is also available with a range of 10 miles within 20° azimuth and 7° elevation. With these large operating parameters, a multitude of problems can be programmed into the system. The simulator can also accommodate more than one trainee which means even better utilization.

RAPS is made up of three components: (Figs 1 & 2) a digital computer which generates the targets for the training program (not shown); the Pilot Console which is used to maneuver the generated aircraft targets in accordance with air traffic control instructions; and the Pilot Indicator which displays information such as position, climb/descent rate, altitude, and heading. Airfields, navigation, and holding fixes can all be programmed into the gaming area also.

What does this all mean for us? First of all, AFCS units in the field will now have a tool to use in the training and upgrading of air traffic controllers. The RAPS provides the capability to train during all hours of duty, at all levels of proficiency. From initial training to improving controller techniques in handling a flight of four aircraft or an airborne emergency, the types and degree of training are unlimited. Controllers at a base who routinely control A-10s will no longer have to wait to hone their skills on an F-4, F-15, or F-16. Unfamiliar wind patterns can be used to further train our controllers.

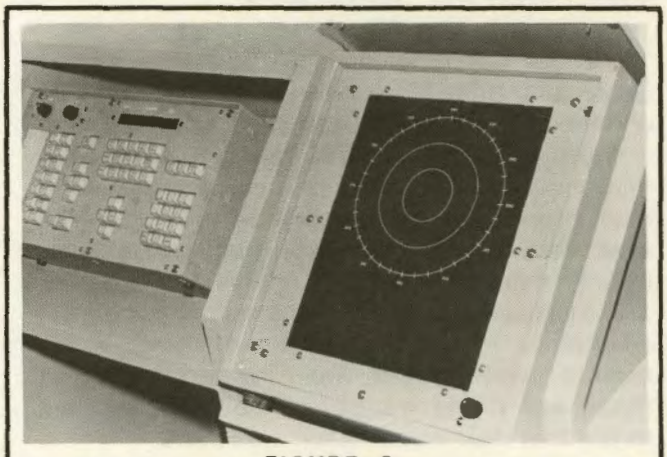


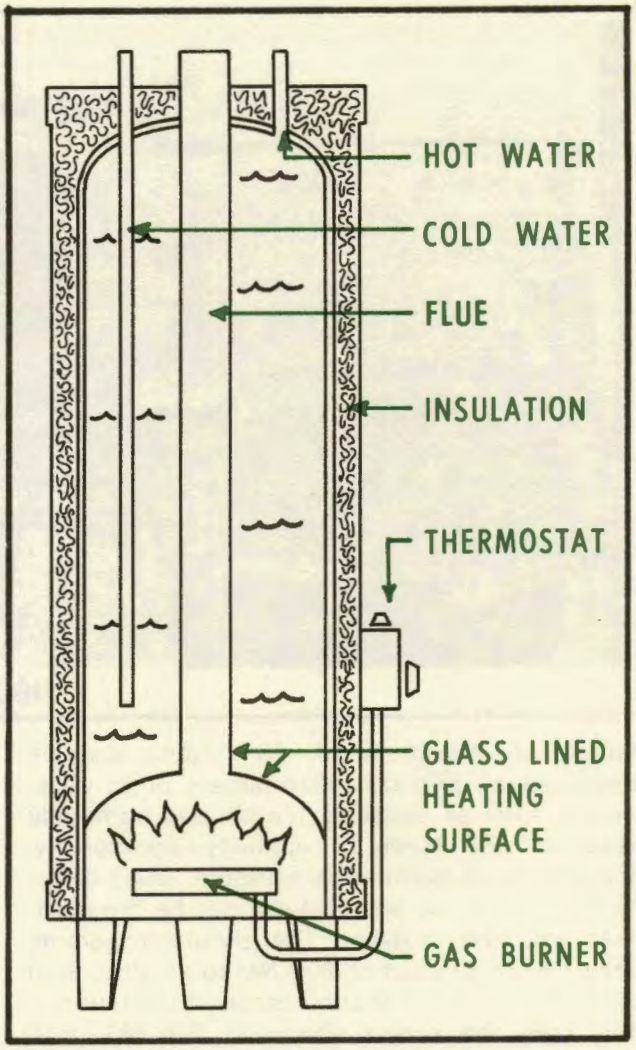
FIGURE 2.

But the ultimate benefit will be in our capabilities to support aircraft operations. Pilots will no longer have to worry about the controller's proficiency when the weather drops down to minimums. You expect our best in these situations. RAPS will enable us to deliver the best.

DOWN TO EARTH

GAS WATER HEATERS

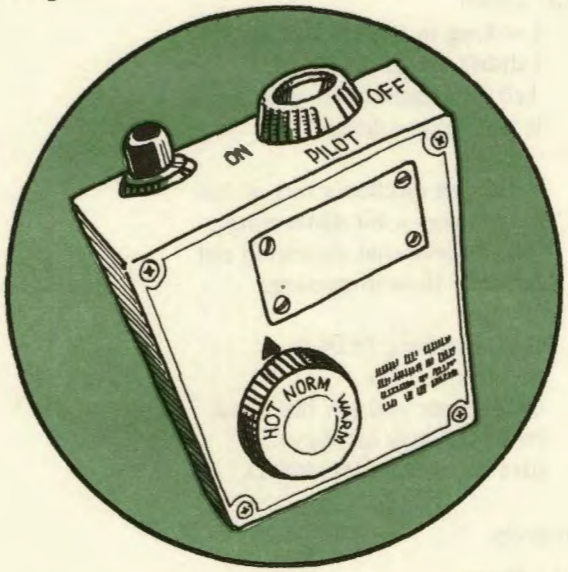
The gas water heater is an appliance all too easily forgotten. Once installed, it normally sits unnoticed and ignored for years until the time it must be replaced. But the U.S. Consumer Product Safety Commission advises consumers that there are some very serious hazards associated with the gas water heater. The Commission estimated that in a one-year period over 1,200 persons were treated in hospital emergency rooms for injuries received in accidents involving gas water heaters. Many of these accidents happened because victims forgot that their water heater was there.



For example, a 62-year-old man was cleaning the floor of his basement with gasoline. The vapors were ignited by the pilot light of a water heater in the next room. He spent 13 days in the hospital with second and third degree burns. A 53-year-old man turned off all the gas in his home in order to attempt to repair his own heating equipment. When he attempted to relight the pilot light of the water heater after completing the job, accumulated gas exploded.

The typical gas water heater is a metal tank lined with glasslike enamel to protect the inner metal surface from corrosive agents in the water. Normally, however, there are some small areas of metal left unprotected; so added protection is given by a long magnesium rod (the anode) inside the tank which the corrosives will attack instead of the tank itself. Over a period of years, therefore, the anode gradually will be eaten away and must be replaced.

Cold water normally enters from the top of the tank through the dip tube, a pipe of metal or plastic that extends into the tank and discharges the water near the bottom to be heated. This is done to prevent the incoming cold water from being mixed with the water near the top of the tank that has already been heated. The heating is done by a gas burner at the bottom of the tank and by the hot gases flowing up the central flue. A metal baffle in the flue slows the flow of these gases.



To control the temperature of the water there is an automatic thermostat that turns the burner on and off, keeping the water from rising above a set temperature. There is also a safety relief device to take over should the regular thermostat fail. An additional feature on most late-model water heaters is a cutoff device that will shut off the gas if the pilot light goes out or if the water temperature rises too high.

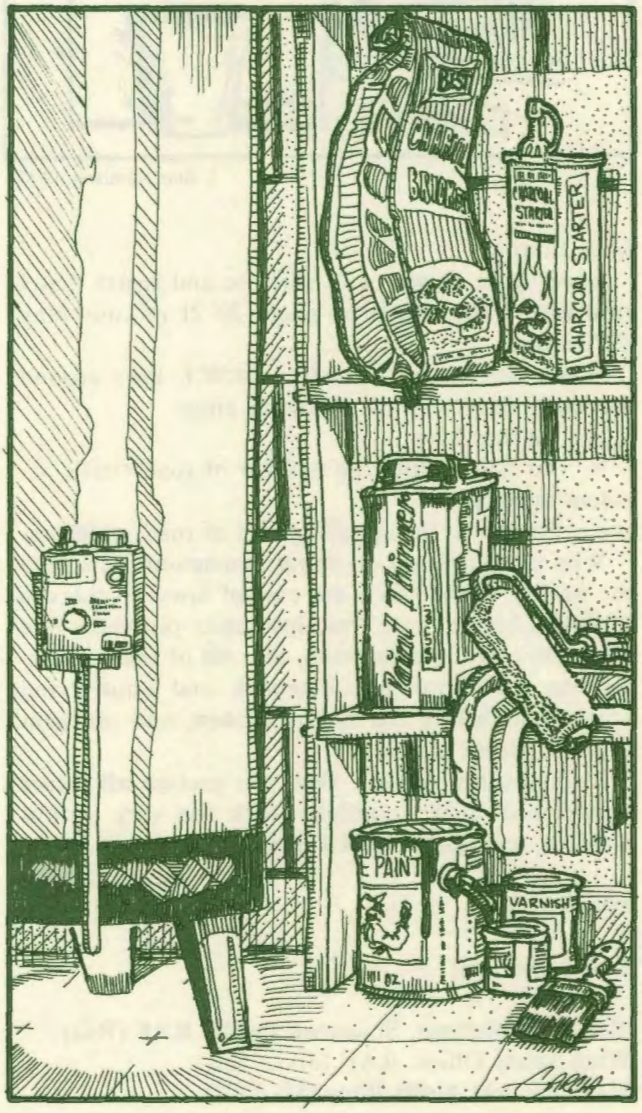
Some of the most serious accidents involving gas water heaters occur when a flammable liquid is used in the vicinity. The heavier-than-air vapors of a flammable liquid such as gasoline can flow along the floor--even the length of the basement--and be explosively ignited by the flame of the water heater's pilot light or burner. Since the victims' clothing frequently ignites, the resulting burn injuries are commonly serious and extremely painful. They may require long hospitalization and can result in disfigurement or death. NEVER, UNDER ANY CIRCUMSTANCES, USE A FLAMMABLE LIQUID NEAR A GAS WATER HEATER OR ANY OTHER OPEN FLAME.

Never store flammable products--including paint products--near the water heater.

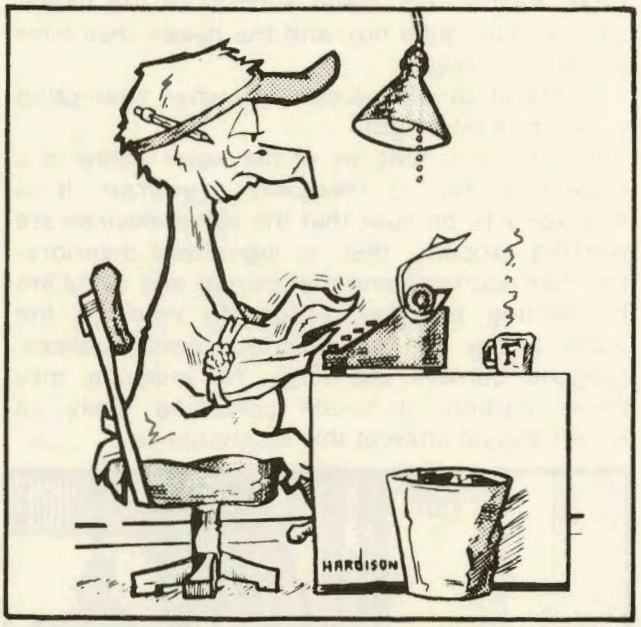
Warn children not to play with or around the water heater. The metal surface of the heater can become quite hot, and the heater may have sharp metal edges.

Follow all directions carefully when attempting to relight a pilot light.

Periodic maintenance of the water heater is a necessity, but is frequently ignored. It is necessary to be sure that the safety devices are working properly, that no significant deterioration has occurred and that burner and vents are functioning properly. Failure to maintain the water heater can have serious consequences. Clogged burners and vents, for instance, may cause carbon monoxide poisoning. Only an expert should attempt this maintenance.



LETTERS



© Stan Hardison, 1977

Dear Editor,

Once again, it was with surprise and regret that I read the D.W.I. article on pages 20/21 of your May 1979 issue.

When will we all learn that D.W.I. laws around the world have only the following aims:

a. To save lives.

b. To help reduce the number of road traffic accident injuries.

c. To reduce the appalling cost of road accidents.

Why do people go on about conviction costs (and the beer it would buy), the cost of lawyers, the size of fines, license problems, insurance problems, the effect on careers, promotion, etc. All of these consequences are thoroughly deserved, and known and understood before the law is broken, and innocent lives are placed at risk.

I respectfully request, that you preface all future uninformed D.W.I. articles with the very serious and true reasons for D.W.I. laws.

Thank you.

Yours sincerely,

'Red' Dunningham, Squadron Leader RAF (Rtd)
Wing Safety Office, RAF Mildenhall
513th Tactical Airlift Wing (USAFE)

Dear Squadron Leader Dunningham,

I'm sorry that we turned you off. That certainly was not our intent. The real aims of DWI laws are so obvious that I didn't see the necessity of repeating them. Additionally, the vast majority of drinking drivers are, or appear to be, unimpressed by those reasons--possibly because they get away with their negligence regularly. I hoped that by appealing to an individual's more immediate concerns--pay, promotions, etc--we might have an impact.

Ed

Dear Editor,

Looking in the latest mag,
I didn't see ol' FLEAGLE.
Tell me, Captain (If you can),
is this bull---- leagle?

Although ejection's lots of fun
(sometimes a bit distracting),
I do believe that punching out
is better than impacting.

Still, crashing FOX-4s
aren't much fun,
and I hope you get the word:
from industry (at least),
give us back "THE BIRD."

Sincerely,

Mike Byers
Arlington, Virginia

Dear Mr Byers,
Now Fleagle's feats and antics,
Are known the world around,
Because his common sense and knowledge,
Aren't what you'd term as sound.

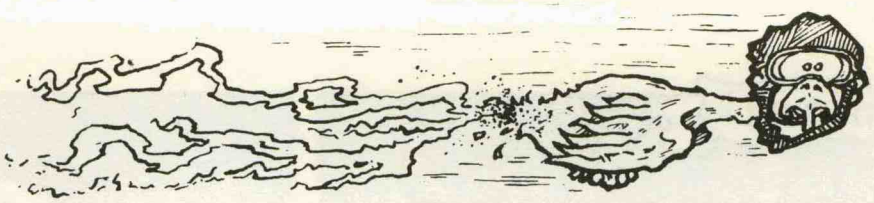
From time-to-time we feel it's wise,
To do without the bird,
And use the last page of TAC ATTACK,
To put out some other word.

And that sir is the reason why,
The June issue was sans Fleagle,
Believe me, with my editorial license,
Everything in this magazine is "leagle."

But take heart and do not despair,
For this issue of TAC ATTACK,
is complete in every respect,
With Fleagle on the back.

Ed

TAC TALLY



	TAC			ANG			AFR		
	JUN	thru JUN		JUN	thru JUN		JUN	thru JUN	
		1979	1978		1979	1978		1979	1978
CLASS A MISHAPS	0	17	16	0	6	8	0	3	1
AIRCREW FATALITIES	0	15	11	0	5	5	0	2	0
TOTAL EJECTIONS	0	20	20	0	4	5	0	3	1
SUCCESSFUL EJECTIONS	0	10	16	0	2	4	0	1	1

TAC Flight Safety Trophy Winners

56 TFW
MACDILL AFB, FL
1 JUL 78 - 30 JUN 79

1 SOW
HURLBURT FIELD, FL
1 JUL 78 - 30 JUN 79

507 TAIRCW
SHAW AFB, SC
15 JUN 78 - 14 JUN 79
(Also includes the 549 TASTG, Patrick AFB, FL)

CLASS A MISHAP COMPARISON RATE 78/79
(BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	78	16.0	12.4	8.3	7.5	5.8	6.3						
	79	6.9	7.0	5.9	6.6	7.4	6.2						
ANG	78	0.0	3.4	4.0	5.9	8.1	7.4						
	79	0.0	11.4	9.0	9.7	7.6	6.2						
AFR	78	0.0	0.0	10.9	7.8	6.0	4.8						
	79	0.0	0.0	19.9	23.1	17.0	14.2						

☆U. S. GOVERNMENT PRINTING OFFICE: 1979—635-037/3

FLEAGLE
AIN'T THIS TH'LIFE.
WILL YA'LOOK AT THAT !
HARRISON
LOOK OUT SURF !
WAIT TIL' SHE SEES THIS FORM.
© Stan Hardison, 1979
SMUSH!
GUESS HE THOUGHT TH'TIDE WUZ IN.
I 'SPOSE SO...HARD T'BELIEVE HE COULD MISS TH'WHOLE OCEAN.