TAC ATTACK

Tac Attack

FEBRUARY 1970

February 1970

THE COMMON COLD
...page 8

The Common Cold... page 8

for efficient tactical air power

TAC ATTACK

FEBRUARY 1970
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TACTICAL AIR COMMAND

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JAMIE SEZ:

Anyone can manage things
It takes leadership to manage people.

current interest

departments

TACRP 127-1

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Angle of ATTACK

the Roots of Accident Prevention

As I finish my career in the United States Air Force, I can't help but reflect back to the many years that have passed by since my first solo flight. Through my years as a *buck pilot, ops officer, commander,* and Chief of Safety, there was one significant fact that kept cropping up at every turn – ACCIDENT PREVENTION BEGINS WHERE THE ACCIDENTS HAPPEN!

You pilots who fly our machines are out where the *root of the problem lies, and are the* only *ones who have* the capability to keep our accident rate going down. Back in the days of the single-seat "pursuit" we used to say, "When the gear comes up, you become the ops officer and commander." For you were truly on your own. Although the *bulk of our fighters today have two seats, things really* haven't changed much.

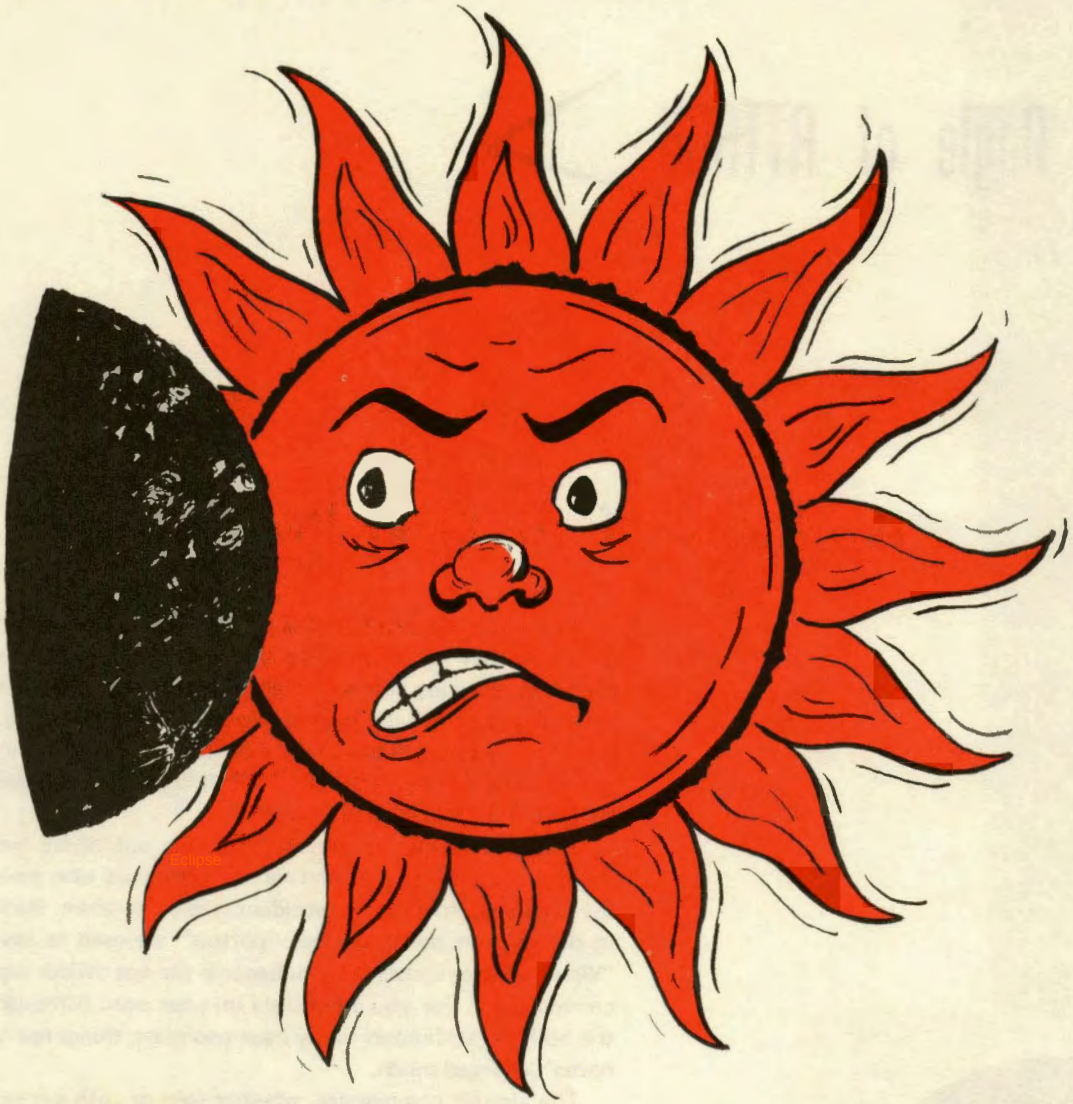
The aircraft commander, whether solo or with a crew, is still responsible for the conduct and safe recovery of every flight he makes. For when you strap an airplane on, you are accepting *full responsibility for its safe return and* for the well being of everyone on board. This serious obligation cannot be transferred or delegated – it is yours and yours alone.

So think about that. Think about how you shoulder your responsibilities as a pilot. Are you prepared, fully prepared for every flight you make? Can you do a better job than you have in the past? A lot depends on your answer to those questions – and what you will do about it.

I wish you all many happy hours in the air. It's been a pleasure to serve you . . . smooth landings!

R. L. Liles

R. L. LILES, Colonel, USAF
Chief of Safety



ECLIPSE

by Capt Michael D. Lewis and
SMSgt Kenneth W. Bickett
Hq 5th Weather Wing,
Langley AFB, Va.

The total solar eclipse of 7 March 1970 will occur over a greater population density of the United States than any other to date. The track of this total eclipse (Fig 3) crosses northern Florida, southeastern Virginia, and then parallels the east coast of North America to Newfoundland. A partial solar eclipse will be visible as far away as eastern Alaska. For all those in the path of the total eclipse, this will be a rare event since a similar eclipse track will not occur for another 56 years and 34 days.

A total solar eclipse occurs when the umbra of the moon's shadow reaches the surface of the earth (Fig 1). This can occur only during a new moon when the earth, the moon, and the sun are in a straight line, and when the moon is close enough to the earth so that the umbra will reach the earth's surface. If the umbra of the moon's shadow does not reach the earth's surface, an annular solar eclipse occurs (Fig 2). Annular solar eclipses are 20 percent more common than total solar eclipses. At least two solar eclipses occur each year, but as many as three can occur somewhere over the earth each year.

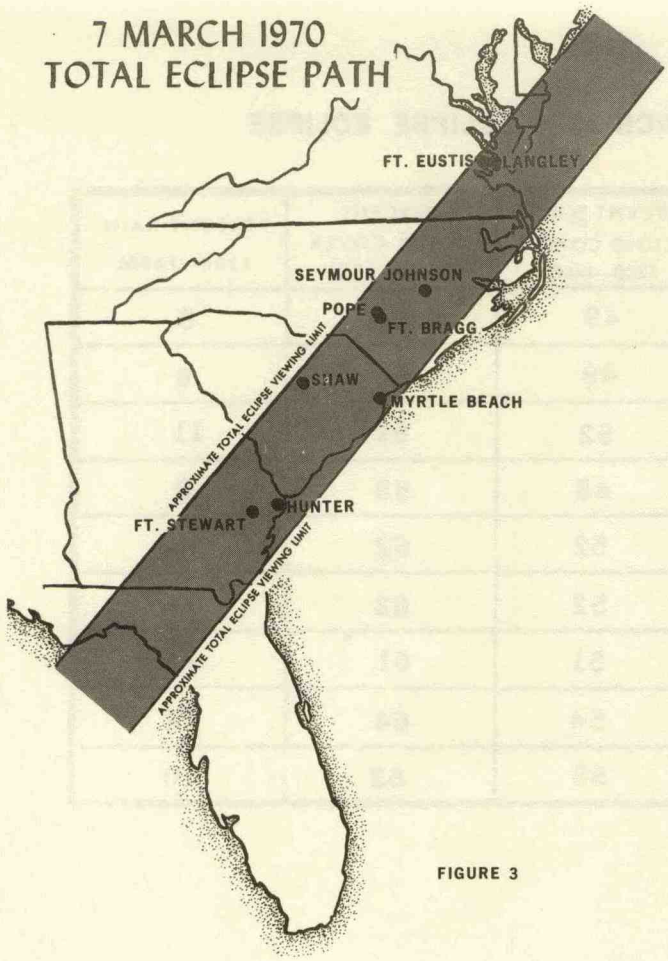


FIGURE 3

The Chaldeans (300 BC) were the first group to empirically determine the periodic recurrence of eclipses. They found that one eclipse is followed by another eclipse of the same kind after an interval of 18 years, 11 days and 8 hours. This is referred to as the Chaldean cycle or saros.

Eclipses repeat every saros, but because the saros is eight hours longer than an integral number of days, the location where the eclipse is visible is displaced approximately 120° longitude to the west. Therefore, for an eclipse to occur over the same location along the same track a period of three saroses must pass which is 56 years and 34 days.

The total eclipse begins over the south Pacific at sunrise and then progresses northeast across southern Mexico, the Gulf of Mexico, across Florida, South Carolina, North Carolina and Southeastern Virginia, then along the eastern seaboard of North America to Newfoundland, before terminating at sunset over the North Atlantic, south of Iceland.

Climatic conditions for units viewing the total eclipse are given in Figure 4, and eclipse times are given in Figure 5.

A partial eclipse can be viewed from a maximum of 80 minutes along the eclipse track to about 20 minutes in eastern Alaska. Generally, it will last from 40-80 minutes in the Continental United States. The times of beginning and end of the eclipse vary considerably from location to location, but these times can be readily obtained by consulting the 1970 edition of the American Ephemeris and Nautical Almanac.

SAFETY WHILE VIEWING THE SOLAR ECLIPSE

Everyone is cautioned not to view the eclipse with your naked eye, but only through fogged film or through smoked glass while the eclipse is partial. Looking directly at the sun, without proper protection, for as little as two seconds can cause severe permanent burns on the retina of your eye, resulting in partial or total blindness. For those in the region of totality, the eclipse can be viewed with the naked eye only after the eclipse has become total. To assure that the eclipse is total and for all personnel in the region of the partial eclipse, it is recommended you

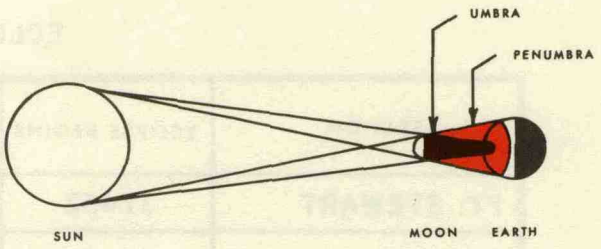


FIGURE 1 TOTAL SOLAR ECLIPSE

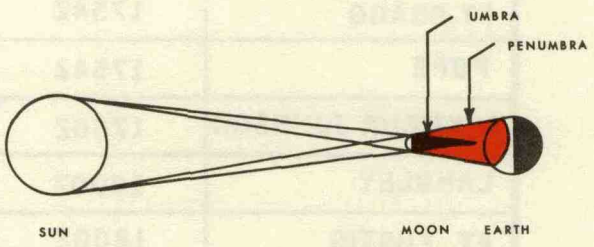


FIGURE 2 ANNULAR SOLAR ECLIPSE

CLIMATIC DATA FOR 7 MARCH 1970 ECLIPSE ECLIPSE

STATION	PERCENT ≤3/10 CLOUD COVER 1200—1400L	PERCENT ≥8/10 CLOUD COVER 1200—1400L	PERCENT CLOUD COVER 1200—1400L	PERCENT RAIN 1200—1400L
FT. STEWART	31	49	61	8
HUNTER	31	49	61	8
SHAW	32	52	61	11
MYRTLE BEACH	36	48	58	8
FT. BRAGG	31	52	62	11
POPE	31	52	62	11
SEYMOUR JOHNSON	33	51	61	11
LANGLEY	29	54	64	12
FT. EUSTIS	32	53	63	10

FIGURE 4

ECLIPSE TIMES

STATION	ECLIPSE BEGINS	TOTAL PHASE ECLIPSE BEGINS	DURATION TOTAL PHASE ECLIPSE	APPROXIMATE DURATION ENTIRE ECLIPSE
FT. STEWART	1745Z	1823Z	3	80
HUNTER	1746Z	1824Z	3	80
SHAW	1750Z	1827Z	3	78
MYRTLE BEACH	1752Z	1829Z	3	78
FT.BRAGG	1754Z	1831Z	3	77
POPE	1754Z	1831Z	3	77
SEYMOUR JOHNSON	1756Z	1832Z	3	76
LANGLEY	1800Z	1836Z	3	75
FT. EUSTIS	1800Z	1836Z	3	75

TIMES TO NEAREST MINUTE

FIGURE 5

construct and use the pinhole camera described in Figure 6.

Do not take this warning lightly! In 1964 a partial solar eclipse was visible over the mid-west, and repeated warnings of viewing the eclipse directly were printed in newspapers and broadcast on radio and television. Even with this warning, over 20 cases of partial or total blindness resulting from viewing the eclipse directly were reported in Ohio alone. A word to the wise should be sufficient; however, make certain all military personnel understand the potential hazard and that they spread the warning, especially to younger dependents.

This solar eclipse will be one of the viewing highlights of 1970, but only if viewed safely. →

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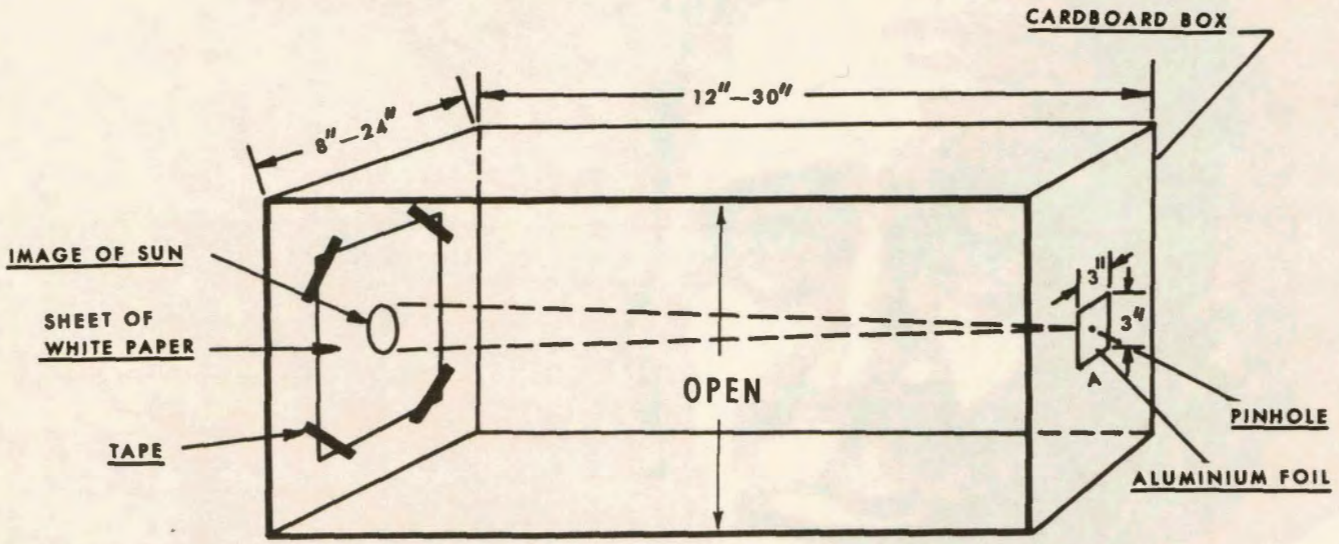
FIGURE 6

PIN HOLE "CAMERA"



CONSTRUCTION:

1. Cut a 3" x 3" hole in one end of cardboard box (A).
2. Tape a piece of aluminum foil (3 ½ - 4" square) over the hole in box. Tape only edges of foil.
3. Make a small hole in the center of the aluminum foil with a pin or a needle.
4. Tape a piece of white paper on the inside of the box opposite the pin hole.
5. Point the pin hole toward the sun and align the box so that an image can be seen on the paper screen.

By Maj Daniel C. Yost

By Maj Daniel C. Yost
Aviation Physioligist
Langley AFB, Va.

The COMMON COLD

The Common Cold

Perhaps after looking at the title of this article you said, or thought something like, "Oh no, not another diatribe about colds!" Harping on the subject may be boring and somewhat antagonizing to the aircrew member, however, the need for repeated and timely reminders about what to expect from self-medication is necessary. Our accident reports testify to that.

The upper latitudes are nearing that season of the year when Mother Nature has a hard time daily, deciding what kind of weather to allow. It's warm one day, cold the next. Rain and snow may alternate. Associated with this changeable season is an increased incidence of the so-called common cold. The variable temperatures, plus the cold weather of the just-past winter has lowered the resistance of the body. Therefore, its reduced ability to fight viruses and bacteria has left us vulnerable to whatever is "going around."

Medical research has shown that the common cold, or

upper respiratory infection (URI), is caused by viruses which so far have no medical cure. The viruses enter through the upper respiratory tract causing a primary infection in the mucous membranes which line the air passageways. The usual symptoms are stuffiness, sneezing, dryness of the throat, watery nasal discharge, watering eyes, occasional headaches, and that "ache-all-over-more-than-anywhere-else feeling." These symptoms last for four to six days and may be followed by a secondary infection caused by bacteria that were present in the nose and throat area. This second infection is accompanied by a thick, yellow discharge which may persist for several weeks. If the infection moves up into the sinuses and middle-ear area, additional infection develops with resulting sinus drainage, headache, and earache. If it continues down to the vocal cords, a sore throat and laryngitis develop. If the infection progresses further, bronchitis, coughing, wheezing, and even chest pains may result.

A PROVEN WAY TO SPREAD THE INFECTION TO THE SINUSES AND MIDDLE-EAR AREA IS TO FLY! The pressure changes encountered cause the air in the sinuses and middle ear to be expelled on ascent and to re-enter on descent. During descent bacteria can be drawn into the cavities along with the re-entering air. There is also a considerable chance of a middle ear block developing. The Eustachian tubes leading to the middle ears are lined with a mucous membrane which is sensitive and subject to swelling. If this tissue is swollen to the extent that the ear cannot be cleared, the eardrum may rupture. Which in turn, may cause nausea, shock, and possible collapse . . . in flight!

Pressure vertigo, that sneaky vertigo caused by pressure in the middle ear, can also occur when the ear is not venting properly. This type of vertigo may range from a mild dizziness to a sensation of spinning or rotating in space. On a minimum-ceiling takeoff you may live to regret taking off that day.

Sinus blocks may also be caused by the swelling of the mucous membrane lining the ducts that vent them. Sinus blocks, especially in the frontal sinus, are always hazardous to flying types. They cause excruciating pain and can louse up your cross check . . . and spoil your whole day!

Despite general skepticism about cures for the common cold, millions of dollars worth of commercial cold remedies are still sold in this country every year. The old fashioned, homegrown cures that Grandmaw used to concoct are no longer in vogue, but in their place has come a whole new arsenal of fashionable remedies — vitamins, nasal sprays, gargles, antihistamines, cold compounds, and numerous other "wonder" drugs. Careful investigation shows that most of the widely advertised remedies now on the market are utterly worthless in curing the cold. And at best, they give only temporary relief from the symptoms. In fact, many of them may be harmful and even dangerous. Dangerous not only physiologically, but also dangerous because they cause the user to become accident-prone due to induced drowsiness, nausea, and reduced alertness.

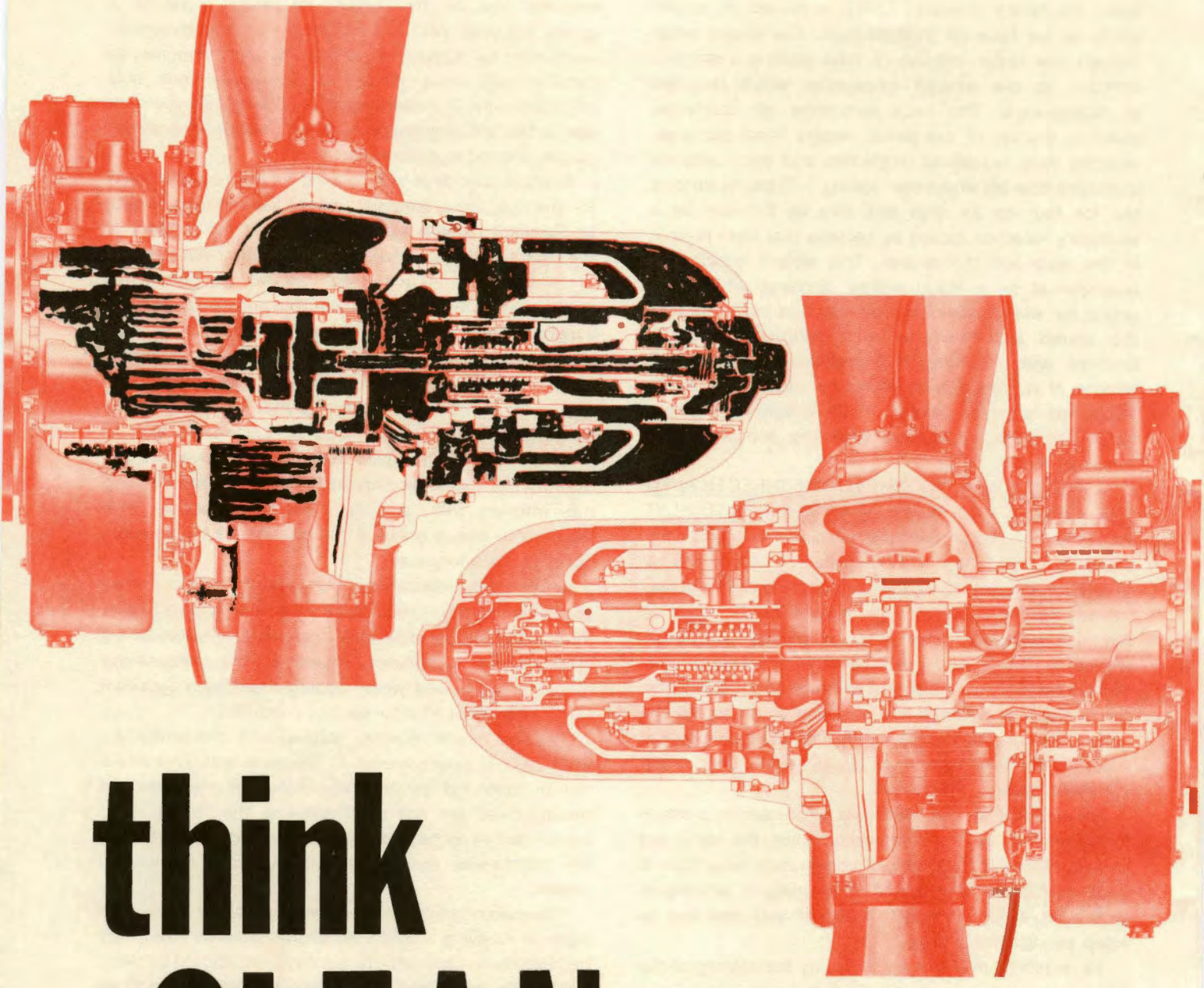
Medical science is still looking for an honest remedy for the cold virus. However, nature has provided us with an excellent defense against invaders. At the entrance to the nasal passages are tiny hairs which filter out particles of foreign material in the air. Located throughout the membranes of the nose are glands that constantly produce a mucous film which covers the membranes. With the help of microscopic, hair-like projections called cilia lining the mucous membranes in the nasal area, this mucous film constantly moves toward the pharynx, from which it is discharged or (yuk!) swallowed. It is estimated that 75 percent of the introduced bacteria is removed in this manner. Many nasal preparations may be harmful because they interfere with, or destroy this natural action. Once the mucous film is removed the bacteria are free to really dig in . . . for a long stay!

While nasal preparations, neosynphrine included, may give some temporary relief from congestion and stuffiness, their continued use may cause increasing irritation of the nasal mucous membranes. Therefore, nasal preparations should only be used when recommended by a physician for the treatment of some specific condition.

Perhaps mouth washes, gargles, and antiseptics are your favorite cold remedy. In the weak solutions which can be tolerated by the membranes of the nose and throat, these are not as effective as the "boob tube" would lead us to believe. Plus, only a small proportion of the membranes can be reached by fancy sprays and gargles.

Drugs containing antihistamines certainly have their place in relieving a cold's symptoms, however, they may be hazardous. Especially to aircrews, and should be taken only when prescribed by a flight surgeon. These drugs have varying effects on individuals, ranging from none to drowsiness, dry mouth and eyes, and mental depression. A recent study made on the effects of antihistamines concluded that most of them succeed in making you drowsier than several of the common brands of sleeping pills. Would you fly after taking a sleeping pill?

It all boils down to one pertinent point: If you've got the time and money to spend on self-medication you're like the man who acts as his own lawyer; he has a fool for a client. There's only one man in the flying business who is qualified, and has the authority to prescribe treatment for you. So — if you come down with a "common cold," stay down and let the flight surgeon do HIS thing!



think CLEAN

Think clean

It's very much like flooding your prized Golden Rolex with never-changed, sludge-laden motor oil drained from the crankcase of your 100,000-plus-actual-miles jalopy . . . and expecting continued split-second accuracy. You know that treasured timepiece will slow down and eventually stall out, no matter how many jeweled bearings it lays claim to. And it'll probably quit at a time of maximum embarrassment – you show up late for an early morning takeoff with the wing commander.

So it's pretty obvious to all watchwearers (Seikos included!) that precision workings can't perform "as advertised" when bathed in a gummy, carbon-laced lubricant even for short periods of time. Unfortunately,

we don't always stop to think about the effects of dirty engine oil on other precision workings we depend on.

For instance, the intricate plumbing in the propeller control mechanism on some of our old recips like the C-123 and KC-97 . . . birds that enjoy a handy little EMERGENCY system for prop oil replenishment. A backup option that gives aircrews one more chance at propeller governing action and feathering in a "tight" by letting engine oil enter the integral oil control assembly and propeller dome. As intended, it'll satisfy that temporary fluid shortage left by nice, clean propeller oil that leaked out somehow, or wasn't serviced properly before launch.

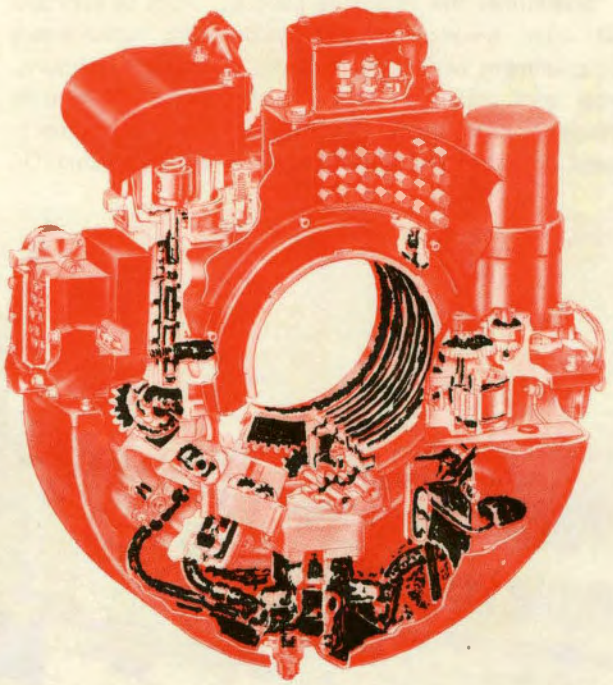
However, sophisticated innards such as prop controls, pilot valves, solenoids, floats, and the rest of that close-tolerance machinery weren't intended to operate in an engine-oil environment . . . except during airborne emergencies. If your problem's low-level prop oil, it'll keep your governing and feathering actions available until you get down for propeller maintenance. But now the prop specialists have the additional important task of draining and flushing the integral oil control assemblies to get rid of the engine oil. It's a difficult and time-consuming job, but it must be done. Otherwise, some follow-on aircrew will suffer prop control problems similar to the following:

- Cruising at 8500 feet, the pilot saw number one's prop oil low-level light flicker on and off. He replenished "a la flight manual" for the prescribed two minutes, but the light wouldn't go out. Having two standby jet engines, he decided to feather number one. Prop specialists found the oil level float switch sticking in the prop can.
- At 500 feet AGL number one prop oil low-level light illuminated. After two minutes of attempted oil replenishment, the light stayed on. Number one was shut down after starting the jet engines. Maintenance troops replaced a sticking prop-oil replenish solenoid.
- Also at 500 feet AGL, another bird had number one prop low-level light flash on. Again, the pilot activated the prop oil replenishment switch for two minutes. The low-level warning light didn't go out, so the prop was feathered. This time, the specialists discovered that the prop oil replenishing line was clogged and wouldn't allow engine oil to flow into the prop oil can.

In and out of the command there are additional accounts of replenishment incidents that suggest contamination and clogging of integral prop control components. Understandably, they generated unsatisfactory reports and requests for control assembly teardowns. For the most part these technical examinations reported:

- "Disassembly of float switch revealed that contacts within float switch were coated with engine sludge, indicating very dirty oil within oil control. This contamination caused intermittent switch operation . . . the direct cause for the malfunction was accumulation of sludge on the switch contact points, which in turn broke the electrical contact, illuminating the replenishing light."
- "Control rotating sleeve contained excessive dirty engine oil and carbon deposits throughout. Apparently control was replenished with engine oil and was never flushed in accordance with applicable directives. Conditions such as these have been found in numerous controls received . . . "

The prop-oil-replenish feature has been around prop-driven recips a long time. Longer than some of the aircrews and maintenance types now exposed to it and having problems. How does this offensive engine oil get into prop cans to do its dirty deed? In the main, prop-oil replenishing is the result of genuine airborne emergencies of the type described earlier; the warning light indicates a low-level of propeller oil and a possible loss of prop governing and feathering with further oil depletion. The aircrew follows correct flight manual procedures and turns on the replenish switch, admitting engine oil to the integral prop control. If the system works normally, the correct oil level is restored and prop control problems caused by insufficient oil quantity are avoided. They write



Cutaway of Control and Brush Block

THINK CLEAN

up their prop discrepancy and oil replenishment action after landing. Prop specialists follow through by correcting the gig and performing the mandatory draining and flushing of contaminated prop oil after replenishing.

Unfortunately, following valid airborne emergencies error, eagerness, or EXPEDITE may short stop normal procedures and set up future prop problems. Sometimes aircrews neglect to record their oil replenishment and enter only the control loss that prompted their action. Other times it's simply forgotten, especially when the low-level light flickered and the actual time of replenishing was so brief that the crew thinks it an insignificant amount of oil transfer, or unnecessary to record it in the Form 781.

In addition, aircrews know that prop oil cans are serviced routinely before each flight. They also are acutely aware that replenishment must be followed by the extra maintenance manhours involved in draining, flushing, and reservicing integral oil control assemblies by maintenance types. Anxious to fulfill important missions and avoid "unscheduled" aircraft downtime, aircrews press on. In their error or eagerness, crews delay the immediate removal of engine oil and set up later more serious prop control problems . . . often for other aircrews.

Sometimes the "expedite concept" leads to improper oil can servicing and subsequent unnecessary replenishment action. For example, on a fast turnaround, prop cans aren't filled to correct levels by hurried (harried?) crew chiefs. Perhaps they don't have time to bleed air out of the system during prop oil servicing. Or, after an oil-replenish writeup, the prop specialists don't have time for tech-order draining and flushing of integral oil control assemblies. Even worse, they have time but don't do it correctly through lack of training or supervision.

Another exedite-eagerness problem involves aircrews at the end of the runway on a "must-mission." Following the lead-in line on a rolling takeoff, a prop low-level light illuminates. The aircrew temptation to replenish-and-roll is very strong. Those that succumb are reluctant to write up their on-the-ground replenishment. Because aircrewmen as well as maintenance types are aware of the flight manual comment, "Improper operation and use of the integral oil control replenishing switch is detrimental to the control assembly. At no time will the propeller air replenishing switch be used to refill oil control during ground operation. It is imperative that . . . instructions be adhered to, in order to assure lasting and safe operation of the integral oil control assembly."

That's very specific instruction on the care and feeding of prop oil controls, a vital aircraft system. There's more guidance for both aircrews and maintenance types in aircraft tech orders. It's worth some study.

In an inflight emergency, use that replenish switch when the flight manual calls for it. That's what it's designed for. But, don't overlook the consequences of sludge introduced into precision equipment. Don't "replenish" the bird's supply of potential prop control problems unnecessarily. When it comes to prop oil cans, think clean!

Contaminated prop controls can cause clutter . . . and spoil your whole day!

TACTICAL AIR COMMAND

Pilot of Distinction

Lt Col Martinez

Lieutenant Colonel Conrad Martinez, Jr., of the 162nd Tactical Fighter Squadron (ANG), Springfield Municipal Airport, Springfield, Ohio, has been selected as a Tactical Air Command Pilot of Distinction.

Lieutenant Colonel Martinez was flying an F-84F in an air-to-air combat tactics mission. As he departed the restricted area after completing the mission, his aircraft developed a nose-up, runaway trim condition at 300 knots. He overcame the pitch-up force by keeping both hands on the stick and exerting a steady pressure of 25 pounds. The alternate trim switch was selected, but it proved inoperative. Colonel Martinez flew on the wing because he could not release the stick long enough to make radio changes, or fly instruments properly. He made his descent through dense weather by using his left elbow to make the power changes as he continued to hold the stick with both hands. Final approach was flown at higher than normal airspeed and a safe, controlled stop was made using the drag chute.

Lieutenant Colonel Martinez's professional airmanship during a critical inflight emergency readily qualifies him as a Tactical Air Command Pilot of Distinction.

TAC TIPS ...interest items, mishaps

Snagging the Brass Ring

Climbing out at 350 KIAS, the Phantom recce jock confirmed centerline tank feeding, which was acknowledged by his GIB. A loud bang followed, accompanied by vibration. He suspected an engine failure. The master caution blinked on, but the only change on the panel was a canopy-unsafe light. He started an easy left turn to check control, that's when he spotted his navigator . . . suspended under a full chute, drifting toward an open area for what turned out to be an easy PLF. After an uneventful landing and a short wait for the chopper the GIB briefed his pilot, relating the following hairy tale.

During climb out he was raising his seat from "bottomed" takeoff position when his USAF knee-board slipped from his right leg. His checklist fell outboard, the kneeboard toward the stickgrip and D-ring. He could not recall having fastened it to his leg, and it may have been "just setting" in place. But he recalled trying to retrieve both at once before they fell from easy reach . . . and that's when things started to happen!

The seat worked just like the book says, and later examination indicated that all initiators and explosive items worked according to design, when activated by the face curtain or D-ring.

Did he get a fist full of unguarded D-ring when he grabbed for the falling board? He doesn't remember, but he admits to being livin' proof that it could'a happened.

APU Anxiety

The OV-10 pilot nosed his bird into a revetment at about a 45-degree angle and shut down, waiting for his passenger. After loading his non-paying rider and baggage he cranked up and prepared to taxi. The auxiliary power unit used to start engines remained in position outboard of the right tail boom, aft of the main gear. After moving straight ahead a short distance, he pivoted on his right wheel and concentrated on avoiding the unmoved APU. Dividing his attention mostly between the beckoning crew chief and the offending ground power unit, he only glanced at his left wing clearance.

That's when the crew chief signaled hurriedly, stop! The twin-boomed tiger slowed a little before the left wing tip crunched into the revetment wall. While worrying about an APU that could be moved he flirted with a wall that he couldn't move. There's a subject for a sermon in here somewhere!

New Squawks

A reminder to those of you who may have missed the new IFF squawks that went into effect the first of this month.

VFR, VFR-conditions-on-top, or an aircraft that cancels its IFR Flight Plan:

Mode 3, Code 3300 – Below 10,000 feet.

Mode 3, Code 3400 – 10,000 feet up to, but not including the base of PCA (FL240 where no PCA).

Mode 3, Code 3500 – FL240 and above, outside of PCA.

Radio failure:

Mode 3, Code 7600

Spurious Rudder Kick...F-4

During a Phantom's GCA final approach with gear and flaps down, channels 14 and 15 selected, a rudder kick was felt each time the mike button was keyed. The upper UHF antenna was being used. The malfunction was duplicated

with morals, for the TAC aircrewman

on the ground and all UHF and ARI components checked okay in accordance with applicable TOs. All wiring and shields checked good. The ARI amplifier was replaced and rudder kick became less noticeable, but was still there. Another amplifier was installed and this one eliminated the rudder kick on channel 14 and 15 transmissions on any frequency setting.

The unit also reported that this malfunction has been a problem for years and should have high priority in finding a fix. Sounds like a great idea . . . having the rudder talk back each time you key the mike could turn out to be a disasterous conversation.

F-4 Garters

An interesting message concerning problems with the F-4 garter system crossed the desk the other day. The following three safety of flight hazards were listed:

Leg and Thigh Garters Slipping – With normal cockpit activity the leg garters are working loose during flight and slipping down around the ankles. In one case the pilot was unable to apply brakes. Thigh garters are also susceptible to slipping because of inflation and deflation of the G suit bladder.

Leg Retraction Line Misrouting – This problem is caused by accidently crossing the right thigh garter over the right leg garter or vice versa when hooking up prior to flight. This act could foul the release system by preventing or delaying the released leg line cone pin from passing completely through the dual rings on the leg garter. This condition could be aggravated by a loose garter.

Loose Buckles – It was reported that the male portion of the buckle came off and was found on the cockpit floor after flight. On another occasion a garter keeper loop caused a malfunction in the canopy system, and caused a flight to be aborted.

These items may be "old hat" to those of you phlying the Fantom right now, so take this reminder for what it's worth. To you jocks entering the program in the near future, here's a start for your list of "lookouts."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story of flight as told by Lt Colonel W. A.
CRF) to the TAC ATTACK Staff.

A few thousand years ago an ancient airman named Daedalus (his studs called him "Old Daed") chiseled on stone tablets aviation's first flight manual. Thus, he assured himself of a never-ending niche in flight history. He called it: Daed 1. Handed down through centuries of air achievement, and suffering much in the many translations, it finally became known to all as the Dash One. It is much revered by all (except for a few dissidents).

Being the first human to fly completely unsupported by horse (Pegasus), elephant (pink), or guy wires (Mary Poppins), Daedalus was much admired and respected by eager young men. They beseeched him to teach them to fly "Escape earth's shackles, bonds, and establishment," they called it.

Anxious to help the youths and having no pilot superior or standard-bearer evaluator, Daedalus modestly proclaimed himself to be Instructor Pilot One (IP-1). Understandably, his aviator's academy proved an instant success; he sold franchises in all the major cities, worldwide.

Being the first, and only human, Old Daed made a few mistakes. Using present-day standards, he would have been torn asunder in the arena by young lions traveling in safety survey teams (it's fun to bite others for a change!). However, when his errors were identified, Daedalus dutifully recorded his shortcomings and revised his Daed 1 each time he erred. Of course, he dulled many stone chisels in the process. Lost a few students too.

And that's why Daedalus developed his hang up on heat. Painfully, he discovered during his frequent accident investigations that some sun-loving solo students violated his proclamations on pilot purity and brazenly flirted with the seductive sun goddesses. Those disobedient pilots that survived their scorching somehow, and landed safely, were summarily banished from Old Daed's Academy of Flight.

Prominent among this pilot group was a skilled young daredevil called Tor. As he was publicly stripped of buttons, lap belt, and flight toga, Daedalus rebuked him with a reproachful,"Fie Tor! Fie Tor!" Later,the banished Tor became the leader of a raucous, renegade group who contemptuously mimicked Old Daed and called themselves Fie-Tor pilots. They were not permitted in polite society. As a result, they frequented clandestine clubs serving alcoholic beverages. Wild rumor had it that Fie-Tor pilots even indulged in riotous revelries called orgies. Some designed a culinary delight forever after known as a "Fie-Tor Pilot's Breakfast."

When Daedalus's number-one son Icarus graduated from college, he enrolled in his father's flying school. Filled with trepidation because his son wasn't particularly bright, Daedalus briefed him carefully, "Icky, I want you to not only read my Daed 1, but memorize all the

don't be ICKY !

emergency procedures, especially the section that describes overtemping. It can save your life some day!"

Well, you can guess young Icky's reaction. His dad owned the school. The Daed 1 was just plain Greek to him and he had majored in a dead language, English. Besides, he rationalized, Old Daed is over thirty, represents the establishment, and a clean-shaven-living square. You're right! Icky was certain he could fake it and perused Pluto's Popular Playgirl instead.

Beginning with his son's first supervised preflight, Daedalus stressed safety and emphasized repeatedly the horrendous hazard created by over-exposure to heat. "Icky, my son," he cautioned, "never, never overtemp thy air machine by polishing thy posterior too close to the sun!"

Tragically, on that day, at that very hour, idiotic Icky initiated a fatal custom that has bedeviled all flying types ever since. HE DIDN'T LISTEN TO OLD DAED! Compounding this grave error, he didn't read his Daed 1.

Predictably, on his very first solo ride, Icky flirted with the sun. Gleefully glistening his gloppus, he quickly overtemped and overstressed his bird. Waxen wings wobbling woefully, ignorant Icky immelmanned into an icy inlet (the dummy ditched!). It put out his fire, but it also extinguished the flame in Icky.

Daedalus was inconsolable. He bemoaned his cruel fate and wailed aloud, "My son was a natural-born pilot. He must have fallen prey to some unknown, awesome adversity."

Hearing his vocal attempt to excuse his son's violation with the spurious claim of hidden adversity, Fie-Tor pilots snorted scornfully, "Adversity?" Yawww (Yaw being a derisive exclamation of that day)! Icky was really ripping regulations by reflecting his rind too close to the sun goddesses! Adversity? Yaw! Icky should've stuck to grinding gravel.

A member of the accident board informed Daedalus about the Fie-Tor Pilot's sarcastic statements. Furious, Old Daed uttered a terrible pilot's oath, (censored). And then he placed a curdling curse upon all future Fie-Tor Pilots. "From this day hence a mysterious malediction shall plague all Fie-Tor Pilots. It will snatch them out of the sky when they are least aware, and most vulnerable. It will lay in wait for the unlearned, unbelieving, and uncouth. It will cause them to fall from the sky as did my son, Icky. And to revenge the Fie-Tor Pilot's derision, it will be forever known as Adversity Yaw! The Fie-Tor Pilot that flubs and forgets will fall quick prey to my Adversity Yaw." So spake Old Daed. Then Daed died.

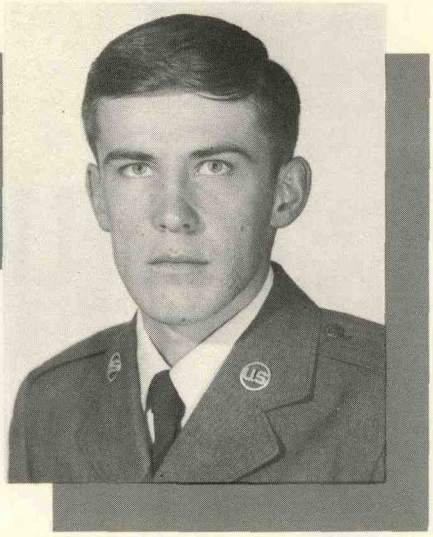
And so through lo these many years, Dear IPs, Flight Leaders, and Studs, the terrible curse of Daedalus lies in wait for fledgling and full-blown fighter pilots (modern spelling). And it is now known as adverse yaw. It's widely scattered throughout the sky hoping to entrap ham-handed pilots. It bites hardest and most often at low altitudes. Look for it lurking in the ACM area, gunnery range, and traffic pattern.

What can you do to avoid the revenge of Daedalus? Don't make the same mistakes as Icky. Read all the good words about adverse yaw in your Dash One (also modern spelling). And when your IP or Flight Leader briefs: LISTEN TO OLD DAD!

Tactical Air Command

Crew Chief of the Month

Staff Sergeant Gordon E. Hahn, 481 Tactical Fighter Squadron, Cannon Air Force Base, New Mexico, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Hahn will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

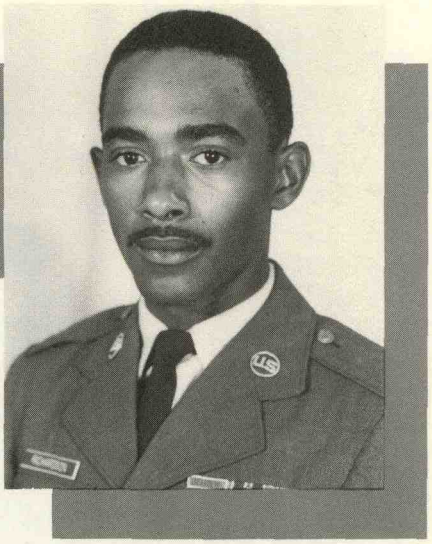


SSgt Hahn

Tactical Air Command

Maintenance Man of the Month

Staff Sergeant Ralph Richardson, Jr., 479 Tactical Fighter Wing, George Air Force Base, California, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Richardson will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



SSgt Richardson

F-4 FLIGHT CONTROL SYSTEM.

faults and fixes

by Maj Jerry Gentry
USAF Flight Test Center
Edwards AFB, Calif

The F-4, originally designed as a Navy interceptor, has done yeoman service for the Air Force as an interceptor, an air superiority fighter, a fighter-bomber, and as a trainer. However, the Flight Test Center has been less than satisfied with the longitudinal stability of the F-4 since the first tests back in 1963. The deficiencies of major concern were:

- A slow pitch trim rate which degraded handling qualities and increased pilot induced oscillation (PIO) tendencies at high speeds.
- A nose-up pitching tendency at high load factors and angles of attack (AOA).
- High control sensitivity and inadequate pitch damping which also increased PIO tendencies at high speeds.
- Control system dynamics which gave destabilizing stabilator inputs and further increased PIO tendencies.
- Low maneuvering force gradients (stick force per G) particularly at aft center of gravity (CG) positions and high AOA which increased chances of inadvertent AOA overshoots and loss of control.
- Poor stick centering characteristics and force cues at slow speeds.

The stability and handling qualities of the F-4 could be greatly improved by either of two ways. First, the basic stability could be improved by a major redesign of the aircraft. This, of course, is pretty much out of the question. The other means is to completely redesign or at least make major modifications to the flight control system. Cost, if no other reason, has dictated that this was the course to be followed.

Before we get down to specifics about the items listed above and discuss what has been, is being, and could be done to improve the F-4, let's review as simply as possible just how the longitudinal or pitch control system works.

To us pilots, the two most obvious components are the control stick and the stabilator. When the stick comes aft, the trailing edge of the stabilator should come up and so should the nose of the aircraft when we are airborne. Of course, the opposite should happen as the stick is moved forward. Basically, when we move the stick fore and aft, this motion is transmitted to the rear of the aircraft through rods and cables to the stabilator actuator and the power control cylinder which moves the stabilator. This system would be reasonably good all by itself if we could afford to fly around at a slow speed all the time. Obviously we need to go faster than 200 knots on occasion so this system alone is inadequate. To prove it, pump the stick vigorously some time when you are that slow and then consider what sort of an aircraft response you would get for the same stick motion at 500 knots.

What is required, in addition to pitch stability augmentation (that's another story), is an artificial feel system installed in parallel with our basic system which varies the stick forces as we change airspeed, G, stick position, and the rate of stick movement. The artificial feel system components from nose-to-tail are basically the bobweights, a bellows assembly, and a balance assembly.

The bobweights, located under the seat, are connected to the basic control system pushrods so that they continually resist aft-stick motion with a force equal to their weight times G. For example: a five pound bobweight resists aft-stick movement with a five pound force in cruising (1G) flight, and with a twenty-five pound force in a 5G turn.

The bellows, which are pressurized from the fin-mounted total pressure (airspeed) pickup, exert an aft stick force that increases with indicated airspeed. This force opposes the bobweight force and makes the stick "stiffer" at higher speeds. The difference between the magnitude of these two forces represents the "feel" force transmitted back through the control system to us at the stick. When flying in a condition we wish to maintain, we operate the trim switch to get rid of any stick forces. What we are doing is running a trim actuator on the

FAULTS and FIXES

balance assembly to equalize the bobweight and bellows forces. So much for the flight control system.

It was noted during early F-4 testing that when accelerating or decelerating rapidly, the trim rate was too slow to keep up with the change in stick forces. This often causes a gross out-of-trim condition at high speeds which, combined with an already sensitive airplane, increased the PIO susceptibility. A downspring in the feel system was removed and this effectively increased the trim rate to an acceptable level. Additional fallouts from this modification (TO 1F-4-595) were that the aircraft could be taxied comfortably without the stick at the forward stop; and configuration changes such as gear, flap, and speed brake extension or retraction required less stick forces.

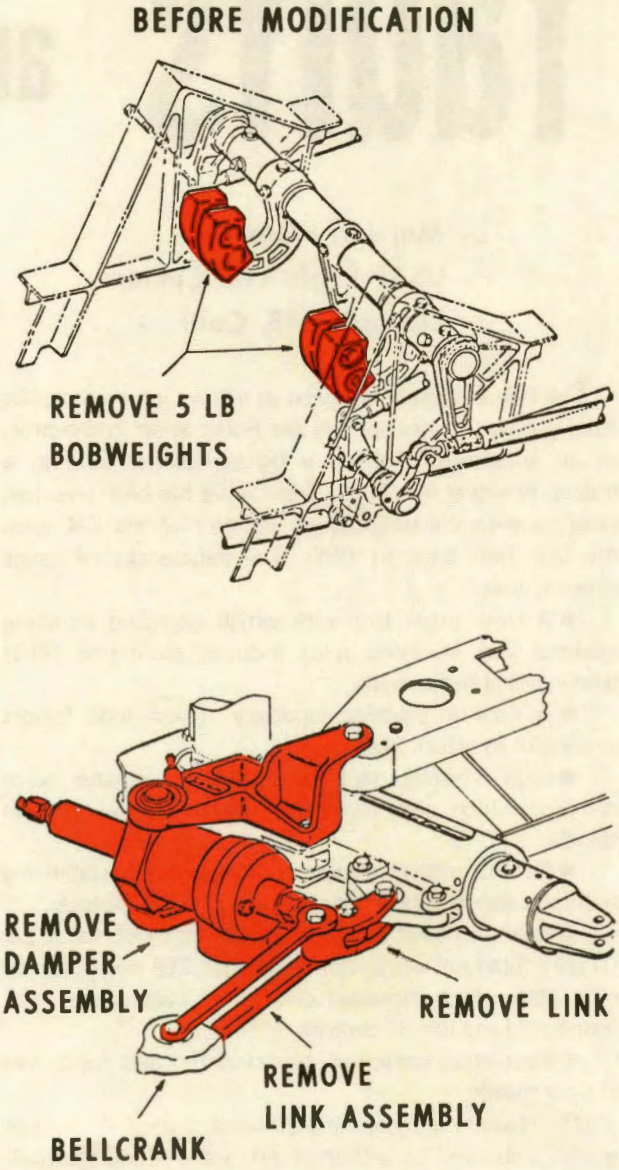
The nose-up pitching tendency at high load factors and AOA results from a lack of basic aircraft stability. This effect becomes more pronounced as the CG is moved aft and external stores are added. Nothing short of aircraft redesign or major flight control system changes will eliminate this problem.

The high control sensitivity and low pitch damping at high speeds gave us an overly responsive aircraft that didn't track nearly as well as desired. Testing indicated that the five pound bobweights were, in some cases, actually driving the flight control system and causing stabilator movements contrary to those that were commanded by the pilot and stability augmentation.

The contractor investigated numerous fixes to decouple the natural frequencies of the aircraft and the flight control system. Short of a completely new flight control system, the best solution appeared to be the replacement of the five pound bobweights with three pound bobweights. The bellows connecting links were redesigned to regain the stick forces which were reduced when the lighter bobweights were installed. The viscous damper was deleted; it had been essentially non-functional since the downspring was removed. After a thorough evaluation the Flight Test Center recommended that this system be installed in all F-4 aircraft.

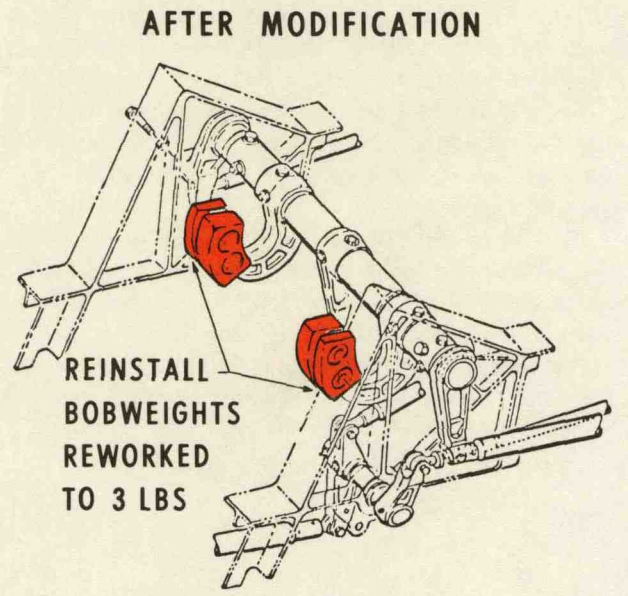
Many F-4 "jocks" have already flown the three pound bobweight system and if they were not briefed on what changes to expect, it is not surprising that they had mixed emotions about the benefits of TO 1F-4-831. For those of you who have not yet flown the system, the following will prevent you from being surprised.

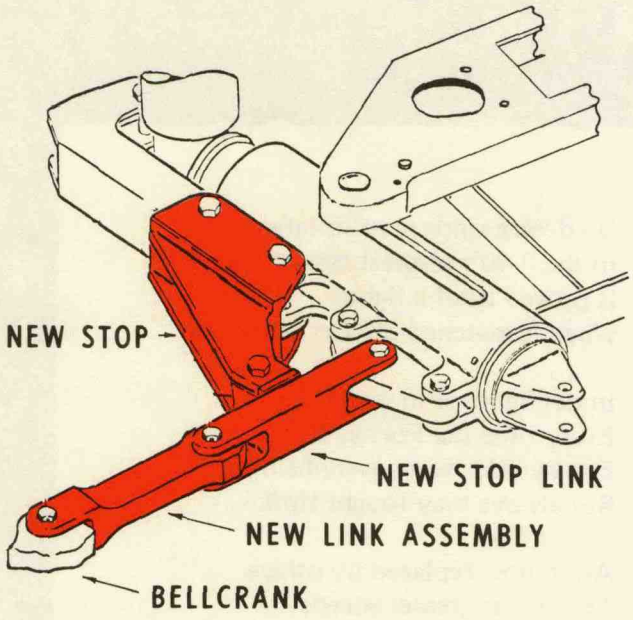
The first noticeable change can be observed during the



flight control checks prior to taxiing. The force required for aft stick movement is reduced and when the stick is released from the aft stop it will not fall smoothly to the forward stop unless you have three or four units nose-down trim.

If only two units nose-down trim are used for takeoff, the stick forces will be very light and there will be a tendency to over-rotate the aircraft. Three to three and one-half units improves the takeoff feel considerably. At

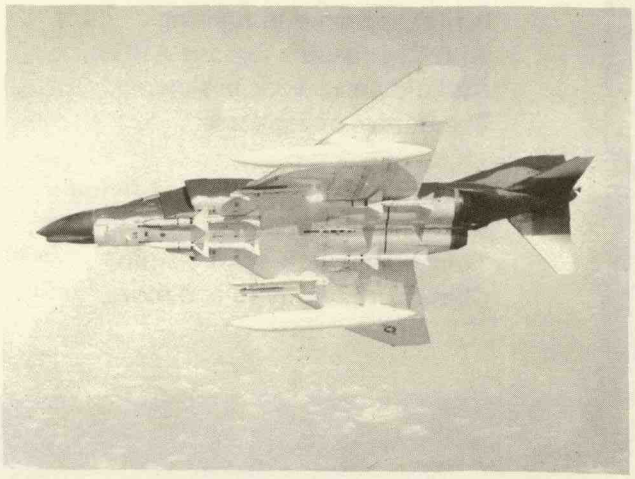




slow speeds and in the landing configuration, the stick feel (response to small pitch inputs) will be somewhat lighter. Unfortunately the low maneuvering forces and the stick centering characteristics were not improved by this modification, and if anything were very slightly degraded. But the dynamic oscillations of the control system have been reduced and you will find that the F-4 handles better at low altitudes and high speeds and that the tracking qualities have been improved.

An analysis of maneuvering data indicates that neither the five nor the three pound bobweights produce a satisfactory stick force gradient as AOA is increased. Ground testing has determined that there is an imbalance in the longitudinal control system which reduces the bobweight contribution to the stick force gradients. Recent flight testing with the control system "overbalanced" to assist the bobweights as AOA is increased showed considerable improvement. The stick centering characteristics were significantly improved especially at slow speeds and in the takeoff and landing configurations. The maneuvering force gradients were increased approximately two to three pounds per G under all conditions. More precise control of G was available and there was less tendency to overstress the aircraft or to pull excessive AOA. This modification, which consists simply of bolting sixteen pounds of lead (not to be confused with a bobweight) on the trim actuator, is currently under evaluation by the O.T. and E. Section at Nellis AFB. Hopefully it will be installed on all F-4s.

The probability of any further improvement in the performance, stability, and handling qualities of the F-4 seems rather remote at this time. The Air Force is apparently not going to pursue the Agile Eagle (leading edge slat) program which was a subject of the September 1969 issue of the FIGHTER WEAPONS NEWSLETTER. In spite of some deficiencies, the F-4 is a "good bird;" however you should treat it with respect. We are going to be flying it for a long time.



Pilot's Printable Poetry Page

An aviator's windfall in the form of a POW's World War II diary crossed the editor's desk the other day. It contained some classic examples of the inspired, brown-shoe-days poetry that sustained the lagging spirits of downed aircrewmen spending involuntary TDYs in Germany's scattered Stalags. The authors are unknown and we're unable to give them much-deserved credit for boosting morale.

Perhaps some of TAC ATTACK's readers will recall the poet-pilot who authored these nostalgic notes. After you've wiped away that tear, send us his name. And in addition, if you have some not-too-boisterous ballads you've collected during your Air Corps/Air Force tours, send them along. We'll try illustrating them in future issues on our Pilot's Printable Poetry Page.

TOMAHAWK !

I'd like to tell a story
Of a plane you all should know,
And how it flew to glory
Against the Jap and German foe.

It first appeared in fighting
With Chennault's famous AVGs,
And did great work in slowing
The hordes of Japanese.

In many months of combat flying
Before Pearl Harbor brought the war,
Tomahawks were there helping
China's armies, more and more.

On desert sands months later
In the P-40's severest test,
It proved itself a fighter
When it matched the German's best.

In dogfights or in strafing
Every time the Forties flew,
Enemy odds were overwhelming
But always they fought thru.

Altho now replaced by others
That fly at greater speeds
P-40s were such wonders
We'll long recall their deeds.


400
DUKE
HARDISON

CHOCK TALK ...incidents and incidentals

Chock talk

pins and women

An F-4 pulled into the dearm area and a ground crewman disappeared under a wing. Seconds later the pilot heard on the ground intercom that the right engine was spewing sparks. He shutdown both engines.

Another F-4 scheduled for an early morning range mission was preflighted by ground personnel, including the crawl down both intakes for FOD inspection. She checked out OK and was turned over to the loadcrew. Just before dawn, the aircrew prepared for takeoff. Air was applied but before the pilot got the throttle out of cutoff position, the crew chief reported sparks coming from the tail pipe.

In both cases safety pins with well chewed streamers still attached were removed from compressor sections. Both pins were for weapons systems only. Where the pins came from is the question: one ship had just returned from a mission, and the other was about to be launched, all pins still in place. Pins just don't go wandering into intakes on their own . . . or do they?

In the first case, it was determined that the pin was one of several carried in the hand of the dearm crewmember who walked under the Phantom, near enough to the intake so that suction literally pulled a streamer and pin from the crewman's hand.

In the second case, the solution was a little trickier. The FOD check was thorough before loading. And all weapon pins were still in place on the crippled bird. However, it was a before dawn launch from an unlighted ramp. The crew chief had made the usual FOD ground check but it's very probable that his flashlight missed a pin and streamer lying on the ramp near an intake, where it had been overlooked for the same reason by the loadcrew.

"Those darn pins are like women," the jock was heard to say to his GIB as they headed for ops. "Ya can't live with 'em, and it's no better without 'em. Only solution is, learn to handle 'em."

about tools and trust

After an hour and a half of cruise, the jock began letdown from FL 230. That's when he first realized that left aileron control was gone. It wouldn't move beyond neutral and he needed some, so he fist-hammered the stick left and got about 20 percent, enough to accomplish landing.

On the ground, investigators found a six-inch screwdriver wedged at the aileron control stop area. And maintenance records showed that the last time the area had been opened was 28 flying-hours previously.

The only corrective action here is positive tool box inventory control by maintenance personnel and their supervisors . . . and a long wait for the pessimistic attitude of aircrews to change back to that of a trustworthy camaraderie desired by all.

can't pump air

While an F-4 was being refueled at FL250, an uncontrollable wing rock began. An immediate disconnect was accomplished at which time the pilot noted his utility hydraulic pressure dropping to zero. After complete failure of the system the oscillations stopped and did not re-occur. External stores were jettisoned and an approach-end BAK-12 arrestment was made.

It is suspected that air leaking past the utility hydraulic accumulator seals into the hydraulic system is a major factor in this one, and reason for a "current surge" of utility hydraulic system failures in the unit. They have started to record dates on which hydraulic accumulators are serviced with air, anticipating that frequent servicing entries will indicate leaking systems. Sounds like a swinging idea; the man who can prevent all of our utility failures on the F-4 will be a pilot favorite in no time at all.

with a maintenance slant.

torque them properly

Here's a case of REPEATED overtorquing of a nut which resulted in stripping the threads of its companion bolt. The end result was the loss of an F-100 drop tank as the pilot lit burner for takeoff. No big thing, right? *Wrong! The tank could just as well have come off at* lift-off . . . or at the end of the runway . . . or over the home of the last man to overtorque it. *We rebriefed again* and stressed TO compliance, with step-by-step installation procedures . . . now we just have to wait for the next one and hope we are as lucky.

fire in the hole

This RF-4C from another command had returned home following IRAN. It passed a quality control acceptance inspection and was cleared for an operational check flight. On takeoff, just after gear retraction, the number one engine fire light illuminated. Afterburner was terminated and the throttle was retarded to idle – the fire warning light went out. All engine instruments were normal and the fire warning circuit checked O.K. Not wishing to tempt fate, the pilot jettisoned his tanks and made a single engine landing with number one in idle.

Investigators found a loose fitting (PN 576C 370P3) on the check valve to the afterburner ON – OFF line. It would leak fuel when pressurized during afterburner operation. The fuel had been ignited when it sprayed on a nearby hot air duct during takeoff. When the throttle was reduced to idle the leak was minimized and airflow blew out the fire – damage was minor.

It appears that the fitting was never tightened properly because the safety wire was still intact and would have prevented the fitting from vibrating loose. Much time and many man-hours are being spent to stop F-4 fires . . . it's a shame to see it all negated – by a loose nut, human or otherwise.

who has the red face ?

Soon after beginning a takeoff roll, an F-100 jock experienced nose wheel shimmy. Steering became ineffective and shimmy intensity increased. He aborted, but before coming to a full stop both nose gear tires were shredded. The nose gear scissor link pin was missing. It was found on the runway about 1600 feet from start of takeoff roll.

The pilot has the red face on this one. Seeing that the pin is secure is one of the few bold-faced items on his walk-around checklist. But you can't really blame the jock for letting his red face slip to a glow around the collar as he turns his bird over to the ground crew, who set him up for this one.

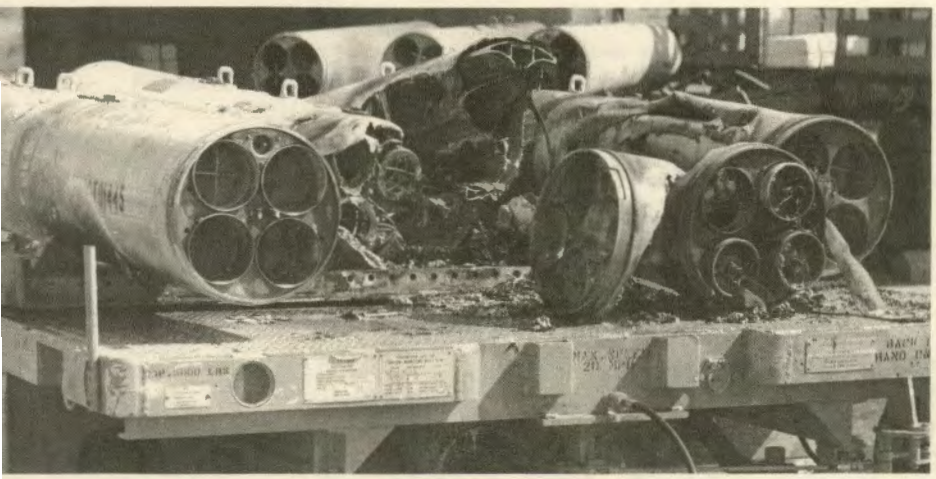
wired for safety ?

During formation practice maneuvering, the F-4 pilot retarded throttles to idle to avoid overshooting lead. After stabilizing on lead, he added power . . . or tried to. Number one throttle would not budge from idle. The navigator assured him that no throttle obstruction existed in the back, so the pilot tried some jiggling to free it. That's when it slipped outboard and the engine flamed out; and the throttle locked in cutoff.

Fortunately they had a good engine and got home. Investigation showed that the torque booster had failed because safety wire holding the valve stop set screws in place had broken at the set screw head, allowing them to back off and locking the throttle to the rear.

Which simply proves that safety wire overstressed during twisting is as good as no wire at all.

MARK IV false flag



by TSgt Willie C. Buckholts
Hq TAC (OSMEN)

Some AC-130 alert crewmembers were reading while others discussed the previous night's mission. Suddenly the alert buzzer sounded.

A platoon of infantrymen was surrounded and in urgent need of close air support. Though near midnight, the AC-130 was soon airborne and on its way to provide suppressive fire for the surrounded troops below. But distinguishing between friend and foe in the dark of night requires illumination, and lots of it. Flares ejected over the area provide sufficient illumination to spot enemy positions and deliver suppressive fire. That's where the Mk 24 flare plays a vital role.

The Mk 24 Mod 4 flare is a delay-type flare launched from aircraft. The flare consists of an outer aluminum container enclosing an ejection fuze, an ignition fuze, a lanyard, a parachute, and a candle (illuminating composition). When burning, the flare provides a light intensity of two-million candle power for 190 seconds.

During assembly and test phases of the flare, the manufacturer is required to perform a lanyard pull test on selected flares from each lot. To do this, a red mark is painted on the lanyard at the base of the ignition dial to aid in distinguishing whether flares did or did not experience an adequate lanyard pull during lot acceptance testing.

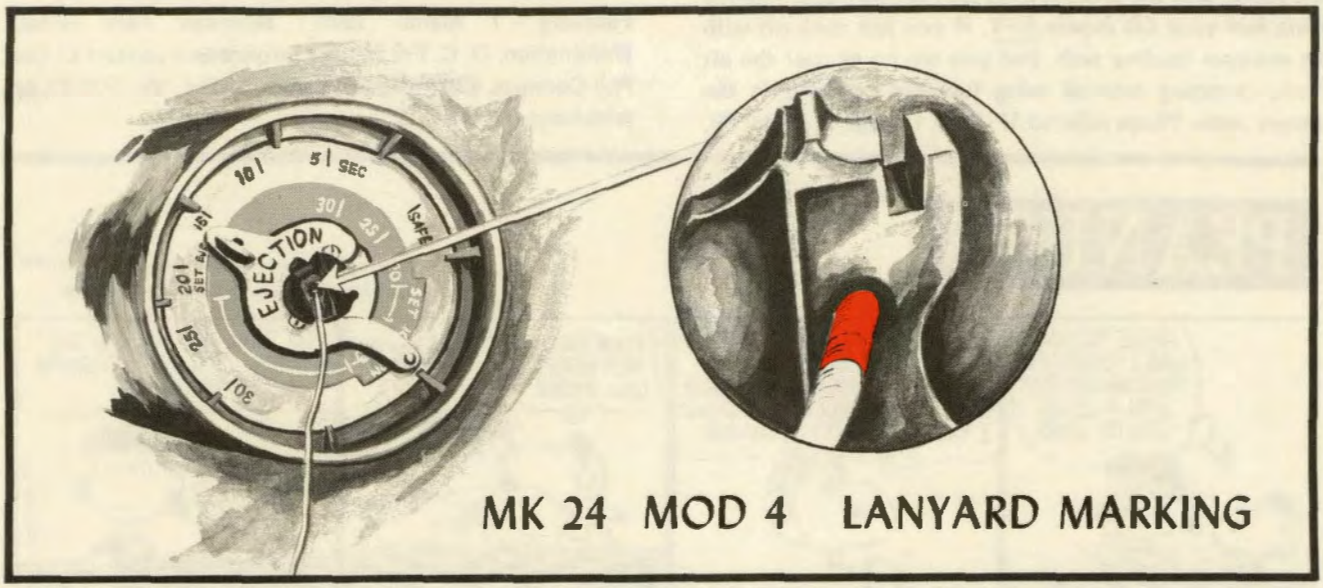
This red mark on some flares has led to misunderstanding while loading and unloading flares in the field. The situation has led some technicians to assume the flare is armed and capable of causing an explosives accident. This has been revealed in a couple of accidents involving the red lanyard marking.

A loadcrew was loading two Mk 24 Mod 4 flares in an SUU-25B/A dispenser. The first flare was installed and the lanyard was connected to the lanyard of a second flare. As the safety pins were removed and the second was being placed in the dispenser, a technician noticed a 1/8 to 1/4-inch of red showing on the lanyard of the first flare. He dropped the second flare and cleared the immediate area. Weight of the dropped flare pulled both lanyards and both flares ignited. Luckily, the fire department was standing by and prevented any serious fire damage.

Another crew was downloading two flares from an SUU-25B/A dispenser, because of binding caused by an improperly seated gas seal. As the first flare came out of the tube and the second flare became visible, the loader noticed red markings along the lanyard base. Assuming the flare was armed and about to ignite, he dropped the first one. Weight of the falling flare armed both flares. The crew moved the trailer to a safe area and shoved the burning dispenser off. Damage was limited to dispenser.

It is impossible for the manufacturer to hold much of a tolerance on the red-painted section of lanyard on spot tested flares. The 3/16-inch red mark is painted on with a tolerance of plus or minus 1/16-inch. The release pin to which the lanyard is attached can vary up to plus or minus 3/8-inch with respect to the top of the ignition fuze setting dial. So flares are being manufactured and accepted for issue with the red marking showing above the top of the ignition dial.

The red-painted section of lanyard cannot be construed as a flare arm/safe indicator. The only non-destructive method of determining that the flare is safe is by insertion of the safety pin. If the pin is in, or it can be inserted (whether the red section of lanyard is showing or not), the flare is considered safe. If a flare is considered to be unsafe for any reason, personnel should stand clear for a minimum of 60-seconds prior to taking further action.



MK 24 MOD 4 LANYARD MARKING

LETTERS to the EDITOR

In your article "Winning the Egress Race" in the October 1969 issue of TAC ATTACK, you mentioned a report of "Combat Use of Life Support Systems" by Robert H. Shannon and Major Arthur N. Till, Directorate of Aerospace Safety. Since in my wing I am concerned with training our pilots in the proper use of life support systems I would like to know from where I could get a copy of the above mentioned report.

Your cooperation in this, to my opinion important subject, would be highly appreciated.

1Lt Hubert Simon
Combat Survival Officer
Fighter Bomber Wing 36, West Germany

Roger! It is an important subject, and getting the word out is not only our job, but our pleasure, too. We've sent you a copy of the report, and additional copies are available from Directorate of Aerospace Safety (AFIAS-L), Norton AFB, California 92409. Ed.

I just read the article, "40-lb Robin?" in your July 69 issue by Capt. Alan W. Melvin. I would like to point out an omission that I consider serious when reducing gross weight preparatory to an emergency landing. Capt. Melvin talks about dumping fuel through the engines, but also it can be dumped via the internal wing tank dump switch. In the latter case the precaution is that as you dump internal wing fuel your CG moves AFT. If you just took off with an external loading such that you are on or near the aft limit, dumping internal wing fuel can put you in the danger zone. Please refer to 1F-4C-1, Change 7, 11 Jul 69, figure 5-8. While the aircraft can and has been flown safely with CGs aft of 35 percent MAC the pilot should bear this in mind and fly accordingly.

Duane C. Seymour
Senior F.S. Engineer
McDonnell Aircraft Co.
5th Air Force

A good point. And the word is, "baby it" around the turns. Remember, as Jamie sez, "He with ham hand, may take ride in meat wagon." Ed.

Thank you for granting permission to APPROACH to reprint "The Thing," by Tony LaVier, TAC ATTACK, Dec 1969, (re phone con with LCDR W. J. Isenhour). When the article is printed we will forward copies for your files.

Lt William T. T. Hood
Managing Editor, APPROACH Magazine, USN.

TAC ATTACK is pleased to contribute to your excellent publication dedicated to keeping the Navy flying . . . safely. Ed.

8th REUNION

The 8th Tac Ftr Wg will hold its annual reunion 27 February – 1 March 1970, Sheraton Park Hotel, Washington, D. C. For further information contact Lt Col Phil Combies, 4307 Majestic Lane, Fairfax, Va., 22030, or telephone OX 5-6182.

PEANUTS

Courtesy of Daily Press, Newport News, Va.
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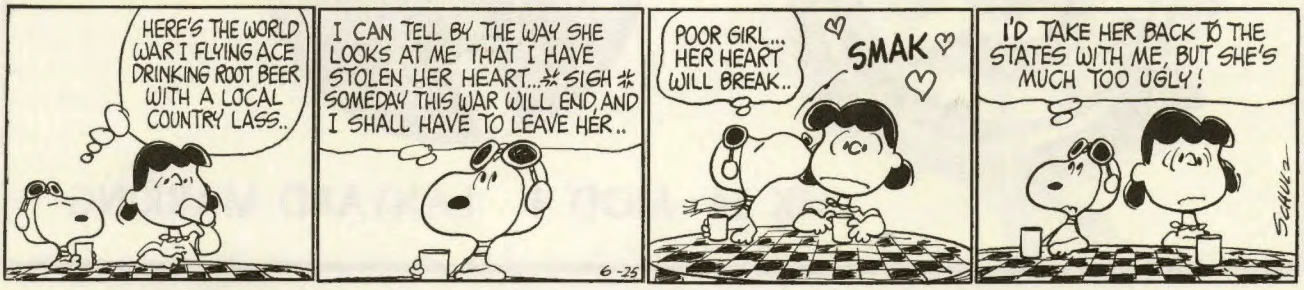

TAC TALLY

AIRCRAFT ACCIDENT RATES

* Estimated

MAJOR ACCIDENT RATE COMPARISON

	TAC		ANG		AFRes	
	1969	1968	1969	1968	1969	1968
JAN	6.8	5.6	28.9	0	0	0
FEB	6.2	7.3	12.8	0	0	0
MAR	6.8	7.1	12.6	0	0	0
APR	7.4	8.7	15.1	1.9	0	0
MAY	7.5	8.0	12.9	7.5	0	0
JUN	7.2	8.5	12.6	7.4	0	0
JUL	7.4	9.3	11.3	6.3	0	0
AUG	7.3	9.4	11.5	8.2	0	2.3
SEP	6.9	9.1	10.5	7.4	0	2.0
OCT	7.1	9.3	9.9	6.7	0	1.8
NOV	6.6	8.6	9.4	6.9	0	1.7
DEC	6.7	8.8	9.5*	7.8	0	3.2

UNITS

THRU 31 DEC	1969	1968	THRU 31 DEC	1969	1968
9 AF	2.2	5.7	12 AF	10.1	9.2
4 TFW	3.8	8.2	23 TFW	21.2	24.7
15 TFW	2.0	8.0	27 TFW	3.3	7.4
33 TFW	12.3	10.0	49 TFW	15.1	0
4531 TFW	3.3	13.8	479 TFW	8.4	9.3
			474 TFW	21.0	26.0
363 TRW	6.0	5.1	67 TRW	3.7	8.0
			75 TRW	3.7	0
64 TAW	0	3.1	313 TAW	0	0
316 TAW	0	0	516 TAW	3.5	3.5
317 TAW	0	0			
464 TAW	0	0			
4442 CCTW	0	0	4453 CCTW	6.5	13.0
4554 CCTW	0	N/A	58 TFTW	12.0	6.0
TAC SPECIAL UNITS					
1 SOW	3.6	14.6	2 ADG	0	0
4409 SUP SQ	0	0	4500 ABW	3.9	3.6
4410 CCTW	8.4	7.8	57 FWW	17.2	34.8
4416 TSQ	0	39.1			

Our Regular and gained-Reserve accident toll for December totaled seven. Not one of our worst months, but not too good either. Fighters accounted for six of the accidents, a T-33 was the seventh. Pilot fatalities numbered six; only one month, October, exceeded that total. Three of the fatalities involved "no ejection": one resulted from fighter disintegration during a high speed dive; the other two went in from relatively low altitudes. There were no fatalities attributed to equipment malfunction or late ejections, however, we lost two pilots who ejected outside the envelope of their egress equipment. The sixth fatality was caused by a failure to connect parachute risers.

We lost two aircraft on the range, an F-100 and an F-111. An F-4 went out of control while attempting to join-up, and an F-105 fell off the leader's wing and went in with no transmissions. An F-105 disintegrated in flight and an F-4 went in following INS failure in the soup, and loss of control. A T-33 landed short while practicing flame-out landings.

There are a lot of safety messages in the series of accidents during December. We don't have the space to belabor cause factors here. Besides, you might ask, "So what else is new," after reading about four of them. You'll wonder why we don't learn more from our past mistakes than we seem to.

An added thought. By the time you read this, the weather will be getting milder (in most of TAC), but don't get sucked in! Those balmy winds can change in a hurry. And don't forget to plan for the freeze-thaw-freeze weather coming up in the spring. Stay alert so you will get to read our "Summer Flying" stories in a few months.

they didn't THINK!