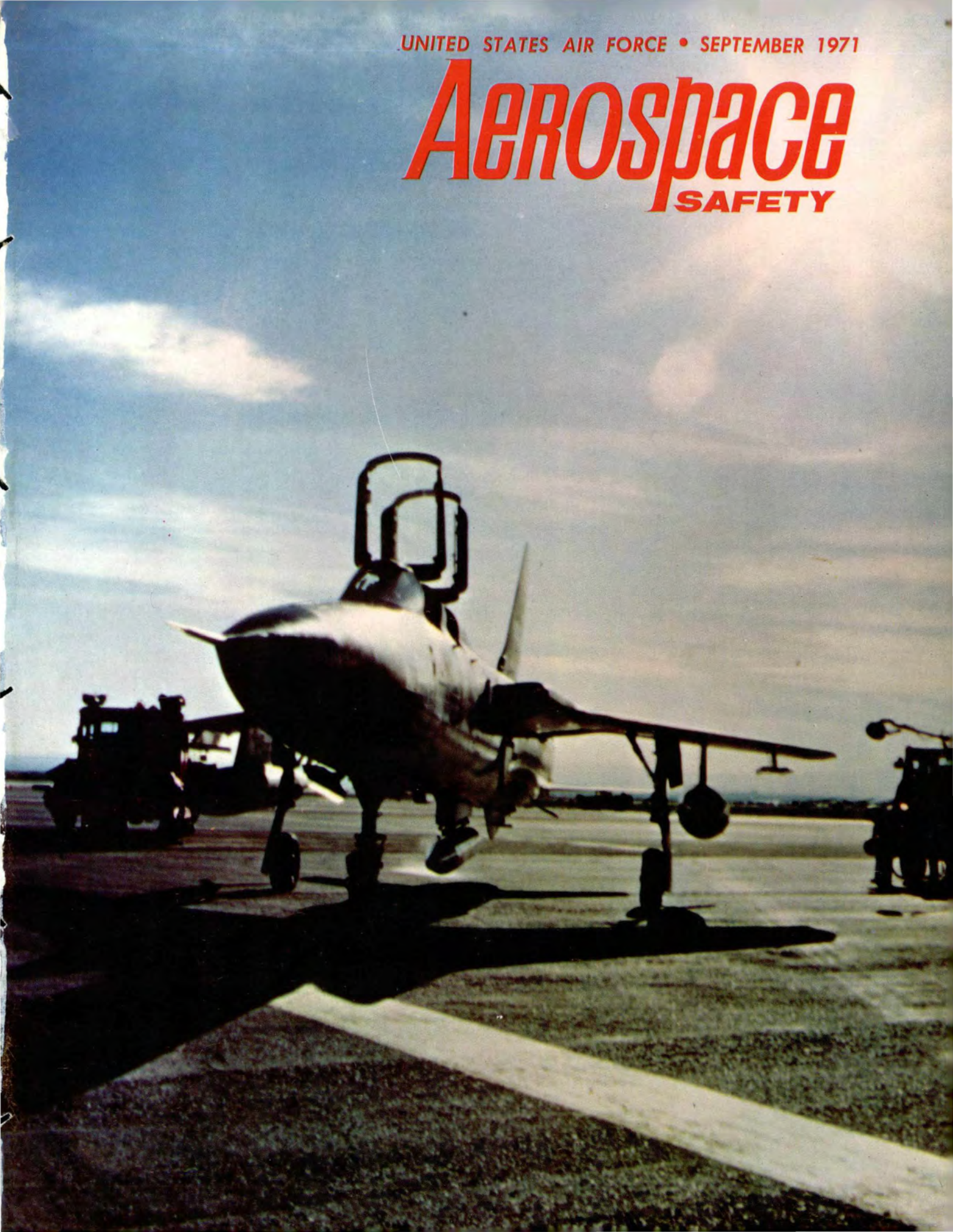
UNITED STATES AIR FORCE • SEPTEMBER 1971

Aerospace SAFETY



Air Force fire fighters approach an F-105 Thunderchief which developed hot brakes during landing. U. S. AIR FORCE PHOTO, Det. 5, HQ AAVS.

UNITED STATES AIR FORCE

SEPTEMBER 1971

Aerospace SAFETY

FOR AIRCREWS, MAINTENANCE & SUPPORT TECHNICIANS

SPECIAL FEATURES

ACCIDENT/INCIDENT REPORTING... *a voice out of the past* 1

ONE CANDLE FOR THE C-5... *how to handle the big one* 2

TO COME IN OUT OF THE RAIN... *have enough sense* 6

QUICK FIX VS THE PERMANENT SOLUTION... *in favor of the OHR* 9

AIRBORNE SMOKEY... *a plea from the Forest Service* 10

PLAN B... *the alternative* 12

ABOUT TIRES... *the care and feeding of* 18

WEATHER RECALL... *getting the birds back to roost* 27

THE SMART ROUTE... *a run-down of safety schools* 30

REGULAR FEATURES

IPIS APPROACH 8
OPS TOPICS 14
REX RILEY'S X-C NOTES 17
TOOTS 21
TECH TOPICS 22
EXPLOSIVES SAFETY 26
NUCLEAR SAFETY AID STATION. 28
MAIL CALL 32
WELL DONE AWARD 33

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, USAF

SUBSCRIPTION—AEROSPACE SAFETY is available on subscription for $4.00 per year domestic; $5.00 foreign; 35c per copy, through the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Changes in subscription mailings should be sent to the above address. No back copies of the magazine can be furnished. Use of funds for printing this publication has been approved by Headquarters, United States Air Force, Department of Defense, Washington, D.C. Facts, testimony and conclusions of aircraft accidents printed herein may not be construed as incriminating under Article 31 of the Uniform Code of Military Justice. All names used in accident stories are fictitious. No payment can be made for manuscripts submitted for publication in the Aerospace Safety Magazine. Contributions are welcome as are comments and criticism. Address all correspondence to the Editor, Aerospace Safety Magazine, Deputy Inspector General for Inspection and Safety, USAF, Norton Air Force Base, California 92409. The Editor reserves the right to make any editorial change in manuscripts which he believes will improve the material without altering the intended meaning. Air Force organizations may reprint articles from AEROSPACE SAFETY without further authorization. Prior to reprinting by non-Air Force organizations, it is requested that the Editor be queried, advising the intended use of material. Such action will insure complete accuracy of material, amended in light of most recent developments. The contents of this magazine are informative and should not be construed as regulations, technical orders or directives unless so stated.

SEPTEMBER 1971 AFRP 127-2 VOLUME 27 NUMBER 9

ACCIDENT/INCIDENT REPORTING

Does this letter sound familiar to you? It may if you have a good memory. The message was one that the then Chief of Staff, General Curtis LeMay consideed important. It's just as meaningful today as it was 11 years ago.

You are well aware that complete, accurate, and objective reporting is basic to any accident prevention program. Our success in safety during the last 15 years has resulted largely from lessons learned from previous mishaps. In some cases, a single report was enough to provide evidence for corrective action.

Further reductions in aircraft accidents can be made by efforts based on complete facts of all occurrences that could lead to accidents. Our missile inventory makes thorough reporting of every incident mandatory. The importance of maintaining a zero rate in the nuclear field moreover, makes it imperative that the Air Staff be completely apprised of every incident.

Incidents are symptoms of accidents that may occur. But there appears to be a lack of enthusiasm in some quarters about reporting. There may be some doubt in the minds of our people as to how these reports are used. For years it has been Air Force policy that accident/incident reporting not be used to place blame nor serve as a basis for disciplinary action. Yet, of course, subordinate commanders feel that they are under pressure to create a good record.

However, I believe that reluctance to report incidents and accidents stems mainly from a lack of understanding of their extreme importance. Because the ultimate value of each report is not always apparent at base or operating level, I am requesting you to encourage your subordinate commanders to report all aircraft, ground, missile, and nuclear mishaps completely, promptly, and honestly. Individually and collectively, such reports become the basis for modifications, changes in design criteria and staff actions which bring about safer operations.

I ask you to emphasize the importance of submitting incident and accident reports and to remove any real or imagined barriers which may color the truth or hide the facts. ★

ONE CANDLE FOR THE C-5

In June, the 437th Military Airlift Wing at Charleston AFB completed one year of C-5 operation. To get a handle on what has been learned and the problems encountered in servicing the C-5, we talked with the people at Dover AFB and Rhein Main AB who have been handling and servicing the C-5 since it became operational in June 1970.

We learned that servicing the C-5 during through flight has not presented serious problems, due to extensive preplanning and training before the aircraft began transiting the MAC system.

The following is intended primarily for non-MAC people who may find themselves servicing, loading and unloading the C-5 without the benefit of extensive training and preparation.

"Although it's the biggest in the world, the C-5A is just another airplane." If you believe that, and you will be having anything to do with the C-5, then you'd better rethink. The C-5 is NOT just another airplane.

Size alone presents some problems, which we'll discuss as we go along. Size also means bigger engines which, in turn, mean trouble, mainly because of the blast effect in the wake of those engines. The blast from any of the heavy jets can erode unstabilized areas on the sides and ends of the runway, take out runway markers, roll up PSP. It can throw rocks and other debris like bullets and make workstands practically fly without wings.

Obviously, you don't just pour on the power in the C-5 without taking certain precautions. Drivers of ramp vehicles must be made aware of the hazards behind the C-5 when the engines are running. Care must be taken to see that all AGE is removed from the engine blast area and positioned so that when the bird taxis and makes a turn the wake is not directed at the AGE or blowing across the active runway. The most serious problem in this regard occurs when the aircraft begins to taxi; breakaway power is sufficient to cause havoc if the area behind is not well secured.

The size of the C-5 creates illusions. For example, people think it is flying lower than it is. Reports have been made that "a C-5 just flew over at 400 feet." Such reports have to be investigated and the fact is, the bird just looks like it's lower than it really is. People will tell you the C-5 is very noisy. Of course, it makes some noise, but not that much. It's a case of people seeing an engine that size and assuming that it has to be noisy.

So far, with more than one year of operation, there have been relatively few problems with handling and servicing the aircraft. Bear in mind, of course, that only trained MAC people have been handling the C-5. Therefore, if you are expecting the C-5 to visit your non-MAC base, pay attention.

First off, the C-5 will eat up a big part of your flightline—like 194,000 square feet of it just for parking. As for parking, the area

should be relatively flat. Problems in kneeling the aircraft have been encountered at bases where there is a crown in the ramp. If you can park it near a fuel pit, that will help. A full load of fuel is 49,000 gallons. During refueling, especially at an installation that does not have regular and frequent C-5 traffic, it would be advisable to have a fire truck standing by. It is possible to get a rather large fuel spill. Firemen should know the pattern a spill would assume at that spot and which way the fuel would travel.

Marshaller directs incoming C-5A to parking spot at Rhein-Main Air Base, Germany

Fueling and concurrent cargo loading and offloading are permissible and normally shouldn't present much of a hazard.

As for loading and unloading the C-5, traffic people tell us it's a piece of cake, although its capacity is enormous. To give you an idea, the C-141 can take 10 pallets in one row. The C-5 gulps up 36 in two rows. Cargo can be loaded from either end simultaneously, or while one row of pallets is being offloaded, loading can be in progress on the other side.

Cargo on wheels, unless it is palletized, can be loaded only when the aircraft is kneeled.

An efficient method seems to be for the cargo to be pre-spotted and one K-loader parked at the aircraft. Another K-loader is used to transport pallets to the parked K-loader for transfer to it and thence into the aircraft. There is also a huge air transportable dock for cargo loading and unloading, but only limited use has been made of it so far.

Pallets built up for either the C-5 or '141 are interchangeable. However, there should be no protrusions, since there is very little side clearance in the C-5.

We don't know what the record is but we have been told that a C-5 has been unloaded and reloaded with 36 pallets in about two hours. So it shouldn't be difficult to meet

• Armored Personnel Carriers prepare to board C-5A through aft cargo door. Aircraft can also be loaded from front, as shown below.

C-5

the current 4:15 standard turn-around time.

Unless there is major maintenance required, and a MAC team would be brought in to accomplish this, turning the bird around shouldn't be too much of a problem, provided the necessary precautions are taken. However, there are certain hazards.

Because of its size and various compartments, the airplane can accommodate a lot of people at one time, so access to the aircraft should be controlled.

Generally the forward crew door is kept closed and entrance to the bird is by the aft troop entrance door where each man working in the aircraft is logged in and kept track of either by interphone or by reporting to the supervisor in person. For turn-around, MAC units are using a Quick Service Supervisor, who is in charge of the aircraft during servicing. At some transit bases the aircraft is roped off and access is rigidly controlled—by the maintenance crew while work is being accomplished, by the Security police after the bird is buttoned up.

Under no circumstances should anyone be allowed on the upper surfaces of the wing or fuselage without protective equipment. These surfaces are fitted with attach points to which a worker can fasten his personal harness. Experience has shown, however, that if he has to move around very much, it is more convenient to attach a rope from one wingtip to the other and let the man attach to the rope. This gives him much more latitude and he doesn't have to be continually connecting and disconnecting as he moves about. The hazard here, of course, is the height of the C-5. A fall from the top of the wing or fuselage could very well be fatal.

People working inside the aircraft should be prebriefed on the various means of escape and the location of fire extinguishers and masks.

The only two C-5s lost were destroyed on the ground by fire. So, unless we have solid ivory between our ears, this should have some significance. If the C-5 is coming to your base you will want your fire department to have a good pre-fire plan. The plan should cover both ground and airborne emergencies that would necessitate a landing or result in a hazard during landing. It should insure that firemen know the interior layout of the aircraft to include seating arrangements, the location of all entrances, emergency exits and escape devices, hazards to contend with and the location of critical switches and components. In case of an engine fire, firemen will want to know:

- When the flight crew is aboard they can use the aircraft system to extinguish the fire. Otherwise, firemen will have to do the job. Since foam and CB are corrosive to the engine, CO_2 should be used.

- Shooting the agent directly into the fan area would be futile—the agent would go right through the engine.

- Cowling or access doors must be opened in order to introduce the suppressive agent. If they can't be opened, then a bayonet nozzle would have to be used to pierce the pylon skin.

- There are fuel, hydraulic and bleed air lines in the pylon. Knowledge of their location is essential for fire fighters.

To a fireman, the C-5, for practical purposes, is not an airplane but a sort of metal warehouse. Attached to the roof are long storage tanks that may be full of highly flammable fuel. His first job is to protect and rescue any people aboard the aircraft; his second, to extinguish the fire. With an airplane the size of the C-5 these responsibilities demand adequate equipment, fire fighters

Quick Service Maintenance NCO installs nose gear pin.

Refueling—C-5A can be fueled at rate of 2400 gallons per minute through four single point receptacles with 600 gpm rate each.

trained in the peculiarities of the C-5, and a well thought out pre-fire plan.

Now, remembering that we are talking primarily to non-MAC people, how prepared would your transient maintenance people be if a C-5 were to land at your base? Maintenance people have been quick to laud the C-5 design. For the most part, systems are easily accessible indicating the aircraft was designed for easy maintenance. However, there are a few things you'll want to watch for:

- With any wind the fan in the engine intake will turn, how fast depending on the wind. A careless man working in that area could lose a hand.

- Unless you are fully qualified, leave the fore and aft cargo door operation to the loadmasters. They know the systems intimately. There has been one mishap in which the maintenance crew fouled up and disconnected the aft door.

- Under certain circumstances, with the engines not running, the thrust reversers can be actuated. Bad news, if someone is working on the engine in that area.

- The ram air turbine can be deployed accidentally and could injure a person.

- Make sure maintenance people work on-handle-actuate only those systems they are qualified for. This includes AGE.

At the present time only aircrews are qualified to taxi the C-5. This operation is a bit more complicated than with a smaller aircraft and generally requires five people on the ground—a marshaller well out front where the pilot can see him over the nose, another man closer in who passes signals to the marshaller for relay to the pilot, two wing walkers and one man on the tail.

When the aircraft is not kneeled, the bottoms of the outboard engines are 7′11″ above the ground and the inboards 10′9″. So FOD would not seem to be a problem. However, there have been several instances of engine damage, so the potential is there. In one case, the cause was identified as a wrench left in the engine intake.

Another item that bears close watching is panels. There have been several losses and some of the panels on the C-5 are quite large. Be sure they are buttoned up securely after any maintenance.

An unusual occurrence that probably could be related to the size of the C-5 resulted in a fire and, under slightly different circumstances, might have caused serious damage or even loss of the aircraft. It was a hot day and one of the maintenance men took off his fatigue jacket and laid it on the ground. Some tidy type, picked up the jacket and hung it on the landing light mounted on the nose gear strut. Meanwhile, the exterior lights were being tested by one man in the cockpit operating the lights and another on the ground to observe when the lights were on and off. After checking the left wingtip lights, the man on the ground moved to the nosewheel landing light which had been turned on. By the time he got there the fatigue jacket was burning merrily.

So far the aircraft has been operating almost entirely within the MAC system and all the bases where it would land were surveyed in advance. Items covered include runway length, width and obstructions, taxiway widths and obstructions, parking ramp size and accessibility, cargo loading/unloading capability and the availability of POL, servicing, maintenance support.

One of these days you may look up and see what looks like the *Queen Mary* coming down final. That will be the C-5. Treat it with respect. It is already doing a big job for the Air Force and in the future will undoubtedly do a bigger one—the kind of job befitting the current heavyweight champ of the world. ★

...TO COME IN OUT OF THE RAIN

The mission was a T-38 out-and-back, homebound, a short hop. Forecast weather was 4500 broken, 25,000 broken, visibility seven plus, gusty winds and a few thunderstorms in the vicinity. The crew attemped to maintain VMC around thunderstorms enroute, then accepted vectors from Center through what appeared to be a clear area. They entered what looked like a thin cirrus cloud at FL 250, and almost immediately encountered heavy rain and hail. Postflight at home revealed dents on the leading edges of each wing, on top of the fuselage and on the vertical stabilizer. Luckily, neither engine was damaged.

* * *

Thunderstorms are often masked by other cloud systems, either by altostratus or a self-generated cirrus shield. Large, isolated thunderstorms, typical of our middle west, and frontal or squall-line thunderstorms will sometimes generate a large cirrus shield which may extend as much as 100 miles ahead of the thunderstorm itself.

Even maintaining VMC, however, is no guarantee against hail damage. Due to winds aloft or vertical wind shear, hail may be found in clear air well away from the thunderstorm cloud.

* * *

The C-141's airborne radar failed on one leg of a long trip. The radar was written up and, after the aircraft landed at an intermediate stop, transient maintenance took a look and informed ACP that the radar couldn't be repaired at that station. The outbound crew checked weather shortly before scheduled takeoff and received a weather briefing which did not forecast thunderstorms enroute. A delay held them on the ground nearly an hour longer than scheduled, but no attempt was made to update the weather briefing. Three hours after the weather

briefing, the crew observed a line of cumulus buildups—some towering as high as 50,000 feet—stretching across their path of flight. They entered a "cirrus cloud" as they approached the line and, before they could extricate themselves, received hail damage to the leading edges of wings and pylons, the HF antenna probe, the radome and to three engine dome assemblies.

There were several stepping stones along this particular primrose path:

1. The forecaster didn't provide a forecast for isolated thunderstorms, even though there was a possibility of their development.

2. The radar specialist who looked at the radar didn't use applicable tech data and incorrectly diagnosed the radar malfunction; the radar could have been—and should have been—repaired before the aircraft was launched.

3. The pilot elected to penetrate a cirrus cloud condition, without radar, in an area of identifiable cumulonimbus buildups.

* * *

Thunderstorms have always presented a major hazard to flight. Statistically, turbulence is the biggest offender, followed closely by hail, with lightning a distant third. See and avoid is clearly the best way to deal with thunderstorms, but isn't always possible. As we continue to expand our global, all-weather mission, the need for more information on thunderstorms becomes more critical.

To this end, a cooperative research program involving the USAF, NASA, the FAA, the Canadian National Research Council, the British Royal Aircraft Establishment, and the National Severe Storms Laboratory of the National Oceanic and Atmospheric Administration has been operating in Oklahoma. In support of this program, test aircraft have been making controlled flights into thunderstorms of varying intensities. Their goal has been to determine the distribution of the hazards and how well that distribution correlates with *indirect* probing, such as radar. As a result of this testing, indications are that radar, properly used and interpreted, is the best source of hazard distribution information now available.

The Oklahoma tests came up with other data of vital importance to pilots:

- The average diameter of a severe thunderstorm is 10 to 15 miles. *Severe turbulence can be encountered even near the edge of the visible cloud.*

- At lower levels, around squall lines and thunderstorms, the return reflected on ground weather radar may not be sufficient for avoidance of severe turbulence unless the aircraft is maneuvered to avoid all radar echo by *well over five miles.*

- Hail, unlike turbulence, can *usually* be pinpointed by strong echo centers.

CAN YOU TELL BY LOOKING? One experiment was conducted to see if the visual appearance of the cloud could be used as a reliable indicator of the turbulence inside. The answer is no; as a rule, pilots couldn't estimate turbulence with any accuracy prior to penetration. Radar returns, however, provided a very useful prediction. Radar echo is a good indication of rain intensity, which in turn, is a useful indicator of severity of turbulence.

Farmers like to tell you, "if you don't like the weather, wait a minute—it'll change." Thunderstorms can change in character very quickly. Thunderstorm building in excess of 6,000 feet per minute isn't unusual, and turbulence within the storm can go from light/moderate to severe in a matter of minutes.

The weather forecaster does a remarkable job of changing raw data into a useful tool, but forecasts are a long ways from infallible yet, and there are many other tools available to the flyer.

- If you can see buildups, avoid them if at all possible.

- If you have radar, use it.

- If ground radar is available for weather vectors, use it.

- Take the time to update weather information, with revalidation in the event of a delay or with METRO enroute.

- If you run into something significant, report it. Weather forecasters and other pilots will find this very useful.

There is no known instance of a thunderstorm coming out second best in a contest with an airplane. Stay flexible and have enough sense . . . . . ★

THE I.P.I.S. APPROACH

By the USAF Instrument Pilot Instructor School, (ATC) Randolph AFB, Texas

SID CLIMB RATES

Q Will adherence to SID minimum climb rates assure compliance with ATC altitude requirements?

A Not always. When a climb gradient in excess of 150 feet per nautical mile is required on a SID, it is published as a required vertical velocity. This published climb rate is determined solely for obstacle clearance requirements. ATC altitude requirements along the SID flight path may require climb rates considerably higher than those published.

MISSED APPROACH POINTS

Recent inquiries concerning the missed approach points for various approaches would indicate that more than just isolated confusion exists on this subject.

PAR/ILS: The missed approach point (MAP) for precision approaches is the geographic point where the glideslope intersects the decision height. For a PAR approach, decision height is determined in the cockpit either as read on the altimeter or as observed by the radar controller, whichever occurs first.

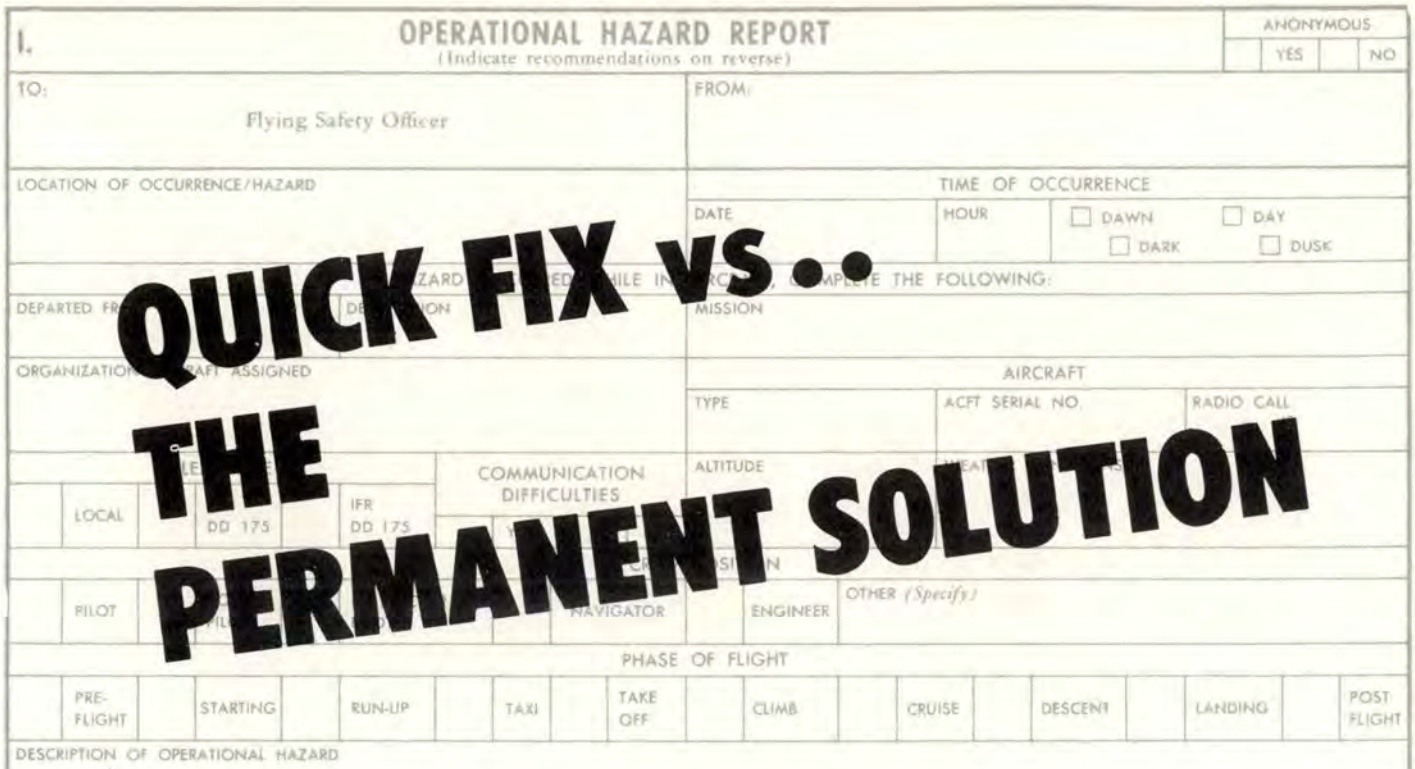
The MAP for an ILS approach will normally be very close to the middle marker if one is installed. In some cases, however, there is a considerable distance between the two. For this reason, the middle marker should be used only as a reminder that you are very near the MAP. Determination of the MAP is made solely with reference to the altimeter and glideslope indicator.

ASR: The radar controller is required to discontinue approach guidance when the aircraft is at the MAP or one mile from the runway, whichever is greater. From the pilot's standpoint, perform the missed approach whenever the controller instructs you to do so. This will be no less than one mile from the runway.

LOCALIZER: The MAP for a localizer approach is not necessarily the same as for the corresponding ILS approach. The depiction on the approach chart supports the ILS and not the localizer procedure. The timing table, when included, will show the distance from the LOC final approach fix to the MAP. For most approaches this distance is to the threshold of the runway. The common method of determining the MAP is by timing from the final approach fix, though other methods may be used (DME, middle marker, etc.).

OTHER NON-PRECISION: The MAP for all other non-precision approaches is as depicted on the approach chart. If the procedure has a final approach fix, the MAP may be well short of the runway threshold or at the runway threshold. For on-airport facilities (VOR or NDB) which do not have a final approach fix, the facility itself is the MAP and in most cases is past the runway threshold.

It is erroneous to assume that you will be in a position to make a normal landing if you reach MDA and the MAP simultaneously. When the MAP is at or beyond the runway threshold, you must reach MDA *prior* to arrival at the MAP if a normal final approach is to be made. ★


I. OPERATIONAL HAZARD REPORT
(Indicate recommendations on reverse)
ANONYMOUS YES NO
TO: Flying Safety Officer
FROM:
LOCATION OF OCCURRENCE/HAZARD
TIME OF OCCURRENCE
DATE
HOUR
DAWN DAY DARK DUSK
MISSION
AIRCRAFT
TYPE
ACFT SERIAL NO.
RADIO CALL
COMMUNICATION DIFFICULTIES
ALTITUDE
LOCAL
DD 175
IFR
DD 175
PILOT
NAVIGATOR
ENGINEER
OTHER (Specify)
PHASE OF FLIGHT
PRE-FLIGHT
STARTING
RUN-UP
TAXI
TAKE OFF
CLIMB
CRUISE
DESCENT
LANDING
POST FLIGHT
DESCRIPTION OF OPERATIONAL HAZARD
DATE
SIGNATURE OF REPORTING PERSON (Optional)
AF FORM JAN 62 457 PREVIOUS EDITIONS ARE OBSOLETE

QUICK FIX vs.. THE PERMANENT SOLUTION

MAJOR R. M. MAC INTOSH, 7AF (SEF), APO San Francisco 96307

Each of us has encountered unsatisfactory situations that were easier to overlook than to correct. A tragic example was when a transport crew, flying in VFR conditions, recognized an altitude error in terrain clearance on the published SID. During the course of their flight the discrepancy was forgotten. Fate had her way when, in IFR conditions, another transport following the SID slammed into the mountain fatally injuring all aboard.

You have a responsibility to inform your commander of potential hazards and you have a most effective tool at your disposal. It's the AF Form 457, better known as the OHR (Operational Hazard Report). In the above case, a radio call followed by an OHR might have prevented an aircraft accident and saved a great number of lives.

Frequently, when we suggest to a crewmember or maintenance man that an OHR be submitted, there is a great reluctance to initiate the process. Why? The most frequently heard statement is, "Any supervisor worth his salt can solve an OHR problem in 15 minutes with a phone call or a few strokes of the pen. Why get involved in all the paperwork?"

There are some very valid reasons why! If that "salty" supervisor is on leave or TDY, the problem may develop into an accident before he gets back. OHR actions are suspense items and should get the necessary action on the problem whether "Salty" is around or not.

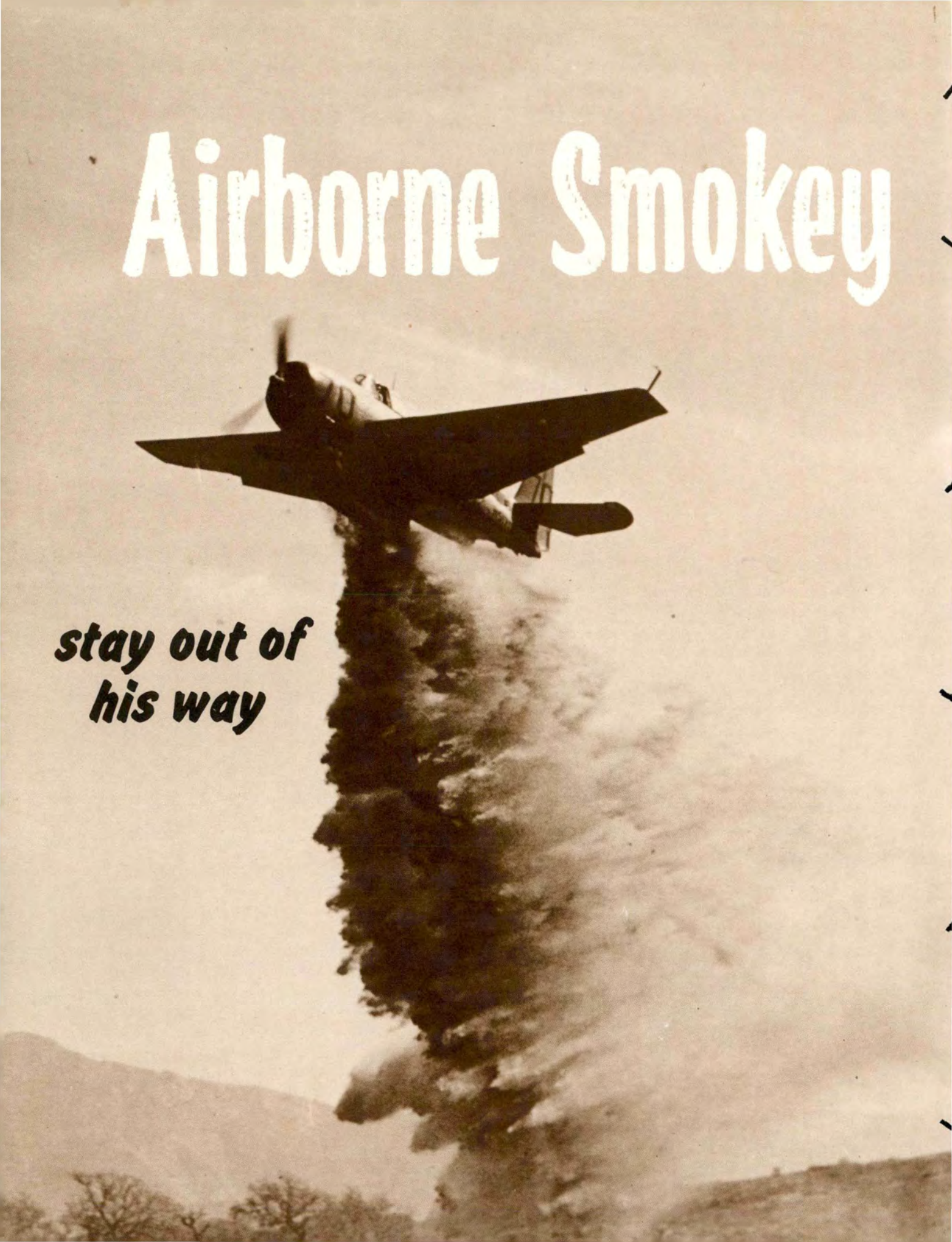
If the problem is solved with a phone call or a buck slip, the conditions may be corrected today but the underlying cause may have been overlooked. OHR solutions are staff efforts. Cursory measures don't get by responsible supervisors. Your OHR and the solution will be reviewed by higher echelon supervisors—the DCO, DM or Wing Commander generally review OHR action to insure adequacy.

Also, you get a return copy when the action is complete. If the problem was misunderstood or the fix inappropriate, you will know that followup is in order. Don't hesitate to send the matter back for reappraisal.

Even if a problem can't be eliminated or corrected, your efforts will have focused supervisory attention on the situation. Frequently, general awareness of hazardous situations is sufficient to preclude an accident. You have the opportunity to initiate the sequence that will create that awareness. ★

(COMBAT SAFETY)

Airborne Smokey



stay out of his way

There's something magnetic about a big forest fire. It draws hundreds of spectators and a lot of firefighters. Something else it draws is a whole bunch of airplanes. You don't think about it too much, but the low altitude traffic pattern around a big fire is really congested. In short, the Forest Service has its own Air Force. Every year these old converted aircraft (B-17s, PBYs, TBMs, F-7Fs, etc.) drop literally millions of gallons of fire retardant. In the State of California last year, four million plus gallons were dropped on state fires alone. This represents a lot of sorties since the biggest air tanker (B-17) hauls 2000 gallons. What we are saying is that any time you see a large forest fire, you can bet there is a lot of air traffic in the immediate area.

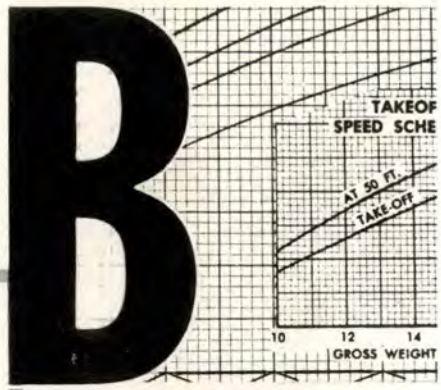
So the question is, what does this have to do with the Air Force? We assumed not too much until the Forest Service appealed to us for help with a problem which does exist. It seems that some of the spectators who are drawn to the big fires are riding in military aircraft. They cited one particular instance where a fighter flew right in front of a B-17 on its drop run, through the smoke, and performed an abrupt pull-up right in the path of another fire bird waiting his turn in the pattern. Since this type of operation is dangerous enough for the fire bombers, they would like to reduce the midair collision problem as much as possible. The avoidance of a midair is a problem even when their own birds are in the area without compounding it with a strange, uninvited flying machine.

Another major area of concern is aero club members. All managers should insure that the pilots who fly our light birds are well aware of the dangers of flying in the vicinity of large ground fires. It's a temptation to "just fly by" and see how things are going, especially when you're in a light, low altitude bird.

We know that almost all of our Air Force missions are so closely planned that it is unlikely that mission requirement would allow time for such sight-seeing. For the few who do have time, make sure you don't become a statistic by colliding with a World War II vintage B-17 while surveying the fire situation. ★

• Not a WWII raid—a B-17 dropping 2000 gallons of fire suppressant in a burning forest.

PLAN B



One of the neatest things about the human mind is that it has the ability to adapt to changing conditions. But like mechanical computers, it will not function unless we tell it to. In other words, we have to keep thinking or we can find ourselves up the creek without a paddle. In this case, let's call the paddle Plan B. Most of us recognize the need for an alternate way to get where we want to go, but sometimes our computer doesn't spell this out because we fail to tell it to spit out a solution.

When we plan a cross country, or any flight for that matter, we are required to select a suitable alternate if the weather is below a certain value. However, one thing that is not spelled out in the regs is a *unique* situation. Let's say, for example, that we are planning to land at a high density training base with one runway. If someone slides to a halt minus the gear about the time you arrive there, what's your alternate? Do you have *something* in mind?

Another one of these Plan B situations occurs about the time you break ground in a single-engine fighter, and the engine catches fire. What now? Did you consider this possibility? We know one pilot who swears that before brake release on

THE T.O. WAY IS A.O.K.

every mission he considers what his alternate plan of action is if the motor stops or he loses thrust. We believe him. We are also relatively sure that if he ever does have an emergency on the takeoff roll, his chances are much better than those of the pilot who ignores the possibility and refuses to consider what he would do.

Hangar flying certainly has its place in helping us formulate our own personal Plan B. Has anyone ever listened to a hairy story related by some other pilot, who hasn't asked himself what he would have done if faced with the same set of circumstances? After many years of listening to these remote frustrations, most of us tend to formulate a course of action to solve a particular pet problem. With some pilots it's weather, others fear midairs or the embarrassing classic of too little fuel and too many miles left to go. What we must do is consider *all* the combinations of problems that are likely to arise *and* at least a tentative course of action.

Nor is this need for an alternate plan limited to the guys who drive airplanes. Remember the one years ago where the crew chief was running up a C-46? Unfortunately the beast jumped the chocks (perhaps the brakes were not set). Again, unfortunately, the crew chief was not qualified to perform the run up. He panicked and leaped out of the aircraft without any effort to stop the bird. Before this one was over, several airplanes were destroyed and several lifeless bodies were strewn around the ramp. What was this man's alternate course? He probably didn't have one because he was not familiar enough with emergency procedures. **Rule:** if you can't predetermine a way out of a possible sticky situation, chances are you are going to end up a very sorry guy.

We all know how routine it is to see the familiar fire guard handy when we crank engines. Have you ever wondered if the fellow really knows what to do with that piece of equipment, if the time comes? We know of one that was eager but just didn't have the training. A jet caught fire but the fire guard *didn't know where to aim the nozzle on the extinguisher*. Result, one burned up airplane.

How about the one where the fire truck was responding to an off-base crash? During this effort the driver managed to get on an access road that had been closed months before and found himself, truck *et al*, at the bottom of a big ditch. Someone had failed to determine a substitute route and update the accident response plan.

Does one of your duties involve taxiing airplanes? What happens if the brakes fail? Do you shut the motor(s) off? That just might not be the best course of action since, when the T wheel stops going around, you usually find yourself without hydraulic pressure. Without this nice feature, you end up strapped to a very large unguided tricycle. It might be worth a few minutes of preplanning to determine just what you would do.

Naturally, we can't come up with a course of action for every situation. However, in most cases we can think of the one that can do us the most harm and compute a Plan B. A pilot doesn't have an alternate for every mile of his cross country, but he should be familiar enough with the track that he knows in general terms where he can go if an emergency arises. What this all boils down to is that you have to be AWARE. Know where you are and don't daydream until time comes for some rapid action and discover the computer reads empty. The more pre-planning you do the less grief you will suffer. ★

COCKPIT FOD

The T-38 lined up on the end of the runway for a dual transition flight. As it accelerated through rotation speed, the student pilot began to apply back pressure on the stick to rotate. The stick would not move aft far enough to raise the nose, so the student retarded the throttles and aborted takeoff.

The instructor pilot, believing the student was using improper throttle technique, returned the throttles to the afterburner position. The student immediately informed the instructor pilot of the rotation problem. The IP now realized the situation and aborted takeoff. The T-38A made a successful barrier engagement and sustained only minor damage.

A postflight investigation revealed a 2½ inch paper clip lying on top of the stick well boot in the front cockpit. The paper clip was of the type that is occasionally used by pilots to clip checklists and flight data cards to their flight suits.

The paper clip was bent in a manner that could have resulted from binding between the control stick and the stick well boot mount. Several half-moon cuts were found in the stick well boot, and the paper clip limited aft stick travel when it was aligned with the cuts in the boot.

Fortunately, this extra bit of foreign material revealed its presence before the aircraft became airborne. Otherwise it could easily have caused a major accident. Cockpit FOD can be as dangerous as engine FOD.

THE CARE AND FEEDING OF NOMEX GEAR

• *Coverall, Type CWU-27/P:* This coverall fabric is a drip-dry type requiring no special handling and may be washed as frequently as needed. The coverall may be laundered at home or in a commercial type washer and dryer. Laundering in water up to 140°F maximum, and tumble drying up to 180°F, will not damage or shrink the coverall. Since the coverall fabric is a high-temperature resistant material, ironing or pressing will not remove the wrinkles and creases. It is recommended that immediately after tumble drying or during drip drying, the coverall be hung on a hanger. Laundering will not compromise the flame retardant

properties of NOMEX and no renewable flame retardant treatment is required. (NOTE): It is recommended that a new coverall be laundered prior to use in order to soften the fabric and eliminate any possible skin irritation that might occur due to original fabric harshness.

• *Flight Gloves:* The leather portion of the glove is launderable and the fabric portion is a drip-dry type. The gloves may be laundered with warm water and mild soap by one of the following methods: (a) Don the gloves and wash with soap and water as you would wash your hands. When gloves appear clean, rinse, and remove from hands. Squeeze, but do not wring or twist gloves to remove excess water. After removing excess water, place individual glove flat on a towel, roll towel to cover glove making sure that the gloves do not come in contact with each other. (b) The gloves may also be laundered at home or in a commercial type washer and dryer. Laundering in water up to 140°F maximum and tumble drying up to 180°F will not damage or shrink the glove. (NOTE): Do not use any type of bleaching compound in laundering. To avoid excess wear on the gloves during washing and drying, make sure there are sufficient articles in the wash to absorb tumbling shock.

(AFSC Safety Management Newsletter)

TOPICS

HOW CLOSE CAN YOU COME?

The mission was contact transition, the new pilot's third ride in a Century-series fighter; he and the IP had stayed in the pattern, shooting touch-and-go landings. On the third approach the student's base turn was low, but the IP's attention was diverted by another aircraft making a low approach a half-mile ahead of them. The IP's attention was recaptured quickly when Mobile called and told them to "bring it up to the runway," whereupon the IP took control of the aircraft and added power.

At this time the aircraft flew into the vortex turbulence of the aircraft in front and settled slightly, striking a 50-foot power line 2000 feet from the runway threshold. The IP went to burner and climbed back to a safe altitude, but a look around the cockpit disclosed an unsafe nosegear indication. The pilot of another aircraft in the pattern took a look and confirmed the nosegear door was damaged and the nosegear itself was retracted about 45 degrees back, against the nosegear door.

The IP made the final landing from the rear seat, touching on the main gear, deploying the drag chute and holding the nose off as long as possible. When he did lower the nose, the aircraft settled gently on the pitot boom and ground to a stop. The crew shut down the engine and egressed with no difficulties.

This turned out to be an incident—damage was minor and no one was hurt—but how close can you come?

ILLEGAL CARGO

A recent message to all commands from the Chief of Staff underscores the ever-increasing emphasis on stemming traffic in illicit drugs. According to the message, one of the most frequent hiding places for narcotics is a small, innocent-looking package being transported by someone as a personal favor for someone else. Aircrew members are particularly susceptible to being singled out for this kind of "favor."

The person caught with the contraband is responsible for the contents of the package, whether he is aware of the contents or not, and is subject to disciplinary action. Don't accept a package from anyone, particularly in an overseas location, unless you have *first-hand knowledge* of the contents and you are willing to accept any possible consequences.

FLIP CHANGES

New DOD International Flight Plan, DD Form 1801:

A new DOD International Flight Plan, DD Form 1801, is now available. All military pilots are authorized to use it in place of the ICAO Flight Plan.

Instructions for the use of DD Form 1801 will be published in the FLIP Planning Documents. In the interim, pilots should use the instructions applicable to the ICAO Flight Plan in Section III, FLIP Planning.

The locally produced ICAO Flight Plan may be used when DD Form 1801 is not available, or in order to deplete current inventory.

HEADS UP--VISORS DOWN

It happened on the gunnery range. The F-4 crew had completed four 10-degree low angle strafing passes. During recovery from the fourth pass, the right windscreen panel was broken—probably by a .20mm ball. A hole approximately one inch wide and seven inches long resulted from the impact. The object did not enter the cockpit; however, several pieces of plexiglas were blown into the front cockpit. Minimum altitude and cease-fire ranges were not violated.

The important thing here is that both crewmembers had their helmet visors down. We trust these words will serve as a reminder for all aircrews to wear the visor down during all low-altitude flight to prevent injury in case the canopy is broken by ordnance debris, birdstrike, etc.

(USN WEEKLY SUMMARY)

Ops topics

NEW POWER LINE WARNING LIGHTS

FAA has officially adopted a new standard for warning aircraft of the presence of power and other transmission lines, by the use of flashing sequenced lights on the supporting structures. The previous standard recommended positioning colored spherical balls on the wires and red tower lights. Pilots may expect to see the older system continued temporarily in some areas, since the standard is not obligatory. Check with AIM and your local FAA facility.

GEAR CHECK

"Left main gear indicated unsafe in up position . . . . Recycled gear several times with same indications. Checked good in down and locked position. Landing accomplished without further incident . . . ."

SEX! !

Now that we have your attention, we'll say it again: If the gear won't come up, see if it will go back down. If it goes down and safe, land and give the airplane to Maintenance. Do not—repeat, do not—recycle the gear in hopes of continuing the mission. The proper place to troubleshoot a gear malfunction is on the ground, in the hangar, on jacks. Anything else is just asking for trouble.

SURPRISE! !

While setting up for his first strafe pass, the pilot got the surprise of his life when his cannon began to fire. He immediately turned the switch off but 164 rounds fired in that short time. All rounds impacted on the range.

They found a faulty trigger detent switch during trouble-shooting and replaced the stick grip. But they didn't stop there . . . pressing on with the investigation to find out WHY, they found that the wiring for the four-way trim switch was misrouted and pressing against the trigger detent switch, causing a fire signal to be present when the other safeties in the system were removed.

The stick grip had been replaced four months earlier but there was no way to trace the man who did it. So somewhere out there is a man who doesn't know how to route the trim wires in a B-8 stick grip. Little thing? You bet . . . unless he's in your outfit.

(TAC Attack)

FIELD-GRADE FOD

After a heavy-weight landing, due to an inflight abort, the aircraft was taxied back onto the parking stub. Prior to engine shutdown, the Supervisor of Flying, intent on personally making sure that a hot brake problem didn't exist, made a quick check of the wheel area. His flight cap, with insignia, was sucked from between his head and the headband of the "Mickey Mouse" ear protectors he was wearing, through the left engine bottom blow-in door and into the engine.

Jet engines will eat almost anything. We have to be constantly aware of where we are in relation to hazard areas such as engine intakes, engine exhausts, antenna radiation patterns and the like.

WHEN YOU NEED IT, YOU NEED IT NOW

Life support equipment that doesn't function is no better than none at all. Therefore, those responsible for maintaining it must be meticulous in performing their duty. Unfortunately, that is not always the case.

During a recent no-notice Unit Effectiveness Inspection, inspectors found the following deficiencies in the life support section:

- Aircrew helmets had not been inspected and were in poor condition.
- Life preservers and life rafts were not being functionally checked.
- URC-10 and RT-10 survival radio batteries were over age, some as long as 18 months.
- Weight check of the F-4 survival kits had not been accomplished prior to ejection seat installation.
- A tester was not available to perform the 10-day leak test on the oxygen mask connectors.
- The high-pressure regulator required for operation of the oxygen mask tester was inoperative; the condition of aircrew "G" suits was marginal.
- Personnel lowering device hardware was improperly installed in four parachute harnesses.

Aircrews deserve equipment that works, not excuses why it didn't. ★

REX RILEY'S CROSS COUNTRY NOTES

The evaluation of a base by Rex and his helpers is as objective as we can make it. However, because of the very nature of the evaluation we have to be subjective. For example, the facilities may be average but invariably the attitude of the individuals responsible for the services has a definite effect on the rating officer. If the people with whom we come in contact are energetically trying to provide top notch service, it is only natural that the rater will up them a block over base services that have that "don't really care if you get fuel or not" attitude. Nor does Rex consider one isolated complaint as truly representative of the service you can expect. The letters we reproduce and send to various base commanders are intended as a management tool for investigating a problem area. When we receive several complaints about a specific base we put their folder in the "consider for elimination" file.

In almost every instance, the action taken by a base commander in response to complaints will give us a clue as to the quality of transient services available to our traveling aircrew. We recently sent a copy of a complaint to the commander of a large Air Force installation. In less than three weeks we had his reply explaining how the discrepancies happened. We're willing to bet that the next crew that lands at this particular base will get the red carpet service. It's actions like this that tells us that we're making great strides in our Rex program.

Guardian Angel: Now that the thunderstorm season is about at an end I think we can say without reservations that had it not been for those traffic controllers at their scopes on the ground, our ride would have been a lot rougher than it was. Most of our pilots realize that the controllers are by no means required to provide vectors around weather, but we have found that if they are not completely snowed with traffic they are more than willing to help. In fact, to get me an up-to-date report, on a number of occasions they have put me on a frequency with another aircraft that had just flown through the area we were concerned about. So thanks, fellows, for a job well done.

In an effort to improve transient services world-wide, overseas commands have been asked to place increased emphasis on the Rex award. So, if you have a complaint or compliment, don't think that just because you are out of the country your comments won't get attention. Let us know here at Norton or contact your local Chief of Safety. ★

THE

REX RILEY

Transient Services Award

LORING AFB	Limestone, Me.
McCLELLAN AFB	Sacramento, Calif.
MAXWELL AFB	Montgomery, Ala.
HAMILTON AFB	Ignacio, Calif.
SCOTT AFB	Belleville, Ill.
RAMEY AFB	Puerto Rico
McCHORD AFB	Tacoma, Wash.
MYRTLE BEACH AFB	Myrtle Beach, S.C.
EGLIN AFB	Valparaiso, Fla.
FORBES AFB	Topeka, Kans.
MATHER AFB	Sacramento, Calif.
LAJES FIELD	Azores
SHEPPARD AFB	Wichita Falls, Tex.
MARCH AFB	Riverside, Calif.
GRISSOM AFB	Peru, Ind.
CANNON AFB	Clovis, N.M.
LUKE AFB	Phoenix, Ariz.
RANDOLPH AFB	San Antonio, Tex.
ROBINS AFB	Warner Robins, Ga.
TINKER AFB	Oklahoma City, Okla.
HILL AFB	Ogden, Utah
YOKOTA AB	Japan
SEYMOUR JOHNSON AFB	Goldsboro, N.C.
ENGLAND AFB	Alexandria, La.
MISAWA AB	Japan
KADENA AB	Okinawa
ELMENDORF AFB	Alaska
PETERSON FIELD	Colorado Springs, Col
RAMSTEIN AB	Germany
SHAW AFB	Sumter, S.C.
LITTLE ROCK AFB	Jacksonville, Ark.
TORREJON AB	Spain
TYNDALL AFB	Panama City, Fla.
OFFUTT AFB	Omaha, Nebr.
ITAZUKE AB	Japan
McCONNELL AFB	Wichita, Kans.
NORTON AFB	San Bernardino, Calif
BARKSDALE AFB	Shreveport, La.
KIRTLAND AFB	Albuquerque, N.M.
BUCKLEY ANG BASE	Aurora, Colo.

"Everything you always wanted to know about tires...

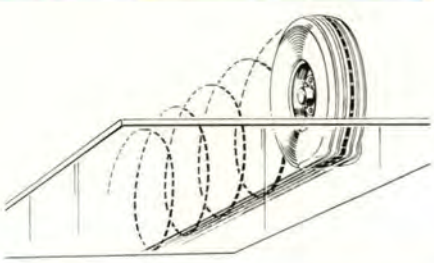
Tires are something that most of us take more or less for granted. Until, that is, one fails. Then it gets our attention right away. Tire failures are extremely dangerous, whether on an automobile or an airplane. They frequently result in costly repairs due to damage caused by flying rubber, explosions in the wheel well or wheel damage on the runway. Many times chunks of tire tread have ripped holes in flaps and wings, severed hydraulic lines and kinked gear door braces.

Usually when a tire fails we chalk it up to materiel failure. But how often has this been aggravated by improper inflation and punctures and cuts from foreign material left lying on the concrete? How many tires have been ruined by excessive taxi speed? How many aircraft have experienced steering problems or severe shimmy because of unequal inflation of dual tires?

We don't all have to be experts on tires, but some general knowledge will help. Pilots should know the hazards of prolonged taxiing on a hot day, or the dangers of making high speed taxi tests on the runway without giving the brakes and tires a chance to cool off. Both of these procedures have resulted in blown tires, fires and other damage. A load change frequently means a tire check and change in pressure. But sometimes this is overlooked with serious consequences.

Heat is a tire's principal enemy. It is generated by flexing within the tire carcass and by outside heat sources—braking, bearing friction, hot pavement, etc. Heat builds up in a rolling tire under a heavy load; excessive heat can weaken tires to the point of failure. Lower than TO pressure contributes to excessive flexing which results in heat buildup. Fig 1 illustrates how a tire flexes. Fig 2 shows how the footprint should look for various degrees of inflation.

Fig. 1. Flexing action of tire



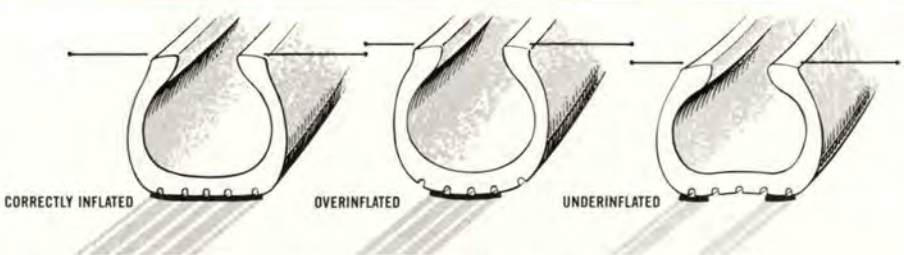
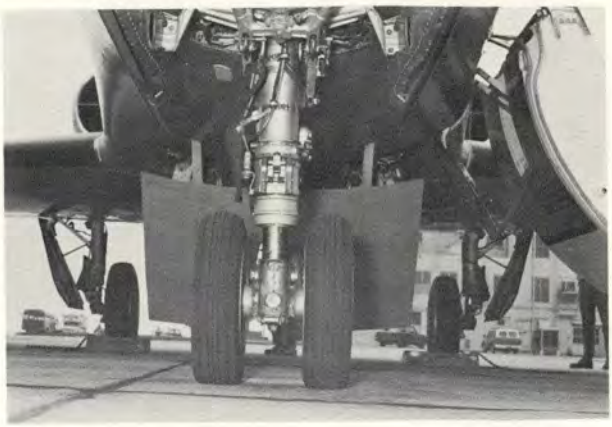


Fig. 2. Footprint area when tire is under load

• Which tire needs air? You can't tell by looking, but the right hand tire is below the TO limit. The only way to really know tire pressure is by use of a properly calibrated tire gage. If not properly inflated, a tire may fail from excessive heat caused by flexing. Tread or ply separation may result, and actual failure may take place on some subsequent flight. Also, underinflated tires can result in hydroplaning at speeds below desired braking speed. Overinflation, as well, is bad since it results in uneven wear and reduced braking coefficient and may even overstress the carcass.



• Checking newly built-up tire for leaks. After mounting, tire should be placed in rack for at least 12 hours, then checked for pressure. Nylon cord will stretch, which will cause pressure loss. The airman here is checking tire for leaks with soap and water solution. With this technique be careful not to get wheel bearing wet, or be sure to carefully dry bearing if it does get wet.

• Carefully inspect tires for cuts, uneven wear, FOD, punctures that might have penetrated cord body and inner liner. Check entire surface including tread, sidewalls. Inspect wheels.

• Next to heat, foreign objects ruin more tires than anything else. This photo shows tire that has been condemned because of FOD. Note screw in face of tread and wire protruding from sidewall (lower right hand corner).

TIRES

• Tire mounting requires great care if damage to tire and wheel is to be avoided. Wheel must be free of scratches, gouges, tool marks. Wheel should be clean—so that proper inspection can be made and to prevent improper bead seating. Wheel preparation is particularly important. Bolts and screws must be in good condition. Look for deformed packing that could mean air leaks. In this photo bolts are being torqued to tech order value in locally built fixture. Proper torquing will assure good seal of preformed packings.

• In addition to visual inspection, wheels should receive NDI to detect minute cracks that could lead to air pressure loss or wheel failure.

• Pressure check is probably most important item in tire care program. Gage should be calibrated frequently. When tire requires service, do not use high pressure source. Overinflation may result in wheel rupture that could cause serious injury to persons in the area, or even death. Normally the best time to check pressure is during preflight when tire is cool.

• An important man in tire care program is the technician in PMEL. Proper calibration of tire gages is essential to good tire maintenance. ★

Toots

is interested in your problems. She spends her time researching questions about Tech Orders and directives. Write her c/o Editor (IGDSEA), Dep IG for Insp & Safety, Norton AFB CA 92409

Dear Toots

As a Maintenance Officer I am empowered by TO 00-20-1 to downgrade a red X condition in the 781 forms. I cannot find a reference confirming or denying the legality of a Maintenance Officer signing off the Inspected By block of the 781A after corrective action has been taken for a discrepancy that warrants a red X symbol. What do the authors of the 00-20 series TOs say?

Don
APO 09406

Dear Don

To answer your question, the OPR for the 00-20 series tech orders referenced 00-20-1, para 3-10. This paragraph states that the repairs made or work accomplished to remedy the dangerous condition indicated by a red X or a circled red X will be inspected by the inspector or supervisory maintenance personnel who are delegated such authority by the maintenance officer. The maintenance officer is a maintenance supervisor, and obviously, in order to delegate the authority, he must have it in the first place.

Realize, however, that the maintenance officer is not usually technically competent to perform these inspections, and it was never intended that he actually inspect and verify the condition of maintenance performed. Rather, he should assure himself that quality maintenance is performed through close supervision and application of sound management principles. As the responsible maintenance manager, the maintenance officer ensures that only the most technically qualified personnel perform the inspections and that they keep him advised of the quality of maintenance actions.

Toots

Dear Toots

I am writing in regards to your column in the June 1971 issue. The letter from "Concerned" at Kirtland AFB and your reply, based on information from the OPR at AFSC Headquarters are both somewhat in error. Only certain AFSC aircraft are included in Table III, Excepted Aircraft, of TO 00-25-4—A-7, B-52, B-66, F-4, F-100, F/YF-104, F-105, F-106, and F/FB-111. All other AFSC aircraft are subject to IRAN just as for any other Major Air Command.

Col A. R. Neville, Jr
Chairman, Maintenance Requirements Review Bd, AFLC
Wright-Patterson AFB Ohio

Dear Colonel Neville

You're right. Thanks a lot for clearing it up.

Toots

Dear Toots

The Dash 2 for the F-106A gives two methods for removing the elevon control valves: during engine removal or through the side access panels. I've seen it done both ways. My question is: What is a Normal Operation? Here at Tyndall we change them through access panels with engine installed, even time changes during HPOs. I have noticed other '106 squadrons on TDY here change them with the engine removed.

SSgt Virgle F. Nelson
Tyndall AFB, Fla.

Dear Virg

I went to MMCT at SAAMA, Kelly Air Force Base, for the answer to your question. They say that Normal Operation would be when the valve is due a time change or is to be removed and replaced for other reasons and is scheduled during other scheduled maintenance, such as engine change, periodic maintenance, etc. They say that the chief of maintenance should dictate policy whether or not to change the valve through the access panel.

Toots

TECH TOPICS

briefs for maintenance techs

IMPROPER MAINTENANCE

After takeoff for an FCF the T-38 pilot felt a thump when he came out of AB. All instruments were normal so the mission was continued, but during straight and level acceleration the left fire light illuminated. The throttle was retarded to idle but the light remained on. The engine was shut down and the light went out in approximately three seconds. Return to base and a single engine landing were accomplished without further incident.

Approximately one-third of the AB liner section had torn and separated from the aircraft. The forward AB liner section, extension liner and outer casing were damaged. Two burn holes were found in the bottom of the boattail.

A review of the aircraft records indicated that this was the second flight following periodic. Investigation of the recovered AB section showed that maintenance had failed to insert five of the liner support rods during buildup. This improper installation caused the unsupported section of the liner to separate during AB operation.

Follow the TO step-by-step during all maintenance and inspection activity.

T-38 GEAR BOX COUPLING

Improper installation of the power shaft retaining ring (P/N N5002-237) caused the power shaft to come disconnected from the gear box coupling. After a few minutes of flight and complete loss of hydraulic and electrical power on the left engine, the engine was shut down and a landing was accomplished without further incident.

Proper installation is critical during gear box and drive shaft assembly. There is no substitute for a perfect job.

STUCK THROTTLE

Takeoff was normal until the pilot of the F-4 attempted to retard the throttles out of afterburner at 300 KIAS. The Nr 1 throttle retarded normally but the

Nr 2 throttle stuck in full afterburner.

After 15 minutes of flight, gross weight was reduced and the engine was shut down with the master switch. When the landing gear was lowered, the Nr 2 throttle became free.

The crew chief had failed to properly secure the starter cartridge breech cap on preflight and it was loose in the auxiliary air door area. When the auxiliary air door closed, after gear retraction, the breech cap jammed against the throttle linkage. When the gear was lowered, the auxiliary air door opened, freeing the breech and throttle linkage.

LOOSE CONNECTORS

After dumping fuel due to a mission change, the C-130 crew noticed fuel leaking from the rear of Nr 2 nacelle. The engine was shut down and return to base was uneventful.

Investigation revealed loose connectors on the fuel dump manifold in both Nr 2 and Nr 3 dry bays, allowing fuel to leak during dumping operations. The connectors had apparently not been properly torqued.

T-38 MISSING PANEL

Postflight inspection revealed the loss of the hydraulic filter access panel during the first flight following a 100 hour inspection. The reason: only three Camloc fasteners on the leading edge had been secured. Small pieces of the panel were still attached at these points, indicating rapid cyclic fatigue (flutter) during flight.

People can, and do, forget such things as panel security during personnel or shift change. A red cross entry in the 781 forms should be a safeguard against incomplete maintenance actions.

HOSE TOO LONG

An inflight utility failure on an F-100 was reason enough for a straight in approach. At touchdown the pressure was indicating zero. Directional control was maintained with the rudder and brakes.

With 2300 feet of runway remaining the brakes failed and the arresting hook was lowered. The aircraft drifted left, passed over the barrier tape and failed to engage. It knocked down a VASI fixture, rolled over the barrier tunnel and stopped with its nose gear collapsed in a small drainage ditch.

The cause: maintenance personnel had installed a 26 inch brake flex hose instead of the original 22 inch. The excessive length allowed chafing with the wheel bolt studs and subsequent failure.

WRONG TOOL MAKES WASTE

Sixty-five dollars was the tab for using the wrong tool. That's the cost of the new igniter plug to replace the one shown.

It's a perfectly good plug for its intended purpose—it'll fire every time—except for one thing: The sleeve nut has been so badly damaged with a pipe wrench or channel locks or vise grips that the plug can't be reinstalled.

A special torque adapter, P/N 1C5064P01, is available, the use of which will prevent this kind of damage. It slides over and around the wrenching surfaces to prevent distortion, and eliminates the apparent necessity for a pipe wrench, too.

(GE Jet Service News)

MEMORY LANE

During climbout on a routine training mission, the pilot of a

MORE

TECH TOPICS

T-29 noticed fuel pressure decreasing on Nr 2 engine. The boost pump was switched off, then back on with no effect on the decreasing pressure. The engine was shut down when the pressure decreased to 21.5 psi, and a single-engine return to base was accomplished.

Investigation revealed that the engine-driven fuel pump balance and drain lines were reversed. The lines had been installed during maintenance on the fuel system prior to this flight. The lines were installed and the red cross cleared by qualified personnel. Their only error was that they trusted their memory instead of tech data.

LOST WHEEL

Following an uneventful mission, a B-57 was on final for a second touch and go when the pilot was informed by the tower that something had dropped from the aircraft. The pilot assumed that he had lost a panel or gear door and elected to make a full stop landing.

During the touchdown the right wing dropped and the aircraft started pulling to the right. By maintaining 90 percent RPM on the right engine and holding left brake, the pilot kept the aircraft under control and stopped on the runway.

The problem with directional control after touchdown was evident. The falling object had been the right main wheel. The wheel and tire assembly was recovered, but an extensive search failed to recover the wheel retaining nut and locking pin.

An examination of the axle locking grooves and retaining nut threads failed to show any scoring or shearing type damage, indicating that the retaining nut backed out of its threads without undue force.

The quality control and maintenance section at this organization is being reevaluated to assure that proper maintenance procedures are being followed.

INSTALLED DISCREPANCY

While investigating a J-85-GE-5 engine for a series of flameouts and afterburner blowouts, the maintenance team found one sector of the seventh stage stators installed backwards. With the technical data and in-process inspection checklist available, we wonder just how an incident like this could occur?

How could the maintenance man overlook this error in a critical stage of engine buildup? How could the supervisor have missed it during his in-process inspection? And how could quality control make the same error as the mechanic and supervisor? The TO and manuals won't answer these questions—but they will provide the information needed for correct engine buildup and proper maintenance management.

CHRONOLOGY OF A FAILURE

A tech order does no good if it is simply given lip service. Failure to check every item required by the TO can lead to a situation like the following in which a T-38 rear canopy was lost.

The aircraft rolled out of 200-hour hourly postflight on the 2nd day of the month. The canopies had been installed in accordance with the work cards. On the 6th of the month the rear canopy was written up: "Both balance cables frayed and the canopy out of rig." Corrective action indicated that the balance cables had been replaced and the canopy rigged.

On the 8th, the star washer was missing from the aft canopy lock push-pull rod assembly. Corrective action: star washer installed. No further rigging accomplished.

Twelve days later the rear canopy was lost during climb as the aircraft passed through 15,000 feet. Cause factor: **canopy out of rig.**

As we review the discrepancies leading up to the canopy loss, we wonder where the TO was during these maintenance actions.

T-33 HOT STARTS

Last year 189 J-33 engines had to be replaced in T-33s when hot starts and other overtemperature conditions occurred. A great deal of time and effort was expended on engine changes that might not have been necessary if everyone had done his job conscientiously.

Although TOs are not specific on wind speeds, any time there is a tailwind there is risk of a hot start. Transient Alert troops can do their part in preventing hot starts by insuring that visiting T-Birds are parked facing into the wind whenever possible.

If your ramp is big enough, why not be flexible and park all tran-

sient aircraft into the wind? T-33 pilots who don't want to spend a few extra days RON would be well advised to insist on starting with a headwind component.

Maj David H. Hook
Canadian Forces
Directorate of Aerospace Safety

A PROPER FIT

A little research by our computer indicates that we lost 121 panels and/or doors in flight during the first six months of 1971. There was one major accident and one aircraft destroyed—an F-106; the pilot lost control and was forced to eject when one speed brake separated from the aircraft. The cause of some panel losses is poor design, of others poor quality workmanship during re-manufacture in our shops. But most are tabbed as failure of maintenance personnel to properly secure them.

Panels should fit flush with the aircraft skin. If the leading edge bulges slightly between fasteners, or if all fasteners are not properly secured it won't withstand high-speed flight. Check the panels or doors every time you install or close them, making sure they fit properly. A panel or door should be either unmistakably open or buttoned up securely.

MUFFED GEAR

The pilot dismounted from the F-100 and was proceeding with the exterior postflight inspection when he noticed the left main gear door missing.

Further investigation turned up a set of ear protectors wrapped around the gear strut. The gear door mount and hinge bracket were broken and the pork chop plate torn. The forward tip of the horizontal stab was bent up.

The cause of this incident was traced to transient maintenance at the departure base. One of their personnel had placed the ear protectors around the strut and failed to remove them. During gear retraction the door jammed against the muffs, failed to close completely and was torn off by the airload.

Protective equipment should be worn as designed or properly stowed to prevent incidents such as this.

CROSSED COWLING

Following a ground run alert exercise the B-52 crew noticed a four-inch hole burned in the Nr 4 engine cowling. The team looked a little further and found the hole was burned directly under the starter exhaust.

It was learned that during routine maintenance, prior to the aircraft being placed on alert status, maintenance personnel had switched the Nr 2 and 4 cowling. (Nr 2 does not have an exhaust port.)

Fortunately the cost to repair this error was only $18.24. Fortunately? Yes, in researching back a few months we find a similar incident in which a KC-135 cowling was installed on the wrong engine. During cartridge start an explosion occurred and the repair bill ran in excess of $12,000.

THINK QUICK

Loss of nose wheel steering and brake failure occurred as the F-4E taxied into the pit refueling area. (It was later determined that the Nr 1 engine utility pump failed.) Nr 2 engine had been shut down as the aircraft approached the refueling area.

The alert pit crew chief, noting that the aircraft was drifting right and that the pilot failed to respond to marshalling signals, realized that the pilot was having difficulty. So he picked up the wheel chocks and threw them in front of the nose gear tires.

The aircraft passed over the chocks but they slowed forward speed.

The F-4 hit a parked aircraft with only minor damage. The pit crew chief's alertness and reaction to an emergency possibly averted a major accident. Nice work!

BOMB RELEASE

The F-4 was enroute to the range and the pilot was setting up the switches for practice weapons delivery. As the left outboard station was selected, the right MK-84L released.

The cause was traced to a bent pin in the left outboard pylon external jumper plug. Pin C was bent and touching Pin B, supplying jettison voltage to the right outboard pylon.

All loading personnel of this organization were subsequently briefed to visually check the serviceability of all connectors before installation. ★

EXPLOSIVES SAFETY

for munitions, weapons, and egress techs

DOUBLE JEOPARDY

GORDON S. TAYLOR,
Directorate of Aerospace Safety

The dictionary defines "jeopardy" as "Exposure to death, loss, or injury." "Double" is defined as "Two-fold; made or being twice as great." In combination the two words define precisely what is occurring all too frequently in the explosives business.

The munitions field has a built-in jeopardy but we try not to unnecessarily expose ourselves, our friends, and our coworkers to known hazards . . . . or do we?

At one base, a 20mm round was fired from an aircraft cannon during the gun functional check. That's jeopardy. The investigative and administrative authorities went through all of the regular steps of investigation and reporting. All, that is, except taking immediate corrective action to inform all concerned what happened and how to avoid a similar mishap. Within 24 hours, a second 20mm round was unintentionally fired. again during the gun functional check. That's *double jeopardy*.

At another base, three CBU-24s were knocked off a flatbed trailer when a forklift driver let his vehicle roll while shifting gears. This mess wasn't even cleaned up before a second forklift driver knocked two more CBUs off another trailer at the same operating site by a similar lack of vehicle control.

. . . Still another base. MK6 Mod 3 Signal Flares were ignited on two separate occasions, about six hours apart, when 20mm ammunition being loaded into the gun drum caught and pulled the flare lanyards.

In each case, no actions were taken to see that all concerned with similar operations were immediately informed so that steps could be taken to prevent recurrence. Double jeopardy was knowingly permitted to exist. It's impossible to justify such laxity. If an accident happened once, it can happen again. If you are unfortunate enough to get trapped once—use your smarts; avoid the DOUBLE JEOPARDY! ★

SMUGGLED EXPLOSIVES

An Army Specialist 4 was caught during customs inspection with two blasting caps and six rounds of small arms ammo. What will happen to the USAF Sergeant who attempted to bring in two pounds of smokeless powder, two rounds of carbine ammunition, and 35 rounds of .22-250 commercial cartridges? Then there was the Marine who had certified that his luggage was free of firearms and explosives only to be caught with guns, ammunition, flares and signals.

These are but three of an increasing number of incidents involving the attempted illegal transportation of explosives. Additionally, personnel confronted with impending customs inspection have irresponsibly discarded numerous explosives items in air terminals. They ranged from small arms ammunition, dynamite and demolition charges to 81 mm mortar shells.

Thus the lives of innocent personnel, including dependents, plus aircraft and facilities have been placed in serious jeopardy. Surely it's not worth the risk to bet these lives against a soon-to-be-forgotten souvenir.

Your best bet is to leave explosives where they belong. If you don't, it's an odds-on bet that you'll face the judge and land in stripe city. Then there's always the chance that you will lose the works and it may be your last bet. ★

Weather RECALL

The message jogged a dormant memory cell back in the dark, damp recesses. It was an incident report about a student pilot, out solo when the winds very abruptly increased in velocity and swung to crosswind, resulting in a weather recall. There were no dual aircraft airborne with sufficient fuel to accompany this student to a suitable alternate, and the senior controller decided to have the student land immediately—even though the aircraft was heavy.

The student touched down 1000 feet down the runway at 155 knots. He began what he thought was optimum braking at 140 knots, but ran out of runway and took the barrier at approximately 50 knots. Unfortunately, the barrier cable was deflected down by the IFF antenna and rotating beacon and missed the main gear. The webbing wrapped around the nose gear, cocking it 90 degrees, and the aircraft departed the overrun and headed off over the desert, still dragging the barrier webbing.

The bird was brought to a halt with very little damage, considering, and no one was injured, so the story had a relatively happy ending. The little nagging memory cell wouldn't be denied, however.

A call to the base where it happened supplied some additional information, which supported the senior controller's decision: The controller got the student on the ground before the winds went past the crosswind limitation for solo students; a few minutes later the winds got appreciably worse, and stayed that way the rest of the day.

FLASHBACK: Circling VFR in bright sunlight, eyeing the ugly black cloud several miles away that marks the precise center of Last Chance Air Patch. The radio is squawking, *"Attention all Last Chance aircraft, weather recall is in effect, return to Last Chance and land."* The voice is hard to understand through the thunder in the background. The pilot looks at the nice weather where he is and compares it with the big murky spot where the voice wants him to go. He looks with satisfaction on the three hours of fuel he has left, mutters under his breath, "No way, buddy," and turns down the volume on the company radio.

Twenty minutes later, the black cloud having moved eastward, the pilot brings his bird into the pattern of the wet, sunlit airfield, gracefully deposits it on the runway, taxies in and shuts down, shaking his head at the philosophy that tried to get him there twenty minutes earlier. END OF FLASHBACK.

What's the purpose of a weather recall, anyway? It's certainly not intended to give the pilot experience in the worst possible weather. Ideally, the forecaster will be able to give a good indication of when operation might be threatened. PIREPs throughout the day should enable Ops and Weather to judge a deteriorating situation pretty closely. And the weather recall should be initiated early enough to get all the birds down safe BEFORE the weather becomes a problem.

A key part of any weather recall plan should be a weather divert plan. Most bases can find an alternate, comfortably close, where the weather is appreciably different. If such an alternate doesn't exist, or if the extreme weather is so widespread that planned alternates are made useless, then the recall must be initiated just that much earlier.

Take a good look at weather recall procedures at your base. Are they designed to fit your particular situation? Will a recall get everyone down safe, even at the cost of a little training? Or is it a trap, just waiting for someone to spring it? ★

NOSE JOB

What started as a routine handling operation ended with a broken weapon nose. A crew of four was manually moving double-stacked weapons out of a storage igloo. With all four wheels of a bolster in the free-caster position, one of the crewmembers moved the front of the bolster to the left for positioning. The rear of the bolster shifted to the right causing the rear section of the bottom weapon to strike and break off the nose tip of a weapon on another bolster. Considering that the maneuvering area was only about three and one-half feet wide, the need for extra caution during the movements should have been obvious. The organization involved changed its local maintenance operating instructions (MOI) covering the particular operation. The crew is now required to lock the wheels in the trail position on the end of the bolster that they don't want to shift. A timely analysis of the MOI from a safety viewpoint might have prevented this incident. Have you and your nuclear safety officer thoroughly analyzed your MOIs from a safety viewpoint? If not, do so! You just might prevent another weapon "nose job."

NUCLEAR SAFETY AID STATION

DAMP NEGLIGENCE

As you might expect, a "wet" missile is one which has been exposed to fluids and contains detectable amounts of moisture in the interstage areas. Recently, a field supervision team checked a Launch Facility (LF) for run-off of water from melting snow and reported to job control that water was running under the launcher closure door. Although job control did dispatch a team to verify the water in the LF, no entry was made in the log book. Neither was a maintenance team dispatched.

A month later a routine reentry vehicle (R/V) change brought to light a wet missile which had to be returned to the depot. Negligence on the part of several persons is obvious. If you are a supervisor, do your part by following through on all reports.

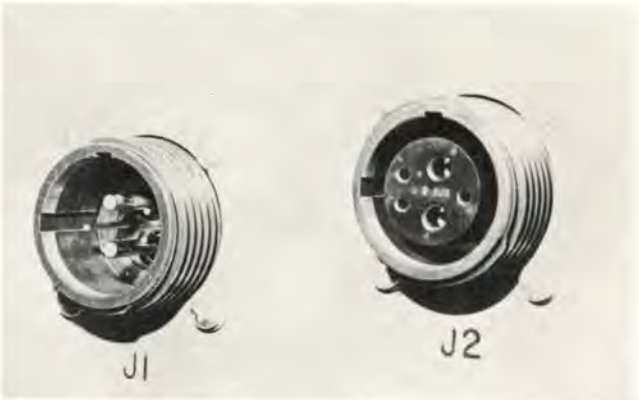
AID REPORTING

All Air Force units having nuclear weapons should closely monitor thunderstorm activity in their area and report all lightning strikes on or near missile or aircraft nuclear weapon systems. This includes strikes on or near storage facilities, maintenance facilities, launch facilities, landing ramps, etc. The yardstick for submitting AFR 127-4 nuclear mishap reports is to report a condition or event that degrades or could degrade nuclear safety (paragraph 1a). The lightning strike is an event which exposes a weapon system to an unusual environment which could degrade nuclear safety. The Air Force is vitally interested in lightning phenomena and their effects on missiles, aircraft, command and control, and monitoring/test equipment. We are also cooperating with the Atomic Energy Commission in a continuing program to assess the effect of lightning strikes on nuclear weapons. Aggressive field reporting of lightning strikes can assist immeasurably in maintaining adequate nuclear safety and improving the design of future nuclear weapons.

NUCLEAR SAFETY CERTIFICATION OF HANDLING EQUIPMENT

AFR 122-1 requires that only appropriate equipment and procedures that have received nuclear safety certification be used with nuclear weapon systems. Both the MJ-1 and MHU-83/E Lift Trucks have received this certification. However, as of 20 May 1971, the A/S32K-3 and MHU-83**A**/E, hydrostatic transmission versions of the Lift Trucks, had **not** received nuclear safety certification and, therefore, will **not** be used with nuclear weapon systems. A recently received Dull Sword on an MHU-83**A**/E indicates that not everyone has received the word. Have you? How about nuclear safety certification of other equipment?

IT COULDN'T BE DONE



A recent incident involved two similar cables and their connecting plugs. Technical Order procedures called for removing the cable connected to J-2 (see photo). The technician removed the cable to J-1 by mistake, but didn't reconnect it before disconnecting J-2. This left both receptacles open. He then connected cable 2, which had a male connector, to J-1, a male receptacle.

Can't be done, you say? Remember Murphy's Law (if it can, it will) and take a close look at the photograph. Note how the key-slots match in J-1 and J-2. Note how the pins in J-1 jibe with the receptacles in J-2. As a matter of fact, investigators found it was easier to connect cable 2 to J-1 than to J-2!

The two male connectors fitted perfectly and, since both cables contained live power lines, a short circuit was the inevitable result. We were lucky on this one, and it was only an incident. But when stray currents start running around **any** missile system, there's no way to predict for certain what's going to happen.

There's just one answer: rigid adherence to tech data! ★

...the smart

Since we bought our first airplane it was obvious that if we could achieve a low accident rate, we could save some of those airplanes and people to use in much better ways. Sometimes in the past, our approach to safety problems has not been too professional. Various solutions attempted by our safety officers met with limited success. However, over the years safety has become a profession, staffed by trained personnel who have a good idea of what method works to prevent accidents and what approach falls on its face. This progress did not come about by accident. It was all part of a plan to insure that those individuals selected to spread the gospel were well prepared to effectively present a program that would preserve our combat potential.

However, safety officers, like ol' soldiers, fade away. So, to keep our ranks young and aware of the comparatively new techniques such as fault tree analysis and system safety engineering, many specialized courses are available to those assigned to the field as well as those who might be interested in the business of mishap prevention.

The following is a list of some of the schools that we in the Directorate of Aerospace Safety at Norton, to an extent, control. AFM 50-5 contains the entire list, but if you have an interest in broadening your safety knowledge, the Education Group is available to assist you. Most of the courses carry college credit and all require military retainability depending on length of the course. If you think you might be interested in attending one or more of these specialized courses, talk to your boss and personnel officer. For answers to any questions, contact the Safety Education Group here at Headquarters, USAF, and they will be more than glad to assist you in any way.

ADVANCED SAFETY PROGRAM MANAGEMENT—UNIVERSITY OF SOUTHERN CALIFORNIA, SIX WEEKS

A graduate level course designed to teach good safety management principles and techniques to fully qualified field grade officers or equivalent grade civilians serving at wing level or higher with the responsibility for safety field functions. The curriculum includes safety philosophy, accident data collection and analysis, statistics, management, human relations and communications techniques.

CRASH SURVIVAL INVESTIGATORS COURSE—ARIZONA STATE UNIVERSITY, TWO WEEKS

Trains officers and civilians in the practical applications of aircraft crash survival concepts. Course covers aircraft accident investigation, injury prevention programs, new aircraft mock up evaluations, human tolerance to abrupt linear acceleration, post crash evidence and investigation techniques. Material presented is of specific interest to aviation safety specialists, medical personnel and design engineers.

FLIGHT SAFETY OFFICERS COURSE—USC, TEN WEEKS

Trains officers for flight safety officer duty. Course includes aeronautical engineering, aviation psychology, physiology, accident prevention, investigation. Thirteen college credits awarded upon successful completion.

route!

GROUND SAFETY OFFICER COURSE—NEW YORK UNIVERSITY, THREE WEEKS

Provides ground/explosives safety education for officers and equivalent grade civilians. Course includes basic safety problems, accident reporting, investigation and analysis, conference techniques, human engineering, safety councils and the use of statistics. Places primary emphasis on the supervisor's role in safety. Three college credits awarded upon successful completion.

MISSILE SAFETY OFFICERS COURSE—USC, TEN WEEKS

Provides university level safety education for officers or civilians assigned to manage USAF missile safety programs. The course objective is to provide students with an understanding of safety program management, safety principles, missile systems, and missile environmental factors. Includes theory of applied physics, propellant chemistry, fluid mechanics, propulsion systems, fundamentals of structures, basic electronics, industrial hygiene and psychology, and the mathematics necessary for an adequate understanding of these subjects.

SENIOR OFFICERS SAFETY COURSE—USC, FIVE DAYS

This safety orientation course provides colonels and general officers the opportunity to learn basic principles as well as techniques and management tools available to the commander in conducting an effective safety program. A review of the existing Flight Safety Officers Course curriculum and the opportunity to exchange personal experiences and ideas relative to aerospace safety programs will enhance the commander's utilization of his safety staff.

SYSTEM SAFETY ANALYSIS—UNIVERSITY OF WASHINGTON, TWO WEEKS

Trains engineers and technical staff members in the practical application of system safety analysis techniques. Course covers fault tree methods of analyzing systems for hazardous events. Terms and concepts of probability and statistics needed in the quantitative analysis of fault trees, human factors, and the use of computers in solving problems.

SYSTEM SAFETY OFFICERS COURSE—USC, THREE WEEKS

Trains personnel of USAF development, support and operational commands who are assigned to system safety engineering positions, system safety engineers in industry and other governmental or military services. Course contains fundamentals of system safety, appropriate system safety standards and specifications, i.e., MIL-S-38130A/MIL-STD-882, implementation of the system safety concept and identification of system safety problem areas. Emphasis is placed on the application of system safety principles in the pre-design and design phases of development and modification programs or projects.

NATIONAL AIRCRAFT ACCIDENT INVESTIGATION SCHOOL—DULLES INTERNATIONAL AIRPORT, WASHINGTON, DC, TWO WEEKS

Trains officers/civilians for aircraft accident investigation board duties. The course is conducted by NTSB and covers accident reporting procedures, witness interrogation techniques, human factors, aircraft systems and power plants, analysis of failed components, NTSB investigation rules and procedures.

Prerequisites, retainability requirements, and college credits given are listed in AFM 50-5. ★

IPIS APPROACH ARTICLES

We in the jet training squadron here at Andrews AFB have benefited regularly from your well researched and lucidly explained articles on instrument flying techniques. When we found in the current issue of Aerospace Safety your index of subjects covered, several of us began to choose those articles which we felt would be most useful to have in a permanent reference file. As more of our IPs joined the discussion, it soon became apparent that practically every article held special appeal to some of us, so we decided to ask you for a complete set.

About that time, the Stan/Eval Chief walked in, joined the discussion, and he decided that he wants a set for his pilots' use.

We then decided to go all the way and ask for an additional set for the recip squadron and one for the Wing.

So—could you spare us four complete sets? I promise that we will put them to work.

Robert L. Hill, Lt Col
Andrews AFB, Wash DC

We have forwarded your letter to IPIS/FTYI, Randolph AFB, Texas, 78148. I am sure they will fill your order for four sets of the IPIS Approach articles.

We have received several similar requests but we do not have the articles here in the Aerospace Safety magazine office and must forward the requests to IPIS. Anyone who wishes a set of the articles should write directly to IPIS at Randolph AFB.

POISON--WARNING

Customs agents have discovered costume jewelry made of Jequirity beans in the possession of persons returning from Africa and the Caribbean area. Necklaces and bracelets predominate. They are also used for eyes on carved coconut monkey heads.

The Jequirity bean, known by several other names, is small, hard, smooth, spherical and scarlet in color with a black spot. They are highly toxic and there is no antidote. Chewing or ingestion of the bean produces nausea, severe diarrhea with colic, weakness, accelerated pulse and tremors. It can be fatal. Treatment is evacuation of the stomach.

Be especially careful not to allow children to get possession of these beans. ★

☆ U.S. GOVERNMENT PRINTING OFFICE 1971 789-120/1

UNITED STATES AIR FORCE

WELL DONE AWARD

Presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Accident Prevention Program.

196th Fighter Interceptor Squadron, Calif ANG, Ontario International Airport, California

Captain George C. Neusse

Captain Roger L. Coakley

On 2 February 1971, Captain Neusse and Captain Coakley were returning from a night intercept training mission in their F-102. While still at 35,000 feet, the left center panel of the forward windscreen blew out. The violent wind blast and flying glass temporarily blinded Captain Coakley. Captain Neusse, in the right seat and at the controls when the failure occurred, immediately started a descent and turned toward land as he declared an emergency. Communication over the intercom was virtually impossible due to wind blast. UHF reception was slightly better. The instrument shroud had been severely damaged, and a large portion of it was broken loose and hanging by its wiring. The shroud damage resulted in complete failure of the left-side instrument lights, and caused the remaining lights to work only intermittently. Severe aircraft buffeting made reading the occasionally-lighted instruments nearly impossible. Captain Coakley recovered sufficiently to remove portions of the broken shroud and assist in the recovery by using his flashlight to help illuminate the instruments.

Captain Neusse continued on a course he believed would take them toward a suitable field. They were flying above an overcast and both compasses were unusable. Approach Control heard the flight on Guard Channel and assisted in join-up with another F-102 to lead a recovery. Approach Control had the only radio the crew could hear well enough to receive instructions. Throughout the letdown, all transmissions between wingman and leader had to be relayed through Approach Control. Slowing the aircraft caused buffeting to increase so that after join-up it was necessary to fly the GCA vectors at 300 KIAS. Captain Neusse held his position on the left wing of the leader as they entered the overcast at 8000 feet. Only after breaking out at 2300 feet on final approach did he slow the aircraft to 250 KIAS and lower the gear. By spiking the aircraft onto the runway at what would normally be an excessive speed he was able to maintain control until touchdown. In spite of the multiplicity of difficulties confronting them, Captain Neusse and Captain Coakley successfully landed their aircraft without further damage. WELL DONE! ★

Hi There!

Have you been getting your copy of AEROSPACE SAFETY magazine every month?

If not, check with your local Publications Distribution Officer. Your mail bag will be empty if your PDO doesn't have your unit's requirements.