**FEBRUARY** 1962

## J-AFFACK



#### STARFIGHTER 'STRAGEDY'



GENERAL WALTER C. SWEENEY JR. COMMANDER TACTICAL AIR COMMAND LT GER G.P. DISOSWAY VICE COMMANDER COL J. K. JOHNSON CHIEF OFFICE OF SAFETY

VOL. 2 NO. 2

FEBRUARY 1962

#### CONTENTS

WHAT ARE YOUR INTENTIONS 2
TAT
STARFIGHTER "STRAGEDY"
DREAM DOCK
THE NOT SO EMPTY SEA 17
TAC TIPS 18
7/32 TO SAFETY 20
OL' SARGE 23
CHOCK TALK
HOSE MINUS 'S' = SAFETY 27



COVER PHOTO F-104 Starfighter defies gravity

#### EDITOR - MAJOR KARL R. DITTMER

ASSOCIATE EDITORS - MAJOR JAMES G. SWENSEN

ART AND PRODUCTION - T/SGT HEINZ E. MIRSCH AVIC RICHARD C. RADER

Use of funds for printing this publication has been approved by Eq USAF. U6AF Recurring Publication 62-12 Articles, accident briefs and associated material published in this magazine are non-directive in nature. All suggestions and recommendations are intended as helpful and remain within the scope of existing directives.

Information used in briefing socidents is extracted from USAF 711 Series Forms and may not be construed as incriminating under Article 13 of the Uniform Code of Military Justice. All names, dates and places used is accident stories are fictitions. Air Force units are anthorized and encouraged to republish the material contained herein; however, contents are not for public release. Written permission must be obtained from Eq TAC before material can be republished by other than Air Force organizations.

Contributions are most welcome as are comments and critician. We reserve the right to make any editorial changes in manuscripts which we believe will improve the material without altering the intended meaning. Direct correspondence with the Editor is authorized.

Some are weather-wise, some are otherwise --Ben Franklin

Airmen have long regarded winter, with its bad weather, ice and snow, as the most hazardous season of the year. Strangely enough, accident statistics indicate that the reverse is true. This past winter, as in previous winters, the TAC accident rate was at its lowest for the year. If previous trends are followed, it will start back up again sometime next month.

Has everyone greatly overrated the winter hazards? Better equipment and improved training and techniques have helped make it easier for pilots to cope with them, but the hazards themselves still exist and are very real. An icy runway is still slick, making control difficult and landing dangerous. But in addition to being slick, an icy runway looks slick and no one has to be told that it will be dangerous.

Perhaps this is the clue to the inconsistent rate. Winter hazards are tangible, pilots know they exist, respect them, and more important, plan for them. They prepare for this season, they use caution, and they avoid accidents. Not so with other seasons. Here, the hazards are less obvious. A hot runway on a clear summer day doesn't look dangerous, even though everyone realizes that the increased heat will result in less engine thrust and a longer takeoff roll. Actual takeoff speed will be higher since an aircraft must travel at a higher true airspeed in order to reach the indicated speed needed for liftoff. This, and the increased temperature, punishes tires—and induces failures.

In warmer weather the aircraft also needs more altitude to recover from a dive bomb run, has a larger turning radius in the pattern and lands at a higher true airspeed. The requirement for more precise judgment is obvious, but not always fully recognized.

Other hazards influence the non-winter months. Poor leave planning and transfers often result in a severe loss of key supervisors during late May and June. This can severely affect the quality of management during this period and induce problems that last for two or three months after everyone has returned to duty.

Supervisors and Safety Officers should look for hazards such as these and bring them to everyone's attention. Then, if they are treated with the same respect reserved for winter hazards, a significant drop in the accident rate will surely follow.

> Colonel James K. Johnson Chief Office of Safety

## 1

attack

angle

This article was based on an accident report. Times, distances, and other pertinent data are based on fact. Conversation of the flight leader is from a tape recording of his actual transmissions and is accurate, except for names of places and call signs. These were deliberately changed. Conversation from ground stations and other members of the flight was reconstructed from statements and other data. With this introduction, place yourself in the flight leader's aircraft and let someone ask.

### What are your

# INTENTIONS?

**Y** OU ARE AT flight level 285 in an RF-84F leading a flight of three from Smoky Airbase to Mucho Airbase near the city of Rancho in the Southwestern US. You are above the clouds and the reflection from the sun is bright even thru your helmet visor.

Everything is proceeding normally altho you had a little trouble during climb out. Number three has a sick radio. Yesterday number two had the bad radio. Smoky had a regulation against formation takeoffs and you didn't find out about it until ready to fire up. You'd briefed the flight on the radio

FEBRUARY 196-

to ioin up after takeoff, planning

imb thru in formation. As Al. something went wrong and number three was late getting off. Rather than waste fuel, you had requested radar to vector each aircraft out on a separate departure. It worked pretty good. In fact they even helped you get joined once you were on top. But that was an hour ago. Right now you are waiting for station passage on your second check point. Due to the fancy climb out you didn't get an accurate ground speed or fuel check at the first station. You glance at the clock. Almost 50. You recheck the Form 21a on your knee board even though you know full well that your ETA is for 59.

You glance at the DME. It reads 88 miles. Roughly, it will toke 13 or 14 minutes to go 88

es at the ground speed you've an making. Letsee, that would put you there at about 06... Better call and change that ETA. You press the mike button and say, "Wildwest center, Wildwest center, Black 13 here."

A faint voice answers, "Black 13, Wildwest center, request you contact me 319.8 over."

"Ah roger Wildwest center. Black Flight let's go 319.8." You reset the radio and repeat your call, "Wildwest center ah, I'm not doing so well, doing about 320 or 330. We'll possibly have to go into Cowtown if we can't make Rancho."

"Understand Black Flight lead." The voice is stronger and sounds a little impatient, "Request your Iceburg esti-

#### mate."

Better give him the whole works if he feels that way. You key the mike, "Ah roger Wildwest center estimate Iceburg at zero six presently 82 miles out and we are at flight level 280, VFR on top."

"Understand Iceburg zero six, request you say again altitude."

Watch it fella, you goofed that time, "Correction 285 not 280."

The counter clicks thru 70 miles to go. You check your fuel, it reads 4300 pounds. You call, "Black 13 flight, check fuel."

"Black two with 4250."

"Black three with 4100 pounds." Good, his receiver seems to be better and he's only 200 pounds low. You recompute your time to destination... If the wind doesn't get any worse, you should make Mucho with about 1500 pounds. Pick up a little on an enroute letdown . . . that is if the weather is still good. You wonder . . . the surface winds were pretty brisk at Mucho and the place has a reputation for dust storms. You had specifically asked the forecaster if there was any danger of blowing dust and he'd said, "No." ... still . . . you key the mike, "Black 13 let's go button 13 for one."

You rechannel the radio, wait a couple of seconds then call, "Iceburg Metro, Iceburg Metro, Black 13 here, over."

No answer, you start to call again, then the voice answers, you can barely read, "... Thirteen, Iceburg Metro go ahead."

"Roger Iceburg, this is Black 13, Black 13, request weather at Mucho and Cowtown. Ah, also, give me their forecast for one hour from now will you?"

You turn up the volume and the answer is louder, tho still difficult to read. "Roger, Black 13, the ah, current Cowtown weather is ah, 2500 scattered, broken cirrus visibility 15, wind north at 15. The Rancho weather is 5000 broken, high broken, visibility ten miles, surface wind southeast 14, gusts to 26...ah, will that be all?"

"Ah, rog, thank you Iceburg. Black to manual."

After the channel change, you have two and three check in. Since three's receiver is poor, you repeat the weather.

By now, your TACAN indicates you are over Iceburg. You call center and give them your position as being over the station at 05, estimating Cowtown at 36. They tell you to go 281.5 and contact Wildwest Radar.

Before leaving the channel you request fuel state from 2 and 3. It's still close, and two asks,

"Lead, you think we can make Rancho?"

You answer, "Ah rog, we'll make our decision over Cowtown. Ah, we picked up to 370 on that full leg...apparently the drum is not too accurate."

Two says something you didn't catch. You ask, "Say again."

"I don't get us that fast.

What is your estimated time enroute to Rancho?"

You recheck the knee board. "I ah get 370 over Iceburg and figure 48 from here to Rancho." As you talk, you recheck the position of your wingman. Three is no longer in sight. "Ah, where's three?I can't see him."

"He's at seven to you."

"Ah rog, lets go 281.5."

Sometime later your TACAN indicates station passage at Cowtown. After giving center your position, you tell the flight to go button 13 and you recheck the weather at both Cowtown and Rancho, and ask for the forecast for the next hour.

Cowtown Metro comes in loud and clear. The weather hasn't changed since you made your request at Iceburg, except that Cowtown is expected to drop to two miles within ten or 15 minutes due to snow showers. Your watch reads 13:35. You get a sudden thought, there are two airports at Rancho. You ask, "Ah Cowtown Metro is that last report for Rancho Municipal or for Rancho Mucho, over?"

"The weather was for the Rancho area, Black 13."

"Ah Roger, the weather was for Rancho. The Mucho AFB area. Is that what you gave me?"

"That is affirmative, Black 13."

"Ah roger. Understand Rancho no change or rather Mucho no change and they're holding 5000 broken--high thin broken and that Cowtown is possibly coming under snow shower activity within an hour or so."

"Snow showers within the

next ten or 15 minutes Black 13."

"Ah roger, thank you. Black 13, fuel check."

"Black three with 2300." "Ah roger three, I have 24. What you got two?"

"2400."

"Ah rog. I don't see any problem. We should pick up some on the letdown and we might get weathered in if we land here. O.K. let's go manual."

Back on the center frequency, you request an enroute descent into the Rancho area.

Rancho center clears you from 285 to a hard altitude of 250. After a bit, they call again, only to be cut out. You ask, 'I got the first part of the clearance. That part up to descend and maintain 20 thousand was cut out will you repeat please."

The center repeats the part you received.

"Rog. Got that. All Igot was the last half. What was the first part of the clearance?" As you suspected. He cleared you to an omni fix. "Negative, I can't accept. All we have is TACAN or ADF, over."

"Roger Black 13. Do you have ADF?"

"Ah rog I have ADF, over."

"Roger cleared to the Mint radio beacon, direct from present position. Descend to 20,000. Call leaving flight level 240. Ah...for your information Black 13 lead, Mucho AFB is below minimums. What are your intentions?"

Boy! that's a surprise. Better confirm. "Ah Rancho, understand Mucho is below minimums . . . ah what they presently carrying?"

"All I have is that they are below minimums, Black 13. Contact Rancho approach control on 363.8 for Mucho weather. Request your flight level, please."

"Ah rog presently at 240. Let's go 363.8 for approach control, Black."

Your TACAN indicates about 40 miles to Rancho. That puts you almost 100 miles from Cowtown. Cowtown will have two miles or less in snow....

"Mucho approach control, I mean Rancho approach control, this is Black 13, request latest Mucho weather please, over."

"Roger Black 13, Rancho approach control. Present Mucho weather, visibility one fourth mile, ceiling obscured"

You know full well what happened, but you ask anywa "For what reason, Rancho?"

"Blowing dust, Black 13. Request your intentions."

"We'll have to return and land at Cowtown AFB, over."

"Understand, Black 13. Contact Rancho center on 363.1 for clearance to Cowtown over."

You make the radio channel change and start a turn back toward Cowtown. When the radio channelizes the center is calling, asking how you read. You answer, "Ah rog Wildwest center, Black 13. Ah I mean, Rancho center, Black 13, read you five square. We're going to have to go into Cowtown, over."

"Say again your intention Black 13." "We're going to have to go Cowtown AFB. Would you e us their latest weather rease."

"Standby on the Cowtown weather I'll try to get it for you. Request your altitude." "Black lead, this is Black three. I'm getting damn short on fuel. I ah, don't know if I can make Cowtown, over."

More trouble. You try to hurry the center. "Listen center, we've got a man who's possibly going to have a fuel situation. I'd like to get some weather and a clearance right now. Are we going to Cowtown or Rancho?"

#### "Black three here."

"Go ahead, three."

"Look lead, I'm down to 1000 pounds and I can't make Cowtown."

That does it. You start a n back toward Rancho, and then advise the center that you will continue to Rancho and try for Mucho AFB or the civil field. You also declare an emergency. And are turned over to approach control. Approach control advises, "Black 13, Rancho Municipal weather is currently reported at 3 to 4 miles, over."

Relief at last! You verify, "What's the ceiling at Rancho Municipal and say again visibility."

"Ceiling obscured, visibility three to four miles blowing dust."

"Roger! Four miles vis. Understand Mucho is lower."

"Affirmative Mucho reporting 1/2 mile."

AC ATTACK

"What altitude you want us at?"

"Descend to 20,000, Black, and go ident."

You comply.

Shortly, he descends you to 8000 and vectors you onto a left cross wind to the active at Rancho Municipal. You're in the brown swirling dust and visibility is very poor. You can see the ground, but ever so often you hit dense patches of the stuff which even obscures that. You are cleared to 7000, and vectored to 260, ten miles from the runway. You request a straight in for number three. field in sight?"

Is he kidding? All you can see is brown dust.

"Negative! No joy." A break in the dust, there it is. "Rog! Have the field in sight. O.K. let's drop in string with three in the lead...and drop gear. O.K. three, it's two-o'clock. O.K. It's dead ahead now. Turn right slightly...Got it? O.K. Two, follow me, I'm cutting in front of you."

Looks like three will make it from the straight in, you can't, so you make an overhead pattern more by feel than anything else, and roll out on



Left to 220, six out...where's the runway?...slow down. You call, "O.K. Black, speed brakes, ready, now! Half flaps. Approach control, we're going to make a straight in on this runway over."

Roger Black 13. You are now five out. Do you have the what you hope is final. You cautiously descend to the minimum altitude given on the approach plate. Gusts of wind cause your F-84 to yaw and pitch. You look down and see the approach lights...or rather the posts supporting them. You lucked-out and are almost lined up. You maintain altitude and follow them in. Suddenly the runway is below you. You have no idea how much you've passed over, but at this point you hardly care. You chop power and put the nose down, holding 170 knots. Close to the runway you flare, let the aircraft touchdown and deploy the drag chute. Visibility is unbelievably poor. An eighth to a quarter of a mile at best. You jettison the chute and almost immediately see number three's chute lying on the runway. You spot a taxiway and turn off and call approach control asking them to turn on the approach lights. This might help number two. You wonder how he's making out and call.

"Two, did you get the field?"

"Yeah lead, I'm on the runway O.K. But I had an accident. I ah, think I wiped out the gear. I'm O.K., tho'."

Rough luck...still, you got two down O.K. and no one was hurt. If you'd only been told of this dust a little sooner. Surely it didn't come up that fast....If only your number three man had let you know a little sooner that he was getting low on fuel ... Too late now, the damage is done.

Later, you find that number two had tried to space himself to land out of the 360 overhead, lost sight of the field and made another three sixty. On this approach he had noticed plowed marks out in the desert, figured they were the overrun and followed them in.

He had to. By then he was down to 600 pounds. The plowed area led him to the approach lights and even tho airspeed was above normal a sudden break in the wind caused the aircraft to settle. The gear struck one of the concrete supports for the strobe approach lighting system and broke the nose gear and one main gear. The next instant, the aircraft was skidding on the runway. He chopped power, deployed the chute, and slid to a stop just off the runway.

The Board determined that the accident was caused by a severe gust condition from which the number two man was unable to recover. You can't help but wonder. Had the



approach lights been turned on, number two might have been able to make a higher, sa approach. Possibly he would have been able to recover from a sudden lull in the wind. Unfortunately, tower personnel didn't know your flight was even in the pattern . . . still, visibility was so bad, you'd think the lights would have been on. They don't do anyone any good when they're not. The civilian tower people were estimating visibility at three to four miles at the time the accident happened. On the overrun it was much much lower.

Mucho AFB was using runway visibility for their weather report. This helped explain why the civil field had supposedly better weather. Better on paper, but not in actuality.

You find that the Mucho visibility dropped to about of fourth mile at 1325.

Letsee ... It was 1335 when vou asked for weather from Cowtown Metro...Surely they should have known. Investigators checked this out too. They found that the deteriorating weather was transmitted to Rancho Tower, RAPCON, Wing Control Room and the Weather Station two Base minutes after it was observed. From there, support personnel went thru the motions of inflight-following ... yet no one made a concerted attempt to contact your flight of three F-84s. As usual, going thru the motions of complying with this sort of a directive didn't quite hack it.

FEBRUARY 1



THE LAST TIME your Old Tat made like a bird we flew an aircraft that was in unusually good condition. The canopy and wind screen were spotless (the ground crewman was busy cleaning 'em when we arrived.) The accumulators were all up, everything was like it's supposed to be

the cockpit was neat with everything arranged easy entrance . . . in short, any plumber could tell that the crew chief on this bird took pride in his work.

After the flight, which was without incident, we complimented him on his bird. Later we got to thinking that a verbal compliment hardly hacks it anymore. Our system has gotten too cumbersome. Busy maintenance chiefs may or may not get around to noticing which troops are taking pride in their work and which are just doing a job because they have to. Most of the info they get is negative . . . you know, squawks on the bird, or complaints of one sort or another.

A lot of our safety setup is like that . . . we have Safety Surveys, UR's, Failure Reports, Discrepancies, OHR's, Form 14's, and a whole long list of tools designed to locate the bad or to highlight the weak. On the other hand we have doggone few tools that will pinpoint strong areas, particularly in maintenance. Oh sure, the Headshed for Bird Watchers runs the Duncan and Heinz program and most of us have an awards program--but these only cut a small segment of our operation.

What we need is a system that will call attention to routine work that has been done with care and pride. Although we shudder to think of more reports, perhaps we could use a form similar to our OHR. Call it a GSR for Good Show Report.

It could be used in other ways. We could use it to compliment a control tower operator for professional performance during a period of heavy traffic or to let someone know the cooks were cranking out above average in-flight lunches. Such a system would let the workers know that they are appreciated. If a few three-day passes were handed out from time to time (based on some of these reports) perhaps some of the less dedicated people might be inspired to do a better job, too.

JUST AFTER CLEANING UP gear and flaps, a young Lieutenant found himself glaring back at the overheat light in his F-100. He grabbed a handful of stick and climbed until he had some 6000 feet of air between the bird and the ground, then came out of AB and reduced power. The light went out. It didn't take long for his flight leader to latch onto his wing and look the bird over. All looked well. The pilot called squadron operations and asked if they wanted him to press on. Right quick, they told him to jettison his load and land. He went to the jettison area and pickled both 275's and the shape he had been lugging around, then made an uneventful landing. Flight time was 20 minutes-about 17 minutes longer than it should have been.

As we recall, the good book says to react to a fire or overheat light by getting rid of the external load while climbing to a minimum safe ejection altitude, then reducing power and, if a check does not confirm a fire, landing ASAP.



... AND THE GOVT. MAINTAINS THE FENCE!!

Good advice, provided some eager beaver real estate agent hasn't peddled a housing development just off the runway in which case, dumping the load may have to be deferred slightly. To our way of thinking, two thousand feet is reasonable for a safe ejection altitude, makes for a quicker power reduction than six . . . and places the bird on a comfortable downwind leg for the ASAP part of the procedure. The check for fire would be made at this time. Gear would be delayed until on base (to delay use of power) and the whole pattern should be made in the same way you'd make a go-around with minimum fuel . . . only slightly bigger due to the extra weight. In short, don't hurry and botch it, but don't go around scratching your ear or picking your nose.

The Lieutenant, bless his unhurried lucky hide, should have known the light was telling him the truth . . . it went out when power was reduced (fortunately). A cracked AB spray bar caused the difficulty, and a small hole had burned thru the aft section liner, damaging wiring and hydraulic lines.

TAT'S FLIPPED LID DEPARTMENT . . . A B-57 pilot accidentally jettisoned the canopy off his bird while taxiing out. Apparently, the seat arm rest wasn't fully in the retainer clip and he snagged his glove or his sleeve on the handgrip and raised it slightly while adjusting seat height. Not only did this leave him with the wind and rain in his hair, it also left him just one short movement from a fast solo flight in a hot seat. When the handgrip is under the spring clip, it takes a noticeable pull to raise it. If it isn't under clip, it comes up quite freely. When B-57 pilcrawl into the office, they'll do well to take a look at the handgrip to see that it is under the clip.

Then we have the F-86 pilot who loosened his shoulder harness and seat belt, shifted to a more comfortable position and caused his machine to buck up and down slightly. The seat wasn't completely locked on the track and moved up and down in reaction, causing the jettison handles to come up and the canopy to blast off.

The pilot reinstalled the pins, tried unsuccessfully to stow the handles and then proceeded to a nearby airbase where he made an uneventful, tho drafty landing. Apparently the lap belt adjustment buckle caught on the arm rest during the mild porpoise . . . reason enough for keeping straps tight and for making certain the seat adjustment is properly locked.

Speaking of seat adjustments, TAT once bounced a friend during a pre-briefed simulated combat mission in ye olde F-86. Our friend broke hard left, pulling some six G's. His seat promptlywent from full up to full down with consideral enthusiasm. According to him, it was a thorough, bone rattling experience . . . almost bone shattering. He lost control, a bit of altitude, and the fight. We point it out as an example of how deadly important simple things like seat adjustment can become.



FLYING THE WARM ONES? If you are, and have to abort on takeoff, are forced to do some heavy brake stomping after losing a chute or because of brake trouble, take a tip from your Old TAT and let the fire department in on your ret. Also, park in an isolated area for a halfdr until the critters cool. Why? Well, hot brakes are like hot potatoes. They can cause some right spectacular wheel explosions, and have been known to chuck pieces of wheel 1,700 feet. Even after tires have cooled off 20 to 25 minutes after the bird was parked. By the way, Flight Safety Officers and other bird watchers will do well to check your SOP's on this subject to see if they are adequate.



FROM A MESSAGE giving maintenance astructions..."Continue to loosen the inner retainer until it is removed from the outer retainer. The inner retainer should rotate freely by hand or with a wrench after torque is broken while it is being removed." In this era of precision torque values, TAT couldn't help wonder why the writer of this didn't warn against using an extension on the wrench.

SHORTLY AFTER LEVELING at 250 the pilot in the aft seat of a T-33 reported hypoxia symptoms. The troop up front checked and found that cabin altitude was 21,000 feet. He then advised the other pilot to go 100%, check all connections, and tighten his mask. Everything checked O.K., including the blinker. Without further ado, the pilot up front made a 180 and got right back to the home pasture where the aircraft was met by wheels from the flight surgeon's office.

Half an hour after experiencing hypoxia, the aft pilot was being checked at the dispensary ... He

was O.K. except he had a low hemoglobin value. The bird was checked. The oxygen hose had been crimped--probably squeezed between the seat and the console, since the affected pilot was certain it hadn't been pinched under the seat.

Loss of pressurization was caused by a mismated rubber block and plumbing fitting on the right aft canopy rail. The hypoxia resulted from this combination of factors. TAT passes it on to you to remind you that this business of high altitude flying is just as critical as ever. Keep your equipment in good shape--watch for crimped hoses and, above all, write-up aircraft that have poor pressurization.

By the way, we like the way this mishap was given the full treatment.

WEATHER WAS REPORTED to be 1500 scattered, 2-1/2 miles in haze when the Lt started his 104 down the slide with another bird on his wing. GCA picked them up and gave 'em an uneventful approach...except the Lt was having compass trouble, but not enough to cause GCA to use no gyro procedures. At about one mile, the Lt picked up the strobe lights off to his left and turned abruptly toward them.

The wingman pushed up power for a missed approach. A few moments later the Lt decided his correction was too large and did likewise. His decision was a little late and he hit the grass along the left side of the runway.

The second GCA was without incident. Damage from the unscheduled landing was slight. A GAR-8 on the right wing got messed up after being dragged about 50 feet and the bird itself hit an approach light and got a slight dent in its belly. The bird left wheel tracks from the right wheel, then from the left as the pilot over-controlled for the low right wing.

Sounds a little scary doesn't it? TAT only has one comment. A bum approach is a bum approach whether it's made VFR or IFR and we all make one from time to time. The smart troops don't try to salvage the bad ones...particularly when flying the heavier hardware...instead they take 'em around and have another go at it.

9

TAT

## STARFIGHTER STRAGEDY

W. T. "ARMY" ARMSTRONG

ENGINEERING TEST PILOT LOCKHEED AIRCRAFT CO.

10

FEBRUARY 1962

hile operating the F-104 during the past year, Air Force units encountered three outstanding problems. A brief discussion of these should result in a better, safer operation for 1962. With this in mind, let's review the big three.

Engine exhaust nozzles failing to the open position caused what was probably the most serious problem encountered in 1961. Failure of the Temperature Amplifier Unit seems to be the main cause factor: however. failures of the Nozzle Area Control. Nozzle Pump, or leaks in the Nozzle Actuating System also contributed. Although all models of the F-104 incorporate nozzle closing emergency systems, the capabilities of these systems vary, depending upon the model of aircraft you are flying. For those of you who

operating the A model, the mergency system is a manual that only override switch corrects Temperature Amplifier failures. You F-104C pilots are more fortunate. The manual handle in this aircraft will compensate for failures of the Temperature Amplifier Unit, Nozzle Area Control, and Nozzle Pump. However, neither system will take care of leaks in the nozzle hydraulic system downstream from the Nozzle Pump.

Now that we know the capabilities and limitations of the J79 nozzle control system, what can we do to promote a safer operation without making expensive changes to the hardware? Let's consider an open nozzle at high gross weight when you are close to the ground, say, immediately after takeoff. This is the most serious case I can think of. If the emergency closure system does not solve the problem, you have only two alternatives...attempt an open nozzle AB light which is highly improbable or eject. Personally, I don't like the odds so let's avoid this situation at all costs. Probably the best way to avoid it is to take a good look at EGT and Nozzle Position when rolling down the runway in full AB. If your mission requires that you retard to military before you have plenty of altitude, look at EGT and Nozzle Position again before you come out of AB. If Nozzle Position has increased an appreciable amount (reading above 0.85) or EGT has dropped noticeably (8 to 10 degrees C low) from what you had on takeoff. an open nozzle failure is likely. You had better skin on up to a safe altitude before retarding the throttle. If you forgot to note your takeoff readings, or if you are in doubt about how much change has occurred, ease the throttle back about an inch and watch the Nozzle Position Indicator. If it starts closing down, you are O.K. If it remains fixed, the only thing you want to pull back on is the stick.

An open nozzle failure at altitude presents two separate courses of action, depending upon what model engine you have. If you have the J79-3a, it is possible to maintain altitude somewhere between 3,000 and 10,000 feet, depending upon fuel

weight and ambient temperature. If all available fuel is not needed to armise to a suitable landing site, placing the throttle in the full AB position is recommended as a means of reducing fuel weight prior to landing. When you arrive at a suitable landing site. fly either a normal traffic pattern or an instrument approach using takeoff flaps for landing. Hold the gear until you are about a half-mile out on final. This will help control your sink rate during maneuvering turns. If you have the J79-7 or J79-11a the engine. vour problem is more acute. An open nozzle on either of these engines will cause the aircraft to enter an extended glide that will eventually result in contact with the ground, with or without the pilot. In this case, a Precautionary Landing Pattern is recommended, if possible, with the landing gear lowered during flareout.

Don't forget, that if either type emergency system fails to close the nozzle, this is an immediate indication that there may be a leak in the actuating system, so plan accordingly.

Next we have the problem of engine compressor stalls at low altitude. Primarily, these are caused by an excessive lag in the Inlet Guide Vane schedule following a power reduction. This is another extremely critical condition, and requires prompt recognition and corrective action. When a stall of this type occurs, engine noise or duct rumble is not always present so you must rely on the engine gauges to tell you what's going on. Remember, nozzle position will be abnormally high or wide open because the engine you are close to the ground, but keep in mind that this is your only possible chance.



is attempting to compensate for the excessive EGT created by insufficient air flow. RPM will be low and fluctuating. However, fuel flow will correspond fairly well with throttle position and a close check of EGT and RPM will keep you from diagnosing this as an open nozzle failure.

Corrective action is extremely simple, providing you do exactly as the.Flight Handbook recommends. The first step is to break the stall. This must be done before any further corrective action will help. To break the stall, fuel flow <u>must be</u> reduced to zero. Stopcock the engine. It won't be easy to convince yourself to do this if

As soon as the stall has been broken, the next step is to get the engine running normally again. After the RPM has dropped to 60%. (70% if you have the P-1 fuel control), hit both start switches and place the throttle to full military. Once the engine is running again, do not retard the throttle or you may have the same procedure to go through again. The entire procedure from the time you stopcock until you have the running at military engine power will require about 20 seconds. Be sure and use it if you think you have that much time before reaching minimum ejection altitude. Remember, if

you decide to use this procedure, DON'T rush it. Let t' RPM unwind to the record mended figure before you reopen the throttle. If you don't, vou will have wasted precious time and altitude. Finally, when you do re-open the throttle, pop it right to full military. This technique causes the Inlet Guide Vanes to lag closed increasing the engine stall margin and reducing the possibility of an RPM hangup during acceleration. This is the only recommended stall clearing procedure. If you have done everything correctly and it hasn't worked out, don't try something else --GET OUT.

USAF accident records contain several reports featuring F-104s which received major structural damage after pilots attempted to execute precav Dama tionary landings. usually occurred because o. excessive sink rate at touchdown, over rotation at touchdown, landing gear not fully extended at touchdown, or because the landing was either too fast, too long, (or both) and the barrier engagement was at excessive speed.

Presently there are three separate F-104 landing patterns outlined in the Flight Handbook...the Normal Pattern, the Simulated Flame-out Pattern, and the Precautionary Pattern. When you use either of the first two, you must automatically decide to bail should the engine fail prior to flareout. If you experience a minor engine malfunction, or have some other difficulty that looks like it cou

FEBRUARY 196-

deteriorate to cause the engine fail, you should land from a ecautionary landing pattern. This pattern is similar to the SFO pattern, except the gear is lowered on flareout. Should the engine fail anywhere in this pattern, you are in a favorable position to continue the approach to a successful landing. Although the Precautionary Pattern will best provide for subsequent failures, it has several limitations that you must consider before you select it for an approach. Remember that the high key point should be 12,000 to 15,000 feet above the field and this may be impossible to reach because of weather. This pattern is not recommended at night since darkness keeps you from accurately judging flareout. The distance consumed between the re point at 240 KIAS and the achdown point at 165 KIAS is considerable, so you should flare short of the runway in order to touchdown in the first third. Since you will touchdown with takeoff flaps and 165 KIAS. instead of landing flaps and 145 KIAS, a longer stopping distance will be required. Also, landing gear must not be lowered until most of the flareout is completed or you will not be able to reduce the sink rate at touchdown to within the structural limits of the airframe.

The Precautionary Pattern is no more difficult to perform than a normal landing pattern but it is evident from the preceding discussion that in order to execute it properly and consistently you will have to maintain a certain proficiency. This can only be acquired through repetitive, conscientious practice. One of the best methods I know for maintaining a high proficiency level with limited practice is to develop a canned procedure. I mean to fly the same pattern all the time, using the landing runway as your reference point. Adjust the high key position to compensate for local wind conditions but don't vary the pattern. Like a golf swing, once you groove it, it won't leave you when the chips are down. Adverse conditions won't affect you quite so much either, since you can enter your canned pattern at any point that is below the lowest clouds and the rest of the pattern remains unchanged. If you remember that the secret to consistent performance is consistent practice, maybe none of those "Million Dollar" landings will be attributed to you.

In closing, I would like to

say that the best answer known to date for any given problem is-"THINK." Work out the possible solutions to a problem before you have to use them and vou won't get caught short. In other words, use your head. (This last statement probably sounds a bit basic to most of you so I will refer you to a recent incident in Spain. There, a young gentleman experienced a low altitude compressor stall. diagnosed his problem as nozzle failure, and promptly pulled the manual closure handle. The next handle he pulled was triangular in shape and painted yellow.) You won't go too far astray with the F-104 or any other airplane you fly if you approach them with the same philosophy--A FEW SECONDS OF CAREFUL BEFORE YOU THOUGHT REACH FOR THE SHINY KNOBS MAY PREVENT YOUR SPENDING SEVERAL HOURS WALKING HOME.

-

#### ABOUT THE AUTHOR.

Weldon T. Armstrong, Jr. is an F-104 Engineering Test Pilot at Lockheeds Palmdale, California Facility. "Army" began his flying career in 1942 back in Oklahoma when he soloed a J-3 Piper Cub. He joined the USAF in 1949 and served for twelve years in such capacities as Jet Instructor for student pilot and gunnery training, Combat pilot in the Korean conflict, and Experimental Test Pilot at Edwards AFB, California. He is a graduate of Combat Crew School, Pilot Instructor School, and the Experimental Test Pilot School.

During his civilian and military flying career, "Army" has compiled some 6300 flying hours of which over 5000 are in military fighters and trainers. He has checked out in every USAF jet fighter produced since the P-80 including all of the Century Series aircraft and has over 3000 jet hours. He has flown all models of the F-104 in experimental test, student training, and gunnery and has over 300 hours in the bird.



#### COL. WALLACE L. ANKEN

#### ABOUT THE AUTHOR.

Col Wallace L. Anken is Director of Materiel of the 108th Tactical Fighter Wing at McGuire AFB, New Jersey. He has been active in military aviation since 1930 with assignments ranging from crew chief and flight chief to Director of Maintenance and Supply, Commander of Maintenance and Supply Group, and Wing Director of Materiel. He was commissioned in 1942, has an FAA A&E license, Commercial Pilot license, and Ground Instructor rating. At one point in his career he owned and operated a government approved flying school and aircraft repair shop and was appointed a Designated Aircraft Maintenance Inspector for the CAA.

Top view, with bird in place.



F YOU HAVE cock access ladders, maintenance stands of all types, a few homemade stands, some ammo boxes, drop cords, air hose and other miscellaneous equipment taking up floor space in your periodic hangar, try putting together a periodic maintenance dock built of the adult type erector set material called Dexion.

Before you old maintenance types yell that you don't need docks, or can't use them on fighters, let us review a few of the benefits the 108th TAC Ftr Wg at McGuire Air Force Base derived from fixed periodic docks.

First we eliminated a varied assortment of maintenance stands that never were too effi-

FEBRUARY 1962



"B" Dock with an 108th bird in place.

ent and oft times were real ground safety hazards as well as fine skin denters for aircraft. We eliminated monstrous cowl and fairing racks, extension cords draped across the hangar floor, and many other hazards.

Basically; however, the greatest asset of this system is that it puts everything needed to perform a periodic inspection in the correct place--right at the mechanics finger tips.

The frame of the docks was constructed of Dexion bolted together. This Dexion allows for future change and modification without waste. Flooring is 3/4-inch plywood with a coating of an excellent skid and slipproof material called Ferrox. This anti-slip material is long lasting and applied with a trowel. It's far better than antislip paint.

Air lines, power outlets. shadow board tool racks for all tools required by the dock crew. light (explosion proof), bench stock, communications with Workload Control, built in desk for the dock chief, and many other timesavers for the mechanic were built in. Unused space under the dock was utilized for cowling, fairings, etc., everything taken off the bird is kept in one place.

Aircraft can be jacked up right in the dock. Areas both above and below the wing line are fully accessible.

The rear half of each dock is hinged and on rollers to facilitate moving the bird in and out of the docks.

The photos will give you a fair idea of these docks, but let your imagination run wild and you'll come up with dozens of ideas to save precious maintenance man-hours and increase the efficiency and quality of your periodics.

When the units at McGuire deployed overseas recently, the dock crews asked no questions, they disassembled their docks and now have them operating at their deployment base. When the wrench turners think enough of them to take them apart on their own and devise a way to ship them several thousands of miles they must be a payoff item.

DON'T KNOCK IT UNTIL YOU TRY IT!





An over-all view of the dock, but without the bird.

View from the front showing work area and pads used to protect wing.

> View of lockers, records file, etc. Note explosion proof light fixture.



Storage area for panels and other parts removed for access.



T HE J-65 FLAMED-OUT without warning. One second it was running smoothly, and the next second all was quiet. The Lt had been daydreaming, wondering what Europe would be like, and almost unconsciously maintaining his position in loose formation. The sun was bright and he could see for miles, but all he could see in any direction was sky and water. Dark grey unfriendly, empty water, appearing cold even at this altitude. Then the engine quit.

the

He glanced at the instrument panel, and saw nothing—absolutely nothing! He keyed the button on the throttle, remembered that he had things to do, pulled the throttle completely off and radioed. "Redbird 78, I've flamed-out!"

The voice that answered was crisp and unnaturally loud without the engine noise. "Redbird lead 78 here, is that you 79?"

He stammered, "Yes Sir."

"Play it cool, I'm joining on your wing. Redbird 80 go guard and alert air-sea rescue. I'm squawking mayday, and will stay with 79 until he gets a start."

Fortunately Redbird 79 was able to start his engine on the emergency system and continue the flight to his destination. He didn't know it at the time, but the unfriendly sea wasn't as empty as it looked.



ot so empi

A few minutes after Redbird 80 made the initial distress call, experienced Coast Guardsmen in the Rescue Coordination Center, 3rd Coast Guard District, were plotting his position and checking with their Atlantic Merchant Vessel Report (AMVER) section to see how many vessels were in the immediate area. During this emergency, twenty-eight were close enough to be available for diversion into the area had the Lt failed to get his airstart.

As with any form of surface travel these vessels are relatively slow, and would need some time to get into position for a pick-up, so a downed pilot would have to be wearing a survival suit and have a dinghy or he would not survive. But the important thing is, if he does his part a lot of other people are standing by ready, willing and able to pick up the ball and do the rest.

TAC ATTACK



#### **IN-FLIGHT VIGILANCE.**

Following is a general quote from the FAA: "It has been noted that some flight crews are lax in clearing the area prior to making turns in holding patterns when flying on an IFR flight plan under VFR conditions. When VFR conditions exist, there is a strong possibility that there will be VFR traffic operating and it must be remembered that all aircraft are governed by the see and be seen rule. Since holding patterns are established near terminal areas, it is reasonable to believe there will be more VFR traffic near the terminals, hence a need for even greater care in watching for other traffic."

-TWA Flite Facts

#### HOT SEAT.

A T-bird pilot leaned his chute up against the fuselage just opposite the aft cockpit ... and then along came the man with the hose. This gentleman proceeded to overfill the fuselage tank; however, according to the pilot, the parachute "appeared serviceable."

By the time he reached the runway, the pilot noticed that his seat was warm. But it was hot out that day, he pressed on. Ten minutes later it began to feel hot. Twenty minutes after takeoff it was downright hot and getting painful. The pilot revised his flight plan and scurried for the nearest field. By the time he got there he could hardly sit.

Two hours later he was able to continue, in a heavily bandaged state with a replacement chute.

The chute had been saturated with fuel which drained onto the seat cushion during flight and accounted for the hot seat.

#### DEMON RUM.

Alcoholic beverages are erroneously considered to be stimulants. The reverse is actually true. Alcohol is a powerful depressant and has an anesthetic effect. Even small quantities have a depressing action on the brain that quickly impairs judgment and muscular control.

Early in the course of intoxication, the loss of discrimination may give the illusion of stimulation or exhilaration. The further course of bodily impairment eventually leads to unconsciousness. The liver can oxidize about 1/3 of an ounce of alcohol per hour. This process continues until all is oxidized or eliminated from the bod Many hours may be required, depending on the amount of alcohol consumed.

Pilots must realize that flying requires good control of the nervous system, precise muscular coordination and faultless judgment. Pilots who have even the slightest impairment or hangover should ground themselves until fully recovered.

-APPROACH

#### PESKY PENCIL.

And speaking of loose objects, during a routine training flight someone's misplaced pencil lodged in the throttle linkage of a jet fighter. Unable to reduce power below 88%, the pilot landed his machine on a base with a good long runway and an operational barrier. The landing was warm and the aircraft took the barrier at about 140 knots. Although the aircraft received negligible damage one wonders why the pilot didn't use the fuel master switch to shut the unit down at an appropriate place on final or after touchdown.

#### F-104 EMERGENCY GEAR EXTENSION.

A new F-104 Interim Safety of Flight Suppleent has been distributed. It outlines instructions for emergency landing gear extension when present published emergency procedures are not successful. Briefly the procedure is:

\* Return gear lever to up position.

- \* Pull landing gear control circuit breaker.
- \* Pull manual gear release handle.
- \* Place gear lever in down position.

These changes should be entered in your checklist.

#### TIRED?

Fatigue is difficult to define, describe, or explain although we all have experienced it and know it exists. Perhaps the simplest way to think of fatigue, is to consider it as a temporary loss of the ability to cope with a task. Keeping in mind that the factors producing this fatigue are always associated with the task. Physical fatigue which is due to activity without recent rest and which results in a pleasant tiredness or in mild aching of muscles, is well-known and common to many physical tasks. In addition to this form of fatigue,

rcrews are subject to a form of mental or skill atigue which can occur even in idleness. It is related to the concentration, responsibility, and apprehension of flying or waiting to fly. It has been said that pilots are either bored to death, worked to death, or scared to death! All of these are mentally and physically exhausting and may accumulate day by day to a chronic state known as "pilot fatigue" unless relieved by frequent rest, recreation, flying, or leave from duty. -RCAF Flight Comment

#### RUSHED TO DEATH.

Shortly after an Air Cargo Constellation departed Midway Airport, a fire-warning light flashed on. The crew secured the affected engine and attempted an immediate circling approach below a variable 800-foot ceiling. The pilot banked the aircraft too steeply on base leg, and at full gross weight there just wasn't enough power in the three remaining engines to stop the sink rate that developed...the aircraft struck houses and exploded, killing the crew.

Nobody expects you to sit out your fuel supply fat and happy with a genuine emergency. On the other hand, nothing can plumber things quite so thoroughly as haste. Any time you have a situation where you are able to maintain altitude and talk to somebody on the radio, there's time to stuff your heart below your throat, take a few deep breaths, and think. If you have difficulty thinking, read a checklist (or the flight handbook, if you carry it along). If you're still too shook up for either thinking or reading, get someone else to read you whatever checklist is appropriate to your emergency. This is especially important (and unfortunately much harder to persuade yourself to do) particularly if your mental processes are in any way impaired, such as by hypoxia, fatigue, etc.

-On Top, Marine Attack Sq 143

#### YOU TOO?

A conversation overheard during the lunch hour.

"Are you settled in your new job, sir?"

"Oh yes, I find myself at the office at 0730 every morning. I am faced with making decisions all day. As a matter of fact I just haven't got time to think."

#### FOR THE BIRDS?

For many years birds have been a nuisance. around airports . . . and were even responsible for one fatal airline crash. Most efforts to discourage them didn't pan out too well, usually bothering humans more than they did the birds. According to an article by Flight Safety Foundation, this may be changed by a new technique discovered by a petroleum company.

Small amounts of a certain chemical are added to the birds' food. After they eat it, they behave in an erratic manner, apparently their gyros topple and they can't fly. They don't pass out, so their actions and protests warn other birds of the danger and they leave the area.

This method has worked on gulls, causing them to leave the test site for as long as a week... only three or four birds had to go beserk in order to discourage a flock of over 1000.

-

Although names and places have been changed, only minor editorial liberties were taken with conversation from the tower tape and witness statements contained in the accident report. A fictional theme was used to present the facts as they probably appeared to the wingman.

HINGS WEREN'T GOING exactly as planned that morning. I was supposed to be number four in a fourship flight on a special weapons delivery at Grumpy Corners Range. However, both lead and three had birds that were out of commission. That left me and Capt Winters in a go position. Since I'm a Lieutenant it was obvious who would fly two.

After making a formation takeoff we climbed to 5,000 feet

and proceeded to the special weapons range. The ceiling was about 11,000 feet and Capt Winters had already briefed that if the ceiling was low we would forget about doing over-theshoulder TIP'S. So the plan now was to do some lay-down deliveries.

Sate

Prior to clearing onto the range we opened dispenser doors and checked each other over. I took spacing and everything seemed normal until after we had made our dry pass. On the second run, which was wet, lead got one off but I got negative results.

As I pulled off target, I heard Capt Winters-say he had utility failure and was leaving the range. Glancing in the direction of the IP I sighted him and as I closed I saw he had a rather unusual configuration for this particular time and place. His nose gear was down! When I advised him of this, he started a steep climb and remarked that he had no indication of an unsafe gear in the cockpit. However, he had heard a noise like rushing air and had had to make a pitch trim change.

FEBRUARY 1962

After we slowed to about 'K he said he had lost his ality system, and figured he had a hydraulic leak. He also said that the nose gear now indicated down and locked. It looked full down when I first glanced at it.

Flying in close formation on Capt Winter's right wing, I could see a lot of hydraulic fluid on the right side of his fuselage. It started near the intake duct and spread from there toward the tail. This confirmed the suspected leak.

We discussed landing at a nearby base but since our only problem was utility failure and we had plenty of fuel, he decided to go on home. We could always use the other base for an alternate if we needed to. Looking over the sequence fevents, I'd say that until now ngs hadn't gone exactly as planned. This might turn out to be a day to remember.

My thoughts were interruped by Capt Winters telling me to go channel two. After I ohecked in, he called the tower and said,

"Fearless tower, 777 now 50 miles out. Declaring an emergency with utility hydraulic failure. Get a tug on standby to pull me off the runway so my number two man can get down, over."

"Roger, 777. Fire trucks and crash equipment are standing by."

"777, this is Mobile."

"Roger Mobile, go."

"Would you like to review the emergency procedures? ver." "Roger, Mobile."

"O.K., In event of utility system pressure failure you will not have any systems actuated by utility hydraulic pressure. However, you will have emergency gear extension and emergency brakes. Leading-edge flaps and speed brakes will be inoperative so burn out as much fuel as possible before landing. How much fuel do you have now? Over."

"Roger, 777 has 3,800 pounds and is 30 miles out from Fearless Tacan."

"I suggest you circle the field and burn out about 2,000 pounds before landing."

"Roger. I'll orbit at 10,000 feet."

"Do you have any other indications in the cockpit besides utility hydraulic failure?"

"My nose gear has fallen out but it is giving me a safe indication." All that was down was the nose gear, so Isaid, "Negative. Did you put your gear handle down and pull the emergency extension?"

"Extension is all the way out and gear handle down."

I looked at him again. He really looked crazy with just the nose gear down, things weren't going too well. I radioed, "Lead this is two. You don't have any main gear. Better give Mobile a call. You'll have to ask for foam if you can't get 'em down."

While Capt Winters was talking to Mobile and rechecking the emergency gear lowering procedures I saw one gear come down and lock. I called, "You have your right gear down now but the left side is still clean."

Mobile suggested yawing the aircraft. This didn't help. He tried positive and negative G's and every maneuver that would



For some reason I was getting a little impatient and suggested, "Let's put the gear down and burn the fuel out a little faster."

Capt Winters acknowledged and then asked, "Are they down?" conceivably help force the gear down but all he drew was a blank. I suggested that he pull the landing gear circuit breakers. That didn't help either.

This was one of those situations pilots have nightmares about. The Dash One,

TAC ATTACK

regulations, supplements and SOPs, had been followed but the problem still wasn't solved.

The handbook for the bird doesn't recommend landing with one gear up and one down, and the right main and nose gear couldn't be retracted.

"777 this is Mobile. You cannot attempt to land if you only have your nose gear and one main gear down. It will require a bail out."

"Understand."

"You'd better try putting the emergency extension in then pulling it out firmly as far as you can. Then try yawing the aircraft again."

"Roger, I've been doing that Mobile."

I broke in saying, "The emergency extension is all the way on the right."

"Roger, thanks. That's the one I've been pulling."

"I think you should start thinking about your bail out, get your personal equipment disconnected and head the aircraft for a clear area to the southeast before you bail. Do you want me to review the ejection procedures with you?"

"Roger, Mobile."

Mobile transmitted the procedures verbatim. I then heard the tower talking to the chopper, and knew that air rescue troops were standing by.

I moved out in the clear as his canopy blew off and moments later he came out. I had reminded him to try to beat the automatic system manually so he'd be sure to get out of the seat.

He said later that his chute opened automatically after he separated from the seat.

After watching 5-1/2 million dollars worth of equipment bury itself in the woods because of a loused up gear, I determined to follow-up and find out what happened.

Accident investigators and reclamation crews literally sifted sand in the crash area. They went down almost 15 feet looking for all possible parts.



Impact damage made their job rough. They didn't find ever thing either, but from what the did find, they decided that the nose gear was never locked up, but was held up by utility pressure... until a leak in the system let it fall. This could have been from two reasons.

Periodic inspection cards didn't clearly show how to check the linkage for a correct overcenter position, or a foreign object could have lodged between the uplock housing and the cylinder rod end.

Investigators found that the gear indicator switches could easily be grounded out, and assumed that this was why Capt Winters didn't get an unsafe indication when the nose gear first fell.

The same leak that allowed the gear to fall, bled out the system...but the real joker the deck came from a 7/32-inc screw head which was found trapped in the pressure port of the left gear emergency control. This screw head prevented pressure from reaching the uplock cylinders.

There was no record that maintenance had ever been performed in the immediate area of this valve since the aircraft was delivered, so it must be assumed that the screw managed to find its way into the system during assembly at the factory.

The moral to this story is obvious. Good housekeeping is a must for everyone. The difference between flying and falling could be as little as 7/32 of an inch!

FEBRUARY 1962



HE OLD SARGE carelessly refolded the sheaf of paper he had been reading, laid it on the desk, and rubbed his eyes.

Lt Green, who had already seen the message asked, "What you think of that one, Sarge?"

The Old Sarge leaned back in his chair and reached for his pipe, "In the first place, if I was a pilot I'd feel mighty uncomfortable sitting on an ejection seat that might not work when I wanted it to ... or worse yet, which might go off was I to

ake a hard landing . . . " He paused to light the pipe he'd been packing. "...So I think we'd best treat it as an immediate action item. We can't afford to take that kind of risk...it'll take about an hour for each aircraft."

Lt Green nodded agreement. "That's pretty much the way I see it, too. Go ahead and get the troops started on it."

A little later, the Old Sarge came back into the office, wiped the slush off his feet and wriggled out of his jacket. Backing up to the radiator he said, "That ol' ground hog will sure see his shadow today. Man, it's bright out there."

"If he can dig through all that darn snow." Lt Green said, looking up. He used to like snow,

AC ATTACK

but lately had lost a great deal of his enthusiasm for the stuff. A badly mangled rear quarter panel on his little red sports car accounted for the change in attitude.

"Say, on that message we got," the Old Sarge said, inclining his head towards the cluttered top of his desk, "Why in the dickens would they make that a 30-day compliance?"

"Weren't thinking, Iguess."

"No, that's not exactly what I mean. Here..." he reached over and picked up the message, studied it a second, then read, "Work will be accomplished not later than thirty days or not later than one of the two next scheduled Periodic Inspections, whichever occurs first after receipt of this Tech Order. Failure to accomplish the work by the expiration date shall make an exceptional release mandatory until compliance is accomplished."

He tossed the message back on his desk. "Why didn't they just tell us to put the birds on an exceptional release until compliance and forget about this thirty day, or next periodic nonsense. I'm speaking of other stuff, this ejection seat T.O. should have been a red cross item, and corrected before the next flight. Lt Green thought this over for a moment, then said, "I think I see what you mean. Why specify a time interval and then give carte blanche to carry the thing indefinitely. It would sure save a lot of unnecessary reading—which is not to be sneezed at."



The Old Sarge grinned, "Yes sir, but that's not all it'd save. It would cut down on the paper work, but more important, putting the aircraft on a diagonal just as soon as these are received would stop some of these things from getting lost in the shuffle....after all, if the thing is important enough to call for a diagonal 30 days from now, it should go on one right away. Shucks, the condition remains the same until the T.O. is complied with, don't it?"

-



#### USE OF NRTS DIGEST.

AFLC publishes a quarterly digest of information taken from "Not Reparable This Station" (NRTS) tags. It lists the items not being repaired at base level, why, and what the AFLC item managers are doing to help bases become more self-sufficient. Maintenance managers at all levels should read and analyze these digests regularly.

According to the latest digest these areas need improvement:

- \* Expendable items which should be condemned at base level are being shipped NRTS.
- \* Part numbers listed are not identifiable or the wrong Federal Supply Codes are used.
- \* Items authorized for local repair are reported as "Not Authorized for Repair."
- \* Lack of technical data is given as the reason for NRTS when technical data is obtainable upon request.

Base maintenance officers should review bench check and shop repair operations to insure that each NRTS action is taken on the basis of correct information, and that coding notations are accurate and appropriate.

#### LET'S TALK TORQUE.

Gone are the days when a mechanic could tighten a nut, give it a half turn more and figure he'd torqued it right. The number of mishaps caused by loose or broken bolts and fittings is both warning and proof that use of proper torquing procedures will prevent accidents. The design specification for practically every nut, bolt, and screw used to assemble a modern aircraft is so close, that most will fail under a maximum load condition if they are not properly pre-loaded during installation. Torque limits establish this pre-loading and are given in the T.O. . . . but knowing and using proper torque limits is not sufficient within itself. To be fully effective, the torque wrench that is used must be accurate and used correctly.

Torque wrenches are actually an instrument and under no circumstance should a user try to adjust one. If the indicator is moving oddly, theuser should have the wrench checked and reca brated, even though it isn't ready for its period. accuracy check.

-NAS Weekly Summary

#### WATER, WATER EVERYWHERE

All aviation fuel inherently contains water. Regardless of how carefully tanks are drained, a small amount of water will always be present. So will condensation. Normally, maintenance personnel drain all tanks 30-minutes after an aircraft is refueled and again just before it is flown. Unfortunately, this isn't always possible. Some flights are made immediately after the aircraft is refueled, and water doesn't have time to settle and be drained off. Further, as much as 1/4-pint of free water is released from 500 gallons of fuel when it is cooled from 75 degrees F to minus ten degrees. This is more than enough ice to cause fuel control malfunctions. This is why fuel system icing will continue to be a hazard in T-33s and other aircraft that have no system for heating fuel before it goes to the engine.

#### FLIPPED LID

A maintenance man was in the cockpit of an -104 with the engine running, checking the pressurization system when the pressure regulator malfunctioned.

Apparently he had a head cold, because the increased pressure made him uncomfortable. To ease the pressure, he unlocked the canopy. It swung back beyond its limits and rotated the torque tube that controls the canopy hinge plate retaining hooks. Both initiators fired and one more ground accident was added to the list.

There are three ways to relieve cockpit pressure in the F-104 and all three are in the book. You can open the ram air scoop. You can shutdown the engine, or you can move the canopy handle forward a half inch and hold it there until the pressure bleeds off.

Supervisors should make certain that everyone who does work on the aircraft with the canopy closed and the engine running knows this. If a trainee is in the cockpit, keep in touch with him thru the intercom system...don't let him do anything without checking with you first.

#### CKED UP

A pilot had to be rescued from his T-bird after--of all things—making a normal landing and trip to the parking ramp. Seems he couldn't unlock the canopy! After all efforts to get it open failed, someone got an ax and chopped him out.

The canopy latch had the old type bearing—the one that was supposed to be replaced by a T.O. back in 1959 or 60. This bearing broke and jammed the locking mechanism.

#### **BASE MAINTENANCE SELF-SUFFICIENCY**

Investments in pipeline supplies can be reduced and depot efforts can be directed to higher priorities and more complex jobs if we follow the USAF policy—maximum maintenance at the lowest echelon. The Air Force doesn't want to make depots out of bases, but it does want to improve base self-sufficiency for supporting weapon systems.

What are your capabilities? What can you do to increase the extent of repairs done at your base? These questions may assist you in evaluating your program.

#### HAVE YOU:

\* Forecast spare part needs to base supply?

\* Included repair bits and pieces in bench stock requirements and insured that an effort is being made to secure them?

\* Requested the repair kits listed in -4 handbooks?

\*Asked the AFLC Kit Manager about recommended new kits?

\* Reviewed unit allowance lists (UALs) carefully and included the tools and test equipment required? Remember the price tag on the new and better equipment though, and if a substituted item is furnished and it will do the job, use it.

#### DO YOU:

\* Know why your personnel are coding items not reparable this station (NRTS)? A recent inspection revealed approximately 90% of all reparables coded NRTS were in a category which did not require explanation of why they could not be repaired.

\* Have an OJT Program that is active and well planned? If your repair program is really good—you have a good OJT Program.

\* Use Contract Technical Service technicians to train your personnel?

\* Use all resources and personnel to fullest advantage?

#### WHAT ARE YOU DOING TO:

\* Improve utilization of man-power to increase the base self-sufficiency program?

\* Assure that the ratio of direct to indirect man-power is one to one?

\* Reduce standby, lag time and other productive indirect codes which reduce over-all base repair capability? A really good manhour scheduling section is a guarantee of success.

\* Finally, have you reviewed your monthly records to assure yourself that you are increasing the self-sufficiency of your organization and are performing all maintenance at the lowest echelon possible?



#### LAU-3A ROCKET ADAPTERS.

All LAU-3A rocket adapters have two shorting clips. When the LAU-3A rocket adapter is attached to the pylon one of these clips is removed and a pigtail is installed. The second clip is supposed to be removed prior to electrical checkout, but maintenance personnel sometimes forget it. Failure to remove this clip causes limiting resistors in the Auxiliary Armament Relay Box to overheat and burn adjacent wires. Damage to these wires causes malfunctions in the munitions control circuit and inadvertent releases of F-105 centerline tanks. Rocket launcher checkout procedures should contain a warning to insure removal of the second shorting clip prior to electrical checkout.

#### LOOSE GRIP.

Shortly after lift off, an F-105 pilot noticed that the control stick grip was loose. He looked it over and saw that it wasn't safetied, tried to tighten it, and lost stick grip trim and radar range selection. Right then, he decided he'd better let well enough alone. After landing, he tried to tighten it again, and it came off in his hand.

Instrument technicians had removed the stick grip in order to take out the instrument panel to comply with a T.O. They didn't make an entry in the Form 781 regarding the stick grip, and it wasn't inspected. Obviously it should have been.

The stick grip is definitely part of the aircraft control system . . . and any work on the control system should be entered in the 781 under a red cross. This will insure that a proper inspection is made. Proper safeguards have been set up to prevent mistakes such as this but these safeguards are worthless if someone short circuits them by failing to make proper entries.

#### FOD IS A LUXURY

Did you know that each F-100 tire cos \$112.00? They do, and one Safety Officer figure. that over \$16,000.00 per month is poured down the drain at <u>one</u> TAC Base because cuts and other damage make it necessary to change tires before they've lived out their full life. This would buy a lot of potatoes--particularly when you multiply this figure by the number of TAC Bases. This is one more reason why dirty ramps are one luxury we cannot afford.

Be FOD conscious. Help eliminate this hazard by picking up nuts, bolts, screws, broken glass and other tire and engine wreckers. By doing this, you will save uncle some money and may save someone's life.

#### BENCH CHECK DEFINED.

The following article appeared in TIG Brief, 15 September 1961. We are republishing it for the benefit of those of you who may not have seen the original article.

There is a difference between inspecting an item and bench-checking a spare part. A benchcheck is defined in AFM 66-1 as action by a field-level maintenance shop to determine the condition status of an item and whether or not can be returned to serviceable status. The bench check also determines whether or not an item can be repaired at base or depot level. In this connection, it is extremely important that no reparable or condemned item be shipped off base without the appropriate maintenance production document being processed through statistical services. The bench check should not be confused with the quality inspection of material used, or other factors which concern the physical make-up or quality of an item rather than its capability to perform its function.

One command has noted that maintenance shops have been confusing these two operations, and using the "B" action taken code (benchchecked--serviceable) for both inspections and bench checks. Actually, the quality inspection is properly coded "X" (inspect).

Maintenance supervisors should be sure that this distinction is being made at their shops, and that all other codes are being used properly.

FEBRUARY 1962

# Mose-S= SAFETY

the receiver pilot "S"ing the

hose after contact. The relative

shortness of the hose made a

smooth "S" impossible and the

result was two definite kinks

resembling a "Z." Hoses wore

rapidly at the kinks causing

leaks or complete hose failure.

The kinks also prevented nor-

mal fuel flow and required the

fighter to stay on the drogue

longer, multiplying the chances

The original tests were con-

drogue proving most

T HE DROGUE just broke my canopy. Gotta land at Kindley now." The F-100 pilot pulled slowly from the tanker fleet and turned toward Bermuda.

The tanker commander mumbled something about poor equipment then said, "Was hoping we wouldn't have any incidents during this deployment."

Today incidents such as this becoming less and less juent. With the cooperation of SAC and its KC-135 tankers, TAC has been conducting refueling tests with its century series fighter aircraft. Annual training requirements have been established, and now this type refueling is becoming quite matter of fact--almost without incident.

But this did not come easy. Since the first test mission was flown in the spring of 1960, numerous problems have been encountered with difficulties including items such as inadequate lighting, canopy losses, bent and broken probes, hose failures, drogue instability and assembly failure, and hose whip.

The most outstanding probm encountered; however, was

ducted with the hose and drogue equipment from a KB-50 attached to the boom of a KC-135, but this equipment was not satisfactory because of the higher operating speeds and altitudes of the KC-135. Many hose-drogue combinations were designed and tested with an internally stiffened hose and

pipe

for trouble.

satisfactory. However, this did not completely solve the "S"ing problem. Finally, a universal trunnion was developed and installed between the drogue assembly and the end of the hose. This trunnion proved to be as much an advancement to aerial refueling as air-to-air TACAN to aerial rendezvousing. The trunnion permits the hose to make a smooth soft curve and practically does away with the old "S" or "Z." Excessive hose wear and failure because of kinks has been eliminated. Fuel flow remains constant, and fewer probes are bent or broken. Although total evaluation of this equipment has not been completed, preliminary analysis certainly indicates that the hose minus the "S" ing equals a new margin of SAFETY.

#### ABOUT THE AUTHOR.

Master Sergeant Earl A. Jones is a boom operator on a KC-135, who supervises boom operators assigned to the 99th Air Refueling Squadron, Westover AFB, Mass. During the KC-135 fighter tests, Sgt Jones rode in the rear seat of a F-100F to observe and learn the problems encountered by receiver pilots. Sgt Jones recently graduated from the 8th AF NCO Academy where he demonstrated his ability and interest by earning four of the five major awards given.

## RECOGNITION



TECHNICAL SERGEANT RICHARD L. GOAD, 4433d Air Transport Squadron, Dobbins Air Force Base, Georgia, has been selected as the Tactical Air Command Crew Chief of the Month for his exceptional performance. He consistently seeks improvement in methods and procedures, an example being a tool he designed to make it easier to install pressure seals on cabin entrance doors of C-131 aircraft. Sgt Goad readily accepts responsibility and always completes assigned tasks with a minimum of supervision. Through conscientious planning and hard work he was able to maintain an in-commission rate on his aircraft of 85.8% during a one-year reporting period. This rate was considerably higher than the average or normal for the period surveyed. Sgt Goad ranked second in his class at the 9th Air Force NCO Prep School and was the winner of the course speech award.



FOR HIS KEEN FORESIGHT in recognizing a potential problem area and for his initiative in taking corrective action, CMSGT LYNN E. HENRY of the 4th Consolidated Maintenance Squadron, Seymour Johnson AFB, North Carolina, has been selected as the Tactical Air Command Maintenance Man of the Month, With typical resourcefulness, Sgt Henry realized that Air Force maintenance personnel had only limited knowledge of the "Silver Cell" battery used in F-105 aircraft and would be apt to mistreat it. To forestall this, he designed and built a battery laboratory for conducting research and analysis. He compiled data from his tests and collected information from flight line personnel to write a pamphlet on the subject. This pamphlet is now used worldwide in F-105 units.

# TAC TALLY

MAJOR RÂTE All Aircraft 1 Jan - 31 dec			
1961	1960		
14.6	14.2		

ACCIDENT FREE (MAJOR & MINOR)					
JET					
ACTIVE	MON	THS	ANG		
474 TFW	9	37	123 TRW		
CONVENTIONAL					
	* <b>F</b> 1.		NAL		
ACTIVE	MON	THS	RESERVE		
ACTIVE 4430 ATG	MON 37	THS 74	RESERVE		
ACTIVE 4430 ATG 314 TCW	MON 37 29	THS 74 61	RESERVE 442 TCW 434 TCW		
ACTIVE 4430 ATG 314 TCW 464 TCW	MON 37 29 10	THS 74 61 52	RESERVE 442 TCW 434 TCW 302 TCW		

#### DECEMBER MAJ ACCIDENTS

ACFT TYPE	113 TFW	442 TCW	127 TRW	4510 CCTW		
F-105						
F-104						
F-103						
F-100	2					
F=86						
F-84						
T-33				1		
CONV.						

#### MAJOR ACCIDENT RATE 1 JAN-31 DEC

TYPE	1961	1960
F-105	23.9	55.9
F-104	71.8	34.1
F-101	5.5	23.6
F-100	19.8	26.7
F-86	35.5	11.6
F~84	33.2	37.2
B-55	22.6	0
<b>T</b> -33	5.4	3.7
KB-50	5.6	8.6
C-130	6.6	0
C-123	5.5	1.6

