

flying

SAFETY

DECEMBER 1987

Potpourri

Common Sense

Safety, Comfort, and Reliability

Aviate, Navigate, and Communicate



Always at the ready, yet the first and most fervent to pray and strive for . . .

PEACE ON EARTH

The Commander's Holiday Message



■ The Christmas and New Year's holidays are a joyous time of year for being with loved ones and friends. It is also a time to reflect on this past year and thank God for all the many blessings He has given to us, and resolve to do even better in the coming year!

I am very honored to be the new Commander of the Air Force Inspection and Safety Center, having replaced an absolute legend in his own time, Major General Fred Haeffner. Our FY 87 statistics are impressive and indicate the Air Force and our major commands view safety as a principal element of their flying program.

Our Class A mishap rate of 1.51 was the *second lowest* in USAF history. Our Class A and B combined mishap rate of 2.08 was the *lowest* in USAF history. Also, our Class A rate marks the fifth consecutive year the USAF has been at or below 1.80, and our Class A operations factor mishap rate of .87 was the best ever recorded.

Our fighter/attack aircraft also set records. Their Class A mishap rate of 3.01 was the lowest in USAF history, and their Class A operations factor mishap rate of 1.56 was the best ever.

Our safety program is alive and well because we are *all* involved with it. Not only are commanders and supervisors supporting the Air Force Safety Program, but *all* our operations and maintenance people are actively involved. Supervisory emphasis, better maintenance techniques, and quality control all contribute to our safety record. And behind all these facts and figures is the finest air force in the world. We should all be very proud of what we have accomplished.

In 1987, we reached other notable milestones — this year saw the 40th anniversary of our Air Force and also marked the 200th year of our Constitution. Although in 1787, America was the "new kid on the block" of free nations, our hard-won freedom has become a beacon of light that continues to shine around the world. Both our Air Force and our Constitution are proud traditions that have continued to grow. In pledging to defend the Constitution, we have promised to guard the democratic principles that inspired the framers of our Constitution 200 years ago.

My wife, Dawn, and I wish you the happiest holidays and a safe and great '88! ■

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DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, OSAF

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THERE I WAS

■ I chanced by a group of fledgling pilots at the bar the other night and overheard that famous opening statement. No doubt another daring episode of superior skill and cunning, I thought. I couldn't help but identify with the lad, for I'm sure I've begun a few of *my* tales with those very same words.

But while I stood there, I recalled what an "old head" had said to me one night at another bar . . . about how bar talk is usually inflated by the storyteller to "properly" distort the abilities involved. The fact is accepted by all, he stated, and we both agreed that it usually made the story a bit more interesting. But then he went on and talked about an underlying and seldomly recognized benefit of these tales: The

sharing of the lessons learned as well as the actions taken to preclude a disastrous ending. The tale teller is actually teaching through example . . . the best method yet devised, short of being there yourself. I agreed again, and we closed the topic with another round.

But as I drifted back and listened to the young pilot begin his story, I couldn't help but think of the times when all did *not* go well. Those times when things did *not* function "as advertised" and the results were disastrous. Now the tales *those* pilots could tell, if only they were still with us . . .

And what about the times when I've been in a tight situation, made the wrong choice, and still lived through it? The times when for-

tune shined upon me and I came through it all, perhaps not smelling quite like the proverbial rose, but indeed alive. The personal education gained from these experiences is valuable, too! Even perhaps more valuable than the typical "fighter pilot" story. But to tell such a tale would definitely not convey the image of a true fighter pilot . . . the very image that I . . . ah, I mean the storyteller . . . desires. So how to tell it? There should be a way . . . there must be a way . . .

"Excuse me, gents, but I couldn't help but overhear your story. I recall a similar event that happened to a *friend of mine* one time.

THERE HE WAS . . . " ■

POTPOURRI

LT COL JIMMIE D. MARTIN
Editor

■ Winter can be a beautiful time of the year. The air is clear and cold and the snow covers everything with a clean, white blanket. But, as a flier, you will find a potpourri of

hazards in the winter season. Let's look at a few incidents from the past year and see what we can learn from them.

Sloppy Takeoff

■ As the C-130 prepared for departure, the weather was 35 degrees Fahrenheit, rain with snow flurries, and surface winds 050 at 25 gusting to 31 knots. There appeared to be about 2 inches of slush on the runway.

At 100 knots on takeoff roll, the No. 3 engine experienced a propeller overspeed to 105 percent RPM with a corresponding torque loss to 5,000 inch pounds. Since they were well past refusal speed, the pilot continued the takeoff.

Shortly after becoming airborne as the Hercules climbed through 600 feet AGL, the No. 2 and 4 engines suffered the same overspeed and loss of torque. With three engines losing power, the pilot was unable to maintain altitude and began a shallow descent.

Suspecting an essential AC electrical bus problem, the engineer turned off the No. 2 generator. The condition didn't change, so he opened the essential AC bus synchrophaser circuit breaker. This restored power and the pilot was able to level the aircraft at 200 feet AGL.

The crew investigated and found equipment under the flight deck covered with slush and water. Suspecting an electrical short in the synchrophaser, they disconnected it and returned for landing using mechanical propeller governing. During the return flight, the crew no-

ticed a continuous vibration in the aircraft.

After landing, they discovered the nose gear doors and several antennas had been damaged by the slush. It had also bent the nose gear inspection door panel in the nose gear well which allowed water and slush to enter the aircraft equipment bay.

Remember, slush is heavy, and when thrown up by the wheels at high speeds, can cause considerable damage to your aircraft. Check your flight manual for applicable precautions when operating in slush.

Where's the Runway?

■ The C-21 was on a scheduled

passenger transport mission. Snow, which had been falling for over 4 hours prior to the takeoff time, had covered taxi lines and reduced visibility so that a follow-me vehicle was required to guide the crew to the runway. Actual runway visual range (RVR), runway condition reading (RCR), and runway surface condition (RSC) values were not available to the crew.

The departure weather forecast given the crew 2 hours before takeoff called for a partial obscuration with 1,200 feet overcast, 1 mile visibility with light snow and fog, temperature and dewpoint 33 degrees Fahrenheit, wind 360/10, wet runway. On the runway, they called for an update and were given indefinite

continued



POTPOURRI

continued

400 feet obscured, ½ mile visibility in snow and fog. An observation taken 1 minute after they started the takeoff showed the visibility had dropped to ¼ mile in heavy snow and fog.

The aircraft commander (AC) estimated the current RSC to be 1.5 inches of snow, based on their tire tracks during taxi. Using the latest braking action report (fair to poor) for reference, he computed takeoff data using an assumed RCR value of 08.

As the AC advanced power for takeoff, the aircraft began to slide. He released brakes and began the takeoff roll. Due to the poor visibility and the absence of runway alignment references, neither pilot realized the aircraft heading had deviated approximately 2 degrees to the left during the slide.

Shortly after reaching V1 speed of 124 knots, the AC realized the aircraft was tracking diagonally across the runway. He attempted to correct the ground track with right rudder. The rudder changed the aircraft heading but didn't change the

ground track, and a slight left skid developed.

The AC knew he wouldn't be able to accelerate to rotation speed before running off the edge of the runway and initiated an abort. The aircraft departed the runway and hit a raised runway light with the left gear and slid to a stop 500 feet later about 50 feet to the left of the runway. The crew and passengers depplaned without injury. The aircraft suffered minor damage.

The crew received very little help in this situation. In fact, they were led down the proverbial "primrose path" in some ways.

The weather had been deteriorating for the past 24 hours. The conditions had gone from 50 degrees and rain to near freezing with heavy snow. As a result, the runway condition had changed from wet to snow-covered slush 1.5 to 2.5 inches thick.

In spite of the changing weather conditions and a C-21 report of fair to poor braking conditions 1-½ hours before the mishap aircraft attempted takeoff, the airfield man-

agement people had not measured either the RCR or RSC as required by AFR 55-48, *Airfield Management and Base Operations*.

The crew had very limited experience in operating in such conditions. The AC had flown the C-21 from snow-covered runways on two previous occasions, but never from an unplowed surface. The copilot had never operated from snow-covered runways. Using all the information available to him, the AC determined all operating criteria had been met. But, unknown to the crew, the existing surface condition exceeded both technical order and command operating limits.

As the aircraft speed increased on the takeoff roll, the effective visibility decreased to an almost whiteout condition. With virtually no visual references, the crew was unable to see the aircraft drift until it was too late.

This crew learned a valuable, but expensive lesson. They were fortunate the damage was not more severe and no one was injured.

Be careful of operating in that



Be extremely careful when operating on snow-covered surfaces. It can be very difficult to recognize an incorrect runway alignment without good outside references.

"gray area" where things are officially OK, but appear marginal. If you don't get the information you need to carry out your mission or to make a good decision, ask for it. Above all, use your judgment to make a decision based on weather and runway conditions, mission requirements, experience and proficiency levels, and any other pertinent factors. What may be "legal" may not be acceptable. Don't be pushed into trying to do something you think is unsafe. As the aircrew, you are best able to make an intelligent go — no-go decision. Exercise your prerogative.

What Ice?

All of the winter hazards aren't on the ground. They can quickly turn an uneventful mission into a very eventful one. Consider the following incident.

■ Two pilots were returning from a cross-country flight in a T-37. During the penetration, they descended through a cirrus deck from 16,000 to 10,000 feet MSL. Passing 12,000 feet, with power set at 70 percent RPM on both engines, the No. 1 engine flamed out. An emergency airstart was successful, but the



In-flight icing can surprise the unwary crewmember. You don't have to be in the middle of a winter storm to experience icing. You just need ambient temperature at or near freezing and high humidity. Be alert for these conditions.

engine flamed out again 2 minutes later. A second emergency airstart was also successful, and the power was set between 75 and 80 percent RPM.

Shortly after this, the No. 2 engine RPM rolled back to 36 percent. The pilot advanced the throttle and the engine recovered. The pilot then set both engines at 75 to 80 percent RPM until the landing was assured. No further engine problems were experienced, and both engines operated normally when the power was reduced for landing.

After landing, they found the engine ice warning system was inoperative. Neither pilot saw any indication of icing during the descent, but the cloud conditions they penetrated were conducive to structural and induction icing. These conditions are explained in both AFM 51-12, *Weather for Aircrews*, and T.O. 1T-37B-1. In the simplest possible terms, they are: Ambient temperature at or near freezing and high humidity or visible moisture present.

See *Flying Safety*, October 1987, for a complete discussion of icing.

After extensive analysis of the engines and fuel system, investigators decided the most likely cause of the engine problems was icing. The ice probably accumulated around the intake areas first and was subsequently ingested by the engines.

Make sure you know the flight manual restrictions for your aircraft and know what to expect under the varied weather conditions you may encounter. Understand your aircraft and know the proper preventive actions necessary to avoid weather-related problems. Also, know the proper corrective actions for unexpected situations you may run into.

Let's hope the only potpourri you experience this winter is the kind that makes your house smell nice as you sit in front of the fireplace and look out the window at the snow. Enjoy the beauty of winter, and plan ahead so you can continue to fly safely. ■



COMMON SENSE, History, and Perspective

LT COL JIM CHRISTOL
Directorate of Aerospace Safety

■ As a brief introduction into my credentials, let me just say that I have over 3,000 hours flying time, mostly in high performance fighters. This is not much time compared to many jocks out there; however, well over 1,000 hours in both the F-15 and F-106 have given me a solid perspective on what it takes to employ fighters effectively and safely. I have experience in ADC, TAC, NATO, and PACAF. This three-part series will focus on the safety aspects of effective fighter employment. While some tactical situations are used in this report for illustration, be sure to refer to your latest tactics manuals, intelligence reports, and weapons officer updates when planning your missions.

One statistic that may surprise you is that "operator factor" Class A mishaps were nearly twice as plentiful as "logistic factor" mishaps in 1987. In addition, many more operators lost their lives in 1987 than in 1986, and a disturbing number of

1987 ejections were out of the envelope. Therefore, it is not surprising that increased efforts to improve aircrew situational awareness (SA), especially when involved in low-level missions, are underway. My approach to successful fighter employment encompasses three broad areas — common sense, history, and perspective. This month I shall discuss common sense.

Upgrade Sortie

Your mission is two versus two (2v2) air combat training (ACT). You are the wingman and are in upgrade training since you recently arrived from RTU. The bandits are flying a maneuvering fighting wing and you get Tally-2. Lead clears you in, and as you suddenly load up the aircraft to maneuver to the bandits' 6 o'clock, you gray out due to an improper straining maneuver. You slack off on the gs and clearly see what you *think* is the trailer (actually you are now on the leader). You press the attack, and in the conversion turn pass belly-up directly in front of the trailer in the bandit alti-

tude block. You miss each other by 100 feet. The bandits never saw you until the near midair.

Lessons Learned

It is tactically unsound to turn in front of a bandit. Belly checks do serve a purpose. Lose sight — lose fight or life. In this example, the wingman went from high SA to low SA in a very short period of time. Rather than press the attack, he should have followed established peacetime rules of engagement and informed his leader of the new situation (Tally-1).

Red Flag

Your mission is combat air patrol with specific instruction to oppose a search and rescue (SAR) force at Red Flag. You are a two-ship. Intelligence briefs you that you can expect helicopters, OV-10s, and A-7s in the SAR force. The weather is clear. It's your lucky day because you spot the helicopter inbound to the target area. He is at low level, moving along a dry river bed with two

OV-10s circling in close escort. There are no A-7s in sight! Flight lead directs sequential AIM-9 attacks from a racetrack pattern against the helicopter. Lead makes a successful rear aspect attack on the helicopter and directs the wingman in who also makes a successful pass. Great training! Great fun!

Flight lead elects to do another circuit, and suddenly four A-7s arrive on scene. Both lead and wing again make successful passes. The wingman feels he has excellent SA since he has lead, the helicopter, both OV-10s, and three A-7s in sight. The wingman completes his pass, looks over his left shoulder to check lead's 6 o'clock when the world gets momentarily very dark, noisy, and turbulent as the fourth A-7 passes from right to left a few feet above. The A-7 pilot maneuvered at the last moment to prevent collision.

Lessons Learned

In this case, the mission had already been accomplished successfully, and even though both pilots maintained what they perceived to be a high degree of SA, they stayed too long in a very dense aircraft environment, thus increasing the mid-air collision potential. The slow speed escort situation is one which should be carefully considered as it was in the following mission.

Red Flag, Cope Thunder, Maple Flag

Your four-ship is fragged to perform defensive counter air (DCA) against a four-ship of C-130s on a tactical resupply mission. Intelligence briefs you that the C-130s will be escorted by F-5E Aggressors. Your four-ship ingresses at low level to avoid enemy GCI detection and finds the C-130s on radar first and then visually. You perform a visual sort, and three of the C-130s are "killed." No F-5s are in sight. Your four-ship executes the pre-briefed post-merge flow pattern at low level. Shortly thereafter, your radar detects potential bandits approaching the C-130s. You remain at low altitude and achieve total surprise as you target the remaining C-130 and well over half the supporting Aggressor force.



Safety is a principal element of effective fighter training. We must profit from previous experiences.

Lessons Learned

Remember that in any *slow speed escort* situation, the concentration of aircraft in a small amount of airspace goes up dramatically. By decreasing the amount of time your four-ship spends in this concentrated arena, you also decrease the midair collision potential. The common sense acquired from the experience on the helicopter mission was well applied in this case. Good mission.

Cope Thunder

You are on a silent launch at Cope Thunder and are following a four-ship of F-16s. Launch is normal, and your four-ship is about 2 miles directly in trail with the F-16s on the established routing to the Cope Thunder airspace. Wingmen are spaced at 500 feet, with No. 3 ap-

proximately 1,000 feet out. Suddenly the F-16s drop flares to check out their systems, and these flares begin raining down on your four-ship. Three aircraft maneuver to miss the flares; however, the pilot of the fourth aircraft is "heads down" updating the INS, and a near midair collision results. This was a close call which occurred in a fairly routine portion of an otherwise challenging mission.

Lessons Learned

Expect the unexpected during *all* phases of flight. Keep your head out! Don't fly directly behind potential flare dropping aircraft, and be wary of flares coming out in your face as early as takeoff roll. Finally, consider putting flare droppers behind you in the flow, conditions permitting.

continued

COMMON SENSE, History, and Perspective

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Team Spirit

You are on a four versus four (4v4) DACT mission, and your adversaries are F-4Es during Team Spirit in the Republic of Korea. This mission is also your annual tactical checkride. Fight's on! Your decoy tactics combined with chaff deception work well. You achieve total surprise as your four-ship pops up from low altitude with a perfect sort. All F-4Es absorb face ordnance, and your four-ship flows through in mutual support. The next engagement results in a well-developed vertical "fur ball." You shoot a valid AIM-9 at an F-4 that just came over the top and is turning toward you from above. You pull your nose off at 10,000 feet range but notice the bandit aggressively pointing directly at you. This continues, and you feel the familiar "bump" as two high performance jets pass very close. You avoid a midair by rapidly pulling away from the plane of motion of the bandit at the last moment. In debriefing, you learn the bandit was aggressively maneuvering toward another member of your four-ship and never saw you.



Being thoroughly familiar with all aspects of a deployment or cross-country can prevent potential mishaps.

Lesson Learned

Even though you are sure the bandit must see you, *never* depend on it. In this case, the crew in the bandit aircraft was padlocked on someone else.

Anywhere

You are en route on a deployment or cross-country, and due to an in-

flight emergency, are forced to divert and make an approach-end arrestment. The BAK-12 is 800 feet from the approach end of the runway. There is an MA-1A barrier at the threshold, and it is stowed (down position). Your plan is to touch down just beyond the threshold so you'll have time to get the nose down prior to engaging the arresting gear (BAK-12). After hearing your plan, your flight lead recommends the MA-1A be completely removed. This is accomplished in about 10 minutes, and then you accomplish an uneventful approach end arrestment.

Lessons Learned

Totally familiarize yourself with the runway environment prior to landing at any aerodrome and understand how various arresting gears and barriers really work. In this case, failure to *remove* the unidirectional MA-1A barrier could have resulted in a sudden stop (with extensive aircraft damage as the nose slams down), tail hook failure, and possible directional control problems if the extended tail hook happened to catch the stowed MA-1A barrier.

These lessons learned are examples of what I call "common sense." These things should be second nature to us and certainly have both tactical and safety implications in the way we employ our aircraft. So how does the new guy or the experienced pilot transition from other aircraft find out about these lessons learned? The information is out there in the form of experienced aircrews, war stories, tactics manuals, articles in safety magazines (*Flying Safety*; *TAC Attack*; *Fighter Weapons Review*; and *Approach*, the Navy's safety magazine), and creative safety programs. This is by no means the entire list, but it serves to represent a portion of the history of aviation experience. In my next article, I will discuss how to learn from this history to supplement your own cup of knowledge. ■



Many avenues are available to aircrews designed to update and familiarize them with current safety concerns and appropriate actions and practices.

FSO's CORNER

Safety Net

CAPTAIN DALE T. PIERCE
919th Special Operations Group
Eglin AFB Aux Fld 3, Florida

■ How well do the fliers in your unit know the maintenance people (and vice versa)? If your unit is like mine, many fliers only see the crew chief, and that's only when they walk out to an aircraft to fly. They may get to see a couple of specialists at the maintenance debrief, and maybe not even that. On occasion, when something breaks prior to takeoff, a specialist may magically appear, brew up a fix or go thumbs down, and then vaporize. That's it.

Sound too familiar? Well, there are people out there who have a lot of good ideas about how to enhance communications and improve relations between fliers and maintenance people. The "Safety Net" created by Captain Steven L. Rakel, FSO of the 528th Bombardment Squadron (BMS) at Plattsburgh AFB, New York, is one of them.

Expert of the Month

The Safety Net is a two-part program. The first part consists of increasing the interaction between fliers and maintainers at flight safety meetings. Under Safety Net guidelines, flight safety meetings provide a "relaxed forum" where an expert-of-the-month from the Quality Assurance shop can discuss a topic from his or her area of expertise, followed by questions from the fliers.

The Quality Assurance participants are volunteers who present information concerning a topic of recent interest. For example, a 528 BMS FB-111 experienced a complete hydraulic failure after taxiing into the chocks. The failure would have



resulted in a Class A mishap if it had happened 20 minutes earlier. This topic was of great interest at the next flight safety meeting. The expert-of-the-month program is an informal arrangement between Captain Rakel and the Chief of Quality Assurance.

Points of Contact

The second part of the Safety Net Program is a system to enable fliers to get expert information on tough systems questions the Dash-1 doesn't address. It was created after discovering how difficult it was to find the right person to talk to regarding a tough system question.

To make it easy to find the right person, Captain Rakel and company developed a list of points of contact within the maintenance complex that he and his fliers can call when tough questions come up. They are people who will know the answers, or know where to find them, and are willing to take the time to work with the fliers.

The Safety Net Program's goals and points of contact are prominently posted on the flight safety bulletin board for ready access by anyone who might care to use the

information. And it does get used. No more searching and groping, or doing without "because it wasn't worth the hassle anyway." The who's-who-in-maintenance list has improved accessibility and thereby improved communications and relations between fliers and maintenance people.

By the way, the paperwork is minimal. It consists of letters of appreciation, written by Captain Rakel, signed out by the 528 BMS Commander, and sent through the maintenance squadron commander to the volunteer speakers from Quality Assurance.

Safety Crosstell

The FSO's Corner is a crosstell program. Its purpose is to enable all Air Force FSOs to share their good ideas with all other Air Force FSOs and thereby enhance flight safety programs Air Force-wide. If you have a good idea, call me (Dale Pierce) at AUTOVON 579-7450 (SMOTEC), or send your name, AUTOVON number, and a brief description of your program idea to 919 SOG/SEF, Eglin AFB Aux Fld 3, Florida 32542-6005. (Just an informal note will do.) ■

Safety, Comfort, and Reliability

**These priorities depict the
way of life for a very
unique Air Force organization**



Many very high-ranking government officials depend on the "safety, comfort, and reliability" provided them by the experienced crewmembers who fly with the 89th Military Airlift Wing. The unit has successfully fulfilled this mission since 1948.

■ In June of this year, I visited a unique organization — the 89th Military Airlift Wing at Andrews AFB, Maryland. I was interested in this unit for several reasons. It is a wing with a very high visibility mission and yet many people are unaware of its existence.

For those of you who are unfamiliar with this unit, it is the one that transports the President, Vice President, congressmen, and other important government officials, as well as high ranking military officers, to all parts of the world. I'm sure you've seen their sleek blue and white aircraft with the large American flag on the tail and "United States of America" on the side.

The 89th Wing consists of 2 flying squadrons, 1 flying detachment, 2 maintenance squadrons, 1 aerial port squadron, and 1 specialized supply squadron with a combined total of 1,400 people. The 89th Wing operates seven different kinds of aircraft including the VC-137, VC-135, VC-20, VC-12, VC-9, CH-3E, and UH-1N. With 2,700 worldwide departures per year, the wing maintains an annual reliability rate of 99.5 percent on time.

I was particularly interested in finding out how the 89th Wing has maintained a mishap-free record extending back to the beginning of their operation. As of September 1987, they had flown a total of 790,000 mishap-free hours. The hours are broken down as follows:

1st Military Airlift Squadron — 645,000
1st Helicopter Squadron — 129,000
Det 1, 89th Military Airlift Wing — 16,000

Operation

Experience As you might expect, the 89th Wing has highly experienced flight crews and strong maintenance support. To be eligible to fly with the 89th Wing, a fixed wing pilot has to have a minimum of 3,000 hours with at least 200 hours of instructor time. A rotary wing pilot has to have a minimum of 450 hours of first pilot time, and navigators



must have a minimum of 2,000 hours and be instructor qualified.

The wing motto is "Experto Crede" which means, "Trust one who has experience." Many of the aircrew members have MAC worldwide experience in C-130s, C-141s, and C-5s. Also well represented are fliers with KC-135, E-3A, E-4, C-140, T-43, B-52, C-12, and T-39 experience. The 89th draws upon all of the Air Force commands for its flight crews and their varied experience.

The maintenance people, also highly qualified, are picked just as carefully for the job. The flight crews and maintenance crews have a lot of confidence in each other. When the flight crews write up an aircraft, the maintenance people work hard to get it fixed. They spend a lot of time making sure the aircraft are the best they can be. The flight crews know that when maintenance says the aircraft is fixed — it is fixed.

The people in supply also do an excellent job of finding needed parts and getting them to the aircraft no matter where the aircraft may be. Sometimes they will send parts through diplomatic channels to the nearest embassy. The embassy people can then expedite the parts through customs and get the aircraft on its way again.

I asked Major Bob Silver, Wing Safety Officer, about the role experience plays in their outstanding safety record. Major Silver acknowledged that aircrew experience is definitely important, but it is not the only factor. Rather, it is a combination of many factors working together that produces results.

In speaking of the aircrews, Major Silver said, "I think the main thing is, we talk to each other a lot. Each crewmember in the cockpit is kept aware of what is going on at all times — not just what has already happened, but what is coming up."

Major Silver mentioned that he had read an article in a commercial magazine by a reporter who had flown with a C-5 crew. One of the comments made by the reporter was that he noticed the Air Force flight crew talked to each other a lot more than civilian flight crews he had flown with. Based on his previous experience in flying C-141s and riding in C-5s, Major Silver said crews in the 89th Wing probably talk about two to three times as much as the normal MAC crew.

He said, "The pilots are constantly telling the rest of the crew what they are doing and why they are doing it. If they don't, or if they make a mistake, one of the other three people who are watching is going to say, 'Why are you doing that?', 'Check your ground speed,' or something else. There is a lot of peer pressure to do things right. Everyone in the cockpit is mentally flying the aircraft."

The flight engineers run the checklists and they are adamant about following the checklists exactly. That means they read an item and then wait for the proper response before moving on. They don't just listen for the response,

continued



In 1975, three specially configured VC-9Cs were delivered to the 89th Military Airlift Wing. It is one of the aircraft that provides transportation for the First Lady.

Safety, Comfort, and Reliability

continued



Maintenance people take great pride in the mission and the aircraft. This is reflected in all the facilities and support equipment. The "polish" isn't all on the aircraft and the hangar floor. Each member assigned to the unit exhibits exemplary personal appearance.



Under the old phonetic alphabet, SAM FOX stood for Special Air Mission Flight. Since that time, SAM FOX has come to stand for the wing's professional manner of doing a job. One might say, "That was a real SAM FOX approach."



The 1st Helicopter Squadron has transported well over 130,000 passengers including distinguished officials of both the U.S. and foreign countries. The squadron has also flown over 200 medical evacuation missions.

they actually watch the person physically check the switch position or reposition the switch, or whatever the required action is.

The other pilot is also watching for the correct action. All pilots are left seat qualified, regardless of their crew position. On missions, the pilot making the takeoff and landing always flies from the left seat. The pilot in the right seat operates the gear, flaps, and radios and also monitors the left seat pilot to see that everything is being done correctly and on time.

This same attention to detail and commitment to safety also extends to ground operations. The 89th crews go to some pretty exotic spots, and taxi routes and conditions are studied as part of mission planning so the crew is prepared as much as possible for any eventuality. If there is any question about obstacle clearance, they stop the aircraft until someone moves the obstacle or they put one of their own people on the ground to make sure everything is all right. If possible, that person is on a ground cord to permit communication with the pilot.

Mission As mentioned at the beginning, the Wing's mission is to transport very important government officials all over the world. At a typical wing when an aircraft is transporting a general officer, the

crew can expect to see everyone from the squadron commander up to the wing commander out on the ramp helping them get airborne. This is not the case in the 89th. Protocol delivers the official to the aircraft and leaves everything to the crew. The crew sets up the mission, plans it, and executes it from start to finish.

Colonel Jim Miller, Assistant Deputy Commander for Operations, expressed it this way: "The hardest thing for me to get used to when I came here was to stay in my office and let the flight crews handle the missions. They didn't need me out on the ramp with my brick helping them launch. Our experience level is very high, and the aircraft commander carries the responsibility. The aircraft commander is given the job, allowed to do it, and is held accountable."

The job begins with mission planning. Unlike the typical MAC C-141 mission where the mission plan is given to the crew by current ops, 89th crews are given destinations and times of departure and arrival. From that time on, the crew does every bit of the planning. This would be impractical in a C-141 unit with the number of missions they fly and the number of navigators they have. But, it works well for the 89th.

The navigator does all the mission planning, including getting the required diplomatic clearances. The flight engineer takes care of all the servicing requirements. The pilots go through all the Flight Information Publications, including the Foreign Clearance Guide. They check the 21st and 22d Air Force airfield restrictions and check the card file maintained by the nav shop. However, in the VC-9 and VC-20 operations, all of this is done by the pilots, since these aircraft don't carry navigators.

The card file contains the latest information on airfields all over the world used by the 89th crews. Here the pilots can find the answers to such questions as, Where are the NAVAIDS in relation to the field? What is peculiar about the controllers in that area? What bizarre things have happened in the past? The information is updated every time someone flies into that particular field or area. They also receive information from different air attaches around the world.

Many of the pilots make up a mission book to take with them. The book contains such things as statements from the IFR Supplement, 21st and 22d Air Force airfield restrictions, notes from the unclassified portion of the Foreign Clearance Guide, and anything else the

pilot thinks important. The crew can then review the information en route on each leg of the trip.

The crewmembers take a lot of pride in getting their passengers to their destination on time. By "on time," they mean to the second. If their scheduled arrival time is 12 noon, the brakes will be set as the second hand hits 12 o'clock. But, they never compromise safety to meet the schedule. If the aircraft is given a last minute delay in the traffic pattern or the parking spot is changed after landing, the pilot will maintain a safe taxi speed even though it will mean a late arrival.

Priorities Major Silver said, "Our priorities are safety, comfort, and reliability. Basically, we've found that if you're safe, you're probably going to have comfort and reliability. That's about the way it works out."

The crews really live by the safety-first philosophy. They don't deviate from established procedures just to get their passenger to a certain place on time. If the weather goes down, the winds are out of limits, or some other unsafe condition develops, they divert. The DVs know the crew is just as anxious to get to the proper destination as they are, and they understand the priorities.

Safety, comfort, and reliability are deliberate priorities. Safety is stressed from the top. At every aircrew certification board, the main emphasis is on safety issues. Wing Safety is seen as an important part of operations, not as the "black hat" bunch. Safety meetings are directly applicable and interesting. You don't see people staring out the windows or sleeping during the meetings. They are actively involved. Safety is truly number one.

Application

Before you say this doesn't apply to my wing because we don't have all that experience, special parts handling, and all that other stuff the 89th does, stop and think. What can you put to use? How involved are you in the safety program? Safety must never be a square filler — it has to be a way of life. Each person involved in the flying program has to make safety the first priority in



The VC-137 is a unique aircraft, commonly known as Air Force One, the Presidential aircraft. It was first designated the Presidential aircraft in 1962. A replacement aircraft is planned.

everything they do.

During flight operations, do you work together as a crew — keeping everyone informed and making sure everything is done correctly? Or do you have the philosophy that the aircraft commander must know what he or she is doing, so I'll just keep my mouth shut? As aircraft commander, do you get defensive if another crewmember questions what you are doing? Do you press the limits just to get the flight completed?

While visiting the 89th Wing, I got a chance to fly on a training mission with the First Helicopter Squadron. On that flight, I got a chance to see firsthand what Major Silver had been telling me. Capt Jeff MacDonald, pilot, and MSgt Jose Tavaréz, flight engineer, were the crew on the mission with Sgt Tavaréz occupying the left seat.

Throughout the flight, Capt MacDonald and Sgt Tavaréz talked about what was happening, what was coming up next, and pointed out traffic to each other. It was done in a very relaxed and comfortable manner that showed the men were very used to that way of doing business. The talk was not distracting and did not interfere with communication with ATC. In fact, it inspired confidence. The crew was extremely professional from preflight briefing through postflight.

As Major Silver put it, "There is no substitute for the experience we

work with. But the fact we talk to each other and are equipped to question — that's the key." ■

89th Military Airlift Wing History

1948 1245th Air Transport Group formed at Washington National Airport. Aircraft assigned:

- 1 C-118 (President Truman's "Independence")
- 8 C-54s
- 1 C-121
- 1 C-47

1957 Helicopter operations began at Bolling AFB, D.C. Aircraft assigned:

- 4 H-19s
- 4 H-13s

1959 First jet, a C-137, joined the fleet. President Eisenhower was the first to travel by jet.

1961 The unit moved to Andrews AFB, Maryland.

1962 C-137, Tail #26000, joined the fleet and was the first jet designated as the Presidential Aircraft. This aircraft transported the body of President Kennedy and newly sworn President Johnson back to Washington.

1966 The unit was redesignated the 89th Military Airlift Wing.

1975 Det 1 formed at Hickam AFB, Hawaii, to support CINCPACOM and CINCPACAF.



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
Mishap Prevention
Program.*



CAPTAIN

James D. Thompson

**125th Fighter Interceptor Group (ANG)
Jacksonville, Florida**

■ On 24 August 1986, Captain Thompson was flying an F-106A on the return portion of a cross-country navigational proficiency sortie. The flight originated at Kelly AFB, Texas, and approximately 200 miles west of Jacksonville, Florida, the engine flamed out. An immediate airstart was attempted, but it was unsuccessful. Captain Thompson turned towards the nearest suitable landing area which was Tyndall AFB, Florida, and set up his glide attitude.

All primary flight instruments and navigational equipment were inoperative. The UHF radio was intermittent, but he was able to reach Tyndall Approach Control and request emergency assistance. Several other airstart attempts were made during the descent as the aircraft traveled some 42 miles.

Due to a broken cloud deck, Captain Thompson was unable to see the runway until he was only 5 miles from the field. Once he saw the field, he decided he could safely make the flameout landing. He touched down in the first 2,000 feet of the runway and engaged the departure end cable to stop the aircraft.

His handling of this extremely complex emergency saved a valuable aircraft resource and prevented damage to nonmilitary property. WELL DONE! ■



UNITED STATES AIR FORCE

Well Done Award

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and professional
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a hazardous situation
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United States Air Force
Mishap Prevention
Program.*



STAFF SERGEANT

David D. Nitzel

**155th Consolidated Aircraft Maintenance Squadron
Lincoln MAP (ANG), Nebraska**

■ On 8 November 1986, Sergeant Nitzel was part of a maintenance crew performing end-of-runway (EOR) checks on RF-4C aircraft. While inspecting one of the aircraft, Sergeant Nitzel noticed the No. 1 throttle torque booster appeared to be vibrating. Since the low smoke engine modification, a ground rumble/harmonics condition is quite common, and various engine accessories may appear to be vibrating. He took this into account, and after closely evaluating this movement, decided to abort the aircraft.

Engine shop personnel later discovered the rear gear box was loose at all mounts. Had this condition gone undetected, the rigid fuel lines going to the fuel control may have cracked or the flanges broken and caused a massive fuel leak in the engine bay.

The EOR checklist does not require looking at these areas. As a result of his attention to detail, Sergeant Nitzel may have prevented a serious injury or possible loss of life of a crewmember and destruction of a valuable aircraft. WELL DONE! ■

If you're not FOD-FREE



Gayle McCormick, coordinator for the Aerospace industry FOD Conference, is a strong advocate for FOD awareness. Aerospace companies that once had no FOD awareness programs now realize the importance of being FOD-free.

CMSGT AUGUST W. HARTUNG
Directorate of Aerospace Safety

■ When Orville and Wilbur Wright were using their bicycle shop to build the machine that would mark the beginning of modern aviation, there was little concern about foreign object damage (FOD). After all, the machine which flew from Kitty Hawk, North Carolina, in 1903, could hardly be called complex. But with the avionics, hydraulics, and other advanced systems available in today's aircraft and space vehicles, it's crucial to be aware of FOD and the problems it can cause.

What began as a small meeting among Rockwell and its B1-B subcontractors 2 years ago has expanded into a major aerospace FOD con-

ference. Under the leadership of Gayle McCormick, FOD Prevention Administrator for Textron Aerostructures, Nashville, Tennessee, and Tom Yeager, FOD Prevention Administrator for Rockwell International, Palmdale, California, attendance at the conference has grown to over 120 representatives from various aerospace companies and government services or agencies.

"Initially, we met for information exchange about typical FOD problems and ways to educate people in FOD awareness. That has worked well, and now we are moving beyond education toward the common goal of industry-wide uniformity of FOD definitions, policies, and procedures," says Tom Yeager, Rockwell's Corporate FOD Coordinator.

The Aerospace FOD Conference, which is held biannually in the spring and fall, is hosted by one of the aircraft manufacturers on a rotating basis. The McDonnell Douglas Corporation hosted the last conference in Lakewood, California, in September 1987. Attendees included representatives of the major aircraft manufacturers, tool corporations, airline industry, military, and the National Aeronautics and Space Administration (NASA).

The FOD conferences provide opportunities for prime contractors, subcontractors, and others to meet, compare notes and ideas about FOD prevention, and leave with a better understanding of the problem and how to communicate its seriousness to others. The 3-day conference includes presentations

and group discussions.

"Somebody will start talking about something, then somebody else will jump in and say 'Oh, I've got that same problem at my company. How do you guys handle it?'" says Gayle McCormick of Textron Aerostructures. "Nobody can get through their presentation without a bunch of questions. So there's a tremendous amount of sharing information on FOD prevention."

"Anyone associated with the business of flying knows the damage FOD can cause," says MSgt Stephen Taylor, Air Force B1-B Plant Representative at Palmdale, California. "There is a vast amount of knowledge shared any time you get this type of support from the aerospace industry. Most of the conference attendees work for companies that are producing some type of a military aircraft to protect America."

Sergeant Taylor is familiar to anyone associated with the B1-B aircraft. He was featured in a safety film emphasizing FOD prevention techniques when working around the Air Force's newest bomber.

"If there are 100 planes and 75 of them are on the ground because of FOD-related problems, America's defense capability can be greatly hampered," says the sergeant. "For that reason, all of us who work around aircraft should take FOD prevention very seriously."

While some of the early FOD conference participants may have had little or nothing to contribute, Gayle McCormick says representatives from the various companies, as well as NASA and the military services, now have all types of programs and material to alert people to the problem.

"I would say the No. 1 thing is they really have jumped on the bandwagon as far as making FOD awareness, and the dangers of FOD, visible at their company. The reason they've been able to do that is these conferences. People meet and share their films, posters, training and prevention procedures, and other useful information."

"For example, Major Alice Fennell from the Air Force Inspection and Safety Center, Norton AFB, California, attended our last conference



Corporation representatives take great pride in displaying and sharing their FOD posters with others attending the Aerospace Industry FOD Conference. These McDonnell Douglas posters are good examples of efforts to increase FOD awareness.

and shared a new Air Force safety film titled 'Engine Intakes.' Needless to say, this 8-minute segment on FOD prevention and the dangers of working around engine inlets was a big hit with all of our attendees."

Still another presentation dealt with magnetic bars which pick up metallic foreign objects. Although well known to anyone in the Air Force who works on the flightline, the success of the magnetic sweeping bars installed on military vehicles at over 92 bases, was briefed at the last FOD conference by Mr Gary Chaplain, President of FOD Control Corporation, Highland, California. As it turned out, there were many conference attendees who had never seen these bars and were impressed at the ease of the bars' operation.

Mr Chaplain says his company is also developing a lightweight portable sweeper that can be towed behind any vehicle with a bumper pintle hook. He described the sweeper this way: "As designed, this product will police areas for nonferrous and ferrous debris, with no additional man-hour or operational expense."

The September 1987 conference also included a discussion of contractual obligations, written under

the guidelines of MIL-STD 980, *Foreign Object Damage Prevention in Aerospace Products*, which specifies how a contractor or subcontractor is to carry out a FOD awareness program relative to tool accountability.

The FOD conferences are now planned events within the aerospace community. The Northrop Corporation, Aircraft Division, El Segundo, California, will host the meeting scheduled for March, 1988.

Gayle McCormick says, "Interest in the conferences is just snowballing as companies and military units become more aware of their benefits. The participation and the interest from all over are incredible."

"We're already planning the activities for the next conference to be held March 15-17, 1988, so mark your calendar. Anyone who is involved with FOD prevention won't want to miss this one! I'm looking forward to an outstanding conference with many new faces from both the commercial and military arenas," concluded Gayle McCormick.

Anyone interested in attending the next scheduled Aerospace FOD Conference should contact Gayle McCormick, Textron Aerostructures, P.O. Box 210, Nashville, Tennessee 37202. Her telephone number is (615) 361-2008. ■

Aviate, Navigate, and **COMMUNICATE**



ANONYMOUS

■ It happened on a Friday afternoon during the second leg of a T-38 cross-country to Carswell AFB. We had negotiated the first leg quite easily and looked forward to getting in some good instrument approaches at the end of our second leg. We received an en route descent direct to Carswell. We had already discussed the approaches and were confident entering the area. I had never been to Carswell before, but my partner had and was familiar with the area.

About 20 DME, setting up for our first planned approach, a TACAN, we were informed by GCA that we would be allowed only one approach to a full stop if we stayed in Carswell's pattern. We checked our fuel, and since we had 1,400 pounds (800 pounds above required shutdown fuel), we requested and were cleared for a touch and go at Carswell, followed by vectors to Navy Dallas and back to Carswell. After all, NAS Dallas is only 25 miles away.

The Carswell approach was exe-

cuted without incident, and on climbout, we coordinated an opposite-direction approach to NAS to save time and fuel. We had 1,050 pounds at the final approach fix at Navy Dallas which confirmed our estimate of 350 pounds per approach.

We completed our touch and go at NAS with 900 pounds remaining at level off. About halfway back to Carswell, we began to receive unfavorable vectors and an uneasy feeling. We quickly rechecked our fuel state — it was now 750 to 800 pounds. This meant we had to go present position direct to a 5-mile VFR straight-in or we would land with less than minimum fuel.

So, at 15 DME from Carswell, we declared minimum fuel and requested vectors to a VFR final. As we crossed over the southern end of Carswell with about 600 pounds (shutdown fuel), we requested to go to tower for a VFR overhead-full stop. The controller told us this was impossible and to continue on our vectored heading. We continued on the heading (taking us northwest, away from the field) and now esti-

mated our fuel to provide us only 10 minutes until flameout.

We immediately declared emergency fuel! The controller acknowledged and told us to maintain our heading — that he would sequence us in for landing. The aircraft he was trying to sequence us behind were two T-37s. Still heading northwest, we finally told the controller we couldn't accept any more of his help and turned our own base. We heard a T-37 at 6 DME instructed to break out, and we stated, "Gear down, full stop" to our radar controller. We foolishly thought our problems were over.

Coming in over the lake on short final we heard, "Carswell tower on guard — Aircraft short final, go around." That was for us! But we only had 300 to 350 pounds — not enough fuel to do anything but land. We told everyone who was listening, "Negative on the go-around, emergency fuel."

We then saw the reason for the go-around call — the T-37 who had landed was still on the runway 3,000 to 4,000 feet down. We had him in sight on the left 150 feet, so we took

the right 150 feet as he was turning off the runway. The landing and taxi to parking were the only events during the last 15 minutes that were uneventful.

Now that we were safely in the chocks, let's review the options and see what we could have done differently.

■ We could have landed with 1,400 pounds on the first approach. This would have been inconsistent with our training needs and limited flying time to accomplish the requirements. We considered the fuel adequate to go to NAS Dallas and return.

■ We could have made a full-stop landing at NAS Dallas. But, we had received vectors direct final to final, and fuel was on the estimated curve. The decision to return to Carswell still looked like a good one. Hidden was the assumption that we would continue to receive favorable vectors.

■ Not getting the vectors we needed, we could have canceled IFR, contacted tower, declared our fuel state, and landed. Although canceling IFR and going VFR is not always the solution, when weather permits, it remains an option. "IFR or nothing" type of thinking got us into a very precarious situation.

We learned one other valuable lesson on this trip. When you do take control of the situation, tell everybody what you are doing and why.

We had informed three controllers of our minimum fuel state and declared emergency fuel with one. None of the information was passed to tower. Not until short final did the tower even know of a problem in the pattern. The controllers work very hard to help us, but our understanding of "little or no delay" might be different from theirs.

So what did we learn? Make your decisions and don't let the wrong one be made for you. Stay ahead of the aircraft and the controllers, and don't fixate on any one problem. Always remember — aviate, navigate, and then communicate. The decisions are yours. ■

What Would You Do?



Cargo Leak

■ Immediately after takeoff, the C-141 crew discovered a large electric transformer in the cargo compartment was leaking. The loadmaster said about 2 to 3 gallons of oil leaked out of the transformer.

What Would You Do?

- Have crew go on oxygen until the spill is cleaned up, then continue the mission since it was only oil.
- Have crew go on oxygen, perform the Smoke and Fumes Elimination checklist, and abort the mission while cleaning up the spill as much as possible.
- Call the command post and ask them if the fluid is toxic.
- Something else.

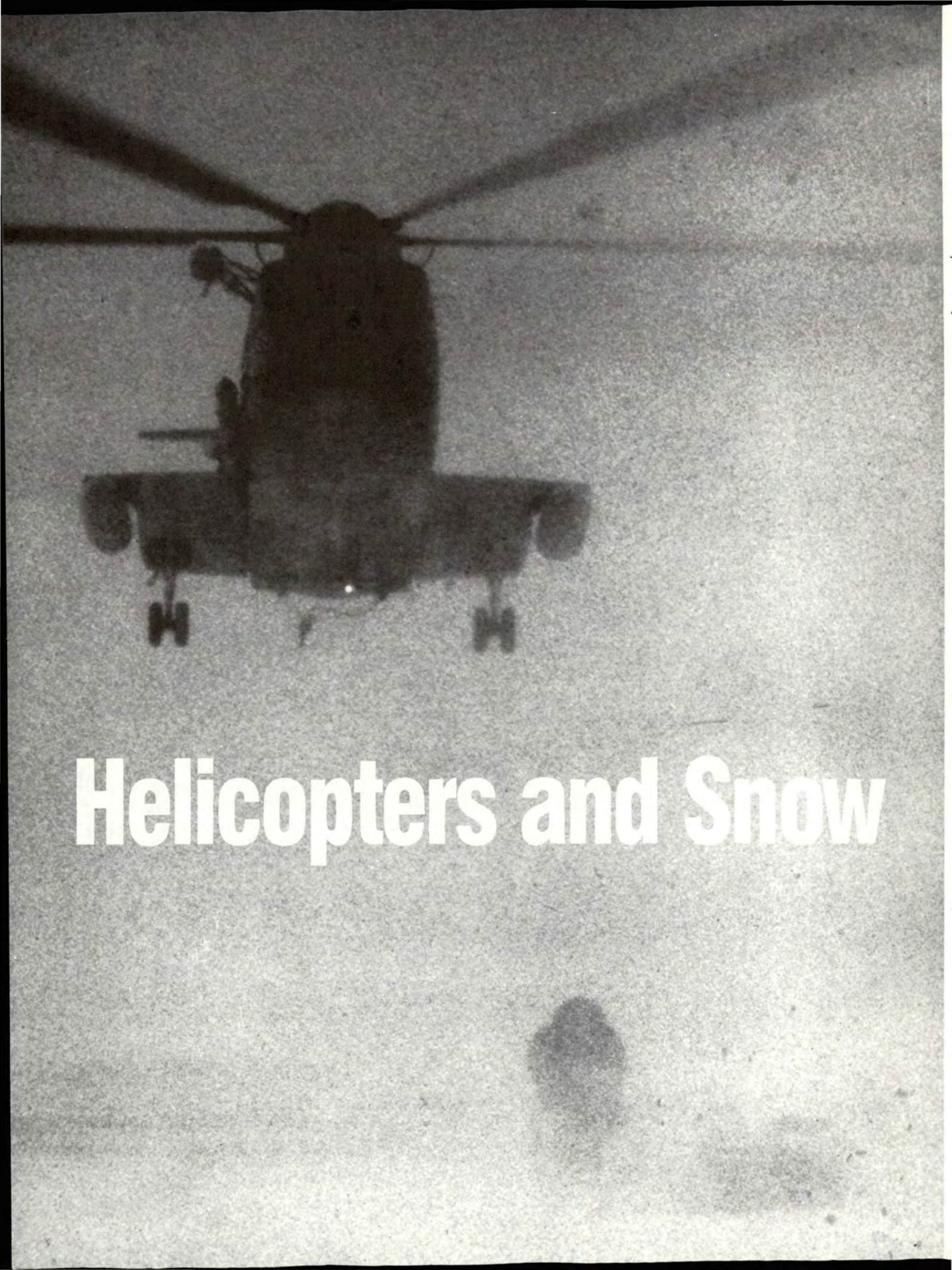
What the Crew Did

The aircraft commander chose option a. The crew donned oxygen masks while the fluid was cleaned up using absorption material. After the cleanup was complete, the crew removed their oxygen masks and continued the mission. After landing at their destination, the crew declared a ground emergency. The aircraft was impounded due to the possibility the leaking oil contained polychlorinated biphenyl (PCB). The fluid was later determined to be silicone based and nontoxic (no PCB).

The safest course of action would be option b. Any leaking cargo should be considered hazardous and the flight should be terminated. A leak may be an indication of even more serious problems with the cargo. Also, unless you know precisely what the leaking fluid is, you don't know what the potential hazards are. Fumes aren't the only danger.

For more information on hazardous cargo, see "Six Minutes to Eternity," *Flying Safety Magazine*, July 1987. ■

Send your real-life submissions to:
What Would You Do?, *Flying Safety Magazine*
AFISC/SEPP, Norton AFB CA 92409-7001



Helicopters and Snow

Beautiful to look at; chilling to hold. Lose references in the snow; you may be out in the cold.

■ Snow is a winter phenomenon that causes aircraft mishaps year after year. When a pilot encounters sudden and complete whiteout, too often the result is disorientation and a mishap. Lack of experience or training in a snow environment is the biggest contributor to these mishaps.

■ A UH-60 pilot was unable to attend mandatory snow operations training conducted by his unit. He was not required to attend makeup classes or engage in hands-on snow landing operations. The pilot was assigned to the No. 3 aircraft in a flight of five on a tactical training mission. The mission called for inserting troops into unimproved landing areas following false insertion landings en route. Weather was 7 miles visibility, 1,000-foot ceilings with scattered snow showers.

The flight of five helicopters made one successful landing and encountered some light blowing snow on top of a packed layer of snow. The next landing zone selected for a false insertion was found to be unsuitable, so an alternate site was selected by the pilot of the lead aircraft. The flight leader did not brief the other members of the flight about the change of landing zone and proposed course of action.

An approach was begun in a snow shower, with visibility at about 1 mile. The landing zone was a large, open, snow-covered field with an upslope in the direction of landing. Winds were forecast at 25 to 30 knots. The flight lead did not pass on information to the other aircraft about the terrain based on his map reconnaissance or any anticipated course of action.

The crew of the No. 3 UH-60 saw snow circulating through the rotor systems of the first two aircraft. The No. 3 pilot selected a touchdown point downslope and to the left rear of the lead aircraft. On short final, the crew chief told the pilot to slow the rate of closure. As the pilot continued the approach, a snow cloud enveloped the aircraft as effective translational lift was lost about 20 feet above the ground. The UH-60

was in a complete whiteout condition when it touched down hard on an upslope to the front and downslope to the left. The helicopter rolled left and came to rest on its left side.

The unit training classes which the pilot missed covered correct snow-landing techniques.

■ A UH-1 pilot also crashed because he did not use the correct snow-landing technique. The pilot made an approach to an unlighted airport. Instead of continuing the approach to the ground, the pilot stopped the aircraft at what he thought was a 15-foot hover. Actually, he was about 10 feet off the ground. With no lights or other visual cues, the pilot allowed the aircraft to continue to descend. Blowing snow generated by rotorwash caused the pilot to lose outside reference, and the descent continued until ground contact.

But snow doesn't have to engulf an aircraft for a pilot to become disoriented. Its presence alone can do the job when it blankets the ground, hiding all visual cues. More than one pilot has found this out the hard way.

■ "I shot a long snow landing just past the radar dome to the runway. I was cleared to hover taxi to the refueling point, pulled power in, and flew out of the snow cloud. I was moving along at what I thought was a 5- to 6-foot hover, just above the effective translational lift, to stay ahead of the snow cloud. I was using a POL point and hangars 4 and 5 for my reference points. At one instant, I looked to the right for a closer reference point than just white, but there was nothing there. I came back to the POL point, and the next thing I knew we were upside down."

This UH-1 pilot was hovering across a snow-covered field when he misjudged the height of the hover. He lost visual depth perception because of the lack of any close visual reference cues. The left ski of the helicopter hit the snow. The UH-1 continued forward for several feet, with the ski pushing up the snow.

The ski then caught in the accumulation of snow, and the aircraft rolled over.

■ In another case, an AH-1 pilot and IP flew their aircraft to a designated area. The IP reconnoitered the area, then landed about 400 feet from a wood line ahead of him. Both pilots put on night vision goggles.

After making a before-takeoff check, the IP lifted the aircraft to a 3-foot hover before allowing the pilot to assume control. He began to feel uneasy and told the pilot he didn't believe the area was suitable for the training mission. The IP decided to land the aircraft and remove the night vision goggles before returning to the airfield.

Because a small ditch was below them, the IP moved the aircraft forward toward more level ground. As he did, he noticed — by looking at the tree line ahead — that the aircraft was drifting left. As he turned his head to the left to pick up some midrange cues he had previously identified, he found that the rotorwash had either blown them away or covered them with snow. When he looked back toward the tree line — his only remaining reference point — he noticed the aircraft was tilted to the left. As the IP applied right cyclic and lowered the collective to land, the main rotor blades hit the ground, tearing the main rotor system and transmission free from the aircraft.

In this case, the problem lay with the training area selected. It was virtually devoid of visual cues, causing the IP to become disoriented.

Pilots lose some of their winter flying proficiency during the summer months. With winter weather upon us in most parts of the world, units should already have given refresher training to ensure their pilots are knowledgeable and capable of safely operating aircraft over snow-covered terrain. The point is, if you haven't done it, do it now. After an aviator gets in trouble, it's too late. ■

Adapted from Flightfax



Remembering WAKE Island

PEGGY E. HODGE
Assistant Editor

■ Just a few hours after the attack on Pearl Harbor 7 December 1941, the Japanese attacked another small island approximately 2,200 miles west of Hawaii — Wake Island.* The battle on Wake Island was a famous story in its time, but is not so well known today. On the anniversary of this battle, *Flying Safety* magazine recounts this story and salutes present-day Wake. — Ed.

Remembering A Past

Background During World War II, Wake Island was considered vital to the United States' Pacific defense. With the exception of Guam, it was the greatest threat to Japanese air and naval bases in the Pacific. Consequently, subduing Wake Island was a big part of the Imperial Supreme Council's master plan for the Pacific War.

* Wake Island is a coral atoll consisting of three islands — Wake Island proper, Wilkes and Peale Islands — all connected by bridges.

That first week of December 1941, the Americans on Wake were not prepared for war. They faced many problems. There were only 449 Marines with 12 Grumman F4F Wildcats. The airfield had no underground gasoline installations, no tool sheds or work shops, and no shelter for the aircraft. It was an easy target for the Japanese.

Commander Winfield Scott Cunningham, Commander of the Atoll, and Major James P. Devereux, Marine Commanding Officer, worried about ammunition shortages, the lack of radar, a lack of medical supplies, and shortage of spare parts for the aircraft. Further, the radio reports from Pearl Harbor were bleak, and the possibility of reinforcements seemed slim.

The problems continued — someone at Pearl Harbor had erred when ordering 100-pound aerial bombs for Wake Island. The bombs on hand did not fit the rack of the F4Fs. The Wildcats were designed to carry two 100-pounders, but without proper fittings on the planes, the bombs were useless. So, the Marines improvised bomb racks out of scrap metal.

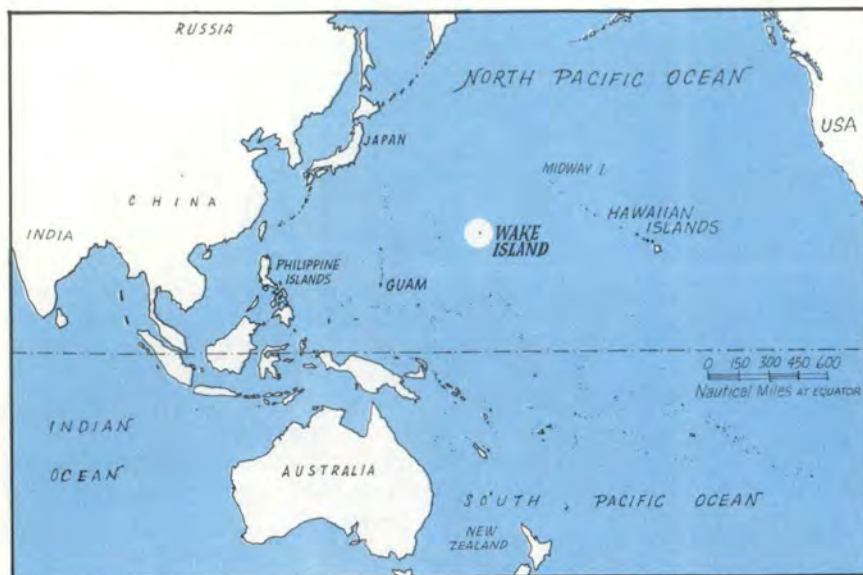
First Invasion From 8 to 12 December 1941,* this small group of Marines fought off a series of Japanese attacks. This first invasion consisted of four assaults.

■ **8 December** A flight of 36 Mitsubishi medium bombers (Bettys) approached Wake. They were not spotted due to a cloud cover until they were overhead at 2,000 feet. It was too late for defensive action. The result was devastating. Four of the eight Wildcats were destroyed, three others were set ablaze, and one was damaged by bomb fragments. Almost all of the facilities at the air station were destroyed. The Japanese escaped unscathed.

■ **9 December** A flight of 27 Bettys prepared to attack at 1145. When Marine sentries spotted the enemy aircraft, every available anti-aircraft (AA) gun went into action.

This second attack was not a "milk run" as the Japanese had expected. After 15 minutes, the enemy withdrew, but this time, with losses. Two Bettys had been shot down, and three others were badly

* Because Wake Island lay west of 180 degrees longitude beyond the International Date Line, it was a day later there than the continental U.S. or Hawaii.



In 1941, Wake Island received a lot of attention from the U.S. and Japan. It was an important link in a projected chain of U.S. naval and air bases in the Central Pacific. Also, it outflanked major Japanese bases in the Marshall and Gilbert islands.



Wake Island is formed of coral built up on an underwater volcano. The average height on Wake is only 12 feet above sea level.

damaged. The biggest American loss this day was the Navy's radio transmitter — their principal link with Pearl Harbor.

■ **10 December** After the air raid on 9 December, Major Devereux was positive the enemy had spotted the United States' most vital position on the island — Battery E's 3-inch AA guns. He felt this would be a primary point of attack. So, the Marines spent all night moving the guns.

The Japanese bombers appeared right on schedule. As expected, the Bettys went for the previous Battery

E position. It would have been destroyed had it not been moved. As it happened, Battery E knocked down one Betty and damaged another.

In this attack, Captain Henry Elrod, known as "Hammering Hank" took on 22 Japanese planes single-handedly and shot down two. He then strafed Japanese warships so badly that one of them sunk. In spite of these successes, however, the Japanese heavily

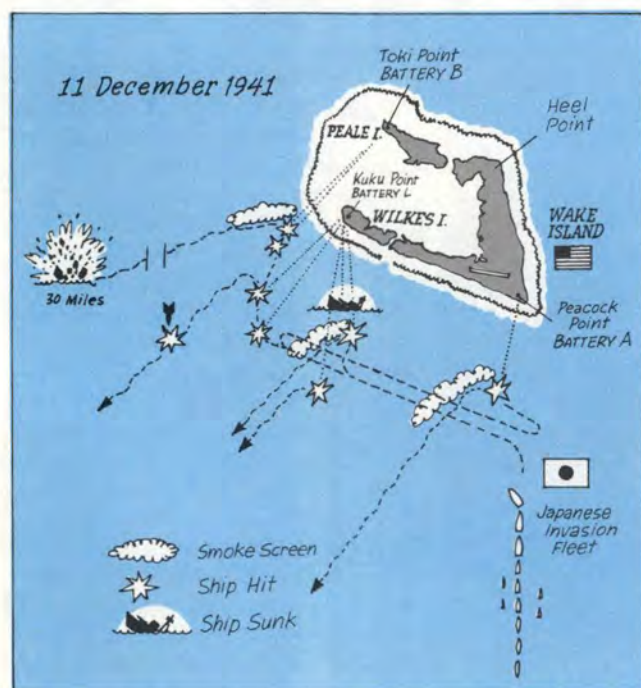
* Captain Elrod was killed in the final assault on Wake. After the war when all the facts were known, he was the first Marine aviator to earn the Medal of Honor.

bombed the beach on Wilkes Island and blew up a building containing 125 tons of dynamite, causing considerable damage.

■ **11 December** At approximately 0530, Japanese destroyers began shelling Wake Island for the fourth attack. Major Devereux ordered Marine guncrews to hold their fire until the enemy was very close. He wanted the Japanese to believe they had knocked out their batteries. His plan worked, and as the destroyers drew very near, the Marines opened fire.

This resulted in a defeat for the

continued



December 11 was a memorable day for the Marines on Wake . . . At Battery A, they first spotted the lights of Japanese destroyers; Marines at Battery L sunk the destroyer Hayate; and Marines at Battery B forced the destroyers Yayoi, Mutsuki, and Kisaragi to turn tail.



The thick foliage that surrounds Wake Island today provided admirable cover for the defenders and invaders during the World War II battle.

Safety Warrior: REMEMBERING WAKE ISLAND continued



Wake Island is the first American territory to see the sun. Its position across the International Date Line makes it a day later there than in the continental U.S. Sometimes, to travelers, this can lead to confusion of yesterday, today, and tomorrow.

Imperial Navy. The losses were great including 2 destroyers sunk, 7 other ships damaged, 500 men killed, and an unknown number wounded.

Second Invasion Because of the severe damage to the Japanese force during this fourth attack, they had to change their tactics.

■ **13 December** Just before noon, the enemy returned — and in greater numbers than ever. Fifty Bettys coming from all directions attacked Wake. This air assault marked a major change in enemy tactics. From 13

to 23 December, enemy aircraft bombed Wake three times a day. Under the relentless assault, the Marines on Wake were fading.

■ **23 December** Not only did the change in tactics mean more air raids, but the Japanese returned for the second invasion with 2,000 men, 2 more carriers — each carrying 54 aircraft, plus a powerful new destroyer.

Almost 1,000 troops were sent ashore. If they could not force a decision, another 500 men from the ships' landing parties would be committed. And, as a last resort, all

remaining men would be sent ashore against the Americans.

With no American aircraft to oppose them, the bombers pounded Wake. By 0700, it was apparent that the defenses of Wake Island were crumbling, and friendly ships were not expected for another day. The United States had suffered heavy casualties on the ground in the bombing raids. Tragically, the "white flag" was raised!

The Rising Sun flag flew on Wake from 23 December 1941 until 7 September 1945 when the Japanese surrendered. The Americans repossessed Wake without a battle. Fittingly, on 7 September 1945, a Japanese admiral gave his sword to Marine Lieutenant Colonel James Devreux to signify Japan's capitulation.

Saluting the Present

Things have changed greatly since the Marines fought on Wake in 1941. Today, the island features a 10,000-foot runway, a bowling alley, and neat rows of homes for the military and civilians who live there.

Wake's current mission is in support of any Pacific Command contingency operation in the relocation of military forces. During peacetime, Wake Island acts primarily as an emergency airfield and refueling stop.

Detachment 4, 15th Air Base Wing, controls Wake Island airfield. The Air Force people assigned serve principally as quality assurance evaluators on the Base Operating Support (BOS) Contract.

The BOS contractor makes up the main work force and population of Wake Island. It consists of approximately 180 workers and 25 American supervisors.

As the F4F Wildcats defended and supported Wake Island during World War II, today, our Military Airlift Command's C-141Bs are Wake's primary means of cargo and passenger movement support. We remember and salute Wake Island's efforts — yesterday and today! ■



Today, fishing net floats decorating local trees are the sole influence of the Japanese.

Most of the material for this article came from *Wake — The Story of a Battle*, by Irving Werstein.



OPS TOPICS



Talk to Me

■ The C-141 was parked on the end of a closed 148-foot-wide runway with the nose tire 40 feet from the edge. The aircraft commander (AC) was advised by the Airlift Control Center Element (ALCE) to make a 180-degree turn after leaving the parking spot to taxi to the active runway.

The marshaling crew planned to take the aircraft forward to the end of the runway where additional pavement was available for the 180-degree turn.

As the aircraft began to taxi, the AC made a slight left turn to get closer to the edge of the runway before starting the 180-degree turn. The No. 1 marshaler realized the left turn would place the engines over the sand and create a FOD hazard, so he gave a brief right turn signal to straighten out the aircraft.

The AC misunderstood the right turn signal and started the 180-degree turn. When the Nos. 2 and 3 marshalers saw the aircraft turning right, they gave the right turn signal.

When the nose wheel was 7 feet from the edge of the runway, the AC stopped the aircraft and deplaned a scanner. After receiving clearance from the scanner, the AC continued to turn until the nose wheel was 1 foot from the edge. He stopped again but was told by the scanner there was room to continue.

As the aircraft began to move, the nose wheel skidded on some sand and departed the runway. The nose wheel buried itself 6 inches into the sand about 2 feet off the edge of the runway. The engines were shut down and the crew deplaned without injury.

The basic cause of this

mishap was a lack of communication. The aircrew, ALCE, and marshaling crew didn't discuss the exact procedure to exit the parking area. This led to a series of misunderstandings and, eventually, to

taxiing off the hard surface.

Make sure everyone involved in any aircraft operation knows what is going on. You can't afford to leave even one member of the team in the dark.



Not Yet!

A student pilot in the front seat of an F-16 quickly changed a routine flight into a memorable one. After touchdown on a touch-and-go landing, he raised the landing gear handle and advanced the power for takeoff.

The landing gear retracted (as advertised), and the electric jet settled on the external wing tanks and began skidding down the runway. When the aircraft came to a stop 3,000 feet down the runway, both pilots made a hasty exit.

Why did something like this happen? There was no malfunction with the aircraft. The student pilot was concerned about the possibility of exceeding

the landing gear airspeed limits after takeoff. He didn't want to make the same mistake some other students had made.

The student also had skipped breakfast 3 days in a row, including the day of the mishap. The importance of adequate rest and nutrition is regularly stressed by our flight surgeons, but sometimes people just don't seem to listen.

We can't say this person's lack of breakfast caused the mental lapse that resulted in a mishap, but it probably contributed. What can we say? Keep yourself in good physical condition, eat right, keep your priorities straight, and don't act without thinking. ■

MAINTENANCE MATTERS



BARBECUED TWEETY BIRD

The T-37 crew had just started the right engine when they noticed an overheat light on the No. 1 fuel shutoff T-handle. After accomplishing the bold face procedures, they quickly egressed their aircraft.

Seeing smoke exiting an engine panel, the crew chief directed a fire extinguisher up the engine tailpipe. But when the smoke continued, a coworker removed the upper engine bay panel so the crew chief could apply the extinguisher agent directly to the engine turbine housing.

Once the fire was extinguished, the crew chief discovered burned remnants of a rag on top of the turbine section. Research of the aircraft records showed the jet hadn't flown in 6 days. Prior to the fire, a fabrication technician replaced a nut plate on the upper engine bay, which was followed by a 7-level FO inspection.

For a task like this, it is customary for a technician to place a rag directly under the area being repaired to catch shavings and loose pieces. Only, the technician performing the task in this mishap didn't recall if he removed the rag. The crew chief installed the engine bay panel while the technician put his tools away. None of the people involved used a flashlight to check for FO prior to installing the access panel.

This incident points out the consequences of failure to accomplish proper FO checks after performing a maintenance task. Although we're able to control our tools by marking them and using composite tool kits,

it is not as easy to control rags, rivets, and zip ties. Yet, control of such consumables is vital to our mission and to the safety of every maintenance technician and crewmember.

In our business, consumables such as rags and FOD items can be considered one and the same. Take the extra minute to check your work area before moving on to the next task.



FORKLIFT DRIVER'S WOE

Aside from complacency and not following tech data, being in a hurry often contributes to many of our mishaps. Hard to believe? Consider this one that resulted in \$30,000 damage to an F-16.

Following a local exercise, a munitions crew was tasked to pick up prestored munitions from various hardened aircraft shelters. Not waiting for a coworker to act as a spotter, the forklift driver hastily drove into the shelter and maneuvered his vehicle in front of the aircraft to pick up a munitions pallet. Upon approaching the pallet of 20mm ammunition, the driver struck the right side of the jet, damaging the pitot tube and radome structure.

This unit reminded everyone of the importance of safety and supervision during explosive operations. Perhaps other units may want to ensure their vehicle operations in and around aircraft and hardened shelters are closely monitored. Controlled speed and deliberate procedures should also be stressed to everyone driving in these areas.

Remember! Being in a hurry can lead to a mishap. Just ask the forklift driver in this one.



F-16: SENSITIVE STEERING

After completing his mission, the F-16 pilot started a left 100-degree turn out of the dearm area. Once into the turn, the aircraft abruptly turned hard right. Despite the pilot's harder push on the left rudder pedal and then the left brake, the Falcon jet continued to the right.

After the pilot disconnected the nosewheel steering with the control stick button, the cockpit nose wheel steering light extinguished, yet the aircraft continued to turn right. Using normal braking, the pilot safely stopped the jet and shut down the engine.

Investigation revealed a broken nose wheel steering (NWS) feedback potentiometer shaft. The shaft broke due to an improperly installed bracket on the NWS feedback potentiometer.

Prior to this flight, a specialist had installed a new feedback potentiometer. However, he didn't follow the applicable tech data, which clearly show the proper installation for the bracket. Following this maintenance task, an inspector also missed the improperly installed bracket.

Although this organization has recommended the NWS bracket be redesigned to prevent improper installation, the fact remains that tech data were not followed.

It is the responsibility of supervisors at all levels to ensure their people are properly trained and tech data are followed. Following prescribed instructions could avoid the kind of mixup that took place in this potentially serious mishap.

SO MUCH FROM SO LITTLE

Passing 35,000 feet shortly after takeoff, an F-15 pilot noticed pressure breathing and the cockpit altimeter fluctuating from 14,000 to 23,000 feet. He initiated an immediate descent to 10,000 feet and recovered uneventfully at the nearest base.

Maintenance technicians discovered a cotter key lodged in the cockpit pressure regulator. The origin of the cotter key was unknown.

In another unrelated mishap, an F-15 pilot flying at 39,000 heard abnormal noise from the cockpit environmental control system, while his altimeter reading increased from



14,000 to 31,000 feet in approximately one minute. The pilot, who experienced approximately a minute of light-headedness from hyperventilation due to pressure breathing at altitude, diverted to the closest base where he was met by the medics.

Maintenance troubleshooting found several pieces of safety wire in the cabin pressure regulator.

These incidents point out the value of thorough inspections after performing maintenance. If all of us take a second look prior to leaving a completed task, we could prevent "so much from so little."



B-1B: HANGAR DOOR CRUNCH!

■ An aircraft towing team was assigned to back a B-1B from inside a hangar to a parking spot on the ramp. The team chief briefed the particular requirements to the team

MAIL CALL

EDITOR
FLYING SAFETY MAGAZINE
AFISC/SEPP
NORTON AFB, CA 92409-7001

"HEI There — Be Careful"

In the August 1987 issue you published an article in the "Maintenance Matters" feature entitled "HEI There — Be Careful." The article pointed out two explosive mishaps, the first involving the inadvertent firing of a 40mm cannon on an AC-130A aircraft.

As a member of the 919th Special Operations Group (AFRES), the only unit flying the AC-130A gunship, I request that you "Be Careful" when printing aircraft types. The 40mm mishap actually occurred on an AC-130H gunship which is flown by an active duty unit. The 919th SOG has an outstanding explosive safety record and does not want to take credit for this mishap.

The facts in your article are otherwise correct and should be read and heeded. Safety and careful attention to detail are musts when personnel are working with explosives.

Lawrence M. Wager, Lt Col, USAFR
Deputy Commander for Maintenance
HQ 919th Special Operations Group
(AFRES)
Eglin AFB Aux Fld 3, Florida

Thank you for your letter. We apologize for the error. It was indeed

an AC-130H that experienced the inadvertent gun firing.

Our maintenance technical editor agrees that the 919th SOG at Eglin has an outstanding explosive safety record and promised to be more careful when printing aircraft types.

"IFC Approach"

In the July 1987 issue of *Flying Safety*, the IFC Approach column was inadvertently credited to Major Bruce Gunn as the author. The correct author of the article was Major D. Foster Bitton, USAF IFC/FO. We at the Instrument Flight Center would like you to give proper credit to the correct author in a future issue.

I regret the breakdown in communication between our two offices as to the correct author of the article.

Major Michael M. Webb
Instrument Procedures Division
USAF Instrument Flight Center
Randolph AFB, Texas 78150-5001

Thanks for your letter explaining who really wrote the article. We certainly want Major Bitton to get credit for an excellent job in writing "The Weekend Cross-Country," a subject near and dear to the hearts of Air Force fliers.

members prior to the start of the operation. All of the proper procedures were followed during the hookup, and all team members were in their respective positions before the bomber began to move.

Despite the favorable preparation and the impressive qualifications of the crew, this single towing operation cost the Air Force about \$100,000 in repair bills.

The team chief and left wing walker opened the main horizontal doors of the hangar to the fully open position, but no one noticed the hangar tail access door was still in the down position.

Once the team was positioned,

the towing supervisor gave a signal to the tug operator to start backing the aircraft out of the hangar. As the tail reached a critical position, the tail walker looked up, saw the access door was down, and gave the stop signal just as the B-1's tail struck the door.

Keep this costly ground mishap in mind as the winter wind whistles through the open hangar doors. Don't rush the doors closed without checking that all is clear in their path. And when it comes time to tow an aircraft out of the hangar, make sure all of the applicable doors are fully open before the first aircraft movement begins. ■



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
Mishap Prevention
Program.*



MAJOR

David R. Lukens

**318th Fighter Interceptor Squadron
McChord AFB, Washington**

■ On 15 November 1986, Major Lukens took off in an F-15 and could not get the landing gear to fully retract. After conferring with the SOF and dumping fuel, Major Lukens returned to the base for a straight-in landing. On final approach, the landing gear appeared to be down and locked, and all cockpit indications were normal. But, the left main gear collapsed after touchdown. Major Lukens made an afterburner go-around and got the aircraft safely airborne without letting the external fuel tank contact the runway.

A chase pilot confirmed the left main gear had failed outboard and the tire and strut cylinder had fallen completely out of the main gear support, and the tire was hanging on only by the scissors linkage. After conferring with McDonnell Douglas engineers and the SOF, Major Lukens decided on a straight-in landing with no barrier engagement.

He landed the aircraft on the right side of the runway and held the left tire off as long as possible. Almost immediately after it touched down, the left tire and part of the strut separated from the aircraft. As the left wing dropped, the external tank hit the runway and exploded. Major Lukens used pulser braking, nose wheel steering, ailerons, and rudder to keep the aircraft tracking down the runway.

After stopping the aircraft, Major Lukens shut down both engines and emergency ground egressed as flames surrounded the left wing fuel tank. Damage to the aircraft was minimized by his ability to keep the aircraft on the runway.

Major Lukens' coolness under pressure, quick thinking, and precise aircraft control saved his own life and limited damage to a valuable Air Force F-15 aircraft. WELL DONE! ■



UNITED STATES AIR FORCE

Well Done Award

*Presented for
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performance during
a hazardous situation
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significant contribution
to the
United States Air Force
Mishap Prevention
Program.*



FIRST LIEUTENANT
Charles D. McBroom



CAPTAIN
Joseph Reynes, Jr.

**347th Tactical Fighter Wing
Moody Air Force Base, Georgia**

■ On 19 September 1986, Lieutenant McBroom and Captain Reynes were flying their F-4E on a BFM upgrade sortie. At 18,000 feet and 400 KIAS during an extension maneuver, the aircraft violently pitched nose low and departed controlled flight. The aircrew neutralized controls and unloaded the aircraft. The aircraft recovered to controlled flight after several oscillations.

Captain Reynes quickly checked the ball in the rear cockpit, looked in his mirror, and noted the rudder fully deflected right. The aircrew was able to keep the aircraft under control until the AOA reached 14 units, at which time the aircraft would execute an uncommanded roll to the right. The aircrew went through all applicable checklists, disengaged all augmentation, and pulled the ARI circuit breaker without effect. Unknown to them, an improperly installed flight control bolt had dislodged from the rudder control horn during the unload and caused the jammed rudder condition.

The aircrew transferred controls frequently to minimize fatigue from the excessive flight control forces required to maintain level flight. They executed a controllability check and found that lateral control ran out at 190 KIAS.

The aircrew flew an approach with the left engine in idle and the right engine at a high power setting to counter the right roll, planning for an approach-end cable arrestment. Initially, Lieutenant McBroom flew the approach. During the terminal phases, Captain Reynes took over and touched the aircraft down on the left side of the runway 1,000 feet short of the approach-end barrier. Unfortunately, the hook skipped and missed the cable. However, Captain Reynes maintained runway alignment by using full left aileron and tapping the left brake intermittently to the point of an insipient skid. The aircrew stopped the aircraft on the runway without further problems. WELL DONE! ■



If only he hadn't pressed to be home for the holidays.