Flightfax

April 1994 Vol 22 No 7

REPORT OF ARMY AIRCRAFT ACCIDENTS

Suddenly, we lost sight of the lead aircraft. I heard the PC transmit "We're IMC, change frequency to approach control," and that was the last we heard from them. We immediately started a 180-degree right turn while notifying them of our actions. No response.

On the return flight to the airfield, neither my backseater nor I said a word. I was sure the other guys were okay. I just knew they had climbed, gotten an IFR clearance, and would beat us home. What a story they would have to tell at the next safety meeting.

As I crossed the landing threshold, I scanned the runways and taxiways looking for them. The crew of the lead aircraft was not waiting for us. In fact, they didn't get back at all.

RISK Management for FLIGHT CREWS

If the accident crew in the scenario had known the "how to" of identifying hazards, assessing hazards, and establishing controls, they might have gotten the chance to tell their story at the unit's next safety meeting. Sadly, they didn't. Now it's up to me to tell the story and show you where we failed to effectively manage the seemingly minor hazards that combined to claim their lives.

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The mission was simple: NVG currency sustainment training with some formation flying—point A to point B and return, 2 hours of flight time with a takeoff at 1900. Pretty basic stuff—no rocket science involved.

Operations had me scheduled as the PC of Chalk 2 and air mission commander for the flight of two AH-1s. My backseater was an assistant brigade S-3 who was scheduled to be transferred to our attack unit. He had a lot of flight time but needed this flight to sustain NVG currency. The PC of the lead aircraft was a new IP and his backseater was one of the unit's newer pilots. The Chalk 1 pilot needed to complete some RL 2 NVG mission tasks and get some NVG time. To evaluate their mission-planning capabilities, the Chalk 1 PC and I allowed the two pilots to plan the mission.

After giving the mission-planning team a couple of hours, I looked at the proposed route of flight, which would take us over a large lake. Although it wasn't the route of flight I would have chosen, it was okay. There would be no problems with illumination or weather, so one route was probably as good as another. I glanced at their performance planning card, and it looked good.

We were doing pretty well for crew endurance even though we had to start our 14-hour duty day a little early so that we could attend a 0900 safety meeting. We would still have 2 hours of our duty day remaining when we finished the mission if we took off at 1900 and flew for just 2 hours. No problem here.

We went to our respective aircraft around 1400 and spent about an hour preflighting. No deficiencies were noted on either aircraft.But where had those clouds come from? The weather forecaster had given us "clear blue and twenty-two" on the long-range forecast. Oh well, it looked good enough to go. The moon was full and high enough to give us plenty of light, but those clouds might make for a dark night.

To file the flight plan and get weather, we all met in operations. The weather was now forecast to be 1,500 overcast with 2 miles' visibility in light rain and would be valid for the entire flight. This weather was a lot different from the previous forecast, but it was still within the unit SOP requirements and well within AR 95-1: Flight Regulations criteria for operations in uncontrolled airspace.

When we added up the numbers on the risk-assessment sheet, it showed the mission as medium risk. How could that be? The weather wasn't that great, and the illumination would be reduced because of the weather. Oh well, we had IPs in both aircraft and the mission was fairly simple.

At 1845, we cranked the aircraft and everything was going fine. The Chalk 1 pilot had just called ground for clearance to taxi for departure when his engine chip detector light illuminated. The Chalk 1 PC called maintenance while I called operations to advise them of our delay. We shut down both aircraft and waited for maintenance to arrive. When the maintenance crew pulled the chip plug, normal fuzz was all they found. The crew started the aircraft again and rechecked the plug. The light remained out, and the aircraft was released for flight. However, our flight had now been delayed for almost an hour.

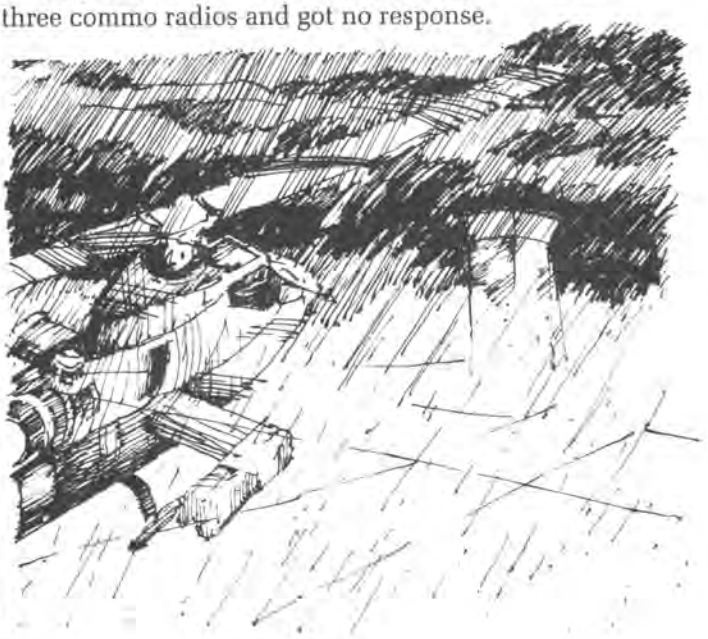
It was about 2006 when we finally got off. The ceiling appeared to be lower than forecast, and the winds were beginning to gust, causing us a lot more work as we proceeded on course toward our first destination.

The flight visibility was starting to deteriorate to below 2 miles and the ceiling was becoming indistinguishable. I asked the flight lead PC how he was doing. "Okay. This weather will make for some good training," he said.

As we approached a large lake along our route of flight, the visibility appeared to be decreasing to about 1 mile. Everything might have been acceptable had the route not taken us over the lake. As we crossed the lake shore, I realized I could not tell how high we were. I called the flight lead and told him we were going to pick up additional spacing. He responded with a "Roger" and that we should reach the opposite shore in about 2 minutes. Suddenly, I couldn't see Chalk 1. I heard the PC transmit "We're IMC, change frequency to approach control" and that was the last we heard from them.

As soon as we lost sight of the lead aircraft, we started a 180-degree right turn while notifying them of our actions. As we completed our turn, we could see lights on the shore. I looked under the NVGs and couldn't see anything. When I looked through the NVG tubes, I could see well enough to remain oriented—well enough to get back home.

I figured the other crew would be busy, so I waited for them to contact me. After a couple minutes of waiting for a call, I tried to contact them. I tried on all three commo radios and got no response.



Our home base tower heard me on guard and asked if they could be of assistance. I asked tower if they were in contact with the other aircraft. They said they were not but would contact approach control to see if they were in contact with the aircraft. I told them what had happened and that we were returning to the airfield.

It took us approximately 15 minutes to get back to the airfield. Neither one of us said a word. I was so sure the other guys were okay—I just knew they were. But they weren't. I kept going over the day's activities in my mind. What could we have done differently that would have saved that crew?

To help the Chalk 2 PC answer that question, let's go back and see where the crews could have more effectively used the risk-management principles and process to guide them in making some mission changes that might have made a life-saving difference.

Hazards and control measures

First of all, the crew was pushing the limit of their crew day. This is a hazard that we as aviators deal with frequently. The safety meeting was important, but there are makeup sessions and the crews could have come in later. This is a control that could have been applied in order to optimize the crew's day.

The maintenance delay pushed the crew day a little further toward the extreme. Did anyone on either of these crews ask questions about how everyone was feeling or if anyone was too tired to fly? Even if the IPs did ask, maybe one of the pilots was tired but chose not to speak up because of a John Wayne image he thought he had to maintain. Even if the control of starting the duty day later had been exercised, additional evaluation of fatigue could have been accomplished.

The crews opted to fly this mission with less than VFR weather. Although the weather was well within AR 95-1 criteria for operations in uncontrolled airspace, was it appropriate weather for initial NVG mission training or for currency sustainment? There may be circumstances when an IP feels a pilot is proficient enough to advance to flying in this kind of weather. If this was the case, a good control would have been to review the local inadvertent IMC procedures and discuss specific crewmembers' responsibilities before takeoff.

When the visibility began to deteriorate below 2 miles, the AMC asked the Chalk 1 PC how he was doing. He responded that it would be good training. Maybe, maybe not. In order to operate below 2 miles of visibility at night, a crew should be in the "run" mode of the crawl-walk-run training cycle. Since this was initial NVG mission training for the pilot in the lead aircraft, maybe a more prudent assessment of the reduced visibility would have warranted turning around or just landing where they were. The visibility was continuing to deteriorate, and the trend was fairly obvious.

It is possible the hazards in the immediate area (wires, trees, and so forth) could have precluded a safe landing and the most prudent decision may have been to return to the base field. A good control for this flight might have included a discussion of mission-continuation criteria before takeoff.

The fact that IPs were on board each aircraft in this situation may be considered a control measure. IPs are typically conscientious and knowledgeable; however, they are not superhuman. In fact, they may require additional instrument training from time to time. Presenting instruction and evaluating it are significantly different from doing it yourself.

To be effective, risk management does not end with mission planning

The IP of Chalk 2 indicated that when he looked under the NVGs, he couldn't see anything. Why continue aided in that situation? Unless hazards in the immediate area precluded landing on the lake shore or in that vicinity, it is possible a landing could have been accomplished.

Aided versus unaided visibility

The issue of aided versus unaided visibility is beginning to surface as a problem from several areas. The question is whether crews should continue a mission based on aided visibility when unaided visibility is less than required by policy or regulation. On a very dark night with no light to help them judge distance, an aircrew may have difficulty judging how far they can actually see unaided.

For now, the unit SOP may be the most appropriate place to establish local procedures regarding aided versus unaided visibility. Continuing flight under aided visibility criteria when unaided visibility is below minimums should be considered very high risk. Unit aviator/crewmember experience and METL should affect these kinds of risk decisions. At the very least, crews should periodically check unaided visibility trends by looking under the NVGs or with the unaided eye for FLIR users.

Cumulative effect of minor hazards

While we have drawn on several actual accidents to create this scenario, a close look at the events leading up to the accident will most likely reveal hazards aircrews encounter frequently, with only minor variations from

mission to mission. Individually, each hazard presented could be assessed as a low risk. However, the cumulative effect of all these hazards significantly increased the overall mission risk.

To be effective, risk management does not end with the mission planning. The process of identifying, assessing, and controlling hazards must continue throughout the mission as the situation changes. While in flight, we often must accomplish "hasty" risk management because the particular situation may demand an immediate response. Time may not allow extensive hazard identification and analysis. In these cases, do as much of the process as time will permit. Even a hasty assessment is better than just reacting. The secret lies in our ability to fully integrate risk management into our basic decision-making process.

—CW5 Robert A. Brooks and CW4 Daniel O. Baxter, USASC Aviation Branch, DSN 558-3703/3774 (205-255-3703/3774)

RISK-ASSESSMENT MATRIX

EFFECT		HAZARD PROBABILITY				
		Frequent	Likely	Occasional	Seldom	Unlikely
		A	B	C	D	E
Catastrophic	I	EXTREMELY HIGH				
Critical	II		HIGH			
Moderate	III		MEDIUM			
Negligible	IV				LOW	

Valid risk assessments needed

The aviation community and the Army as a whole have enjoyed a downward trend in Class A through C accident rates for the last 3 years. This downward trend in Class A through C aviation accidents has occurred despite the lower aviator flight time experience, the increased complexity of the mission and equipment, the reduction of pure individual/collective training time due to budgetary constraints, and the requirement to execute training and missions in a more hazardous environment (night, night vision device, all weather, and so forth).

Without a doubt, effective application of the risk-management process has played an important role in bringing these accident rates down. However, accidents are still occurring in which either all the hazards were not identified or in which the cumulative mission risk was not appropriately assessed during the risk assessment.

It is crucial that the risk assessment show the true risk level associated with the mission. Do not allow cumulative numerical values on a worksheet to be the determining factor in who makes the risk decision. If the mission includes any potential high-risk hazards or any combination of hazards that would constitute a high risk, elevate the risk decision to the appropriate level in the chain of command.

Assessing individual hazards

Identified hazards must be correctly assessed to determine their individual and cumulative effect on the mission. The risk-assessment matrix (above) is a tool to help crews analyze individual hazards to determine the probability (how likely is the hazard to cause an accident?) and the effect of the consequences (how severe will the accident be?) should a problem occur.

Assessing cumulative risk

To assess the cumulative risk of mission hazards, units often develop a numerical risk-assessment worksheet appropriate for their operations or generate one based on the identification and assessment of individual hazards. However, if not properly used, the mission risk assessment can become a risk in itself if it establishes numerical values too low for the hazards being considered. To ensure the validity of the numerical values used in the mission risk assessment, units should ensure that the values yield a risk level commensurate with the complexity of the mission.

Making risk decisions

Some mission hazards should fall in the high-risk category. When one or a combination of these hazards fall in the high-risk category, the overall mission risk assessment should fall into the high-risk level regardless of the total cumulative numerical value obtained on the mission risk-assessment worksheet. The mission should then be elevated to the proper command level for approval. Too often, the risk-assessment process is too liberal. In effect, battalion, brigade, and division commanders are kept out of the decision-making process because the risk assessment falls in the low or medium level by design. Therefore, the risk decision is not elevated to higher-level commanders when their

experience and command influence in lowering risks are most needed.

In cases where crews are performing risk assessments without the benefit of the chain of command's input, leaders are kept from fulfilling their leadership responsibilities. Risk management starts at the mission planning stage, not after the decision cycle has been completed. A poorly assessed mission may yield a low risk value, thereby placing risk acceptance decisions at an inappropriate level. Getting the chain of command involved in the entire risk-management process—from identifying and assessing hazards affecting their unit's METL to developing proper control measures and supervisory procedures to mitigate or diminish the effect of those hazards on unit operations—enhances the chances of accomplishing the mission safely.

Recent accidents involving aviation crews highlight some common mission aspects that commanders should review as especially hazardous and deserving a higher risk value: crew experience, night vision devices, weather, mission complexity, and/or combinations of these. Commanders should train subordinate leaders to recognize hazardous situations and to elevate approval to the proper command level when one or a combination of the high-risk hazards exist.

Controls should be in place to ensure crews have a clear understanding of when the situation requires reassessment during mission execution. When new hazards arise or the risks of previously identified hazards increase, then pilots-in-command and air mission commanders need to reevaluate the cumulative risks their flights face and do what is in the best interest of everyone involved. Many times that can mean aborting the mission until situations change or conditions improve.

POC: LTC Herminio Velazquez, Investigations Division, DSN 558-9552 (205-255-9552)

Crew readiness level progression for battle-rostered crews

According to U.S. Army Aviation Center (USAAVNC) message dated 251200Z Feb 94, crew readiness levels (CRLs) no longer apply to aircrew training programs. All references to CRL will be deleted with the next change to TC 1-210: Aircrew Training Program, Commander's Guide to Individual and Crew Training scheduled for first quarter of FY 95.

Commanders are no longer required to battle roster crewmembers regardless of FAC level. However, they may still choose to battle roster crews at their discretion.

Commanders should note that a recent study of AH-64 crews by the U.S. Army Research Institute revealed that battle rostering had minimal effect on overall mission performance and flight safety for crews who have completed the Army's exportable training packet for crew coordination. Study data showed battle rostering had mixed results in some instances: gunnery performance improved with battle rostering, but crews tended to exhibit more complacency, overconfidence, and nonstandard coordination procedures in the cockpit.

The requirement in TC 1-215: Aircrew Training Manual, Observation Helicopter, for an aerial observer (AO) and aerial fire support observer (AFSO) to be battle rostered with a pilot-in-command (PC) for the purpose of emergency aircraft handling training is rescinded. The commander will designate in writing PCs to conduct emergency handling training with AOs/AFSOs.

Crew coordination training

The Army is still conducting crew coordination training, which is separate and distinct from crew readiness levels and battle rostering. This training is seen as the most effective solution for improving crew coordination. Commanders are required to implement the Aircrew Coordination Training Program in accordance with USAAVNC message 201630Z Jul 93, subject: Aircrew Coordination Training Program.

The USAAVNC point of contact for crew coordination training is CW5 Rodney Rowe or CW4 Jim Winston, Aviation Training Brigade, DSN 558-9545/2238 (205-255-9545/2238).

—MAJ Jose R. Arroyo, USAAVNC Directorate of Evaluation and Standardization, DSN 558-2603 (205-255-2603)

Keeping engines clean at the NTC

The Safety Center has received several calls concerning the proper way to flush helicopter engines at the National Training Center (NTC) at Fort Irwin, CA. As everyone who has been to the NTC knows, the sand and dust there can damage vital components of turbine engines. As everyone also knows, the need to remain tactical while also conforming to stringent California environmental protection standards when trying to clean the engines can create problems for units.

The Army has tested several engine wash solutions other than BB 3100, but it has been determined that not even rinse water could be drained onto the ground and still be in compliance with California Environmental Protection Agency standards. To properly dispose of the used gas path solution and the rinse water, it must be caught in a container and hauled to the disposal site. This is time consuming and costly since the unit has to pay for the disposal as hazardous waste.

Units have tried moving aircraft to some of the different Army and Air Force installations to flush their engines. There have also been recommendations that the Army install an environmentally safe engine-flush facility at the NTC, but use of either of these possible solutions would cause the units to sacrifice their tactical posture.

The difficulty in complying with the California environmental protection standards when performing engine washes and the need to remain tactical have caused several flight crews to either ignore the requirement for flushes or put them off until they could be done back at home station. Unfortunately, some accidents have occurred before the engine washes could be performed. In one case, the aircraft overflew the engine-flush requirements by about 10 hours and experienced an in-flight engine failure. Investigation revealed that the engine had extensive accumulations of ingested sand/dirt that disrupted airflow.

Soldiers find ways to overcome problems, and this problem is no exception. A soldier finally decided that the answer was a "kiddie pool." That's right, a small plastic pool like the ones little children use in the backyard in the summertime could be the solution.

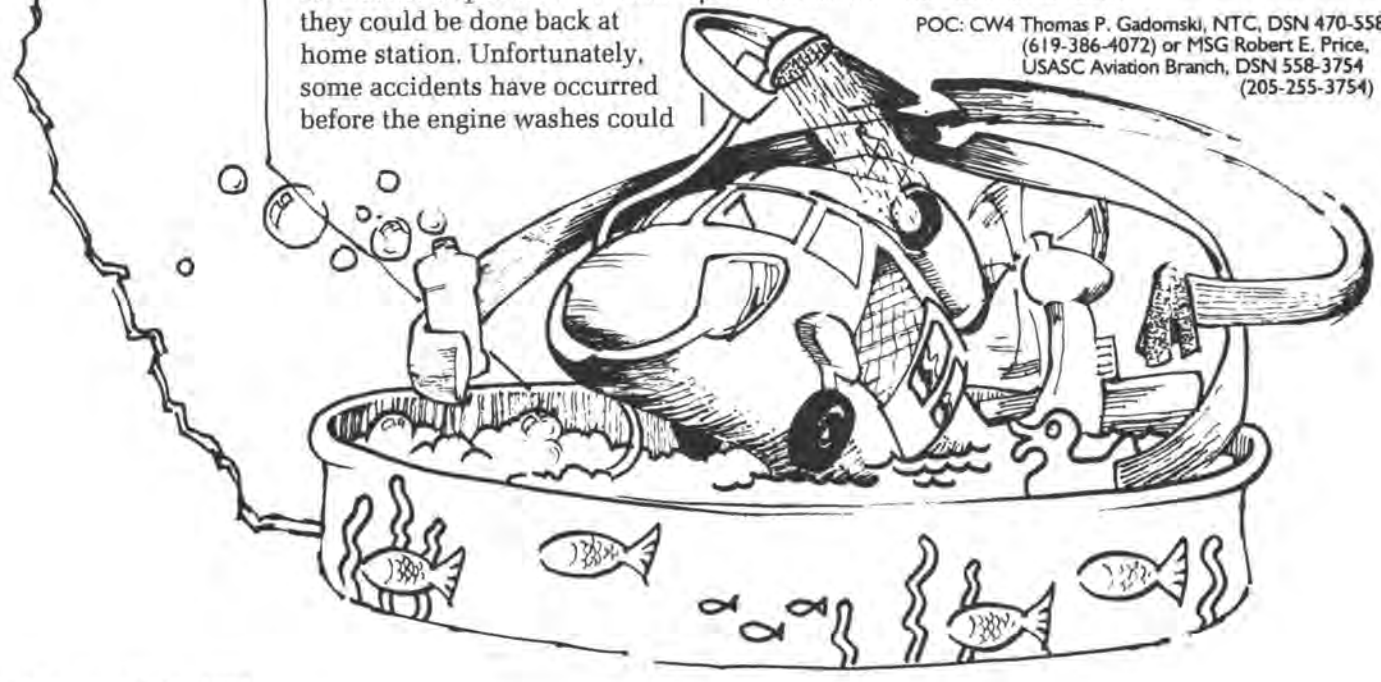
The pool is cheap and can be bought almost anywhere. The tactical problem is solved because the pool can be used anywhere. But what about the environmental problem? Liquid in the desert evaporates rapidly, leaving only a small amount of residue when the water is gone. This residue can easily be wiped up with a rag or damp paper towels and disposed of properly.

Sounds almost too simple:

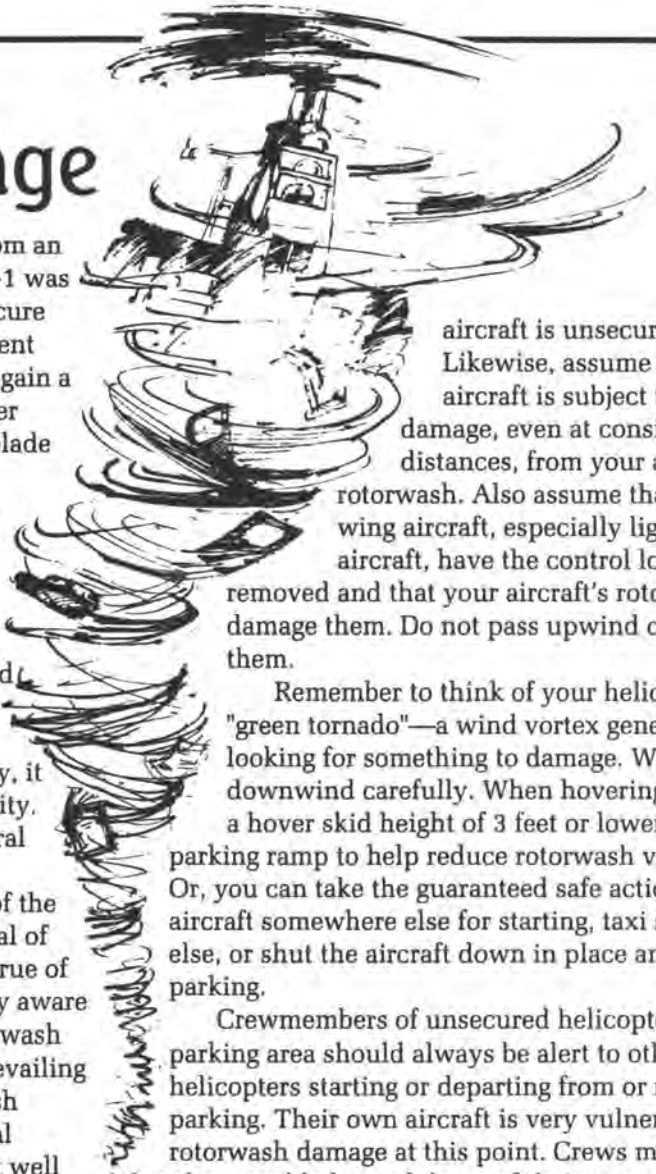
- Use the kiddie pool to collect the engine wash and rinse
- Let the liquid evaporate
- Wipe away the residue
- Dispose of the cleanup rag or towels properly

Simple or not, the procedure works well, is endorsed by officials at Fort Irwin, and is covered in the NTC training pamphlet. The next time your unit is scheduled to go to the NTC, remember to take along a few "kiddie pools." By doing so, you will be able to keep your unit's aircraft engines clean and operating *safely*. And you'll be able to comply with environmental standards and still remain tactical.

POC: CW4 Thomas P. Gadomski, NTC, DSN 470-5583 (619-386-4072) or MSG Robert E. Price, USASC Aviation Branch, DSN 558-3754 (205-255-3754)



Rotorwash damage



Our unit recently had a rear door torn loose from an OH-58 that had just been shut down. An AH-1 was hovering past as the OH-58 crew was trying to secure their aircraft. The AH-1 crew halted their movement until one of the OH-58 crewmembers was able to gain a handhold on the OH-58 rotor blade. But as another crewmember opened the rear door to obtain the blade tiedown, the AH-1 resumed taxiing, and its rotorwash caused the open door to separate. The door contacted the windscreen and nose of the OH-58 and continued on until it struck an AH-1 parked on the adjacent row.

The crew of the AH-1 was correct in halting their taxiing, as far as it went, but obviously, it did not go far enough to prevent this accident. If the separated door had hit any of the three crewmembers who were in the immediate vicinity, it could have caused a serious injury or even a fatality. As it stands, the aircraft damage amounts to several thousand dollars.

Aircrewmembers must always be conscious of the tremendous air velocities and destructive potential of their helicopter's rotorwash. This is particularly true of our bigger helicopters. Crews should be especially aware that prevailing winds will greatly add to the rotorwash problem in the downwind direction. In strong prevailing winds, hovering helicopters have rotor down-wash velocities that are potentially damaging for several hundred feet downwind to any aircraft that is not well tied down and completely secured.

Prevention measures

If aircrewmembers or maintenance personnel are inside or in the vicinity of any parked aircraft, assume that the aircraft is unsecured. Likewise, assume that the aircraft is subject to serious damage, even at considerable distances, from your aircraft's rotorwash. Also assume that fixed wing aircraft, especially light civilian aircraft, have the control locks removed and that your aircraft's rotorwash will damage them. Do not pass upwind of or near them.

Remember to think of your helicopter as a "green tornado"—a wind vortex generator looking for something to damage. Watch your downwind carefully. When hovering, maintain a hover skid height of 3 feet or lower on the parking ramp to help reduce rotorwash velocities. Or, you can take the guaranteed safe action: tow the aircraft somewhere else for starting, taxi somewhere else, or shut the aircraft down in place and tow it to parking.

Crewmembers of unsecured helicopters in the parking area should always be alert to other helicopters starting or departing from or returning to parking. Their own aircraft is very vulnerable to rotorwash damage at this point. Crews must ensure that the rotor blades and doors of their aircraft are promptly secured to prevent damage when there are helicopter movements underway in the parking area.

—CW3 Don C. Thomson, Aviation Safety Officer, 1st Battalion, 135th Aviation, Missouri Army National Guard, DSN 975-5771

Back to the basics

The July 1988 issue of the *Aviation Digest* contained an article titled "Enforcement of Standards Key to Safe Aviation Units." The article was based on a review of three units with exceptionally good safety records. Although each unit had a different organizational structure and mission, common threads ran through each.

Commanders

Commanders in these units established clearly defined performance criteria and ensured all personnel were aware of the standards. They established training standards and conducted training to those standards. And they were technically and tactically competent, possessed strong leadership and management abilities, and were highly involved in the appointment process for pilots-in-command. These commanders also took immediate and effective enforcement action against violators of proper flight discipline. This action reinforced self-discipline and created an awareness of intolerable behaviors and the consequences of deviation.

Aviators

The senior aviators helped train the inexperienced aviators in by-the-book operations. These aviators accepted responsibility for policing their own, which is a

prerequisite to being considered a professional. All the aviators took pride in the fact that their units conducted flight operations by-the-book. They felt the title pilot-in-command (PC) was a status earned instead of one automatically given. And they all demonstrated a high degree of professionalism in their duties.

Noncommissioned officers

The noncommissioned officers showed strong leadership in maintenance operations. They were personally competent and supervised personnel by making on-the-spot corrections and emphasizing by-the-book operations, clearly stressing that quality should never be sacrificed for quantity in maintenance operations.

In essence, what these units with good safety records did was rely on the basics—sound leadership, professionalism, self-discipline, and by-the-book operations. Getting back to the basics as the commanders, aviators, and noncommissioned officers did in the units surveyed, coupled with sound risk-management practices, is the key to helping us avoid costly accidents.

—MAJ James F. Dunn, Training Division, DSN 558-2947/3367 (205-255-2947/3367)

Where are all the ALSE maintenance personnel ?

As I travel to different units teaching the Aviation Accident Prevention Course (AAPC) for Noncommissioned Officers and conducting unit safety surveys, I find a problem that is prevalent in most units. There appears to be a lack of qualified aviation life support equipment (ALSE) maintenance personnel or there is an insufficient number of qualified personnel to properly maintain the unit's assigned equipment.

All units surveyed within the past year did have personnel maintaining the ALSE equipment; however in most cases, these personnel were not properly trained. By regulation, they were not qualified to maintain the equipment.

ALSE maintenance personnel requirements

Army Regulation 95-3: Aviation: General Provisions, Training, Standardization, and Resource Management, Section III, paragraph 7-7, states that "commanders having operational control of Army aircraft will provide personnel to perform required maintenance on ALSE." The regulation further states that "one ALSE maintenance person on a full-time basis would be adequate to maintain the equipment for up to 50 personnel." And according to the regulation, "commanders using personnel in a part-time capacity must adjust the number required to ensure that all required inspection and maintenance on ALSE is performed."

Section IV, paragraph 7-11 of AR 95-3 requires that commanders establish and equip ALSE maintenance shops and staff them with qualified ALSE maintenance personnel on a full- or part-time basis. Consolidation of shops and pooling of personnel and equipment is authorized when advantageous.

Training

AR 95-3, Section III, paragraph 7-8 states that "maintenance of ALSE will be performed only by trained, qualified personnel, either military or civilian." The only approved training is graduation from the U.S. Army, Air Force, or Navy ALSE schools or other courses of instruction approved by the U.S. Army Aviation Logistics School (USAALS), which has the responsibility for Army ALSE maintenance training.

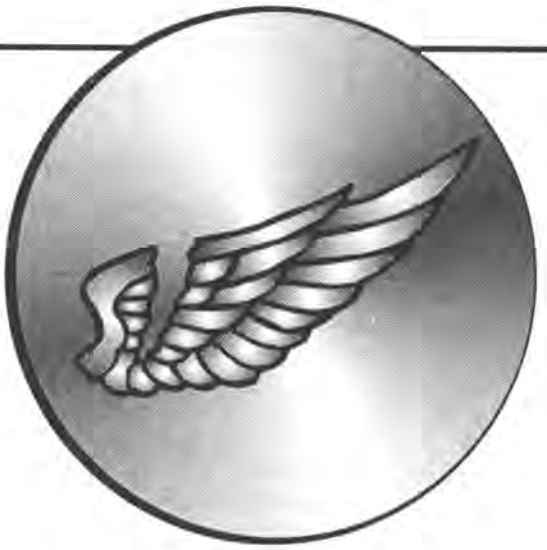
Information received from the ALSE school at USAALS indicates that about 400 ALSE maintenance personnel are trained per year. Based on findings during unit safety surveys, these highly trained personnel are not in the unit ALSE shops where they are most needed. Where do they go after graduation and why are they not being properly utilized?

Aircrewmembers deserve highly maintained aviation life support equipment to increase their chances of surviving if they should happen to be involved in an aircraft crash. We have the tools and are training the personnel to maintain that equipment. However, if the qualified ALSE maintenance personnel are not being properly utilized, we have accepted an unnecessary risk by lessening the chance that the crew's ALSE equipment will function as designed at the time when they need it the most. We cannot afford to accept that risk.

Unit commanders and first sergeants should review the qualifications of their unit personnel and get those who have been trained as ALSE maintenance personnel into their ALSE shops.

POC: MSG Keith A. Gallion, Training Division, DSN 558-1154 (205-255-1154)

Broken Wing award



The Broken Wing award is given in recognition of aircrewmembers who demonstrate a high degree of professional skill while actually recovering an aircraft from an in-flight failure or malfunction necessitating an emergency landing. Requirements for the award are spelled out in AR 672-74: Army Accident Prevention Awards Program.

■ **CW4 David E. Broadnax and CW3 Eugene A. Frost, Company D, 1st Battalion, 228th Aviation Regiment, W. Columbia, SC.** Under adverse weather conditions, the UH-1H crew was being vectored by air traffic control for a night instrument landing system approach. Weather was reported as 800 feet overcast, 2-mile visibility, rain, fog, and wind shear. The UH-1 was cleared for the approach and was handed off to the control tower for landing instructions. As the aircraft intercepted the glide slope, a complete hydraulics power failure occurred. Because of the turbulence and wind shear, CW4 Broadnax directed CW3 Frost to fly the glide slope with the collective pitch control and call out power settings and trim. The adverse weather required CW4 Broadnax to use both hands on the cyclic to maintain aircraft control and stay on the localizer course. The aircraft entered visual meteorological conditions at about 700 feet AGL and right of the intended course. While aligning the aircraft with the runway, CW4 Broadnax reduced the airspeed below 90 knots for the landing. The aircraft became unstable and difficult to control. He increased airspeed back to 90 knots to maintain stability for the approach and landing. Both pilots used collective pitch control to maintain a stable approach angle. The aircraft landed and skidded about 2,000 feet before coming to a stop. Inspection of the aircraft hydraulic system revealed a ruptured pressure line to the hydraulic filter.

■ **CW2 Eddie L. McSweeney, Company A, 4th Battalion, 123d Aviation Regiment, Aviation Brigade, 6th Infantry Division (Light), Fort Wainwright.** During departure from a confined area on a UH-1H NVG training flight, the master caution and hydraulic segment lights came on. CW2 McSweeney took the controls and initiated the hydraulics failure emergency procedure. Because of his position relative to the airfield, CW2 McSweeney decided to use the outbound NVG corridor to return to the airfield. He immediately coordinated use of the airspace with other traffic. Simultaneously, he declared an emergency and requested crash and rescue support through battalion flight operations. There was confusion between flight operations and rescue personnel as to the nature of the emergency, the location of the aircraft, and its intended landing site. Attempting to clear up the confusion, operations made several calls to CW2 McSweeney. Finally, unable to totally clear up the confusion and to allow total concentration while landing, CW2 McSweeney requested that operations stand by until the landing was complete. On short final, he verified the runway was covered by ice and several inches of powdery snow. As the aircraft touched down, it was engulfed by blowing snow. CW2 McSweeney used delicate control inputs to maintain runway alignment and aircraft heading on the icy surface. When the aircraft came to a stop, CW2 McSweeney performed an emergency engine shutdown. CW2 McSweeney was able to complete a successful NVG running landing despite no hydraulics, blowing snow, reduced visibility, the distractions of coordinating with other aircraft for airspace usage, and the confusion of coordinating with flight operations for emergency support. ◆

ShortFAX
Keeping you up to date

Congratulations AAAA winners!

The Army Aviation Association of America national award recipients for 1993 are:

■ **Outstanding Aviation Unit of the Year (Active).** 10th Aviation Brigade, 10th Mountain Division (Light), Fort Drum, NY 13602. Commander, COL Lawrence E. Casper, Senior Noncommissioned Officer, CSM Dwight J. Brown.

■ **Outstanding Aviation Unit of the Year (ARNG).** 1st Battalion, 106th Aviation Regiment, IL ARNG, 523 NE Adams Street, Peoria, IL 61603-4203. Commander, LTC Michael A. Marvin, Senior Noncommissioned Officer, CSM Frederick A. Lane.

■ **Outstanding Aviation Unit of the Year (USAR).** 7th Battalion, 158th Aviation Regiment (Cbt), 146th Aviation Group (Cbt), 2520 East Drive, Scott Air Force Base, IL 62225-5427. Commander, LTC James M. Richey, Senior Noncommissioned Officer, CSM Warren O. Berry.

■ **Army Aviator of the Year.** CW2 Gerhard P. Turner, A Company, 3d Battalion, 227th Aviation Regiment, APO AE 09165.

■ **Aviation Soldier of the Year.** SGT Joseph T. Ebuen, B Company, 1st Battalion, 58th Aviation Regiment (Corps), 159th Combat Aviation Group (Airborne), Fort Bragg, NC 28307-5000.

■ **Joseph P. Cribbins Department of the Army Civilian of the Year.** Mr. Rickie L. Barron, Directorate of Evaluation and Standardization, U.S. Army Aviation Center, Fort Rucker, AL 36362.

■ **James H. McClellan Aviation Safety Award.** CW5 James H. Raiford, Aviation Branch Safety Office, U.S. Army Aviation Center, Fort Rucker, AL 36362.

■ **Robert M. Leich Award.** The U.S. Army Aviation Logistics School (USAALS), Fort Eustis, VA 23604-5414. Assistant Commandant, COL Thomas E. Johnson, Senior Noncommissioned Officer, SGM Alan A. Gott.

■ **Top Chapter of the Year.** Colonial Virginia Chapter, COL Thomas E. Johnson, Chapter President, Assistant Commandant, U.S. Army Aviation Logistics School, Fort Eustis, VA 23604-5414.

Congratulations to all recipients for their significant achievements in Army aviation.

Wing stores inadvertently jettisoned

After completion of runup and system checks, the AH-64 copilot in the front seat was installing the backup control system (BUCS) locks in the flight controls. In the process of installing the locks, he placed them on his lap so that he could use both hands to lower his seat to the full-down position, which would provide easier access to the flight control base. The BUCS locks fell off his lap and struck the surface area of the jettison button on the collective control head. The locks striking the jettison button caused the wings stores to jettison.

MWO 1-1520-238-50-12, installation of stores jettison button covers, is being applied to prevent inadvertent jettison of the wings stores. Until completion of the MWO, special precautions are required in the cockpit to avoid striking the jettison button.

POC: MSG Alcides Santana-Cruz, USASC Aviation Branch, DSN 558-3051 (205-255-3051)

Accident briefs
Information based on preliminary reports of aircraft accidents

Utility

UH-1 Class C

H series - During engine response check portion of maintenance test flight, aircraft experienced compressor stall. Pilot made precautionary landing and completed normal shutdown. Damage requires replacement of 90- and 42-degree gearboxes and engine.

UH-60 Class C

A series - While hovering into POL, turbine gas temperature on No. 2 engine fluctuated in the red and reached 1,000°C for 3 to 5 seconds. Crew performed emergency engine shutdown. Teardown analysis of electromechanical control and hydromechanical control units in progress.

A series - After two aborted landings to unimproved, dusty LZ by pilot, PC took flight controls to make a third attempt. PC decided to land with greater forward airspeed in attempt to remain ahead of impending dust cloud. Upon contact of tail wheel and main landing gear, PC neutralized flight controls and applied brakes. Prior to end of aircraft's ground run, underside of nose section struck berm, damaging airframe.

L series - Aircraft departed on training mission that included local area orientation en route to confined-area practice site. IP demonstrated approach and landing to area. Pilot made several approaches to area and had trouble with aircraft alignment during each touchdown. On final landing, IP warned pilot that rate of closure was too fast. Pilot adjusted speed and landing appeared normal to crew. During rollout, crew felt severe vibrations through airframe and completed emergency shutdown. Inspection revealed that main rotor had contacted tail rotor drive shaft cover.

L series - Crew chief cleared area for landing. Aircraft descended, moved forward to clear foliage, and landed. No damage was noted during night postflight inspection. Maintenance inspection the following day revealed damage to all four main rotor blades.

Attack

AH-64 Class B

A series - Two main rotor blades contacted PNVS during engine shutdown. Investigation in progress.

AH-64 Class C

A series - Jack assembly broke off and entered engine, causing damage to IPS duct inlet, air barrier blower, and one tail rotor blade.

Cargo

CH-47 Class C

D series - No. 1 engine seized during maintenance operational check. Sudden stoppage inspection completed. Engine oil samples were normal, but engine transmission oil sample had high iron content.

D series - During night landing to unimproved LZ, pilot struck large rock with right rear landing gear. Landing gear was severely damaged, and some supporting sheet metal sustained damage.

Observation

OH-58 Class C

A series - On two separate occasions, aircraft was overtorqued to 120 and 115 percent respectively. Engine, transmission, main drive shaft, and transmission mast assembly removed for teardown analysis.

Fixed wing

C-12 Class B

C series - While taxiing for takeoff, left main landing gear ran off side of runway and struck runway light. As pilot was applying power to maneuver aircraft back onto runway, gear collapsed and propeller blades struck runway.

Messages

■ Safety-of-flight technical message concerning visual inspection of T53 engine data plates and instructions to obtain T53-L-13B engines for all UH-1 aircraft (UH-1-94-02, 012247Z Mar 94). Summary: CDRATCOM message 182200Z Feb 94, UH-1-94-01 grounded all aircraft with T53-L-13BA engines, P/N 1-000-060-10/-10A until replaced with -22 engines. T53-L-13BA engines, P/N 1-000-060-10/-10A with suspect second-stage power turbine nozzles within the power turbine assemblies are subject to failure. Within the last 2 years, 35 power turbine failures from this cause have been documented. One of these failures was not contained by the engine. Suspect nozzle was introduced at Corpus Christi Army Depot to eliminate cracks by installing a doubler (retainer) repair to the inner shroud. Over the years, the repaired nozzle has accumulated high operating time, as well as being exposed to thermal cycling and fatigue. This has resulted in failure of the repaired doubler and subsequent damage to turbine blades and nozzles (including the recent uncontained failure). Doubler repair was discontinued with the introduction of the T53-L-13B engine, P/N 1-000-060-22. In addition, various repair facilities zero timed -10/-10A engines without a complete overhaul. This generated engine records containing operational hours that are inaccurate and unreliable. As a result, the reliability and flight safety of the -10/-10A engine can no longer be assured. A comparison between engine data plates and engine historical records is required to ensure configuration control. Some engines may have been mistakenly marked as -10/-10A engines but are in a -22 configuration and are serviceable. T53-L-13B engines, P/N 1-000-060-22 shall be obtained using procedures outlined in this message. Units will not be required to fund replacement engines. The purpose of this message is to require units to inspect T53 engine data plates and historical records to confirm information, provide instructions to obtain T53-L-13B engines (P/N 1-000-060-22) to unground aircraft, and provide disposition instructions of T53-L-13BA engines, P/N 1-000-060-10/-10A. Contact: Mr. Brad Meyer, DSN 693-2085 (314-263-2085).

■ Safety-of-flight technical/operational message concerning main rotor stretched strap assembly on all AH-64 aircraft (AH-64-94-01, 011927Z Mar 94). Summary: A recent fatal AH-64A mishap is under rigorous investigation. Initial observations point to the main rotor stretched strap assembly as the most likely area of failure. Until the mishap investigation is complete, extraordinary precautions are warranted. A series of ASAMs and TBs have been issued related to inspections of the strap pack assembly. Current inspection interval is 10 hours providing no laminates are discrepant, or a 2.5-hour inspection interval is required if one laminate is discrepant. This message requires a preflight inspection of the strap pack assemblies by one of the flight crew prior to each flight. If the preflight inspection is inconclusive or a failure is detected, an additional inspection shall be performed by maintenance personnel. It further requires that a strap pack be replaced in accordance with new requirements in this message. As soon as conclusive information is made available from the mishap investigation, this message may be revised or augmented. Contact: Mr. Brad Meyer, DSN 693-2085 (314-263-2085).

■ Aviation safety action informational message concerning reporting of fuel cell problems for all Army aircraft using quality deficiency reports (GEN-94-ASAM-04, 021830Z Mar 94). Summary: A product quality deficiency report (PQDR), SF 368, is an important vehicle to identify material problems in aviation. Units are encouraged to submit PQDRs for early detection of mechanical defects and nonconforming parts. Actions initiated on certain fuel cells could have been addressed earlier if these problems had been identified in the PQDR system. The purpose of this message is to emphasize the need for submitting PQDRs on fuel cell problems. Contact: Mr. Brad Meyer, DSN 693-2085 (314-263-2085).

■ Aviation safety action informational message concerning nonstandard vibration analysis equipment (GEN-94-ASAM-05, 101800Z Mar 94). Summary: There have been several reports of unit-level commanders and contractors who perform maintenance for the Army procuring and allowing the unauthorized use of nonstandard vibration analysis equipment for the purpose of helicopter track and balance maintenance and vibration troubleshooting. Local procurement and usage of any other vibration analysis equipment not referenced in this message for the purpose of performing helicopter track and balance maintenance and/or vibration troubleshooting is considered a direct violation of Army Regulation 70-62: Airworthiness Qualification of U.S. Army Aircraft Systems, paragraphs 4.D(1), Utilization of Nonapproved Allied Equipment Testing, and 4.F(5), modifying parameters that could affect the operating limits and/or emergency procedures specified in the operators manual. The aviation vibration analyzer (AVA), NSN 6625-01-282-3746, is the standard U.S. Army support equipment to facilitate helicopter track and balance maintenance and perform helicopter vibration troubleshooting tasks. The AVA and the Chadwick Helmuth Model 177 (Vibrex), NSN

4920-01-040-7816, are the equipment authorized for use on all U.S. Army aircraft. The Helitune model R5M (Rotorturner) is authorized for use on the CH-47 only. Engineering support for safe and effective track and balance maintenance can only be provided when authorized support equipment is used. Note that there are no exceptions to this policy unless specifically authorized by the aircraft statement of airworthiness qualification or an airworthiness release. Previous use of unauthorized track and balance and/or vibration analyzers on Army aircraft does not constitute grounding of aircraft. However, all aircraft on which unauthorized track and balance and/or vibration equipment has been used shall have rotor (main and tail) track and balance maintenance performed with authorized equipment at the next phase inspection or required track and balance, whichever occurs first. Contact: MAJ Malmgren, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning modification to left cyclic rigid connection link on all UH-1H/V aircraft (UH-1-94-ASAM-03, 022000Z Mar 94). Summary: Several documented cases have been reported of interference between the new improved servo-cylinder (installed in the left cyclic position) and the left main beam bulkhead. The interference occurs during extreme movements of the cyclic stick, usually from the left forward quadrant to the right aft quadrant. The contact has been severe enough to dent the bulkhead and could result in the servo-cylinder getting caught up, jamming the cyclic controls. A correction/modification has been developed that allows AVIM personnel to reposition the servo-cylinder and alleviate this situation. The purpose of this message is to require a modification to the left cyclic servo-cylinder rigid connecting link of all UH-1H/V aircraft. Contact: Mr. Brad Meyer, DSN 693-2085 (314-263-2085).

■ Aviation safety action maintenance mandatory message concerning revision to UH-60-94-ASAM-07 (UH-60-94-ASAM-08, 082142Z Mar 94). Summary: Due to changes to increase the operating gross weight limit of the H-60 aircraft, it has been necessary to recalculate the retirement life of certain components. Also, an overhaul interval has been established for the spindle nuts. These components are listed in this message. The purpose of this message is to revise the task/inspection suspense date and the correction procedures. Contact: Mr. Jim Wilkins, DSN 693-2258/2085 (314-263-2258/2085).

■ Aviation safety action maintenance mandatory message concerning one-time inspection of Grimes master panel, P/N 80-0199-39, on all AH-1S(MOD) aircraft (AH-1-94-ASAM-04, 011652Z Mar 94). Summary: There are several types of master caution panels that may be installed in the AH-1S(MOD). One, manufactured by Grimes, will cause a failure of the pilot's armament control panel standby/armed indicator. This is an indication failure only; the system is still operational. At this time, we cannot identify how many Grimes master caution panels are installed in the AH-1S(MOD) aircraft. The intent of this ASAM is to require maintenance personnel to determine by stock and part number which master caution panel is installed and to identify and replace defective panels. Report the results of the inspection to the AH-1 Product Manager's Office, DSN 693-2081 (314-263-2081). The purpose of this message is to alert the operators of the AH-1S(MOD) aircraft of the possibilities of the Grimes panels being installed on their aircraft. Contact: Mr. Jim Wilkins, DSN 693-2258/2085, (314-263-2258/2085).

■ Aviation safety action maintenance mandatory message concerning KY-58 wire bundle interference with collective and cyclic controls on all OH-58A/C aircraft (OH-58-94-ASAM-08, 281920Z Feb 94). Summary: A Category I deficiency report stated that two aircraft modified in accordance with modification work order (MWO) 55-1520-228-50-27 were found to have binding in the cyclic and collective controls. This binding is caused by an interference between the cannon plug and harness for the KY-58 control head and the cyclic yoke. The purpose of this message is to alert all field units having OH-58A/C aircraft with MWO 55-1520-228-50-27 and draft MWO 55-1520-228-50-37 installed to inspect for and correct any obstruction to the free operation of the flight controls. Contact: Mr. Jim Wilkins, DSN 693-2258/2085, (315-263-2258/2085).

For more information on selected accident briefs, call DSN 558-2119 (205-255-2119).

In this issue:

- *Risk management for flight crews*
- *Valid risk assessments needed*
- *Crew readiness level progression for battle-rostered crews*
- *Keeping engines clean at NTC*
- *Rotorwash damage*
- *Back to the basics*
- *Where are all the ALSE maintenance personnel?*
- *Wing stores inadvertently jettisoned*

Class A Accidents *through March*

		Class A Flight Accidents		Army Military Fatalities	
		93	94	93	94
1ST QTR	October	6	2	2	0
	November	2	3	6	0
	December	0	2	0	2
2D QTR	January	1	1	0	2
	February	5	2	8	0
	March	1	0	5	0
3D QTR	April	4		0	
	May	1		1	
	June	0		0	
4TH QTR	July	0		0	
	August	1		0	
	September	2		0	
	TOTAL	23	10	22	4

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