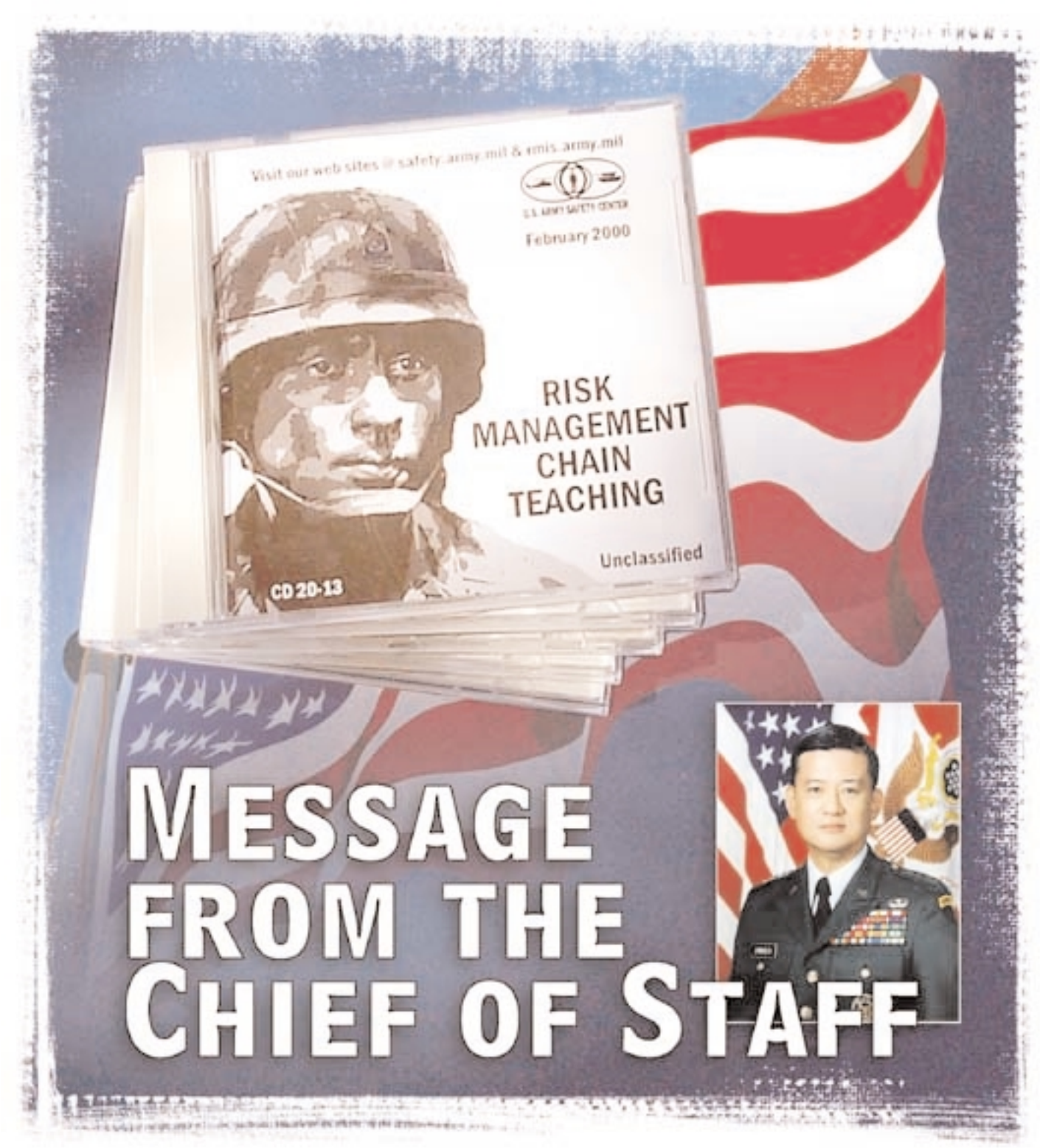
Flightfax

ARMY AVIATION
RISK-MANAGEMENT
INFORMATION

MARCH 2000 ◆ VOL 28 ◆ NO 3 http://safety.army.mil



MESSAGE FROM THE CHIEF OF STAFF

Message from the Chief of Staff

I need your help to ensure that commanders at every level are focused on safety and are using the risk management tools that have been developed to prevent accidents.

The Army accident rate is rising, specifically in the number of vehicle (both military and POV) and aviation accidents. We need to implement the following measures:

Brief all fatal accidents (on and off-duty) to the first general officer in the chain of command. The intent is for senior leaders to "AAR" the accidents and develop or reinforce procedures from the lessons learned.

■ Train each soldier on risk management. We have developed a chain-teaching packet which will be available on CD from the Army Safety Center. All soldiers should receive this training by 1 July 2000.

We have developed a chain-teaching packet which will be available on CD from the Army Safety Center. All soldiers should receive this training by 1 July 2000.

■ Ensure compliance with the Army six-point POV accident prevention program. This is a comprehensive program designed to aid commanders in reducing the risk of POV accidents.

■ Develop standardized, drivers' training programs. Many new soldiers are entering the Army without driver's licenses. We need to ensure soldiers develop driving skills that will allow them to competently and confidently operate under all conditions.

■ Ensure aircrew coordination training is sustained. The Aviation Center is building an exportable training package. Review your requirements, and enforce the training standards established by aircrew training manuals.

■ Use the safety professionals assigned to your organization. They are a valuable asset for assisting commanders with the planning and execution of an effective safety program. An effective safety program focuses on positive, preventative measures taken to reduce risk, rather than reacting to accidents after they occur.

■ Ensure compliance with accident-reporting procedures. We need accurate information from the field to focus on the right problems and develop the right solutions.

In closing, please remind your commanders that safety and risk management are their programs. Focus on safety by the chain of command will occur only if there is focus by commanders. Every soldier is a combat multiplier—we cannot risk one life unnecessarily. The objective is simple—enhance combat readiness through proactive risk management.

Persuasive in peace, invincible in war!

General Eric K. Shinseki

Editor's Note: If you have not received your chain teaching package, contact Dr. Brenda Miller, USASC, DSN 558-3553 (334-558-3553), millerb@safety-emh1.army.mil

...a study from our past major conflicts reveals that we have two enemies on the battlefield: them and us. In every modern conflict except Korea, more than 54% of the Army's casualties resulted from accidents. **— RMIS webpage**

Battery Acid Package Failure

Gallon-size bottles of battery acid with these NSNs
6810-00-823-8008 Grade 2 50%, 1-gallon bottle
6810-00-249-9354 Grade 3 37%, 1-gallon bottle
6810-00-236-0702 Grade 4 29%, 1-gallon bottle
6810-00-418-1697 Grade ¾ exception, 1-gallon bottle

may be in danger of breaking or leaking. The Army's shelf life administrator advises that the plastic containers for these items have been found to become brittle with age.

The Army's shelf life administrator requests that you make it a priority to check out your supplies of this commodity. The item is managed by the Defense Logistics Agency Supply Center, Richmond.

The shelf life is to be changed to Type I (non-extendable) 60 months, which will show up in LOGRUN, DLSC, SAMMS, and FEDLOG as shelf life code "S".

Depot stocks of this and other packages of this commodity will be screened to see what impact a change in shelf life will make on stock levels.

Kenneth Pillar, Army Shelf Life Administrator, US Army Logistics Support Activity, DSN 795-7685, (570) 895-7685 kenneth.pillar@logsa.army.mil

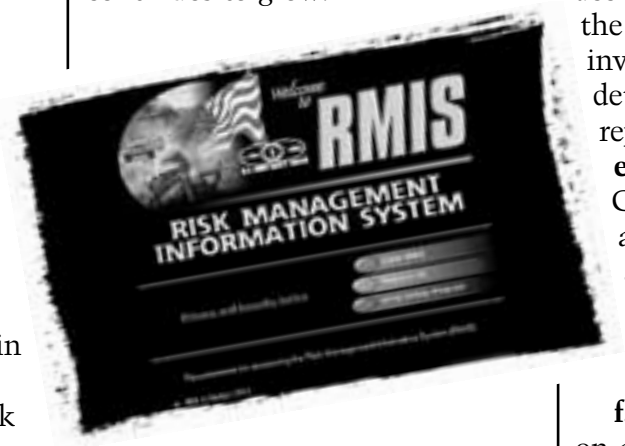
Risk Management Information System

The past safety successes achieved by the Army demonstrate the commitment and dedication of its leadership to protecting the force and multiplying combat effectiveness. Our goal is to continue the downward trend in the number of accidents. The U.S. Army Safety Center's Risk Management Information System (RMIS) is a powerful risk-management tool with the potential to help leaders and their staffs maintain this trend in accident rates.

Aimed at helping meet Department of Defense and Army goals for accident prevention, RMIS has been fielded and in use for about a year. It is an Internet-based risk-management tool that makes available to leaders worldwide a powerful "intelligence" system that offers significant help in identifying hazards and implementing controls to optimize force protection and multiply combat readiness.

RMIS, available in both a public and a restricted version, is designed to be a centralized, one-stop shopping source of near real-time information on hazards, risks, and controls. Still in its infancy, RMIS continues to grow more robust as sections are expanded and new sections are populated with data. As evidenced by its heavy use (104,434 requests from 23,423 users during the month of January, 2000), RMIS has become an invaluable tool in helping leaders and their staffs do the tough missions and do them safely.

Following is a recap of major additions and improvements as this risk-management tool continues to grow:



a. Systems. This section now contains direct links to the Army accident database and information on the Army's primary systems (tracked vehicles, wheeled vehicles, and aircraft). Also included are other safety links to risk management assessment tools, prioritized system hazards, and accident profiles.

b. Privately owned vehicles (POVs). This section was designed by a process action team to help Army agencies address POV accidents, the largest source of soldier losses. Included is the latest six-point program directed for use by the Chief of Staff Army. This section also contains a library of attention-getting accident photos that can be used for safety briefings.

c. Training. Significant improvements include five-minute safety briefings on a variety of subjects, ranging from hazardous materiel handling to electrical systems, the latest "hot news", and listings of available professional safety training.

d. Safety messages. Ensuring everyone "gets the word" has always been an Army wide problem. Safety messages are now available for aviation, night vision, and life support equipment. Also included are safety alert messages: Director of Army Safety notifications to the field of accident trends identified through the centralized accident investigation process and through detailed analysis of accident data reported to the Safety Center.

e. Help link. The Safety Center's help desk is readily accessible via this system to answer any technical or non-technical questions regarding risk management of systems and operations.

f. RMIS Training. Information on availability of and training on RMIS is provided at every civilian and military professional course taught by the U.S. Army Safety Center. Also, training to MACOMs and field agencies is available on request. RMIS is also briefed as a primary risk-reduction tool to all division commanders, students at the Aviation Pre-Command Course, the Aviation Warrant Officers Advanced Course, and students attending the Air War College. A brief overview of RMIS is provided to students attending the Inspector General School.

For further information on RMIS or to schedule training on the system, contact Mr. Dwight Lindsey, Program Manager, at DSN 558-1373, (334) 255-1373, or lindseyd@safety-emh1.army.mil. User notification and password access can be obtained through Ms. Wanda Thornton at DSN 558-2920, 334-255-2920, or thorntonw@safety-emh1.army.mil.

—Dwight Lindsey, Program Manager for RMIS, US Army Safety Center, DSN 588-1373, 334-255-1373, lindseyd@safety-emh1.army.mil

RISK MANAGEMENT LESSONS LEARNED

WAR STORIES

Crew Resource Management

Don't you just love the way most *Flightfax* stories start: "It was a beautiful, clear, sunny day. . . ." Well, this one doesn't. It was 900 overcast, 2 miles with rain showers, and the forecast was for it to get worse within 2 hours.

The field was barely VFR and we had a check-ride to complete. We were feeling the time crunch of trying to rush through our planning, weather, filing, risk assessment, and pre-flight while trying to make the weather window. This was our third attempt at finishing a check-ride, we were short IP's and we wanted this one to be a go.

Making Assumptions

I was from a different unit, so I didn't really participate in much of the planning duties. This effectively took me out of the Crew Resource Management (CRM) mix of responsibilities. Remember, CRM is supposed to use all the resources at your disposal. Don't assume the co-pilot is just along for the ride.

After hurrying through the aforementioned normal administrative items, we walked out to the aircraft. It was raining, heavier than forecast, and neither of us had a raincoat. Sound familiar? How often have you done the same, thought you'd be just a few minutes on a quick pre-flight? We had two sets of eyes, and were just staying in the pattern, so a really thorough pre-flight wasn't warranted.

We then proceeded to do a non-standard, not-by-the-book pre-flight. "You check the top. I'll check the bottom." Not exactly how the dash ten checklist is written, but how many of you do the same thing, dividing up the duties to speed up the pre-flight?

The Light Dawns

After completing our rainy duties, we strapped in and began the STARTING ENGINE checklist. Unfortunately, we failed to re-read the pre-flight checklist to confirm each pilot's work and the tasks he'd completed.

Another complication was that the unit had limited crew chiefs available. We had a fireguard for the APU start only, and he had his head down to avoid the rain when he gave us his clear, thumbs-up signal. He quickly departed the area once the APU was running.

After a normal engine start, we completed a BEFORE TAKE OFF check. The Number 1 engine checked out within limits and very close to the previous day's HIT. Our day became interesting when the Number 2 engine showed 100 degrees hotter TGT. We scratched our heads for a minute. Then a light dawned and I said "You don't think we left the inlet cover on, do you?"

I offered to hop out and visually check the inlet, but neither of us really thought we could make such a foolish error. (Don't those bright red covers have big REMOVE BEFORE FLIGHT streamers?)

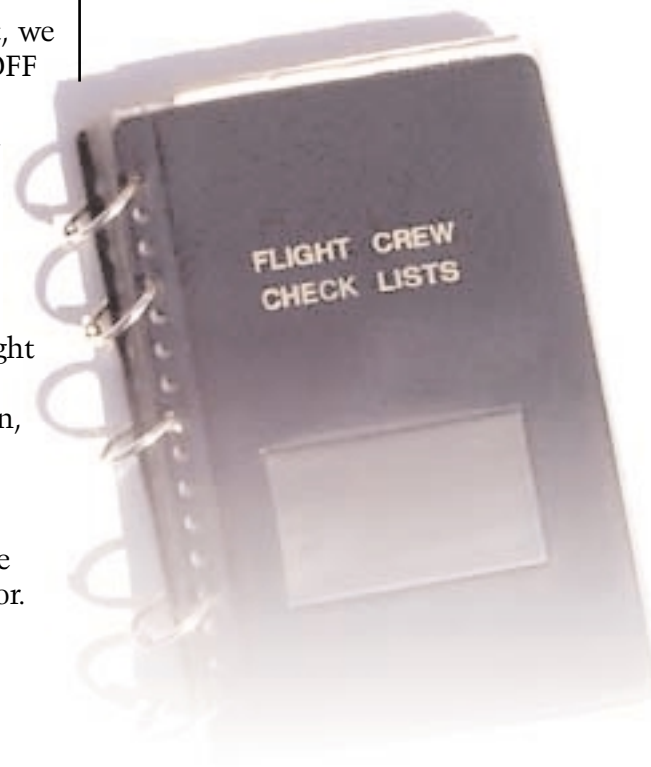
Sure enough, plastered against the swirl vanes, was the engine inlet cover. We performed an emergency engine shutdown, and ground taxied back to the tie-down area on one engine.

What if?

Our haste and failure to follow procedures almost cost us an $800,000 engine or worse. What if we had not noticed the HIT check, or disregarded it? What if we had launched for our traffic pattern flight experienced inadvertent IMC and lost the Number 2 engine? Think about how close we were to a potential disaster. How many eyes should have caught that inlet cover? Was it haste, poor CRM, or simple complacency? Probably all of the above.

Flying is as safe or as dangerous as we make it. Completing tasks by the -10, using proper CRM techniques such as delegation and walk-around inspections, and taking your time, will help keep us all safe.

—CW3 Spiro Davis, MA ARNG, 508-968-5863



Shortfax
Keeping you up to date

Simple Green's Not for Aircraft Washing

Don't Use "SIMPLE GREEN" to wash aircraft or aircraft components.

It has been brought to the attention of the AMCOM Depot Maintenance Engineering Team that numerous units are using the commercial product SIMPLE GREEN as an aircraft wash. STOP! This product has been through DoD testing and was determined to be highly corrosive on aircraft aluminum. It can also be a catalyst for hydrogen embrittlement in high strength aircraft alloys.

While it is a highly effective cleaning agent for floors and non-aluminum/non-high strength alloy vehicles, this product is not approved for aviation usage.

If your unit has been using SIMPLE GREEN on a regular basis, it is recommended that a thorough fresh-water wash with the approved cleaners per the appropriate airframe maintenance manuals be accomplished as soon as practicable. This should be followed up with a corrosion inspection/treatment and application of approved CPCs.

Insure that no unauthorized cleaning products are being used on your aircraft or in the shops as a component cleaner.

—Mr. Richard Cardinale, DSN 861-4041, (361-961-4041), corrosion@amcom-cc.army.mil

No High Pressure, Please

Some units are using high pressure washers to clean aircraft. That's a no-no. Para 3-3.9 of TM 1-1500-344-23, Aircraft Weapons System Cleaning and Control, says to use no more than 175 PSI nozzle pressure when you use a water hose. Pressure washers can develop very high pressure, sometimes in excess of 1,500 PSI. That pressure can harm numerous items on aircraft, including bearings, composite panels, and painted surfaces. A soft spray, no more than 175 psi nozzle pressure, is all an aircraft can handle—the softer, the better.

Here are some other targets to keep in mind when your aircraft needs a bath.

- DON'T OVERDO THE CHEMICALS. You need chemicals to clean the aircraft (see accompanying article about detergents) but don't overdo it. The right amount cleans the area intended. Too much causes run-off that can damage wiring and bearings, as well as doing potential harm to the environment.

- START WITH A DAMPENED CLOTH. If the dirt is stubborn, add water to dampen the cloth some more. If there's danger of run-off, you can protect the areas prone to get damaged with some waterproof paper, NSN 8135-00-753-4662, and preservation sealing tape, NSN 7510-00-852-8180.

- NO LINT, PLEASE. Any old rag might be fine for some cleaning chores, but an aircraft needs lint-free cloths. Lint can clog a filter, ruin an electrical contact, or pollute a vital fluid. Don't take that chance.

- STANDING WATER CORRODES. Any standing water left on the aircraft after cleaning needs to be wiped up. Water corrodes—standing water corrodes absolutely.

- PREVENTING CORROSION. The aircraft is clean, everything's fine-right? Hold one, the job's not finished until CPC (corrosion prevention compound) has been added to all those areas called out in your TMs.

—PS Magazine

Ergonomics Conference

The Department of Defense Ergonomics Best Practices 2000 Conference is set for 25 April 2000 in Bethesda, MD. With a theme of "Preserving Tomorrow's Global Reach Today!", the setting is the Uniformed Services University of the Health Sciences auditorium, 4031 Jones Bridge Road, Bethesda MD.

Open to all DoD and federal agencies free of charge, the target audience is safety and occupational health personnel.

A sample "tool kit" containing samples of the latest products produced by the DOD Ergonomics working group will be available – one kit to an installation or agency.

For additional information, check out the CHPPM Training website:
http://chppm-www.apgea.army.mil/trng/describe.crs/d8801.htm

Accident briefs

Information based on *preliminary* reports of aircraft accidents

AH64

Class C
A series

■ Electrical fire during APU run up resulted in avionics damage.

Class E
A series

■ During cruise flight at approximately 700' AGL, crew observed smoke entering the cockpit through environmental control unit (ECU) ducts. Shaft driven compressor (SDC) caution light illuminated within 10 seconds after onset of smoke. Aircrew initiated immediate approach for landing. Smoke continued to fill cockpit, obscuring pilot's ability to maintain visual contact with landing area. Pilot utilized night vision system (NVS) and helmet mounted display (HMD) to land aircraft. Emergency shutdown was performed without starting APU. No damage to aircraft.

■ During flight the automatic and manual stabilator modes failed and the stabilator indicator was erratic. The pilot returned to the airfield and landed without further incident. Maintenance personnel found water in the lower stabilator actuator. Actuator assembly was not sealed as required by maintenance information message (MIM) that is at least 3-4 years old. Aircraft was repaired and returned to service.

CH47

Class C
D series

■ During takeoff, the aircraft's rotor wash resulted in damage to Main Rotor Blades of a parked aircraft.

■ Aircraft entered wake turbulence during take-off, and transmission torque limitations were exceeded.

Class E
D series

■ On climb out with external load crewmembers identified fluid leak from aft area. On approach, crew noted decrease in aft transmission oil pressure to 10 PSI. Crew landed external load, then landed aircraft to sod area. A loose oil line to transmission was tightened.

Class E
E series

■ Crew detected smoke during post phase run-up. Inspection revealed seals were blown throughout the engine, resulting in oil leaking onto tail cone.

■ No. 1 engine firelight illuminated. No fire associated with light, aircraft returned to parking. Thermocoupling wiring harness replaced.

■ C-Box chip light activated in-flight. Precautionary landing made. Combining transmission seized during shutdown.

OH58

Class C
D(R) series

■ Aircraft experienced an engine overtorque during simulated engine failure with power recovery training.

■ While correcting for an uncommanded yaw at an OGE hover, the pilot overtorqued the engine and mast.

Class E
D(R) series

■ At a 3 ft hover, while conducting manual throttle operations, the SP in the right seat on the controls felt the throttle go slack. No throttle movements from the right seat correlated to the indicated RPM, which remained 103%. The IP (left seat) switched from manual to auto and regained control of the RPM. The SP landed the aircraft. Maintenance inspection revealed missing snap O-ring from base of collective/throttle.

UH1

Class E
H series

■ During cruise flight at 2,500 MSL 90 knots indicated airspeed, aircraft yawed left sharply followed by a change in engine noise. RPM warning light illuminated and the low audio sounded heard. N2 and rotor were still joined at 6200 RPM. Pilot on the controls initiated a descent and landed in open field with power. An emergency shutdown was completed with no other abnormal indications. Maintenance personnel examined engine for FOD, engine anomalies and loose connections. MTP could not duplicate event. Aircraft was signed off and released for flight.

UH60

Class C
A series

■ Aircraft engine temperature exceeded limitations during start-up.

Class C
L series

■ Preflight inspection revealed damage to two rotor blade tip caps. Suspect tree strike during APART evaluation.

Class E
A series

■ No. 1 engine experienced a stall with successive loud reports during ground run. No. 2 engine was at idle for 2 minutes; No. 1 engine was at fly; collective flat pitch; TGT increased from 750 degrees C to 825 degrees C during stall. No other abnormal indication. No. 1 engine power control lever was immediately retarded. Stall ceased and TGT decreased. No. 1 engine was shutdown.

■ After shutdown, crew noticed aircraft was sitting on a large rock near the center of the cabin area. No damage was apparent. Aircraft was repositioned and shut down again for further inspection. Crew noticed only scratched paint. Maintenance at home station found further damage.

■ While bringing PCLs to idle, No. 1 engine failed. Aircraft was shut down with no further incident.

C12

Class C
F series

■ While in flight at FL 250, No. 1 engine reportedly had an overtemp and N1 overspeed, which was later confirmed from engine data recorder.

Class E
D series

■ During takeoff roll, PC noticed No. 1 engine prop RPM was not increasing above 1900 rpm. Takeoff was aborted and aircraft returned to parking without further incident. Maintenance determined faulty overspeed governor was limiting prop RPM.

Class E
F series

■ At FL 160, cruise flight, 180 KIAS, pilot 's side (LH) inner windshield ply shattered. Pilot immediately began descent to 10,000 feet MSL and crew performed appropriate procedures IAW USAF-1. Pilot transferred the flight controls to the pilot stationed in the right seat for the remainder of the flight. Aircraft diverted and landed without further incident.

■ Approximately 10 minutes after departure, during climb out, right side windscreen outer ply shattered, OAT –22 C; windscreen heat was placed in the normal position just after takeoff and defrost heat was on. Aircrew landed with no further incident.

■ The No. 2 engine compressor stalled when power was increased prior to takeoff.

C23

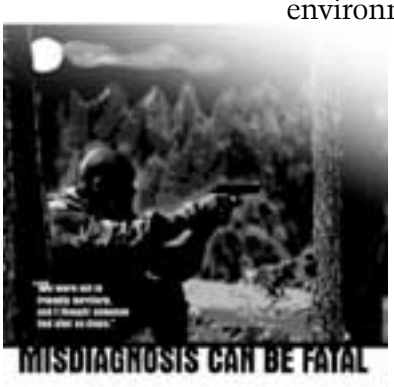
Class E
B series

■ On third traffic pattern, during take-off roll, crew felt aircraft decelerate slightly with no change in engine noise. On rotation with main wheels on the ground and nose wheel airborne, crew could feel a positive deceleration. IP assisted on the controls and lowered the nose back to the ground and scanned engine instruments. Aircraft again decelerated. IP announced abort and retarded engine power control levers to idle. Aircraft decelerated normally. While exiting the runway crew felt aircraft slowing without any brakes being applied. When aircraft was stopped on the taxiway, the left main tire deflated. Hydraulic system was serviced before flight. It is suspected that overservicing caused brakes to activate. The tire deflated due to overheating of the brakes.

For more information on selected accident briefs, call DSN 558-9855 (334-255-9855). Note: Information published in this section is based on *preliminary* mishap reports submitted by units and is subject to change.

Misdiagnosis– a Follow-up

Flightfax has received numerous questions from the field regarding the recent article "Misdiagnosis Can Be Fatal", published in the January 2000 *Flightfax*. We certainly appreciate the feedback and are encouraged that the publication is reaching our intended audience (the aviators and maintainers in the field). The following supplement to the original article is provided to answer some of the questions that have been raised.



First, it cannot be overemphasized that the article was not written to find fault with the aircrew. The intent was to show how inaccurate diagnosis of a problem is a recurring problem that has the potential to produce catastrophic results.

In this particular case, the crew's memory of the accident sequence differed substantially from what the recorded flight data revealed. Undoubtedly, you will draw your own conclusions, but keep in mind that the crew was operating in an unfriendly environment, at low altitude, under night vision goggles.

The fact that the PC felt the aircraft descend was a function of the pilot reducing the collective without announcing the emergency. The ENGINE OUT message did appear and then disappeared. The system is designed with a minimum three-second activation of the message to allow the aircrew to recognize what message was displayed. The ENGINE OUT message disappeared after three seconds. The cause of the erroneous ENGINE OUT activation was an anomaly and is still being addressed by the appropriate agency.

Despite what the PC recalled, the rotor did not immediately begin to decay. In fact, activation of the LOW ROTOR warning occurred a full seven seconds after the ENGINE OUT warning message was first displayed. Extensive analysis of the autorotation using recorded flight data failed to reveal why the momentary rotor droop occurred. Finally, recorded data showed that the TGT, NG and NP values remained consistent with normal, powered flight throughout the maneuver, confirming that the engine was operating normally at the onset and during the perceived emergency.

So what is the right answer? Unfortunately, we can only reiterate that the operator's manual states that you must confirm the condition with other indications. In the above incident, the PC thought he had multiple indications, but, in fact, the data showed that he didn't.

—CPT Stace Garrett, Systems Manager, Utility Branch, USASC. DSN 558-9853 (334-255-9853), garretts@safety-emh1.army.mil

Camouflage Face Paint

The question has come up again and again: is it okay to wear camouflage face paint while performing flight duties? It's a valid question, because aircrews are very interested in minimizing the hazard of burns in aircraft-related fires. We wear special fire-retardant clothes, boots, gloves and a helmet with visor. We fly helicopters with crash-worthy fuel systems that reduce the potential for post-crash fire. Then we smear camouflage paint on our faces. Is that really a good idea?

The experts at the Soldier Biological Chemical Command at Natick, MA, in coordination with the office of the Surgeon General, tested the ingredients of face paint before it was approved for your use. The contents are:

■ Compact form: ceresin wax, caster wax, mineral oil, talc, and pigments.

• (NSN 6850-01-262-0635)

■ Stick form: hydrogenated castor oil, carnauba wax, mineral oil, lanolin, talc, and colorants.

• (NSN 6850-00-161-6202 – green, light, or sand)

• (NSN 6850-00-161-6201 – loam or white)

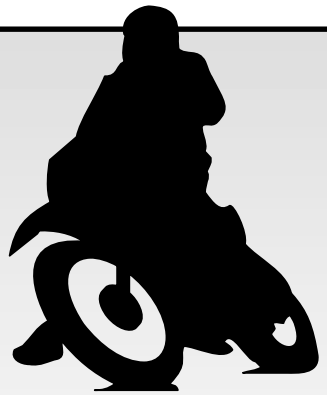
• (NSN 6850-00-161-6204 – green, light or loam)

A review of the Materiel Safety Data Sheets (MSDS) for the face paint shows the melting point to be 158 degrees F or above and its flash point to be 400 degrees F or above, which means it will melt off before igniting. Health hazards are listed as "none."

Some aviators reportedly use insect repellent as a base before applying camouflage face paint. Before doing so, be sure to read the label for the flash point of any insect repellents.

The bottom line is, face paint available through the Army supply system has been thoroughly evaluated for hazards. The same can't be said for face paint that you may buy commercially. Beware of petroleum-based face paint you might be tempted to pick up from local sources. Don't take a chance on petroleum-based face paint lighting up your life. Use only the Army supplied version for aircrew duties. The bottom line is that the use of face paint in no way degrades your survivability during a post-crash fire.

—SFC Ralph McDonald, ALSE NCO, USASC, DSN 558-3650 (334-255-3650), mcdonalr@safety-emh1.army.mil



POV Fatalities through 31 Dec

FY00	FY99	3-yr Avg
18	36	27

HIGH-RISK PROFILE

Age & Rank:
19-23, E1-E4, O1, O2
Place:
Two-lane rural roads
Time:
Off-duty, 1100-0300
Friday & Saturday nights

TRENDS
1. Speed
2. Traffic rule violation
3. No seatbelt or helmet

Beginning with this issue, Aviation statistics will be published quarterly.

IN THIS ISSUE

Message from the CSA 2
Battery Acid Package Failure . .2
Risk Management Information System 3
Crew Resource Management (WS) 4
Simple Green's Not for Aircraft Washing (SF) 5
No High Pressure, Please (SF) . .5
Ergonomics Conference (SF) . . .5
Accident Briefs 6
Misdiagnosis—a Follow-up 7
Camouflage Face Paint 8

WS • War Stories, CC • Crew Commo, SF • Shortfax

FY00 Aviation Accidents through 31 December

		Class A	Class B	Class C	Total
ACCIDENTS	Total* Avn Acdts	3	3	20	26
	Flight Acdt Rate	1.35	0.90	7.22	9.47
RATE COMPARISON	FY00 vs. FY99	-4%	92%	18%	19%
	FY00 vs. 3-yr avg	-1%	-25%	4%	-1%
Aviation Military Fatalities					2

* Includes Flight and Non-flight aviation accidents.

U.S. ARMY SAFETY CENTER

Flightfax is published by the U.S. Army Safety Center, Fort Rucker, AL 36362-5363. Information is for accident-prevention purposes only and is specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition. Address questions about content to DSN 558-9855 (334-255-9855). Address questions about distribution to DSN 558-2062 (334-255-2062). To submit information for publication, use fax 334-255-9528 (Attn: Flightfax) or e-mail flightfax@safety-emh1.army.mil Visit our website at http://safety.army.mil

Gene M. LaCoste
Brigadier General, USA
Commanding