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# FlightFax

REPORT of ARMY AIRCRAFT ACCIDENTS
October 1995 ◆ Vol 24 ◆ No 1

FY 95 was a breakthrough year in aviation safety: we achieved a Class A flight accident rate of 0.98 per 100,000 flight hours. Just a few years ago, only the visionaries dared to dream that someday we would be able to turn the corner on aviation accidents and break the 1.0 mark.

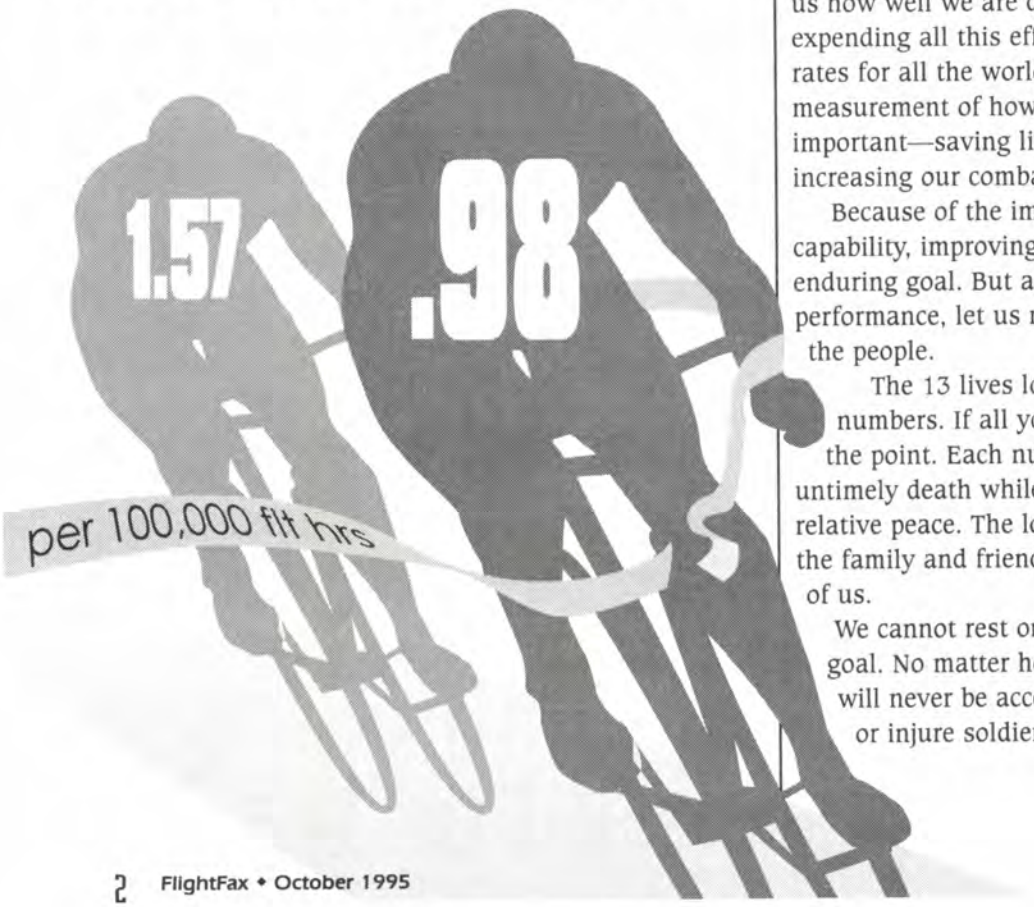
Congratulations to every single member of the Army aviation team on accomplishing the most significant event ever in Army aviation safety. Your embracing risk management and force protection efforts made a once seemingly impossible vision a reality.

# *a* DREAM *becomes a* REALITY

# FY 95—the best year ever in Army aviation safety

The benchmark aviation safety record was set in FY 92 with a Class A flight accident rate of 1.57 per 100,000 flight hours. Repeating achievement of such a significant milestone proved to be a tough challenge. In fact in FY 93 and FY 94, we fell just short of the FY 92 record. But we continued to move in the right direction by indoctrinating soldiers in the safety culture. And the result of all aviation team members applying risk management to daily operations has made FY 95 the year we turned the corner on aviation accidents.

As this issue of *FlightFax* goes to press, the Class A aviation flight accident rate for FY 95 stands at 0.98 per 100,000 flight hours. The final FY 95 statistics will not be available until the flying hours are verified during this month of October. Even though the final Class A flight accident rate may change slightly, we are confident that the FY 95 Class A rate will become a new Army benchmark. Final FY 95 statistics and a recap of all FY 95 Class A accidents will be included in the next issue of *FlightFax*.




### Pause for a moment to . . .

Congratulate yourselves and take pride in this monumental safety accomplishment—but don't linger too long with the backslapping. Even as we savor the moment, we must remind ourselves that if all we do is look back, something out front will be waiting to snare us and our safety momentum will be lost. We still have much work to do.

### Recap of FY 95

**The good news.** A lot of good things were going on in aviation safety during FY 95. Not only were we able to reduce our Class A flight accident rate to its lowest ever in FY 95, we also reduced our Class A through C flight accidents and total costs.

Compared to 21 in FY 94, the Army experienced only 12 Class A flight accidents during a year in which the optempo was exceptionally high for some units. Our Class A through C flight accidents decreased significantly as well—from 116 in FY 94 to 84 in FY 95. And we were able to reduce total aviation accident costs from approximately $108 million in FY 94 to about $76 million in FY 95.

**The bad news.** In spite of our great successes, FY 95 was marred by the loss of soldiers in accidents that could have been prevented. We lost 13 soldiers in FY 95 flight accidents, 2 more than we lost in FY 94.

### Remembering those lost

Although we sometimes tend to focus on statistics to tell us how well we are doing in aviation safety, we are not expending all this effort to produce ever more impressive rates for all the world to see. The rates are only a measurement of how well we are doing in what's really important—saving lives, equipment, and money while increasing our combat capability.

Because of the importance of safety to our combat capability, improving our safety performance must be an enduring goal. But as we continue to work to improve that performance, let us never forget that what really counts is the people.

The 13 lives lost during this fiscal year are not just numbers. If all you see is the number 13, you've missed the point. Each number represents a soldier who met an untimely death while serving our country in a time of relative peace. The loss of each individual not only touches the family and friends affected by that death, it touches all of us.

We cannot rest on the laurels of reaching a numerical goal. No matter how low the numbers and rates go, they will never be acceptable as long as we continue to lose or injure soldiers in preventable accidents.

### Looking ahead to FY 96

The big question is, Can we repeat or perhaps even improve upon our FY 95 safety performance? As we begin FY 96, the safety momentum is high, but we must stay focused to maintain it. If we don't we could quickly give up some of the high ground we've worked so hard to achieve. No one doubts that FY 96 will be another challenging year for Army aviation. The missions won't be easy, and we must work hard to protect our soldiers and preserve our resources.

### Your role

Risk management is the bedrock of our safety culture. And we must continue to promote it because soldiers live and operate in a highly demanding and potentially dangerous environment. Study risk management, learn to use and apply it intuitively, and teach others to do the same. When you think about the mission, apply risk management by constantly identifying, assessing, and controlling hazards in your daily operations. The more you practice applying the risk management process and principles, the easier it becomes.

Safety begins with you. In everything you do, practice safety by planning ahead, applying risk management, and using common sense. *Don't take any unnecessary risks.* Make a personal commitment to force protection efforts and help us ensure that an even safer future lies ahead for all members of Army aviation. The fact is you will determine what we accomplish in FY 96. ❑

# The Hawthorne effect and accident reduction . . .

*Should an upward trend in accidents occur, this phenomenon can be used as a short-term fix but be wary of failure to identify underlying causes.*

I was stationed in Korea during the summer of 1994 when Eighth U.S. Army (EUSA) had a series of aviation mishaps. About 12 major accidents occurred within a 3-month period—a totally unacceptable upward trend in accidents. The Commanding General held a meeting with aviation commanders to determine what could be done to reverse the trend. The inevitable safety standdown days were held, and the mandated training in aircrew coordination was completed in record time.

A curious phenomenon regarding accident trends sometimes happens in Army aviation safety. After the Commanding General's meeting with aviation commanders, which was followed by increased unit emphasis on safe operations, the accidents mysteriously stopped. My battalion commander also noted this phenomenon and asked, "Why did the accidents stop after the Commanding General became involved?"

As a safety officer, I was also puzzled. I in turn asked a senior safety officer, CW5 Windell Mock, about this. He said, "Al, it's easy to explain. Think of it in terms of the Hawthorne effect." The Hawthorne effect? What is the Hawthorne effect?

### The study

Webster's defines the Hawthorne effect as "the stimulation to output or accomplishment that results from the mere fact of being under concerned observation." It refers to an interesting discovery made during a study at the Hawthorne plant of the Western Electric Company in Cicero, IL, from 1924 to 1932. The study focused on the effect that raising and lowering work area light levels would have on productivity.

Group A employees were *told* their work performance was being studied and monitored while the researchers *increased* light levels in their work areas. When higher light levels were applied, a corresponding increase in worker productivity occurred. Meanwhile, a control group was not informed about the close scrutiny of their performance with varying light levels. Although light levels were increased, their productivity remained the same. Group B employees were also *told* their work performance was being studied while researchers *decreased* their available light. Amazingly enough, their productivity also *increased* even though lights were turned down so dim they could barely see what they were doing.

### The conclusion

It was not the increase or decrease in light levels that changed productivity. Productivity changed because workers became aware of the fact that they were part of a special group. Because they were being monitored and attention was being given to their work, the workers felt special, as if they were an elite group.

### How does this apply to Army operations?

The Hawthorne effect may have been evident during the Desert Shield buildup. Following several early Class A

accidents, it became evident that aviation units were operating in an environment like none they had encountered before. The Army's senior leadership quickly focused on this problem area and formed a team of experts to assess the hazards, particularly during NVG operations.

Attention by the chain of command, the public, and the media put Army aircrewmembers in the limelight. Aware that they were the focus of intense efforts to establish more effective techniques for operation in the desert terrain, aircrewmembers took pride in knowing that America's Army was counting on them to perform as disciplined professionals in as safe a manner as possible until more effective NVG desert flying techniques could be determined. Consequently, even in preparing for imminent war in a harsh, unfamiliar environment, aircrewmembers began exercising more caution while an operations planning guide with a crawl-walk-run progression of unit NVG training programs in desert operations was being prepared. The result: a decrease in the accident rate.

Considering that at least 75 to 80 percent of all accidents are attributed to human performance, commanders and leaders at all echelons must consider and use principles such as the Hawthorne effect when attempting to control accident cause factors. The obvious lesson is that if you make a group or person feel special, they will usually respond in proportion to the degree of importance they feel. Our Army leadership recognizes this point and continually stresses that we have a trained and ready Army—one that is capable of decisive victory. America counts on them, and individual soldiers can take pride in knowing that they are part of an elite group of warfighters trained to serve the Nation at home and abroad and to defend the interests of our country and those of our allies. Conversely, those same individuals and groups may perform in a proportionately negative manner if they do not feel that their superiors and peers view them in a positive manner.

## A word of caution

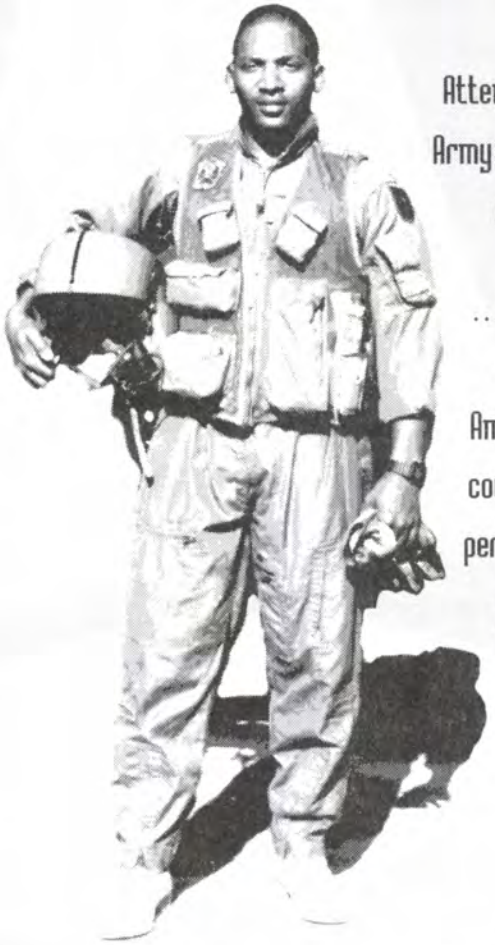
The Hawthorne effect can also work in reverse. Historically, there are higher rates of accidents during static displays and air shows. This can be explained because aircrews fly to the limits of their abilities and the capabilities of their aircraft (and sometimes beyond) to satisfy their perceived notion that the public expects them to put on an exciting show.

There is another equally important consideration regarding this phenomenon. While intense command interest in aviation safety issues is certainly important and does appear to "activate" the Hawthorne effect, commanders should be aware that they have in many cases done nothing more than buy time if they do not discover the root cause of an upward accident trend. The true causes of the rising accident rates cannot be eliminated or positively controlled until they are identified. Unidentified, the real problems will only lie dormant until the focus of the command has relaxed, then the same problems often reoccur.

This is not to say that the Hawthorne effect is a good or bad thing. Actually, it is neither. It is simply a phenomenon that can be used to affect human behavior. Understanding and effectively using the Hawthorne effect is the key to its positive application. We must constantly strive to convey to our soldiers that they are an elite group—the best-trained, best-equipped fighting force the world has ever known—and demand nothing short of excellence from them.

We are coming off a great year in Army aviation safety. But when the attention afforded our significant FY 95 accomplishments subsides and accident rates begin to rise, we must remember to focus our efforts on identifying the underlying causes. At the same time, we can rely on short-term fixes such as the Hawthorne effect to remind aviation team members that they are indeed an elite group of warfighters and that the Army leadership is counting on each of them to curtail any upward trend in accidents.

**POCs: CW3 Alfred L. Rice, A Company, 1-212th, Aviation Training Brigade, Fort Rucker, AL, DSN 558-4064 (334-255-4064); and CW5 Windell Mock, Aviation Safety Manager, Office of the Director of Army Safety, DSN 225-7291 (703-697-7291)**



Attention ... put Army aircrewmembers in the limelight.

... [they] took pride in knowing that America's Army was counting on them to perform as disciplined professionals ....

# Technical publications update

*The following is a list of current aviation changes, revisions, and new technical publications:*

| Publication Number | New (N), Revision (R), Change (C) | Subject |
|---|---|---|
| MWO 1-1270-476-55-17 | N | Modification of TADS Turret |
| MWO 1-1520-237-50-22 | N | UH-60 Improved Airspeed System |
| MWO 1-1520-238-50-39 | N | Phase Generator Wire Clamping, AH-64 |
| MWO 1-1520-240-50-68 | N | Install GPS AN/ANS 149(V)1 |
| TB 1-1520-237-20-153 | R | UH-60 Tail Rotor Pitch Change Shafts |
| TB 1-1520-239-20-161 | N | Change of Retirement Life for M/R Blade Cuffs |
| TB 1-1520-238-20-42 | R | Rec Insp of APU PTO Clutch |
| TB 1-1520-240-20-76 | N | Torque Check of Lower Drive Link |
| TB 1-1520-248-20-32 | N | One-Time Insp and Restack of ADEL Clamps |
| TB 1-2840-229-20-2 | N | Sandy Environment or Combat Ops for T-53 Engine |
| TB 1-1520-210-20-26 | N | Inspection of Fuel Boost Pump |
| TB 1-1520-237-20-166 | N | Pitch Change Shafts |
| TB 1-1520-240-20-75 | N | One-Time Inspection of Stratopower |
| TB 1-2835-205-20-2 | N | Sandy Environment or Combat Ops for Gas Turbine Engine |
| TB 1-2835-208-20-2 | N | Sandy Environment or Combat Ops for Gas Turbine Engine |
| TB 1-1520-238-30-8 | N | Head Assy, Inst/Insp, AH-64 |
| TB 43-0001-03-3 | N | Aviation EIR Digest |
| TB 43-0001-03-4 | N | Aviation EIR Digest |
| TB 43-0001-03-5 | N | Aviation EIR Digest |
| TM 1-1270-476-23P | C2 | TADS Assy, AH-64 |
| TM 1-1500-328-23 | R | Aero Equip Maint Management |
| TM 1-1510-223-MTF | N | RC-12N Maint Test Flight Manual |
| TM 1-1520-237-23P-1 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23P-2 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23P-3 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23P-4 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23P-5 | R | EH/UH-60 Maint Manual |
| TM 1-1520-237-BD | R | EH/UH-60 Battle Damage |
| TM 1-1520-237-S | R | EH/UH-60 Shipping |
| TM 1-1520-237-MTF | C1 | EH/UH-60 MTF Manual |
| TM 1-1520-237-10 | C2 | EH/UH-60 Operator's Manual |
| TM 1-1520-237-CL | C2 | EH/UH-60 Checklist |
| TM 1-1520-237-23-1 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-2 | C2 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-3 | C1 | EH/UH-60 Maint Manual |

| Publication Number | New (N), Revision (R), Change (C) | Subject |
|---|---|---|
| TM 1-1520-237-23-4 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-5 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-6 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-7-1 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-7-2 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-23-8 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-PMS-1 | R | EH/UH-60 Maint Manual |
| TM 1-1520-237-T-1 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-237-T-2 | C1 | EH/UH-60 Maint Manual |
| TM 1-1520-238-10 | C1 | AH-64 Operator's Manual |
| TM 1-1520-238-CL | C1 | AH-64 Checklist |
| TM 1-1520-238-23-1 | C2 | AH-64 Maint Manual |
| TM 1-1520-238-23-2 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23-3 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23-4 | C4 | AH-64 Maint Manual |
| TM 1-1520-238-23-6 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23-7-1 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23-7-2 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23-8 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23-9 | C1 | AH-64 Maint Manual |
| TM 1-1520-238-23P-1 | R | AH-64 Maint Manual |
| TM 1-1520-238-23P-2 | R | AH-64 Maint Manual |
| TM 1-1520-238-23P-3 | R | AH-64 Maint Manual |
| TM 1-1520-238-23P-4 | R | AH-64 Maint Manual |
| TM 1-1520-238-23P-5 | R | AH-64 Maint Manual |
| TM 1-6625-736-13&P | N | Test Set, Electronic |
| TM 1-6625-3081-30P | C2 | Elec Equip Test Fac, TADS/PNVS |
| TM 5-4930-234-13&P | C5 | Closed Circuit Refueling Nozzle |
| TM 9-1270-476-30 | C24 | TADS Assy, 28,000 BTU/HR |
| TM 10-4930-247-13&P | C3 | HTARS |
| TM 55-1500-345-23 | C6 | Painting & Marking Army Acft |
| TM 55-1520-210-23-2 | C8 | UH-1H/V, EH-1H/X Maint Manual |
| TM 55-1520-210-23-3 | C7 | UH-1H/V, EH-1H/X Maint Manual |
| TM 55-1520-228-23-2 | C8 | OH-50A/C Maint Manual |
| TM 55-1520-236-23P-3 | C10 | AH-1S (PROD) Maint Manual |
| TM 55-1520-240-10 | C5 | CH-47D Operator's Manual |
| TM 55-1520-240-CL | C3 | CH-47D Checklist |
| TM 55-1520-240-PMD | C8 | CH-47D Maint Manual |
| TM 55-1520-240-23-1 | C56 | CH-47D Maint Manual |
| TM 55-1520-240-23-2 | C18 | CH-47D Maint Manual |
| TM 55-1520-240-23-4 | C33 | CH-47D Maint Manual |
| TM 55-1520-240-23-6 | C19 | CH-47D Maint Manual |

| Publication Number | New (N), Revision (R), Change (C) | Subject |
|---|---|---|
| TM 55-1520-240-23-9 | C17 | CH-47D Maint Manual |
| TM 55-1520-240-23-10 | C14 | CH-47D Maint Manual |
| TM 55-1520-240-23P-1 | C7 | CH-47D Maint Manual |
| TM 55-1520-248-10 | C7 | OH-58D Operator's Manual |
| TM 55-1520-248-MTF | C4 | OH-58D Maint Test Flight Manual |

| Publication Number | New (N), Revision (R), Change (C) | Subject |
|---|---|---|
| TM 55-1520-248-23-4 | C5 | OH-58D Maint Manual |
| TM 55-1520-248-23-7 | C7 | OH-58D Maint Manual |
| TM 55-1520-248-23-8-2 | C2 | OH-58D Maint Manual |
| TM 55-1520-248-23-9 | C3 | OH-58D Maint Manual |

**POC: CPT Peter Newell, Engineering Programs Branch, USASC, DSN 558-1235 (334-255-1235), fax DSN 558-9528 (334-255-9528)**

# Documentation for DA forms

ATCOM recently issued a maintenance information message (MIM) (GEN-95-001, 171756Z Aug 95) concerning documentation for DA forms governed by DA Pam 738-751: *Functional Users Manual for the Army Maintenance Management System—Aviation (TAMMS-A)* and DA Pam 738-50: *The Army Maintenance Management System (TAMMS)* update 14.

The purpose of the MIM is to alert aviation maintenance managers that—

■ DA Pam 738-750 maintenance management update 14 was published 1 August 1994. This update changed DA Form 2408-14: *Uncorrected Fault Record* dated October 1991 and DA Form 2407: *Maintenance Request*. The update also deleted DA Form 5504: *Maintenance Request Used for Standard Army Maintenance System (SAMS)*. The following instructions will be followed until the next DA Pam 738-751 is published:

◆ Without Army aviation approval, DA Form 2408-14 dated October 1991 was changed in June 1994 to meet the needs of ground equipment maintenance. The June 1994 version is similar to the October 1991 version, but it is not compatible with unit-level logistics system—aviation (ULLS-A) and the needs of Army aviation. Therefore, the following actions are authorized:

• The DA Form 2408-14 dated October 1991 is approved for aviation use. Stocks of DA Form 2408-14 dated October 1991 must not be destroyed.

• If the October 1991 version is not available, the DA Form 2408-14 dated June 1994 will be used. If the June 1994 version of the DA Form 2408-14 is used, ensure that the entry in column B (fault) includes the system, fault date, and fault.

• The October 1991 version of DA Form 2408-14 will be reissued as DA Form 2408-14-1 when DA Pam 738-751 is next revised.

◆ DA Form 5504: *Maintenance Request* used for SAMS reporting was deleted. Do not use.

◆ DA Form 2407: *Maintenance Request* was revised. This form is now used by SAMS units and non-SAMS units. The preparation instructions in the current edition of DA Pam 738-751 pertain to the August 1988 version of the DA Form 2407. Until the next revision of DA Pam 738-751 is published, aviation users should use the preparation instructions for the DA Form 5504 in DA Pam 738-751 for the new DA Form 2407. The new DA Form 2407 is similar and most of the blocks are compatible to the DA Form 5504 but are arranged somewhat differently.

■ The correct addresses for submission of DA Form 2410: *Component Removal and Repair/Overhaul Record,* DA Form 2408-19-3: *Engine Component Operating Hours Record,* and quality deficiency reports (QDRs) are as follows:

◆ DA Form 2410—Commander, U.S. Army Aviation & Troop Command, ATTN: AMSAT-I-MDO (2410), 4300 Goodfellow Blvd, St. Louis, MO 63120-1798.

◆ DA Form 2408-19-3—Commander, U.S. Army Aviation & Troop Command, ATTN: AMSAT-I-MDO (TACTS), 4300 Goodfellow Blvd, St. Louis, MO 63120-1798.

◆ QDR—Commander, U.S. Army Aviation & Troop Command, ATTN: AMSAT-I-MDO (QDR), 4300 Goodfellow Blvd, St. Louis, MO 63120-1798. This QDR address change affects paragraphs 3-6.A.(2), 3-6.C.(1), and 3-6.C.(3) of DA Pam 738-751.

■ AMSAV-M Form 188: *Serialized Parts Life Tracking System (SPLTS) Reporting* is no longer an acceptable form. It was deleted by DA Pam 738-751 dated 15 June 1992. DA Form 2408-19-3 is the correct form.

**Points of contact**

■ Maintenance—Ms. Ann Waldeck, DSN 693-1821 (314-263-1821).

■ Foreign military sales (FMS)—CW5 Jay Nance or Mr. Ron Van Rees, DSN 693-3326/3659 (314-263-2066/2067). ❑

# Understanding ALSERP

The U.S. Army Aeromedical Research Laboratory (USAARL) established the aviation life support equipment retrieval program (ALSERP) in 1972 under the authority of AR 95-5: *Aircraft Accident Prevention and Reporting*. The purpose of the program was to evaluate and record the efficiency of aviation life support equipment (ALSE) in an aircraft accident environment.

The initial program was based on accident record analysis only. To accommodate more detailed analysis, the program has evolved into a laboratory-based examination of helmets and other ALSE by a selected interdisciplinary team of engineering, medical, and aviation safety experts.

ALSERP is not limited to but is primarily focused on rotary wing accident investigation. Its goal is to maintain or increase aircrew protection during aircraft impact scenarios by collecting injury and equipment-performance data, analyzing the data, and presenting trends to substantiate design improvements. The objectives of today's program are to determine whether ALSE performed as desired and if not, to develop concepts and criteria for design or remanufacturing improvements.

Individuals who are appointed to serve on a U.S. Army Safety Center (USASC) centralized accident investigation (CAI) team or local accident investigation team complete accident forms that present the injury data necessary in our research. They accomplish this by establishing the nature and cause of the trauma, correlating the distribution of victims and their injury patterns, and evaluating the application and use of human factors design engineering principles. Accident investigators also record in the accident report any item of ALSE or personnel protective equipment that is in any way implicated in the prevention or cause of an injury. Items that prevented injury, caused injury, or failed to perform as a function of design, manufacture, or use are shipped to USAARL for analysis (DA Pam 385-40: *Army Accident Investigation and Reporting)*.

Authorized by regulation and a letter of agreement with the USASC, USAARL participates when requested and as budget and personnel permit in all Army aviation accidents where flight crews are injured. In cases where we do not participate directly, we routinely provide consultant services to assist the investigators assigned to the investigation.

Given a brief sketch of the crash kinematics and type and degree of injury, we advise investigators on the pieces of ALSE that should be sent to the lab for further analysis. We help investigators determine crash kinematics, assess the performance of crashworthy seats and restraint systems, assess the survivability of the aircraft environment, and correlate the human-to-equipment response. Physical collection, investigation, and documentation of ALSERP data and equipment involved in an accident is a joint investigation team-USAARL effort.

The primary purpose of accident investigation is the prevention of future accidents and injury. It follows that a complementary effort between accident investigators and USAARL can better ensure comprehensive injury and accident data recording and analysis. If you are assigned to a CAI team or a local accident investigation board, call us and let us help you during the investigative process.

**POCs: CW5 Joel J. Voisine or Mr. Joseph R. Licina, Aviation Life Support Equipment Retrieval Program Managers, USAARL, Fort Rucker, AL, DSN 558-6895/6893 (334-255-6895/6893)**

*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.*

■ **CW3 Glenn A. Spilman, 603d Aviation Support Battalion, APO AE 09250.** While flying straight and level, the UH-1H crew heard a loud grinding sound coming from the rear of the cargo area. The aircraft yawed left, back to the right from the pilot's inputs, and began to descend. CW3 Spilman, the pilot-in-command, in the right seat took the flight controls, lowered the collective, and retarded the throttle. A loud pop was heard and smoke began coming from behind the dashboard. While smoke was pouring out, CW3 Spilman saw the only possible landing area was about 90 degrees to the left. As CW3 Spilman was turning the aircraft and making a mayday call, the pilot set the transponder to emergency. By this time, the cockpit was so full of smoke neither CW3 Spilman nor the pilot could see the dashboard much less the landing area. CW3 Spilman could only see a red and yellow glare coming through the smoke from the dashboard and trees out his door. Knowing there were numerous trees and the intended landing area was just at glide distance, CW3 Spilman maintained his airspeed to increase glide distance. Because of the smoke, he had to rely on what he felt, heard, and didn't hear to maintain control of the aircraft during the descent. At about 150 to 200 feet AGL, the smoke had stopped pouring into the cockpit and had dissipated to the point where CW3 Spilman was able to see the landing area, which was still ahead with some trees in the flight path. At about 100 feet AGL, he started to decelerate while maintaining enough forward airspeed to clear obstacles and reach the intended landing area. At about 15 feet AGL, CW3 Spilman pulled initial pitch to slow the rate of descent. With the ground getting closer, he could no longer hold the decelerating attitude. He then leveled the aircraft as he began to cushion. Because of the upslope condition and the very soft field from numerous rainshowers, the landing gear stuck into the ground, causing the crosstubes to rotate and the fuselage to land on its belly. CW3 Spilman then performed an emergency shutdown in response to the fire light and the crew chief calling out smoke. Inspection revealed that the nose reduction gear assembly most likely failed in flight from materiel failure or fatigue, causing the engine to fail.

■ **CW4 Kenneth W. Cowan, Army Aviation Support Facility, California Army National Guard, Stockton, CA 95205.** About 1 hour into the CH-47 general test flight, CW4 Cowan was performing a turbine engine analysis check (TEAC) on the No. 2 engine. This flight check requires tht the No. 1 engine be at idle producing zero torque while the tested engine produces maximum military power. CW4 Cowan was recording engine parameters and manipulating engine condition levers while the pilot maintained heading and altitude. The aircrew heard a loud bang, followed by another loud bang. The aircraft experienced a severe yaw. CW4 Cowan perceived the rapid rotor RPM decay as the No. 2 engine fire light illuminated and the flight engineer simultaneously announced a visible fire surrounding the No. 2 engine. CW4 Cowan immediately reduced the thrust lever and began an autorotation. Subsequently, the pilot reduced airspeed with aft cyclic which when coupled with the rapid thrust reduction, increased rotor RPM toward an overspeed. CW4 Cowan manipulated the thrust, stabilizing the RPM. He then performed the emergency engine shutdown procedure and activated the fire suppression system for the No. 2 engine while making an emergency call to the tower. CW4 Cowan brought the No. 1 engine on line to flight, directed the flight engineer to secure himself, and advised the pilot that the No. 1 engine was on line. After descending through 500 feet AGL at a 1,700-feet-per-minute autorotational rate of descent, CW4 Cowan applied power and landed the aircraft in an open pasture. After landing, CW4 Cowan executed an emergency engine shutdown and the crew evacuated the aircraft. Subsequent analysis indicated that the No. 2 engine experienced a catastrophic failure caused by the severance of the power turbine shaft. Part of the power tubine shaft failed against the gas generator shaft, which in turn failed and caused a seizure of the accessory gearbox and oil pump. These failures caused an explosion that disintegrated the last stage of the power turbine, which then exited through the exhaust. ❑

# ShortFAX
Keeping you up to date

## Height-velocity-avoid region

The UH-60 with its dual engines brought a safety margin to utility helicopter operations that wasn't possible with single-engine aircraft. However, as mission demands expand and new equipment is added, Black Hawks frequently operate at higher gross weights than in the past.

UH-60 crews should be aware that operating in the height-velocity-avoid regions can be hazardous to them too, if one engine becomes inoperative. The avoid regions vary based on gross weight and atmospheric conditions encountered.

Pilots should review the information in the operator's manual on the height-velocity-avoid regions for single-engine failure and avoid flying in these danger zones as much as possible.

**POCs: Mr. Dennis Menckowski or Mr. Michael Lupo, Utility Helicopters Project Manager's Office, Aviation and Troop Command, DSN 693-3210 (314-263-3210)**

## Address verification

Because of new postal regulations, we are updating our distribution lists for *FlightFax*. The post office now requires building numbers, street addresses, and 9-digit zip codes. APO addresses should include unit, box, and CMR number as appropriate.

Please review and update your current mailing label and return the corrected label to us. If your address is correct, please return the existing label and so state. Return your label to Commander, U.S. Army Safety Center, ATTN: CSSC-IM, Bldg 4905, 5th Avenue, Fort Rucker, AL 36362-5363, or fax requested information to DSN 558-2266 (334-255-2266). ❑

## Helicopter external load operations

The lack of standard pendants for hook up of certain loads presents a hazard to aircrews, ground crews, the lift helicopter, and the equipment being transported. Air delivery equipment (ADE) lines are commonly used as field-expedient pendants to provide long lines between the helicopter and the load. These nylon web straps are easily cut by the sharp edges of the load or an inappropriate shackle.

Using current hookup procedures and equipment, the close proximity of the lift helicopter to certain loads has resulted in the helicopter settling on the load, damaging it, damaging the helicopter, and in some cases, injuring hookup personnel. This condition is much more hazardous during NVG operations.

Older rigid reach pendants are difficult to hook up and can prevent the proper function of the helicopter cargo keeper. Roll pins have failed to secure the grab hook keeper, resulting in dropped loads.

The Aviation and Troop Command recently issued a safety of use message (SOUM-ATCOM-95-007, 141545Z Aug 95) to—

- Identify standard lines and shackles to be used as long-line pendants and to prohibit the use of other unauthorized field-expedient pendants.
- Require the use of reach pendants for specific external air transport (EAT) loads to provide the necessary clearance to accomplish the hookup quickly and safely.
- Prohibit the use of the older aerial recovery kit reach pendants on the forward and aft hooks of the CH-47D.
- Require the field modification of grab hooks to replace the roll pin with a bolt and lock nut.
- Require the use of a castellated nut and cotter pin to secure the safety bolt on the apex fittings.

**Points of contact**

- Technical—Mr. Jerome C. Smith, DSN 693-1676 (314-263-1676).
- Logistical—Mr. Dick Harper, DSN 693-5362 (314-263-5362).
- Safety—Mr. Brad Meyer, DSN 693-2085 (314-263-2085). ❑

## Delayed implementation of survival radio requirement

AR 95-3: *Aviation: General Provisions, Training, Standardization and Resource Management*, dated 27 September 1990 and effective 26 October 1990, requires that each aircraft crewmember be equipped with a survival radio. The Department of the Army issued a message (HQDA message 081245Z Aug 95) superseding HQDA message 030920Z Aug 94 and authorizing delay in the complete implementation of paragraph 7-68 of AR 95-3 until 30 September 1996.

This delay is to allow redistribution of the AN/PRC-90 survival radios and fielding of the AN/PRC-112 survival radio. PM Aviation Electronic Combat (AEC) is currently fielding one AN/PRC-112 per aircraft. Additional AN/PRC-112 radios will be procured if additional funding becomes available.

In the interim, the pilot-in-command (PC) will continue to ensure that not less than one fully operational survival radio is on board the aircraft. This does not preclude crewmembers from carrying additional radios on board the aircraft as assets become available. In addition, the PC will ensure that crewmembers without radios have other means of signaling; for example, the L119 foliage penetration flare kit and/or a signal mirror.

**Points of contact**

- HQDA, LTC Jim Budney, DSN 227-0487.
- PM-AEC, Mr. Jim Macelderry, DSN 992-4605. ❑

# STACOM
## Standardization Communication

During recent assistance visits, Directorate of Evaluation and Standardization (DES) personnel discovered that some units are selecting 2000-series ATM tasks, modifying the task condition, and redesignating them as 3000-series tasks. For example, a unit had changed the *condition* of several 2000-series tasks to "orally" and listed them as 3000-series tasks to avoid the ATM's requirement to perform the tasks in the aircraft. Obviously, this practice saves time and money; however, it also allows unit personnel to be progressed to RL 1 status without ever having actually performed those particular tasks.

The U.S. Army Aviation Center, Aviation Training Brigade (ATB), the proponent for TC 1-210 and all ATMs, has determined that this practice is not authorized. Once a task is approved as a standard DA task, any modification must be requested by submitting a DA Form 2028: *Recommended Changes to Publications and Blank Forms*.

TC 1-210, paragraph 3-2c states, "Those tasks that the commander determines are essential to METL accomplishment *but are not in the ATMs* will be designated as additional tasks and listed separately. The commander assigns these tasks 3000-series numbers." In other words, 3000-series tasks are tasks required by a commander in order to support the unit's mission and have not been published as a standard DA task (not listed in the ATM).

The DES POC is CW4 Estrada, DSN 558-2442 (334-255-2442). The ATB POC is CW4 Johnson, DSN 558-3801 (334-255-3801).

**STACOM 165** **October 1995**

Prepared by the Directorate of Evaluation and Standardization, USAAVNC, Fort Rucker, AL 36362-5208, DSN 558-1098/3504. Information published here generally precedes the formal staffing and distribution of Department of the Army official policy. This information is provided to all commanders to enhance aviation operations and training support.

William H. Bryan
Colonel, Aviation
Director of Evaluation and Standardization

# Accident briefs
## Information based on *preliminary* reports of aircraft accidents

### Aviation flight accidents

### Utility

#### *UH-1 Class A*

H series - While in cruise flight at 1,100 feet AGL, crew experienced suspected engine malfunction and executed autorotation. Aircraft came to rest in about 8 feet of water. No injuries.

#### *UH-1 Class C*

H series - During RL 3 training, IP told pilot to perform manual throttle (emergency governor) operations. Pilot induced engine overspeed that went to 7300 RPM before IP could apply corrective actions. Engine, main rotor hub, and tail rotor bolts and nuts replaced.

H series - While in flight, crew experienced increase in engine RPM (+6900), N1 (+101.5 percent) and rotor RPM (+356) for maximum of 5 seconds. Crew applied manual control of N2 and executed precautionary landing without further incident. Engine and drive train component replaced due to engine overspeed and drive train overtorque.

V series - Thermostat flow control failed while in the closed position during engine runup. Engine oil temperature gauge climbed to 140° before crew completed shutdown. Engine replaced.

#### *UH-60 Class A*

A series - Aircraft was lead in flight of two during NVG mission. At about 700 feet AGL, Chalk 2 observed a flash from Chalk 1's No. 2 engine. Chalk 2 then observed Chalk 1 in a high-speed descent to water impact. Four fatalities.

#### *UH-60 Class D*

A series - During level flight at 4,000 feet MSL and 120 knots, small electrical fire started in lower right corner of pilot's windshield (anti-ice connector). Crew noticed that pilot's windshield anti-ice switch was on and turned it off. Crew used hand-held fire extinguisher to extinguish fire and completed uneventful landing at heliport. Maintenance disconnected windshield anti-ice.

A series - IP demonstrated NVG approach to confined area along dirt road. Dust cloud developed on final approach, obstructing peripheral view of IP and crew chief sitting on right side. Approach terminated with tip path plane being very near bush on right side. During postflight, crew discovered damage to all four main rotor blade tip caps.

#### *UH-60 Class E*

A series - During maintenance test flight evaluation, crew was performing maximum power check and successfully completed No. 1 engine checks. During power check on No. 2 engine at 4,500 feet and OAT of 30°C with a TGT of 840° and NG of 99.3, crew heard a loud noise followed by failure of the No. 2 engine. TGT exceeded 1,000°, low RPM light illuminated, and

audio activated. Pilot on controls entered autorotation while other pilot brought No. 1 engine back on line and performed emergency engine shutdown on No. 2 engine. Crew flew aircraft single engine back to base.

## Attack

### *AH-1 Class E*

E series - During cruise flight, No. 1 hydraulic caution and master caution lights illuminated. Crew heard loud noise from No. 1 hydraulic pump area and lost yaw control. Crew completed run-on landing. Inspection revealed hydraulic lock nut was loose. Lock nut and No. 1 hydraulic pump replaced.

### *AH-64 Class C*

A series - During night system APART evaluation EP training, IP administered simulated engine failure at altitude. Aircraft incurred low airspeed and began to descend. As aircraft neared power lines, IP applied power to No. 2 engine and collective to arrest descent. Torque on No. 1 engine reached 134 percent before No. 2 engine came on line. Crew completed landing without further incident.

### *AH-64 Class E*

A series - Upon advancing engine power levers to fly position, PC noted that No. 1 engine NP was exceeding normal limits. PC secured both engines. Maintenance replaced engine alternator.

## Cargo

### *CH-47 Class C*

D series - Aircraft was slingloading disabled UH-60A to home station when rotor blade tiedown broke, allowing UH-60 blades to flap. First blade snapped 2 feet from rotor hub, and second blade also flapped and sustained damage.

D series - During overwater level flight, clamshell doors blew off. Crew completed landing without further incident.

## Observation

### *OH-58 Class A*

A series - Aircraft struck large power lines and crashed inverted. Two fatalities.

### *OH-58 Class C*

A series - While departing mission area in level flight to the east, PC observed small fixed wing aircraft descending at 12 o'clock position. PC took controls and initiated evasive maneuver. During immediate descent, he heard rotor noise and observed rotor RPM at 115 percent. PC increased collective, resumed power to flight, and executed precautionary landing without further incident.

D series - Tail rotor balancing weight severed and lodged into tail rotor blade. Crew completed landing without further damage. Gearbox mounting bolts and tail boom sustained damage.

D series - While conducting laser testing at 600 feet AGL, aircraft entered descent. When crew attempted to arrest descent, aircraft experienced overtorque of power train system.

### *OH-58 Class E*

A series - During cruise flight at 2,000 feet MSL, transmission oil hot light illuminated. Crew landed aircraft at civilian airfield. During postflight, crew found transmission fluid on deck and running down side. During 100-hour inspection prior to flight, extra transmission oil had been added due to low indication. Extra oil caused foaming and overtemp. Inspection of sight glass revealed that clear plastic disc used during shipping had moved into a position that prevented oil from showing accurately.

## Fixed wing

### *C-12 Class E*

D series - On gear extension, red light remained on in gear handle and right main gear-down light did not illuminate. On sixth attempt using manual extension, right gear safe light illuminated and red lights extinguished in gear handle, but gear warning horn still sounded when crew reduced power. Gear was visually confirmed down, and crew completed landing and shutdown on runway. Inspection revealed that right main landing gear downlock switch had malfunctioned.

K series - During descent from FL 330, crew decreased power levers. No. 1 engine was producing popping noise and TGT indicated 100° hotter than No. 2 engine. When attempting to increase power, No. 1 engine torque would not increase above 20 percent, TGT would increase to upper limit (830°), N1 fluctuated from 60 to 90 percent, and popping noise would increase. Crew reduced power on No. 1 engine to idle, declared an emergency, received clearance to recovery base, and landed without further incident. Inspection revealed compressor turbine vane ring assembly was damaged.

### *C-26 Class E*

B series - During cruise flight, high pressure hydraulic line ruptured, resulting in total hydraulic failure. Systems lost included landing gear, flaps, and nose wheel steering. Crew completed emergency procedures and landed without further incident.

### *EO-5 Class C*

B series - During flight, cowling was loose. During subsequent preflight inspection, crew noted damage to props and spinner.

### *OV-1 Class E*

D series - While climbing to 14,000 feet prior to level off, PC saw light flashes from right side of aircraft accompanied by popping sounds. Crew noted no abnormal cockpit indications. During power change at level off, crew still noted no abnormal indications. Observer in right seat observed flames coming from No. 2 engine exhaust. PC again noted no abnormal indications on engine instruments but elected to perform emergency procedure for engine fire in flight. Crew secured No. 2 engine and activated fire extinguishing system. PC executed uneventful single-engine approach and landing.

### *U-21 Class C*

H series - While performing single-engine flight at altitude in landing configuration, operating engine experienced electrical failure. Landing gear was retracted, flaps would not retract, and lights dimmed. Troubleshooting procedures failed to restore electrical power. Engine failed to restart. Crew applied maximum power to good engine to sustain altitude. On final, emergency landing gear extension was successful. Engine experienced ITT reading of 775°C for 10 minutes (no torque reading available due to electrical failure).

H series - While conducting upper air work maneuvers during APART flight evaluation, pilot initiated go-around in landing configuration at altitude. After applying power and initiating climb, SP failed left engine with condition lever. Pilot initiated correct emergency procedure and gear retraction was uneventful. However, flaps would not retract. Crew noted loss of all AC electrical power. Right generator fail light dimmed. Attempt to restart left engine showed no ignition light. SP unsuccessfully attempted to secure radios with master avionics switch to off position. Crew manually lowered gear on final and completed uneventful landing.

## FOD incidents

### *UH-1 Class F*

H series - During flight, 7/16 quarter-inch drive socket that had inadvertently been left in tail rotor drive shaft housing came in contact with rotating rear 3 drive shaft couple, driving the socket down through skin into tail boom. Inspection revealed damage was limited to one tail rotor drive shaft clamp and sheet metal.

*UH-60 Class F*

A series - Crew failed to note that No. 2 engine inlet cover was still installed. Crew started engine, and No. 2 engine sustained FOD damage.

## Aviation-ground accident

*AH-64 Class C*

A series - Aircraft experienced maintenance problems, and crew returned to base field at 1315. At approximately 1545, an unforecast thunderstorm struck field. An associated microburst produced high winds that tipped aircraft to the left. Rocket pod, which was mounted on outboard wing store, kept aircraft from turning over.

## Safety messages

### Aviation safety action maintenance messages

■ Aviation safety action maintenance mandatory message concerning revision to inspection and lubrication of the flight control rod end bearings (rolling element) on all CH-47D, MH-47D, and MH-47E aircraft required by CH-47-95-ASAM-05 (CH-47-95-ASAM-06, 211254Z Aug 95). Summary: CH-47-95-ASAM-05 required an inspection at every third phase. As a result of engineering analysis, the requirements of CH-47-95-ASAM-05 need revising. Implement the requirements of this message at the next phase inspection as required by CH-47-95-ASAM-05. This message supersedes CH-47-95-ASAM-05 entirely and makes the following changes:

◆ Inspect and lubricate bearings in paragraphs 6A, 6B, 6C, 6D, and 6E of this message at the next phase inspection and at the first and third phase inspection thereafter.

◆ Inspect the pedal box bearings (paragraphs 6F, 6G, and 6H) at the next phase inspection, and lubricate each time they are removed from the aircraft.

◆ Increases the number of parts to be inspected and the inspection criteria of the parts to be inspected. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning one-time records check for MWO 1-1520-240-50-69, reinstallation of MWO 1-1520-240-50-69 for rotor heads that were modified in Europe, and recurring visual inspection for slipped bushings and/or cracked pitch housing lugs for rotor heads that have MWO 1-1520-240-50-69 applied (CH-47-95-ASAM-07, 061805Z Sep 95). Summary: After the application of MWO 1-1520-240-50-69 in Europe, a daily inspection found a slipped bushing in the lower lug of the pitch housing on an aircraft in Italy. The slipped bushing may have been caused by either improper interference between the bushing and lug or damage to the bore caused by improper installation techniques of the previous and/or current MWO. The purpose of this message is to require units to perform a one-time records check for MWO 1-1520-240-50-69 and a recurring visual inspection for slipped bushings and/or cracked pitch housing lugs for rotor heads that have MWO 1-1520-240-50-69 applied. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

**For more information on selected accident briefs, call DSN 558-2119 (334-255-2119).**

**The principle is this; no safety check can ever be routine, no matter how often performed, when the lives of men are involved. It is an insidious temptation to slight checks on regulations when things have been going safely for days—but this is the danger, because it dulls alertness.**

—Major General Aubrey "Red" Newman
*Follow Me*, 1981

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## Class A Accidents through September

| | | Class A Flight Accidents | | Army Military Fatalities | |
|---|---|---|---|---|---|
| | | 94 | 95 | 94 | 95 |
| 1ST QTR | October | 2 | 0 | 0 | 0 |
| | November | 3 | 0 | 0 | 0 |
| | December | 2 | 1 | 2 | 0 |
| 2D QTR | January | 1 | 1 | 2 | 1 |
| | February | 2 | 0 | 0 | 0 |
| | March | 0 | 1 | 0 | 0 |
| 3D QTR | April | 5 | 1 | 2 | 5 |
| | May | 0 | 2 | 0 | 2 |
| | June | 0 | 1 | 0 | 0 |
| 4TH QTR | July | 4 | 1 | 5 | 0 |
| | August | 1 | 3 | 0 | 5 |
| | September | 1 | 1 | 0 | 0 |
| | TOTAL | 21 | 12 | 11 | 13 |


U.S. ARMY SAFETY CENTER

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