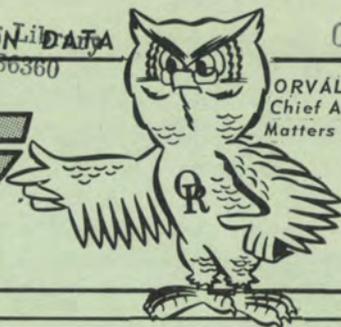




FLIGHT FAX



OCT 15 Rec'd
 ORVAL RIGHT
 Chief Advisor on
 Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 1 ■ 6 OCTOBER 1976

mishaps for the period of 17-23 SEPTEMBER 1976

ADDITIONAL SKILL IDENTIFIER FOR AAPMC GRADUATES

The Aviation Accident Prevention Management Course (AAPMC) is for personnel with the appropriate MOS in grades E6 to E9. Dissatisfaction has been expressed by AAPMC attendees not having the appropriate MOS concerning non-receipt of the additional skill identifier (ASI) upon graduation. Commanders are requested to review change 5, AR 611-201, and changes 6 and 7, which will soon be published. If an individual without the appropriate MOS must be trained, he should be *advised* that he will not be awarded ASI "A2".

Requests for additional class quotas by MACOMs have increased since this ASI became effective. To accommodate the increased demand, course attendance by personnel in grades E5 and below is discouraged. Exceptions to grade requirements may be granted on a case by case basis by submitting a request for waiver, through channels, to Commander, USAAAVS, ATTN: IGAR-PE, Fort Rucker, AL 36362. Requests for waivers should reach us not later than 4 weeks before scheduled class date to allow time for reply to the requesting unit.

Commanders are also urged to brief AAPMC attendees on course information contained in

DA Pamphlet 351-4, page 2-19. ARNG and USAR students who are on flight status should have in their possession a DF or letter verifying their flight time for the appropriate period. For additional information, contact MAJ Yongue or MSG Smythe at USAAAVS, AUTOVON 558-3493/6595/4510 or commercial 205-255-3493/6595/4510.

ACCOUNTABILITY OF INJURIES/ FATALITIES IN AVIATION MISHAPS

Injuries/fatalities in aviation mishaps are now charged against the command/MACOM which has ownership of the aircraft involved. Effective 1 October 1976, injuries/fatalities in aviation mishaps will be charged against the command/MACOM to which the victim is assigned. The victim's unit of assignment will be entered in block 15, DA Form 2397-11.

NEW FILM

TF 46-4947, Helicopter Icing, 28 minutes, color, 16mm, should be at local audio-visual centers on 18 October 1976. Through the use of animation and live, slow-motion footage, this film depicts the hazards associated with helicopter flight in icing conditions, and safety precautions to take.

U.S. ARMY AGENCY FOR AVIATION SAFETY
 FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
 Directorate for Aircraft Accident Analysis
 and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
 Distribution to Army commands for accident prevention
 purposes only. Specifically prohibited for use for
 punitive purposes, or for matters of liability, litigation,
 or competition. Information is subject to change
 and should not be used for statistical analyses. Direct
 communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate Aircraft Accident Analysis and Investigation	4479
Technical Research and Applications	3913/4202
Plans, Operations, and Education	6404/6410
Management Information System	4479/4812
Publications and Graphics Division	5286/4200
Medical Division	6385/3493
Staff Duty Officer (1800-0700 hours)	6788
	6510

FY 76 ACCIDENT BRIEF

SYNOPSIS 47-76

Type Aircraft: **UH-1H**

Time: **1800** Classification: **Major (Total)**

Fatalities/Injuries: **1 Fatality, 7 Injuries**

Estimated Materiel Damage Cost: **\$293,070**

Mission: **Service-Support of FTX**

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	37	3,442	-	3,442
CP	O2	26	789	-	789

Description of Accident: Aircraft was on night resupply mission in mountainous terrain. Weather was gusty winds and blowing snow. After resupplies were dropped off, five passengers boarded aircraft. Pilot brought aircraft to hover and was making pedal turn when copilot turned landing light on, blinding pilot. Pilot lost ground reference, control was lost, and

aircraft crashed. Crash was considered non-survivable.

Causes of Accident

Initial: Crew-Pilot attempted takeoff from critical location without proper crew coordination. Crew used improper takeoff procedures for existing conditions, attempting to maintain VMC during IMC.

Contributing: Weather-Blowing snow at night in unimproved landing area. Condition was probably aggravated by rotorwash. Disorientation-Copilot (right seat), at the request of the pilot (left seat), turned on landing light. This light probably aggravated the spatial disorientation of the pilot.

Corrective Action: This is an accident in which corrective actions rest solely with the commander. The requirement for flying at night in mountainous terrain in blowing snow from an unimproved landing area must be questioned.



SYNOPSIS 48-76

Type Aircraft: **U-8D**

Time: **1234** Classification: **Major (Total)**

Fatalities/Injuries: **No Fatalities, 1 Injury**

Estimated Materiel Damage Cost: **\$115,250**

Mission: **Training-CRF minimums**

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	27	1,491	1,360	2,851
CP	CW3	38	1,022	453	1,475

Description of Accident: Aircraft was making climbing turn after low fly-by for visual gear check with control tower. Both engines failed due to fuel exhaustion. Aircraft crashed with gear extended and both props unfeathered.

Causes of Accident

Initial: Crew error-Fuel exhaustion of both engines.

Contributing: Supervisory (local commander) (suspected)-Aircraft with 14.9 hours remaining to PE was scheduled to fly a mission that would require in excess of 16 hours to complete, and it was the accepted practice to operate in overgross configurations. Materiel (suspect)-Mechanical nose wheel indicator gave a down indication in both positions, causing the crew to make a low pass to verify gear down.

Remarks: Aircraft was dropped during attempted sling recovery by CH-47. Information indicates improper rigging of aircraft for sling load. USAAAVS has submitted recommendations for standardizing recovery operations.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

SYNOPSIS 49-76

Type Aircraft: **OH-58A**
 Time: 1420 Classification: **Major**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$54,838**
 Mission: **Training-transition checkride**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	30	3,226	4	3,230
P	1LT	26	327	36	363

Description of Accident: During practice low-level autorotation to sod area, skid toes dug into soft ground. Aircraft pitched forward, then back, causing major damage.

Causes of Accident

Initial: Instructor pilot was slow in initiating corrective action and did not tell pilot he was taking control of the aircraft.

Contributing: Supervision—Unit failed to check landing area IAW directives of the major command. Command—Failure to properly disseminate information from standardization meetings (suspected).

Corrective Action: Sod touchdown, nonstandard OH-58 maneuvers have been prohibited by the command. Flight standardization information has become a matter of command emphasis. IP was given additional training and requalified by SIP.



SYNOPSIS 50-76

Type Aircraft: **U-8D**
 Time: 2120 Classification: **Major (Total)**
 Fatalities/Injuries: **3 Fatalities, No Injuries**
 Estimated Materiel Damage Cost: **\$115,250**
 Mission: **Service-pickup from storage**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	Unk	1,337	900	2,237
CP	CPT	Unk	443	1,300	1,743

Description of Accident: After pickup, aircraft was filed for IFR flight. After breaking out at 600 feet agl on VOR-A circling approach, pilot reported turning right downwind for the runway and shortly thereafter impacted 1¾ miles SSE of the approach end of the runway. Weather was reported by flight service to be 600 overcast, 7 miles visibility, light drizzle, temperature 34° at the surface (pilot reported visibility less than 7 miles). Landing gear was down at time of impact. Accident was nonsurvivable.

Causes of Accident

Initial: Crew error—Pilot failed to maintain control of aircraft during circling VOR night approach with weather at or below IFR approach minimums.

Contributing: Crew (suspect)—Disorientation after breaking out of overcast. Weather (suspect)—Low ceilings and light drizzle produced poor visibility with no visible horizon. Environment—The sector involved was without any ground reference lights. Design (suspect)—Pilot's most recent flight experience was in U-8F, with only 4 hours recent experience in U-8D. Throttle quadrants are reversed in two aircraft. Icing (suspect)—Carburetor icing may have caused the power loss.

Remarks: Teardown analysis from CCAD indicates both engines were developing little or no power at time of impact. No cause for the absence of power could be positively established.

Corrective Action: USAAAVS reported the dark quadrant to USAASO and recommended that a note be placed on the low altitude instrument approach plate. The FAA did not support this suggestion, but indicated they will evaluate the adequacy of the lighting at the airport. USAAAVS submitted recommended changes to the U-8 operator's manual on carburetor heat procedures and published an article in FLIGHT-FAX on carburetor heat procedures.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

1 Accident, 0 Fatalities, 1 Injury, Estimated Costs: \$81,000

UH-1

1 Accident ■ During steep and slow approach to LZ at night, aircraft struck ground hard at an approximate 90° angle to direction of flight. Accident is under investigation.

1 Incident ■ While practicing decelerating maneuver, pilot applied excessive aft cyclic, causing tail rotor and tail skid to hit ground.

1 Forced Landing ■ Aircraft was being repositioned for HIT check and MOC. During hover, engine chip detector light came on, followed by three or four loud bangs and loss of engine and rotor rpm. Pilot made hovering autorotation. Cause of engine malfunction not reported.

21 Precautionary Landings—following are selected briefs ■ Transmission oil pressure dropped to zero. Caused by transmission pressure transmitter failure. ■ At 550 feet msl, pilot detected fuel fumes in cockpit while flying in close trail formation. Cause could not be determined. ■ During cruise flight at 3,000 feet msl and 90 knots, moderate feedback in cyclic control was noted. Pilot recycled hydraulic control switch several times with no change in control response, and hydraulics-off landing was made. Maintenance personnel bled hydraulic system and released aircraft for flight. ■ Transmission oil pressure rose to 105 psi. All other instruments remained normal. Maintenance replaced pressure transmitter. ■ At 10,000 feet, two loud noises were heard from engine area. Maintenance inspection revealed materiel failure on weld attaching diffuser insert to air outlet pan. ■ Rpm warning light and audio came on intermittently. Rpm remained steady at 6600. Maintenance replaced rpm warning control.

AH-1

2 Incidents ■ Aircraft was moving forward out of hover hole when blades struck pine tree. ■ En route to POL, aircraft struck tree.

3 Precautionary Landings ■ No. 1 hydraulic caution light and master caution light came on. No. 1 hydraulic pressure line ruptured. ■ Aircraft was descending and passing through 2,800 feet when No. 2 hydraulic pressure caution light came on. Maintenance inspection revealed failure of axial piston pump. ■ Engine oil pressure light illuminated. Maintenance replaced oil pressure switch.

MESSAGES RECEIVED

■ USAAVSCOM Message 221920Z Sep 76—Maintenance Advisory Message, UH-1 Armored Seats (GEN 76-23).

■ USAAVSCOM Message 231530Z Sep 76—Maintenance Advisory Message on Shelf Life Extension of Cartridge, Fire Extinguisher, Aircraft, P/N 841155, NSN 1377-00-756-1834 (GEN 76-24).

■ USAAVSCOM Message 211930Z Sep 76—Safety Advisory Message. This message emphasizes instructions established in EIR Maintenance Digest TB 43-0001-2-4 dated Jan 76, reference a modification of the pilot/copilot cockpit jettisonable doors. This modification will prevent unscheduled separation of the jettisonable doors during flight. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

1 Accident, 0 Fatalities, 0 Injuries, Estimated Costs: \$28,160

OH-6

1 Incident ■ Tension unit on aft side of ADF sense antenna failed in flight. End of failed unit and antenna struck main rotor blades, then antenna moved aft into tail rotor.

OH-58

1 Accident ■ On final approach at 50 feet agl power was applied to begin termination. Engine failed and autorotation was unsuccessful, resulting in hard landing that severed tail boom and caused structural damage. Cause is under investigation.

2 Incidents ■ Pilot attempted to fly at treetop level on dark night in marginal weather. Vertigo was experienced and aircraft struck ground. ■ Twenty-minute fuel warning light came on. Eight minutes later, engine quit due to fuel exhaustion. Aircraft was autorotated to open field with 12° slope and "spike knock" occurred.

7 Precautionary Landings ■ During engine start at 60 percent N2, noise and vibration came from area of tail rotor drive shaft. Aircraft was shut down and inspection revealed drive shaft severed at No. 4 hanger bearing. ■ During start, starter quit at 35 percent and TOT dropped to 150°. Second start was initiated and TOT went to 960°. Cause under investigation. ■ Aircraft was at 2-foot hover when TOT went to 750° in less than 6 seconds. Crew chief found anti-ice valve linkage had broken at clevis rod end. ■ Engine chip detector light came on. Caused by improper installation of magnetic plug. ■ Engine oil temperature rose to 125° C. Cause not reported. ■ During start, TOT rose to 940° for 1 second and aircraft was shut down. Cause under investigation. ■ Engine chip detector light illuminated. Caused by deteriorated insulation on cannon plug, NSN 5935-00-849-4268.

CH-47

1 Incident ■ Aircraft was at hover with sling load when it lost power in No. 2 engine and settled on load. Electrical problem caused actuator to approach minimum beep.

2 Precautionary Landings ■ Aircraft was on final with sling load when transmission temperature indicator climbed to 150° and caution light came on. Caused by internal failure of rotary oil temperature switch. ■ Static torquemeter failure occurred in No. 1 engine and engine chip detector light illuminated. Caused by failure of torquemeter rotor assembly. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558.3901

1 Accident, 0 Fatalities, 1 Injury, Estimated Costs: \$30,327

U-8

1 Accident ■ (F series) On takeoff after gear retraction, aircraft lost power at 200 feet agl. Pilot attempted left turn, was unable to maintain altitude, and leveled wings. Aircraft struck ground gear up in zero pitch attitude and planed forward into 8 to 15 feet of salt water. Crew egressed through cabin door while aircraft remained afloat. Cause under investigation.

OV-1

1 Incident ■ (D series) Aircraft was left slot of two-ship formation. During roundout for landing, aircraft rolled right because of wing tip vortices of lead aircraft. Right drop tank struck runway, damaging two drop tank stabilizer fins.

OV-1 Precautionary Landing in FLIGHTFAX dated 22 September 1976 with thermal runaway of battery during flight has been upgraded to an incident. Cause was given as suspected voltage regulator failure.

U-21

1 Incident ■ (A series) During emergency exit procedure training, pilot ejected emergency cockpit escape hatch before shutdown of No. 1 engine. No. 2 engine had been shut down. IP was in process of shutting down No. 1 engine when two blades on No. 1 propeller were damaged.

1 Precautionary Landing ■ (B series) While in traffic pattern, IP retarded No. 1 engine power lever for simulated engine out and engine quit. Due to close proximity of airfield, engine restart was not attempted. Cause of engine stoppage is being investigated. Suspect fuel control unit, start control, or engine-driven fuel pump.

C-7

1 Precautionary Landing ■ Crew noted vibration during climb. After leveling at 4,500 feet msl, power was reduced to cruise (30 inches manifold pressure), 2000 rpm. Vibration increased. Crew noticed right engine vibrating and placed mixture lever to auto lean. Vibration increased and engine was secured. Aircraft returned to home station and landed. Cause unknown.

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

CH-47

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

1 Precautionary Landing ■ Crew chief noticed transmission oil cooler fan shroud rubbing on drive shaft in flight. Maintenance found some mounting screws missing, causing it to contact shaft assembly. Improper screws were used to mount shroud assembly.

C-12

1 Precautionary Landing ■ As aircraft accelerated to 160 knots climb speed, inboard aft edge of No. 1 engine upper forward cowling raised approximately 1 inch. Pilot remained in traffic pattern, landed, had mechanic secure cowling, and resumed flight without further mishap. Aft inboard cowl lock was not properly latched when crew chief assisted mechanic in reinstalling cowling after maintenance on No. 1 engine. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

2 Mishaps, 0 Fatalities, 2 Injuries, Estimated Costs: \$0

OTHER TYPE MISHAPS

■ Mechanic was masking aircraft horizontal stabilizer for painting. After checking bottom side for cleanliness, he started to straighten back up and hit the upper part of his neck on stabilizer, causing mechanic to momentarily lose consciousness. ■ After maintenance work was completed, mechanic stepped off work-stand backwards and injured the heel of his left foot on concrete floor. □

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

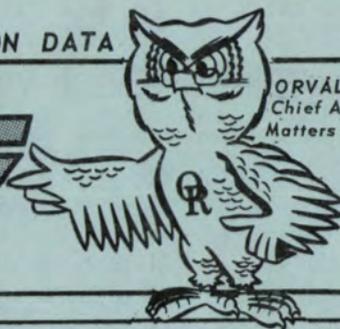


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314



ARMY AIRCRAFT MISHAP PREVENTION DATA

FLIGHT FAX

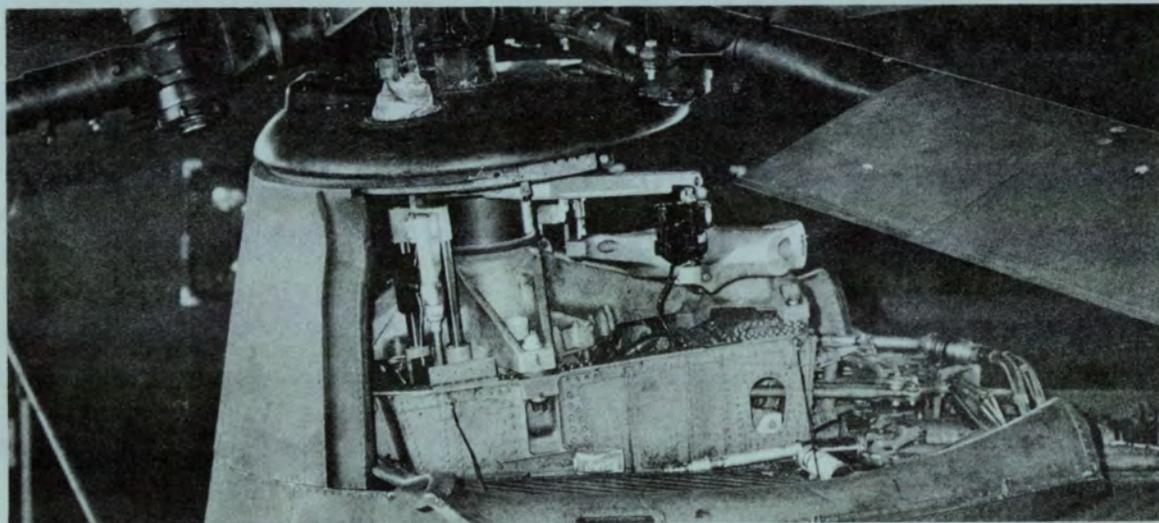


ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 10 ■ 8 DECEMBER 1976

US Army Aviation Training Ships for the period of 19-25 NOVEMBER 1976
Fort Rucker, Alabama 36360



Foreign objects come in all shapes and sizes and are found in all types of aircraft. The U.S. Navy has an outstanding FOD prevention program, which includes tool control. But mistakes will happen. A Navy safety officer recently took this photograph after he saw several objects lying on the helicopter work platform. Think of what could have happened if these items had not been removed and had lodged in the push-pull tubes of the control system. FOD can be prevented, but it's a job for all hands—from supervisors and inspectors to the men who maintain and fly the aircraft. —Thanks to G. L. Coffee, commanding officer, Fleet Composite Squadron ONE

DEFECTIVE EAR CUP PADS FOR SPH-4

The Troop Support Command has notified us that approximately 11,000 defective ear cup pads, NSN 8415-00-143-8577, are in stock and in the field. These ear cups are manufactured by Aqua Aire and in many cases do not meet Army specifications. *Stocks of these ear cups should be held, not issued.*

Stocks of Gentex ear cups should be ordered to replace the defective Aqua Aire cups. Although the NSN is the same, the Gentex cups are stamped "GENTEX" on the back. When ordering new stocks specify *Gentex Only*.

Units will receive credit for stocks of the unused ear cups. Hold defective stocks and submit Standard Form (SF) 364. DPSC will notify all users of dispo-

sition of stocks upon receipt of this form. Send form to: Defense Personnel Support Center, Director of Clothing and Textiles, Stock Control Division, ATTN: DPSC-TSK1, 2800 South 20th Street, Philadelphia, Pennsylvania 19101.

REPLACEMENT CUFFS FOR NOMEMEX JACKET

Fifty-two hundred pairs of the replacement cuff for the new Nomex flyer's jacket, NSN 8415-00-217-7220, are now available at a cost of \$1.32 per pair.

Replacement cuffs should be requisitioned by supply personnel from the Defense Personnel Support Center (DPSC), Director of Clothing and Textiles, Philadelphia, PA 19101, using the following nomenclature: Cuff, knit, nonmelting nylon, color OD 106, NSN 8315-01-024-5725.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

SYNOPSIS 83-76

Type Aircraft: OH-58A
 Time: 0850 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$7,623
 Mission: Service (tactical training)
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	28	603	-	603
CP	CPT	28	416	36	452

Description of Accident: Aircraft departed field site and was attempting to catch up to a flight of UH-1s. Aircraft struck two high-tension aluminum wires (unmarked) while crossing a main supply route located in the training area. Pilot landed in a field.

Causes of Accident

Initial: Crew error—Crew failed to maintain adequate obstacle clearance.

Corrective Action:

- a. Proper flight planning.
- b. Use of adequate terrain maps with hazards clearly marked.
- c. All future flights will comply with unit's SOP which requires flights to be flown 500 feet or above outside training areas.
- d. Maintain required obstacle clearance in accordance with FM 1-1.

SYNOPSIS 84-76

Type Aircraft: OH-6A
 Time: 1200 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$23,564
 Mission: Training
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	28	2,398	-	2,398
P	CW3	38	2,975	21	2,996

Description of Accident: During touchdown autorotation with both pilot and IP on the controls, aircraft touched down heels low, with low rotor rpm. Aircraft rocked forward, then rearward, and main rotor severed tail boom.

Causes of Accident

Initial: IP failed to take sufficient corrective action during touchdown autorotation.

Corrective Action: Command took action to bring the facts and circumstances of this mishap to the attention of all flight personnel. All assigned aviators were briefed on correct procedures for transfer of controls. Flight training programs must emphasize the consequences of allowing the maneuver to get beyond the IP or SIP. The key is the instructor's ability to recognize and take the controls in time to allow recovery.

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Injuries, 0 Fatalities, Estimated Costs: \$23,700

UH-1

2 Incidents ■ During night approach to field site, left synchronized elevator hit treetop. ■ On takeoff from PZ main rotor blade struck tree, damaging blade tip.

19 Precautionary Landings—following are selected briefs ■ Fumes were noticed in cockpit. Inspection revealed overheated battery. ■ Aircraft was No. 4 in a flight of 6. During approach for landing, series of three loud bangs occurred. Caused by erosion of engine compressor blades. ■ During hover, crew noted electrical odor in cockpit. Maintenance replaced main inverter. ■ During initial climb after takeoff, crew noted engine oil pressure fluctuating between 40 and 60 psi, with rise in engine oil temperature. Inspection revealed oil leaking from engine oil pump housing. ■ Engine oil pressure dropped to zero. Maintenance replaced engine oil pressure gauge.

AH-1

1 Incident ■ While supporting field training exercise, aircraft was hovering over trees waiting for simulated fire mission. Tail rotor blades hit trees, damaging both blades.

1 Precautionary Landing ■ During fire power demonstration, aircraft took evasive action in response to controller to avoid another aircraft. During the maneuver, aircraft was overtorqued.

AVSCOM MESSAGES RECEIVED

- 242032Z Nov 76—Maintenance Advisory Message, Leakage in Modification Instrument Piping System on AH-1Q/S Aircraft (AH-1-76-26).
- 292131Z Nov 76—Maintenance Advisory Message, Off-Spec Chemical Products (GEN 76-30).
- 291450Z Nov 76—Operational (Advisory) Message, OV-1 Mohawk Aircraft, Message No. OV-1-76-10. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$583

OH-58

1 Incident ■ During VFR service mission, aircraft struck bird. Damage not reported.

1 Forced Landing ■ At 50 feet agl, engine failed and aircraft was autorotated with no damage. Inspection revealed loose double check valve and small amount of water in fuel filter.

13 Precautionary Landings—following are selected briefs ■ Hydraulics failed during takeoff. Pressure switch, NSN 5930-00-007-7666, failed. ■ During flight, N₂ bled off to 100 percent. Right rear compressor discharge tube developed air leak. "T" fitting on compressor scroll was loose. ■ Aircraft touched down nose low, resulting in hard landing. Aircraft was inspected and released for flight. ■ During hover, engine oil bypass and master caution lights illuminated. Oil filter was removed, cleaned, and replaced. MOC was performed and aircraft released for flight. ■ Aircraft landed after 20-minute low fuel light came on. Excessive engine ground run time and error in NOE navigation prevented aircraft from reaching destination. ■ During descent, hydraulic caution light illuminated intermittently. Five seconds later, total loss of hydraulics occurred. Loss of hydraulic pressure was caused by chafing of hydraulic line. ■ Engine oil bypass light came on. Improperly secured oil cap resulted in loss of engine oil.

TH-55

2 Precautionary Landings ■ Engine oil pressure exceeded upper limit. Inspection revealed failure of sending unit. ■ Main transmission gearbox warning light came on. Caused by failure of oil pressure switch.

CH-47

4 Precautionary Landings ■ Flight engineer saw fuel leak in No. 2 engine. Fuel flow divider and dump valve malfunctioned. ■ Fuel odor was detected and fuel was seen leaking from internal auxiliary fuel tank. Caused by loose wing nuts at seal on top of tank. ■ Violent shudder lasting from 3 to 5 seconds was felt in airframe during flight. Inspection failed to reveal cause of shudder. Inspection revealed metal particles in aft transmission oil filter; however, chip detector light did not illuminate. Special oil sample was submitted. ■ Forward transmission chip detector light came on. As descent was initiated for precautionary landing, light went out. However, mild aircraft buffeting was noticed and No. 2 engine egt rose to 932° C. Simultaneously, No. 2 engine N₁ decreased to 45 percent. Chip detector light was caused by metal particles on transmission chip detector plug. Transmission was removed and engine is being evaluated. (USAR)

U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate	4479
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	6404/6410
Plans, Operations, and Education	4479/4812
Management Information System	5286/4200
Publications and Graphics Division	6385/3493
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

CH-47 UNITS TAKE NOTE

A recent CH-47 mishap occurred in which the engine fire extinguisher system failed to function. Investigation revealed there was no electrical connection at the squib, and there was zero ohms resistance at the squib. It has not been established why the squib was disconnected.

Supervisors should adhere to the special inspection criteria outlined in TM 55-1520-209 and 227-20 manuals. This requires a 6-month inspection interval of the engine fire extinguisher system. It also provides a testing procedure when a fire extinguisher or squib/cartridge is replaced. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$20,067

C-12

1 Incident ■ (A series) Aircraft was in cruise flight at flight level 220 when pilot's windshield outer layer cracked. Electric windshield heat was in use at the time. Bonding separated at windshield upper left-hand corner, P/N 101-384025-3. Cause unknown at this time.

1 Precautionary Landing ■ During before-landing check, landing gear would not extend. Landing gear handle was recycled and landing gear relay circuit breaker was reset IAW prescribed emergency procedures. Landing gear still would not extend. Emergency gear extension was accomplished. Landing gear indicators showed down and locked. Upon touchdown, red light illuminated in handle, and gear warning horn sounded. Light in gear handle came on intermittently while aircraft was taxied to ramp. After aircraft was parked, light in gear handle remained on. Caused by failure of landing gear motor, P/N 115-380002. Unsafe indication on the ground was caused by loose nose gear drive chain.

OV-1

2 Incidents ■ (C series) During acceptance test flight, passing through 300 kts in high speed dive, left main upper landing gear door tore from aircraft and struck fuselage, sheared ADF antenna, and bent fuel vent. Cause is under investigation. ■ Right entrance hatch blew open in cruise flight. Plexiglass from hatch damaged leading edge of wing center section and right side of fuselage. Locking mechanism was out of adjustment.

T-42

1 Incident ■ During landing rollout, pilot applied excessive right brake, causing wheel to lock. Resulting abrasive action caused tire to blow.

1 Precautionary Landing ■ No. 2 engine oil pressure dropped to 25 psi. Oil temperature rose to 210° and slowly increased. IP reduced power and landed aircraft. Condition could not be duplicated on subsequent checks.

U-8

1 Precautionary Landing ■ During climbout at 44 inches manifold pressure and 3200 rpm, No. 2 engine rpm fluctuated 50 rpm. Engine backfired and quit. Cause not reported. □

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

OV-1

2 Precautionary Landings ■ Crew smelled fumes and smoke in cockpit. As aircraft was landed, smoke and fumes dissipated. Film in forward camera (KA-60) was improperly loaded and jammed, causing power supply to overheat. Instructor and student failed to properly load and preflight camera. ■ Right main landing gear would not fully retract after takeoff. Pilot recycled gear and landed with no damage. Right main gear strut had been overserviced. □

MAKE AVIATION SAFETY THE SPIRIT OF '76



STACOM 10 ■ 8 DECEMBER 1976

DEPUTY FOR STANDARDIZATION, USAAVNC, FT. RUCKER, AL 36362
COL CLEMENT A. WYLLIE ■ 558-2603/3514

ATTABOY!

The Directorate recently had the opportunity to conduct an IP/SIP seminar at the Columbus, Ohio, ARNG facility. Though we don't usually publicly praise individual units, we have to make an exception here—the Columbus facility is, in a word, OUTSTANDING.

The positive attitudes and high morale of the people assigned, the high state of readiness, the superb condition of the aircraft, and the facility itself are the embodiment of professionalism. You do good work Columbus; keep it up.

THE REALITIES OF INADVERTENT IMC

"If inadvertent IMC is encountered climb to 2,000', contact range control on FM 30.8."

"Descend immediately to regain VMC when IMC conditions are experienced."

"Inadvertent IMC flight is prohibited at all times."

The above are not excerpts from some inadvertent IMC plans currently in existence—they are the plans. They also represent the attitudes that cause inadvertent IMC to be Army aviation's number-one killer. No matter how much we wish to ignore the possibility of encountering inadvertent IMC or rationalize that it really doesn't exist at all—"people shouldn't attempt VMC flight when the weather is marginal"—it still happens, generally with catastrophic results. The question is why? Why does an instrument-qualified aviator flying an instrumented aircraft lose control under these conditions when he has obviously demonstrated skill in instrument flight by obtaining the qualification? The answer to this lies primarily in one significant difference between deliberate and inadvertent IMC flight—PLANNING. The pilot undertaking a deliberate instrument flight has studied the weather, thoroughly charted the route, computed fuel requirements, has all the necessary navigation publications, and has a clearance from ATC to cap it off. He knows exactly where he's going and how to get there. Inadvertent IMC, on the other hand, is an unplanned event occurring generally at low airspeed and low altitude, with the crew totally unprepared for instrument flight. Psychologically, it's a nightmare.

The pilot fears the consequences of blundering into the ATC system without a clearance, is probably unsure of his position, and very likely does not have instrument navigation charts available. Add to this the utter lack of a preplanned course of action for a safe recovery and disaster is virtually assured. So to answer the question of why the pilot lost control—he didn't—he never attempted to control the aircraft, only tried to return to VMC—generally in a diving 180-degree turn, terminating in a high speed ground impact.

Now what can be done about this? To begin with, the pilot has to be convinced that a system insuring his safe recovery has been established; therefore, each installation with aircraft assigned must develop a simple, *workable* IMC recovery plan. Keep in mind the pilot will have to memorize the altitude to which he is to climb, the facility to contact and the recovering airfield, so keep these immediate actions as straightforward as possible. Additional details such as frequencies, en route fixes, lost communication procedures, etc., must also be made available to the pilot in the form of a local publication permanently carried in the aircraft. All of which brings us to the next point—aircraft and aircrew suitability. Although both civilian and military aviators have tried unsuccessfully for years to disprove this—you still can't fly instruments without instruments nor can you fly instruments when you can't interpret them—so before trying to hack marginal VMC be absolutely certain that both you and the aircraft are prepared for and capable of instrument flight.

The final and most critical consideration—aircraft control. Any survivor of an inadvertent IMC situation will attest to the startling suddenness of the encounter. There is simply no time for an orderly transition to instruments—as in an ITO—which very probably accounts for the fact that in the majority of the inadvertent IMC accidents, the pilot had made no apparent attempt to go to the gauges. Since an attempted immediate return to VMC is virtually a suicidal act, and the pilot has no instrument scan established, the situation is certainly grim—but far from hopeless.

In recognition of this very critical transition period, HQDA directed USAAVNC to develop an immediate action procedure which would enable the pilot to rapidly transition to instrument reference. The procedure developed, which is now DA policy, is a simple step-by-step technique, bringing the instruments into the pilot's scan in order of criticality as follows:

- #1. **ATTITUDE INDICATOR**—level the aircraft. Quite obviously, the most important first step, as no following control input will achieve the desired response if the aircraft is not in a level attitude.
- #2. **HEADING INDICATOR**—maintain heading. Turn only to avoid *known* obstacles. Don't compound things by getting vertigo.
- #3. **TORQUEMETER**—adjust to climb power. Let's get away from the hard ground as fast as possible.
- #4. **AIRSPEED**—adjust to climb airspeed.
- #5. **RECOVERY PROCEDURES**—initiate only after transition to instrument reference is complete and the aircraft has reached a safe altitude. Don't distract yourself from the primary job of regaining control of the aircraft. Save the yelling for later or let the copilot do it.

Remember this above all else—WHEN INADVERTENT IMC IS ENCOUNTERED, YOU MUST GO ON INSTRUMENTS. THERE IS NO OTHER OPTION. An immediate landing or a 180 away from the weather will work only when you are still VMC—and, unfortunately, we have the fatalities to prove it.

C. G. PROBLEM?

An SIP was checking the 365F on an AH-1G during a recent evaluation visit when he noticed a rather unusual entry. The takeoff c.g. was computed to be at station 188.3 with a gross weight of 9,055 pounds. Since the forward c.g. limit for this weight is 192.0, the SIP's first thoughts were that some practical joker had assigned him a static display model from the local museum. These thoughts were quickly dispelled, however, when he learned that the aircraft had flown that day and that the 365F was, indeed, current, having been computed six months earlier. The answer to the absurd c.g. location was easily found when the Chart C was studied. The unit had received the aircraft with a dummy turret and had subsequently installed the live one. The turkey who made the entries in the Chart C, however, had neglected to subtract the weight and moments of the dummy before adding the weight and moment of the live turret. When this was done, the aircraft was found to be comfortably within the normal c.g. range. The really disturbing aspect of the whole affair is that the erroneous 365F had been approved by the weight and balance technician, the aircraft inspected (?) numerous times and flown by dozens of pilots in the 6-month period since the form was prepared—yet, NO ONE questioned the alleged out-of-limits condition.

Granted, the aircraft in this case probably felt good since it actually was within c.g. limits, but feel is not enough. We're flying some pretty sophisticated equipment now with weight and balance being critical to safe and efficient aircraft operation. An out-of-limits aircraft may seem to "hang" OK at a hover but can become uncontrollable when certain maneuvers are attempted near the limits of the flight envelope. The 365F is the only way you're going to know if your aircraft will really be able to respond to the demands of a rigorous mission without splattering itself all over the countryside. Therefore, it follows that the Chart C data must be accurately maintained—and transcribed.

Wonder how many other aircraft we have flying around with two tail rotors, ten or twelve batteries or whatever installed? Incidentally, the January 1977 issue of the AVIATION DIGEST will carry an article discussing the relationship of c.g. location to mast bumping. Be looking for it—this should get your attention.

WHERE ARE THEY?

From the phone calls we have been receiving, apparently everyone in the world knew that AR 95-1 and 63 were supposed to be out on 1 October. Unfortunately, things didn't work out the way we'd planned and the publication date had to be set back. DA DCSOPS tells us that they are being printed and should be distributed late in December or early January with an effective date of 1 January. We'll stay on top of this and if there are any changes, we'll get the word out as fast as possible.

PILOT'S ENCODING ALTIMETER (AAU-32A)

Recent inquiries received in regard to the proper operating procedure for the AAU-32A have disclosed that some disparity exists between the various operators manuals. The specific problem is the requirement for a one-minute warmup period prior to setting or checking altimeter operation. The new nine-chapter T-42 manual spells out the requirement, while the rest of the operators manuals do not. The logical questions then are: one, why only the T-42, and two, what is the purpose of a warmup period anyway?

The answers furnished by AVSCOM were simplicity itself—the reason for the one-minute warmup period is to insure altimeter accuracy by allowing the internal vibrator to firmly seat the gear train and indicators (keeps them from hanging up). The reason the requirement appears only in the T-42 manual is because this manual is the first of the new format manuals published. As the remainder of the dash 10s are reformatted, the required warmup period *and* the reasons for it will also appear.

In the meantime, just remember that the only purpose for the warmup is altimeter accuracy. You cannot damage the thing by setting it cold but you probably won't have an accurate reading either.

NAME CHANGE

The Deputy for Standardization, USAAVNC, has been redesignated as the DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC. The office symbol has been changed to ATZQ-ES. However, the telephone numbers and staffing remain the same.

POSITION REPORTS, QUESTIONS & ANSWERS

■ Is there any regulation that prohibits passengers from being on board an aircraft during starting? Although our SOP requires that everyone remain clear of the aircraft during start, we have had problems with people moving around within the aircraft during this time.

There is no regulation that prohibits passengers from being aboard an aircraft during start. Nor is there likely to be because normally you want these folks inside the aircraft when the rotors begin to turn. Loading a running aircraft, though necessary at times, is a pretty touchy operation and one that must be closely supervised to prevent aircraft damage and personnel injury. If you're having problems with passengers moving around inside during start—or at any other time—it's your fault. These people are supposed to be briefed (paragraph 3-17, AR 95-1). So tell 'em to sit down, buckle in, and generally behave themselves.

■ We have a local scout air explorer post organized here and would like to provide short orientation flights for them. Would it be a big hassle to get this approved or can we just go do it?

No, you can't "just go do it," but the amount of hassle involved in getting approval depends on your interpretation of the word. Chapters 8 and 9 of DOD 4515.3-R pretty well explain who can, and under what conditions, approve travel of nonmilitary personnel aboard government aircraft. Read those chapters and paragraph 1-15, AR 95-1. Good luck.

■ On a UH-1H equipped with a dual electric boost pump, what malfunction is indicated by illumination of a boost pump segmented caution light if the fuel pressure remains normal?

The most probable causes of these apparently contradictory indications are either a clogged cross fitting screen or a malfunction of the ejector pump, flow switch, or check valve in the tank on the side indicated by the light. You should also be aware that if failure of the ejector pump caused the light, the fuel quantity gauge reading will be inaccurate below 572 pounds of fuel. (Reference TM 55-1520-210-20, page 5-37.)

■ Would it be possible to develop an Instrument Examiners Flight Information Kit? It is extremely important that these people be kept up to date on all current instrument procedures and regulations. If they could be issued a kit containing all pertinent regulations and manuals upon graduation from IFEC, and then placed on a pinpoint distribution list to keep these publications current, it would certainly increase their effectiveness.

Of course, it's possible to develop such a kit, but it has to be done at installation level. The Army Publications Supply System is designed to work down to the individual unit, so no other unit could supply your publications without depleting their own stock. Please read DA Pamphlet 310-10, Guide for Publications Supply Personnel, dated February 1969, and Chapters 2 and 3 of AR 310-1. These publications explain how the system works and what you must do to insure an uninterrupted supply to your unit. They do not, however, cover command and local directives which are issued solely for use within the command. You should also check with your installation publications officer, normally located in the Adjutant General Section, or with the publications supply personnel of your next higher headquarters for guidance on local command policies. These people should be your first point of contact in requesting publications.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

FLIGHTFAX/19-25 NOVEMBER 1976



FLIGHT FAX

US Army PUBLICATION

Fort Belvoir, Mo. Training Library

VOL. 5, NO. 11 ■ 15 DECEMBER 1976

mishaps for the period of 26 NOV-2 DEC 1976

UH-1/AH-1 GROUND HANDLING GEAR

Recently, a mechanic was seriously injured while installing ground handling wheels on an AH-1. The assembly disengaged from the skid and the mechanic was struck on the head by the jacking handle. Injuries amounted to facial cuts, temporary loss of clear vision in the left eye, and the loss of about a half pint of blood.

From June 1975 through September 1976, 10 mishaps similar to this have been reported. There is also evidence that other mishaps associated with ground handling wheels have occurred but were not reported.

As a result of discussions with AVSCOM concerning ground handling gear problems, it has been determined that the following modification is the most expeditious one that can be accomplished in the field to reduce this hazard. It is recommended that UH-1/AH-1 ground handling gear users modify their gear accordingly (figure 1).

■ Remove release pin by removing the MS15001-2 lubrication fitting, and removing the connecting pin, P/N 204-050-154-1, using a small screwdriver.

■ Measure, mark, and drill a .093-.098 hole in the release pin as indicated in figure 1, using a 3/32-inch bit.

■ Clean and deburr the release pin and lubricate, using MIL-G-25537 grease or equivalent.

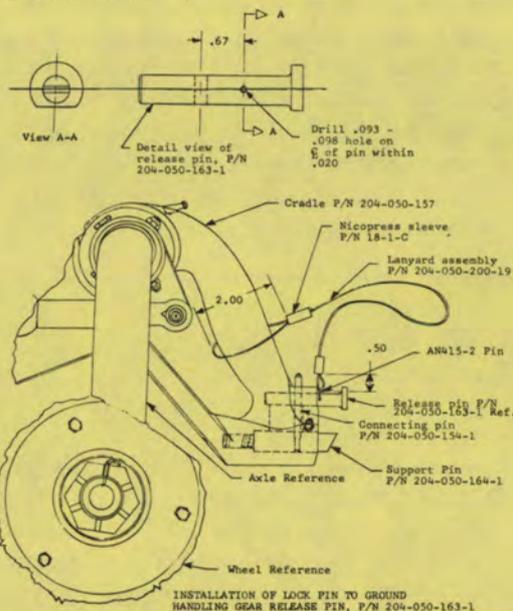
■ Reinstall the release pin by placing in location in the cradle and threading the connecting pin, P/N 204-050-154-1, through cradle housing into threaded hole in pin. Install lubrication fitting in housing of cradle.

■ Lanyard Assembly, P/N 204-050-200-19, shown in figure 1 is not available in the supply system. The lanyard assembly can be fabricated using a

12-inch length of chain, NSN 4010-00-262-1551. Attach to forward arm of cradle by looping around arm, allowing a 2-inch loop, and secure with safety wire or suitable substitute.

■ Secure lock pin, P/N AN 415-2, on the other end of the lanyard, and then install it in drilled hole in the release pin, P/N 204-050-163-1. To release ground handling gear from skid tube, pull lock pin from hole in release pin, and press release pin to remove support pin from fitting on skid tube.

This modification will assure that the support pin is fully engaged on the skid tube and prevent the ground handling gear from inadvertently disengaging from the skid tube.



LAST FLIGHTFAX THIS YEAR

This is the last issue of FLIGHTFAX you will receive this year. The next issue will be dated 12 January 1977, and will include briefs for the period 3-30 December 1976. The personnel of the U. S. Army Agency for Aviation Safety wish you a Merry Christmas and Safe and Happy New Year.



FY 76 ACCIDENT BRIEF

SYNOPSIS 85-76

Type Aircraft: OH-58
 Time: 0650 Classification: Major (total)
 Fatalities/Injuries: 2 Fatalities, 0 Injuries
 Estimated Materiel Damage Cost: \$151,565
 Mission: Tactical, VFR
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	27	1,612	75	1,687
CP	CPT	27	440	-	440

Description of Accident: During second high-speed, low-level overflight of ground/armored position, main rotor blade struck muzzle of parked M-60 tank, causing main rotor to separate. Accident was nonsurvivable.

Causes of Accident

Initial: Crew-Pilot failed to maintain flight discipline by operating aircraft in a reckless manner.

Contributing: Command (definite)-Inadequate mission planning and briefing.

Corrective Action: Reviewing and approving authorities directed unit commanders and supervisors to establish written procedures concerning conduct, control, proper flight and safety requirements for flight crews conducting operations independent from parent units, and to closely monitor these safety and flight procedures to insure strict compliance with established regulations.

SYNOPSIS 86-76

Type Aircraft: OH-58
 Time: 1445 Classification: Major (total)
 Fatalities/Injuries: 0 Fatalities, 2 Injuries
 Estimated Materiel Damage Cost: \$143,782
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	33	1,310	-	1,310
CP	1LT	26	326	35	361

Description of Accident: While flying down riverbank, aircraft struck two 5/8-inch wires. Both push-pull tubes were severed and aircraft yawed right, struck trees, and crashed.

Causes of Accident

Initial: Crew-Exercised poor judgment in flying low level in an unfamiliar area.

Contributing: Crew-Poor cockpit discipline by permitting their attention to be diverted from aircraft's flight path.

Remarks: There was confusion among aviators assigned to this installation as to the altitude restrictions imposed for off-post flight due to conflicting local directives.

Corrective Action: Command supplements and changes to AR 95-1 and aviation training guidance policy letter were rescinded, and commanders directed to insure that off-reservation flying will comply with par. 91.79, part 91, of FAR, which establishes minimum safe altitudes for rotary wing aircraft.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF



SYNOPSIS 87-76

Type Aircraft: UH-1H
 Time: 1201 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$16,331
 Mission: Training (NOE)
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CPT	29	1,895	508	2,403
P	CPT	39	159	810	969

Description of Accident: During dual training NOE mission, IP was demonstrating NOE quick stop to his student when tail rotor struck ground. One tail rotor blade separated and

damaged tail boom. IP landed aircraft by closing throttle and performing hovering autorotation.

Causes of Accident

Initial: Crew error-IP misjudged the position of his tail rotor in relationship to the ground.

Corrective Action: Perform NOE quick stop IAW TC 1-35, Qualification Training and Standardization (UH-1). Paragraph 3d, Appendix B of TC 1-35 is quoted as follows: "The pilot will perform quick stop/deceleration *maintaining the altitude of the tail rotor to insure obstacle clearance* and decelerate the aircraft to desired airspeed or to a full stop."

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

1 Accident, 0 Fatalities, 2 Injuries, Estimated Costs: \$135,196

UH-1

3 Incidents ■ Aircraft was making approach to landing area. Tail rotor hit treetop, damaging both tail rotor blades. ■ Aircraft had landed, off loaded personnel, and was repositioning on the helipad when tail rotor struck tree limb. Maintenance replaced tail rotor assembly. ■ Aircraft was in cruise flight at 1,500 feet when bird strike occurred, damaging pilot's overhead greenhouse window.

20 Precautionary Landings—following are selected briefs ■ During takeoff from confined area, crew smelled electrical fumes in cockpit. Maintenance replaced main inverter. ■ On short final to PZ, right pedal stuck. With more pressure applied, pedals broke loose but binding was still felt. Maintenance inspection revealed failure of tail rotor servo. ■ Left pedal would not move past neutral setting. Aircraft was returned to station and running landing was made. Broken link in silent chain restricted left pedal movement beyond neutral position. ■ After takeoff on a night flight, IP was tuning the radios and pilot was flying the aircraft. Pilot looked down at the radios. As he looked up his airspeed was 70 knots and altitude was 700 feet and descending. Some reference was lost because a hill was between the aircraft and the lights on the horizon. Pilot then pulled 63 pounds of torque for 15 seconds before gaining sufficient altitude to clear the trees and regain visual contact with the horizon. ■ Complete loss of hydraulics occurred in flight. Actual IMC existed. Emergency was declared and instrument approach made to airport. Pilot and copilot were at controls with IP in jump seat. Safe landing was made after 25 minutes of AI with no hydraulics. WELL DONE to DAC James C. Anthony, CW3 Thomas R. Wie, and CW2 Rodney T. Offhaus, USAAVNC, Ft. Rucker.

AH-1

1 Accident ■ While in cruise flight at night and approximately 1,000 feet, pilot reported engine had failed. Pilot entered autorotation and made descending left turn to land on dirt road. Accident under investigation.

AVSCOM MESSAGES RECEIVED

■ 031640Z Dec 76—Subject: Maintenance Advisory Message on Potential Safety Hazard (MIL-STD-882) (Category IV), NSN 6230-00-299-5879, Floodlight Set, Contract DSA 400-75-0-4606, Manufactured by All Bidders, Inc. (GEN-76-31). □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$124,101

OH-58

1 Incident ■ During NOE flight, aircraft hit tow missile wire left in training area. Wire wrapped around main rotor control tubes and tail rotor shaft assembly. Control tubes were replaced and aircraft was released for flight.

1 Precautionary Landing ■ At 1,700 feet msl, N2 gauge dropped to zero percent. Caused by failure of tachometer generator, NSN 6220-00-179-2175.

TH-55

1 Incident ■ Engine rpm was approaching 1800 during runup when IP noted severe vibration. Investigation revealed water from heavy rains had frozen inside one tail rotor blade, damaging blade.

CH-47

1 Incident ■ Pilot heard loud roaring noise in flight, followed by fire and loud explosion in No. 1 engine area. Pilot shut down No. 1 engine and fired both fire bottles. After landing, No. 2 engine was shut down and hand-held fire extinguishers were used to put out remaining fire. Cause of mishap was internal failure of No. 1 engine transmission.

3 Precautionary Landings ■ IP noticed smoke coming from transmission pressure selector switch. Cause under investigation. (USAR) ■ Combining transmission oil pressure dropped to zero. Oil pressure transducer failed. ■ No. 2 engine oil low light illuminated and oil pressure dropped from 65 psi to 40 psi. Engine

UNITED STATES ARMY AGENCY FOR AVIATION SAFETY, FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the Directorate for Aircraft Accident Analysis and Investigation
LTC Curtis M. Sanders, Director

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication authorized by AR 10-29.

was shut down and single-engine landing was made. Oil filler cap was left off by crew chief, causing engine oil to flow overboard through oil tank filler assembly.

THOUGHT YOU WOULD LIKE TO KNOW

Wire strikes *are* on the increase. During the period July 1973 through March 1976, 38 wire strike mishaps occurred. Eleven of the 38 (30 percent) involved flights consisting of more than one aircraft and usually the lead aircraft was not affected. Apparently pilots are assuming they are clear of wires since lead just flew through the same area. The lead aircraft should inform other members of the flight when his aircraft passes over obstacles. One crewmember should keep the lead in sight and another maintain obstacle clearance. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

U-8

2 Precautionary Landings ■ No. 2 engine lost power during climbout with carburetor heat being used. Maintenance found threaded tapered pin attaching carburetor heat control arm to control valve assembly had dropped out, causing partial air starvation to carburetor. (ARNG) ■ No. 2 engine surged and oil pressure dropped to 5 psi. Engine was secured and single-engine landing was made. Internal engine failure is suspected. Engine is being analyzed.

U-21

1 Precautionary Landing ■ (A series) Landing gear would not fully retract. Splines on landing gear motor were worn excessively.

OV-1

1 Precautionary Landing ■ Pilot smelled hydraulic fluid. Both hydraulic systems dropped rapidly to zero. Landing gear was lowered using emergency procedures and landing was uneventful. Hydraulic line flange broke in nose gear well. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

2 Mishaps, 0 Fatalities, 0 Injuries, Estimated Costs: \$634

UH-1

■ Mechanic was cleaning oil from top of aircraft when his right foot went through green plexiglass window on top of left side of cockpit. The oil had leaked from a main rotor blade grip. The unit involved indicated no corrective action other than all personnel were cautioned of hazards while working on top of aircraft.

OH-58

■ Hovering UH-1H blew copilot's door off parked OH-58 aircraft. All pilots were told to land and allow time for flight personnel to secure loose cowling and doors before hovering near unbuttoned aircraft.

WHEN WAS THE LAST TIME . . .
You practiced partial panel instrument flight?

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

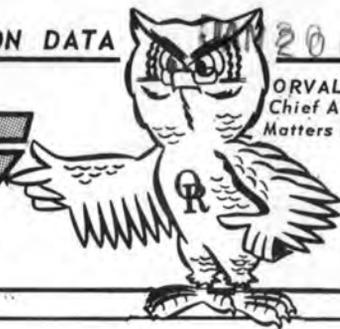


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



A USAAVCS PUBLICATION

VOL. 5, NO. 12 ■ 12 JANUARY 1977

mishaps for the period of 3-30 DECEMBER 1976

US Army Aviation Training Library
Fort Rucker, Alabama 36360

MURPHY STRIKES AGAIN

An operational unit recently reported an OH-58 precautionary landing that resulted from an engine that would produce only 45 to 47 psi of the maximum continuous engine torque rating of 79 psi. Attempts to pull more power resulted in rotor rpm and N₂ bleed-off. In an unsuccessful attempt to correct the problem, the double check valve was replaced. During the resultant test flight, the problem was resolved and normal power was restored when the copilot was able to roll on one-fourth inch more throttle following full throttle application by the pilot.

Careful analysis by the unit maintenance and safety officers disclosed the copilot collective stick had been misaligned during installation. Failure to align the bosses on the collective elbow (P/N 206-001-169-3) with the recesses on the adapter tube (P/N 206-001-175-1) resulted in a throttle stop short of the full open throttle position. The copilot was able to apply sufficient pressure to overcome the friction of the round (knurl) nut (P/N 206-001-389-1) and rotate the entire copilot collective stick to a position of proper alignment, thus allowing full throttle travel.

Failure to loosen the dust boot (P/N 206-070-884-1) sufficiently to allow a visual alignment check of the recesses on the collective stick with the alignment bosses on the elbow may have contributed to this mishap. In response to this mishap and a resultant DA Form 2028, USAAVSCOM is including the following information in the next change to the Operator's Manual and appropriate maintenance publications: "NOTE: When installing the copilot's collective stick, insure the alignment notches on the collective stick are aligned with the alignment bosses on the elbow before tightening the knurl nut to insure full throttle travel."

NEW PHONE NUMBERS COMING

Because of a recent move within the USAAVCS building, most of the phone numbers have changed. We will give you a new listing in the next week or so.

**CORRECT**

- A-Adapter tube (collective stick)
- B-Knurled knob
- C-Alignment boss (lug)
- D-Collective elbow

**INCORRECT**

SAFETY-OF-FLIGHT MESSAGES

■ 092130Z Dec 76, subject: Safety-of-Flight, Operational Advisory Message on CH-47A/B/C Extended Range Fuel Tankage (CH-47, 1976-19). Summary: Installation of fuel tanks in the CH-47 cabin for range extension or ferry flight is hazardous because of the fuel leakage. Locally fabricated systems or ferry tank kits, NSN 1560-00-937-0367, should be removed.

Continued on page 2

Continued from front page

Contact: Mr. Hoffman, AVSCOM, AUTOVON 698-2326, commercial (314) 268-2326.

■ 221930Z Dec 76, subject: Safety-of-Flight Message (Operational) for AH-1Q and AH-1S Attack Helicopter M28 Turret Weapons (AH-1-76-27). Summary: A potentially dangerous situation exists with the AH-1Q and AH-1S helicopter when firing the 40mm grenade launcher using the tow missile system TSU to direct

the M28 turret. When the tow missile system is shut down by malfunction, the control of the turret reverts to the helmet sight system. Since the gunner has his head down to view the TSU eye piece, the helmet sight system will direct the turreted weapon into a depressed position for firing. At very low altitudes, the fragmentation pieces from the impacting grenades may strike the aircraft. Contact: Mr. Kostal, AVSCOM, AUTOVON 698-6516, commercial (314) 268-6516.

FY 76 ACCIDENT BRIEF

SYNOPSIS 88-76

Type Aircraft: UH-1H

Time: 1700 Classification: Minor

Fatalities/Injuries: None

Estimated Materiel Damage Cost: \$12,422

Mission: Training

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CPT	31	1,644	71	1,715
P	CPT	27	1,034	-	1,034

Description of Accident: IP entered demonstration autorotation from 600 feet agl. While decelerating, tail rotor struck ground, damaging tail rotor and tail boom.

Causes of Accident

Initial: Crew (IP)—Decelerated with excessive nose-high attitude, resulting in tail rotor hitting ground.

Contributing: Supervisor (suspect)—IP had limited recent experience in IP duties.

Remarks: At the time of this mishap, the aircraft center of gravity was located at station 140.5.

Corrective Action: Compliance with the following caution in Chapter 7 of the UH-1D/H operator's manual would have prevented this mishap.

CAUTION

When flying at an aft C.G. (Station 140 to 144) terminate an approach at a minimum of five-foot hover prior to landing to prevent striking the tail on the ground.



SYNOPSIS 89-76

Type Aircraft: OH-58A

Time: 1905 Classification: Major (total)

Fatalities/Injuries: No Fatalities, 3 Injuries

Estimated Materiel Damage Cost: \$143,780

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	27	1,121	190	1,311
CP	CPT	31	2,314	27	2,341

Description of Accident: Aircraft struck two 1/8-inch steel telephone cables suspended 100 feet agl while conducting reconnaissance along riverbed.

Causes of Accident

Initial: Crew—Pilot failed to detect and avoid a hazard to flight while violating unit SOP which

prohibited contour flight in that area.

Contributing: Supervision—Conflicting guidance existed at this installation concerning altitude restrictions for various flight missions.

Remarks: Evacuation of injured personnel was delayed approximately 3 hours by lack of communications due to the low altitude of the flight and the extended distance to the nearest communications facility. No life support equipment was aboard aircraft.

Corrective Actions: (1) Aviation commanders were instructed to insure aviators' proficiency/training are compatible with mission requirements. (2) Conflicting installation regulations and policy letters were rescinded and provisions of applicable FARs were reinstated for flights off the military reservation.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

SYNOPSIS 90-76

Type Aircraft: **UH-1H**

Time: **0030** Classification: **Major**

Fatalities/Injuries: **No Fatalities, 2 Injuries**

Estimated Materiel Damage Cost: **\$103,465**

Mission: **Training**

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	28	647	-	647
CP	CPT	32	721	-	721

Description of Accident: Aircraft departed LZ. Upon clearing trees, pilot turned off landing light and initiated left turn. During the turn, aircraft lost altitude and hit trees. Crew regained control of aircraft and landed at first clear area.

Causes of Accident

Initial: Crew—Allowed aircraft to descend and

hit trees.

Contributing: Command—Local guidelines and directives pertaining to the appointment of pilots-in-command were not complied with. Specifically, the pilot-in-command of this aircraft was not given the night flight phase of his PIC checkride. Additionally, local regulations fail to consider total continuous duty time in addition to flight crew duty time with regards to crew rest. Supervisory (LCO)—Two aviators of limited recent experience were paired to perform complex low-level night formation flight under conditions where no visible horizon or ground reference points were available.

Corrective Action: Major command has published additional directives requiring subordinate units to comply with all the published requirements for pilot-in-command before appointing that individual on PIC orders.



SYNOPSIS 91-76

Type Aircraft: **UH-1H**

Time: **2200** Classification: **Major (total)**

Fatalities/Injuries: **No Fatalities, 5 Injuries**

Estimated Materiel Damage Cost: **\$618,055**

Mission: **Service—medevac**

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	29	671	-	671
CP	CPT	35	1,215	-	1,215

Description of Accident: On short final to helipad at approximately 100 feet and 40 knots, pilot lost directional control due to stuck right pedal. Power was reduced to counter rotation. Aircraft impacted vertically. Fuselage was distorted, underside crushed, tail boom severed, and engine mounts and deck were buckled.

Causes of Accident

Initial: Materiel—Tail rotor silent chain link

fractured and jammed between sprocket wheel and guard, causing antitorque controls to lock. Maintenance (suspect)—Broken tail rotor chain link was not detected on daily inspection. Accident report did not reflect if change 25 of TM 55-1520-210-20 had been complied with.

Corrective Action: Change 25 to the Organizational Maintenance Manual (TM 55-1520-210-20), "Aircraft Inspection Checksheet," is quoted as follows:

"EVERY 10 HOURS OF OPERATION

All silent chains shall be subjected to a close visual inspection for cracks while installed on aircraft using at least a 3 power magnifying glass and adequate light source. If cracks are found, refer to paragraph 9-15f (3.1)."

By-the-book maintenance would have prevented this accident.

FY 76 ACCIDENT BRIEF

6 Accidents, 6 Injuries, 1 Fatality, Estimated Costs: \$1,515,804

UH-1

5 Accidents ■ During ground run on simulated hydraulics-off landing, aircraft started to slide off right side of landing lane. IP attempted to make go-around and apparently lost control of aircraft. Main rotor blades struck ground while aircraft was in a roll to the right. Aircraft came to rest inverted. ■ While on takeoff aircraft started uncontrollable turn, spun approximately 360°, and returned to its takeoff point. Aircraft then started right roll. To avoid turning the aircraft over, pilot lowered collective pitch, landing hard. Landing gear and underside of aircraft were damaged. ■ Aircraft encountered moderate to severe winds during landing. While attempting go-around, pilot noted engine rpm at 6000 and heard low rotor rpm warning sound. As rpm continued to decrease pilot maneuvered aircraft into an area with the smallest trees and landed, striking several trees with main rotor blades, severing the mast. Aircraft came to rest on its side. ■ Aircraft crashed while making simulated hydraulics-off running landing. Accident under investigation. ■ Twenty-minute fuel light had illuminated. Right and left fuel boost pump lights came on, followed by engine stoppage. Hard landing resulted. Suspect fuel exhaustion.

7 Incidents—following are selected briefs ■ Aircraft was on ground at flight idle when mechanic inside aircraft threw crescent wrench to another mechanic outside aircraft. Wrench hit main rotor blade. ■ During contour flight, aircraft struck tree, breaking left chin bubble. ■ Aircraft was being hovered to hover hole for cover and concealment when main rotor blade struck tree. ■ Helicopter was on authorized low-level route when sea gull hit pilot's windshield, breaking out two-thirds of plexiglass. ■ While aircraft was hovering in LZ, two troops jumped onto left skid, causing aircraft to strike stump, breaking left chin bubble.

2 Forced Landings ■ Rpm warning light illuminated and engine rpm went to 5600. Investigation revealed overspeed governor failure and N2 tach generator failure. ■ At approximately 4,200 feet and climbing, crew heard loud bang from engine area. Aircraft yawed about 30° to right, followed by rpm audio and warning light. Engine and rotor needles split with engine (N2) decaying to approximately 3600 rpm and rotor to the bottom of green arc. Crew lowered collective and attempted to regain engine rpm by checking the throttle to insure it was full open and increasing rpm beep with negative results. Successful autorotation was accomplished. Cause unknown at present time.

45 Precautionary Landings—following are cause factors ■ 4 fuel boost pump failures ■ 4 chip detector lights came on ■ 3 batteries overheated ■ 2 fire warning lights illuminated ■ 4 N2 tachometer generator failures ■ 2 engine compressor stalls ■ 2 seal failures in the quill assembly accessory drive ■ 2 transmission oil pressure transmitters malfunctioned ■ 3 hydraulic leaks ■ 19 other miscellaneous causes.

AH-1

1 Accident ■ Aircraft encountered blowing snow while making an approach to a field. Aircraft struck ground, bounced, and on second impact rolled to right. Aircraft came to rest inverted.

2 Incidents ■ During termination of simulated antitorque failure with left fixed pedal setting, tail rotor struck vertical fin, damaging vertical fin and tail rotor. ■ Aircraft was flying authorized, supervised NOE course. While copilot was looking at map, aircraft struck tree, damaging left side of tail boom and tail rotor.

12 Precautionary Landings—following are selected briefs ■ During takeoff, pilot heard bang and noticed engine instruments fluctuate. Maintenance inspection revealed grass in engine inlet. ■ Crew smelled fumes

UNITED STATES ARMY AGENCY FOR AVIATION SAFETY, FORT RUCKER, ALABAMA 36362

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication authorized by AR 10-29.

and master caution, transmission oil bypass, and transmission oil pressure lights illuminated. Caused by internal transmission oil filter gasket failure. ■ Master caution panel light came on with no segment light. Maintenance replaced master caution panel. ■ SCAS hardover in roll channel occurred during takeoff. Inspection revealed moisture on SCAS card. ■ While conducting blowing snow approaches at night, ground personnel told pilot of unusual noise coming from aircraft. Maintenance inspection revealed swashplate and support assembly had failed. Cause of failure unknown.

AVSCOM MESSAGES RECEIVED

- 202150Z Dec 76—Maintenance Advisory Message on Aircraft Cleaning Compound (GEN-76-32).
- 291410Z Dec 76—Cleaning Compound, Solvent, NSN 6850-00-224-6665, MIL-C-110900, DSA 600-76-C-1819, Octagon Process, Lot C (GEN-76-33). □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 1 Injury, Estimated Costs: \$6,998

OH-6

1 **Forced Landing** ■ When IP rolled throttle to flight idle during practice autorotation, engine stopped. Successful autorotation was completed. Cause of engine stoppage unknown.

1 **Precautionary Landing** ■ Abnormal vibration occurred and aircraft was landed at nearest airport. Tape on tail rotor blade came off in flight.

OH-58

1 **Incident** ■ Main rotor blades struck tree during hover. While pilot was maneuvering to land, tail rotor struck the same tree. Aircraft developed vibrations and pilot performed hovering autorotation with no further damage.

1 **Forced Landing** ■ Aircraft yawed and tach needles split. Pilot attempted to increase N₁, but it was slowly decaying. Pilot lowered collective, needles rejoined, and N₁ stabilized at 62 percent. Autorotation was completed. Caused by low side governor failure.

12 **Precautionary Landings—following are selected briefs** ■ Pilot felt severe vibrations in flight. Aircraft was landed and shut down. Suspect wear pad bonding separation caused main rotor blades to be out of track. ■ During hover, engine oil pressure dropped to 9 psi with rapid fluctuation of 5 psi. Suspect oil pump failure. ■ Aircraft touched down skid “heels low” during termination of autorotation. Aircraft rocked forward and spike knock occurred. ■ Loud noise was heard and vibration was felt in airframe. Cause unknown. Maintenance inspection revealed no problem. Aircraft was test flown and released. ■ Pilot noted oil temperature rise to 100°. This is the third time this aircraft has had an engine oil overtemperature condition. Quality control and AVSCOM representatives are evaluating the problem. ■ Fuel filter caution light illuminated. Aircraft landed without incident. Aircraft had been refueled at a civilian airfield. Fuel was found contaminated with water. Fixed base operator was notified and aircraft was defueled, refueled, and flown to home station. ■ During cruise flight, rotor rpm decayed and low rpm audio and warning light came on when pilot increased power above 45-47 psi torque. Pilot entered autorotation and rpm returned to normal range. Pilot again increased collective, and aircraft response was normal until torque reached 45-47 psi, at which time rotor rpm started decaying again. Pilot executed shallow approach with power to the airfield. Cause of difficulty was an improperly aligned copilot’s collective stick. (For additional information, see “Murphy Strikes Again” on front page.)

TH-55

3 **Precautionary Landings** ■ High frequency vibration was noted during hovering flight. Upper bearings on pulley assembly and frame of main rotor belt transmission had worn excessively. ■ IP heard loud noise from engine. Retainer strap holding heat exchanger to manifold had broken. ■ Longitudinal cyclic trim became inoperative during hover. Caused by failure of reversing unit.

CH-47

1 **Incidents** ■ Aircraft was on GCA passing through 500 feet when large flock of white birds was encountered.

One bird hit and cracked the right windscreen, and another hit the right side of the aircraft. ■ While unloading one of two 105 howitzers, cable struck spade of second gun and was cut. Wheel brakes were engaged on one wheel only, and gun rotated and struck left inside of aircraft, causing damage. ■ Aircraft landed at field site to load ¼-ton and passengers. Crew chief lowered ramp onto stump, puncturing ramp and tongue.

5 Precautionary Landings ■ No. 1 generator light came on, then went out. Flight engineer reported smoke and sparks coming from AGB area. Caused by internal failure of generator. ■ Flight engineer saw something unusual around aft vertical shaft during flight and landing was made. Cause was sunlight diffusion around aft vertical shaft. (ARNG) ■ No. 1 engine transmission temperature went to 145°. Engine condition lever was brought to ground position and temperature dropped to 125°. Caused by faulty transmission temperature selector switch. ■ Aircraft was started and 235 rotor rpm was obtained. APU was shut down. Approximately 10 to 30 seconds later No. 1 and No. 2 generators dropped off line. No. 1 rectifier and No. 2 flight boost pump dropped off line, followed by No. 2 rectifier shortly afterwards. Both SAS systems also dropped off line. No. 1 flight boost system maintained normal pressure. APU was restarted and normal shutdown was completed. Inspection revealed both generator shafts were sheared. No metal was found on chip detector plug, and no loss of transmission oil was noted. Teardown analysis in progress. ■ No. 1 engine chip detector light flickered, then came on steady. No. 1 engine was shut down. No. 2 engine oil pressure increased to 200 psi, and oil temperature started to climb. No. 1 engine was restarted and running landing was made. No. 2 engine oil pressure transmitter had failed and normal fuzz was found on No. 1 engine chip detector.

CH-54

1 Precautionary Landing ■ Pressure loss occurred in second stage hydraulic system during flight. O-ring in second stage hydraulic manifold failed in the pressure inlet side. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$6,571

Following are selected briefs.

U-21

1 Incident ■ (A series) Crew attempted to lower gear for landing and heard unusual noise. Right gear gave unsafe indication. Recycling and manual extension attempts failed to produce positive results. Tower and another aircraft agreed gear appeared down. On landing rollout right main gear collapsed. Aircraft veered off runway, damaging right wing tip and trailing edge, both flaps and prop. Right main gear actuator failed.

3 Precautionary Landings ■ After reaching cruising altitude, crew noted fuel siphoning from right nacelle cap. Aircraft returned for landing. Fuel cap inner O-ring preformed packing failed. ■ When flaps were lowered to approach position, right inboard flap failed to extend and others lowered to full down. Pilot was able to maintain control with full left rudder and aileron and differential power. Landing was made without mishap. Flexible shaft assembly failed to stay fully seated. WELL DONE to CW2 C. R. Barber, 146th ASA Co. ■ (H series) During climb through 19,500 feet, right yaw was experienced with loss of torque, followed in a few seconds by exhaust smoke. Pilot secured No. 2 engine and returned for successful single-engine landing. Engine failed internally.

OV-1

1 Incident ■ While taxiing to runup area for predawn mission, aircraft turned to avoid parked UH-1 and struck fire extinguisher with drop tank fin. Damage was discovered during postflight inspection.

2 Precautionary Landings ■ Pilot saw both hydraulic gauges drop to zero and returned to home station. Emergency gear extension procedures were followed and landing was uneventful. Preformed packing on brake assembly failed. ■ Right gear gave unsafe indication for landing. After recycling, unsafe indication remained but tower reported gear appeared down. Landing was uneventful. Investigation revealed gear warning wires caught in landing gear scissors.

C-12

1 **Precautionary Landing** ■ Copilot windshield cracked (not separated) at FL 220. Pilot returned to home base and landed. AVSCOM and Beech Aircraft are aware of the C-12 windshield cracking problem. It is imperative that aviation safety officers insure that all C-12 windshield problems are reported to USAAAVS and AVSCOM.

U-8

2 **Precautionary Landings** ■ No. 2 engine began running rough. Pilot secured engine and single-engine landing was successful. Automatic mixture control unit malfunctioned. (ARNG) ■ On short final, grinding noise was heard, followed by No. 1 engine chip light. Engine failed on touchdown. Engine crankshaft counterweight was thrown through upper engine case. (USAR)

T-42

2 **Precautionary Landings** ■ After takeoff, No. 2 engine rpm continued to increase and manifold pressure dropped. Throttle was retarded and power stabilized at 2700 rpm and 12 inches manifold pressure. Landing was accomplished in this configuration. Caused by failure of right prop governor. ■ No. 2 engine failed during cruise and single-engine landing was successfully completed. Maintenance could not duplicate problem. Aircraft was released for flight.

U-3

2 **Precautionary Landings** ■ Gear-down light would not illuminate for landing. Emergency procedures were executed and successful landing was completed. Wires to left gear microswitch were broken at crimped terminal. (ARNG) ■ As power was reduced for descent for landing, No. 1 engine failed. Single-engine landing was made. Fuel discharge nozzle screens were dirty. (ARNG) □

WHEN WAS THE LAST TIME . . .
you reviewed your emergency procedures?

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

1 Accident, 0 Fatalities, 1 Injury, Estimated Costs: \$920

CH-47

2 **Precautionary Landings** ■ No. 2 engine oil low light came on. Flight engineer reported large amount of oil was visible on right aft section of aircraft. Caused by improperly installed O-ring in oil filter and crack in oil filter housing. ■ Flight engineer discovered fuel leak in No. 2 engine. Leak was caused by loose fuel barrier filter.

OH-58

1 **Ground Accident** ■ Mechanic attempted to wipe a drop of fuel off fuel nozzle housing with the engine exhaust covers while engine was running. Tie cords of exhaust covers were caught in No. 1 section of tail rotor drive shaft, jerking mechanic's hand into combustor housing, resulting in minor injury.

1 **Precautionary Landing** ■ Engine oil bypass caution light illuminated. After taking oil sample, crew chief left engine oil tank drain valve open, resulting in loss of engine oil. This is the second time this type mishap has occurred in the same unit. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

9 Mishaps, 0 Fatalities, 6 Injuries, Estimated Costs: \$31,825

UH-1

■ As main rotor hub was being moved from unserviceable maintenance platform (one wheel missing), platform collapsed, causing rotor hub to fall and damage main rotor blade which was lying on floor. All unit workstands were inspected and unserviceable stands tuned in for repair. ■ Mechanic was standing on top of helicopter loosening jam nut on main rotor head when he felt something pop in his right shoulder. Muscle strain resulted in loss of 4 working days. ■ During preflight inspection, pilot was attempting to open left cargo door when he pulled ligaments and muscles in his right shoulder, forearm, and hand. All personnel

were briefed on applying only reasonable force to open cargo doors. Mishap resulted in a loss of this aviator for 14 duty days.

OH-58

■ A mechanic was trying to check vibrations by placing his hand on tail rotor drive shaft bearing. His hand inadvertently touched rotating shaft and pulled his arm forward between tail boom and tail rotor drive shaft, causing minor injury to his arm and minor damage to the aircraft. ■ While tracking main rotor blades, tracking flag struck and damaged rotor blade. The unit held a class on proper procedures for tracking and the inherent dangers associated with blade tracking.

AH-1

■ Avionics repairman was attempting to unlock pilot's door to remove the SCAS sensor amplifier. He was instructed to remove the safety pin in the pilot's door lock; instead he pulled the copilot's/gunner's canopy removal system actuator handle which triggered the explosive charge, causing damage to the aircraft. The avionics repairman developed a headache and ringing in his ears. All personnel were briefed on proper procedures for unlocking the AH-1G and locations of the mechanisms for canopy removal.

U-10

■ A soldier with an M-16 rifle at sling arms was acting as a ground guide for a night landing operation. A landing aircraft snagged his rifle, dragging him some distance. Serious injury resulted.

AUXILIARY POWER UNITS (APU)

■ Due to a weak battery on an APU, an operator started it with a hand crank. After the APU started, crank would not release from splined shaft. When APU rpm increased hand crank was finally thrown from APU, striking top of helicopter rotor blade, damaging the blade beyond repair. Investigation revealed the following: (1) the operator was not a qualified APU operator; (2) electrolyte level in battery was low; (3) splines on the APU driveshaft and the crank handle were rusted. All APUs and related equipment should be checked to insure appropriate lubrication procedures are followed. ■ Mechanic in a kneeling position was removing an APU electrical cord from an aircraft when he felt a sharp pain in his lower back. One duty day was lost as a result of back strain. □

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

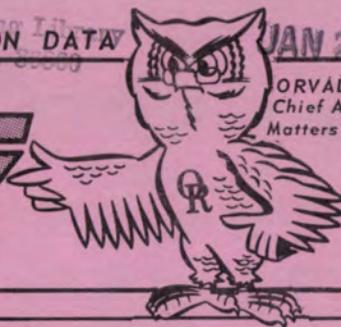
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



FLIGHT FAX



A USAAVVS PUBLICATION

VOL. 5, NO. 13 ■ 19 JANUARY 1977

mishaps for the period of 31 DEC 1976-6 JAN 1977

OVERHEATING OF NICAD BATTERIES

Over the past months, we have received many questions about procedures for handling overheated nicad batteries. These questions were researched with appropriate commands, and here are the answers.

■ How long should it take an overheated battery to cool, and how do you know when the battery has cooled to a safe temperature?

Under normal conditions, it takes approximately one-half hour for a battery to cool after landing. However, if the battery is making a hissing sound and/or fluid is escaping from the vent, wait until this venting process has completely stopped. To determine if the battery has reached a safe temperature, recommend the hand-touch method be used; i.e., lightly place hand against the battery case similar to the way you determine the temperature of an iron.

■ When a battery overheats, will its charge be lost? In most cases, the battery will have some charge remaining. However, it is suggested that an engine start not be attempted until the battery has been inspected by maintenance personnel.

■ What procedures should maintenance personnel follow when the battery cools down?
The procedure followed at DS/GS and depot levels

■ ■ ■

NOTICE TO T53 OPERATORS

This article originally appeared in FLIGHTFAX, Vol. 3, No. 43, 20 August 1975. It is being reprinted by request.

PRAMs received by USAAVVS indicate an increasing number of in-flight engine stops that are fuel control related. In many of these mishaps the engine would have continued to produce power had the pilot selected the emergency governor position before N₁ speed decreased below 50 percent. The criterion for an emergency governor save is a loss of power without loud noises such as compressor stall or mechanical disintegration, then a shift to emergency that is accomplished before N₁ speed decreases below 50 percent. The engine should continue to produce usable power for a safe and controlled landing.

is shown in figure 2-7, Maintenance Flow Chart, of TM 11-6140-203-15-1. Detailed information is provided in TM 11-6140-203-15-2, sections 1 and 2 of chapter 4 for organizational maintenance, chapter 5 for DS and GS maintenance, and chapter 6 for depot maintenance. Portions of the dash 2 manual were updated by maintenance advisory message number 181540Z (GEN 75-7) dated 18 Mar 75 from AMSAV-FEG, St. Louis, MO. After installation of the battery, the voltage regulation device should be checked IAW the above advisory message which modified paragraph 3-4c of the dash 2 manual.

■ After the battery has cooled, and an emergency condition exists, can the aircraft be safely started, the battery disconnected, and the aircraft flown? In the event of an emergency condition, an engine start may be attempted, but it's recommended that if the start is successful, the battery not be disconnected but battery switch be turned "off" instead. If no emergency condition exists, an engine start should not be attempted until battery has been inspected by maintenance personnel.

■ ■ ■

PREPARATION FOR NIGHT FLIGHT SERIES

Directorate of Training Development

Training Literature Division

USAAVNC, Fort Rucker, Alabama

Since release of TCs 1-29 and 1-30 of the "Preparation for Night Flight" series training circulars, several comments have been received stating that these publications do not emphasize the requirement to remove materials placed on the aircraft in preparing it for night flight. Although not brought out in the TCs in the form of a warning or note, the introduction states that the aircraft should be returned to its normal configuration after completion of night flight. Units modifying aircraft for night flight must be aware of this requirement and remove material (e.g., tape, acetate, clip-on filters, etc.) before performing day flight in the aircraft. Future publications in the "Preparation for Night Flight" series will contain a note to this effect at the beginning of Section I.

FY 7T ACCIDENT BRIEF

FY 7T ACCIDENT BRIEF

FY 7T ACCIDENT BRIEF

SYNOPSIS 7T-1

Type Aircraft: **UH-1H**
 Time: 1342 Classification: Major (total)
 Fatalities/Injuries: **No Fatalities, 7 Injuries**
 Estimated Materiel Damage Cost: \$618 055
 Mission: **Service**

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	24	1,328	-	1,328
CP	CW2	29	740	-	740

Description of Accident: During takeoff, low rpm audio came on and pilot autorotated into trees from an altitude of 75 feet.

Causes of Accident

Initial: Suspect malfunction of low rpm warn-

ing system.

Contributing: Suspect training—Existing UH-1 dash 10 emergency procedure for engine failure instructs pilots to close throttle and shut off main fuel if time permits.

Remarks: Pilot departed landing zone with 10 persons, interpreted what he thought was an engine failure, and followed the dash 10 emergency procedure for an engine failure at low altitude.

Corrective Action: The U.S. Army Aviation Center has taken action to change the UH-1 emergency procedures that would include a warning for aviators to insure that the engine has failed before retarding throttle. AVSCOM is developing an improved rpm warning system.



SYNOPSIS 7T-2

Type Aircraft: **UH-1H**
 Time: 1110 Classification: Major (total)
 Fatalities/Injuries: **No Fatalities, 7 Injuries**
 Estimated Materiel Damage Cost: \$618,055
 Mission: **Service (MAST)**

Grade/Age/Experience

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	30	2,138	-	2,138
CP	1LT	25	587	-	587

Description of Accident: Crew reported unusual vibration and aircraft yawed right. Pilot initiated precautionary landing to open field. As aircraft passed 200 feet agl, it began right spiral and crashed into trees.

Causes of Accident

Initial: Materiel failure—42-degree gearbox.

Contributing: Crew—Pilot did not correctly

analyze emergency situation and follow corrective procedures for loss of tail rotor thrust as outlined in operator's manual. Crew-copilot was aware of tail rotor malfunction but failed to communicate this information to the pilot. This aircraft had been used by the unit IPs to conduct nonstandard hovering autorotations with left and right pedal turns, creating a suspected tail rotor overtorque condition which may have contributed to the failure of the 42-degree gearbox.

Corrective Action: It has been reemphasized that nonstandard maneuvers (i.e., hovering autorotations with pedal turns) are not to be conducted because of overtorque stress placed on tail rotor drive system. Tail rotor malfunctions are being programmed into the SFTS to train the individual aviator to detect, interpret, and select proper course of action.

FY 7T ACCIDENT BRIEF

FY 7T ACCIDENT BRIEF

SYNOPSIS 7T-3

Type Aircraft: OH-58
 Time: 1045 Classification: Major (total)
 Fatalities/Injuries: No Fatalities, 3 Injuries
 Estimated Materiel Damage Cost: \$143,780
 Mission: Service (ROTC support)
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	30	2,980	1	2,981

Description of Accident: Pilot attempted low-level, steep right turn downwind with low airspeed. Aircraft began turning uncontrollably around mast and crashed into trees.

Causes of Accident

Initial: Pilot error—Pilot exceeded aircraft capability through a combination of gross weight, density altitude, low airspeed, and downwind turn at low altitude.

Contributing: Supervisory error—No mission briefing to establish flight requirements.

Corrective Action: Coordination has been accomplished with USAAVSCOM to revise the dash 10 operator's manual to take into account angle-of-bank effects on aircraft performance.

SYNOPSIS 7T-4

Type Aircraft: AH-1G
 Time: 1635 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$34,000
 Mission: Training
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	34	1,761	-	1,761
P	CW2	29	1,769	-	1,769

Description of Accident: During simulated antitorque (stuck left pedal) maneuver, aircraft landed hard.

Causes of Accident

Initial: Crew—Pilot used incorrect technique to terminate a left fixed pedal approach (retarded throttle which aggravated left yaw condition).

Contributing: IP permitted training situation to deteriorate beyond the point of safe recovery.

Corrective Action: The Deputy for Standardization is evaluating this maneuver to develop a more valid method of teaching yaw control after a malfunction of the antitorque system.

FY 7T ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

UH-1

5 Precautionary Landings—following are selected briefs ■ Tail rotor chip detector light came on during hover. Maintenance replaced 90° gearbox due to contamination. ■ On climbout, pilot felt high frequency vibration in pedals. Maintenance inspection revealed loop clamp on heater noise suppressor was broken, allowing heater assembly to vibrate. ■ Aircraft was crossing a saddle area, with descent on the other side. As descent was started, main rotor blade hit top of 20-foot saguaro cactus. Pilot landed, checked main rotor blades, and continued mission.

AVSCOM MESSAGES RECEIVED

- 062000Z Jan 77—Subject: Maintenance Advisory Message on Defective Fuel Cell Sealant (GEN-77-1).
- 291405Z Dec 76—Subject: Lubricant, Solid Film, NSN 9150-00-754-0064, MIL-L-23398, Lot 602, Mfg by Hohman Plating and Mfg. Co. on contract DSAA 600-76-C-1465 (GEN-76-34).
- 121950Z Jan 77—Subject: Maintenance Advisory Message on Grease, Aircraft, MIL-G-23927 American Oil Co. DSA 600-12359, Lot 3291, NSN 9150-00-985-7245, DOP Aug 66 (GEN 77-2).

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

OH-58

1 **Precautionary Landing** ■ Aircraft was on downwind for landing when smoke filled cockpit. Smoke was caused by accumulation of oil that had leaked from freewheeling unit onto bleed air line to heater. When heater was turned on, it raised the temperature of the oil sufficiently to cause it to smoke but not ignite.

CH-47

1 **Precautionary Landing** ■ Lateral binding occurred in cyclic control during hover. Caused by defective roll centering spring assembly. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

OV-1

1 **Precautionary Landing** ■ After lowering gear for landing, right main indicated unsafe. After several unsuccessful recycling attempts, emergency extension procedures were used. Landing was uneventful. Microswitch on right gear was out of adjustment.

THOUGHT YOU'D LIKE TO KNOW

Fifty-four forced landings were reported from 1 July through 31 December 1976. Component failures and malfunctions accounted for 45 of these. Maintenance and crew factors accounted for the remainder with the exception of three in which the causes were not determined. Following is a summation:

Component Failure/Malfunction	OH-58	TH-55	UH-1	OH-6	U-10	CH-47	U-21	AH-1	Total
ENGINE									
Compressor Stall			1						1
Cylinder Failures		3							3
Power Turbine Failures			1						1
Unknown	7		6	1				1	15
Linear Actuator	1								1
Internal Failure	1		1						2
Cracked Fuel Manifold			1						1
Blockage of Fuel Nozzle	1								1
Fuel Pump Failure			1						1
Double Check Valve	5								5
Fuel Control/Governor	3		5					1	9
Fuel Manifold Failure						1			1
Total									41
ROTOR SYSTEM									
Blade Tip						1			1
Tail Rotor Silent Chain Failure			1						1
Transmission Drive Shaft Coupling			1						1
Hanger Bearing Failure	1								1
Total									4
MAINTENANCE FACTORS									
Missing Cotter Pins			2						2
Improper Refueling				1					1
Improper Rigging of Bleed Band			1						1
Total									4
CREW FACTORS									
Fuel Exhaustion		2							2
UNDETERMINED CAUSE FACTORS									
			1		1		1		3
Totals	19	5	22	2	1	2	1	2	54

UH-1

■ During maintenance operation, unattended ½-ton pickup truck rolled backwards, striking parked UH-1. Truck's engine was running and gearshift lever was in park position. The cause of this accident was attributed to vehicle left unattended with engine running; emergency foot brake pedal not fully depressed; and shift lever moving from park to reverse position due to vibrations. ■ Right greenhouse plexiglass was found broken on parked UH-1. Suspect another helicopter parked adjacent hovered out of parking area, causing flying debris to be thrown into greenhouse.

AH-1

■ Facility engineer was repairing ceiling of maintenance hangar. Work was being accomplished from a "cherry picker" lifting device. Wrench fell from the lift onto an AH-1 main rotor blade installed in workstand, causing unrepairable damage to the blade.

OH-58

■ Mechanic placed ground-handling wheels on aircraft skids. Aircraft was being towed when left ground-handling wheel came off, damaging left skid and causing tow ring to be pulled out of right skid. Aircraft was being towed under blackout conditions and tug operator could not observe position, ground-handling wheel, or tow bar.

CH-47

■ Aircraft was being repositioned inside hangar by tow vehicle and ground guide. Because of close proximity of other aircraft, rotor blades were being rotated when an aft blade struck an overhead heating duct, causing blade damage that required depot maintenance. ■ A soldier was moving an ammo trailer just released from CH-47 sling hook when rotorwash from CH-47 blew a foreign object into soldier's right forearm, resulting in serious laceration.

RECAP OF AVSCOM MESSAGES

AVSCOM message 062121Z Jan 1977, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 July to 31 December 1976 for the AH-1.

- AH-1-76-10 One-Time Inspection for Oil Cooler Installation of the UH-1B/C/D/H/M, TH-1G, and AH-1G/Q Series Acft, TB 55-1500-206-20-25
- AH-1-76-11 AH-1G/Q/TH-1G/UH-1C/M Helicopters and Boot Assembly, P/N 540-011-427-1
- AH-1-76-12 Engine Oil Cooler Turbine Bearings for UH-1/AH-1 Aircraft
- AH-1-76-13 Engine Oil Cooler Turbine Bearings for UH-1/AH-1 Aircraft
- AH-1-76-14 Limited Use of Turret/Turret Select Switch on AH-1Q/S
- AH-1-76-15 UH-1H/M, AH-1G/Q (T53-L-13B Engine) Aircraft
- AH-1-76-16 AH-1S TM 55-1520-234-10, Chg 1, 20 Aug 76
- AH-1-76-17 Maint Records for AH-1Q/S Inconsistencies on Helicopters from Amarillo BHT Overhaul Facility
- AH-1-76-18 AH-1Q, TM 55-1520-221-34B and AH-1S, TM 55-1520-234-23P
- AH-1-76-19 AH-1S TM 55-1520-234-10, Chg 2, 25 Aug 76
- AH-1-76-20 AH-1S TM 55-1520-234-10, Chg 2, 25 Aug 76
- AH-1-76-21 Procedures for Suspected Engine Failure for UH/AH Series
- AH-1-76-22 AH-1S TM 55-1520-234-10, Chg 2, 25 Aug 76
- AH-1-76-23 Lift Link Assembly Configuration Requirement Applicable to the AH-1 and UH-1 Series Aircraft
- AH-1-76-24 AH-1S, TM 55-1520-234-10, Change 2
- AH-1-76-25 Lift Link Assy Configuration Requirement Applicable to the AH-1 and UH-1 Series Aircraft
- AH-1-76-26 Leakage in Modification Instrument Piping System on AH-1Q/S Aircraft
- AH-1-76-27 AH-1Q/S M28 Turret Weapons

UNITED STATES ARMY AGENCY FOR AVIATION SAFETY, FORT RUCKER, ALABAMA 36362

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication authorized by AR 10-29.



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FORT RUCKER, AL 36362
STACOM 11 ■ 19 JANUARY 1976 COL CLEMENT A. WYLLIE ■ 558-2603/3514

THERE JUST AIN'T NO OTHER WAY

Remember the article which appeared in STACOM 10 entitled "The Realities of Inadvertent IMC"? About the time this article was published, a UH-1H crew provided a chilling demonstration of those realities. The crew survived and item 11 of the PRAM describing the encounter is reprinted below with minor editing. Read it carefully.

11. At 2130 the aircraft was being repositioned from a field FARES location to its parking spot approximately 700 meters to the southwest. A takeoff was made from the FARES site but due to darkness visual contact was not made with other aircraft already in the parking area. A landing was completed to a small airstrip south of the parking area. Weather during the operation was forecast to be 1,500 feet overcast with 3 miles visibility and fog. The subject aircraft departed the airstrip to the north and the pilot gained visual contact out his left door with another aircraft in the parking area. A left descending turn was started and IMC was encountered 20 feet above the trees. The pilot *initially attempted to descend to visual conditions* and an unusual attitude resulted in the pilot getting into extreme vertigo. Pilot estimates that airspeed in excess of 120 knots, nose-low attitude of 65 degrees, and 70 degrees of left roll were encountered. Visual contact was gained just above the trees and a radical (full aft cyclic, full up collective) recovery was completed, but this caused a reduction of N₂ rpm and a suspected overtorque. Due to the high power setting and the now nose-high attitude, the aircraft climbed back into IMC, and an unusual attitude again resulted from both pilots attempting to recover the aircraft at the same time. After the pilot got the copilot off the controls, a recovery was completed and an instrument approach was made to the base airfield without incident. Weather conditions at the time of mishap were obscured in heavy patchy fog throughout the reservation.

Now reread STACOM 10 again, especially the part that says: WHEN INADVERTENT IMC IS ENCOUNTERED, YOU MUST GO ON INSTRUMENTS. THERE IS NO OTHER OPTION. Generally, PRAMs reporting an experience like this read only: "11. Aircraft was observed to enter a fog bank at low altitude, explosion was heard, wreckage was located the following morning. Investigation in progress."

Even though the crew of this aircraft initially did about everything wrong, we wish to congratulate them for staying with it and eventually regaining control. Our appreciation is also extended to the organization reporting this mishap. All too frequently episodes like this are quietly buried at the unit level with the end result that only the greatly sobered participants benefit from the experience.

MORE CG PROBLEMS!

"Just couldn't seem to get the nose down before I dinged the tail rotor . . ."

"I know you're not supposed to make an approach to the ground with the CG aft of 140—that's why I shot an autorotation."

The preceding quotes are from a couple of people who had each terminated a standard practice autorotation in a UH-1H by landing in a one-point attitude—on the tail rotor. In both cases, the aircraft CG was

found to be located between station 140 and 144; a condition where the aircraft should have been brought to a 5-foot hover prior to touchdown. Both aviators were also aware of the note contained on page 7-6, TM 55-1520-210-10, which states in its entirety: "When flying at an aft CG (station 140-144), terminate an approach to a 5-foot hover prior to landing to prevent striking the tail rotor on the ground." So, why had the note been ignored? It hadn't; these guys just didn't think the note applied to autorotations—only to "approaches." The truth is, it applies to ALL approaches to the ground, including autorotations, because any decelerative attitude established with an aft CG condition will bring the tail rotor equal to or below the level of the skids and the intent should always be to land skids first—right? Anyway, the dash 10 will shortly be changed to point out in very positive language that this is an across-the-board restriction. Once again, and again, and again—know and UNDERSTAND your aircraft CG limitations.

ENGINE? FAILURE

Judging from some recent AH-1/UH-1 accidents, we seem to have developed a problem in making the correct diagnosis of engine malfunctions. There have recently been three cases where pilots accepted an N2 tach generator failure and the associated warning light and beeper as prima facie evidence that the engine had failed. All three ended up as major accidents. In addition, P1 multiplier failure has tricked a few of us into believing the fire had gone out; again, with an accident as the end result.

To discuss these failures individually: first, the spurious warnings. The rpm warning system was installed in these aircraft for the simple purpose of alerting the pilot to an out-of-limits rotor or turbine rpm condition. The crew is thus free (at least in theory) to concentrate on other tasks without having to constantly monitor rpm as was the case with our recip-powered helicopters. Since the system receives inputs from the N2 as well as the rotor tach generator, an engine underspeeding condition will also trigger the alarm. But there are a couple of very positive indications of engine malfunction that will precede this warning—yaw and a sudden drop in the noise level. The low rpm warning by itself means only one of two things; either the rotor speed has reached a point where a reduction of collective or increased beep is necessary to gain rpm, or a tach generator has failed; nothing more.

React to the warning—certainly, but realize what the system is telling you and don't close the throttle as the first act. If a legitimate low rpm situation exists, that throttle most definitely needs to be fully open.

The diagnosis of whether a malfunction is a P1 multiplier failure, underspeeding N2 governor, or complete engine failure is a considerably more complex task. In any case, the N1 will provide the most reliable indication of the nature of the malfunction:

- 0%—complete engine failure
- 28–40%—P1 multiplier failure
- approximately 50%—underspeeding N2 governor

Seems simple enough except for one thing—the rate of decay of N1 rpm. If the pilot waits until the N1 is stabilized at any of these values before taking corrective action, it could well be too late to do anything about it. So, if altitude permits, don't wait; once you have entered autorotation and know for a fact that the engine has lost power for whatever reason, retard the throttle to flight idle and place the governor switch in the emergency position. Then use the dash 10 underspeeding N2 procedure in an attempt to regain N1 rpm. If the problem was caused by the N2 governor or the P1 multiplier (and you caught it before N1 decayed below 40%), you're back in business. If not, and the throttle has no effect, just turn the fuel off and continue the autorotation.

POSITION REPORTS, QUESTIONS & ANSWERS

■ What is the proper way to operate the jettison handles and pilot's door from the pilot's seat in an emergency in a UH-1 and an OH-6 aircraft?

The thing to remember about both the UH-1 and OH-6 doors is that they may not just fall away when the jettison handle is pulled. The OH-6 Operator's Manual states that the door should be unlatched prior to jettison. The UH-1 manual, however, does not establish this condition as the door latch is connected to the jettison system. Although we know of no "proper" way to operate the release, we recommend that you be prepared to deliver a healthy kick to the lower forward corner of either door after pulling the jettison handle.

■ AR 95-1, paragraph 3-17d, requires that only those immediate action emergency procedures required for safe aircraft emergency operation be memorized. Paragraph 4-1c(2) of TM 55-1520-210-10 indicates that the urgency of certain emergencies requires immediate and instinctive action by the pilot. My question is: Are aviators required to commit to memory all emergency procedures listed in chapter 4 of the UH-1 dash 10 or only specific procedures? If aviators are not required to memorize chapter 4, which emergency procedures should be committed to memory?

O.K., let's back off a bit here and look at the checklist and emergency procedures in their proper perspective. The checklist is nothing more than a memory substitute and its purpose is to insure that all necessary actions, checks, etc., are accomplished. During normal flight operations, the checklist can be used in a deliberate challenge and response manner, with each action being accomplished when called for. Under some emergency conditions, however, such deliberation is quite obviously impossible. For example, there are seven steps to the Engine Failure During Flight Checklist, the first being *COLLECTIVE—Maintain rotor rpm within limits* and the last *COLLECTIVE—Cushion Landing*. No way should you ever need to have to follow a checklist to complete this procedure. The same holds true for any emergency where quick positive action by the pilot is essential to survivability. Now, after the immediate actions necessary to regain or maintain control of the aircraft are taken, by all means get the checklist out and verify that everything necessary has been done. In short, the emergency procedures cannot be neatly separated into urgent and nonurgent categories. Virtually any failure can, under the right (wrong) conditions require urgent action on the part of the aviator. Recommend you commit all of them to memory and back it up with the dash 10CL.

■ What are the minimum crew requirements for a CH-47 maintenance operational check? Since there is no intent to fly, can we get by with one CH-47 rated pilot?

No. Paragraph 3-7, TM 55-1500-328-25, contains a caution note specifying that the minimum crew required by the Operator's Manual for flight will be aboard during an MOC. Both pilots also must be qualified in mission design and series. The CH-47B/C Operator's Manual establishes a pilot, copilot, and flight engineer as the minimum crew for this aircraft (paragraph 11-4).

■ I am not a flyer but my duties frequently make it necessary for me to travel by Army aircraft, both airplanes and helicopters. The question I have is this. Why don't ALL of your people give us passengers a briefing on safety procedures such as the airlines do? Some of the pilots I've flown with are very meticulous about this, but others don't even bother to tell us to fasten the seatbelts.

Sir, the pilot is *required* to brief passengers on items that affect safety or mission completion. As this is established by a DA regulation, you have the right and the obligation to insist that a briefing be conducted.

Reminder to the aviators: Read paragraph 3-18, AR 95-1. There are three items that must be covered in the passenger briefing. They are: (1) Emergency exits; (2) Life support systems and equipment; and (3) Emergency and abandon-aircraft signals.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

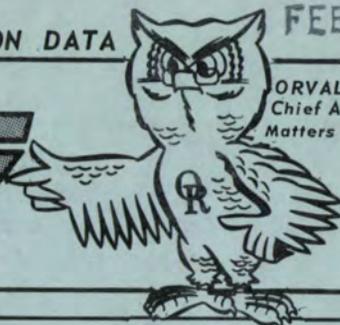


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX

ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 14 ■ 26 JANUARY 1977

US Army Aviation Training Center for the period of 7-13 JANUARY 1977
Fort Rucker, Alabama 36860*-From USAAVSCOM Field Services Activity*

ARMY LOGISTIC ASSISTANCE PROGRAM

The AVSCOM Directorate for Maintenance, Field Services Activity, provides technical logistic assistance to the customer by availing to him the services of some of the topmost technical experts in the business. These people are equipment specialists with many years of aircraft maintenance and operations experience who are specialized on one or more of our major weapon systems. For example, most of the UH-1 specialists are also highly qualified on the AH-1 series and OH-58 aircraft and engines. In the Logistic Assistance Program they are called field maintenance technicians (FMTs). At the present time there are 120 FMTs in the field—from Korea to Hawaii to Alaska, across CONUS from California to Maine, and throughout Europe. The assignments include Active Army, National Guard, Army Reserve, and International Logistics. Their expertise covers all first and second line aircraft in the Army inventory and some that are obsolete. The average aircraft experience of each FMT is 25 years.

Now that we know who the people are (FMTs), who they work for, and their technical qualifications, what services do they provide? Here are a few examples.

1. Maintains a complete library of TMs with latest changes so that he can better inform the customer. He receives advance information from AVSCOM and is able to prevent many potential aircraft grounding situations.

2. Provides technical advice and assistance to the mechanics in the units in the proper maintenance procedures on aircraft and aircraft equipment.

3. Works with the technical inspectors and maintenance officers by determining the serviceability of components and end items. Many times he obtains engineering approval for repairs in the field and saves high cost items from being returned to overhaul.

4. Spends a great deal of time on the flight line troubleshooting problems and usually pinpoints troubles on the spot.

5. Provides on-the-job training to new mechanics and update training to the more experienced personnel on his particular system.

6. Participates in the Trends Analysis Program (TAP) reporting all field problems that are potential major problems affecting the fleet of aircraft worldwide. His intelligence reporting has prevented many problems from turning into major ones.

7. Has direct pipeline to AVSCOM for both maintenance and supply support and is in a position to render a great service to unit commanders.

All FMTs are capable of conducting formal classroom training and are frequently tasked to instruct an Army Aviation Mobile Technical Assistance Program (AAMTAP) course of instruction on a system to enlisted or officer personnel of the Regular Army, National Guard, or Army Reserve. These courses are available to any unit requesting this type of logistic assistance through command channels as provided for in AR 700-4. During the period 1 July 1975 through 30 June 1976, AVSCOM FMTs provided 2,128 hours of instruction to 617 personnel in the OH-58A, OH-6, UH-1H, AH-1G, CH-47, U-8, T-53, and T-55 systems.

The Field Services Activity has another very important arm of the AVSCOM Logistic Assistance Program. It is the Supply Operations Branch. In this program these people are known as field supply specialists (FSS), who are also mobile. Their function is to augment the supply assistance efforts of the FMT in the field. The in-house FSS receives inquiries from the FMT, either by phone or telecopier, requesting status of outstanding requisitions that are over 15 days old. Through his sources of information, he is able to feed back to the FMT actual requisition status (valid/invalid), stock status, and/or shipping data. His efforts may be directed outside the confines of AVSCOM, e.g., other DARCOM commodity commands and DARCOM storage depots, and he is able to answer or obtain an answer to any question regarding any aspect of supply management. This close relationship between the FSS and the FMT provides quick response to field commanders in resolving aviation supply problems. There is no doubt that this type of logistic assistance to aviation customers enhances the Operational Readiness (OR) standards.

Continued on page 2

Continued from front page

The following locations and phone numbers are provided to identify where AVSCOM FMTs can be reached for advice and assistance.

St. Louis, MO	AV 698-6568/6591	Ft. Knox, KY.	AV 464-1741/2746
.	Com 268-6568/6591	Ft. Polk, LA.	AV 863-4446/4514
Ft. Benning, GA	AV 835-2473	Ft. Riley, KS.	AV 856-3945
Ft. Bragg, NC	AV 236-1501/8600	Ft. Sill, OK	AV 639-3765/2712
Lakehurst, NJ	AV 944-4142	Boone, IA	Com (515) 432-6351
Hunter AAF, GA	AV 971-5950/5814	Gulfport, MS	AV 436-3661
Ft. Rucker, AL.	AV 558-2707/5214	Springfield, MO	AV 581-1292/1293
Birmingham, AL	AV 694-2241	Alaska	Com (317) 353-7102
Groton, CT.	AV 893-1464	Ft. Bliss, TX	AV 978-8938/8600
Winder, GA.	AV 742-6019	Ft. Carson, CO	AV 691-3614/5213
Albany, GA	Com (912) 439-4340	Ft. Lewis, WA	AV 358-5600/2706
Indiantown Gap, PA	AV 454-2917	Ft. Ord, CA	AV 929-3460
Ft. Meade, MD	AV 923-7251/5767	Stockton, CA	AV 462-2440/2692
Panama, Canal Zone	85-4505	Fresno, CA	AV 629-1440
Ft. Campbell, KY	AV 635-3325/5901	Salem, OR	AV 355-3998
Grand Prairie, TX	AV 940-1110, ext 262-6971	Los Alamitos, CA	AV 972-8534/8552
Ft. Hood, TX	AV 737-6983/6513	Atlanta, GA	AV 797-5402
		Presidio, CA	AV 586-4114/2691
		Heidelberg, Ger	Heidelberg Mil 7684/8139
		Seoul, Korea	Yongsan Mil 298-8292/8235

FY 7T ACCIDENT BRIEF

SYNOPSIS 7T-5

Type Aircraft: AH-1G
 Time: 1552 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$69,522
 Mission: Training—standardization ride
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	33	2,019	-	2,019
P	CPT	32	1,402	21	1,423

Description of Accident: While performing simulated antitorque maneuver (fixed right pedal),

aircraft landed tail low and pitched forward. Pilot overcorrected with aft cyclic and main rotor flexed down, severing tail rotor drive shaft.

Causes of Accident

Initial: Crew—Pilot made excessive pitch applications as aircraft touched down. IP failed to initiate timely corrective action.

Corrective Action: This installation has suspended practice of simulated antitorque malfunction approaches to touchdown. DCSOPS has tasked USAAVNC to improve present technique of instructing the simulated antitorque maneuvers.



SYNOPSIS 7T-6

Type Aircraft: UH-1H
 Time: 1301 Classification: Major (total)
 Fatalities/Injuries: 3 Fatalities, No Injuries
 Estimated Materiel Damage Cost: \$618,055
 Mission: Training—tactical contour flight
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	28	571	-	571
CP	CW2	37	1,098	6	1,104

Description of Accident: Aircraft was lead of a flight of five. Returning from insertion flight, lead diverted to recon site of proposed night

LZ and while en route struck three 3/4-inch seven-strand steel/aluminum power cables.

Causes of Accident

Initial: Crew—Pilot failed to avoid power cables.

Contributing: Supervisory error—Pilot was conducting a low recon mission without adequate planning, crew briefing, and proper recon.

Remarks: The wires that were hit were marked on the tactical map found in the cockpit of the crashed aircraft and this flight had overflown these wires a few minutes before the crash.

Corrective Action: Command emphasis on flight discipline and proper flight planning will eliminate this type mishap.

FY 7T ACCIDENT BRIEF

FY 77 ACCIDENT BRIEF

SYNOPSIS 7T-7

Type Aircraft: OH-58

Time: 0836 Classification: Major (total)

Fatalities/Injuries: No Fatalities, 4 Injuries

Estimated Materiel Damage Cost: \$143,780

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW3	46	1,508		1,508

Description of Accident: Aircraft was circling to the left, making a visual reconnaissance. On downwind at an estimated ground speed of 20-30 knots at 150 feet, helicopter made almost two complete 360° spins to the right, descended vertically and struck ground, spreading skids and buckling fuselage. Wind was 10 knots gusting to 16.

Causes of Accident

Initial: Crew error—Pilot exceeded flight envelope of aircraft, lost rotor rpm and effective tail rotor control, misinterpreted the resultant spin,

and took inappropriate corrective action.

Contributing: Supervision—This aircraft and crew were attached for a prolonged period to a unit with inadequate aviation flight following, operations, maintenance, and support capabilities.

Remarks: This mishap contained the "classic" ingredients of high DA, near max gross weight, gusty winds, low altitude, and low airspeed resulting in loss of antitorque effectiveness. The autorotation terminated in a hard landing. No materiel failure.

Corrective Action:

1. Command has established a policy that all future aviation support for units not possessing aviation assets and accompanying aviation management structure will include an adequate command and control feature as an integral part of the support package.

2. USAAAVS is evaluating the feasibility of including angle-of-bank factors in appropriate aircraft performance charts.



SYNOPSIS 7T-8

Type Aircraft: OH-6A

Time: 1540 Classification: Major

Fatalities/Injuries: No Fatalities, 2 Injuries

Estimated Materiel Damage Cost: \$21,842

Mission: Service—ferry flight

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW3	29	3,868	24	3,892

Description of Accident: During cruise flight at approximately 1,000 feet agl, engine power was lost. Pilot executed a 260° turn toward forced landing area. Aircraft touched down on side of hill with nose facing 25° upslope. During touch-down, aircraft rocked fore and aft, causing main rotor blades to flex down and sever tail boom.

Causes of Accident

Initial: Maintenance—Engine flamed out due to fuel starvation (see remarks).

Remarks: Aircraft had just been retrofitted with crashworthy fuel system and two internal (inside fuel tanks) fuel lines had been backed off during installation and not retightened. With fuel tanks full, these connections are submerged; but when sufficient fuel is used these lines then allow air to enter the connections, causing an engine flameout.

Corrective Action: CDR, USAAVSCOM, transmitted a safety-of-flight message, 152015Z Sep 76, recommending that all OH-6A aircraft with MWO 55-1520-214-50-6 installed be checked for proper torque on fuel line connections leading from the submerged pump, P/N 369A8143, to the engine fuel pump, P/N 6854292, IAW TM 55-1520-214-34, change 2, chapter 5.

FY 77 ACCIDENT BRIEF

MISHAPS FOR 7-13 JANUARY 1977

	UH-1	AH-1	OH-58	TH-55	U-8	OV-1	C-12	TOTAL
Accidents								0
Incidents	1							1
Forced Landings	1	1		1				3
Precautionary Landings	13	4	3	2	2	4	1	29
Human Factors	2							2
TOTAL	17	5	3	3	2	4	1	35
Fatalities								0
Injuries								0
Estimated Costs	\$12,066							\$12,066

Following are selected briefs of mishaps reported this week.

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incident ■ Main rotor blade was damaged due to suspected tree strike. Aircraft was performing authorized, supervised NOE flight.

Forced Landing ■ On ATC descent from 4,000 feet to 2,500 feet, transmission oil pressure dropped below 25 psi. Master caution and segment warning lights illuminated, and pressure continued to drop to zero. Aircraft landed and maintenance inspection revealed failed transmission internal oil filter gasket.

Precautionary Landings ■ Loud bang was heard and aircraft yawed during cruise flight. Descent was started and engine deice and bleed air heater were shut off. Two more compressor stalls occurred before landing. Caused by malfunction of fuel control. ■ Left fuel boost pump segment light came on. Fuel boost pump filter screen was clogged. ■ While aircraft was climbing to assigned altitude, 20-minute fuel light illuminated with 460 pounds of fuel indicated. Float switch was out of adjustment. ■ Tail rotor chip detector light came on. Maintenance checked tail rotor chip detector plug and found small amount of metal. Plug was cleaned and aircraft released for flight. En route to airfield, tail rotor chip detector light came on again. Subsequent inspection revealed small amount of metal. Tail rotor gearbox was replaced. ■ Transmission oil hot light came on. Water in cannon plug caused light to come on.

AH-1

Forced Landing ■ During annual gunnery training, pilot initiated descent from 50 feet agl to NOE altitude when a series of three compressor stalls occurred. Pilot attempted landing in rough terrain when second series of stalls occurred. During repositioning of aircraft to better landing site, third series of stalls occurred. Inspection revealed 90° gearbox, engine, and No. 5 tail rotor drive shaft were damaged.

Precautionary Landings ■ During gunnery training, crew received call from tower telling them that an access panel had fallen from right side of aircraft. Panel was not properly secured. Crew failed to notice unsecured panel on walk-around inspection before takeoff. ■ During night NOE training, crew noticed engine oil temperature had risen from 85° to 90°. After landing and shutdown, oil temperature increased to 120°. Suspect thermal bypass switch failure. ■ On takeoff, transmission oil pressure was lost and transmission oil pressure/transmission bypass lights came on. Caused by transmission internal oil filter gasket failure. ■ During climbout, pilot felt feedback in tail rotor pedals with noise coming from hydraulic compartment. Tail rotor pedals stuck and No. 1 system hydraulic warning light illuminated. No. 1 system pressure line fitting on right cyclic servo was ruptured due to overtorque.

UNITED STATES ARMY AGENCY FOR AVIATION SAFETY, FORT RUCKER, ALABAMA 36362

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication authorized by AR 10-29.

Human Factors Mishaps ■ Student navigators in two aircraft became ill during flight. Flight surgeon diagnosed the problem as airsickness. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Precautionary Landing ■ Engine oil bypass light came on during takeoff, resulting in an abort. Engine oil was lost from loose fitting on torquemeter oil pressure line at engine deck. Maintenance had been performed in this area, and a test flight was in progress. *At least two sets of eyes missed this loose line. Closer inspection and greater attention to detail would have prevented this mishap.*

AVSCOM MESSAGES RECEIVED

- OH-58 maintenance advisory message, DTG 111650Z Jan 77 (OH-58-77-1). Purpose of the message is to insure that all OH-58 main rotor hub assemblies have been inspected for serviceability in compliance with TB 55-1520-228-20-20 dated 27 Aug 76, and also to insure that maintenance personnel do not allow main rotor blades to rotate on pitch change axis beyond 90°.
- CH-47 maintenance letter dated 5 Jan 77, subject: CH-47A/B/C Helicopter Engine Mechanical Transmission Chip Detector, directs the removal of engine transmission chip detector light from the caution system in those aircraft equipped with the debris detection system. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

U-8

Precautionary Landings ■ After prelanding check, nose gear indicated up. Gear was recycled several times and nose gear still indicated up. Position mirror on engine nacelle showed nose gear appeared to be fully extended. Safe landing was made. Caused by frozen nose gear microswitch. ■ During mag check, No. 2 engine had a 200 rpm drop. Two additional checks were made and rpm checked OK. Pilot suspected fouled plugs. During climbout, No. 2 engine ran rough and aircraft returned to airfield. Caused by broken wire between capacitor and magneto points.

OV-1

Precautionary Landings ■ After prelanding check, right main gear indicated unsafe. Gear was recycled and right main still indicated unsafe. Visual inspection showed locking tab was not completely locked. Emergency gear extension was used and unsafe condition was still indicated. Aircraft landed without mishap. Shielding of right main gear downlock microswitch wiring bundle was broken in two places. This allowed wire bundle to bend back in slipstream and slip underneath gear lock tab, causing it to remain in up position. (ARNG) ■ After takeoff, gear was slow retracting. Gear was recycled and was slow extending. Emergency extension was accomplished and aircraft landed. Cause was reported as failure of dump valve. ■ Three days later, the same aircraft and crew had hydraulic pressure loss on No. 2 system. Caused by hydraulic accumulator failure, allowing air into hydraulic system. □

MAINTENANCE BRIEFS

SFC John Terrell ■ 558-3913

C-12

Precautionary Landing ■ Approximately 35 minutes into mission, copilot detected what appeared to be oil coming out of engine cowl on inboard side of right engine at the point where the exhaust stack is located. The condition was worsening noticeably. Decision was made to land at an airfield in the local area. After landing, visual inspection revealed left engine was leaking oil in a manner identical to right engine, but condition could not be detected from cockpit because it was on the outboard side of the nacelle. On the day preceding the flight, manufacturer's tech rep had applied service instructions No. CIZA-0016, Rev 1, to remove secondary low-pitch stop system from the aircraft. The tech rep failed to install two of three O-rings required (each side) when replacing solenoid switches on prop governors with blanking plates. Inspection of completed work by contracting officer's representative could not detect failure to install required O-rings. Had this mishap occurred at night or in IMC, the loss of oil might not have been detected and could have resulted in loss of both engines. □

AVIATION-RELATED GROUND MISHAPS

W. P. Christian ■ 558-4202

4 Mishaps, 0 Fatalities, 0 Injuries, Estimated Costs: \$20,053

UH-1

■ A tug was being positioned in front of aircraft for towing when engine quit. The tug was left with emergency brake on and gearshift lever in drive position, and started by placing a knife blade between battery terminals. The tug moved forward, striking the aircraft and causing damage to the nose section. This mishap could have been prevented by proper maintenance practice and inspection of electrical system (i.e., proper battery grounding, etc.). ■ Aircraft picked up sling load consisting of ½-ton truck (M274A2). During flight, pilot noted upward pitch of aircraft and crew chief reported load had just fallen from aircraft. Investigation is in progress. Supplemental data will follow. ■ Mishap occurred while changing skids on UH-1. The two jacks used to raise aft portion of UH-1 for skid removal were too small and wooden blocks had to be used under jacks. Left skid was removed, but difficulty was encountered in removing right skid. To facilitate right skid removal, left skid was reinstalled and both front jacks had to be repositioned. To reposition both front jacks, UH-1 tail section had to be lowered. (One step in changing skids requires the removal of the skid cap assemblies. In this situation, however, the attaching bolts were removed from the skid caps, but caps were still left in place.) As the weight of the UH-1 was placed on skid heels, skid caps moved due to removal of attaching bolts. Aircraft slid backwards, causing aft jacks to tumble over, allowing wooden blocks to strike and damage underside of aircraft. The cause of this mishap was attributed to: (1) failure of maintenance personnel to use proper jacks and (2) prescribed maintenance procedures, as outlined in TM 55-1520-210-20, were not complied with regarding jacking procedures.

AH-1

■ Main rotor blade tiedown ropes on AH-1 were broken by high winds. One of the rotor blades struck the gunner's canopy of an AH-1 which was parked in close proximity. Aircraft were not parked in accordance with TM 5-803-4 which establishes proper clearances between aircraft. □

WHEN WAS THE LAST TIME . . .
You inventoried your toolbox?

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

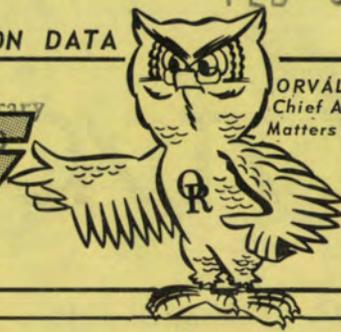


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 15 ■ 2 FEBRUARY 1977

mishaps for the period of 14-20 JANUARY 1977

IMPROPER USE OF FIRE EXTINGUISHER



A fire extinguisher (NSN 4210-00-720-1815) half filled with solvent exploded as two crew chiefs were attempting to charge the extinguisher with air. A power-driven compressor, NSN 4310-00-878-7969, was being used for charging. The compressor is designed to supply up to 3,000 psi, while the extinguisher is only tested to 500 psi with a normal charge of 100 psi for use. One individual was monitoring the fire extinguisher gauge while the other was operating the compressor valve. The extinguisher gauge apparently malfunctioned as the needle did not move from the recharge area before the explosion. The extinguisher body exploded into four major pieces and the hose into three.

One crew chief was treated for exposure to chemical agent (solvent) and released. The other crew chief was treated for exposure to chemical agent and serious lacerations to right lower leg and left hand.

COLD WEATHER OPERATIONS AND YOUR NICAD BATTERY

Some units are having difficulties with nicad batteries during extreme cold weather operations. *This problem can be corrected by using a ground power unit.* Extreme caution must be exercised to insure the amperage rating of the ground power unit equals or exceeds that required for engine starting.

When a ground power unit is not available, batteries should be removed after shutdown and stored in a heated area. They should be reinstalled just before engine starting to prevent them from becoming "cold soaked." A cold weather start *should not* be attempted without a ground power unit unless the battery is fully charged. At the first indication of insufficient electrical power, the start should be aborted to insure electrical energy remains for engine cooling in the event of hot start.

If the battery requires charging, insure that all appropriate requirements are met (i.e., TM 11-6140-203-15-1, -2, -3).

NEW PHONE NUMBERS

- Commercial 255-XXXX AUTOVON 558-XXXX
- Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-106385/6510
- Assistance in Locating Proper Directorate.6385
- Aircraft Accident Analysis & Investigation.3913/4202
- Technical Research and Applications . . .4812/3493
- Plans, Operations and Education6410/6404
- Management Information System2920/4200
- Publications & Graphics Division4479
- Medical Division6788
- Staff Duty Officer (1800-0700 hours)6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-9

Type Aircraft: UH-1H
 Time: 1940 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$13,000

Mission: Training

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	28	917	-	917
CP	CPT	30	1,045	196	1,241

Description of Accident: Aircraft was in cruise flight at 1,000 feet agl when low rpm warning light illuminated. Pilot initiated autorotation, resulting in hard landing.

Causes of Accident:

Initial: Materiel—N2 tachometer generator failed, activating low rpm warning system.

Contributing: Crew (suspect)—Pilot improperly interpreted low rpm warning system as an actual engine failure. Pilot then followed emergency procedures for engine failure as prescribed in the dash 10.

Design (definite)—UH-1 low rpm warning system does not differentiate between a system failure and an actual engine failure.

Corrective Action: USAAVSCOM is currently testing a modified rpm warning system control box to eliminate activation of rpm light and low rpm audio when a single tachometer generator has failed or a short circuit in the rpm warning system has occurred. Initial delivery of the modified control box to the field is anticipated to begin in May 1977.

■ ■ ■

SYNOPSIS 7T-10

Type Aircraft: TH-55
 Time: 1330 Classification: Major (total)
 Fatalities/Injuries: No Fatalities, 2 Injuries
 Estimated Materiel Damage Cost: \$35,590

Mission: Training

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	DAC	41	2,968	552	3,520
SP	Foreign				
	National	24	6	-	6

Description of Accident: IP closed throttle for simulated forced landing. SP initiated autorotation and made left turn to suitable forced landing area. Aircraft crashed into 40'-60' pine trees (70° entry angle). Injured IP walked 1.2 miles for help. SP was trapped in aircraft with fuel leaking. No fire. Approximately 65 minutes elapsed between accident and rescue.

Causes of Accident:

Initial: Crew—IP failed to closely monitor SP during critical flight maneuver.

Contributing: Crew (suspect)—SP applied excessive left pedal during autorotation from which a high rate of descent resulted.

Noncontributing: Lack of positive flight following and emergency signaling devices. Pilot did not know emergency telephone numbers.

Remarks: SP received fuel burns to 10 percent of body in addition to impact injuries.

Corrective Action: A more positive means of flight following has been established. Emergency signaling devices are provided all IPs and SPs who haven't been issued a survival vest. Aviators assigned to this command are issued a mishap reporting card listing the required telephone numbers and radio frequencies.

UNITED STATES ARMY AGENCY FOR AVIATION SAFETY, FORT RUCKER, ALABAMA 36362

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication authorized by AR 10-29.

SYNOPSIS 7T-11

Type Aircraft: UH-1H
 Time: 1720
 Classification: Major (total)
 Fatalities/Injuries: No Fatalities, 4 Injuries

Estimated Materiel Damage Cost: \$618,055
 Mission: Maintenance test flight
 Grade/Age/Experience:
 Grade Age RW Hrs FW Hrs Tot Flt Hrs
 MTP CW2 28 1,030 - 1,030

Description of Accident: During maintenance test flight aircraft was flying low level when the skids struck a dike. Pilot lost control of aircraft and crashed.

Causes of Accident:

Initial: Crew-Pilot was performing unauthorized low-level maneuvers while conducting a test flight.
Remarks: Suspect pilot was trying to impress personnel aboard aircraft.
Corrective Action: MACOM sent a message reemphasizing maintenance test flight procedures per AR 95-1 and TM 55-1500-328-25.



SYNOPSIS 7T-12

Type Aircraft: CH-47C
 Time: 0945 Classification: Major (total)
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$3,223,625

Mission: Service
 Grade/Age/Experience:
 Grade Age RW Hrs FW Hrs Tot Flt Hrs
 P CW2 34 4,011 234 4,245
 CP CW2 34 1,131 - 1,131

Description of Accident: While awaiting taxi for takeoff, high-frequency vibration developed in rear of aircraft. Before the pilot could reach the condition levers to shut the engines down, the aircraft started a violent vibration, followed by the forward and aft transmissions separating from the aircraft. A small fire started in area of missing aft transmission.

Causes of Accident

Initial: Materiel: Improper shim installation in aft transmission during factory overhaul/modification.
Contributing: Improper shim allowed fretting corrosion which resulted in failure of spiral bevel gear and sudden stoppage of aft transmission.
Corrective Action: An AVSCOM safety-of-flight message, 301500Z Aug 76, was issued requiring one-time inspection of forward and aft main transmissions on all CH-47A, B, C aircraft which had been contractor/depot overhauled. Additionally, the 1,200-hour TBO interval on CH-47B/C aircraft has been reduced as specified in the safety-of-flight message.

TOTAL MISHAPS FOR 14-20 JANUARY 1977

	UH-1	AH-1	OH-58	TH-55	CH-47	CH-54	U-21	U-8	OV-1	TOTAL
Accidents										0
Incidents	1	1			1					3
Forced Landings	3	2	1							6
Precautionary Landings	15	2	8	2	2	2	4	1	1	37
Ground Accidents			2							2
TOTAL	19	5	11	2	3	2	4	1	1	48
Fatalities										0
Injuries			4							4
Estimated Costs	\$12,066	\$2,163	\$4,300		\$103,000					\$121,529

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incident ■ Main rotor blade struck tree during NOE flight, causing damage to blades.

Forced Landings ■ While in level flight, crew heard loud noise and felt high-frequency vibration in entire airframe. Caused by failure of No. 3 hanger bearing assembly. ■ During takeoff from hover, N2 deteriorated to 6000 rpm at approximately 6 feet agl. Caused by internal failure of fuel control.

Precautionary Landings ■ Aircraft was on test flight to check for a reported stiff tail rotor control pedal condition. During test flight tail rotor pedals became stiff again and running landing was made. Maintenance replaced tail rotor servo. ■ While on VFR night flight, unforecast weather conditions of low visibility and blowing snow with severe winds were encountered. Pilot elected to land near highway. ■ During cruise flight, pilot felt slight flutter in cyclic control, followed by master caution and hydraulic pressure segment lights and control stiffness. Caused by chafed hole in hydraulic line, P/N 205-076-235-1, allowing loss of hydraulic fluid. ■ Transmission oil pressure, master caution, and oil caution lights illuminated. Maintenance inspection revealed hex nut, NSN 5310-00-199-1028, on main transmission oil line came loose, allowing loss of transmission oil. ■ Aircraft was being test flown for component replacement when complete loss of hydraulics occurred. Collective servo irreversible valve failed internally.

AH-1

Incident ■ During ground run of low-level autorotation, aircraft yawed to right, slid 40 meters and came to rest 90° to landing direction. Pylon rock occurred, causing damage to main rotor pitch change connecting rods, backed-off nut on white main rotor blade drag brace, and displaced mast collet. Additional inspection revealed damage to pylon damper assembly, transmission fitting support assembly, and pylon mount assembly (5th mount).

Forced Landings ■ At 150 feet agl over trees, aircraft yawed and rpm decreased through 5800 rpm and continued to deteriorate. Pilot autorotated into open field. Suspect fuel control malfunction. ■ During rocket firing at hover, compressor stall was encountered. Three loud bangs were heard. Maintenance replaced engine.

Precautionary Landing ■ Engine oil pressure light came on. Caused by failure of engine oil pressure switch.

AVSCOM MESSAGES RECEIVED

■ 191600Z Jan 77, subject: Maintenance Advisory Message Authorizing New Lubrication/Inspection Requirements of Tail Rotor Flexible Couplings on AH-1/UH-1 Helicopters (AH-1-77-1 and UH-1-77-1).

WHEN WAS THE LAST TIME . . .
your unit had an FOD survey?

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Precautionary Landings ■ Five mishaps occurred as a result of servo vibrations due to ice forming in main rotor and/or tail rotor blades. Icing was caused by light rain and drizzle immediately followed by freezing

weather. During these weather conditions, when possible, aircraft should be hangared or locally-fabricated blade covers used. ■ During pretakeoff check, pilot noticed binding in cyclic control. Cannon plug which connects to ARC C-8157 (secure voice control indicator) was rubbing against control tube on bottom of cyclic at the radio console.

Ground Accidents ■ During tracking preparations, tracking flag struck main rotor blade. The flag assembly being used was manufactured from extremely light material which was drawn into rotor as crew chief passed under rotor tip path. ■ Crew chief was assisting maintenance officer in tracking main rotor of an OH-58. After engine shutdown, with rotor blade still turning, crew chief attempted to check for vibration of tail rotor drive shaft. When he placed his gloved hand on the hanger bearing, his glove was caught, pulling his arm forward between the drive shaft and tail boom. Crew chief received minor injuries.

CH-47

Incident ■ During night operations, aircraft was at high hover at the edge of PZ awaiting clearance to pick up load, when aft rotor blades struck tree. Landing lights were not in use in compliance with minimum lighting restrictions.

CH-54

Precautionary Landing ■ Main transmission chip detector light came on. Inspection revealed unused nut had contacted gearbox mag plug. Transmission was only 8 hours out of rebuild. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

U-21

Precautionary Landings ■ (A series) Five minutes into flight, No. 1 engine lost torque, oil, and fuel pressure, and oil temperature increased. Pilot secured engine and landed. Oil cooler failed internally. *Two days later*, the same engine lost all torque pressure and chip detector light illuminated. Engine was secured and single-engine landing was completed. Engine was changed. Results of analysis are pending. ■ After lowering gear handle, gear failed to extend and circuit breaker popped. After one recycling attempt, crew used emergency extension procedures and landed. Caused by spur gear failure. ■ (F series) Right generator failed during climb. Approximately 2 minutes later left generator failed. Crew returned for landing and battery failed before destination was reached. Postlanding inspection revealed No. 1 and No. 2 generators had failed.

OV-1

Precautionary Landing ■ (D series) Right main landing gear failed to give safe down indication. Gear was blown down and landing was uneventful. Gear microswitch wire was pinched in gear locking mechanism. □

AVIATION-RELATED GROUND MISHAPS

W. P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 1 Injury, Estimated Costs: \$0

U-21

■ While working on a U-21, a civilian mechanic was struck on the head by a hand-rotated propeller. The following day, he became nauseated and was treated for a head concussion. This mishap resulted in the loss of four man-work days. □

RECAP OF AVSCOM MESSAGES

AVSCOM message 062121Z Jan 1977, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 July to 31 December 1976 for the UH-1.

- UH-1-76-14 One-Time Inspection for Oil Cooler Installation of the UH-1B/C/D/H/M, TH-1G, and AH-1G/Q Series Acft, TB 55-1500-206-20-25
- UH-1-76-15 AH-1G/Q/TH-1G, UH-1C/M Helicopters and Boot Assy, P/N 540-011-427-1
- UH-1-76-16 Engine Oil Cooler Turbine Bearings for UH-1/AH-1 Acft
- UH-1-76-17 Engine Oil Cooler Turbine Bearings for UH-1/AH-1 Acft
- UH-1-76-18 Electrical Cable Chafing Oil Tubes, UH-1
- UH-1-76-19 Rotating Control System Bolted Connections for UH-1C/M Helicopters
- UH-1-76-20 UH-1M, AH-1G/Q (T53-L-13B Engine) Aircraft
- UH-1-76-21 Overheated Battery Procedure, UH-1S
- UH-1-76-22 Aviation Life Support Equipment: Troop Seat Belts on UH-1 Aircraft
- UH-1-76-23 Procedures for Suspected Engine Failure for UH/AH Helicopters
- UH-1-76-24 Lift Link Assy Configuration Requirement Applicable to the AH-1 and UH-1 Series Aircraft
- UH-1-76-25 UH-1B/D/H Helicopters, TB 55-1500-219-20-6, Defective Connecting Links
- UH-1-76-26 Lift Link Assy Configuration Requirement Applicable to the AH-1 and UH-1 Series Aircraft

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

FLIGHTFAX/14-20 JANUARY 1977



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 16 ■ 9 FEBRUARY 1977

mishaps for the period of 21-27 JANUARY 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360



ASOs ON THEIR TOES

Doing the ballet? Nope—just calling attention to some errors in certain TMs regarding personal protective and survival equipment. These ASOs cared enough to do a little research, found the errors, and brought them to our attention.

The ASO from the 3rd ACR, Fort Bliss, TX, found that the NSN for the SDU-5E marker distress light (strobe light) is listed wrong in TM 55-8465-215-10, Operators' Manual for Vest, SRU-21/P, Hot Climate, June 70. On page 24, last item, the proper NSN should be 6135-00-073-8939 (not 6135-269-5843). The ASO immediately completed DA Form 2028, Recommended Change to Publications and Blank Forms, and forwarded it to the appropriate agency.

An ASO from the 101st Airborne Division, Fort Campbell, KY, found an error in the chin strap position as illustrated in the Instructors' Manual for the Gentex SPH-4 helmet and in TM 10-8415-206-13, Helmet, Flying Protective. These manuals show the chin strap fastened in the wrong position. The correct position is in the bottom snap or the second from the bottom snap, depending on the comfort of the user. If the chin strap is secured to either of the top two snaps, the retention capabilities of the helmet will be significantly reduced. It should also be remembered that chin strap pads should not be used with the SPH-4 helmet. The reason is that compression of the pad allows slack in the retention system and you may lose your helmet in a crash. Changes in the two manuals are being made to show the proper location of the chin strap.

An ATTA-BOY for these ASOs. Their actions are what it's all about.

WINTER BLUES

Cold weather can create a "hurried atmosphere" with attendant shortcuts that can be fatal. How many times have you read about a fuel tanker sliding into an aircraft, or personnel slipping off a work stand or aircraft due to ice or snow? Probably too many times. ASOs—supervisors—take a good look at your SOPs and insure that winter precautions are addressed and that all personnel are made aware of all the hazards that may exist in the hangar and on the flight line. Emphasize the additional hazards encountered during winter weather—stress the "total approach" to safety.

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-13

Type Aircraft: UH-1H
 Time: 1536 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$31,696

Mission: Training

Grade/Age/Experience:		Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	DAC	49	4,514	1,650	6,164	
P	CPT	35	2,450	390	2,840	

Description of Accident: During standardization checkride, IP initiated an unannounced simulated forced landing during takeoff at 70 feet agl and 60 knots. Pilot attempted autorotation, aircraft landed tail low, and tail rotor blades struck runway, causing separation of tail rotor blades and gearbox.

Causes of Accident:

Crew-Pilot unable to react in sufficient time to properly execute maneuver.

Supervisor-IP initiated a prohibited maneuver (low-level, unanticipated practice touchdown autorotation) in violation of DA message 031310Z January 1975.

Remarks: IP exercised poor judgment by attempting touchdown autorotation with less than favorable (sta. 139.92) aircraft CG condition.

Corrective Action: (1) Unit instructor pilots have received additional training to insure compliance with local and command directives on authorized maneuvers. (2) The Deputy for Training Developments at the USAAVNC has submitted a DD Form 2028 recommending a specific statement be included in chapter 7 of TM 55-1520-210-10 restricting the UH-1D/H from touchdown autorotations when the CG is located between station 140 and station 144. (3) The Standardization Communication (STACOM) in the 19 Jan 1977 FLIGHTFAX addresses this type of mishap in an article titled "More CG Problems."

SYNOPSIS 7T-14

Type Aircraft: UH-1H
 Time: 1135 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$14,164

Mission: Tactical support

Grade/Age/Experience:		Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	28	1,010	-	1,010	
CP	WO1	27	254	650	904	

Description of Accident: Aircraft lost engine and rotor rpm at 100 feet agl, and was autorotated to downhill slope. Main rotor severed tail boom on touchdown.

Causes of Accident: Materiel-Engine fuel control malfunction (P1 multiplier failure) caused complete power loss.

Corrective Action: All fuel control units are to be replaced with the modified A-7 fuel control unit which incorporates a redesigned P1 multiplier. Production schedule for the modification has been accelerated with projected completion in July 1977.

SYNOPSIS 7T-15

Type Aircraft: OH-58
 Time: 1325 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$18,286

Mission: Training (transition)

Grade/Age/Experience:		Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	34	2,735	4	2,739	
P	CW2	34	2,640	181	2,821	

Description of Accident: During practice autorotation with turn, rated student pilot allowed main rotor rpm to drop below minimum allowable. Initial pitch pull was high with low rotor rpm. IP took controls to complete landing. Aircraft touched down with excessive speed on heel of left skid, resulting in ground run of 51 feet. Pylon rock occurred during ground run, causing structural damage to aft fuselage.

Causes of Accident: Crew-IP did not demonstrate maneuver and allowed pilot to improperly execute and continue to a point beyond the ability of the IP to recover.

Corrective Action: Unit commander initiated action requiring that all practice emergencies will be terminated IAW standardization guides and new maneuvers will be demonstrated before allowing a transition pilot to attempt the maneuvers.

TOTAL MISHAPS FOR 21-27 JANUARY 1977

	UH-1	AH-1	OH-58	OH-6	CH-47	TH-55	C-12	U-21	OV-1	U-8	T-42	TOTAL
Accidents			1									1
Incidents	7		1			1						9
Forced Landings			1									1
Precautionary Landings	20	2	6	1	7		1	1	1	3	1	43
TOTAL	27	2	9	1	7	1	1	1	1	3	1	54
Fatalities												0
Injuries			1									1
Estimated Costs	\$15,906		\$42,950			\$3,141						\$61,997

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incidents ■ Two incidents occurred during takeoffs from confined areas, causing damage to main rotor blades of both aircraft. ■ After troop dropoff, crew chief found an entrenching tool in aircraft. He attempted to return the tool by throwing it out the door, striking main rotor blade. ■ During training exercise, aircraft was on approach to LZ when main rotor blades struck tree. ■ Aircraft was on shallow firing pass when IP saw a tree at the 11 o'clock position. Right turn was executed but one main rotor blade struck tree.

Precautionary Landings ■ Pilot was performing steep approach to a minimum lighted field site. On pitch application, rotor and power train were overtorqued. ■ Fire detection light came on. Maintenance inspection revealed water had short circuited fire detection system. ■ Tail rotor pedals stuck in left position during approach. Go-around was performed and running landing was completed with pedals stuck in left forward position. Maintenance inspection revealed cotter pin was missing from tail rotor sprocket retained nut. This is the third occurrence of this type in three months. Reference FLIGHTFAX, Vol. 5, No. 2, dated 13 Oct 1976. ■ Hydraulic segment and master caution lights came on, followed by complete hydraulic failure. Caused by irreversible valve failure. ■ Left fuel boost pump caution light came on. Caused by internal failure of left boost pump.

AH-1

Precautionary Landings ■ Master caution and No. 1 hydraulic caution lights came on. Maintenance inspection revealed failure of hydraulic pressure switch. ■ Hydraulic caution and master caution lights came on and pedals became stiff. Maintenance inspection revealed No. 1 hydraulic return line ruptured due to chafing against main transmission.

AVSCOM MESSAGES RECEIVED

- 281400Z Jan 77, subject: Maintenance Advisory Message Concerning Use of Nonstandard/Locally Manufactured, Heavy Duty Skid Shoes on UH-1/AH-1 Series Aircraft (UH-1-77-2 and AH-1-77-2).
- 272040Z Jan 77, subject: Maintenance Advisory Message on Application of Low Reflective Lacquer, MIL-L-46159 (GEN-77-3).
- 282015Z Jan 77, subject: Maintenance Advisory Message or Interim Change to TB 746-93-2 on Painting of Rotor Blades (GEN-77-4).

WHEN WAS THE LAST TIME . . .
you requested a no-gyro GCA?

OH-6

Precautionary Landing ■ Aircraft was hovering when pilot discovered aft cyclic control movement was restricted. Suspect ice formed in cyclic one-way valve. This mishap could have been prevented had the pilot performed preflight IAW checklist.

OH-58

Accident ■ Pilot was hovering aircraft for takeoff and lost visual reference due to blowing snow. Aircraft struck ground and rolled over on left side. Investigation is in progress.

Incident ■ While flying safety and control for NOE operation, aircraft lost power and was autorotated to rough terrain. Broken chin bubble resulted. Power loss was caused by loose "B" nut on double-check valve connection.

CH-47

Precautionary Landing ■ No. 1 engine oil low light came on and oil pressure decreased to zero. Oil filter cap was damaged, causing oil to pump overboard. □

WHAT'S YOUR ANSWER?



The basic weight of your OH-58 is 1,669 pounds with a moment of 196400. You are scheduled to depart, in support of an ARTEP, at 0900 hours with two passengers, combat equipped. OAT at takeoff time is +10° C. and elevation 1,000 feet msl. Time en route to landing site is 30 minutes. The landing site is 6,000 feet msl and will require a steep approach landing and maximum performance departure. After landing you are informed that your departure time will be 1315 hours with the same two passengers. If the OAT is +25° C., can you complete the mission?

Charts, Forms, and TMs Used

1. TM 55-1520-228-10
 2. Takeoff rated power available, Figure 14-4
 3. Torque and power required to hover OGE
- Answer will be in next week's FLIGHTFAX.

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

C-12

Precautionary Landing ■ Gear would not retract after takeoff. Recycling attempt was unsuccessful. Pilot used prescribed emergency procedures to confirm gear down and locked and landed without further incident. Landing gear retraction motor failed.

U-21

Precautionary Landing ■ No. 1 engine secondary idle stop light came on during takeoff. Propeller rpm decreased slowly and could not be controlled by prop lever. Pilot landed aircraft without further problem. Secondary idle stop switch had separated from mount.

OV-1

Precautionary Landing ■ (D series) Nose gear failed to fully retract after takeoff. Loose hydraulic check valve fitting allowed air to enter hydraulic line.

U-8

Precautionary Landings ■ (D series) During instrument flight, No. 2 engine failed while aircraft was climbing through 5,000 feet. Single-engine landing was made. Maintenance found counterweight had separated from engine crankshaft and exited top of engine. (ARNG). ■ (G series) Unsafe indication was received after gear had been lowered for landing. After gear was recycled, tower and another aircraft agreed gear appeared down. Landing was made without mishap. Landing gear indicator microswitch wire was broken. ■ (F series) Pilot had difficulty maintaining prop synchronization. Fluctuations began increasing on No. 2 prop to plus/minus 400 rpm. Propeller failure procedures were performed. Engine could not be secured because prop would not feather. Manifold pressure was maintained at 15 inches to prevent prop overspeed. Landing was uneventful. Caused by internal failure of propeller governor. □

MAINTENANCE MISHAPS

SFC John M. Terrell ■ 558-3901

T-42

Precautionary Landing ■ No. 1 engine alternator failed during climbout. No. 2 engine alternator immediately went to full max amperage on amp meter and then went off line. All electrical equipment was turned off except one radio. Tower was contacted and after gear extension prior to landing, aircraft battery failed. Failure was caused by No. 1 engine alternator being incorrectly connected (two pins, in cannon plug, shorted out). Leads were reinstalled correctly and aircraft was released for flight. □

AVIATION-RELATED GROUND MISHAPS

W. P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$564

AH-1

■ Aircraft was being towed across hangar door tracks when right ground-handling wheel broke loose from skid eyebolts. Loose wheel struck right inboard rocket pod, damaging No. 9 rocket tube, and at the same time a main rotor blade flexed down and dented No. 4 tail rotor drive shaft. Ground handling wheels had not been modified in accordance with TB 43-0001-2-2 (EIR) dated May 1974, which replaces the support pin with a longer pin. □

RECAP OF AVSCOM MESSAGES

AVSCOM message 062121Z Jan 1977, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 July to 31 December 1976 for the OH-6, OH-58, CH-47, and OV-1.

OH-6-76-2	Crash Resistant Fuel System
OH-6-76-3	Fuel Shutoff Valve
OH-58-76-6	Tail Rotor Blade Retention Bolts
OH-58-76-7	Improved Seatbelts and Attachment Points Kits, Modified Per MWO 55-1520-228-30-19, TB 55-1520-228-20-21

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

OH-58-76-8 Main Rotor Hubs and Strap Assemblies
 OH-58-76-9 Tail Rotor Drive Shaft, Greasing of
 OH-58-76-10 Lower Collective Tube Assembly
 OH-58-76-11 Inspection of Surface of Main Drive Shaft Assemblies During Routine Maintenance
 CH-47-76-10 One-Time Inspection of Centrifugal Droop Stop Installation on all CH-47A, B, C Aircraft, TB 55-1500-210-20-32
 CH-47-76-11 Use of CH-47 Starter
 CH-47-76-12 One-Time Inspection of Forward and Aft Main Transmissions on all CH-47A, B, C Aircraft, TB 55-1500-210-20-33
 CH-47-76-13 CH-47 Pilot/Copilot Jettisonable Doors
 CH-47-76-14 CH-47 One-Time Inspection of Forward and Aft Main Transmissions for Correct Scalloped Tin Plated Shim Configuration
 CH-47-76-15 CH-47 Forward and Aft Transmissions
 CH-47-76-16 CH-47A, B, and C Aft Landing Gear Bolts, P/N EWSB 26-7-48
 CH-47-76-17 Installation of T55-L-11ASA Engines in CH-47C Aircraft
 CH-47-76-18 CH-47A, B, and C Landing Gear Bolts, P/N EWSB 26-7-48
 CH-47-76-19 CH-47A/B/C Extended Range Fuel Tankage
 OV-1-76-8 OV-1 Survival Vest (Aircrew)
 OV-1-76-9 OV-1 Ejection Seat MK-J5 Delta
 OV-1-76-10 OV-1 Mohawk Aircraft (Stall Characteristics)

DEPARTMENT OF THE ARMY
 UNITED STATES ARMY
 AGENCY FOR AVIATION SAFETY
 FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



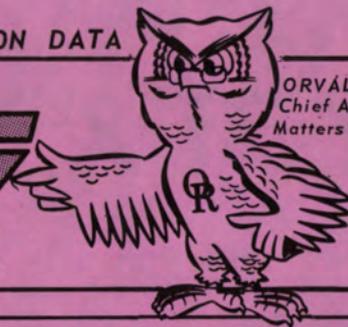
POSTAGE AND FEES PAID
 DEPARTMENT OF THE ARMY
 DOD-314
 FIRST CLASS

US ARMY AVN SCHOOL LIBRARY
 BUILDING 5907
 FT RUCKER, AL 36362

FLIGHTFAX/21-27 JANUARY 1977



FEB 18 1977



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAAVS PUBLICATION

VOL. 5, NO. 17 ■ 16 FEBRUARY 1977

mishaps for the period of 28 JAN-3 FEB 1977

WHAT'S YOUR ANSWER?

The basic weight of your OH-58 is 1,669 pounds with a moment of 196400. You are scheduled to depart, in support of an ARTEP, at 0900 hours with two passengers, combat equipped. OAT at takeoff time is +10° C. and elevation 1,000 feet msl. Time en route to landing site is 30 minutes. The landing site is 6,000 feet msl and will require a steep approach landing and maximum performance departure. After landing you are informed that your departure time will be 1315 hours with the same two passengers. If the OAT is +25° C., can you complete the mission?



US Army Aviation Training Library
Fort Rucker, Alabama 36860

ANSWER

The first takeoff and landing was within operational limits.

The takeoff at 1315 hours should not be attempted unless the weight of the aircraft is reduced by approximately 250 pounds.

STEP #1-Determine takeoff/landing conditions.

	Weight	Moment/100	
Basic weight and moment	1,669	1,964	
Oil	11	20	
Crew	200	130	
Pax (back seat)	480	499	
Fuel (71.3 gal)	465	544	
Takeoff condition	2,825	3,157	CG 111.7
Fuel expended in 30-minute flight	75*	92	
Landing condition	2,750	3,065	111.4

The landing condition will be the same as the 1315 hours takeoff condition.

*Mean fuel consumption was determined by analyzing all flight conditions encountered during this mission and applying them to Figure 14-6.

STEP #2-Compute density altitude using Figure 14-2 in the OH-58 operator's manual (TM 55-1520-228-10, dated 11 September 1972 through Change 13).

	Pressure Altitude	Temperature °C.	Density Altitude
1st Takeoff	1,000'	10°	700'
1st Landing	6,000'	0°**	5,800'
2nd Takeoff	6,000'	25°	8,600'

**Standard lapse rate of 2° per thousand feet was used to determine the density altitude for this phase of the mission.

Continued on back page

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-16

Type Aircraft: JUH-1H

Time: 0915 Classification: Major (Total)

Fatalities/Injuries: 0 Fatalities, 4 Injuries

Estimated Materiel Damage Cost: \$618,055

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	29	560	-	560
CP	WO1	26	256	-	256

Description of Accident: While on a mission over mountainous terrain, aircraft encountered bad weather and pilot elected to reduce airspeed over a meadow which was 4,200 feet msl. At 50 feet agl, aircraft started uncontrollable spin to the right. In an effort to regain directional control, pilot reduced power and initiated an autorotation. Aircraft did a 360-degree tum, and struck the ground at a high rate of descent. The impact resulted in extensive damage to the aircraft and injuries to all occupants.

Causes of Accident:

Materiel malfunction. Tail rotor controls jammed due to tail rotor sprocket retaining nut backing off, allowing sprocket to come in contact with sprocket guard.

Contributing: Maintenance personnel failed to install or improperly installed sprocket retaining nut cotter pin during PMP inspection 3.2 flight hours prior to the accident. Maintenance supervisor-tech inspector failed to detect maintenance discrepancy.

Corrective Action: Unit commander has taken action to insure that the appropriate technical publications are used and adequate supervision provided during the performance of maintenance. Reference FLIGHTFAX, Vol. 5, No. 2, dated 13 October 1976.

■ ■ ■

TOTAL MISHAPS FOR 28 JANUARY-3 FEBRUARY 1977

	UH-1	OH-58	CH-47	CH-54	AH-1	U-21	OV-1	U-8	T-42	U-1	TOTAL
Accidents											0
Incidents	3				1						4
Forced Landings	1				1						2
Precautionary Landings	13	3	1	1	2	4	2	1	1	1	29
TOTAL	17	3	1	1	4	4	2	1	1	1	35
Fatalities											0
Injuries											0
Estimated Costs	\$2,545				\$19,000						\$21,545

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incidents ■ Pilot was running up aircraft for a mechanic to adjust the inverter voltage. Mechanic inadvertently pulled copilot's collective, causing aircraft to become airborne. Pilot quickly lowered collective pitch, resulting in hard landing and damage to the aircraft. ■ After a tactical mission, postflight

inspection revealed hole approximately 6" x 8" in underside of aircraft. ■ During autorotation, student pilot failed to apply proper touchdown procedures, resulting in damage to cross tube and tail stinger.

Forced Landing ■ During approach for landing at 200 feet agl, engine compressor stall occurred. Autorotation was completed without further incident.

Precautionary Landings ■ While performing health indication test, engine surged to 97% N₁ and 7000 N₂ rpm. Suspect engine governor high side failure. ■ Tail rotor controls began to bind during hover. Maintenance inspection revealed tail rotor magnetic brake assembly failure. ■ Pilot caused overtorque (53 psi) while executing a go-around after tactical landing attempt in a formation of five aircraft. ■ On approach at 20 feet agl, tail rotor pedals became stiff. Maintenance inspection revealed tail rotor servo failure. ■ Hydraulic warning light flickered. Maintenance inspection revealed cracked hydraulic line.

AH-1

Incident ■ During normal runup, forward cross tube broke. Aircraft was equipped with snow skis and had undergone an ultrasonic inspection 2 hours before breakage. Cross tubes on all aircraft were inspected. One other cross tube was found to have flaws and was changed.

Forced Landing ■ While hovering to park, aircraft started an uncontrollable spin to right. Pilot executed hovering autorotation without further incident. Caused by broken tail rotor silent chain.

Precautionary Landings ■ During final approach for landing, No. 2 hydraulic light came on. Postflight inspection revealed hydraulic pressure switch failure. ■ During hover for takeoff, SCAS hardover occurred. SCAS system was disengaged and aircraft was landed with no damage. Cause of SCAS hardover undetermined. (Supplement will follow.)

AVSCOM MESSAGES RECEIVED

- AH-1 Maintenance Advisory Message, DTG 021700Z Feb 77 (AH-1-77-3)—Purpose of message is to provide advanced information concerning a change to the overhaul and retirement section, chapter 3 of TM 55-1520-221-20, affecting the retirement interval for the tail rotor grip assemblies.
- AH-1S Maintenance Advisory Message, DTG 022030Z Feb 77 (AH-1-77-4)—Purpose of this message is to inform all AH-1S users of special lubrication requirements.

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Precautionary Landings ■ During flight, whining noise was heard along with high frequency vibration in control pedals. Inspection revealed failure of No. 1 tail rotor hanger bearing. Bearings were not lubricated IAW USAVSCOM TWX 311829Z Aug 76 (OH-58-1-76-9). ■ Master caution and engine chip detector lights came on. Aircraft was landed and inspection revealed small amount of metal fuzz on chip detector. Aircraft was cleared for one-time flight to home station. After 8 minutes in flight, chip detector light came on again. Landing was made and during engine shutdown an overtemp occurred, followed by engine seizure. Engine is being evaluated. ■ During hover and takeoff pilot noticed torque meter was slow to respond. Torquemeter continued to be unreliable and landing was made. The following day, torque meter was tested and all indications were normal. Possible cause of high torque meter reading was contaminated engine oil. Cold temperatures prevailed at time of flight.

CH-47

Precautionary Landing ■ During aircraft runup, fuel leak was observed when heater start was attempted. Heater was secured and fuel leak stopped. Maintenance inspection revealed heater fuel drain line was blocked with dirt and soot. Drain line was cleaned, correcting the difficulty.

U-21

Precautionary Landings ■ (A series) Gear was extended for landing and left main failed to indicate down and locked. Tower flyby was made. Tower and maintenance personnel confirmed gear appeared down. Landing was made without mishap. Inspection revealed wires to gear down-lock switch were severed. Suspect chunks of ice were thrown into wheel wells during takeoff, severing wires. ■ **(D series)** During flight at 11,000 feet, No. 1 engine flamed out. Crew could not diagnose the cause and did not attempt a restart. Single-engine landing was made. Maintenance could not determine cause of failure.

OV-1

Precautionary Landing ■ Hydraulic pressure dropped to zero during flight. Pilot proceeded to the nearest airfield with crash equipment, used emergency gear procedures, and landed safely. Inspection revealed O-ring failed at pressure port on left engine hydraulic pump.

U-8

Precautionary Landing ■ No. 1 engine chip detector light came on. Aircraft returned for landing with no further difficulty. Inspection of magnetic plug revealed steel slivers. Maintenance changed engine.

T-42

Precautionary Landing ■ Following descent for approach, pilot received no power response from No. 2 engine. Assuming engine failure, prop was feathered and single-engine landing completed. Throttle control cable had separated at engine connection. □

WHEN WAS THE LAST TIME . . .
you practiced magnetic compass turns?

AVIATION-RELATED GROUND MISHAPS

W. P. Christian ■ 558-4202

3 Mishaps, 0 Fatalities, 2 Injuries, Est. Costs: not provided

OH-58

■ Aircraft was parked on parking ramp when struck by bolt of lightning. Damage included one main rotor blade tip and all major components were magnetized. Also, exploding concrete from parking ramp tore a 4' x 4' hole and numerous smaller cuts in underside of aircraft. Aircraft requires depot maintenance repair. ■ Crew chief was assisting in moving an OH-58 into a maintenance hangar when one ground handling wheel rolled into hole, causing tail boom to drop. Efforts by the crew chief to prevent the boom from striking the ground resulted in a wrenched back and loss of four working days.

JU-6A

■ A civilian employee was using an approved maintenance work platform while making repairs on a JU-6 engine. When dismantling the platform he fell against the landing gear, resulting in a back injury. □

<p>U. S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, ALABAMA 36362 Prepared from information compiled by the Directorate for Aircraft Accident Analysis and Investigation Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.</p>	<p>COMMERCIAL: 255-XXXX AUTOVON: 558-XXXX Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10 6385/6510 For Assistance in Locating Proper Directorate 6385 Aircraft Accident Analysis and Investigation 3913/4202 Technical Research and Applications 4812/3493 Plans, Operations, and Education 6410/6404 Management Information System 2920/4200 Publications and Graphics Division 4479 Medical Division 6788 Staff Duty Officer (1800-0700 hours) 6510</p>
---	---

BATTERY WATER

The following maintenance advisory message, 261800Z Jan 77, from Commander, ECOM, Fort Monmouth, NJ (DRSEL-MA-DT), subject: Battery Water, NSN 6810-00-297-9540, is reprinted for your information.

1. Purpose of this message is to advise all nickel-cadmium battery shops of availability of nonusable battery water.
2. There are listed by DSA two different types of water for adjusting battery electrolyte level. Distilled or ironized water, NSN 6810-00-682-6867, is suitable for all batteries and can be used. DSA also lists battery water, NSN 6810-00-297-9540, which is ONLY suitable for use in lead acid batteries. Use of NSN 6810-00-297-9540 battery water in a nickel-cadmium battery will destroy the plate structure and require replacement of the complete battery. DSA has acknowledged the confusion and will mark the battery water for lead acid batteries only in future procurements.
3. For nickel-cadmium batteries it is mandatory that only distilled or deionized water, NSN 6810-00-682-6867, be used to adjust the electrolyte level.
4. POC is Mr. George Borcher (DRSEL-HA-JA), AUTOVON 992-4693.

RECAP OF AVSCOM MESSAGES

AVSCOM message 062121Z Jan 1977, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 July to 31 December 1976.

- GEN-76-20 Lubricating Oil, General Purpose Preservative VV-L-800A, Contract DEA 600-76-C-1383, Sprayon Products, Lot 758
- GEN-76-21 Lubricating Oil, General Purpose, VV-L-800A, Lot C-3101, mfg. by Octagon Processing on Contracts DSA 600-76-C-1137 and DSA 600-76-C-1138
- GEN-76-22 UH-1 Hoses, Part No. 70-009
- GEN-76-23 UH-1 Armored Seats
- GEN-76-24 Shelf Life Extension of Cartridge, Fire Extinguisher, Aircraft, P/N 841155, NSN 1377-00-756-1834
- GEN-76-25 Aviation Life Support Equipment Troop Seat Belts on UH-1 Aircraft
- GEN-76-26 Acetone, O-A-51F, NSN 6310-00-184-4796, DSA 600-75-D-1102, Phipps Products Corp, Lot/Batch 75417, DOP Nov 75
- GEN-76-27 Temporary Extension of Approvals for Dust, Fume, Mist, Organic Vapor and Paint Spray Respirators
- GEN-76-28 Maintenance of Aircraft Nickel-Cadmium Batteries
- GEN-76-29 NSN 9150-00-369-8255, Grease MIL-G-43438, One 1B Can, Lot/Batch 50, DOP Aug 74, Royal Lubricants Co., Contract DSA 600-75-C-1122
- GEN-76-30 Off-Spec Chemical Products
- GEN-76-31 Potential Safety Hazard (MIL-STD-882, Category IV), NSN 6230-00-299-5879, Floodlight Set, Contract DSA 400-75-C-4606, Manufactured by All Bidders, Inc.
- GEN-76-32 Aircraft Cleaning Compound
- GEN-76-33 Cleaning Compound, Solvent, NSN 6650-00-224-6665, MIL-C-11090C, DSA 600-76-C-1819, Octagon Process, Lot C-3223
- GEN-76-34 Lubricant, Solid Film, NSN 9150-00-754-0664, MIL-L-23398, Lot 602, Mfg by Hohman Plating and Mfg Co. on Contract DSA 600-76-C-1465

Continued from front page

STEP #3—Determine power available using Figure 14-4.

	Pressure Altitude	Temperature °C.	Torque Available
1st Takeoff	1,000'	10°	87.5 psi
1st Landing	6,000'	0°	77 psi
2nd Takeoff	6,000'	25°	62 psi

STEP #4—Determine power required using Figure 14-9.

	Weight	Density Altitude	Power Available	Power Required
1st Takeoff	2,825	700'	87.5 psi	68 psi
1st Landing	2,750	5,800'	77 psi	69 psi
2nd Takeoff	2,750	8,600'	62 psi	71.5 psi

To accomplish the 2nd takeoff with a density altitude of 8,600' and power available of 62 psi, the pilot must lighten his aircraft by approximately 250 pounds.

Actual Takeoff	2,500'	8,600'	62 psi	62 psi
----------------	--------	--------	--------	--------

RECOMMENDED SOLUTION: Discharge one passenger, take remaining passenger to home station, then return for other passenger, or arrange for other transportation.

REFERENCES: TM 55-1520-228-10

Figure 14-2, Density Altitude Chart

Figure 14-4, Takeoff Rated Power Available

Figure 14-9, Torque and Power Required to Hover OGE

Figure 14-6, Fuel Flow

AUTOVON CHANGE

The new AUTOVON number for the AVSCOM field maintenance technician at Indiantown Gap, PA, is 235-2917.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

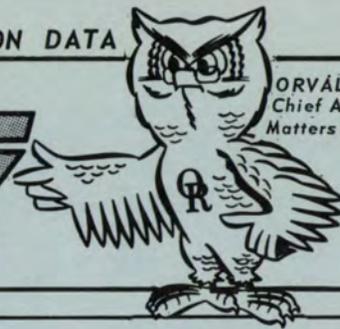


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 18 ■ 23 FEBRUARY 1977

US Army Aviation Mishaps for the period of 4-10 FEBRUARY 1977
Fort Rucker, Alabama 36360

ARE YOUR CH-47 FIRE EXTINGUISHER BOTTLES SERVICEABLE?

A CH-47 unit performed a routine check on a DA Form 2408-18 and discovered that the required entry pertaining to the service life of the CH-47 engine fire extinguisher bottle cartridge had been deleted from the form. When this discrepancy was discovered, additional checks of DA Form 2408-18 on the remaining 15 CH-47s disclosed that *all* fire bottle cartridges (a total of 64) were due replacement. These cartridges have a shelf life of 5 years from date of manufacture or a service life of 2 years from date of installation. The requirement for 64 cartridges placed such an unusual demand on the supply system that it could not immediately be met. Consequently, the unit found it necessary to ground all its CH-47s for replacement of cartridges. Cartridges, NSN 1377-00-824-5858 and NSN 1377-00-930-9390, were ordered as replacements.

How much attention are the aircraft historical records (DA Form 2408 series) getting in your unit?

Chances are some are not getting the attention they deserve. Is there a possibility that some replacement items have been deleted from your records? By checking historical records at regular intervals, especially during scheduled inspections, you can prevent this type error in your unit. For further information, contact Mr. Winkler, AVSCOM, AUTOVON 698-2326.

SAFETY-OF-FLIGHT MESSAGES

■ 091625Z Feb 77, subject: Safety-of-Flight Message (Advisory Operational) M158A1 Launcher for AH-1Q Attack Helicopter (AH-1-77-5). Summary: The purpose of the message is to clarify the use of the M158A1 launcher and to correct errors and omissions in TM 55-1520-221-10-1, Operators Manual, Army, Model AH-1Q Helicopter, dated 31 Dec 75. Contact: Mr. Kostal, AVSCOM, AUTOVON 698-6516, commercial (314) 269-6516.

■ 112025Z Feb 77, subject: Safety-of-Flight Message (One-Time Inspection) for UH-1D/H Helicopters, TB 55-1520-210-20-13, Defective Control Cables (UH-1-77-5). Summary: Control cables (P/N 205-001-726-1) have been released into the supply system with an incomplete swaging operation. Red River Army Depot has released 44 of these cables to requesting units. It is suspected that only a few of these defective cables have been installed on fielded aircraft. The purpose of the message is to locate the defective parts and remove them from service. Contact: Mr. James Boen, AVSCOM, AUTOVON 698-5066, commercial (314) 268-5066.

Aviation Life Support Equipment DISTRESS MARKER LIGHTS

The distress marker lights, NSN 6230-00-782-0643, manufactured under Contract DSA 400-75-C-5264 (Audi Industries), are not made of the proper plastic and may be a safety hazard. All Army aviation units and aircrew personnel should inspect their distress marker lights/stocks. If lights manufactured under noted contract are found, they should be suspended from use/issue and quantities reported to DGSP-SOSP, Mr. Cooper, AUTOVON 695-3922.

U. S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-17

Type Aircraft: OV-1C

Time: 0845

Classification: Minor

Fatalities/Injuries: None

Estimated Materiel Damage Cost: \$1,197

Mission: Service photo

Grade/Age/Experience:

Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P CPT	28	267	462	729

Description of Accident: Aircraft was photographing a convoy of trucks returning from an ARTEP. After high and low reconnaissance, pilot leveled off at approximately 50 feet agl for panoramic camera photo run. During the run, pilot inadvertently descended, spotted wires in flight path, and elected to go under them. Aircraft struck top of semi-trailer van with UHF/VHF antenna.

Cause of Accident: Pilot allowed the aircraft to descend below the preplanned altitude for the mission. He did not perform proper reconnaissance and failed to detect wires along his flight path.

Corrective Action: A wire hazard map will be maintained at unit level and increased emphasis placed on mission planning and reconnaissance during standardization flights.

■ ■ ■

TOTAL MISHAPS FOR 4-10 FEBRUARY 1977

	UH-1	AH-1	OH-58	CH-47	CH-54	U-21	C-12	OV-1	TOTAL
Accidents						1			1
Incidents	2	2	2						6
Forced Landings	1		1		1				3
Precautionary Landings	13	4	4	5		3	1	1	31
Human Factors								1	1
TOTAL	16	6	7	5	1	4	1	2	42
Fatalities									0
Missing						7			7
Injuries									0
Estimated Costs	\$1,585	\$34,454	\$158			\$348,844			\$385,041

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incidents ■ During runup, aircraft started sliding/spinning to the left. Student pilot applied right pedal and increased collective, bringing aircraft to a hover. Stinger and synchronized elevator were damaged due to ground strike. ■ Pilot's greenhouse window cracked in flight. Aircraft was landed with no further damage.

Forced Landing ■ Engine chip detector light came on, followed by loss of engine oil pressure. Pilot initiated autorotation and landed without further damage. Inspection revealed No. 3 and No. 4 bearing oil scavenge line had vibrated loose. Oil seepage at this location was written up by pilot on a previous flight and aircraft checked and released by maintenance.

Precautionary Landings ■ During final approach, hydraulic pressure light came on, followed by loss of hydraulics. Emergency procedures failed to restore hydraulics and aircraft landed without incident. Inspection revealed cracked hydraulic pump pressure line. ■ During flight, pilot experienced cyclic feedback. Caused by loose cyclic control head. ■ During night low-level mission, crew experienced severe cyclic feedback. Postlanding inspection revealed ice had formed on bellcrank assembly, restricting forward right cyclic movement. ■ Engine chip detector light came on. Large metal chips were found on magnetic plug. Engine was replaced. ■ Pilot smelled electrical fumes during takeoff and voltmeter pegged at maximum voltage. Caused by voltage regulator failure.

AH-1

Incidents ■ Crew discovered damage to both main rotor blades after completion of NOE mission. Cause not reported. ■ Right ammo bay door opened in flight, allowing rear canopy locking device stored in bay to fall out, striking tail rotor.

Precautionary Landings ■ Transmission oil bypass and pressure lights came on. Caused by ruptured internal transmission filter gasket. ■ Pilot heard hydraulic pump cavitating and hydraulic caution light came on. Inspection revealed improper installation of No. 2 hydraulic pump pressure line.

USAAVSCOM MESSAGE RECEIVED

■ 041950Z Feb 77, subject: Maintenance Advisory Message Concerning the UH-1 Tail Rotor Hub Assembly (UH-1-77-3). □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Incidents ■ Two incidents involving damage to left side of fuselage were caused by passenger seatbelts left hanging outside of aircraft during flight.

Forced Landing ■ Loss of power and high TOT occurred during flight. Autorotation was completed to field site. Maintenance inspection revealed failure of compressor discharge tube at forward attaching point. Suspect excessive engine vibration caused discharge tube to fail.

Precautionary Landings ■ Engine oil bypass caution light came on. Caused by loss of engine oil through oil filler cap. Cap was not properly secured. ■ Grinding noise was heard during flight and vibration occurred in control pedals and airframe. Running landing was made. Maintenance inspection revealed lack of lubrication on tail rotor slider assembly. ■ Loss of power and high TOT occurred during flight. Maintenance inspection revealed failure of compressor discharge tube. Excessive engine vibration was suspected. *This was the same aircraft that had the above forced landing. Only the time and place changed.*

CH-54

Forced Landing ■ During takeoff to hover, No. 2 hydraulic boost system gauge began to fluctuate until it was pegging out at both extremes. Cyclic was vibrating and moving several inches in all directions. When No. 2 boost system was turned off, No. 1 boost system began to duplicate the behavior of No. 2 system except that when the pressure fluctuated to the low end of the scale the aircraft controls froze. AFCS servo was then turned off and No. 2 hydraulic boost system was turned back on. Landing was accomplished by both pilots lowering the collective. All flight controls and gauge indications returned to normal after landing. No. 1 flight control boost pump failed internally.

WHEN WAS THE LAST TIME . . .
you executed an instrument approach as published?

U-21

Accident ■ Aircraft was on IFR service mission and was reported overdue at destination. Search and rescue is in progress.

Precautionary Landings ■ (A series) Approach flaps were lowered during upper air post PE test flight. Right inboard flap remained up and all others went to the full approach position. Landing was completed without difficulty. Maintenance inspection revealed right inboard flexible shaft assembly had failed. ■ Landing gear failed to retract fully after takeoff. Recycling attempt did not correct the situation. Pilot elected to fly to destination with existing gear condition, since weather at takeoff was IMC. Landing was made without further incident. Caused by landing gear motor failure. ■ (H series) After approximately 2 hours in flight, copilot saw fuel siphoning between No. 2 engine nacelle and wing root. Pilot aborted remainder of mission and returned for landing. Fuel continued to siphon and during landing roll fuel was seen spilling from wheelwell. Engines were secured and aircraft was towed to maintenance area. Caused by drain valve failure.

C-12

Precautionary Landing ■ During cruise flight, No. 1 engine oil pressure fluctuated between 60 and 120 psi. Pilot reduced power and returned for landing. Caused by failure of oil pressure transducer.

OV-1

Precautionary Landing ■ During cruise flight, No. 1 engine lost oil pressure. Egt and oil temperature started to rise and engine was secured. Single-engine landing was completed. Maintenance could not determine the cause. Oil was changed and aircraft was released after test flight.

Human Factor Mishap ■ During maintenance runup check for smoke and fumes in cockpit, maintenance crew was overcome by fumes and hospitalized 12 hours for observation. No. 2 engine oil seal failed. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$351

UH-1

■ During preflight, copilot was cleaning snow from top of fuselage when his foot slipped and went through cockpit window, NSN 1560-00-999-0307. □

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

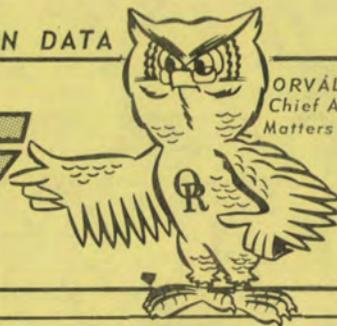
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 19 ■ 2 MARCH 1977

mishaps for the period of 11-17 FEBRUARY 1977

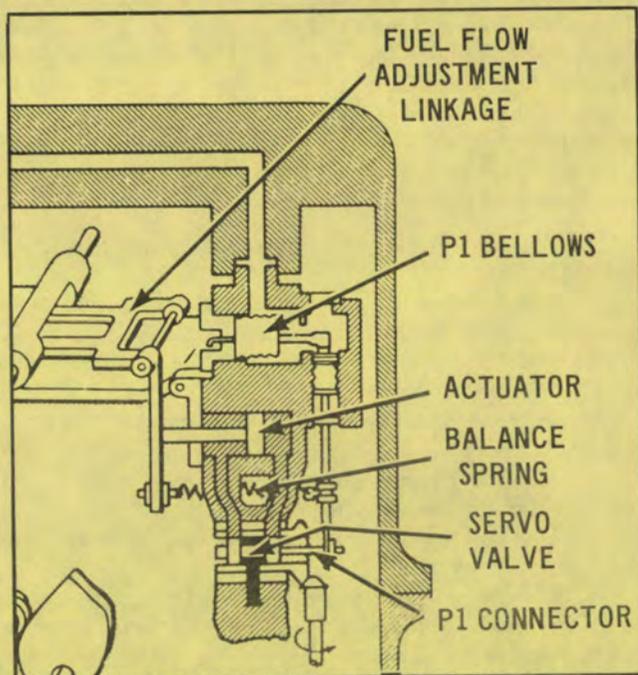
US Army Aviation Training Library
Fort Rucker, Alabama 36360

A LOOK AT P1 MULTIPLIER FAILURES

We receive many questions about the T53-L-13B fuel control P1 multiplier connector, its function, history of failures, and status of the fuel control modification program. Perhaps this article will shed some light.

What is the P1 multiplier? The P1 system consists of a bellows, servo, actuator, and linkage. It automatically provides correct fuel flow for any pressure or altitude change the aircraft may be subjected to throughout the complete engine power range. The fuel flow is adjusted by the pressure change acting on the P1 bellows that causes it to expand or contract. This small movement is transmitted to the multiplier connector by the multiplier linkage. The multiplier connector (the part that fails) is actually the shaft of the servo valve. The servo valve position is balanced by a spring connected between the P1 fuel enrichment/derichment system and the P1 bellows to P1 connector linkage. When the P1 bellows expands or contracts due to a pressure change, it opens the servo valve by means of the P1 connector and allows servo fuel pressure to flow to the actuator, increasing or decreasing the fuel flow by extending or shortening the linkage to the main fuel flow valve. When the actuator piston is repositioned by servo pressure, the tension is changed on the balance spring, repositioning the servo valve and shutting off servo pressure to the actuator.

The only positive indication of a P1 connector failure is some kind of power interruption. In one instance, the only indication of failure was a 200 rotor rpm fluctuation. On a subsequent test flight, a complete loss of power occurred. Sometimes failure may be accompanied by a loud bang or a compressor stall. In fact, there is no consistent pattern as to which way the fuel flow, and consequently, rpm, may go. In all recorded P1 failures, the engine rpm has decreased. However, there are no mechanical limits



or stops to prevent the fuel flow from increasing after a failure.

All of the T53-L-13B-powered helicopters (AH-1G, TH-1G, UH-1H, UH-1M) are equipped with a rotor-speed warning system to indicate overspeed or under-speed. If a P1 connector failure occurs in flight, the warning this system gives will be the first indication the pilot will have unless he is looking directly at the engine instruments at the moment the failure occurs. Rotor speed should be the pilot's first consideration. Only after rotor rpm is stabilized should another action be considered. If N₁ (compressor speed) and egt (exhaust gas temperature) are within safe limits (N₁ 40 to 101.5, egt 450-690) after rotor rpm has been stabilized, the emergency governor, or

Continued on page 2.

Continued from front page.

manual mode, should be considered. The decision to switch to the manual mode should be accomplished before N1 has decreased below 40 percent. Otherwise, precise and careful throttle application will be necessary to bring the N1 up to operating speed without causing overtemp and engine burnout. The applicable dash 10 procedure should be strictly adhered to and the egt monitored very closely during manual power changes. Once the aircraft is stabilized with the fuel control in the manual mode, flight can usually be continued to the original intended point of landing. After the desired cruise power settings are obtained in the manual mode, throttle and collective friction can be adjusted to maintain desired setting and the aircraft controlled by the application of cyclic.

According to records at USAAAVS, 13 P1 multiplier connector failures have caused mishaps since March 1971. The last seven of these occurred since February 1975 and resulted in a dollar loss of approximately \$433,000. In 10 of the 13 failures, engines did not stop operating. Consequently, had the pilots involved been aware of the P1 connector failure mode and taken proper action, they might possibly have prevented these mishaps. Briefs of recorded failures are listed as follows:

1. AH-1G—Engine lost power and skids collapsed on touchdown.
2. AH-1G—Partial power was lost and autorotation made to a safe landing.
3. UH-1M—Pilot entered practice autorotation. Upon application of power, N1 decreased to 25 percent and egt increased to 700 degrees. Aircraft landed hard.
4. UH-1H—Engine stopped in climb and synchronized elevator struck wire on landing.
5. UH-1H—Engine lost power and aircraft was landed with low rpm.
6. UH-1H—Aircraft yawed left and rpm audio came on. On landing, aircraft impacted tail low, severing main rotor and tail boom.
7. UH-1H—N2 decreased and running landing was made to plowed farm field. Main rotor blade struck tail rotor drive shaft.
8. UH-1H—Engine lost power and aircraft was landed on two-lane highway, causing main rotor blades to strike telephone poles.
9. UH-1H—Engine stopped at approximately 1,500 feet agl. Loud bang was heard and aircraft yawed hard to the right. Aircraft was autorotated into wooded area.
10. UH-1H—While in cruise flight at 500 feet and 100 knots, engine stopped with no warning. Aircraft yawed slightly nose left and autorotation was made into canal.
11. UH-1H—During cruise flight at low level,

engine failed at approximately 100 feet agl. Pilot completed autorotation to a downhill slope. Main rotor blades severed tail boom on touchdown.

12. UH-1H—While in cruise flight at 4,000 feet msl and 100 knots IAS, aircraft yawed 10°-15° left, low rpm audio sounded, and rpm warning light came on. N2 decayed to 3000 rpm, N1 fluctuated between 35 and 40 percent, torque pressure dropped to zero, engine oil pressure decreased to 1-10 psi and engine oil pressure caution light came on. Pilot autorotated aircraft to plowed field with partial power.

13. AH-1G—Engine failed during cruise flight at 1,000 feet. Pilot entered autorotation and made descending left turn to dirt road. Aircraft landed hard, sustaining major damage.

In August 1975, 263 modified fuel control units were available. Since then, Corpus Christi Army Depot (CCAD) has modified approximately half of all fuel controls in the supply system. A check with selected units shows approximately 45 percent of the T53-L-13B-powered helicopters are presently equipped with the modified fuel control. CCAD plans to modify 200 controls per month until all units have been modified. At this rate, AVSCOM can initiate a program to purge the unmodified fuel controls from the system by July 1977.

Based on the present rate of failure, we can expect at least five more in-flight failures to occur before the modification program is completed. If the pilot who experiences such a failure has enough altitude and is proficient in his emergency procedures for low-side governor failure, chances are he can make a safe landing at a suitable area or airfield. Following are some actions units can take until all fuel controls are modified:

- Conduct an intensive awareness program on P1 multiplier failures and associated emergency procedures.

- Determine the part number of the fuel control your T53-L-13B-powered helicopters are equipped with. This information is found on the fuel control data plate. Fuel controls bearing part number 84200A7 are the only ones that have been modified. (If the part number ends in any number other than 7, the control has not been modified.) Placard the aircraft so the type of fuel control will be readily apparent to the pilot.

- Ensure pilots are aware of correct emergency procedures and that they know the fuel control status prior to flight.

- Whenever feasible, schedule only those aircraft with modified fuel controls for NOE, flight in IMC, and missions that are not conducive to flight in the emergency governor mode.

For more information on P1 multiplier failures, contact Jack Carter, AAA&I, USAAAVS, AUTOVON 558-3913/3901 commercial (205) 255-3913/3901.

FY 77 ACCIDENT SYNOPSES

SYNOPSIS 77-18

Type Aircraft: U-21A

Time: 1705 Classification: Major

Fatalities/Injuries: None

Estimated Materiel Damage Cost: \$84,421

Mission: Service (passenger transport)

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW3	33	2,490	843	3,333
CP	1LT	26	519	11	530

Description of Accident: Pilot attempted a maximum performance takeoff at the request of a passenger. After liftoff (10 feet agl) aircraft veered left and started left roll. Pilot reduced power as left wing struck the ground. Aircraft continued left and struck railroad track and dirt mound, tearing off landing gear and causing major damage to underside of fuselage.

Causes of Accident: Pilot failed to insure left condition lever was in low idle detent before takeoff, resulting in partial power loss in left engine. Crew fatigue may have contributed to this mishap since unit's crew rest SOP was not complied with.

Corrective Actions: Message was dispatched to all U-21 operators emphasizing that a partial power condition can exist when the condition lever is not locked in the low idle detent. Supervisors are placing greater emphasis on and enforcing unit SOPs.

■ ■ ■

TOTAL MISHAPS FOR 11-17 FEBRUARY 1977

	UH-1	AH-1	OH-58	CH-54	CH-47	TH-55	U-21	OV-1	U-8	TOTAL
Accidents										0
Incidents	1									1
Forced Landings										0
Precautionary Landings	31	4	6		4	2	3	3	1	54
Dropped Load				1						1
TOTAL	32	4	6	1	4	2	3	3	1	56
Fatalities										0
Injuries										0
Estimated Costs	\$224									\$224

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incident ■ A flight of 5 aircraft was attempting to maintain VFR in deteriorating weather conditions by flying along an interstate highway. The lead aircraft struck an electrical powerline, causing damage to landing and search lights.

Precautionary Landings ■ Engine chip detector light came on. Inspection revealed large metal particles on chip detector plug. Engine was replaced. ■ During cruise flight, tail rotor pedals became stiff. Post-

flight inspection revealed wear to silent chain. ■ Aircraft developed severe vertical vibration in cruise flight. Postlanding inspection revealed main rotor blade skin separation 30 inches inboard of tip and 4¾ inches aft of leading edge. ■ Pilot was advised to be aware of kites on approach path. Several kites were seen and avoided during approach. After shutdown, string was found on the skids and wrapped around swashplate assembly. ■ Fire warning light activated in flight. Maintenance replaced fire warning control box.

AH-1

Precautionary Landings ■ Pilot found aft left crosstube fairing missing on postflight inspection. Suspect fairing was not properly secured before flight. ■ Master caution light came on without segment light. Maintenance could not duplicate problem and aircraft was returned to mission-ready status. ■ Ninety-degree gearbox chip detector light came on. Maintenance found metal chips on magnetic plug and replaced gearbox.

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

CH-54

Dropped Load ■ Aircraft was transporting OV-1 training sling load when forward mounting points failed, causing load to separate from rigging gear.

CH-47

Precautionary Landing ■ During landing, IP pulled No. 1 engine condition lever to ground position to simulate single-engine operation. No. 1 engine dropped to 33 percent N1 momentarily, then engine stopped. Caused by improper rigging of N1 governor. Governor was adjusted and aircraft returned to service.

OH-58

Precautionary Landings ■ During landing approach, master caution light came on, then went out. After landing was completed, master caution and transmission pressure warning lights came on. Inspection revealed transmission oil line to free wheeling unit came loose at firewall. ■ Overspeed governor malfunctioned during descent. Pilot reduced throttle to obtain manual control and completed landing with power. ■ During flight, TOT climbed to 800° for 5 seconds. Rise in temperature was caused by asbestos insulation in transfer tube blowing out, resulting in loss of air to engine. ■ N1 and rotor rpm fluctuated and engine-out audio and light came on. Pilot made a power-on landing in an open field. Maintenance test pilot was unable to duplicate condition. Malfunction of double check valve was suspected. Valve was removed and cleaned and aircraft released for flight.

TH-55

Precautionary Landings ■ Amp meter indicated electrical failure during flight. Maintenance inspection revealed alternator had failed. ■ Engine oil pressure exceeded upper limit during flight. Caused by failure of oil pressure sending unit.

USAAVSCOM MESSAGES RECEIVED

■ 032015Z Nov 76, subject: Configuration and Requisitioning Information Concerning Fire Extinguisher, NSN 1680-00-168-5737. Message indicates fire extinguisher, NSN 1680-00-948-6568, and all subconfigurations are replaced by fire extinguisher, NSN 1680-00-168-5737. NOTE: This TWX provides additional information to the article titled "Are Your CH-47 Fire Extinguisher Bottles Serviceable?" in FLIGHTFAX, Vol. 5, No. 18, dated 23 February 1977.

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

U-21

Precautionary Landings ■ (A series) During cruise, No. 1 inverter, fuel boost, and generator caution lights came on. Pilot turned off No. 1 generator and boost pump switches and closed crossfeed switch. Landing gear was manually extended. Maintenance inspection revealed No. 1 current limiter had failed. ■ During cruise check, pilot saw fuel siphoning from right nacelle fuel cap. Fuel cap was replaced after aircraft was returned to base. Maintenance inspection found fuel cap inner O-ring had deteriorated. ■ (D series) During cruise check, pilot saw fuel siphoning from left wing tank fuel cap. After consulting flight operations and maintenance, aircraft was flown an additional 30 minutes to reduce aircraft landing weight. Postlanding inspection revealed fuel cap was not properly seated.

OV-1

Precautionary Landings ■ (C series) During landing, pilot received unsafe gear indication and noticed loss of hydraulic pressure. Emergency gear extension was used. Caused by O-ring failure on high pressure line of No. 2 hydraulic pump. ■ (D series) During climb at 200 feet agl, copilot's hatch opened. Hatch was not properly secured before takeoff. ■ During takeoff, IP announced takeoff abort at or below normal rotation speed and left main tire blew at the same time. Student allowed aircraft to lift off and IP took the controls and landed. Tire failed because of a flat spot from a previous landing.

U-8

Precautionary Landing ■ (D series) During missed approach while under the hood, pilot inadvertently increased power to 40" Hg. with 2600 propeller rpm. Power was reduced immediately and landing made. Maintenance inspection revealed no damage.

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

2 Mishaps, 0 Fatalities, 1 Injury, Estimated Costs: \$1,429

UH-1

■ A mechanic was attempting tug hookup to a helicopter when he lost control of the tug. Tug struck aircraft, causing damage. Allegedly, the accelerator stuck and brakes failed. However, this could not be duplicated. The civilian employee is restricted from future tug operations.

CH-47

■ During preflight inspection, pilot accidentally applied pressure to No. 1 flight boost hydraulic reservoir filler cap, depressurizing hydraulic system. Hydraulic fluid escaped from filler cap vent, striking pilot's right eye. Pilot required medical treatment. □

BATTERY WATER

Reference maintenance advisory message 261800Z Jan 77, in FLIGHTFAX, Vol. 5, No. 17. The following message, 231400Z Feb 77, is a clarification of the message referenced above:

All nickel cadmium batteries and cells which have had the electrolyte adjusted using subject battery water are considered unserviceable and are to be disposed of in accordance with regulations. Distilled water may also be obtained under NSN 6810-00-356-4936 (5 gallons) or NSN 6810-00-107-1510 (5 gallons) as well as NSN 6810-00-682-6867 (1 gallon). The three items listed here are all suitable for electrolyte adjustment of nickel-cadmium batteries.

Point of contact is Mr. G. Borchert, AUTOVON 992-4693.

WHEN WAS THE LAST TIME . . .
you reviewed your aircraft limitations?



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FORT RUCKER, AL 36362
STACOM 12 ■ 2 MARCH 1977 COL CLEMENT A. WYLLIE ■ 558-2603/3514

THEY'RE HERE

As practically every Army aviator knows by now (judging by the phone calls), ARs 95-1 and 95-63 have hit the field. Unfortunately, but predictably, there were some errors in the final product. Most of these were minor typo's which will be corrected in a future change, but there are six noted in 95-1 and two in 95-63 which tend to change the intended meaning of the regulation and require immediate correction. These corrections will be coming down officially by DA Message. In the meantime, we'll publish them here for your information.

AR 95-1

Paragraph 1-18a(3). Change: *Instructor* Flight Examiner (IFE) to read: *Instrument* Flight Examiner (IFE).

Table 2-1. Change first line as reads: RW only RW only *FW* to read: RW only RW only RW.

Paragraph 4-27e(3). Change to read: Aircraft shall *not* be operated.

Appendix D-1. Change visibility column, Army standard alternate minimums to read: 2 mile for precision or nonprecision approach. Rotary wing may reduce visibility to 1 mile.

Appendix D-1. Delete: Copter only approaches are as published plus ½ of alternate requirement.

Appendix D-1. Change: Airfield cannot be used as an alternate *if prohibited; if radar is the only approach*; or, if radar is required to execute the only instrument approach procedure. These fields may be used if weather forecast indicates *decent*, approach and landing can be made in VFR conditions.

To read: An airfield cannot be used as an alternate if it is specifically prohibited for use as an alternate. An airfield cannot be used as an alternate if radar is the only approach procedure, or if radar is required to execute the only instrument approach procedure unless descent, approach and landing can be made in VFR conditions.

AR 95-63

Paragraph 1-19(2)(b). Add: . . . or complete satisfactorily an instructor pilot equivalency evaluation administered by the USAAVNC.

Table 2-1. Change title as reads: The Following Maneuvers/Procedures are required for all instrument Flight Examiners: To read: The Following Maneuvers/Procedures are Required for all Instrument Flight Examinations:

BATTERIES NECESSARY?

A question came up during a recent Safety/Standardization meeting as to the advisability of flying rotary wing aircraft without batteries installed. Although nothing in the current dash 10 or dash 20 restricts this practice, it is the Directorate of Evaluation and Standardization's position that this is not

a "sound operating procedure." Also, FORSCOM has transmitted a message (R241615Z Mar 76, subject: Rotary Wing Operations Without Batteries Installed) prohibiting flight operations in this type configuration except in actual emergencies.

This message applies only to FORSCOM units, but every aviation unit should consider the consequences of an electrical failure and seriously weigh the pros and cons of flying without a battery installed, especially if the battery is the only standby source of electrical power available.

POSITION REPORTS, QUESTIONS & ANSWERS

■ What publications are required to be on board an aircraft for flight?

AR 750-31, paragraph 4, states that the following will be located in each Army aircraft for all flights:

- a. Operator's checklist (CL)^{1,2}
- b. Operator's manual (dash 10) including all changes and related Technical Bulletins.^{1,2}
- c. Weight and Balance Manual (TM 55-405-9, conspicuously annotated with aircraft serial number) will be used to provide a file for current duplicate weight and balance forms, DD Form 365, Record of Weight and Balance Personnel, Series and Chart E (for each Class 2 aircraft in accordance with AR 95-16).
- d. Equipment Logbook Assembly consisting of the following items:
 - (1) Logbook binder.
 - (2) Health Indicator Test (HIT) egt log.³
 - (3) Preventive Maintenance services checklists (PMP, PMI, and PMD cards).^{2,4}
 - (4) Current DA Forms 2407 (Maintenance Request), 2408-14 (Uncorrected Fault Record), and 2408-18 (Equipment Inspection List).⁵

¹Existing AFTO and TM-1 series of pilot handbooks (dash 1) and maintenance instructions (dash 2) will be used on U-3, U-9, and U-10 series aircraft.

²Authorized commercial manuals will be used when DA publications are not printed on U-21F, C-12, T-41, T-42, and TH-55 series aircraft.

³Required only for aircraft equipped with turbine engine power plants.

⁴Not required for T-41, T-42, TH-55, U-3, U-9, U-10, U-21F, and C-12 series aircraft. Existing AFTO and TM-1 series of inspection requirements (dash 6) will be used on U-3, U-9, and U-10 series aircraft. ESC at discretion of each commander with AR 95-33 and AR 220-1.

⁵DA Forms 2408-4 required only when aircraft are equipped with installed armament.

■ Is there any AR or TM that restricts a UH-1H to a two-hour flight, if the fuel quantity indicator is inoperative?

Inasmuch as there is nothing officially published concerning flight restriction with an inoperable fuel quantity indicator, it is the accepted practice and policy for USAAVNC to place its UH-1Hs under a circle Red-X with the following flight restrictions: for a UH-1H aircraft with a noncrashworthy fuel system installed, the maximum allowable flight time will not exceed 2+00, and for UH-1H aircraft with crashworthy fuel systems installed, the maximum allowable flight time authorized is 1+45.

■ Does an inoperable fuel quantity indicator restrict a UH-1 from IFR flying?

Although nothing prohibits you from flying under instrument flight rules with this equipment defect, you are placing yourself in a potentially hazardous situation. AR 95-1 stipulates the required equipment for IFR flight and the fuel quantity indicator isn't included; therefore, you are legal by regulation. However, considering the UH-1's limited range, the alternate and fuel reserve requirements, and the need for continuing fuel checks, IFR operation with an inoperative gauge is definitely not recommended. Either stick to day VFR or get the thing fixed.

■ Am I legal in flying my unit's aircraft while in a "leave status"?

AR 95-1, paragraph 1-12(2)(a), states that members of the Active Army and Reserve Components who hold authorized Army aeronautical designations, are currently on flying status (IAW AR 600-106), and are physically qualified, are permitted to fly Army aircraft. Your duty status really has nothing to do with it. Therefore, while on leave, should the need arise for you to complete your CRF minimums, renew your instrument qualification, or renew your annual standardization ride, you may do so without having to return to "duty status."

■ When can a crewmember wear contact lenses?

According to AR 40-8, paragraph 5, at *no* time will any aircrewmember wear contact lenses when performing flying duties, i.e., pilot, copilot, crew chief, flight engineer. This decision was made by the Surgeon General, Chief Consultant of Ophthalmology. However, the Federal Aviation Administration has revised their decision on this matter. Change 1 of FAR, part 67, effective 21 December 1976, states that pilots are authorized to wear contact lenses when performing flying duties; furthermore, they do not have to carry, on their person, a spare pair of corrective spectacles. So, if you also fly civil aircraft you can get by with the contacts, but be sure you wear the spectacles in the Army bird.

■ In Chapter 4 of many dash 10s we are instructed, at the end of several emergency procedures, to land as soon as practicable or practical, or to land immediately, or land at the nearest available safe landing area. My question is, what are the meanings of these phrases?

Let's look at these terms in descending order of urgency.

First—land immediately. Very little question here, is there? It applies to a situation so grave that unless the aircraft is put on the ground *right now* the chances are good that you will be viewing a spectacular event from the best seat in the house.

Second—land at the nearest safe landing area. Not quite as bad as land immediately, but still pretty serious. Get it down just as soon as you can find a place big enough and smooth enough for it. The idea here is not to turn a precautionary landing into an accident or incident.

Third and last—land as soon as practical or practicable. This is the least urgent category of all and the one generating the most *mis*interpretation. The dictionary defines these terms as "to obtain through practice or action; that which can be used; workable; useful; and concerned with the application of knowledge to useful ends, as distinguished from speculation." In essence, evaluate the problem, using your experience and good common sense, then decide for yourself what "as soon as practical" means. Just remember, the book says land!

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAAVS PUBLICATION

VOL. 5, NO. 2 ■ 13 OCTOBER 1976

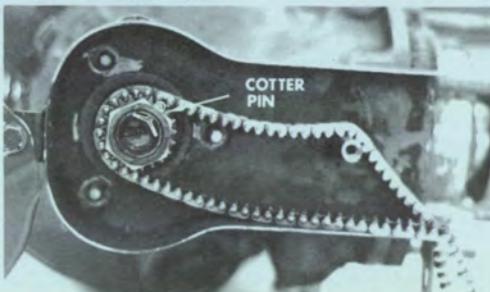
mishaps for the period of 24-30 SEPTEMBER 1976



\$95,000 COTTER PIN

The mechanic failed to install a cotter pin in this silent chain drive sprocket retaining nut—the TI failed to catch the error on his inspection—and a \$95,000 major accident occurred with four injuries.

The nut backed off the drive shaft and jammed against the sprocket guard, causing the control pedals to stick.



REPLACEMENT CUFFS FOR NOMEX JACKET

The U.S. Army Troop Support Command has informed USAAAVS that a replacement cuff for the new Nomex flyer's jacket, NSN 8415-00-217-7220, will be available approximately 1 December 1976.

Replacement cuffs should be requisitioned by supply personnel from the Defense Personnel Support Center (DPSC), Director of Clothing and Textiles, Philadelphia, PA 19101, using the following nomenclature: Cuff, knit, nonmelting nylon, color OD 106, NSN 8315-01-024-5725. (This color matches the new Nomex jacket.)

If it is necessary to replace cuff before 1 December, Cuff, wool, sage green, NSN 8315-00-275-2870, may be requisitioned as an interim solution.



U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate Aircraft Accident Analysis and Investigation	4479
Technical Research and Applications	3913/4202
Plans, Operations, and Education	6404/6410
Management Information System	4479/4812
Publications and Graphics Division	5286/4200
Medical Division	6385/3493
Staff Duty Officer (1800-0700 hours)	6788
	6510

FY 76 ACCIDENT BRIEF

SYNOPSIS 51-76

Type Aircraft: **T-42A**
 Time: **1810** Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$15,127**
 Mission: **Training**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	31	2,546	525	3,071
CP	CW3	30	3,300	162	3,462

Description of Accident: Landing gear collapsed during landing role.

Causes of Accident

Initial: Pilot inadvertently raised gear handle instead of flap switch after landing.

Contributing: Materiel—Landing gear switch was badly worn and in need of replacement. Maintenance—Maintenance failed to correct gear switch discrepancy on DA Form 2408-13.

Supervisory—Lack of adequate standardization program.

Remarks: Pilot had been flying both the T-42 and U-21 aircraft. The landing gear handle in the T-42 is on right side above aileron trim wheel. The wing flap switch in the U-21 is on right side above rudder trim wheel. A pilot who flies a U-21 could inadvertently activate the gear handle on the T-42 when intending to activate the flap switch.

Corrective Actions: USAAAVS recommended provisions of paragraph 3-16, AR 95-1, which requires oral callout and conformation of checklist items, be accomplished on each flight. USAAVSCOM prescribed immediate inspection of all T-42A landing gear switches for positive locking action in both detents and replacement of any defective switches before further flight. Switch is to be inspected for wear and detent action each 300 flying hours. These instructions are contained in AVSCOM T-42 Letter No. 15, dated 25 Feb 1976, page 5, par. 13.



SYNOPSIS 52-76

Type Aircraft: **AH-1G**
 Time: **1440** Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$65,573**
 Mission: **Training, VFR local**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	28	2,760	1	2,761
CE	E4				

Description of Accident: As pilot was attempt-

ing to land between trees, tail rotor struck tree limb, causing 90° gearbox to separate from aircraft. Crew was relocating aircraft in LZ for purpose of concealment.

Causes of Accident

Initial: Crew—Pilot selected LZ too small to accommodate aircraft.

Contributing: Supervisory—Local commander did not provide adequate crew for the mission. Local directives require two pilots for all tactical missions.



SYNOPSIS 53-76

Type Aircraft: **UH-1H**
 Time: **1530** Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$1,360**
 Mission: **Service-tactical troop extraction.**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW4	35	4,649	298	4,947
CP	MAJ	35	949	-	949

Description of Accident: Aircraft landed on stump during troop extraction. Minor skin and

structural damage resulted (7-inch diameter puncture).

Causes of Accident

Initial: Crew attempted landing in unsuitable tactical LZ.

Contributing: Supervision—LZ preparation. Crew rest suspected. Pilot had 10 hours sleep in last 48 hours and copilot had 9 hours sleep in preceding 48 hours. Training—Due to poor unit radio discipline, crew turned off radios which prevented ground guide from warning crew of stump in LZ.

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

1 Accident, 0 Fatalities, 0 Injuries, Estimated Costs: \$135,601

UH-1

5 Incidents ■ On start, main rotor tiedown contacted tail rotor blades. Maintenance replaced tail rotor blades. ■ On takeoff, rotorwash caught marking panels, throwing them into the air. One of the panels came down through the rotor system. Investigation revealed damage to one rotor blade. ■ During touchdown phase of hydraulics-off maneuver, aircraft touched down left skid low and bounced to right skid and back to left skid, damaging aft crosstube and skid caps. ■ During approach with excessive nose-up attitude, IP told pilot to level aircraft and stop left slip. Pilot lowered nose and was slow applying collective pitch to slow descent. Tail stinger struck ground and aircraft touched down left skid first. ■ Aircraft was on short final to night tactical LZ when it encountered ground fog and "white-out" conditions at approximately 75 feet agl. Just after entering ground fog, aircraft struck several trees with main and tail rotor blades, tail boom, and left horizontal stabilizer.

2 Forced Landings ■ On short final, left antitorque pedal went to the stop position. Aircraft turned 180°. Pilot reduced throttle and completed hovering autorotational landing with no further damage to aircraft. Aircraft landed on 15°-20° slope. Inspection revealed failure of tail rotor silent chain. ■ Engine failed at 1500 feet. Aircraft was autorotated onto interstate highway. Suspect power turbine failure.

31 Precautionary Landings—following are selected briefs ■ An OH-58 attempted to take off in front of a flight of 15 UH-1Hs taking off from PZ. Flight of UH-1Hs avoided the OH-58. During the evasive maneuver, one UH-1H overtorqued to 54 pounds. ■ Left fuel boost light illuminated. Caused by left fuel boost pump failure. ■ Engine tach failed during cruise flight. Pilot continued to field site. ■ Unusual vibrations occurred during takeoff. Rpm fluctuated between 6200 and 6700. Cause unknown. ■ Right fuel boost pump light came on. Maintenance replaced right fuel boost pump.

AH-1

1 Accident ■ No. 1 hydraulics failed in cruise flight. Crew was attempting to land at civil airport. Control was lost during touchdown, and aircraft sustained major damage.

2 Incidents ■ Pilot discovered damage to both main rotor blades on postflight inspection. ■ On takeoff, while attempting to clear wires, low rpm audio came on and aircraft began to sink. Aircraft struck ground and slid across a small road. Main rotor blade cut through 8-inch telephone pole. Suspect low side governor failure.

6 Precautionary Landings—following are selected briefs ■ During cruise flight, master caution and transmission oil bypass lights came on. Maintenance replaced transmission oil bypass pressure switch. ■ Master caution and generator segment lights illuminated. Maintenance replaced main generator. ■ Heavy feedback was felt in cyclic during low-level autorotation. Maintenance was unable to duplicate malfunction and aircraft was released for flight. ■ High frequency vibration in antitorque pedals occurred during hovering flight. Cause unknown. ■ Crew felt extreme high frequency vibrations in antitorque pedals. Inspection revealed failure of tail rotor bearing, NSN 3110-00-872-6968. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$13,218

OH-58

4 Incidents ■ While aircraft was being maneuvered from one observation point to another, main rotor blades struck tree limb. Pilot heard and felt the strike, followed by a pronounced vibration. Aircraft was landed immediately. ■ Pilot was observing tanks from high hover. He started moving aircraft to right and struck two high-tension electrical wires. One main rotor blade was damaged. ■ Pilot was observing aggressor tanks when aircraft struck two electrical wires, which became entangled in tail rotor, damaging both blades. ■ While practicing for air assault mission, excessive bank was made, causing blades to strike ground.

2 Forced Landings ■ Engine failed during simulated antitorque practice. Cause unknown. Investigation is underway. ■ Engine failed during hover. After shutdown, maintenance found contaminated fuel in lines and sump.

4 Precautionary Landings ■ Engine oil pressure gauge line became disconnected. Oil pressure dropped, bypass light came on, and aircraft was landed. ■ Pilot noted restricted lateral cyclic travel. Landing

was completed without incident. Hydraulic fluid, grease, and dirt found on clevis rod end caused bearing to bind. ■ Engine chip detector light came on. Suspect internal engine wear. Engine oil sample is being analyzed. ■ During flight, pilot smelled electrical odor. Instrument cross-check indicated d.c. amps at 60. All electrical equipment, except FM, was turned off. Caused by failure of voltage regulator.

CH-47

1 Incident ■ Aircraft was at hover over sling load when bottom of aircraft struck load, causing small hole in fuselage at station 450.

1 Precautionary Landing ■ (Dropped load) Aircraft was on climbout with twenty-five 55-gallon barrels of mogas when cargo net broke open, causing load to drop. Caused by materiel failure of cargo net. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

1 Accident, 0 Fatalities, 1 Injury, Estimated Costs: \$109,000

U-21

1 Accident ■ Left engine lost power after takeoff. Left wing dropped and aircraft veered to left, touched ground left of runway, hit railroad tracks, sheared off landing gear, and slid sideways to a halt. Cause of power loss is unknown. Accident is under investigation.

OV-1

1 Incident ■ Aircraft was flying low level when it struck a large bird, damaging right vertical stabilizer.

1 Precautionary Landing ■ Landing gear would not retract after takeoff. Emergency gear extension procedures were used and gear rechecked down and locked. Dump valve was reset and blowdown bottle reserviced. Retraction test was performed, and problem could not be duplicated.

U-8

4 Precautionary Landings ■ (D series) Throttles were advanced to 45 inches manifold pressure on takeoff roll. After takeoff, pilot saw engine rpm at 2800 and immediately advanced rpm to 3200 and manifold pressure to 45 inches. Climbout was continued and aircraft returned to airfield. Maintenance changed both engines due to overboost. ■ (D series) No. 2 engine chip detector light illuminated after takeoff. No unusual engine instrument readings were noted. Large metal chip was found on chip detector plug. Maintenance is investigating origin of the chip. ■ (D series) Landing gear would not extend electrically during training flight. Gear was lowered manually and landing completed. Caused by lack of lubrication to adaptor switch actuator. ■ (D series) No. 2 engine quit during VMC climb at 2,000 feet. Single-engine landing was made. Crew discovered mag switch for No. 2 engine was in the "off" position. Pilot had inadvertently turned mag switch to "off" position while tuning VOR. (ARNG)

T-42

1 Precautionary Landing ■ Smoke was seen coming from under right flap of No. 2 engine and engine ran rough at 17-18 inches manifold pressure. Single-engine landing was made. Three cylinders were below minimum compression and excessive amount of metal particles was found on engine oil screen. Engine is being changed.

DISSEMINATION OF SOF AND MAINTENANCE ADVISORY MESSAGES

The following AVSCOM message is quoted for information and necessary action to insure timely dissemination of messages.

SUBJECT: Dissemination of Safety-of-Flight and Maintenance Advisory Messages

A. Reference Msg, DA WASH DC//DALO-AV//, 101750Z Apr 75, subject as above.

1. Due to the difficulty experienced by the U.S. Army Aviation Systems Command (AVSCOM) in maintaining current lists of all commands, organizations, and activities processing Army aircraft or concerned with operating and maintaining them, Address Indicating Group (AIG) 8881 was established for transmittal of aircraft safety-of-flight and maintenance advisory messages. The AIG consisted of all major commands, to assure that all were provided with required information and data affecting safety-of-flight and/or maintenance of Army aircraft. Major commands are responsible for the retransmission of all messages to their subordinate activities.

2. AVSCOM has developed a message numbering system to assure that all safety-of-flight and maintenance advisory messages have been received. A summary of these messages is published semi-annually (January and July). The summary contains:

- a. Control number.
- b. Subject.
- c. AVSCOM action office/officer and telephone number.
- d. Date Time Group.

3. AVSCOM has received information that in some cases safety-of-flight and maintenance advisory messages are not being retransmitted to subordinate elements in a timely manner and in a few cases not at all. Request that all addressees take immediate action to assure timely retransmission and dissemination of safety-of-flight and maintenance advisory messages. Further request that control procedures be reviewed or established to assure that all messages have been received and retransmitted.

4. It is further requested that subordinate elements go to their major commands on retransmission and dissemination problems instead of coming direct to AVSCOM. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

9 Mishaps, 0 Fatalities, 5 Injuries, Estimated Costs: \$97,254

UH-1

■ Mechanic was load testing UH-1 clevis assembly. Shackle, NSN 1670-00-678-8560, used to adapt dynamometer to clevis, was not designed for the load placed on it. The rated load of the shackle was 2,000 pounds. The shackle failed when 9,000 pounds had been applied. This stress caused shackle to bend and shear retainer pin. Shackle separated from clevis, causing test stand to bounce. Mechanic was thrown away from stand, striking a table and jack stands. ■ UH-1 was landed in riverbed after loss of transmission oil pressure. Maintenance was unsuccessful in restoring aircraft to flyable status and CH-47 was dispatched for recovery. After 3 days of attempts, hampered by bad weather, one serious injury, and damage to the aircraft by flood waters, successful recovery was completed. ■ Aircraft workstand was positioned to rear of a CH-47 so aft blades could be tracked. While rotor blades were being tracked, workstand was blown across ramp into parked UH-1H, causing sheet metal damage to UH-1. Inspection of workstand revealed brakes were properly set, but were ineffectual in keeping workstand stationary. Unit modified all workstands with a locking pin inserted in aft wheels to provide positive locking. ■ Repairman was assigned to install KY-28 in UH-1. He laid the KY-28 on its side to connect cannon plugs and it slipped and fell through cockpit chin bubble. ■ Security guard fell asleep while driving ¾-ton pickup truck. Truck collided with parked UH-1. Driver had been on duty for 7 hours before the accident and had no assistant driver in the truck with him. Unit is now requiring an assistant driver for all roving guard details.

AH-1

■ Mechanic (inside conex which was used for storing aircraft parts) picked up arming/firing mechanism for AH-1G and pulled the handle. This activated firing mechanism, injuring mechanic's left hand. Maintenance officers should insure that like items are stored IAW TM 9-1300-206, par. 24i. ■ Preflight inspection revealed tail rotor blade bonding separation and strange mark on blade tip. Blade showed signs of high voltage strike. Bearing in tail rotor yoke was burned, and yoke showed arcing to the static stop. Inspection of aircraft showed above normal magnetization from tail rotor to transmission. Suspect aircraft was struck by lightning while tied down on parking ramp. ■ Commander was notified that tail rotor of AH-1G was rotating in the wind. Turning tail rotor caused damage to drive shaft and hanger bearing. The day before this incident, crew chief installed new hanger bearing and did not connect tail rotor drive shaft.

OH-58

■ Mechanic performing maintenance on OH-58 was standing in stooped position on roof of helicopter. After prolonged period in this position, his left leg became numb. While climbing down, he lost his balance and fell to the floor, injuring his back. □

CORRECTION

Reference FLIGHTFAX, Vol. 4, No. 48, Synopsis 40-76. Although referenced in tech manuals, MWO 55-1520-221-30/43 is not available to field units at this time.

INADVERTENT IMC...

Remember the five "Cs"

1. **CONTROL**—Establish positive aircraft control. Maintain straight and level flight by use of flight instruments.
2. **COORDINATION**—Establish beforehand that the pilot at the controls will concentrate only on his flight instruments. The copilot is to monitor the instruments and advise when visual conditions are again encountered.
3. **CLEARANCE**—Insure clearance above the highest obstacle; gain required altitude with a straight controlled climb.
4. **COURSE**—Select and turn to appropriate heading.
5. **CALL**—Make required radio calls for necessary assistance. Coordinated radio frequencies should be specified and posted in the aircraft.



DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

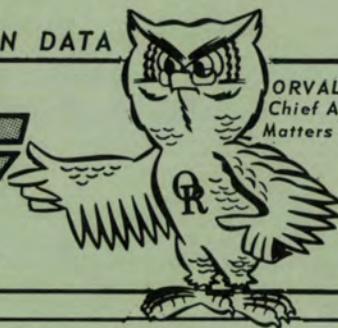
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

ARMY AIRCRAFT MISHAP PREVENTION DATA

FLIGHT FAX



A USAAAVS PUBLICATION

VOL. 5, NO. 20 ■ 9 MARCH 1977

mishaps for the period of 18-24 FEBRUARY 1977

AVIATION SAFETY REPORTING PROGRAM

FAA Advisory Circular 00-46A dated 31 Mar 1976 establishes the Aviation Safety Reporting Program for the National Aviation System. It applies to all aircraft operations, to include departure, en route, approach and landing procedures. It also covers air traffic control deficiencies, pilot/controller communications, airport facilities, and near midair collisions.

The program is managed by the National Aeronautics and Space Administration (NASA) which provides anonymity and protection from disciplinary action to individuals making reports. NASA also provides reports and studies pertaining to the program to the FAA for implementation.

Department of Defense participation in the program has been requested. All the military services have agreed to provide reports for the improvement of the National Aviation System. Army personnel can use the existing Operational Hazard Report (OHR) system, as referenced in AR 95-5, as a means of providing input to the Aviation Safety Reporting Program. Army Regulation 95-30 provides authority to exchange safety information with the FAA.

Army commanders and aviation safety officers are requested to forward copies of the OHRs that pertain to the subjects listed in the first paragraph to the Aviation Safety Reporting System, P.O. Box 189, Moffett Field, California 94035. Participation in this reporting program will enhance the safety of Army aircraft operations within the National Aviation System. The effectiveness of the program is reflected in the number of near midair collisions reported during

the period May 1975 to April 1976. Of 495 near midairs reported by individuals, 359 used the NASA system of anonymity and protection. It is interesting that military aircraft were involved in 178 cases.

■ ■ ■

WHAT'S YOUR ANSWER?

The basic weight of your CH-54A is 21,895 pounds with a moment/1000 of 7,309. You are scheduled for a troop movement of 44 troops and the crew chief in the universal military pod, which has a basic weight of 3,000 pounds and a moment/1000 of 1,035. The 45 troop seats have a combined weight of 290 pounds and moment of 100. Weights and locations of crewmembers, passengers, and miscellaneous equipment are:

	LOCATION	WEIGHT
Pilots	B-1	180 each
Flight engineer	B-2	180
Toolbox	B-4	100
Crew chief & 44 troops	P-79 thru P-93	180 each
Takeoff fuel	Fwd Tank	2,500
	Aft Tank	2,500
	Aux Tank	2,800

OAT at takeoff is +15° C. and pressure altitude is 2,000 feet. The landing site conditions are 8,000 feet pressure altitude and OAT of +3° C. Distance from takeoff to landing zone is 50 nautical miles. Winds are calm at all locations. *Can you complete your mission?*

Answer will be in next week's FLIGHTFAX.

U. S. ARMY AGENCY FOR AVIATION SAFETY
 FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
 Directorate for Aircraft Accident Analysis
 and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of
 ARs 95-5, 385-40, and 385-10 6385/6510
 For Assistance in Locating Proper Directorate 6385
 Aircraft Accident Analysis and Investigation 3913/4202
 Technical Research and Applications 4812/3493
 Plans, Operations, and Education 6410/6404
 Management Information System 2920/4200
 Publications and Graphics Division 4479
 Medical Division 6788
 Staff Duty Officer (1800-0700 hours) 6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-19

Type Aircraft: OH-58A
 Time: 1500
 Classification: Major
 Fatalities/Injuries: None

Estimated Materiel Damage Cost: \$43,273

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	31	491	-	491

Description of Accident: Aircraft was on approach to a sod helipad at approximately 50 feet agl and 50 knots airspeed. As collective pitch was applied to terminate the approach, the engine stopped. A hard landing resulted and main rotor blade flexed down, severing the tail boom.

Causes of Accident: Materiel—Engine failed on final approach. Crew—Pilot did not initiate proper emergency procedures to preclude hard landing.

Remarks: CCAD engine teardown analysis did not reveal any engine defects. However, there were indications the engine had flamed out before impact. Suspect malfunction of double check valve, NSN 2915-00-924-7789, P/N 6854622. This item is being replaced with the new check valve, NSN 4820-00-626-8108, P/N 6873599, TM 55-2840-231-23P.

Corrective Action: Approving authority directed more emphasis be placed on emergency procedures, and that aviators flying less than 100 hours per year and those with less than 1,000 hours in the OH-58 receive standardization rides on a semiannual basis.

■ ■ ■

TOTAL MISHAPS FOR 18-24 FEBRUARY 1977

	UH-1	AH-1	OH-58	CH-47	OH-6	U-21	OV-1	U-9	C-7A	TOTAL
Accidents	1	1								2
Incidents	1			2						3
Forced Landings	1	1					1			3
Precautionary Landings	17	3	6	4	1	1	1	1	2	36
TOTAL	20	5	6	6	1	1	2	1	2	44
Fatalities										0
Injuries										0
Estimated Costs	\$28,566	\$30,400		\$32,244						\$91,210

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Accident ■ During night training, aircraft made a normal approach to landing zone and terminated with a hard landing, resulting in minor damage.

Incident ■ During approach to confined area, main rotor blades struck small pine tree. Blades were replaced.

Forced Landing ■ Antitorque control was lost during hover. Autorotation was executed without further incident. Maintenance inspection revealed broken links in tail rotor silent chain.

Precautionary Landings ■ While aircraft was climbing through 10,000 feet right fuel boost pump light illuminated and circuit breaker popped. Caused by right fuel boost pump failure. ■ Master caution and left fuel boost pump light came on. Caused by left fuel boost pump failure. ■ Fire warning light came on. Maintenance found dirt/corrosion on one pin of fire detector cannon plug. ■ While on short final to landing zone, pilot overtorqued engine. ■ During combat assault, lead aircraft in a flight of five went IFR in gun smoke and dust. Aircraft settled to ground, landing on right skid. Aircraft was released for one-time flight to maintenance facility. Extent of damage not reported.

AH-1

Accident ■ After touchdown from IP-demonstrated autorotation, aircraft slid off lane. Power recovery was attempted, causing aircraft to spin clockwise. Cross tubes were sheared and aircraft came to rest on rocket pods.

Forced Landing ■ During test flight at approximately 1,000 feet agl, extreme lateral vibration developed. Maintenance inspection revealed main rotor blade tip weight came off in flight.

Precautionary Landings ■ Transmission oil bypass light came on. Maintenance inspection indicated a defective switch on transmission oil bypass light. ■ During flight at 600 feet agl, pilot initiated a sudden dive to avoid collision with two jet aircraft approaching from right. While leveling, sharp jolt was felt in cyclic control stick. Pilot climbed to altitude and attempted to duplicate the condition, without results. Flight was continued and approximately 2 minutes later during a climb and subsequent dive, to clear wires, pilot felt two sharp jolts in cyclic as collective was applied. Aircraft was then landed without further incident. EIR submitted on fore/aft servo to determine failure. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

CH-47

Incident ■ Following cargo operation, copilot was retracting winch cable (CE control was inoperative) for stowing. When switch was placed in off position, cable continued to retract, resulting in damage to litter retainer where the crew chief had secured the cable hook.

OH-6

Precautionary Landing ■ Transmission oil pressure light came on. Transmission oil filter was clogged with purple sludge. Suspect internal magnesium corrosion. Oil sample was submitted for analysis.

OH-58

Precautionary Landings ■ Crew smelled fumes in cockpit. Caused by overheated battery. ■ Transmission oil pressure light came on. Transmission pressure switch, NSN 5930-00-168-8019, failed. ■ During NOE flight, crew heard loud bang. Investigation by maintenance personnel could not duplicate problem and aircraft was released for flight. ■ Fuel filter caution light came on during approach. Caused by clogged fuel filter. □

DA FORM 2397 SERIES

The revised DA Form 2397 series are available for issue by the U.S. Army AG Publications Centers. The Baltimore Center notified the field of the availability of the revised forms and the rescission of the forms dated Sep 70 and Feb 72 in Section III of Baltimore Center Bulletin No. 3 dated 7 February 1977. A similar notification is forthcoming from the St. Louis Center. The release of the new forms negates the instructions in AR 95-5 to make pen-and-ink changes to the DA Form 2397 series.

U-21

Precautionary Landing ■ During cruise flight at 10,000 feet and 185 knots, fuel was seen siphoning from left wing nacelle tank filler cap. Postlanding inspection revealed fuel cap was improperly seated.

OV-1

Forced Landing ■ Aircraft was in IMC and moderate icing conditions when pilot felt a shudder and No. 2 engine stopped. Single-engine flight could not be maintained and emergency descent was made to VFR conditions. Aircraft was landed at nearby civilian airfield. Suspect engine failure was due to ice ingestion.

Precautionary Landing ■ During training flight, strong JP-4 fuel odor was detected in cockpit. The seal of air fuel vent valve (NSN 4820-00-324-8693) had deteriorated, allowing fuel to seep.

U-9

Precautionary Landing ■ During missed approach, pilot inadvertently increased power to 45' Hg. with 3000 propeller rpm. Power was not reduced by instructor pilot until approximately 2 minutes later. Both engines are being changed for overboost.

C-7

Precautionary Landings ■ During power adjustment from climb to cruise setting, No. 1 engine began running rough and backfiring. Pilot was unable to correct the condition. Engine was secured and landing made. Maintenance inspection revealed No. 12 cylinder intake valve seat failed. ■ At cruise flight, pilot attempted a radio call. All radios failed and strong odor of overheated electrical insulation was detected. Maintenance inspection revealed wires to No. 2 VHF power plug at radio console shorting to airframe and a burned resistor. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$2,736

AH-1

■ During hovering fire maneuver, pilot attempted to fire aircraft rockets without success. Copilot then tried from the rear seat and the two inboard M200A1 rocket pods jettisoned. No damage occurred to the aircraft, but 24 rockets were destroyed by the EOD. Maintenance inspection revealed faulty wiring caused the misfire and subsequent jettison. □

CLARIFICATION

FLIGHTFAX, Vol. 5, No. 16, dated 9 February 1977, carried a front page article entitled "ASOs on their Toes." NSN 6135-00-073-8939 is for the battery (distress marker light). It is not the NSN for the SDU-5E marker distress light (strobe) as might be construed.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



ORWRIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAAVS PUBLICATION

VOL. 5, NO. 21 ■ 16 MARCH 1977

mishaps for the period of 25 FEB-3 MAR 1977

WHAT'S YOUR ANSWER?

The basic weight of your CH-54A is 21,895 pounds with a moment/1000 of 7,309. You are scheduled for a troop movement of 44 troops and the crew chief in the universal military pod, which has a basic weight of 3,000 pounds and a moment/1000 of 1,035. The 45 troop seats have a combined weight of 290 pounds and moment of 100. Weights and locations of crewmembers, passengers, and miscellaneous equipment are:

	LOCATION	WEIGHT
Pilots	B-1	180 each
Flight engineer	B-2	180
Toolbox	B-4	100
Crew chief & 44 troops	P-79 thru P-93	180 each
Takeoff fuel	Fwd Tank	2,500
	Aft Tank	2,500
	Aux Tank	2,800

OAT at takeoff is +15° C. and pressure altitude is 2,000 feet. The landing site conditions are 8,000 feet pressure altitude and OAT of +3° C. Distance from takeoff to landing zone is 50 nautical miles. Winds are calm at all locations. *Can you complete your mission?*

ANSWER

STEP #1-Determine takeoff conditions.

	Weight	Moment/1000
Basic aircraft weight and moment	21,895	7309.0
Oil	15	4.0
Crew	540	57.0
Toolbox	100	12.7
Fuel (1,200 gal)	7,800	2993.0
Pod.	3,000	1035.0
Troop seats	290	100.0
45 personnel	8,100	2893.0
Pod correction		9.1*
Takeoff condition	41,740	14,412.8
Takeoff CG		345.29

*Weight of pod, seats, and personnel multiplied by .8, divided by 1,000. Ref. par. 12-6b, TM 55-1520-217-10-1
Continued on page 2

<p>U. S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, ALABAMA 36362</p> <p>Prepared from information compiled by the Directorate for Aircraft Accident Analysis and Investigation</p> <p>Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.</p>	<p>COMMERCIAL: 255-XXXX AUTOVON: 558-XXXX</p> <p>Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10 6385/6510</p> <p>For Assistance in Locating Proper Directorate 6385</p> <p>Aircraft Accident Analysis and Investigation 3913/4202</p> <p>Technical Research and Applications 4812/3493</p> <p>Plans, Operations, and Education 6410/6404</p> <p>Management Information System 2920/4200</p> <p>Publications and Graphics Division 4479</p> <p>Medical Division 6788</p> <p>Staff Duty Officer (1800-0700 hours) 6510</p>
---	--

Continued from front page

STEP #2—Determine if takeoff CG is within the pod aircraft combination recommended CG limits, par. 12-16c.
Yes. Limits are 42,000 pounds gross weight, fwd 328, aft 346.

STEP #3—Determine if you can hover under this condition.
Yes. Figure 14-12.

STEP #4—Determine landing CG conditions.

	Airspeed	Time	Fuel	Distance	
Climb data	63*	9.0	688	10.0	Figure 14-13
Cruise data	67	35.5	2,112	40.0	Figure 14-15
Total		44.5	2,800	50.0	

*Mean climb airspeed was determined from Figure 14-13.

	Weight	Moment/1000
Takeoff condition	41,740	14,412.8
Less fuel.	2,800	1,292.0
Landing condition	38,940	13,120.8
Landing CG	336.94	
Landing CG limits—fwd 328, aft 346		

Will the aircraft hover at this gross weight, CG condition? Yes. Figure 14-12.

REFERENCES: TM 55-1520-217-10-1, dated 29 Mar 74 w/changes
Figure 7-4—Center of Gravity Limits
Figure 14-12—Maximum Gross Weight to Hover
Figure 14-13—Climb Chart for Normal Power
Figure 14-15—Range Dual Engine

AVIATION LIFE SUPPORT EQUIPMENT

LIFE PRESERVERS FOR AIRCREWMEN

If you find yourself in the water someday, you should be wearing the LPU-10/P life preserver (NSN 4220-00-850-8655). However, there is a problem: there are not any of those items in the supply system. The LPU-10/P will not be available for approximately 18 months.

The parachutist B-7 life preserver (NSN 4220-00-657-2197) can be substituted until the LPU-10/P is available. The technical manual for the B-7 life preserver is TM 5-4220-201-12, December 1970.

SRU-21/P SURVIVAL VEST, DISTRESS SIGNAL FLARES, NSN 1370-00-921-6172

According to page 2-1, par. 2-2b(2), of TM 55-1680-317-23&P, signal flares have a 2-year service life, which is computed from the date stamped on the flares. Do not dispose of your flares. An extended service life or lot test criteria is now being determined and the above TM will be corrected accordingly. If you have questions concerning your flares, you may write ARMCOM, ATTN: DRSAR-QAS, Rock Island, IL 61201, or call ARMCOM, Mr. George Mehan, AUTOVON 793-4021, extension 219/225.

CORRECTION TO STACOM 12

Reference the question "What publications are required to be on board an aircraft for flight?" Paragraph d(4) of the answer should read: Current DA Forms 2407 (Maintenance Request), 2408 Equipment Log Assembly (Records), 2408-4 (Weapon Record Data), 2408-12 Army Aviator's Flight Record, 2408-13 (Aircraft Inspection and Maintenance Record), 2408-14 (Uncorrected Fault Record) and 2408-18 (Equipment Inspection List).

FY 71 ACCIDENT SYNOPSES

SYNOPSIS 7T-20

Type Aircraft: OH-58

Time: 1440

Classification: Major

Fatalities/Injuries: None

Estimated Materiel Damage Cost: \$36,656

Mission: Support

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	33	2,119	-	2,119

Description of Accident: Aircraft was making descending turn to avoid two flights of UH-1s when observer detected and called out "wires." Pilot flared aircraft and applied collective, but underside of skids hit the wires, sliding over them. The rpm audio and light came on and the pilot reduced collective, regaining rpm. Power was applied and again the audio and lights came on. Pilot entered autorotation. During touchdown aircraft rocked forward, then settled hard, spreading rear cross tube.

Cause of Accident: Suspect fuel contamination, resulting in partial loss of engine power.

Remarks: The reviewing official nonconcurred with the cause factor of fuel contamination. The DA Form 476 (Turbine Fuel Test Report) indicated the presence of fuel contaminants that would affect aircraft fuel controls. However, an engine teardown analysis did not reveal any discrepancies that would preclude normal engine operations.

Corrective Action: The approving authority has taken action to improve POL analysis in future exercises.

■ ■ ■

TOTAL MISHAPS FOR 25 FEBRUARY-3 MARCH 1977

	UH-1	AH-1	OH-58	TH-55	CH-47	U-21	U-8	C-12	U-9	OV-1	TOTAL
Accidents	1				1						2
Incidents	4		1		2	1			1		9
Forced Landings				1							1
Prec. Landings	19	4	7		8	2	2	1		1	44
TOTAL	24	4	8	1	11	3	2	1	1	1	56
Fatalities					4						4
Injuries	3										3
Estimated Costs	\$623,660		\$2,200		\$3,325,625	\$800			\$2,500		\$3,954,785

WHAT IS COMPLACENCY?

- Cockpit procedures overlooked
- Operational discipline lacking
- Mission assignment beyond crew/aircraft capability
- Preflight without using the checklist
- Laziness
- Aviators not maintaining proficiency in instrument flying
- Can-do syndrome overrides reason
- Environmental hazards ignored
- No weight and balance computation
- Contact flight into marginal weather conditions
- You are surviving on luck

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Accident ■ During NOE flight, main rotor blade struck high bank of ravine and aircraft crashed, causing major damage. Accident is under investigation.

Incidents ■ During termination of straight-in autorotation, pilot initiated collective pitch application at 15 feet agl. IP was late with corrective action and aircraft landed hard. This was an annual standardization checkride with 5 persons aboard the aircraft, an apparent violation of AR 95-1. ■ During troop lift, aircraft was terminating approach to touchdown when right skid slipped into depression. Abrupt left cyclic was applied, causing mast bumping. ■ After completion of night troop lift, postflight inspection revealed that open tail rotor drive shaft cover had caused damage to four drive shaft clamps.

Precautionary Landings ■ Feedback was felt through controls and hydraulic caution panel light came on. Maintenance inspection revealed collective servo irreversible valve O-ring had failed. WELL DONE to CW2 Mezera, 3rd Avn Det, APO SF 96271. ■ Transmission oil pressure fluctuated from 0 to 100 psi. Maintenance replaced transmission oil pressure gauge. ■ Crew heard several loud reports from engine compartment and aircraft yawed left, then right. Power was reduced and aircraft landed. Engine is being inspected for compressor stall damage. ■ Aircraft was departing traffic pattern when abnormal vertical vibration was felt for approximately 5 seconds. Pilot continued flight and second vibration occurred. Aircraft was landed. Collective sleeve bearing was installed backwards, allowing it to separate and contact mast. ■ During takeoff from landing zone, visual reference was lost due to blowing dust. Aircraft was overtorqued (52 psi) while climbing out of dust.

AH-1

Precautionary Landings ■ Transmission oil pressure dropped to zero. Caused by failure of internal transmission oil filter gasket. ■ During NOE approach, master caution, transmission bypass, and transmission oil pressure lights came on. Caused by internal transmission oil filter gasket failure. ■ During runup with aft fuel boost pump circuit breaker pulled, forward fuel boost caution light came on and fuel pressure went to zero. Maintenance replaced forward fuel boost pump circuit breaker.

AVSCOM MESSAGES RECEIVED

- 022050Z Mar 77—subject: Maintenance Advisory Message on Battery Water, NSN 6810-00-297-9540 (GEN 77-6)
- 031630Z Mar 77—subject: Maintenance Advisory Message Concerning Main Rotor Retention Strap Assemblies Utilized on UH-1D/H Series Helicopter (UH-1-77-6)

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Incident ■ During cruise flight at 100 knots and 2,000 feet msl, pilot heard loud explosion, followed by gusty winds in the cockpit. He initiated a power-on autorotation, and 5 seconds later noticed copilot's door was missing. Landing was completed. Loss of door was caused by a broken safety which was not detected on preflight inspection.

Precautionary Landings ■ Master caution and engine chip detector lights came on. Oil analysis showed high metal content. Engine was removed for analysis. ■ Pilot heard banging sound on takeoff. Main rotor tiedown rope was left hanging outside of right rear passenger door. Aircraft was not damaged. ■ Transmission oil hot warning light came on. Inspection revealed leaves and grass in oil cooler ducting. Debris was removed and aircraft ground run, test flown, and released. ■ Engine and rotor rpm began to decay during level flight. Pilot entered autorotation and applied throttle to full open position, resulting in 99 percent N2 rpm and a stabilized 200 fpm rate of descent. During final approach, as collective was applied, rpm decayed further, resulting in hovering autorotation. Maintenance inspection revealed failure of power turbine governor.

CH-47

Accident ■ During service mission, a flight of three aircraft was in a loose trail formation when deteriorating weather conditions caused loss of contact between aircraft. Aircraft No. 2 was later found to have crashed and burned due to wire strike. Four fatalities. Accident is being investigated.

Incident ■ After landing, aircraft was taxiing to POL point with assistance of a ground guide. During taxi, main rotor blade tip caps struck metal light pole, causing blade weight to separate, striking a parked civilian aircraft. (USAR)

Precautionary Landing ■ Transmission chip detector light came on. Maintenance replaced aft transmission due to excessive wear. □

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3901

U-21

Incident ■ (A series) During descent for landing, No. 2 engine cowling pulled loose on right side, causing punctures around nacelle fuel filler cap and damage to cowling assembly. Maintenance inspected cowling fasteners and could not find a deficiency.

Precautionary Landings ■ (A series) Right generator failed during climbout. Maintenance inspection found blown fuse in generator control (heat sink) unit. ■ Unsafe condition was indicated after gear was lowered for landing. Gear was recycled and unsafe condition still existed. Manual gear extension system was used and landing was uneventful. Landing gear limit down-lock switch failed.

U-8

Precautionary Landings ■ (G series) Gear would not retract after takeoff. Pilot elected to continue 30-minute flight to another airfield, made a tower flyby, and landed without difficulty. Right landing gear squat switch was out of adjustment. ■ (F series) During climbout, No. 1 engine cylinder head temperature began rising. As it exceeded limits power was reduced. Temperature then stabilized at 245° and landing was made at reduced power (zero thrust). Investigation revealed fuel was contaminated. Aircraft had been refueled from tanker carrying both JP-4 and AVGAS in separate compartments. The partition separating the two compartments had cracked, allowing fuel to mix.

C-12

Precautionary Landing ■ Landing gear failed to fully retract after takeoff. When recycling did not produce a gear-up indication, gear was lowered and landing was completed. Landing gear up limit switch was out of adjustment.

U-9

Incident ■ During practice touch-and-go landings, copilot initiated a takeoff and called for gear up at

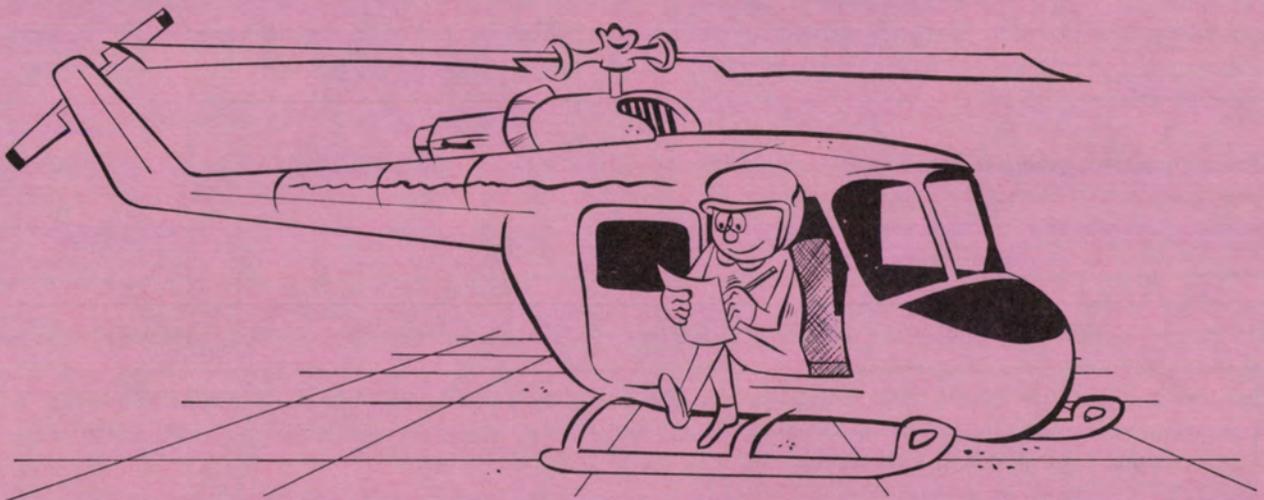
10-15 feet. Aircraft began settling as gear raised, striking runway before copilot could apply power to gain altitude. Aircraft continued in traffic pattern and landed. Inspection revealed skin damage from station 118 to station 150. Two formers were pushed up and marker beacon antenna was sheared off. (USAR)

OV-1

Precautionary Landing ■ (C series) No. 2 engine chip detector light came on. After approximately 2 minutes, No. 2 egt dropped to 100° and No. 2 engine oil pressure began fluctuating. Pilot secured engine and landed. Maintenance inspection found fuzz on chip detector, dead probe on ignition harness assembly, and short in resistor thermocouple (NSN 5905-00-059-9451). □

WHEN WAS THE LAST TIME . . .

You used your aircraft's performance data charts in planning your flight?



DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

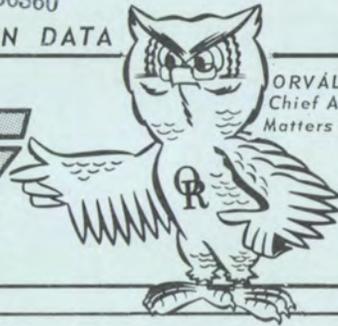
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 22 ■ 23 MARCH 1977

mishaps for the period of 4-10 MARCH 1977

PREPARING AIRCRAFT FOR NIGHT OPERATIONS

Like oxygen and grease, light and night vision goggles just don't belong together. The temporary blindness that can result from a sudden mixture of the two can cause accidents and injuries, particularly during low level training missions. Consequently, a series of training circulars on preparing each type aircraft for night flight have been or are being published and distributed to aviation units everywhere. These field expedient measures are intended to aid units in conducting realistic night training by controlling the level of light luminance from the aircraft. Following are some precautions which should be taken when using these procedures:

1. Be careful not to use too many layers of tape over the master caution, low rpm, and fire warning lights. As MIL-STD-1472B and MIL-STD-411D point out, certain brightness levels and brightness contrasts are essential for recognition.
2. Base the extent that navigation/position lights are to be masked on actual need. Masking these lights with tape can prove extremely hazardous and is not authorized during operations in airspace off military reservations.
3. If modified aircraft are to be used for daylight operations, the "field expedients" must be removed. Good housekeeping practices should always be followed during their removal, and care should be exercised to avoid using any cleaning compound that might damage caution and warning lights or distort labels and decals.

Finally, keep in mind missions of this nature impose exceptional demands on both crews and equipment. Since human errors and mechanical failures during low level night training missions can readily produce disastrous results, it becomes doubly important to make certain crews are mentally and physically ready, and aircraft are properly prepared.



C-12A CRACKED OR DELAMINATED WINDSHIELDS

Five instances of cracked or delaminated windshields in C-12A aircraft have been reported, but only one EIR has been submitted. USAAVS is interested in this problem, but we need more information. If your unit has had a cracked or delaminated C-12A windshield, we need to know aircraft hours at the time of the occurrence, whether pilot or copilot windshield, flight level, outside air temperature, true airspeed, weather conditions, if windshield cracked or delaminated, windshield serial number, if windshield heat was in use, and equipment improvement report (EIR) number. Correspondence should be addressed to:

Commander
U.S. Army Agency for Aviation Safety
ATTN: IGAR-AE-F
Fort Rucker, AL 36362

U. S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 77-21

Type Aircraft: OH-58A

Time: 1750 Classification: Major (total)

Fatalities/Injuries: No Fatalities, 4 Injuries

Estimated Materiel Damage Cost: \$151,565

Mission: Service-visual recon of auxiliary field

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	29	2,337	-	2,337
CP	CW2	23	1,077	-	1,077

Description of Accident: During approach to a closed Air Force airfield at approximately 40 feet agl, copilot saw a wire across the runway. To avoid the wire, pilot attempted to fly under it, but main rotor contacted wire and aircraft crashed.

Causes of Accident: Command-Ground and flight reconnaissance of the airfield had been conducted earlier the same day and failed to detect wire hazard (inadequate survey IAW AR 95-1, par. 3-14). Airfield was marked as closed but was *presumably* open for helicopter operations during field exercise. Other-Evening shadows made wires difficult to see.

Corrective Actions: It was recommended that: (1) MACOM assign specific responsibility for physically surveying airfields within the operation area prior to all major exercises; (2) all airfields considered unsafe be identified in the survey and closed to problem play; and (3) a copy of the survey be provided to all participants including controlling personnel.

■ ■ ■

TOTAL MISHAPS FOR 4-10 MARCH 1977

	UH-1	AH-1	OH-58	TH-55	CH-54	CH-47	T-42	U-8	U-21	OV-1	U-3	TOTAL
Accidents			1									1
Incidents	5	1	3	1								10
Forced Landings	3					1						4
Precautionary Landings	21		7		1	6	1	3	1	1	1	42
Human Factor Mishaps									1			1
TOTAL	29	1	11	1	1	7	1	3	2	1	1	58
Fatalities												0
Injuries												0
Estimated Costs	\$10,529	\$1,520	\$14,208	\$1,901								\$28,158

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incidents ■ During troop pickup, a free world soldier allowed radio whip antenna to strike main rotor blade. Blade was replaced. ■ On approach to large cement heliport with minimum lighting, pilot misjudged height and closure rate, resulting in hard landing. ■ During postflight inspection of aircraft, FM antenna was found to be severed 3 inches above its base. Antenna had struck both tail rotor blades. Gusting winds and icing conditions may have caused antenna to flex into tail rotor. Ice accumulation was noted on the aircraft while in flight. ■ Crew heard loud bang and immediate landing was made. Inspection revealed right overhead (greenhouse) window was cracked. ■ Aircraft was in cruise flight when pilot's overhead (greenhouse) window popped out, striking a main rotor blade one foot outboard of blade grip. Blade was not damaged.

Forced Landings ■ Pilot was performing 180° hovering tum when complete loss of tail rotor control occurred. Hovering autorotation was made. Maintenance inspection revealed complete separation of tail rotor control chain. ■ Crew heard muffled explosion and left yaw occurred, followed by engine failure. Autorotation was completed with no further damage. Caused by compressor failure. ■ During cruise flight, rpm decreased to 6000 for 2 seconds, then steadily decreased until engine stopped. Suspect fuel control malfunction.

Precautionary Landings ■ Tail rotor control became erratic. Maintenance replaced tail rotor control servo. ■ While descending to fly NOE along a tank trail and pipeline cut, aircraft struck strand of commo wire strung between two trees on either side of the cut. Aircraft was inspected and released for flight. ■ Master caution and engine chip detector lights came on. Engine chip detector wire was loose at engine. ■ During training flight, transmission oil pressure and caution light came on. Maintenance replaced transmission oil pressure switch. ■ During takeoff at approximately 10 to 15 feet, crew heard grinding noise. Hydraulic pressure light came on and pressure was lost. Inspection revealed internal failure of collective irreversible valve.

AH-1

Incident ■ Aircraft was hovering during NOE training when tail rotor blade struck tree, damaging blade.

Precautionary Landings ■ Main rotor blade struck tree during NOE flight. Blade was removed, inspected, and found to be within tolerance. ■ While performing HIT check, egt exceeded 700° and crew smelled burning odor. Engine was shut down and maintenance inspection revealed safety wire hanging from engine inlet guide vanes. "FOD." ■ No. 2 hydraulic system panel light and master caution light came on. Caused by failure of hydraulic pressure switch. □

AVSCOM MESSAGES RECEIVED

- 082100Z Mar 77—Subject: Clarification of UH-1D and CH-47B/C Phased Maintenance Checklists (PMCs) (UH-1-77-7/CH-47-77-2)
- 091447Z Mar 77—Subject: Maintenance Advisory Message on Aviation Life Support Equipment: Extension of Service Life for Army Aircraft Personnel Restraint Equipment (GEN-77-7)
- 092100Z Mar 77—Subject: Maintenance Advisory Message on Tail Rotor Control Assembly Publication Change on UH-1/AH-1 Helicopters (UH-1-77-8 and AH-1-77-6)

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Accident ■ IP was demonstrating standard autorotation to sod runway. After touchdown aircraft had a ground run of about one and one-half helicopter lengths. During this time, aircraft started bouncing on the ground. Postflight inspection revealed skin was wrinkled on bottom side of tail boom.

Incidents ■ During tactical exercise, pilot was making shallow approach to touchdown point on a hill when main rotor blades struck and severed two strands of wire. Poor visibility due to light rain and a wet windshield were reported. An IP aboard the aircraft had used "the same approach" approximately 1 hour earlier. Main rotor blades were damaged. ■ Aircraft struck tree limbs during NOE flight. Left chin bubble was damaged. ■ During hover, technical observer in copilot's seat shifted position and inadvertently pushed down on copilot's collective pitch. Aircraft struck the ground, spreading cross tubes.

Precautionary Landings ■ Fuel filter caution light came on. Landing was made, fuel filter cleaned, and aircraft released for flight. ■ On termination of approach, at 5 feet, controls stiffened and master caution and hydraulics caution lights came on. IP took controls and landed. During daily inspection crew chief had detected seepage from fitting at right servo actuator return line and made entry on DA Form 2408-13, without tightening the fitting. It subsequently came loose in flight, causing hydraulic failure. ■ Transmission oil temperature light came on. Caused by clogged transmission oil cooler lines, NSN 4720-00-134-4364.

TH-55

Incident ■ Aircraft was turning base in traffic pattern when engine started running rough and rpm could not be maintained. SP entered autorotation and landed in the only open area available—a freshly plowed field. Aircraft landed tail low, damaging tail rotor blades. Inspection revealed fuel line break at fuel flow divider to No. 2 cylinder.

CH-54

Precautionary Landing ■ Transmission chip detector light came on. Inspection revealed excessive accumulation of metal particles on main transmission chip detector plug. Caused by internal failure of main transmission.

CH-47

Forced Landing ■ During straight and level flight, No. 2 engine stopped due to fuel starvation. Caused by improper installation of main fuel quick disconnect at engine disconnect panel.

Precautionary Landings ■ During recovery from a demonstrated emergency descent, No. 1 engine N1 would not go above 65 percent. Both a.c. and d.c. engine trim systems were tried to increase the engine rpm to operating power, without effect. No. 1 engine condition lever was moved to ground position and then returned to flight position. Rotor rpm climbed to 258 before engine could be shut down. Caused by failure of No. 1 engine fuel control. ■ During pickup to a hover, No. 2 torque needle increased to 800 pounds. No. 1 torque needle stabilized at 500 pounds. Thrust was decreased and No. 2 torque needle dropped 300 pounds below No. 1 torque. Caused by failure of No. 2 engine torque metering system. *This is the second failure of this component during this reporting period.* □

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3901

T-42

Precautionary Landing ■ After takeoff, nose gear indicator did not show gear retraction. Gear was recycled but gear indicator would not move. Manual extension was accomplished, flyby was made, and landing completed. Nose gear position indicator link came off, causing position indicator not to move.

U-8

Precautionary Landings ■ Shortly after takeoff, No. 2 engine chip detector light came on and cylinder head temperature rose to 220°. Aircraft was landed and engine changed due to excessive metal in oil. ■ Immediately after takeoff, No. 1 engine cylinder head temperature rose above red line and engine began running rough and emitting black smoke. Power was reduced and roughness decreased. Postlanding inspection revealed fuel contamination. (Aircraft had been refueled by the same tanker involved in a mishap reported in last week's FLIGHTFAX. The tanker had inner wall failure between compartments, allowing JP-4 and AVGAS to mix.) ■ Aircraft was at cruise flight in IMC when airspeed dropped to zero. All other instruments indicated normal. Crew reported situation to ATC radar who monitored airspeed until aircraft broke out of weather and landed. Inoperative pitot heater caused ice buildup.

U-21

Human Factor Mishap ■ On tactical training mission, forward technical observer complained of nausea, then began to feel better. After another hour and a half, nausea returned and flight was terminated due to turbulence. Flight surgeon diagnosed technical observer's problem as inner ear infection.

Precautionary Landing ■ While on final GCA, pilot placed flap switch to approach position and aircraft yawed left. Copilot noticed right inboard flap remained in "up" position. Attempts to correct situation were unsuccessful and landing was made using trim and differential power. Flexible shaft assembly had sheared.

OV-1

Precautionary Landing ■ No. 2 hydraulic pressure gauge dropped to zero. Failure was confirmed by turning on windshield wipers. Landing gear was blown down and landing completed. Pressure relief return line from priority valve to system relief valve had a loose "B" nut, allowing a leak.

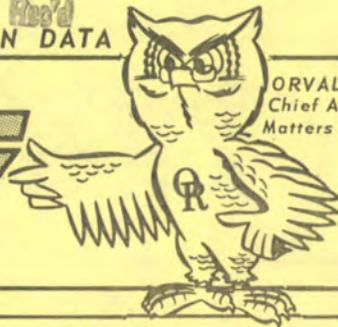
DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS

APR 11 1977



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAVSCOM PUBLICATION

VOL. 5, NO. 23 ■ 30 MARCH 1977

mishaps for the period of 11-17 MARCH 1977

SUBMISSION OF EIRs ON AERONAUTICAL EQUIPMENT

Reference par. 3-16, TM 38-750. To expedite Equipment Improvement Recommendation (EIR) receipt and processing, AVSCOM has requested that the following procedures be complied with on all EIRs normally submitted to AVSCOM.

■ Emergency EIRs will initially be submitted by electrical message or telephone in accordance with the above reference. A follow-up DA Form 2407 marked "EMERGENCY" will be submitted by mail within five

working days and will specify the same activity, EIR control number, and date assigned to the electrical or telephone transmission being confirmed.

Urgent and routine EIRs mailed to AVSCOM.

■ Electrical message address: CDR, AVSCOM //DRSAV-FEM//

■ Telephone: Duty hours—AUTOVON 698-5467/8/9/0, Commercial (314) 268-5467/8/9/0. Nonduty hours: AUTOVON 698-2266/7, Commercial (314) 268-2266/7.

■ Mailing address:

Commander
U.S. Army Aviation Systems Command
ATTN: DRSAV-FEM
P.O. Box 209
St. Louis, Missouri 63166

For additional information regarding the above, contact Mr. Paul L. Sutton, AVSCOM, AUTOVON 698-5467.

CCAD TEARDOWN & ANALYSIS— ALL CLASSES OF MISHAPS

Par. 10-5, AR 95-5, gives guidelines on what, when, and how to submit components for teardown and analysis. However, there seems to exist a misunderstanding that this procedure applies only to accidents. While par. 10-1, chapter 10, AR 95-5, gives techniques for the investigation of major accidents, it also states that these techniques may also apply or serve as a guide in the investigation of other mishaps of lesser complexity, i.e., incidents, forced and precautionary landings. Since ASOs are the prime "investigation board" with respect to these lesser mishaps, par. 10-5, AR 95-5, applies to them. So, if you are an ASO and in doubt about a component, submit it for teardown and analysis and let the pros at CCAD help you do your job better.

AVIATION LIFE SUPPORT EQUIPMENT

ALSO PAMPHLET

A pamphlet of aviation life support equipment (ALSE) has been published by the Aviation Life Support Systems Management Office. This pamphlet has consolidated all ALSE used by the Army. The pamphlet contains approximately 1,800 items and is listed in both noun and NSN sequence. It also tells you where to obtain ALSE and lists publications which will be useful to you.

A limited quantity of these pamphlets is available and will be sent to aviation units. If you do not receive a copy, you may obtain one by writing to USAAVSCOM, ATTN: DRSAV-WL, P.O. Box 209, St. Louis, MO 63166, or by calling AUTOVON 698-3241 or 3291.

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate Aircraft Accident Analysis and Investigation	6385
Technical Research and Applications	3913/4202
Plans, Operations, and Education	4812/3493
Management Information System	6410/6404
Publications and Graphics Division	2920/4200
Medical Division	4479
Staff Duty Officer (1800-0700 hours)	6788
	6510

FY 77 ACCIDENT SYNOPSES

SYNOPSIS 7T-22

Type Aircraft: UH-1H

Time: 2025 Classification: Major (total)

Fatalities/Injuries: No Fatalities, 3 Injuries

Estimated Materiel Damage Cost: \$618,055

Mission: Training (night formation)

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	31	572	308	880
CP	1LT	24	342	-	342

Description of Accident: During night training flight at 1,000 feet above the ocean, No. 3 aircraft in a flight of three had an engine failure. Pilot entered autorotation and ditched the aircraft. The three crewmembers swam to shore and were picked up by another aircraft.

Causes of Accident: Materiel—Internal engine failure (fatigue failure of fourth-stage compressor blade retaining pin).

Corrective Action: The fourth-stage compressor blade retaining pins are being replaced with improved blade retaining pins at time of engine overhaul.

■ ■ ■

TOTAL MISHAPS FOR 11-17 MARCH 1977

	UH-1	AH-1	OH-58	CH-47	U-21	T-42	U-8	OV-1	U-3	TOTAL
Accidents	1	1	1							3
Incidents		1	2	1						4
Forced Landings	1		3	1						5
Prec. Landings	26	5	6	3	1	1	4	2	1	49
TOTAL	28	7	12	5	1	1	4	2	1	61
Fatalities										0
Injuries		2								2
Estimated Costs	\$59,000	\$139,400	\$11,523	\$3,603						\$213,526

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Accident ■ Power cylinder check was being performed as part of a training maintenance test flight. During hover, pilot experienced control lockup and lost control. Tail rotor struck the ground and aircraft rolled and crashed. Accident is under investigation.

Forced Landing ■ Aircraft was being test flown after engine change. On takeoff at approximately 75 feet, engine quit and pilot successfully autorotated. Cause of engine failure unknown.

Precautionary Landings ■ During cruise flight N1 fluctuated between 0 and 100 percent. Cannon plug was overtorqued on N1 gauge, breaking the seal at the cannon plug receptacle and causing wires to short out. ■ Transmission oil pressure gauge fluctuated and dropped to zero. Maintenance replaced transmission oil pressure transmitter. ■ Master caution and hydraulic segment lights came on. Maintenance inspection revealed hydraulic pressure switch failure. ■ Rpm warning light and audio came on. Pilot noted N1 was 89 percent and made power-on landing. Maintenance inspection revealed N2 tachometer generator failure.

AH-1

Accident ■ During hover check sequence at 25 feet, aircraft started uncontrollable spin and crashed, causing extensive damage. Accident is under investigation.

Incident ■ Aircraft landed hard during practice autorotation, separating skids. Pilot recovered to hover, and proceeded to land on sandbags. Shutdown was made without further incident.

Precautionary Landings ■ During cruise, pilot experienced SCAS feedback in cyclic controls, accompanied by odor of smoke. Maintenance inspection revealed failure of sensor amplifier unit, NSN 5126-00-177-3370. ■ Tail rotor chip detector light came on. Maintenance replaced tail rotor gearbox. ■ DC generator failed during takeoff. Maintenance replaced starter generator. ■ While hovering, IP noted drop in transmission oil pressure and master caution and transmission oil bypass lights came on. Maintenance inspection revealed cracked valve assembly, NSN 1560-00-076-9878.

AVSCOM MESSAGES RECEIVED

- 152200Z Mar 77—subject: Maintenance Advisory Message, Clarification of Tail Rotor Assembly Publication Change on UH-1/AH-1 Helicopters
- 171945Z Mar 77—subject: Maintenance Advisory Message, Amendment to Message 152200Z Mar 77 Pertaining to Clarification of Tail Rotor Assembly Publication Change on UH-1/AH-1 Helicopters (UH-1-77-9 and AH-1-77-7). NOTE: Subject message is amended to include AVSCOM control numbers UH-1-77-9 and AH-1-77-7 that were omitted.
- 162000Z Mar 77—subject: Maintenance Advisory Message on Battery Water, NSN 6810-00-297-9540 (GEN 77-8)
- 172150Z Mar 77—subject: Maintenance Advisory Message Concerning Chafing of the Elevator Control Rigid Connecting Link on AH-1S Model Aircraft (AH-1-77-8)

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

UH-58

Accident ■ While repositioning in confined area, pilot, in an attempt to avoid obstacles on his right, allowed aircraft to strike a tree on the left, damaging both main rotor blades.

Incidents ■ During approach to a field adjacent to a road, right side of aircraft hit ¼-inch cable approximately 100-150 feet agl. Landing was completed without further damage. ■ During cruise flight, pilot thought he felt a slight bump in aircraft controls. All instruments were noted to be in the normal range and flight was continued. Postflight inspection revealed damage to right horizontal stabilizer. Caused by buzzard strike.

Forced Landings ■ Engine surged to 114 percent N2. Attempt to reduce throttle had little effect and engine again surged above 114 percent N2. Pilot successfully autorotated. Suspect high side governor failure. ■ While aircraft was hovering to refueling point, engine failed. Pilot successfully autorotated. Suspect compressor failure. ■ During cruise flight, engine-out audio and low rpm light came on. N1 went to 62 percent. Autorotation was successfully completed to an open field. Maintenance was unable to duplicate malfunction. Double-check valve was cleaned and aircraft released for flight.

Precautionary Landing ■ During cruise flight at 700 feet agl, engine oil bypass light came on and aircraft was immediately landed. Engine oil supply line ruptured at fitting.

CH-47

Incident ■ An observer aircraft noticed that Nos. 1, 3, and 5 tunnel covers were open on an aircraft performing NOE quick stop maneuvers. In addition, Nos. 2 and 4 tunnel covers were missing. The pilot of the damaged aircraft was notified of its condition and he returned to the airfield where the open covers were secured before shutdown. No. 3 tunnel cover was found to be damaged beyond repair. Aircraft cowlings were reported as being checked before takeoff. However, the fasteners were in working order after the incident. □

U-21

Precautionary Landing ■ (A series) Gear failed to retract fully after takeoff. Recycling had no effect and emergency procedures were followed to extend gear for landing. Spur drive gear was stripped.

T-42

Precautionary Landing ■ After gear was lowered for landing, nose gear indicator did not appear down in window. Gear was confirmed down and landing was uneventful. Nut on nose gear linkage came off, allowing spring clip on visual indicator to fall off.

U-8

Precautionary Landings ■ Shortly after takeoff on test flight for TBO engine change, No. 2 engine failed. Engine was secured and pilot continued in normal traffic pattern for landing. The engine failed due to fuel exhaustion. Crew did not check fuel tanks before takeoff. Aircraft was serviced and flight continued. ASO was not informed of the mishap until approximately one month later. ■ No. 2 engine oil pressure dropped to 30 psi during training flight. Engine was secured and single-engine landing completed. Engine was changed due to internal failure. ■ During simulated single-engine approach with No. 1 engine at zero thrust, No. 2 chip detector light came on. Both engines were reset for operating power and landing was completed. Maintenance found steel chips on magnetic plug. No. 2 engine is being changed.

OV-1

Precautionary Landings ■ During climb through 7,000 feet, pressure on both hydraulic systems dropped to zero. Emergency was declared and successful ILS approach was completed. Main pressure line from No. 1 engine hydraulic pump vibrated loose and allowed leak. ■ Right main gear indicated unsafe during prelanding check. Visual check confirmed gear was down but not locked. After several recycling attempts and emergency gear extension, gear remained unlocked. Pilot attempted to bump it into locked position with two touch-and-go landings but was unsuccessful. He then proceeded to foamed runway and landed on left gear allowing right gear to ease onto runway. After approximately 2,000 feet of ground roll, right gear locked. Landing gear safety locks were installed before continuing to taxi. Landing gear hydraulic actuator failed internally. WELL DONE to CW4 Preston Obray, 704th MIDAS. □

MAINTENANCE MISHAPS

SFC John M. Terrell ■ 558-3901

U-8

Precautionary Landing ■ Technical observer noticed oil seeping from No. 2 engine cowling during test flight. O-ring on oil cooler thermostat was torn. Oil cooler had been removed and flushed during PE by maintenance.

U-3

Precautionary Landing ■ During takeoff, nose gear door did not close after gear retraction. Landing gear was lowered and aircraft landed. Nose landing gear door actuator rod was improperly connected by avionics personnel. Proper entries were not made on the DA Form 2408-13 for removal or reconnection of actuator rods. No discrepancies were noticed during preflight. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

2 Mishaps, 0 Fatalities, 0 Injuries, Estimated Costs: \$3,103

UH-1

■ Mechanic was climbing down from the roof of a helicopter when his foot slipped and went through pilot's overhead window. Fluid spillage and the mechanic moving in a hazardous manner were listed as cause factors. ■ A mule operator was attempting to back into cargo compartment of UH-1 to load a piece of equipment. With the mule partially in aircraft, the operator accidentally suppressed gas pedal instead of brake, causing mule to strike and damage right front inner bulkhead of aircraft. □



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FORT RUCKER, AL 36362
STACOM 13 ■ 30 MARCH 1977 COL CLEMENT A. WYLLIE ■ 558-2603/3514

WING FLAP EXTENSION SPEEDS

In the dash 10 manuals, certain airspeeds are prescribed for certain flap positions. In the U-21A aircraft, the full flap down (100%) extension limit is 131 KIAS, and to extend flaps to their approach position (35%), the maximum airspeed is 173 KIAS. It's logical to ask what airspeed applies for 50% of flaps. This question is asked occasionally, and we would like to pass on this information to you.

The dash 10 specifies airspeeds for two flap settings (APPROACH and FULL DOWN) for simplicity. Other airspeeds for different flap settings are really not of any importance to the pilot. This information is not published because for *each* degree or percentage of flap that is used, there is a different maximum airspeed which applies, due to the differing aerodynamics load factor that the flaps create when lowering to different settings. We could publish all of these varying airspeeds (a 100?), but who could remember all of them?

The U-21A dash 10 states that when operating with approach flaps (35%) do not exceed 173 KIAS. Furthermore, when operating with full-down flaps (100%) do not exceed 140 KIAS. This means that as soon as the pilot lowers the flaps past the approach position (35%), airspeed will not be greater than 131 KIAS until FULL DOWN. Simple, isn't it?

Remember, the dash 10 also states, "If wing flaps are extended above these speeds, the flaps or their operating mechanisms MAY BE DAMAGED."

POSITION REPORTS, QUESTIONS & ANSWERS

■ I have received Change 15 to the UH-1H Operator's Manual. I am confused about paragraph 3-23A—Health Indicator Test (HIT). Do I follow the procedure indicated in paragraph 3-27A or the procedure in the UH-1 HIT egt log in the aircraft logbook?

A check with AVSCOM indicates that the intent of the change to the health indicator test in the Operator's Manual was to prevent pilots from making hurried, inaccurate recordings of differences from the egt baseline. By repeating the check, the maintenance officer would be assured of accurate readings. It was also found that subparagraph (10)a should read "10° C. or greater from previous reading" . . . not reading(s). In other words, after recording your egt difference from baseline, you find that your difference is 10° C. or greater from that recorded last, repeat the test and if the readings do not change, notify the maintenance officer by making an appropriate entry on the DA Form 2408-13. If the difference between indicated egt and baseline egt is 20° C. or greater, also record this in the DA Form 2408-13. If 30° C. or greater, the aircraft should not be flown.

■ During a recent field evaluation, it was noted that a hook unit had adopted a policy of using SAS during ground operations. The question is what problems occur when using power steering with SAS engaged on the CH-47B and C?

The yaw rate gyros will sense turns and try to correct for these inputs. In certain wind conditions this

will result in droop stop pounding. Chapter 8-25 of the Operator's Manual notes whenever possible SAS-off flight should be conducted during training or check flights in order to increase the proficiency of the flight crew.

■ What are the appropriate landing minimums for aircraft in formation flight that are executing an instrument approach? Take an ILS approach, for instance. The lead aircraft has the necessary equipment installed to execute a complete ILS and his wingman has only the necessary equipment for a localizer (LOC) approach. What minimums should (must) the wingman use?

Aircraft in formation are primarily dependent on the formation leader for the navigation of the entire flight. In recognition of this, the FAA requires air traffic controllers to control formation flights as a single aircraft and issue instructions only to the formation leader (reference ATC 7110.65, par. 27). Considering this "single aircraft" concept, the approach procedure to be flown and the landing minimums would be predicated only on the equipment capability of the lead aircraft.

■ Are graduates of the Initial Entry Rotary Wing Program (IERW) qualified in NOE IAW FM 1-1?

Yes. IAW DA Msg 011642Z Aug 75, subject: Terrain Flight/NOE Training and Proficiency. The newly graduated aviator is qualified for NOE flight and this, along with his other aeronautical skills, should be evaluated on his initial evaluation flight after reporting to his new unit. The Course of Instruction (COI) subsequent to July 1975 included NOE flight training. Accordingly, all graduates subsequent to that date are NOE qualified aviators. IERW graduates receive an average of 45 flight hours of intensive NOE training to include aircraft handling, navigation and crew integration while in the tactics phase of training. This qualification is not recorded on the individual's DA Form 759 as NOE flying is considered a fundamental portion of the aviator's training.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS

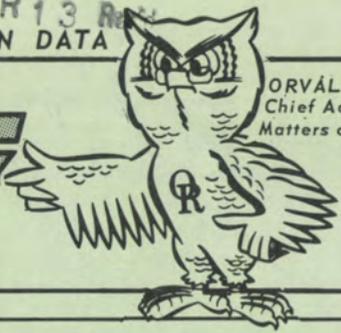
FLIGHTFAX/11-17 MARCH 1977

APR 13 1977

ARMY AIRCRAFT MISHAP PREVENTION DATA



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVVS PUBLICATION

VOL. 5, NO. 24 ■ 6 APRIL 1977

mishaps for the period of 18-24 MARCH 1977

CHECK THOSE SEATS

Maintenance advisory message, UH-1 Armored Seats (GEN-76-231), USAAVSCOM, dated 22 Sep 76, states that U.S. Army Aeromedical Research Laboratory personnel found a nonstandard bucket seat assembly installed in an aircraft that had been involved in a minor accident.

Because of its features, the nonstandard seat could prove hazardous in the event of a crash. Consequently, USAAVSCOM recommends that all UH-1 aircraft be checked to identify any nonstandard seats for replacement.

Since the seats installed in the aircraft are not marked with a part number or a stock number, determination as to whether or not they are standard will have to be made by checking seat dimensions (see figure 1).

If you find a nonstandard seat installed on your aircraft, you should do the following:

1. Requisition a standard seat, P/N AL 1040-60-00, NSN 1680-00-168-5768.
2. Place aircraft on a horizontal dash until seat replacement is accomplished.
3. Replace the entire nonstandard bucket seat assembly, including seat covers, pads, and frame with the standard seat assembly.
4. Notify USAAVSCOM (make reference to advisory message GEN-76-231) by contacting Mr. Jim Ruffner, AUTOVON 698-2630/2660.

NOTE: The manufacturer has changed the part number of the standard seat from P/N AL 1040-55-00 (shown in TM 55-1520-210-34P, dated April 1974, figure 37) to P/N AL 1040-60-00.

US Army Aviation Training Library
Fort Rucker, Alabama 36360

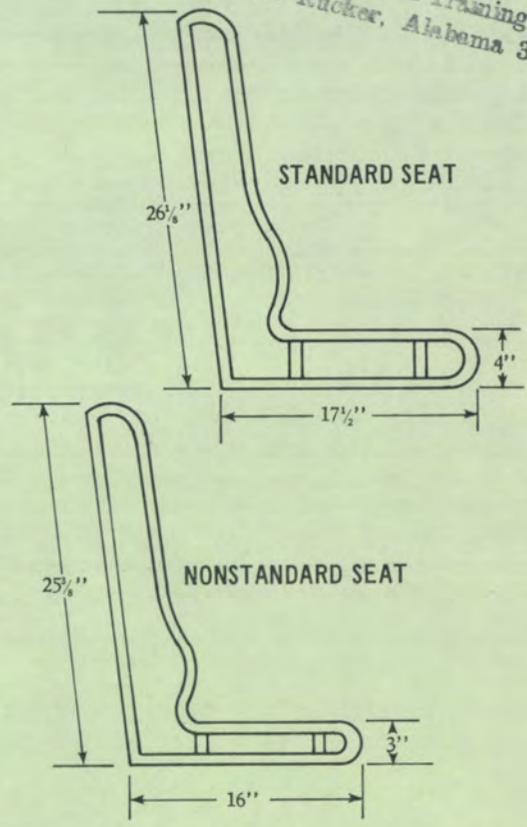


FIGURE 1

U. S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, ALABAMA 36362		COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Prepared from information compiled by the Directorate for Aircraft Accident Analysis and Investigation		Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.		For Assistance in Locating Proper Directorate Aircraft Accident Analysis and Investigation	6385
		Technical Research and Applications	3913/4202
		Plans, Operations, and Education	4812/3493
		Management Information System	6410/6404
		Publications and Graphics Division	2920/4200
		Medical Division	4479
		Staff Duty Officer (1800-0700 hours)	6788
			6510

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Accidents ■ Aircraft was in cruise flight performing C&C for multi-aircraft lift. Aircraft lost power and pilot established an approach to a field. On final, OH-58 was noted at intended touchdown point. Pilot maneuvered to avoid OH-58 and aircraft landed hard, causing major damage. ■ Aircraft was No. 5 in a formation of 5 in trail. When it landed aircraft hit hard on right rear of skid. Nose pitched down and right skid struck ground, resulting in damage. Cause undetermined. Mishap is being investigated.

Incidents ■ Main rotor rpm appeared too low during cool-down period. Pilot shut down engine and aircraft shuddered, with loud noise coming from tail rotor drive shaft area. Inspection revealed twisted mast and sheared tail rotor drive shaft section. Suspect failure of transmission input quill assembly. ■ After simulated CBR attack mission, postflight inspection revealed bullet hole in bottom of aircraft. Investigation is in progress. ■ Pilot was flying low and failed to see tree in flight path in time to avoid it. Both left and right chin bubbles were broken and sync elevator damaged. Pilot was not performing NOE training mission. ■ During power recovery from practice autorotation, engine overspeed occurred. After landing, loud noise was heard from rear of aircraft and tail rotor drive shaft separated between 42° and 90° gearbox. Tail rotor drive shaft indicated severe overtorque. ■ After a local training flight, postflight inspection revealed bullet hole in tail boom of aircraft. Investigation is in progress. ■ Pilot was making a series of passes to dispense smoke when aircraft struck a tree, causing damage to left sync elevator. This was an authorized NOE flight.

Forced Landing ■ Aircraft was IFR in cruise flight at 4,000 feet when rotor and engine needles on N2 tachometer fluctuated, followed by engine failure 3 minutes later. Pilot completed successful autorotation on sod airfield. Suspect No. 3 and 4 bearing pack failure. WELL DONE to CPT Steve Carey.

Precautionary Landings ■ Hydraulic segment light came on, with no loss of hydraulic pressure. Maintenance inspection revealed hydraulic pressure switch failed. ■ Master caution and transmission oil hot lights came on. Maintenance replaced thermostatic switch. ■ During climb from low level to traffic pattern altitude, rpm warning light and low rpm audio came on. Pilot cross-checked instruments and determined that N2 tachometer had failed. Aircraft continued to airfield and landed. Maintenance replaced tach generator due to a sheared input shaft. ■ During cruise flight at 2,500 feet msl, N1 gauge pegged out and then dropped to zero. Landing was made and maintenance replaced N1 tach generator because of sheared input shaft. ■ While in cruise flight crew saw smoke and fluid coming out of battery vent. Caused by failure of three battery cells .

AH-1

Incident ■ While performing NOE flight, aircraft struck four powerlines. Pilot landed without further incident. Inspection revealed cracked canopy and skin damage.

■ ■ ■

AVSCOM MESSAGES RECEIVED

- 182015Z Mar 77—subject: Shortage of Modified T53-L-13B Fuel Controls, NSN 2915-00-223-7004 (P/N 84200A7)
- 211430Z Mar 77—subject: Maintenance Advisory Message on Status Reporting of Aircraft Door Lock Device and Ignition Switch Lock Installations (RCS AMC-232) (GEN-77-9)

WHEN WAS THE LAST TIME . . .

you reviewed your weight and balance computation procedures?

TOTAL MISHAPS FOR 18-24 MARCH 1977

	UH-1	AH-1	OH-58	TH-55	CH-47	CH-54	U-8	U-21	C-7	TOTAL
Accidents	2		1	2			1			6
Incidents	6	1	1	1						9
Forced Landings	1		1							2
Prec. Landings	19		3	1	4	1	1	4	1	34
TOTAL	28	1	6	4	4	1	2	4	1	51
Fatalities										0
Injuries	3			4						7
Estimated Costs	\$116,433	\$19,000	\$4,609	\$21,969			\$10,000			\$172,011

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558.4202

OH-58

Accident ■ While terrain flying pilot made a tum and aircraft struck wires, resulting in broken chin bubble and minor structural damage. Investigation is in progress.

Incident ■ During hovering NOE flight aircraft struck wires, causing damage to windshield and one main rotor blade.

Forced Landing ■ During takeoff, at 70 knots and 50 psi torque, pilot heard rapid increase in engine rpm (loud whining noise) and noticed N₂ rising through 110%. Emergency procedures were initiated and landing was uneventful. Suspect high side governor failure.

Precautionary Landing ■ During cruise flight N₁ fluctuated between 80 percent and 92 percent at 40 psi torque. Caused by malfunction of double-check valve.

TH-55

Accidents ■ Power recovery was attempted at termination of straight-in autorotation. Aircraft fell through and landed hard, resulting in major damage. ■ Aircraft was seen by witness to initiate a power recovery from a simulated forced landing and then make a tum back to the open area and crash. Investigation is in progress.

Incident ■ While making a solo approach, SP allowed the approach angle to become steep. In an attempt to respond to IP instructions from the tower, he caused engine antioverspeed device to activate. Aircraft yawed and SP lost control, resulting in hard landing.

CH-47

Precautionary Landing ■ During cruise flight, No. 2 engine instruments indicated a "normal beep trim system" failure. Rotor rpm dropped to 230 and then was regained with "emergency beep trim." As N₁ approached 84 percent, violent shudder occurred and N₁ began to drop. At approximately 40 percent N₁, engine was shut down and single-engine landing was made. Cause of beep trim system failure is unknown. Teardown analysis is being performed.

CH-54

Precautionary Landing ■ Second stage servo caution light came on, indicating zero pressure. Caused by loose second stage servo cannon plug. Plug was tightened and aircraft was released for flight.

U-8

Accident ■ (G series) After level-off at 2,500 feet, No. 2 engine sputtered. Fuel selector was switched from main to auxiliary and engine ran normal again. After level-off at 4,000 feet msl, No. 1 engine began losing power, and stopped even though fuel selector was switched from main to auxiliary. No. 2 engine then stopped. Air start was unsuccessful for either engine. Aircraft made gear-up landing in plowed field. Investigation is in progress.

U-8

Precautionary Landing ■ (D series) During cruise flight, No. 1 engine began to run rough and rpm and manifold pressure fluctuated. All other indicators remained normal. Pilot feathered the engine and landed. Maintenance inspection revealed failure of No. 4 cylinder.

U-21

Precautionary Landings ■ Gear failed to fully retract after takeoff. Pilot was unable to electrically extend or fully retract the gear. Flight continued to home base where manual extension was attempted, but extension handle broke. Another attempt to electrically retract the gear was successful. Pilot then slowed to 95 KIAS and was successful in lowering landing gear. Inspection revealed that one shim friction pad (P/N 50-810275-79) was missing and second one was deteriorated, causing gear motor drive shaft misalignment which in turn allowed emergency extension drive chain to slip off sprocket and bind. ■ (A series) Right main gear indicator did not come on when landing gear was lowered for landing. Light in gear handle indicated safe condition. Gear was verified as being down by tower and aircraft landed. Down-lock switch on right main gear was out of adjustment. ■ (D series) During cruise flight, torque surge occurred on left engine and throttle idle position would not decrease power below 90 percent N1 rpm, or 1,000 pounds torque. Suspect internal failure of fuel control. ■ (A series) After level-off check (45 minutes in flight) fuel was seen siphoning from No. 1 engine nacelle cap. Pilot failed to check proper seating of fuel filler cap before takeoff.

MAINTENANCE MISHAPS

SFC John M. Terrell ■ 558-3901

C-7

Precautionary Landing ■ Right main gear indicated unsafe during landing approach. Gear was recycled with same indication. Aircraft was returned to home station where gear was lowered using manual release uplocks. Aircraft landed without further incident. Maintenance had disconnected right landing gear down line from uplock assembly to facilitate work in that area. Maintenance and quality control personnel failed to notice line was disconnected.

OH-58

Precautionary Landing ■ During landing, on downwind, engine oil temperature exceeded red line. Post-flight inspection revealed rag in oil cooler fan.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

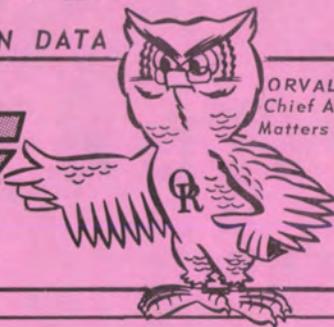
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 25 ■ 13 APRIL 1977

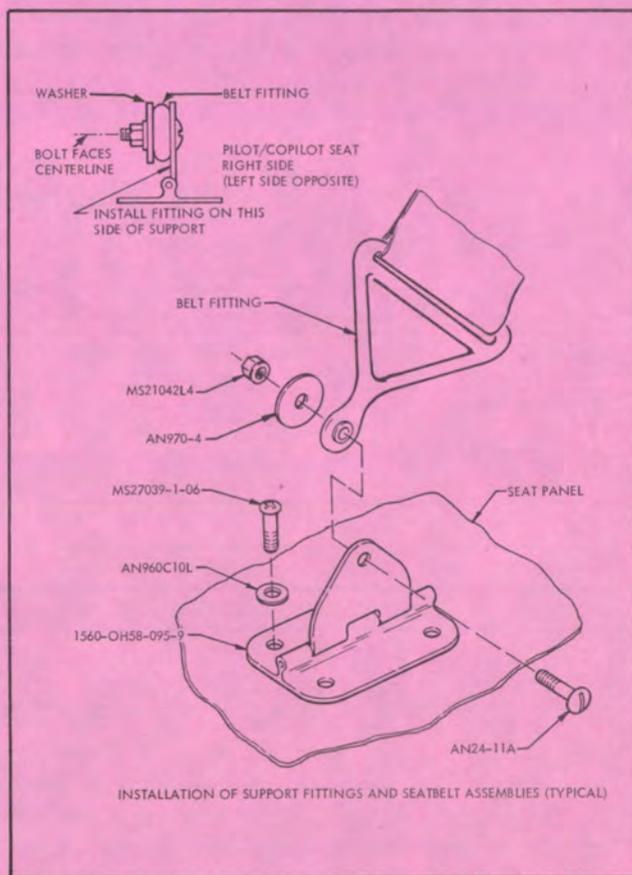
US Army shops for the period of 25-31 MARCH 1977
Aviation Training Library
Fort Rucker, Alabama 36360

OH-58A LAPBELT MURPHY

If it weren't for that ghostly character called Murphy, we could all relax and enjoy our maintenance activities—from depot overhaul to shade tree tinkering. But given the opportunity, old Murphy will get into the act and foul up a mechanic's best intentions. He did this recently when a maintenance man momentarily let down his guard while installing the pilot lapbelt on an OH-58A. Needless to say, the belt ended up incorrectly installed, and separated from one attaching point during flight in turbulent air. Understandably, this didn't make the pilot any too happy. In all probability, as he was being jostled about, he was preoccupied with two thoughts: getting down safely and finding the responsible party.

MWO 55-1520-228-30-19, Improved Seatbelts and Attachment Points (OH-58A helicopter), figure 4 (reproduced here), shows an exploded view and an end view of the support fittings and seatbelt assemblies for reference purposes to insure correct installation of the pilot and copilot lapbelts. As can be seen, the lapbelt end fitting should be located between the hinge support assembly and the washer (AN 970-4). With the retaining nut installed, the lapbelt fitting bushing is then held in place by the washer on one side and the hinge support assembly on the other. However, when Murphy entered the picture, the mechanic inadvertently positioned the washer between the hinge support assembly and the lapbelt end fitting. During flight in turbulent air, the retaining nut (MS 21042L4) pushed the bushing out of the lapbelt end fitting, allowing the belt to come loose from the hinge support assembly.

USAAVS recommends an inspection of OH-58A pilot/copilot lapbelt installations be made in accordance with AVSCOM message 162130Z March 77, ZFF-4, subject: Maintenance Advisory Message for OH-58A Helicopters, Improved Seatbelt and Attaching Points, message No. OH-58A-77-2. The above message also directs changes be made to: (a) MWO 55-1520-228-



30-19 by adding the words "washer," "belt fitting," and "pilot or copilot seat right side" to the cross section view in figure 4 (as has been done on the drawing reproduced here), and (b) TM 55-1520-228-23, Maintenance Manual, by adding a view showing the proper installation of the seatbelt anchor fitting to the hinge support assembly in figure 2-7 (duplicates figure 4-4 in TM 55-1520-228-20).

If additional information is required contact Mr. Charles VanArtsdalen, USAAVSCOM, AUTOVON 698-3891, Commercial (314) 268-3891.

FY 77 ACCIDENT SYNOPSES

SYNOPSIS 7T-23

Type Aircraft: OH-58

Time: 0640

Classification: Major (total)

Fatalities/Injuries: No Fatalities, 1 Injury

Estimated Materiel Damage Cost: \$143,780

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	27	1,036	-	1,036

Description of Accident: While performing low recon of landing site, at 20 knots and 30 feet agl, aircraft struck a wire with left front crosstube, causing aircraft to tumble forward 360° about the lateral axis. Main rotor severed tail boom and then separated from the mast just below the static stops before aircraft came to rest in an upright position.

Causes of Accident: Crew-Pilot failed to detect and avoid wires. Contributing--(1) Pilot failed to make high recon. (2) Approach was made with a 15-knot tailwind. (3) Approach was made into the sun, restricting pilot's visibility.

Corrective Action: Adherence to established policies and procedures.



TOTAL MISHAPS FOR 25-31 MARCH 1977

	UH-1	AH-1	OH-58	OH-6	CH-47	CH-54	OV-1	U-8	TOTAL
Accidents					1				1
Incidents		1	3	1	2				7
Forced Landings			2						2
Prec. Landings	21	6	6	2	2	1	1	3	42
TOTAL	21	7	11	3	5	1	1	3	52
Fatalities									0
Injuries									0
Estimated Costs		\$19,000	\$1,683	\$1,300	\$228,000				\$249,983

DA FORM 2397-1

Hey, fellows! It seems there's some confusion about what should be put in *block 10* of *DA Form 2397-1* when reporting damage cost and repair man-hours for aircraft mishaps. Paragraph 14-3(9), chapter 14, AR 95-5, simply means that you enter an estimated materiel cost of damage (including the dollar amount for total man-hours) and the number of man-hours required to repair the aircraft and/or replace damaged components. Following is an example of how block 10, DA Form 2397-1, should be filled out.

10. ESTIMATED COST OF DAMAGE	
* Acft Damage Cost	\$13,000 Ownership <u>A</u>
** Acft Repair M/H	<u>56</u>
Other Damage Mil \$	Ownership <u>A</u>
Other Damage	Ownership _____

* Acft materiel cost + man-hour cost.

**Number of man-hours to repair or replace will always be given.

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Precautionary Landings ■ During practice GCA, crew detected smell of burning insulation. Postflight inspection revealed domelight rheostat failure. ■ While in cruise flight at 90 KIAS and 50 feet agl, IP noticed decrease in engine and rotor rpm, followed by low audio and reduction in engine noise. After verifying full throttle and inc/dec switch position, IP selected emergency governor mode and landed without incident. Fuel control was submitted for analysis. ■ While hovering for takeoff, pilot noted engine oil temperature rising. Oil temperature reached 108° before engine shutdown. Maintenance inspection revealed failure of flow control thermostat. ■ During pretakeoff check for maintenance test flight, emergency governor switch was placed to emergency without retarding throttle. Overspeed to 7200 N2 rpm resulted. ■ During climbout from missed approach at 4,000 feet, antitorque pedals became stiff. Running landing was made. Maintenance test flight could not duplicate condition and aircraft was released for flight.

AH-1

Incident ■ During simulated antitorque malfunction landing, M28 turret depressed, causing M134 gun to strike runway. Suspect failure of turret limiter switch.

Precautionary Landings ■ During aerial gunnery exercise, at 30-foot hover, aircraft began to settle. Pilot increased collective and overtorqued to 58 psi in transient. Maintenance conducted special inspection requirements and aircraft was released for flight. ■ Transmission oil bypass light came on and pressure fluctuated. Maintenance inspection revealed transmission oil line had chafed through. ■ Transmission oil bypass light came on during landing. Caused by loose electrical wire on bypass valve. ■ During NOE hovering flight at less than 5 knots, two muffled bangs occurred, followed by torque fluctuation. Maintenance replaced engine and 42° and 90° gearboxes. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-6

Incident ■ During night training flight at 100 knots IAS, upper right windshield broke and blew out. Pilot continued to destination for landing. During hover, airspeed indicator still indicated 60 knots. Inspection revealed water in static pressure line. Temperature during flight was below freezing. Suspect aircraft exceeded VNE limits.

Precautionary Landing ■ Transmission chip detector light came on. Metal particles were found on magnetic plug. Aircraft was grounded pending results of EIR and oil analysis report.

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

OH-58

Incident ■ During landing at 35 knots and 150 feet above pinnacle, N2 dropped and low rpm light/audio activated. IP autorotated to the only available landing area, which consisted of rocky terrain. Moderate to severe spike knock occurred on touchdown, causing skin damage at station 180. Maintenance replaced double-check valve and fuel control without effect. Further analysis is being performed. ■ Main rotor blades struck tree during NOE flight. Aircraft was landed with no further damage. ■ During NOE flight in dry creekbed, one main rotor blade struck cactus, causing damage to blade.

Forced Landings ■ During final landing approach to mountain top, at approximately 100 feet and 40 knots, N2 and rotor rpm began to decrease. After verifying throttle was full open and governor switch was at full increase, pilot lowered collective, resulting in rpm increase. Pilot applied collective to clear obstacles in approach path and again rpm decreased. Autorotation was successfully completed. About 1 minute after touchdown, N2 and rotor rpm returned to normal operating range. Cause of failure is being investigated. ■ While hovering at 150 feet agl for aerial gunnery scoring, pilot noticed N2 rpm decreasing, followed by low rpm audio and warning light. Pilot entered autorotation and successfully landed on 5° slope. Maintenance could not duplicate failure and aircraft was released for flight. WELL DONE to WO1 James A. Carlsen.

Precautionary Landings ■ Low rpm and audio came on during cruise flight and pilot entered autorotation. At 1500 feet msl, engine responded to throttle application and aircraft was landed with power. Suspect fuel control malfunction. ■ Oil bypass light came on. Aircraft landed and inspection revealed excessive oil leak around accessory gear housing and compressor. Suspect compressor seal failure.

CH-47

Accident ■ During training flight with an IP aboard, single-engine hover OGE at 100 feet was attempted. Aircraft fell through, striking the runway in a tail-low attitude. Aft landing gear, aft fuselage, aft vertical shaft, and drive shaft were damaged. Suspect complete loss of power. Investigation is in progress.

Incidents ■ Aircraft landed hard on aft gear during termination of practice autorotation. Postflight inspection revealed damage to aft right landing gear strut assembly. Inspection is in progress to determine if airframe damage occurred. Mishap is under investigation. ■ Copilot's door came off during cruise flight and passed through rotor disc, causing damage to forward yellow blade and engine cowl. Mishap is under investigation.

Precautionary Landing ■ Aircraft developed high frequency vibration in No. 2 engine area during cruise flight. Maintenance inspection revealed insufficient lubrication in adapter at No. 2 engine transmission output. Lack of lubricant was due to frequent washing of aircraft with a pressure hose. Aircraft are operating in a highly corrosive environment, requiring the frequent washings. AVSCOM gave permission to unit to lubricate adapter on a 50-hour basis. Further instructions were: (1) Exercise care when washing around transmission, drive shafting, and under tunnel cover. (2) Reduce pressure during washing operations.

CH-54

Precautionary Landing ■ Jolt was felt in airframe during cruise flight at night. Rotor tip path plane was checked with landing light and one blade was noted out of track. Popping noise came from rotor system during descent. Inspection after shutdown revealed a red "BIM" indicator and a blade pocket missing from the midsection on one main rotor blade. Faulty bonding caused blade pocket separation.

CORRECTION

The number of the maintenance advisory message on UH-1 armored seats referenced in last week's front page article is GEN-76-23, not GEN-76-231.

AVSCOM MESSAGES RECEIVED

■ Maintenance advisory message 301810Z Mar 77 (OH-58-77-3) requires a disassembly inspection of the main rotor tension torsion straps after 600 and 900 hours. Also, under no circumstances will the finite life of the TT strap be exceeded. POC is Mr. Joseph Dierker, AVSCOM (AMSAV-FEL), AUTOVON 698-3891.

■ Maintenance/technical advisory message 231505Z Mar 77 (OH-6A-77-1). The original passenger restraint system is such that it might not protect a passenger in the event of a crash. MWO 55-1520-214-50-9, installation of improved seatbelt and shoulder harness, was issued to remedy this situation. A change to the dash 10 will read: "Do not allow passengers to ride in the aft compartment of an OH-6 helicopter unless MWO 55-1520-214-50-9 has been applied to that aircraft." POC is Mr. Victor Feldman, AVSCOM, AUTOVON 698-3010.

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3901

U-8

Precautionary Landings ■ During cruise flight, copilot saw intermittent black smoke trailing from right engine. Engine was secured and single-engine landing was successful. No. 6 cylinder was removed and found to be worn excessively, with broken cylinder ring. ■ After takeoff, gear only partially retracted and then could not be lowered using normal procedures. Pilot returned to home station, lowered gear manually, and landed. Caused by sticking gear relay solenoid. ■ While aircraft was climbing to assigned altitude, No. 1 engine quit. Engine was secured and single-engine landing was made without further incident. Caused by broken mixture control cable. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

3 Mishaps, 0 Fatalities, 3 Injuries, Estimated Costs: \$0

UH-1

■ Mechanic, sitting in rear cargo seat facing left door, was washing windows. He attempted to face forward by tucking his left leg under his right leg while pushing cargo door closed. This awkward position resulted in injury to his left knee. Three man-days were lost. ■ As civilian mechanic was scraping excess sealant from UH-1 main rotor hub, he cut an artery in his left arm with the scraping knife. Employee apparently was using his knife in an unsafe manner. Ten man-days were lost as a result of careless use of knife.

CH-47

■ Electronics mechanic was removing an antenna from the underside of the aircraft when he received a tom muscle in his right shoulder as a result of applying abnormal pressure to break it loose. Thirty-one man-days were lost because the mechanic (1) did not request help when needed; (2) did not exercise care when in an unusual body position; and (3) did not use proper tools. □

AAA&I PHONE NUMBERS

Some of you are having trouble getting your telephone calls through to AAA&I Directorate, USAAAVS. It's true these phones stay busy most of the time, but any individual, division, or branch in AAA&I Directorate can be contacted through any one of the following numbers during duty hours.

AUTOVON 558-3913, 3901, 4202, 4198.

After duty hours, call AUTOVON 558-6510.

WANTED

FOR CORRECTION



Doesn't believe
in standardization.

Has 57 ways
to do everything.

"Heinz" MURPHY

REWARD

BETTER MAINTENANCE AND SAFER FLYING

MURPHY'S LAW

"If an aircraft part can be installed improperly - someone will install it that way."

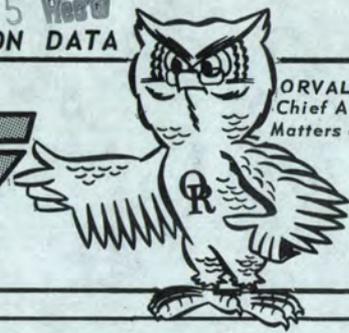
DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS

100 25 1977



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAVS PUBLICATION

VOL. 5, NO. 26 ■ 20 APRIL 1977

mishaps for the period of 1-7 APRIL 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Check Those Chinstraps

The U.S. Army Troop Support Command in St. Louis, MO, received an equipment improvement recommendation (EIR) which reported that failure of the SPH-4 chinstrap retention assembly during crash sequences may have been a contributing factor in the deaths of several aircrewmembers.

Specifically, the snap fasteners on older helmets pull through the leather, causing the helmet to come off because the leather has deteriorated due to a combination of age and use.

All SPH-4 helmets should be inspected for leather deterioration of the retention assembly.

In those instances where obvious damage or deterioration has occurred, replacement retention assemblies should be requisitioned. The follow-

ing NSNs are listed in TM 10-8415-206-13:

NOMENCLATURE	NSN
Retention Assembly, regular	8415-00-411-0113
Retention Assembly, extra large	8415-00-411-0114

To check the retention assembly of the SPH-4 helmet, the United States Army Aeromedical Research Laboratory recommends that:

- (1) A thorough visual inspection be made.
- (2) The chin strap be fastened and then given a hard jerk. If the dot fastener or the stitching fails, then the helmet is unsatisfactory.

In the event that unsatisfactory helmets are found please submit an EIR, DA Form 2407, IAW TM 38-750. The NSN for the chinstrap is 8415-00-144-4981.

SAFETY-OF-FLIGHT MESSAGE

■ 111530Z April 1977, subject: Safety-of-Flight Message (Operational) for AH-1G/Q/S Attack Helicopter, Firing of Weapons Under Icing Conditions (AH-1-77-9). Summary: A very serious safety hazard exists if aircraft weapons are fired in icing conditions. The tow missile warhead can detonate in close proximity to the aircraft. The warhead fuse may be damaged as the missile is launched through ice in the missile launcher.

Gun barrels and breeches can rupture if the gun muzzles are clogged with ice. The FFAR are held captive in the launcher tubes by the frozen ice. Firing of aircraft weapons in icing conditions is prohibited. Weapons covered are: tow missile, 2.75-inch FFAR, 40mm grenade launcher, 20mm gun, and 7.62mm MG. Contact: Mr. Kostal, AVSCOM, AUTOVON 698-6516, commercial (314) 268-6516.

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-24

Type Aircraft: AH-1G

Time: 1400 Classification: Minor

Fatalities/Injuries: No Fatalities, 1 Injury

Estimated Materiel Damage Cost: \$204,031

Mission: Training (NOE)

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	29	1,109	-	1,109
CP	WO1	23	391	15	406

Description of Accident: Pilot was departing from NOE tactical mission and returning low level to refueling point when aircraft struck and severed three strands of electrical wire, porpoised several times, struck the ground initially with the tail rotor, skidded, and terminated in upright position.

Causes of Accident: Crew-Pilot failed to detect and avoid wires. NOTE: Flight path was between poles that were seen by the pilot before contact with wires. Copilot was preoccupied with folding a map and did not see wires until a moment before contact.

Corrective Action: Installation commander directed a revision of (installation) Cir. 95-1 to include a requirement for all aviator personnel to periodically review the NOE techniques for wire crossing and establish procedures for wire crossing maneuvers to be made a part of the NOE annual standardization flight evaluation. Installation commander also sent a letter to all commanders and aviators emphasizing the importance of adequate preflight coordination between crewmembers to identify specific individual responsibilities. Commanders were directed to insure that crew duties and responsibilities are addressed in all aviation unit SOPs.



TOTAL MISHAPS FOR 1-7 APRIL 1977

	UH-1	AH-1	OH-58	TH-55	CH-47	T-42	OV-1	C-12	C-45	C-7	TOTAL
Accidents			1	1							2
Incidents	1	1	2		2						6
Forced Landings	1		1								2
Prec. Landings	18	9	7	1	2	3	1	1	1	1	44
TOTAL	20	10	11	2	4	3	1	1	1	1	54
Fatalities											0
Injuries											0
Estimated Costs	\$809	\$19,000	\$152,060	\$10,000	\$102,000						\$283,869

REVIEW YOUR WARM WEATHER PROCEDURES

With the advent of warm weather, many flight crews elect to fly with the cargo doors locked open. Be sure during preflight that all loose items are properly tied down or stowed to preclude losing them in flight. Also, do not attempt to fly with the doors open unless the soundproofing can be anchored securely.

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incident ■ During a troop insertion, aircraft landed on rock, denting right skid tube. Skid was replaced and aircraft released for flight.

Forced Landing ■ During test flight, aircraft was climbing through 4,000 feet msl when pilot noticed three torque fluctuations of 5 to 10 psi, followed by rapid loss of N2 rpm and low rpm audio. Test pilot entered autorotation and switched to emergency governor as N1 was passing through 50%. Gradual throttle application affected the N1 only 1-3% but caused the egt to increase to 700°. Power could not be regained. Engine was shut down and full autorotative landing completed to open field. Fuel control is under evaluation. WELL DONE to CW2 Marvin Beck.

Precautionary Landings ■ Transmission oil hot light came on during cruise flight. Maintenance inspection identified loose ground wire on transmission temperature switch. ■ Ten minutes after departure from AAF at 700 feet agl and 90 knots, crew heard loud noise and aircraft developed severe vertical vibration. Postlanding inspection revealed bonding separation, causing 8-inch skin tear on upper surface of one main rotor blade 4 inches in from blade tip. ■ While on approach to an LZ with 8 combat-equipped troops on board, No. 4 in a flight of 4 pulled 56 psi torque to check his rate of descent. (Results of overtorque inspection were not reported.) ■ As rpm was increased to 6600 on runup, master caution and transmission oil pressure segment lights came on and transmission oil pressure gauge indication dropped to zero. Inspection revealed quick disconnect between transmission oil pump and oil cooler system failed, causing primary oil filter gasket to fail. ■ While hovering over snow, crew noticed oil spillage. Pilot continued hover to suitable landing area and hydraulics failed on touchdown. Inspection revealed hydraulic pump packing had failed.

AH-1

Incident ■ During postflight inspection after aerial gunnery training mission, pilots found dents in both main rotor blades and one tail rotor blade. Incident is being investigated.

Precautionary Landings ■ Copilot was refueling aircraft when he noticed a steady stream of oil from transmission. Pilot was notified and aircraft was shut down. Inspection revealed failure of internal transmission filter gasket. ■ Pilot overtorqued engine (53 psi) during formation landing. Results of overtorque inspection not reported. ■ While at cruise flight pilot felt abnormal cyclic control pressures when he attempted to fly at 120 knots. Maintenance inspection revealed loose spanner nut on cyclic. ■ Engine chip detector and engine oil pressure lights came on, accompanied by drop in oil pressure gauge indication. Pilot landed immediately. Engine teardown analysis is in process. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Accident ■ During training NOE landing approach at approximately 10 feet and 10 knots, pilot was applying collective when low rpm audio came on and apparent power loss occurred. Aircraft struck the ground left rear skid low, bounced and rolled to the right. Main rotor blades hit ground, causing major damage to aircraft. Investigation is in progress.

Incidents ■ During NOE left turn at approximately 60 knots, pilot heard noise and felt one-to-one lateral vibration. Aircraft was landed a short distance away and shut down. Inspection revealed damage to one main rotor blade. NOE flight was unauthorized and unsupervised. ■ During tactical training, aircraft was flying NOE along a dirt road at approximately 15 knots. Approaching a point with a tree on each side of the road, IP evaluated the space and decided to proceed. Main rotor struck a limb. One rotor blade was damaged.

Forced Landing ■ During cruise flight, aircraft yawed left and engine noise rapidly faded. Pilot entered power-on autorotation and landed in an open field. Caused by faulty double-check valve.

Precautionary Landings ■ Pilot attempted to pick up aircraft to a hover with a 12-knot left quartering tailwind. Aircraft came off the ground left side first due to right skid being imbedded in mud. Mast bumping occurred. Pilot lowered collective and shut down. Maintenance inspection revealed no damage. Aircraft was released for flight. ■ During tactical training, pilot was making an approach to a field when he heard wire scrape the skids. Landing was completed and aircraft checked. No damage was noted, but a powerline was broken, starting a small brush fire. ■ During takeoff for NOE flight, tail rotor struck tree limb. Inspection revealed no damage. Aircraft was released for flight. ■ During NOE flight at 25 feet agl, aircraft struck commo wire strung between two trees, causing minor scratch to paint below pitot tube. Aircraft was released for flight.

TH-55

Accident ■ SP was making normal approach when aircraft was seen to start spinning to the right with a right drift. Aircraft descended to the ground, still spinning and drifting, and rolled over on right side, resulting in major damage. Investigation is in progress.

CH-47

Incident ■ After landing, pilot was making right turn during ground taxi when tail of aircraft swung left and aft rotor blades struck hangar door. Ground guide was being used. Caused by malfunction of aircraft's power steering. WARNING: Par. 3-29, TM 55-1520-227-10, states: "When turning with power steering, the tail may suddenly swing in the direction opposite to the turn as the aft wheels rotate to the turn position. Be prepared to reduce power and apply brakes."

Precautionary Landing ■ Aircraft was on maintenance test flight. During engine topping check of No. 1 engine, loud noise was heard, followed by slow reduction of N1. Torque needle started spinning but egt remained normal. Postflight inspection revealed dirty No. 1 engine compressor section. Engine was cleaned and aircraft was returned to service. □

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3901

T-42

Precautionary Landings ■ Immediately after gear was raised on night takeoff, complete electrical failure occurred. Gear was manually lowered and landing made without further incident. Both alternators failed because of dead battery which could not absorb a system overload. ■ Gear would not retract after takeoff. Landing gear safety switch link assembly was out of adjustment.

C-12

Precautionary Landing ■ During level-off at 11,000, No. 1 engine fire detector light came on. There were no other fire indications. Pilot declared an emergency and obtained clearance to return to home station for landing. After maintenance inspection revealed no discrepancies, it was determined moisture had caused the malfunction. Aircraft had been sitting in the rain before departure.

OV-1

Precautionary Landing ■ (D series) During cruise flight, pilot noticed loss of hydraulic pressure and confirmed the failure by turning on windshield wipers. Gear was blown down for landing. Inspection revealed hydraulic line to speed brake failed. □

MAINTENANCE MISHAPS

SFC John M. Terrell ■ 558-3901

UH-1

Precautionary Landing ■ Rotor tachometer and transmission pressure gauges went to zero during takeoff. Transmission oil temperature gauge increased to maximum. No caution lights came on and engine instruments indicated normal. Pilot landed immediately. Maintenance inspection revealed that a cannon plug on right side of transmission aft of hydraulic pump had been improperly installed and had vibrated loose. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

UH-1

8 Mishaps, 0 Fatalities, 2 Injuries, Estimated Costs: \$34,437

■ During windstorm, main rotor blade tiedown broke, allowing blade to flex and strike parked truck. Truck was parked next to the aircraft as a windbreak. ■ Aircraft was being repositioned from hangar to airfield when right ground handling wheel struck bottom hangar door slider, causing aircraft to swing left, damaging tail rotor assembly. Significant factors in this mishap were: (1) a 1¼-ton truck was used for towing instead of a proper towing vehicle (tug); (2) door slider protruded above floor level; and (3) operator of vehicle did not have an operator's permit. ■ During main rotor blade tracking demonstration, student mechanic allowed tracking flag strap to strike and damage one rotor blade. Factors contributing to this mishap were: (1) student was trying to move his helmet visor down to reduce sun glare while holding tracking flag; (2) instructor was having difficulty in assisting the student due to a back problem; and (3) winds were 5 knots gusting to 15 knots.

OH-58

■ A direct support platoon leader supervised the removal of skid assembly of an OH-58 in a hangar with closed doors. Several minutes later aircraft fell from the jacks, causing major structural damage. Just before aircraft fell, hangar door had been opened. The cause of this mishap was attributed to wind blowing through hangar door and aircraft not being adequately supported.

OH-6

■ An OH-6 was secured on the parking ramp at night when a severe storm occurred with wind gusts reaching 80 mph. A mobile hoist (gantry) parked 25 feet away was blown from its chocks and struck left side of helicopter, causing major structural damage. No advance warning was received of the approaching severe weather.

CH-47

■ During attempted sling hookup of M274A5 mule, hookup man was struck by the helicopter and received minor injury. Just before this exercise, the man was briefed on proper procedures to avoid the aircraft.

U-1

■ While aircraft was being ground handled to a parking spot, a wind gust (12 knots) caused tail assembly to swing and strike a parked APU. It's interesting to note that the aircraft was being towed by a tug, two wing walkers were present, gust locks were installed, and there was a man in cockpit to apply brakes.

C-7

■ A mechanic had just completed securing the engine cowl when another mechanic in the cockpit engaged the starter, causing a prop to strike him in the back. Mechanic in cockpit thought he had received a "clear" signal.



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FORT RUCKER, AL 36362
STACOM 14 ■ 20 APRIL 1977 COL CLEMENT A. WYLLIE ■ 558-2603/3514

INADVERTENT IMC AND THE FAA

Some installations, in attempting to establish inadvertent IMC recovery plans IAW DA MSG 202037Z Oct 76, are running head-on into resistance from a rather unlikely source—the local ATC facility. At first glance it would seem incredible that the agency responsible for the safe control of air traffic would object to establishment of such a plan. After all, many an FAA controller has had the hair-raising experience of guiding a confused and desperate aviator through the murk to a safe landing. So wouldn't it be better for all concerned if both the pilot and the controller had a preplanned course of action to follow when things go to pot? Of course it would.

The problem here is one of understanding, communicating, and coordinating. The FAA is responsible for the safe and orderly flow of air traffic in the federal airspace system. They do a magnificent job of discharging these responsibilities, but cannot be expected to look favorably on any plan involving use of controlled airspace when they do not participate in the development process. ("In a pig's ear, you're going to send those aircraft to the outer marker at 2,200 feet.")

The formulation of an IIMC recovery plan is not a simple process. The purpose of the plan is, of course, to provide for the safe recovery of the IIMC aircraft. However, the procedure must be so designed as to eliminate any possibility of a midair collision. The local FAA representative, therefore, must be in on the plan's development from the beginning.

It must also be fully understood from the outset that inadvertent IMC is an unfortunate fact of life and is going to occur regardless of whether a plan exists or not. In view of this, the plan developed is to be wholly regarded as an emergency procedure, not as a cheap way for an aviator to fly IMC when the spirit moves him.

It may well be that the volume of traffic in some terminal areas is so great that no safe method of IIMC recovery can be devised. In these cases the only recourse may be to establish a weather minimum which would totally preclude an inadvertent IMC encounter. Under other circumstances, it will be necessary to initially restrict the aircraft to an altitude below that established as minimum safe or minimum vectoring and below controlled airspace. In any event, it is absolutely imperative that the closest possible coordination be established and maintained with the responsible FAA facility.

Inadvertent IMC is, in itself, a mighty serious situation for one aircraft. Let's make the recovery as routine and efficient as possible—and without risking other lives.

AND THE BEAT GOES ON

Remember the story about the driver racing in the Indy 500 who made six pit stops, two for fuel and four to ask directions?

Well, the guy has apparently given up on the racing business and turned to flying helicopters for a living—as witness the following:

A UH-1 crew was tasked with transporting a nine-man survey team and a heavy pile of gear from one field site to another, some 20 miles away and 1,500 feet higher than the first. After everything was crammed on board, the pilot found that all that moved when he pulled pitch were the torque and egt needles. The order was then given to jettison one mermaid can. When this didn't help, another can joined its mate on the ground. Still not much help—so a passenger was deplaned. This time the crew chief reported that daylight could now be seen between the skids and the ground, so a long, grass-skimming takeoff was negotiated. This skillful bit of aimanship was followed by a tedious climb to the higher pad where an arrival of sorts was made, using the "Unplanned Approach to the Ground" technique.

After off-loading and completing the hard landing inspection, the crew returned and ferried the one remaining passenger and two mermaid cans to the new site without further difficulty.

Seems that no matter how hard you try, some days are just going to turn out all right.

STATUS OF TRAINING CIRCULARS

The preparation of the Qualification Training and Standardization Circulars is proceeding on schedule with the following expected to be submitted to HQ TRADOC on the dates indicated.

Basic TC 1-34—June 1977

OH-6 TC 1-38—September 1977

OH-58 TC 1-37—June 1977

CH-47 TC 1-39—September 1977

Those listed below are scheduled for completion in FY 78 and early 79.

CH-47 TC 1-40

OV-1 TC 1-44

T-42 TC 1-42

U-21 TC 1-45

U-8 TC 1-43

UH-60 TC 1-46

The corresponding USAAVNC Flight Training Guides, which were designated interim DA flight standardization guidance by DA MSG 301446Z Jul 74, will be superseded for field use by these circulars.

POSITION REPORTS, QUESTIONS & ANSWERS

■ Since TC 1-35 (QUALIFICATION TRAINING AND STANDARDIZATION FOR UH-1) became available in the field, several questions have been raised regarding its usage. My questions are: Must IPs use TC 1-35 for all UH-1 standardization flights? Do we have to complete a gradeslip? Must we use the printed gradeslip shown in TC 1-35?

In response to your first question, "Must IPs use TC 1-35?" the answer is a definite YES; the reason being that AR 95-63 makes its use mandatory. Paragraph 1-13 is quoted in part as follows: "Procedures for operations, training and standardization are provided in appropriate field and technical manuals, training circulars, Army Training and Evaluation Programs, and other publications and will be used in conjunction with the Operator's Manual. Compliance with published procedures is MANDATORY unless specifically waived." Furthermore, the Purpose and Scope of TC 1-35 establishes the requirements contained therein as the minimum elements required for training and standardization and the flight evaluation procedures for the qualification flight checks and evaluation rides required by AR 95-63. Insofar as gradeslips are concerned, yes, you must complete a gradeslip for all evaluation flights. Additionally, a copy of the gradeslip covering IP and SIP evaluations must be forwarded to USAAVNC, ATTN: ATZQ-ES-E. Use of the DA Form 4507-R is required. For your information, the qualification training and standardization TCs are the "Bible" for field use. As DA standardization literature, they supersede the USAAVNC Flight Training Guides which were designated interim DA flight standardization guidance by DA MSG 301446Z Jul 74.

■ I completed a local U-8 transition a while back and believe I might have been shortchanged. Although I spent quite a bit of time securing an engine after simulated failure, I was never taught how to deliberately shut one down. Considering the possibilities of engine detuning if it's not done properly, I believe a deliberate in-flight engine shutdown procedure should be taught. What about it?

Students attending the U-8 flight courses at USAAVNC are taught to use the "Engine Fire in Flight" procedure for deliberately securing an engine in flight. This procedure may be used without danger of detuning whenever an engine is to be secured for any reason. **NOTE TO THE STANDARDIZATION BOARDS:** Better take a look at your U-8 training and standardization procedures. Detuning is serious business.

NEW STACOM PUBLICATION SCHEDULE

In order that STACOM may become more responsive to the field, the publication schedule has been upped to semi-monthly (that's every two weeks for you guys without dictionaries). We hope in this way to get the information to you when it's needed, not after we've both forgotten what the problem was in the first place. Incidentally, we are hoping to be able to support weekly publication in the near future. As a reminder, our address is: **Commander, USAAVNC**

ATTN: ATZQ-ES

or

ATTN: ATZQ-ES (STACOM)

Fort Rucker, AL 36362

Our phone numbers are:

Director and Assistant	2603/7174
Chief, Flight Standardization Division	3504/6309
STACOM Editor	3617/6487
Chief, Evaluation Division	6571/2415
SIPs: Utility	6309
Observation/Attack	6784
Cargo/Fixed Wing	6874
24-Hour Flight Standardization Information Center	2603
AUTOVON 558-XXXX Commercial (205) 255-XXXX	

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

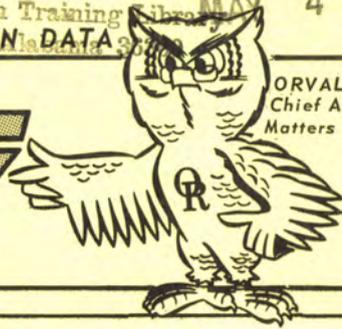
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 27 ■ 27 APRIL 1977

mishaps for the period of 8-14 APRIL 1977

PMPs NEEDED NOW!

That's PRAMS and MORE PRAMS—not periodic inspections. While we are not aware of any units having inspection problems, we are experiencing some difficulties with PRAMS—mainly a lack of supplemental information to tell us what caused a mishap when the cause was not known at the time the initial PRAM was submitted.

While this bit of information may appear unimportant as applied to a single seemingly insignificant mishap, it is, in reality, vital to the overall safety program. All mishap causes must be

known if corrective measures are to be developed not only to prevent the same kind of mishaps from similar causes but also to avoid the possibility of their mushrooming into full fledged accidents.

So, please, be sure to submit follow-up mishap information any time causes are not included in the initial PRAMS. And, of course, the *requirement* for submitting supplemental information is spelled out clearly in AR 95-5, chapter 13, paragraph 13-1b, and in AR 385-40, chapter 4, paragraph 4-2. 'Nuff said.

FITTING & CARE OF THE SPH-4 HELMET



A much needed video tape on this subject has been produced by USAARL and is highly recommended for use at your next unit safety meeting and for continuing refresher training.

Written requests for the program copy should be mailed to U.S. Army Aviation Center, Educational Television Division, ATTN: ATZQ-TD-ETV, Fort Rucker, AL 36362.

When requesting program copies ("dubs"), please send one blank 3/4-inch video tape cassette for each program to the address above. Programs will be dubbed onto cassettes furnished and the cassettes will then be returned to requester.

When making request for dubs, please specify programs desired by number and title as shown:

Program Number: #-2C-011-0693B

Title: SPH-4 "Aviator's Protective Helmet"

Running Time: 22 minutes

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate Aircraft Accident Analysis and Investigation	6385
Technical Research and Applications	3913/4202
Plans, Operations, and Education	4812/3493
Management Information System	6410/6404
Publications and Graphics Division	2920/4200
Medical Division	4479
Staff Duty Officer (1800-0700 hours)	6788
	6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-25

Type Aircraft: UH-1H
 Time: 1930 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$32,431

Mission: Training

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	25	796	-	796
CP	CPT	30	1,055	-	1,055

Description of Accident: During night combat assault training, a flight of eight aircraft attempted to land in an unlighted LZ, resulting in several excessive torque applications. One aircraft made a go-around and one aircraft struck the ground, spinning and terminating 180° from flight path.

Causes of Accident: Pilot-in-command allowed the copilot to proceed beyond a point where normal landing or go-around could be made. Supervision-Improper mission preparation; LZ changed three times before takeoff and once en route; LZ not reconnoitered; and flight attempted a downwind landing. Weather-Marginal conditions at time of mishap.

Corrective Actions: The reviewing authority forwarded letters to all commanders and aviators emphasizing crew duties and responsibilities of the aviator in command, and directing that sufficient time be allocated to conduct mission briefings before each operational flight.

■ ■ ■

TOTAL MISHAPS FOR 8-14 APRIL 1977

	UH-1	AH-1	OH-58	TH-55	CH-47	T-42	OV-1	U-8	U-21	C-54	TOTAL
Accidents						1	1				2
Incidents			1								1
Forced Landings	1										1
Prec. Landings	15	4	4	1	3			1	3	2	33
TOTAL	16	4	5	1	3	1	1	1	3	2	37
Fatalities											0
Injuries											0
Estimated Costs			\$300			\$17,000	\$95,000				\$112,300

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Forced Landing ■ Master caution and transmission oil pressure segment lights came on with transmission oil pressure going to zero. Cockpit filled with blue smoke and unusual noises were heard from transmission area. Maintenance inspection revealed incorrect size stand-off clamp on pressure return line. Smaller clamp caused line to collapse, resulting in internal failure of transmission.

Precautionary Landings ■ Hydraulic pressure segment light came on. Maintenance replaced hydraulic pressure switch. ■ Tail rotor chip detector light came on. Maintenance inspected 90° gearbox and found metal particles. Ninety-degree gearbox was flushed and aircraft was released for one-time flight back to field site where 90° gearbox was replaced. ■ During NOE training, pilot noticed smoke coming from upper battery vent. Maintenance replaced aircraft battery. ■ Crew was executing pinnacle approach with five troops on board. At termination of approach an overtorque of 52 psi occurred. Aircraft was inspected by maintenance and released for flight. ■ During simulated medevac mission, pilot felt unusual binding in tail rotor pedals. Maintenance inspection revealed failure of magnetic brake assembly.

AH-1

Precautionary Landings ■ During hover firing of 40mm, one round impacted and exploded within 20 meters of aircraft, cracking the forward canopy. Crew discontinued firing and returned to starting point. Maintenance replaced electronic component assembly, NSN 1090-00-078-2732. ■ Aircraft was engaged in hovering fire when SCAS hardover occurred. SCAS was disengaged and aircraft departed range to return to ready line. While en route five loud reports were heard from engine and rise in egt was noted. Aircraft landed without further incident. Maintenance replaced engine fuel control, SCAS control box, and transducer. ■ During cruise flight at 900 feet agl, engine tachometer failed. Maintenance replaced engine tach generator. ■ Engine chip detector warning light came on. Maintenance inspection revealed aluminum and iron particles on screen of oil filter. Engine was replaced.

AVSCOM MESSAGES RECEIVED

- 072038Z Apr 77—subject: Maintenance Advisory Message Concerning All Army Aircraft Utilizing Rotary Aircraft Motor Generators (Inverters) (GEN-77-10).
- 090438Z Apr 77—subject: Maintenance Advisory Message for UH-1B/D/H Helicopters Regarding Swash-plate, P/N 204-011-400-11 (UH-1-77-10).
- 150045Z Apr 77—subject: Maintenance Advisory Message, Cobra Warpage Problems, AH-1G, AH-1Q, and AH-1S (Mod) (AH-1-77-10). □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Incident ■ During cross-country flight at 300 feet agl, pilot heard loud bang at right front of aircraft and felt metal hit his leg. Pilot landed and inspection revealed a small caliber rifle round had hit the aircraft. Maintenance checked aircraft and released it for flight.

Precautionary Landing ■ Transmission hot oil light came on. Aircraft was landed and maintenance personnel could not duplicate problem. Aircraft was sent to DS maintenance because the same condition was reported earlier. Maintenance evaluation is in progress.

TH-55

Precautionary Landing ■ During training mission, short circuit occurred in console electrical wiring. Fire extinguisher was used to extinguish smoldering wires. Maintenance inspection revealed shorted battery switch. Starter relay switch and wiring were replaced.

CH-47

Precautionary Landings ■ During hot refueling, when APU was started and engines brought to ground, smoke was noticed coming from ramp area. Engines were brought to flight position, but the smoking seemed to increase. Aircraft was shut down and maintenance inspection revealed hydraulic fluid coming from system AGB valve. O-ring was replaced. ■ During training mission, aircraft appeared to have a static beep failure on No. 1 engine with torque at 420 pounds. Normal beep failure procedures were applied and engine control was regained. A short time later the same condition occurred again. Corrective procedures were applied, but engine control was erratic and unpredictable. Suspect failure of fuel control or engine trim system. Maintenance troubleshooting is still in progress. □

FIXED WING BRANCH

MAJ William G. Daly, Jr. Chief ■ 558-3901

T-42

Accident ■ During night training, IP was demonstrating simulated single-engine approach, while pilot was reading the checklist. Aircraft was landed gear-up. Aircraft skidded approximately 1,000 feet down the runway, causing major damage to fuselage, flaps, nose gear doors, props, and engines. Investigation is in progress.

OV-1

Accident ■ After touchdown, power levers were placed in reverse. Aircraft yawed to the left and departed runway, coming to rest in a ditch. Investigation is in progress.

U-8

Precautionary Landing ■ During climbout, right engine began running rough and pilot returned for landing. Inspection revealed valve failure in No. 6 cylinder. (ARNG)

U-21

Precautionary Landings ■ (A series) After gear was lowered for landing, left main would not indicate down and locked, but horn did not sound when throttles were retarded. Electrical wire to left main gear indicator microswitch was broken. ■ (A series) During attempt to even fuel load distribution from right to left nacelle tank, fuel began to siphon from right nacelle cap with fuel lever in crossfeed position. Fuel gauge indicated 250 pounds in right nacelle tank and pilot closed crossfeed, which diminished siphoning action. However, fuel continued to seep from fuel cap and mission was aborted. Fuel cap adjustment nut was tightened and aircraft released for flight. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

3 Mishaps, 0 Fatalities, 3 Injuries, Estimated Costs: \$0

UH-1

■ During daily inspection, mechanic was climbing from engine deck when his wedding ring caught on engine oil reservoir filler cap release, stripping the flesh from his finger. *The finger required surgical amputation at the palm.*

CH-47

■ A mechanic injured his back while removing a battery from a CH-47. As a result of this injury, 13 man-days were lost.

AH-1

■ Mechanic moved from under aircraft to get tools. While repositioning himself under the aircraft, his head struck a protruding bolt, resulting in a contusion at the base of the skull. Three man-days were lost.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

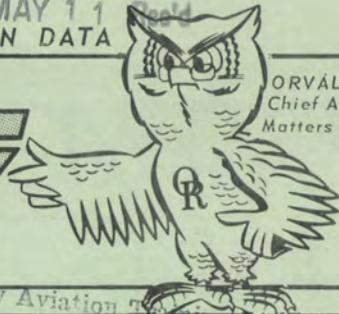
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS

MAY 11 1977

ARMY AIRCRAFT MISHAP PREVENTION DATA



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

US Army Aviation Training Library
Fort Rucker, Alabama 36500

A USAAVS PUBLICATION

VOL. 5, NO. 28 ■ 4 MAY 1977

mishaps for the period of 15-21 APRIL 1977

RESTRAINT SYSTEMS SERVICE LIFE EXTENDED

AVSCOM message 091447Z March 77 ZEX, subject: Maintenance Advisory Message on Aviation Life Support Equipment: Extension of Service Life for Army Aircraft Personnel Restraint Equipment (GEN 77-7), authorizes extension of restraint equipment to 6 years to prevent grounding of aircraft during supply shortages. This extension is granted provided that all personnel restraint equipment over 5 years old be given an initial inspection and inspected every 30 days thereafter for any indications of weakness. Inspection of each lapbelt, shoulder harness, inertia reel strap, safety belt tiedown strap, and personnel restraint harness (gunner harness, etc.) will consist of checking for:

- Loose bolts and fasteners.
- Improper attachment, installation, or operation of hardware.
- Missing or unserviceable adjuster webbing retarder spring.
- Metal hardware that is bent, broken, or corroded in excess of an area 1/2-inch by 1/4-inch.
- Any cuts, burns, or tears in the webbing or any broken stitches.
- Wear or fraying of the webbing causing broken, raveled, or lost fibers, especially in the area of the length adjusters.
- Any stain from fluids that appears on both sides of the webbing.

■ Discoloration or fading due to sunlight which causes a significant difference in shade (color) between the exposed and unexposed sections.

■ Any imbedded dirt which causes a significant difference in shade (color) compared to a clean section.

■ Pull tabs that have loose or broken stitches.

■ Leather cushion that is torn or has loose rivets or elongated rivet holes.

Personnel restraint equipment which cannot pass this inspection, which is damaged, or which shows signs of weakness that may render it incapable of performing its full restraining function will be replaced. In case of doubt seek advice from the maintenance officer.

This extension is based on the requirement that aggressive action will be taken to requisition new equipment. DA Form 2408-18 (Equipment Inspection List) or equivalent aircraft historical maintenance form will be amended to reflect this extension. This message will be cited as authority. DA Form 2408-18 will also be annotated to record the 30-day inspection requirement. In situations where the service life of personnel restraint equipment used by the pilot or copilot must be extended, the aircraft will be placed on a circled red x and restricted from practice touchdown autorotations.

Point of contact for action on this message is Mr. Jim Ruffner, AUTOVON 698-2630/2660/2480 or commercial (314) 268-2630/2660/2480.

U. S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate	6385
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	4812/3493
Plans, Operations, and Education	6410/6404
Management Information System	2920/4200
Publications and Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-26

Type Aircraft: UH-1H

Time: 1430 Classification: Minor

Fatalities/Injuries: No fatalities, 1 Injury

Estimated Materiel Damage Cost: \$3,578

Mission: Training

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	24	965	-	965
CP	1LT	28	366	-	366

DESCRIPTION OF ACCIDENT: Aircraft was in cruise flight, low-level, when M74A1 pyrotechnic round penetrated pilot's chin bubble and exploded behind left pedal, causing damage to chin bubble, cabin roof window, and left side airframe. Pilot sustained minor injuries to his right leg. Copilot took control and landed without further incident.

CAUSES OF ACCIDENT: Ground personnel fired a live pyrotechnic round from an M203 grenade launcher and struck aircraft. Supervision-Tactical unit commander allowed personnel to fire live airburst pyrotechnics during ARTEP, in violation of local directives.

CORRECTIVE ACTION: Commanders will insure that personnel participating in small arms air defense techniques receive briefings that include all safety requirements inherent to the operation and employment of weapons and ammunition authorized for use during exercises.



TOTAL MISHAPS FOR 15-21 APRIL 1977

	UH-1	AH-1	OH-58	OH-6	CH-47	U-21	U-8	OV-1	U-3	TH-55	TOTAL
Accidents	1					2					3
Incidents	1	2	2								5
Forced Landings	4		1	1						1	7
Prec. Landings	23		6	1	3	2	1	1	1	3	41
TOTAL	29	2	9	2	3	4	1	1	1	4	56
Fatalities											0
Injuries	2										2
Estimated Costs	\$60,096	\$33,500	\$2,300			\$214,000					\$309,896

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Accident ■ During medevac standby mission for night parachute drop, aircraft was in right orbit when crew became disoriented and flew into the ground at shallow angle and cruise speed. Aircraft terminated inverted, with rotor, transmission, skids, and tail boom separated. Two minor injuries were sustained. Investigation is in progress.

Incident ■ During termination of approach to LZ, can was blown into tail rotor. One main rotor blade and both tail rotor blades were damaged.

Forced Landings ■ During test flight, high hover power response check was being made when bang occurred and low rpm audio came on, followed by left yaw. Pilot executed hovering autorotation. Engine teardown is being performed. ■ In cruise flight at 600 feet agl at night, crew heard loud bang that was accompanied by severe left yaw. Copilot entered autorotation and initiated 150° left turn to landing area. During the turn, crew heard several more bangs that were accompanied by aircraft vibrations. Pilot took control of aircraft and completed autorotation. Maintenance inspection revealed fuel control failure. ■ At 5-6 feet agl during approach, compressor stall occurred. Throttle was reduced to flight idle and hovering autorotation completed. Maintenance inspection revealed no damage to engine or drive train components. Engine was washed and aircraft was being test flown when another compressor stall occurred. Engine is being replaced.

Precautionary Landings ■ Transmission oil temperature began to rise. Oil temperature indicated 113° at landing. Maintenance replaced oil cooler bypass valve. ■ Hydraulic caution light stayed on during runup with no indication of stiffness in controls. Maintenance replaced hydraulic pressure switch. ■ During ground operations, IP switched to emergency governor without reducing N2 rpm, resulting in engine over-speed. Maintenance inspection conducted. ■ Low rpm audio warning light came on and engine N2 rpm needle went to zero. Pilot entered autorotation, cross-checked instruments, and determined engine was still running. Powered flight was resumed and aircraft returned to airfield. N2 tach generator shaft sheared. ■ During cruise flight, pilot felt binding in tail rotor pedals. Maintenance replaced tail rotor servo. ■ While aircraft was being hovered onto compass rose, ground guide saw smoke/vapor coming from battery vent and signaled pilot to land and shut down. Battery overheat was caused by failure of voltage regulator.

AH-1

Incidents ■ While hovering over trees during river crossing exercise, crew allowed main rotor to hit a treetop, causing damage to both main rotor blades. ■ During start pilot felt sharp movement in pedals and immediately shut the aircraft down. Inspection revealed main rotor tiedown had been left on. Damage included one tail rotor blade unreparable, cracked 90° gearbox, and two holes in vertical fin.

AVSCOM MESSAGES RECEIVED

- 181350Z Apr 77—subject: Special Installation/Usage Instructions for the UH-1B/C/D/H/M Glass Windshield, P/N NP104401-1, L/H and MP 104401-2, R/H (UH-1-77-11).
- 212018Z Apr 77—subject: Maintenance Advisory Message on Painting of Helicopter Cockpits with Low Reflective Lacquer (GEN-77-11).

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-6

Forced Landing ■ During cruise flight, N2 increased to 120 percent. Copilot applied pitch, manually rolled throttle to 102 percent, and landed in field. Caused by failure of N2 power turbine governor. WELL DONE to CW3 Major E. Weber, HHB, 50th Armored Div Arty, NJ ARNG.

Precautionary Landing ■ While in cruise flight, pilot heard flapping noise. Immediate approach and landing was made to the median of an interstate highway. Caused by 6-inch piece of tape loose at corner of windshield.

OH-58

Incidents ■ During NOE hovering flight, aircraft drifted left rear and main rotor hit treetops. Pilot landed and shut down. Inspection revealed slight damage to one blade. ■ Main rotor tiedown was not removed before engine start, causing slight damage to vertical stabilizer.

Forced Landing ■ During test flight, at cruise, N2 decreased to 97 percent and TOT rose to 1,000° C. Pitch was lowered to regain rpm and TOT decreased to 850° C. Landing was made using partial power. Maintenance inspection revealed gasket and bell mouth separated from fire shield, causing partial ingestion of gasket by engine.

Precautionary Landings ■ Hydraulic pressure caution light came on. Caused by failure of hydraulic pressure switch, NSN 5930-00-007-7666. ■ Hydraulic pressure caution light came on. Caused by failure of hydraulic pump, NSN 4320-00-134-5197. ■ Master caution and engine oil bypass lights began to flicker. Aircraft had history of lights flickering due to intermittent short circuit. On short final, caution lights came on steady. Postflight inspection revealed oil on ground and aircraft. Caused by failure of No. 1 bearing pressure line, NSN 4720-00-540-0487.

TH-55

Forced Landing ■ During entry for standard autorotation, engine rpm stabilized momentarily and then engine quit. Inspection and test flight failed to reveal cause of failure.

Precautionary Landing ■ During solo training flight, SP interpreted a noise as engine failure and autorotated to plowed field. After landing, engine was running. Inspection revealed alternator belt was frayed and broken.

CH-47

Precautionary Landings ■ During cruise flight, pilot smelled smoke, odor dissipated, and flight was continued. Shortly thereafter, transmission oil pressure gauge needle indicated above 100 psi. Pilot switched selector to all positions with no effect. Aircraft was landed in field. Caused by failure of oil pressure selector switch. ■ During cruise flight, pilot experienced SAS hardover in yaw axis. Caused by engagement error in No. 2 SAS system. SAS system was balanced and aircraft test flown and released for flight. □

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3913

ATTENTION IPs AND SIPs: Consider and reestablish your personal margin of safety for initiating simulated emergencies. We are currently having a rash of mishaps which can be attributed directly to the instructor pilot's overconfidence in his own ability to handle a self-induced emergency. Let's put a stop to this trend—NOW! READ ON!

U-21

Accidents ■ (A series) During approach while on developmental test/training flight with an IP at the controls, aircraft struck the ground about 1,000 feet short of runway. Gear was down and torn off during crash sequence, causing extensive damage to underside of fuselage. Both engines were partially broken loose from wings, which struck small trees and barbed wire fence. Investigation is in progress. ■ Immediately after takeoff on training flight, instructor pilot initiated simulated engine failure. Pilot had already retracted gear and landed wheels up on runway. Investigation is in progress.

Precautionary Landings ■ (A series) During training flight after IP shut down No. 2 engine for single-engine demonstration, attempts to restart were unsuccessful. Single-engine landing was completed.

Maintenance determined engine had been flooded during attempt to restart. ■ (D series) During "after-takeoff" check, pilot noticed fuel siphoning from left-wing cap and returned to airfield. Aircraft was overgross for landing, requiring inspection.

U-8

Precautionary Landing ■ Shortly after takeoff, No. 2 engine lost 700 rpm with high CHT. Aircraft returned for landing. Maintenance replaced faulty fuel injector pump.

U-3

Precautionary Landing ■ While on training flight at 11,000 feet in IMC, aircraft was struck by lightning. Maintenance inspection revealed high magnetism damage in No. 2 prop and engine and slight exit burns on trailing edge of rudder and right tip tank. Aircraft had received a negative report from center radar on any severe weather. (USAR) □

MAINTENANCE BRIEFS

SFC John M. Terrell ■ 558-3901

UH-1

Forced Landing ■ During training flight, IP demonstrated practice autorotation. When throttle was reduced to flight idle, engine quit. Autorotation was completed. Flight idle stop and release was adjusted. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$1,368

AH-1

■ Mechanic was raising the aircraft on ground-handling wheels. A ground-handling wheel support pin which attaches the assembly to aircraft skid tube failed, causing cylinder to strike and damage rocket launcher. □

SAFETY-OF-FLIGHT ADVISORY MESSAGE

Safety-of-Flight Advisory Message, 212219Z Apr 77, subject: Army Aircraft Accident Prevention/Safety of Flight Advisory

ALSAFECOM 001-77 from the United States Air Force Safety and Inspection Center is quoted for the information and guidance of all concerned:

a. The recent civil aviation tragedy in the Canary Islands reveals again the dangers involved in using active runways as taxiways and the need to insure that communications between controllers and aircrews are concise, accurate, and clearly understood.

b. Strongly suggest each agency responsible for establishing procedures regulating the use of runways as taxiways thoroughly review their directives. Pay particular attention to the control of such operations during periods of reduced visibility when neither the controller nor the aircrew can adequately assess the situation visually.

c. The civilian accident also indicates the degree to which the safe and orderly flow of traffic is dependent upon clear, unambiguous, controller-to-aircrew transmissions.

d. Failure to use the precise communications directed by the ATC Controllers Handbook, FLIP Planning and the Airman's Information Manual can lead to misunderstood clearances, misinterpreted directions, and significantly increase the possibility of tragic mishaps. Commanders must insure that air traffic controllers and aircrews appreciate the necessity for clear, precise transmissions. This is particularly imperative when operating on or crossing runways.

e. Suggest the following to enhance ground operations:

(1) Signs and taxiway markings must be easily read and understood.

(2) Aircrews must use extreme caution when operating on runways.

(3) Vehicle operators must be able to identify the runway under all meteorological conditions and be thoroughly familiar with the procedures for crossing, or operating on, the active runway.

(4) Controller/cockpit transmissions must be accurate and concise; if there is any doubt about issued clearances, the aircrew must request a retransmission.



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FORT RUCKER, AL 36362
STACOM 15 ■ 4 MAY 1977 COL CLEMENT A. WYLLIE ■ 558-2603/3514

WHAT GOES UP—MUST COME DOWN

Back in the early days of aviation, the procedures employed in landing an aircraft, though physically demanding, did not really overtax a pilot's mental ability. One had only to remember to break the glide at the proper time and from that point on successful completion of the maneuver depended mainly on the aviator's skill and reflexes. Then, the retractable gear came along and the pilot's mental workload during the landing phase increased substantially. He now had two things to remember. Adding to the problem was the normal human tendency to return to a previously established behavior pattern when under stress. (Ever catch yourself pedaling backwards in an effort to stop your new Caliper brake-equipped bicycle?)

In any event, pilots accustomed to fixed gear aircraft did not fare too well when faced with the demands of the new system. More than one shiny new airline DC3 grated to a halt on the runway while an embarrassed captain pondered the wisdom of his decision to upgrade from Ford tri-motors. The taxpayers came in for their share of the action too—having to foot the bill for a considerable amount of sheet metal repair to the new F3Fs, P35s, and the like.

Clearly, something had to be done so a variety of warning devices was added to the system over the years in an effort to insure that the wheels would be lowered prior to landing. Although these devices did cause a reduction in gear-up landings, they did not totally eliminate the problem—primarily because aviators are remarkably adept in eliminating minor cockpit annoyances. A glaring light can be extinguished by unscrewing the bulb; a bell can be silenced by sticking a piece of gum on the clapper; and, of course, pulling a circuit breaker renders a warning horn inoperative.

All of which brings us to our modern sophisticated aircraft, each equipped with a fine gear warning system and 30-page checklist designed to preclude any possibility of gear-up landings. Yet, these belly scrapers continue to occur. Why? Because our modern aviator is still the same old creature of habit that his predecessor was. True, he may never have flown a fixed-gear aircraft in his life, but he can be psyched into forgetting about the wheels just as effectively as the old guy could. How? Simply by (mis)use of the checklist, coupled with the apparently natural impulse to disable the gear warning system.

In consideration of the increasing complexity of our aircraft and the fallibility of the human memory, aviation training doctrine places a very strong emphasis on the use of checklists. Checklists *will* be used—crewmembers *will not* rely on memory, etc. Our aviator, therefore, is conditioned to respond to a stimulus (the checklist) at a certain time (gear down during the before-landing check). Normally, the system works beautifully. It goes awry only when we encourage it to do so; for example, when we perform all the items on the before-landing check during a simulated single-engine approach—except the one absolutely essential item—"GEAR DOWN." We have just loaded the gun. The aviator now on final approach, under stress, "knows" the gear was lowered during the before-landing check and may even "visualize" the gear handle in the down position during the landing check. This phenomenon may also occur if the gear is retracted in the pattern due to a landing delay.

The solution to the problem is obvious. Since we are trained to depend on the checklist—then depend on it. If you desire to hold the gear on a single-engine approach beyond that point at which it would normally be lowered, go ahead. (Though it's not recommended except under the most adverse conditions of density altitude and weight.) But DON'T EVEN begin that before-landing check until you're ready to go through the whole thing WITHOUT INTERRUPTION.

Once the gear is extended in the pattern, just plan to leave it down. It doesn't hurt a thing to have it hanging out while you do a 360 or whatever for traffic spacing. If, on the other hand, you decide to bring it back up for any reason, get that before-landing checklist ready—and go through the ENTIRE SEQUENCE again when you're ready to land.

And finally, learn to enjoy the racket the gear horn makes. It's pure music compared to the sounds of an irate commander viewing his crumpled bird and you simultaneously.

POSITION REPORTS, QUESTIONS & ANSWERS

■ Do I have to do a TACTICAL instrument approach on my instrument renewal ride?

Yes, according to AR 95-63, the examination procedures will conform to those listed in table 2-1. The tactical instrument approach procedure is covered in maneuver nine and is required to be performed. This is in addition to the two approaches of the examiner's choice authorized by paragraph 2-8e, and table 2-1F; the only exception being in certain geographical locations where it is impossible to obtain the approaches prescribed in paragraph 2-6a(4). If this exception applies to your area, then appropriate remarks shall be entered on the aviator's DA Form 759, restricting the instrument qualification to the approaches examined. Furthermore, upon reassignment to a geographical area where a tactical approach as described in FM 1-5 can be performed, the aviator must, within 60 days after reporting to the new duty station, pass a flight examination on the approach.

■ Can I use RADAR minimums to determine the suitability of an airfield as an alternate, providing other approaches are available for my use?

YES. The old AR 95-1 specifically stated that "radar minimums will not be considered when selecting alternate airfields." However, our current AR 95-1 has deleted that statement and under certain circumstances we can, in fact, use radar minima to determine our alternate weather requirements. Perhaps an example will more clearly illustrate this point. Let's say we are flying to Marianna Municipal in Marianna, Florida (MAI), and the forecast weather at the ETA for MAI requires us to have an alternate. Because of the distance involved, Eglin AFB appears to be the best choice, weather permitting. Looking at AR 95-1, paragraph 4-25b, we find that Eglin AFB meets the following criteria. First, it is not prohibited from use as an alternate; second, it has several instrument approaches available, so radar is not the only usable approach aid; and finally, radar is not required to execute the only authorized approach procedure. Now, by looking at the PAR minimums in the IFR supplement, we determine that the lowest ceiling and visibility, that we can legally use for an approach, is that which is published for PAR RWY 19 (100-1/4). Since Eglin is a USAF facility, we add 400 feet and 1½ miles to this published approach minimum. We now find that the ceiling and visibility for 1 hour before to 1 hour after our ETA must be at or greater than 500 feet and 1¾ miles. Thus, the new 95-1 gives us a little more latitude in selecting an alternate, but just because it's legal doesn't necessarily make it smart. In the foregoing example, would you still want to establish your weather requirements based on this approach if the Eglin winds were from 010 at 30 knots? Remember also to check those NOTAMs and the No-NOTAM Preventive Maintenance Schedule shown in the IFR Supplement.

■ As a unit maintenance officer, I frequently encounter the problem of not being able to perform timely MOCs due to nonavailability of aviators. My question is this: Can I use an aviator who is under medical suspension to perform an MOC?

Although we appreciate the problem, the answer is no. AR 600-107, paragraph 2-6, is quite explicit in this regard, stating that in no case will an aviator operate an Army aircraft during a period of medical restriction/suspension. Sorry.

■ In STACOM 13 you replied to a question regarding NOE qualification by stating that IERW graduates received 45 hours of intensive NOE training. I recently graduated and did not receive that much—more like 20 or 25 hours. What gives?

The STACOM reply you are referencing was, unfortunately, misleading. Therefore, in order to clarify this matter, let's start all over. Currently, the Course of Instruction (COI) for NOE training contains 15 pilot hours. The *average* student/IP ratio at USAAVNC presently is 3 to 1, thereby allowing the student to receive approximately 2 hours of navigation training for each hour of pilot training he receives. Hence, "45 flight hours of intensive NOE training," can logically be deducted so long as the student/IP ratio is 3 to 1. However, not all student/IP ratios are 3 to 1. Some are 2 to 1, and there is, on occasion, a 1-to-1 ratio. Thus, if you only had one stick buddy, or no stick buddy, you would naturally be exposed to less total NOE training than the student who had a higher student/IP ratio. Anyway, IERW students do receive a *minimum* of 15 hours NOE training and are considered NOE qualified upon graduation.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

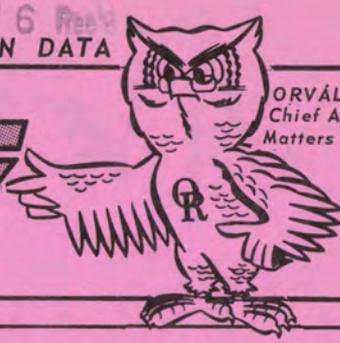
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS



FLIGHT FAX



ORVÁL RIGHT
 Chief Advisor on
 Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 29 ■ 11 MAY 1977

mishaps for the period of 22-28 APRIL 1977

MBU-5/P Oxygen Mask

HQ, USAAVSCOM has advised USAAVS that aircrewmembers who perform high altitude or ferry missions may requisition and use the MBU-5/P oxygen mask. The managing activity is the USAF, San Antonio Air Materiel Area, ATTN: SA-ALC/MMIRCB-Z, Kelly AFB, TX 78241. Requisitions should be submitted in accordance with USAF T.O. 13A1-1-1-1. Mask fitting and helmet attachment will be accomplished by a qualified USAF aviation life support technician trained for this purpose. The oxygen masks are available in four sizes. If additional information is required, contact Mr. A.B.C. Davis, USAAVSCOM, ATTN: DRSAV-WL, P.O. Box 209, St. Louis, MO 63166, AUTOVON 698-3241/3291.

MBU-5/P OXYGEN MASK DATA			
Unit	NSN	Mfg. Part No.	Nomenclature
1 ea	1660-00-810-3223	P/N 450-91	Oxygen Mask, MBU-5/P Size Reg Narrow
1 ea	1660-00-794-0865	P/N 450-09A	Hardshell Reg Narrow
1 ea	1660-00-811-5259	P/N 450-192	Oxygen Mask, MBU-5/P Size Reg Wide
1 ea	1660-00-794-0869	P/N 450-10	Hardshell Reg Wide
1 ea	1660-00-810-3225	P/N 450-193	Oxygen Mask, MBU-5/P Size Long Narrow
1 ea	1660-00-794-0870	P/N 450-11A	Hardshell Long Narrow
1 ea	1660-00-810-3222	P/N 450-194	Oxygen Mask, MBU-5/P Size Short Narrow
1 ea	1660-00-794-0871	P/N 450-12	Hardshell Short Narrow
The following components are required for each MBU-5/P:			
1 ea	8475-00-487-0903	P/N 450-195	Dust Cover
1 ea	1660-00-076-9662	MIL-C-38271	Connector CRU-60/P
1 ea	1660-00-137-5106	P/N 450-485	Suspension Harness, 4-pt
2 ea	1660-00-066-2077	63C4228	Bayonet Straight
2 ea	1660-00-440-5553	P/N 60C4459	Receiver Assy Bayonet
1 ea	5965-00-854-0658	MIL-M-27297	Microphone M100 A/C
1 ea	5995-00-890-8614	CX-4434/U	Cord Microphone
1 ea	5965-00-509-9889	P/N MT-1927 /A/C	Mounting Bracket Boom Microphone

SAFETY-OF-FLIGHT MESSAGE

021915Z May 77, subject: Safety-of-Flight Message: One-Time Inspection of Engine Mechanical Transmissions on all CH-47C Aircraft, TB 55-1520-227-20-17 (CH-47, 1977-3). Summary: Investigation of a recent engine transmission in-flight failure disclosed the cause to be excessive wear of the drive shaft thrust bearing retainer which permitted the bevel and pinion gears to come out of mesh. To prevent a recurrence of the failure, an inspection of engine transmissions, P/N 114D6200-1, -2, and -3 only, will be performed by a contractor team. Inspection will include installed transmissions and

serviceable spares located at unit level which have operating time since overhaul. The team will use contractor-furnished tools and will require the assistance of Army depot or unit maintenance personnel and field maintenance tech. The wear problem has been satisfactorily corrected by a steel liner and keyed bearing which are incorporated in engine transmissions, P/N 114D6200-4. The -4 transmission does not require inspection and is not affected by this TB. Contact: Mr. Gil Adkins, AVSCOM, AUTOVON 698-6042, commercial (314) 268-6042.

U. S. ARMY AGENCY FOR AVIATION SAFETY
 FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
 Directorate for Aircraft Accident Analysis
 and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of
 ARs 95-5, 385-40, and 385-10 6385/6510
 For Assistance in Locating Proper Directorate 6385
 Aircraft Accident Analysis and Investigation 3913/4202
 Technical Research and Applications 4812/3493
 Plans, Operations, and Education 6410/6404
 Management Information System 2920/4200
 Publications and Graphics Division 4479
 Medical Division 6788
 Staff Duty Officer (1800-0700 hours) 6510

FY 77 ACCIDENT SYNOPSES

SYNOPSIS 7T-27

Type Aircraft: AH-1G
 Time: 1515 Classification: Major (total)
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$509,833

Mission: Ferry Flight

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	28	964	-	964
CP	CW2	28	842	-	842

DESCRIPTION OF ACCIDENT: No. 1 hydraulic system failed during cruise flight. Crew lost control while attempting to divert to an intersecting runway for landing, and aircraft impacted ground, sustaining major damage.

CAUSES OF ACCIDENT: Materiel—No. 1 hydraulic system failure. Crew—At the direction of the tower operator, the pilot attempted to change landing runway with hydraulic failure and lost control of aircraft. Maintenance—Hydraulic failure resulted from chafed hydraulic line.

CORRECTIVE ACTION: The unit has established a coordination and training class for all aviators with approach control facilities in the area. A letter by the command suspending nonstandard helicopter maneuvers has been rescinded and pilots are being required to demonstrate their proficiency in nonstandard maneuvers. Additional preventive maintenance classes have been given to enable pilots to conduct a thorough preventive maintenance daily (PMD). A command policy requiring the pilot-in-command to demonstrate his proficiency in conducting a PMD to maintenance personnel before departing on a ferry flight has been established.

■ ■ ■

TOTAL MISHAPS FOR 22-28 APRIL 1977

	UH-1	AH-1	OH-6	TH-55	CH-47	T-42	OV-1	U-8	U-21	T-28	OH-58	TOTAL
Accidents				1			1					2
Incidents	1	2			1		1		1		2	8
F/L	1									1	2	4
P/L	22	2	1	1	5	2		1	4		3	41
TOTAL	24	4	1	2	6	2	2	1	5	1	7	55
Fatalities												0
Injuries												0
Est. Costs	\$606	\$19,700		\$10,000	\$51,000		\$105,082					\$186,388

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Incident ■ While on short final for landing to soccer field adjacent to a golf course, aircraft was struck by golf ball. Dent in leading edge of red tail rotor blade was found during postflight inspection.

Forced Landing ■ Engine fuel pump caution light came on during landing. Engine lost power at hover. Engine-driven fuel pump was replaced.

Precautionary Landings ■ Twenty-minute fuel light came on, followed by left fuel boost pump light. Aircraft landed, POL truck was dispatched, and aircraft refueled. ■ During NOE training, IP suspected blade strike. Postflight inspection revealed small dent on underside of main rotor blade. Maintenance inspected main rotor blade and released aircraft for flight. ■ During start, engine failed at approximately 65 percent N1. Inspection revealed failure of engine fuel filter quick disconnect. ■ Low rpm audio and warning light came on. Maintenance replaced rpm warning control box. ■ Right fuel boost pump light came on. Inspection revealed right fuel boost pump failure.

AH-1

Incidents ■ Aircraft landed hard during low-level, low-speed autorotation. IP took control of aircraft after

aircraft came to rest, moved aircraft off lane, shut down, and found damage to aft right cross tube attaching point. ■ While aircraft was being parked, main rotor blade struck a tree. Ground guide was being used.

Precautionary Landings ■ Fuel filter segment light illuminated. Inspection revealed moisture in engine electrical harness cannon plug. ■ Pilot heard whining noise and made an approach to open field. At 2-foot hover, No. 2 hydraulic segment warning light came on. Inspection revealed loose elbow fitting for turret. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-6

Precautionary Landing ■ Generator caution light and fuel filter caution light illuminated at the same time. Aircraft was landed immediately. Maintenance inspection revealed that voltage regulator was set at 32 volts. Voltage regulator was reset to 27 volts and fuel filter was replaced.

OH-58

Incident ■ During NOE training flight, main rotor blades struck tree, causing damage to both blades and power train. ■ During climbout at 400 feet agl and 60 knots, left front door separated and was blown clear of helicopter.

Forced Landings ■ Aircraft was at hover when engine failed. Aircraft was autorotated to the ground. Inspection revealed fuel contamination. Fuel sample had not been taken immediately before the flight. ■ While aircraft was controlling a live fire training exercise, from a 150-foot hover, N2 went to 92 percent. As aircraft was turned into the wind, N2 momentarily fluctuated to 103 percent and then stabilized at 82 percent. A maximum of 45 pounds torque was available to clear 70- to 80-foot trees and reach an open area on a slope where a successful landing was made. Inspection revealed double-check valve malfunctioned. WELL DONE to CW2 Donald L. Martin, AHT, 11th ACR, Fulda, Germany.

Precautionary Landings ■ During service mission, while hover taxiing, N2 decreased to 95 percent and aircraft settled to the ground. Inspection revealed broken silver solder bond on maximum flow adjusting screw spring, NSN 2915-00-946-0914. ■ Transmission oil pressure warning light came on. Inspection revealed malfunction of oil pressure switch.

TH-55

Accident ■ During solo training flight, SP performed unauthorized hovering autorotation. Hard landing resulted, with major damage to multiple airframe components.

CH-47

Precautionary Landings ■ As power was applied for takeoff, engine torque needles split indicating static beep failure of No. 2 engine. Inspection revealed failure of high-speed control box. ■ No. 2 engine torque would not respond to changes in power application. Inspection revealed failure of No. 2 engine AC beep trim actuator. ■ Flight engineer noticed hydraulic vapor spray and fluid coming from aft transmission area during cruise flight. System pressure dropped to 2000 psi indicated. Utility hydraulic cooler was not operating, causing system to overheat and burn up the packing and O-ring seal in pressure line of utility hydraulic pump. Inspection revealed defective utility hydraulic pump.

Incident ■ During flight, left auxiliary fuel pumps forced excess fuel into left main fuel tank through one-way check valves. This caused left main fuel tank to expand, causing structural damage to stiffeners and stringers. Caused by malfunction of one-way check valves. □

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3901

OV-1

Accident ■ (D series) During practice short field approach, pilot reduced power rather than adding power to cushion landing. IP could not initiate corrective action soon enough to prevent hard landing. Aircraft struck ground on right gear 50 feet short of runway threshold. Major damage to fuselage mid section and entire right wing.

Incident ■ During recovery from split "S" maneuver at 230 knots, left hatch flew open, shattering plexiglas. Center vertical stabilizer, left horizontal stabilizer, and VHF antenna were damaged. Aircraft was landed with no further damage.

U-21

Precautionary Landings ■ (A series) During training flight, right outboard flap and left flaps failed to retract beyond approach position. Aircraft returned to base. Inspection revealed flex shaft had broken in flap actuator head. ■ During test flight following replacement of No. 2 engine, chip detector illuminated on No. 2 engine and aircraft was returned to base. Excessive metal chips were found on magnetic plug. Engine was replaced.

T-28

Forced Landing ■ During cruise flight at 8,000 feet in IMC, engine backfired loudly, followed by loss of power. Engine vibrated violently and sufficient power to maintain altitude was not available. Five minutes later, engine sump plug light came on, oil pressure dropped to 28 psi, oil began to spray over fuselage, and engine quit. Aircraft was vectored to an airfield. Pilot performed an emergency landing after breaking out VFR at 3,000 feet agl. Engine had failed internally. WELL DONE to CW3 John R. Dougherty, Ft. Bragg, NC, for performing professionally in an emergency situation! □

MAINTENANCE MISHAPS

SFC John M. Terrell ■ 558-3901

U-21

Precautionary Landing ■ After climb through 11,000 feet, fuel was seen coming from firewall area of No. 1 engine. Engine was secured and single-engine landing was made. Fuel filter O-ring was improperly installed.

T-42

Precautionary Landing ■ During takeoff at approximately 100 feet agl, fuel pressure dropped approximately 2 psi on No. 2 engine. At 200 feet agl when climb power was reduced, No. 2 fuel pressure dropped to zero. Pilot made single-engine landing. Maintenance found main fuel line fitting in area of No. 2 alternator only finger tight and leaking fuel. Suspect line was removed by support maintenance when No. 2 alternator was changed. □

AVIATION-RELATED GROUND MISHAPS

Samuel M. Phillips ■ 558-4202

5 Mishaps, 0 Fatalities, 3 Injuries, Estimated Costs: \$1,400

TH-1G

■ While lowering aircraft from ground handling wheels, maintenance man inadvertently placed right foot under skid. Skid settled on foot, resulting in broken toe. Three man-days lost.

UH-1

■ Mechanic was lying on his back under a helicopter to release stuck fuel drain valve. Wind blew JP4 into mechanic's left eye, causing fuel burn. Two man-days lost. ■ Mechanic was helping install main rotor head. Load shifted, crushing left hand between head and mast. Two man-days lost. ■ Parachutist landed on aircraft, breaking chin bubble and pitot tube mount. ■ Helicopter was being towed from hangar to ramp by tug driver with one man observing tail clearance. Tail rotor blade was damaged by contact with hangar door. Observer could not yell warning loud enough to overcome hangar noise. □

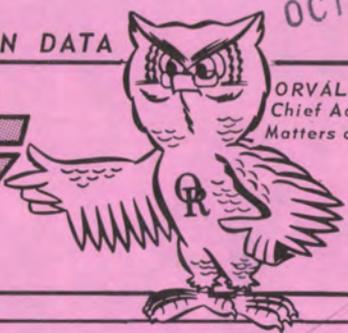
DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS

FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

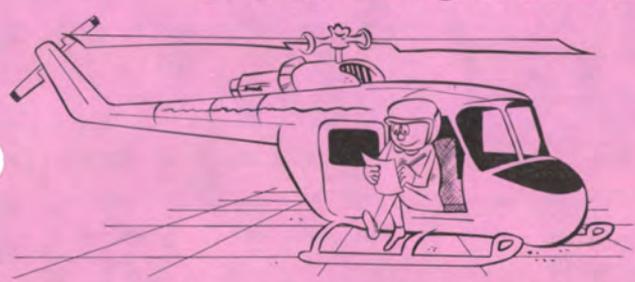
A USAAAVS PUBLICATION

VOL. 5, NO. 3 ■ 20 OCTOBER 1976

mishaps for the period of 1-7 OCTOBER 1976

US Army Aviation Training Library
Fort Rucker, Alabama 36360

your answers needed



Next week's issue will carry a questionnaire for readers, a survey of your likes, dislikes, and ideas concerning FLIGHTFAX. The questionnaire will be preaddressed; just fill it out and get it in the mail. Please take the time to complete this survey. We need your answers to make FLIGHTFAX a better publication.

BATTERIES FOR AN/PRC-90 SURVIVAL RADIO

The DA special staff officer for life support equipment indicates that sufficient batteries, BA 1568/U, NSN 6135-00-838-0706, are available. According to the Electronics Command commodity manager, approximately 32,000 of these batteries are on hand. Refer to TM 11-5820-800-12 for replacement of batteries and useful life.

SPH-4 HELMET DEFICIENCY

According to the U.S. Army Aeromedical Research Laboratory, there is a deficiency in the SPH-4 helmet, NSNs 8415-00-144-4981 and 8415-00-144-4985. The eyelets pull out of the nylon straps that fasten the ear cups retention harness to the helmet shell.

Specifications and drawings have been corrected to eliminate the problem. However, helmets bought under older specifications should be fixed to correct this deficiency. Figure 1 shows the "fix" and the materials needed. This "fix" applies to all helmets manufactured before FY 76.

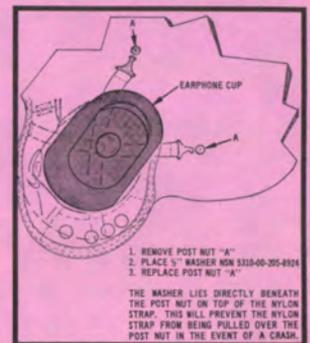


FIGURE 1

PREREQUISITE FOR ASO COURSE

One prerequisite for attendance at the 10-week Aviation Safety Officer Course is a working knowledge of high school level mathematics, algebra, and physics or equivalent. The depth to which technology and investigation subjects are taught and subsequently used by the ASO requires a background and understanding of basic mathematical skills to do the work necessary for successful completion of the course. Students who do not have this background will find it extremely difficult to graduate. Those who do not meet the grade requirements for graduation are not awarded the Additional Skill Identifier as Aviation Safety Officer (1S) or Flight Safety Technician (Suffix B).

U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

- Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10 4479/4812
- For Assistance in Locating Proper Directorate 4479
- Aircraft Accident Analysis and Investigation 3913/4202
- Technical Research and Applications 6404/6410
- Plans, Operations, and Education 4479/4812
- Management Information System 5286/4200
- Publications and Graphics Division 6385/3493
- Medical Division 6788
- Staff Duty Officer (1800-0700 hours) 6510

FY 76 ACCIDENT BRIEF

SYNOPSIS 54.76

Type Aircraft: **UH-1H**
 Time: **1355** Classification: **Major (Total)**
 Fatalities/Injuries: **No Fatalities, 1 Injury**
 (injured individual was member of ground troops
 hit by piece of rotor blade)
 Estimated Materiel Damage Cost: **\$586,140**
 Mission: **Service—troop lift onto ridgeline**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
Lead					
P	CPT	Unk	265	-	265
CP	CW2	26	3,349	-	3,349
Chalk 2					
P	LTC	35	3,396	35	3,431
CP	CW2	28	2,872	-	2,872

Description of Accident: Flight of four aircraft was inserting troops on ridgeline. Lead aircraft was light on skids and Chalk 2 was at hover when main rotor blades made contact.

Causes of Accident:

Initial: Crew—PIC of Chalk 2 maneuvered his aircraft into lead despite warnings from crew.
Contributing: Supervisory—Both pilots in Chalk 2 failed to meet minimum requirements for PIC IAW Command Supplement 1 to AR 95-1 and company SOP.

SYNOPSIS 55.76

Type Aircraft: **T-42**
 Time: **0900** Classification: **Major**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$13,050**
 Mission: **Maintenance test flight**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	27	2,705	433	3,138
CP	CPT	31	448	219	667

Description of Accident: After landing fast and long, pilot attempted to shorten landing roll by retracting flaps. Pilot inadvertently selected gear switch and retracted gear.

Causes of Accident

Initial: Crew error—Pilot selected incorrect switch to raise flaps. Crew also failed to use dash 10 checklist which delays retraction of flaps until aircraft is clear of runway, reducing the chance of improper selection of switches.

Contributing: Pilot had extensive recent experience in U-21 which has position of flap and gear switches in opposite location from those in T-42.

Corrective Action: Correct flap operating procedures were published in FLIGHTFAX, Vol. 4, No. 36, 30 June 1976.



SYNOPSIS 56.76

Type Aircraft: **UH-1H**
 Time: **1650** Classification: **Major (Total)**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$293,070**
 Mission: **Service**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW3	38	2,485	64	2,549
CP	CW2	27	3,804	-	3,804

Description of Accident: Aircraft entered IMC

in dust on takeoff, crashed, and rolled over. LZ was located at 6,000 feet msl and density altitude exceeded 9,000 feet.

Causes of Accident:

Initial: Crew—Aircraft was in excess of 800 pounds overgross.

Contributing: Airfield—LZ was extremely dusty. Training—Crew had no recent experience in high-altitude flying.

Corrective Action: Unit has initiated a mountain-training program to qualify all their pilots in this type of flying.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

SYNOPSIS 57-76

Type Aircraft: **UH-1H**
 Time: 1030 Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$6,340**
 Mission: **Service**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	41	822	-	822
CP	CW2	30	1,556	49	1,605

Description of Accident: After landing on uneven sod adjacent to taxiway, aircraft began to rock forward and aft. Crew overreacted to aircraft movement, causing aircraft to become airborne and travel approximately 19 feet. Hard landing resulted in damage to skids and underside of fuselage.

Causes of Accident

Initial: Crew—Poor crew coordination caused loss of aircraft control. Crew failed to insure that aircraft was securely on the ground.

Remarks: The crew had been instructed to land in an area with uneven terrain, which the accident board cited as cause factor. However, the terrain was not considered to be beyond the capability of a skid-equipped helicopter. Additionally, failure to establish crew duties and a general lack of communication by the crew were found to have definitely contributed to the mishap. This type mishap can be prevented by the insistence of concerned commanders and operations officers on basic crew discipline and adherence to established procedures.



SYNOPSIS 58-76

Type Aircraft: **T-42A**
 Time: 0706 Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$6,280**
 Mission: **Service/training**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	LTC	41	2,275	1,200	3,475
CP	LTC	45	286	3,933	4,219

Description of Accident: After removal of chocks, brakes were tested and left taxiing turn started toward runup area. Right main gear collapsed, damaging gear, prop, and wing.

Causes of Accident

Initial: Materiel failure—Failure of right main landing gear retract rod.

Contributing: Design error—Landing gear light system does not give a positive down-lock indication (suspect).

Remarks: The USAAVS data base revealed 19 gear malfunctions on the T-42 from April 1970 through January 1976.

Corrective Action: AVSCOM Letter No. 15, dated 25 Feb 76, subject: T-42 Aircraft Problems and Recommended Corrective Actions, established the requirement to check main gear down-lock tension at every 300-hour inspection.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$31,128

UH-1

3 Incidents ■ While aircraft was in right turn, main rotor blades struck tall tree. ■ While aircraft was in straight-and-level cruise flight, large bird penetrated right windshield. ■ During postflight inspection, crew detected damage to tail rotor drive shaft covers.

30 Precautionary Landings—following are selected briefs ■ While landing to LZ, aircraft encountered turbulent air and started high rate of descent. Copilot pulled in power to stop descent and overtorque resulted. ■ Left fuel boost pump caution light illuminated. Maintenance replaced boost pump. ■ At about 100 feet on takeoff, pilot heard loud bang from rear of aircraft and landed straight ahead in hayfield. Maintenance officer elected to truck aircraft to home station. ■ Pilot was performing HIT check which was +48° above baseline. While hovering back to parking area, compressor stall occurred.

AH-1

2 Precautionary Landings ■ Hydraulic pump cavitated on takeoff. Pilot initiated approach to clear area. No. 1 hydraulic light came on and pedals became stiff. ■ During gunnery training, forward fuel boost pump caution light illuminated. Maintenance replaced boost pump. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$151,492

OH-58

1 Incident ■ Several dents and punctures were noted aft of left cargo/passenger door. Caused by passenger seatbelt or individual load-bearing equipment striking side of aircraft.

1 Forced Landing ■ As pilot started to pick up to hover, engine failed. Pilot executed emergency shutdown. No abnormal indications or noise were noted. Maintenance restarted engine without problems and could not duplicate condition.

3 Precautionary Landings ■ Hydraulic caution light illuminated without loss of hydraulic control. Maintenance changed pressure switch. ■ Aircraft was turning from downwind to base when pilot heard squeaking and binding noise as collective was reduced. ■ Engine chip detector light came on. Suspect internal failure of engine.

TH-55

1 Forced Landing ■ Pilot heard loud banging noise and noted tachometer needles had split. IP lowered collective and attempted to rejoin needles. Engine would not produce power and quit during descent. Inspection revealed No. 1 rod had failed and punched hole in crankcase.

2 Precautionary Landings ■ Aircraft encountered lateral vibrations at hover. Maintenance replaced blue main rotor damper, retorqued, and rephased both main rotor dampers. ■ IP reported rough-running engine and 300 engine rpm drop on left magneto. Pilot noted burning oil smell and saw smoke coming from engine. Inspection revealed broken ring on No. 3 cylinder. Oil analysis showed increase in copper metal content and engine was changed.

CH-47

2 Incidents ■ Aircraft was being backed away from civilian aircraft when aft blades contacted metal pole. Three aft blades were damaged. One forward blade was damaged by flying debris. ■ Left cockpit jettisonable door separated from aircraft during flight. Cause unknown. Safety advisory message 211930Z Sep 76, subject: Installation of Phenolic Blocks, had not been complied with.

1 Forced Landing ■ No. 2 engine caught fire during startup. Fire was extinguished without damage to aircraft. Cause unknown. Suspect fuel manifold failure.

5 Precautionary Landings ■ IP was simulating low oil pressure with oil pressure selection switch between positions. Switch was returned to scan and pressure dropped to zero. System check indicated that forward transmission had zero oil pressure. Caused by failure of oil pressure selector switch. ■ During climbout, crew chief noticed oil leak in aft transmission area. Caused by worn seal on vertical shaft assembly. ■ Aircraft was at hover when No. 1 flight boost manifold developed hydraulic leak. Caused by failure of preformed packing. ■ No. 2 flight boost caution light came on and No. 2 pressure gauge dropped to zero.

Caused by broken hydraulic line in tunnel area at combining box. ■ Aircraft was in flight with external load when crew smelled hydraulic fluid. Approximately 30 seconds later, No. 2 flight boost pressure dropped to zero. Load was dropped 5 feet above ground with no damage and aircraft was landed. Caused by broken line at phenolic block forward of combining box. This is the third occurrence of this type. An emergency EIR has been submitted.

SUPPLEMENTARY DATA REQUIRED

Some units in the field are not complying with the provisions of AR 385-40. Paragraph 4-2e(14), page 4-3, states that when a suspected cause factor is given, a supplementary message is required. The ASO must insure when a PRAM is submitted with a suspected cause factor, a supplemental followup message is sent. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

T-42

1 **Precautionary Landing** ■ Copilot saw oil siphoning from No. 2 engine, and aircraft was returned for landing. Maintenance failed to secure oil cap properly when adding oil. Copilot visually checked cap.

U-21

2 **Precautionary Landings** ■ Smoke was coming from under pilot's seat during approach. Pilot executed electrical fire emergency procedures and smoke stopped. Situation could not be duplicated during MOC. Suspect heater backfired. ■ Gear was placed up after takeoff and light in gear handle remained on. Pilot placed gear down and light extinguished. Caused by electrical failure of "squat" switch.

U-8

2 **Precautionary Landings** ■ During training flight, IP executed emergency gear-down procedure. After gear was locked down, IP was unable to get gear clutch to engage for retraction. Aircraft returned for landing with gear extended. Because of gear position, clutch sprocket did not engage. Retraction tests were OK. ■ No. 1 engine chip detector light came on. After landing, several large steel chips were found on magnetic plug and oil screen. Suspect internal engine failure. Engine is being replaced. (ARNG)

OV-1

4 **Precautionary Landings** ■ Aircraft encountered moderate to severe turbulence and lightning after entering unforecast thunderstorm. Maintenance inspected aircraft after landing and found two lightning strikes, one burning trailing edge of right inboard aileron and the other on outboard tip of left aileron. Both areas were repaired with metal set. ■ Pilot detected hydraulic fluid odor and noticed No. 2 hydraulic pressure had dropped to zero. A few minutes later, No. 1 hydraulic pressure also fell to zero. Pilot executed emergency gear extension and landed. Nose gear actuator O-ring, P/N MS 28775-221, failed. ■ During pretakeoff runup, smoke was seen coming from right side aft bulkhead. Aircraft was shut down. No. 2 engine bearing seal was leaking. ■ IP turned off No. 2 engine master switch to simulate engine failure at 9,500 feet. After two abortive attempts at restart, engine was secured and single-engine landing was made. Maintenance could not determine cause. *A message was sent by USAAAVS to the unit, referencing the TM and stating that the most probable cause was the gas producer turbine seizing in the housing.*

C-12

1 **Precautionary Landing** ■ No. 1 engine failed to produce sufficient power and takeoff was aborted. Caused by broken P3 line.

C-7

1 **Precautionary Landing** ■ No. 2 engine chip detector light illuminated upon entry into traffic pattern. All other indications were normal. Metal chips were found on magnetic plug and oil screen. Suspect internal failure. Engine is being changed. □

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

CH-47

1 **Precautionary Landing** ■ Severe oil leak was noted in forward transmission area. Main oil line fitting to forward transmission was not torqued.

T-42

1 Precautionary Landing ■ During test flight for periodic inspection, power was reduced on descent. No. 2 engine maintained 23 inches manifold pressure and throttle control had no effect. Approach was continued, and No. 2 engine was shut down/feathered on final approach. Cotter pin was not installed in accordance with par. 3-179, TM 55-1500-204-25/1, allowing nut and bolt of control cable at fuel control end to dislodge. Cable rod end, item 38, figure 72, TM 55-1510-208-25P, was separated from fuel control lever with no evidence of materiel failure. Cables had been changed and inspected during periodic inspection.

U-21

1 Precautionary Landing ■ (A series) After takeoff, copilot noticed fuel siphoning from right-wing filler cap. Postflight inspection revealed that fuel tank neck/cap locking flange was slightly deformed and cap locking tab was loose.

CH-47 TRANSMISSIONS

AVSCOM message, DTG 082000Z Oct 76, subject: Maintenance Advisory Message on CH-47 Forward and Aft Transmissions (CH-47, 1976-15), advises that TBOs of some CH-47 forward and aft transmission configurations have been reduced and others require a depot-level inspection before TBO. The message also contains recording and reporting instructions. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

1 Ground Accident, 1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$11,408

GROUND ACCIDENT

■ Preparing to track AH-1 main rotor blades, crew chief raised tracking flag and metal pole struck both rotor blades. Shrapnel damaged nearby OH-58. Blowing sand and lack of blade-tracking SOP were cause factors.

UH-1

■ While hovering to parking area, pilot and copilot were advised of unsecured parked aircraft. Pilot continued to parking area. Main rotor blade of unsecured aircraft flexed down and struck tail rotor drive shaft. Pilot preflighting unsecured aircraft did not see approaching aircraft in time to prevent damage. □

FOUO ON PRAMs

Preliminary Reports of Aircraft Mishaps (PRAMs) are not to be classified For Official Use Only (FOUO) unless there is a requirement to protect some information in the report, e.g., names of fatalities until next of kin can be notified. DA Message 052033Z Feb 76 changed the requirement for FOUO in paragraph 4-2a of AR 385-40.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

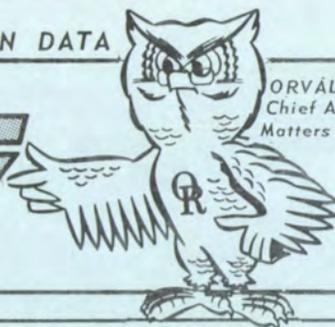
OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314



MAY 23 1977



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAVVS PUBLICATION

VOL. 5, NO. 30 ■ 18 MAY 1977

mishaps for the period 01 APR-5 MAY 1977

US Army Aviation
Fort Rucker, Alabama 36360

WELL DONE!

Quick action by an on-looking crew prevented a possible two-ship hover accident at a southern AFB.

Returning from a static display at a local university campus, the crew of an OV-10, CPT A. K. Darby, DES, USAAVNC, and CPT Jack Wofford, USAARL, both of Fort Rucker, AL, averted possible catastrophe as a pair of sister service AH-1Js prepared for hover departure from the refueling ramp.

The Mohawk crew, waiting for their aircraft to be refueled, watched the two Cobras start and prepare for departure. The AH-1s started together, and the nearest aircraft picked up to a 4-foot hover, moved back, and motioned the "follow-me" truck to his

□ □ □

DON'T MOVE THE AIRCRAFT

Just a reminder *not* to move aircraft for 25 minutes after power has been removed from the MD-1 displacement gyros and the CN-998/ASN-43 directional gyros. If it is necessary to relocate the aircraft after shutdown, power should be reapplied to the MD-1 and the CN-998/ASN-43 gyros for 5 minutes before repositioning the aircraft, *with power left on*. Failure to observe these precautions can result in damage to the gyros. Who says so? Right now, TM 11-1520-210-20, change 1 (dated 15 Jul 74) says so; but this information is being added to TM 55-1520-210-10, par. 7-16; TM 55-1520-219-10, par. 7-42; TM 55-1520-220-10, par. 7-41; TM 55-1520-210-20, par. 1-20; TM 55-1520-219-20, par. 1-33; and TM 55-1520-220-20, par. 1-35. Meanwhile, read and heed.

front to proceed to the takeoff area.

At this time, CPT Darby noticed a red "safety flag" dangling underneath the aircraft.

Closer inspection revealed that the Cobra was still attached to the grounding wire. Running toward the hovering Cobra, CPT Darby obtained the front seat pilot's attention and signaled the aircraft to land immediately. With the Cobra safely on the ground, CPT Darby and CPT Wofford removed a 40-foot, 1/4-inch plastic-covered steel grounding wire with large metal clips on each end from the aircraft. The grounding wire had been attached to left skid but was now wrapped around the right skid three times and connected to a grounding pin on the ground under the tail rotor.

The alertness of these two individuals turned an imminent accident into a lesson well learned. With their OHR in the mail, a much deserved well done!

□ □ □

Aviation Life Support Equipment ELSE BULLETIN

A general information bulletin (newsletter) has been published by the Aviation Life Support Systems Management Office. The information contained in this bulletin is of special interest to all Army aircrewmembers.

You can receive copies by writing to USAAVSCOM, ATTN: DRSAV-WL, P.O. Box 209, St. Louis, MO 63166, or by calling AUTOVON 698-3241/3291.

U. S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX	AUTOVON: 558-XXXX
Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	6385/6510
For Assistance in Locating Proper Directorate Aircraft Accident Analysis and Investigation	6385
Technical Research and Applications	3913/4202
Plans, Operations, and Education	4812/3493
Management Information System	6410/6404
Publications and Graphics Division	2920/4200
Medical Division	4479
Staff Duty Officer (1800-0700 hours)	6788
	6510

FY 77 ACCIDENT SYNOPSSES

SYNOPSIS 7T-28

Type Aircraft: UH-1H

Time: 0950 Classification: Minor

Fatalities/Injuries: None

Estimated Materiel Damage Cost: \$18,844

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	39	1,506	1,952	3,458
CP	CW2	42	756	2,323	3,079

DESCRIPTION OF ACCIDENT: During cruise flight, pilot heard rumbling noise, followed by a vibration and complete loss of tail rotor thrust. Pilot was unable to maintain directional control to a desired landing site. Pilot established a descending right tum after two violent aircraft oscillations and elected to execute a hovering autorotation from approximately 10 feet agl. The aircraft continued a tight right tum during the hovering autorotation and touched down hard, left skid first, on slightly sloping terrain. All crewmembers and passengers exited the aircraft using standard egress procedures.

CAUSES OF ACCIDENT: Materiel—Tail rotor output quill coupling failed.

REMARKS: Pilot used excellent judgment in not overcontrolling aircraft in his attempt to return to airfield. Pilot realized he could not reach airfield and landed aircraft on uneven, sloping terrain, sustaining only minor damage.

CORRECTIVE ACTION: USAAVSCOM published maintenance advisory message AH-1-77-1 and UH-1-77-1 modifying the lubrication and inspection requirements of tail rotor flexible couplings on AH-1 and UH-1 helicopters.

■ ■ ■

TOTAL MISHAPS FOR 29 APRIL-5 MAY 1977

	UH-1	AH-1	OH-58	CH-47	T-42	OV-1	C-12	U-8	U-21	TOTAL
Accidents	1									1
Incidents		2		1						3
Forced Landings	2									2
Precautionary Landings	11	4	12	2	1	2	1	1	4	38
TOTAL	14	6	12	3	1	2	1	1	4	44
Fatalities										0
Injuries										0
Estimated Costs	\$59,000	\$17,505		\$51,000						\$127,505

SELECTED MISHAP BRIEFS

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

UH-1

Accident ■ Upon completion of night training flight aircraft was hovered to parking space. As aircraft was pivoted around parking space marker to position for shutdown, undetected rearward movement occurred. Aircraft hit a parked UH-1H. Investigation is in progress.

Forced Landings ■ Test pilot was checking autorotation rpm on test flight. During power recovery phase, N1 rpm failed to stabilize. Subsequent attempts to maintain power resulted in deterioration of N1. Operation of aircraft in emergency governor mode resulted in several compressor stalls and engine overspeed. Suspect failure of fuel control. Teardown analysis has been requested on the fuel control. ■ Engine lost power while aircraft was hovering for takeoff. Aircraft yawed 10°-15° to the left and hovering autorotation was performed. With aircraft on the ground N1 stabilized at 30 percent with throttle full open and egt 550°. MOC was performed. Test flight was unable to duplicate loss of power. Teardown analysis has been requested on the fuel control.

Precautionary Landings ■ During cruise flight, vibration was felt in antitorque pedals and unusual noise was heard from rear of aircraft. Caused by failure of No. 1 tail rotor drive shaft hanger bearing. ■ Pilot noticed fluctuation of transmission oil pressure. Inspection revealed broken ground wire leading to transmission oil pressure sending unit. ■ Pilot detected strong fuel odor and elected to land in open field. Inspection of aircraft revealed no cause for the odor. ■ Master caution light came on. Maintenance test pilot could not duplicate condition. ■ Tail rotor chip detector light illuminated. Tail rotor gearbox was replaced.

AH-1

Incidents ■ During touchdown from practice autorotation, aircraft broke through ice into 6 inches of water. Aircraft rocked forward and ice buckled up and struck gun turret. ■ Aircraft landed hard during termination of low-level, low-speed autorotation. Incident is under investigation.

Precautionary Landings ■ During NOE training, master caution and transmission oil pressure segment lights came on, followed by rapid decrease in transmission oil pressure. Caused by failure of gasket, NSN 5330-00-107-5393. ■ During NOE flight, IP noted N1, N2, and torque gauge fluctuations, accompanied by approximately 4 bangs from rear of aircraft. Suspect compressor stall. ■ Tail rotor gearbox chip detector light came on during takeoff. Tail rotor gearbox was replaced. ■ During hover, loud noise was heard from hydraulic pump area and No. 1 hydraulic light came on. Failure of pressure line from hydraulic pump was caused by chafing and improper routing of line.

AVSCOM MESSAGES RECEIVED

- 041820Z May 77—subject: Maintenance Advisory Message Concerning Attachment of the Fifth Mount Assembly to the Transmission Case on AH-1S Helicopters (AH-1-77-11).
- 051615Z May 77—subject: Maintenance Advisory Message on AH-1/UH-1 Helicopters Concerning Mismatch of Tail Rotor Drive Shaft Hanger Assembly Parts (AH-1-77-12/UH-1-77-12).
- 052011Z May 77—subject: Maintenance Advisory Message Concerning Movement of the Barometric Setting of the AAU-32/A Encoding Altimeter (GEN 77-12).

1. Movement of the barometric pressure setting under vibratory conditions has been discovered by user activities. Two instruments found by pilots to have barometric settings sensitive to vibration have been confirmed by laboratory tests. Laboratory testing resulted in more baro setting movement than observed by the pilot in both instances.

2. Although field complaints have been few and the reports have indicated small deviations, field activities are hereby notified that the barometric setting may deviate in flight. This notification is intended to be precautionary only since:

- a. The barometric setting is routinely checked in flight and before landing or takeoff.
- b. The encoder output is unaffected by the barometric pressure setting.

3. If baro shift should occur the correct altitude (pointer) reading can be obtained by merely returning the baro knob to the correct setting.

4. Baro movement has been observed only in the AAU-32/A encoding altimeter. The manufacturer is aware of the problem and is conducting an engineering study to solve it.

5. If baro movement is observed in flight to be more than 00.02, replace the instrument and submit an EIR at the earliest possible time.

6. Point of contact for this action is Mr. Robert Lucker, AVSCOM, AUTOVON 698-3030/2660. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

OH-58

Precautionary Landings ■ Engine oil bypass light came on during climb. Engine oil pressure was fluctuating between 0 and 100 psi and temperature was in excess of 150° C. Investigation during ground check revealed oil was being injected into exhaust stack by AGB vent line. Suspect engine oil pressure regulator internal oil check valve was the cause. Teardown analysis has been requested on engine. ■ Low rpm audio came on during landing. Collective was reduced and engine-out warning light came on. Engine N2 indicated 103 percent and N1 75-80 percent when engine oil bypass caution light and chip detector light came on. Aircraft was landed with power and engine oil pressure dropped to zero. Caused by internal failure of engine. ■ During cruise flight, two grinding sounds were heard, master caution and hydraulic caution lights came on, and hydraulic pressure was lost. Pilot turned off hydraulic switch and landed without mishap. Hydraulic hose fitting lost torque and backed off from reducer tube at hydraulic solenoid valve tee fitting, causing loss of system hydraulic fluid. ■ During cruise flight, pilot initiated a climb using 70 pounds of torque when N2 dropped to 95 percent. Pilot lowered collective to regain rpm and extended linear actuator to full open. Rpm stabilized at an indicated 101 percent. During power-on descent, increases in power caused rpm to bleed off. Caused by failure of double-check valve. Valve was removed, cleaned, and reinstalled. ■ Engine chip detector light illuminated. Chips were found on both chip detector plugs. The last oil sample indicated a high iron content in engine oil. Engine was changed.

CH-47

Incident ■ Crew heard loud noise and aircraft was landed and inspected. No. 2 drive shaft tunnel cover was

missing, and Nos. 1 and 3 tunnel covers were unsecured. Passengers stated that when boarding they had seen one tunnel cover up, but thought that was normal. Tunnel covers had not been properly secured following preflight.

Precautionary Landing ■ No. 2 engine oil temperature climbed to 150° C. and P/TIT began to rise. No. 2 engine condition lever was placed in ground and single-engine running landing was performed. Investigation revealed defective No. 2 engine oil temperature transmitter and attaching electrical cable assembly. □

FIXED WING BRANCH

MAJ William G. Daly, Jr., Chief ■ 558-3901

C-12

Precautionary Landing ■ Immediately after liftoff, No. 2 engine torque meter indicated 115%. Power was reduced to get torque below 100% and pilot returned for landing. Engine fuel control had failed, causing overtorque.

U-8

Precautionary Landing ■ After takeoff and during climb, fuel was seen trailing from left wing outboard of engine nacelle. Fuel leak was caused by faulty fuel transmitter gasket, P/N 35-921503. *Engine was not shut down IAW par. 4-23, TM 55-1510-201-10/4.*

OV-1

Precautionary Landings ■ When landing gear was extended on downwind leg, left main gave unsafe indication. Three recycles were made and emergency system was used. Caused by failure of microswitch on left main gear, P/N M524331-1. ■ During takeoff on test flight, fuel fumes were detected in cockpit. Emergency was declared and aircraft landed. Cause of fumes was defective fuel cap seal, P/N 1560CV1-156-1.

T-42

Precautionary Landing ■ After level-off, when pilot attempted to adjust power to cruise setting, No. 1 engine did not respond to throttle movement and remained at climb power. Engine was shut down and aircraft landed. Throttle cable slider had slipped out of clamp, P/N RA1039-C, causing throttle to stick in open position.

U-21

Precautionary Landings ■ Approximately 5 minutes after takeoff while aircraft was climbing to 10,000 feet, No. 1 engine quit. No engine instrument fluctuations occurred before failure. Emergency shutdown procedures were used. Engine restart attempt resulted in bus overload circuit breaker popping when No. 1 condition lever was placed in low idle. Engine was secured and aircraft landed. - Caused by sheared fuel pump shaft, P/N 4V146R101. ■ No. 2 engine was started and while starting No. 1, No. 2 quit. Caused by contaminated fuel. Analysis revealed fuel was contaminated with water and lye. Lye had been used during repair of fuel truck used to refuel the aircraft. ■ Fuel pressure on No. 1 engine dropped to 10 psi. Three minutes later, left boost pump failed. Boost pump was shorted internally. □

MAINTENANCE BRIEFS

SFC John M. Terrell ■ 558-3901

OH-58

Precautionary Landing ■ Power loss occurred and collective control increase caused low rpm audio system to activate. Cross-check of engine instruments indicated low-side governor failure. Governor was improperly rigged. □

AVIATION-RELATED GROUND MISHAPS

MAJ William F. Prow ■ 558-3913

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$77,000

UH-1

■ Aircraft was being used to sling lift a radio relay system to a remote site. During flight, cargo began to rotate, causing sling assembly to place excessive tension on cargo hook, resulting in shearing of cargo hook pin. As the load and cargo hook continued rotating, mechanical release cable wound around hook shaft resulting in activation of release system and the load fell to the ground. An EIR was submitted with suggested design improvements to the cargo hook assembly.



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FORT RUCKER, AL 36362
 STACOM 16 ■ 18 MAY 1977 COL CLEMENT A. WYLLIE ■ 558-2603/3514

CRF MINIMUMS

Since the publication of DA MSG 271545Z April 1977, we have received several inquiries regarding the correct structuring of table 2-2. The entire table was not printed on a single page with the result that it is quite difficult to understand. Here is how it should look.

**TABLE 2-2. Combat Readiness Flying Objectives and Requirements
 (TOE Units)**

	Quarterly ¹ Objectives	Semiannual Requirements	Annual Requirements
Tactical	5	10	30
Instrument ^{2,3}	5	10	25
Night	5	10	25
Tactical	(4)	(8)	(20)
Instrument	(1)	(2)	(5)
	<hr/>	<hr/>	<hr/>
	15	30	80

The numbers in brackets under the night requirement indicate the number of hours of night tactical (NT) and night instrument (NH or NW) to be counted toward the total night requirement. These hours apply only to night minimums and are not simultaneously creditable toward the 30-hour annual tactical and 25-hour annual instrument minimum. For illustrative purposes the table might be transposed to read as follows:

(Annual Minimums Only)

Tactical	50
Night	(20)
Instrument	30
Night	(5)
Total	80

Be certain also to read table 2-1 and 2-1A carefully in order to determine the number of SFTS hours which must be applied toward your annual instrument minimums. Depending on your qualifications, the aircraft you are flying and your proximity to an SFTS device, the time which must be credited could range from zero to 25 hours (all except the night instrument).

POSITION REPORTS, QUESTIONS & ANSWERS

■ What is the correct call sign for an Army helicopter flying a nontactical mission? Can we use our unit tactical call sign?

With the exception of medical evacuation flights, the only authorized nontactical call sign for an Army helicopter is "Army copter," followed by the last five digits of the aircraft's tail number. Medical evacuation flights use the prefix "Army Med Evac." The references on this are the DOD FLIP General Planning, AR 95-11 (attachment 2) and ATC handbook 7110.65, section 87(c). Sorry about those flashy tactical call signs, but you'll have to leave 'em behind when you're non-tac.

■ The old AR 95-63 specifically authorized an instrument examiner to examine two pilots simultaneously. The new reg doesn't contain such specific authorization. Are we still authorized to do this?

No. According to AR 95-63, dated 13 December 1976, the examiner must function as either the pilot or copilot. There are a couple of reasons for this. (1) The examiner, by having immediate access to the controls, can better control the evaluation, especially problem simulations and emergency procedure evaluations. (2) The examiner is also responsible for insuring that the applicant does not maneuver the aircraft into a dangerous position or does not exceed the aircraft's limitations. This would be quite a difficult undertaking from the back seat.

This may seem a bit rough for some of you to live with, but the advantages of doing it this way pretty well outweigh the disadvantages.

■ When experimenting with various temperatures versus pressure altitude, I found that with a 0° C. and zero pressure altitude (PA) that the VMC speed was nearly equal to the published takeoff speed for the U-21A aircraft. At first glance, this doesn't seem to agree with the way I have thought of VMC in the past. That is, with lower pressure altitudes and colder temperatures, you will have better performance, and it just doesn't appear to be logical that VMC would be that high. What's the story?

Well, you've answered your own question in part when you stated low temp and low PA provide better performance—just remember that "better performance" includes engine power output. So at zero PA and 0° C. in order to maintain directional control of your aircraft, you require more TAS, thus more KIAS. Therefore, VMC IAS and TO IAS are nearly the same. Your T74-CP 700 turbo prop engine is developing maximum allowable power under these conditions of temperature and altitude. Reference torque available for takeoff chart, page 7-19, figure 7-9, TM 55-1510-209-10.

■ Recent field visits have surfaced a varied interpretation of the flying requirements for aviators assigned to limited flying duties. Paragraph 1-13, AR 95-1, describes the position and states the annual written exam and flight physical must be maintained. Paragraph 2-12 relieves the individual of mandatory accomplishment of CRF minimums. The question arises, what about annual standardization rides and maintenance of instrument qualification?

Officers performing pilot duties under the provisions of paragraph 1-13, AR 95-1, must still meet the requirements of AR 95-63 insofar as instrument qualification and standardization evaluations are concerned. These gentlemen, however, do not have to meet hourly CRF minimums, as they are authorized to perform aircrew duties only in conjunction with the operational requirements of their position.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS

JUN 3 Rec'd

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

VOL. 5, NO. 31 □ 25 MAY 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

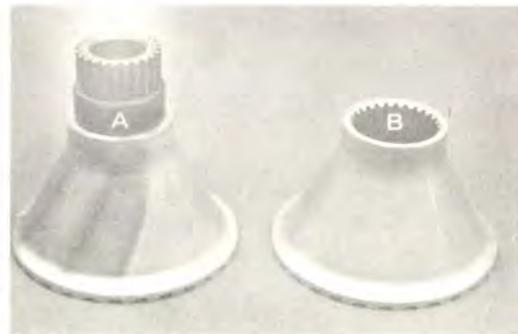
Safety-of-flight message

□ 162010Z May 77, subject: Safety-of-Flight Message (Operational) for U-8 Aircraft. A very serious safety hazard exists in the practice of storing and transporting extra engine oil in the battery compartments of engine nacelles. Many of the one-quart containers now in use are made of a cardboard substance. These may seep or rupture due to vibrations and turbulence, or otherwise deteriorate with age and allow the oil to contact hot engine components. Storing or transporting oil or other flammable materials in the battery compartments of the engine nacelles should be prohibited due to the possibility of fire. Contact: MAJ Daly, USAAAVS, AUTOVON 558-3901/4202, commercial (205) 255-3901/4202.

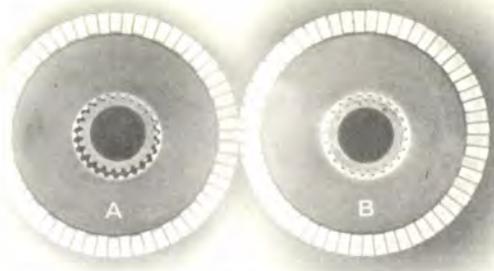
Murphy strikes again!

As these photos show, the new AH-1S tail rotor coupling, model 212, can be installed quite easily on model 204 hanger shafts. This is so even though the 212 couplings have 26 splines versus 24 splines on the model 204 shafts. The enlarged internal diameter on the S model coupling is responsible for this situation. The S model tail booms were "Murphy proofed" to prevent installation of the model 204 hanger assemblies.

However, nothing insures the model 212 hanger assembly itself has not been built up from an incorrect 212 aft coupling and/or an incorrect 204 male coupling. Model 204 hanger assemblies are also vulnerable to Murphy's Law by virtue of the same combination. Reference AVSCOM message 051615Z May 77 (AH-1-77-12/UH-1-77-12).



(A) Model 204 coupling, P/N 204-040-614-3, and shaft, 24 splines, P/N 204-040-602-5, for UH-1 and AH-1G/Q aircraft. (B) Model 212 coupling, 26 splines, P/N 212-040-614-1, for the AH-1S aircraft.



(A) 204 shaft incorrectly mated with 212 coupling.
(B) 204 coupling correctly mated with 204 shaft.

Prepared by the U.S. Army Agency for Aviation Safety, Fort Rucker, AL. AUTOVON 558-4479. Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition. Data is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.



212 tail rotor myth

A recent AH-1G accident involving a tail rotor malfunction has brought to light some misconceptions about the characteristics of the 212 tail rotor when loss of tail rotor pitch control occurs.

The 212 tail rotor *is not* designed to seek a neutral pitch setting or make any movement from the last pitch setting applied before tail rotor pitch control was lost.

The counterweights on the 212 tail rotor have two purposes. One is to eliminate pedal creep. The second is to reduce pilot workload during hydraulics

failure. These weights balance out some aerodynamic loads and make pedal applications less difficult when the hydraulics are out.

The thrust available from this system and the possibility of a malfunction make it imperative that operators understand that the loss of tail rotor pitch control with the 212 tail rotor will not “fix itself” to a neutral setting or even change from the last position applied by the operator before failure. This information should be widely publicized among operators of the AH-1G/Q/S.



Crew was performing a hover check in this AH-1G when pilot initiated left pedal turn. Ninety degrees into turn, the rate of turn increased violently and pilot applied full right pedal with no apparent response. Aircraft completed three 360° turns and crashed. Suspect the tail rotor silent chain failed and the left pitch setting in the tail rotor blades remained fixed, causing the aircraft to spin uncontrollably to the left. This Cobra was equipped with a 212 tail rotor.

Accident synopsis

SYNOPSIS 77-1

Type Aircraft: OH-58A

Time: 1750 Classification: Major (total)

Injuries: 0 Fatalities, 4 Injuries

Estimated Materiel Damage Cost: \$151,565

Mission: Service-visual recon

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CW2	29	2,337	2,337
Copilot	CW2	23	1,077	1,077

Description: During approach to a closed airfield at approximately 40 feet agl, copilot saw a wire across the runway. To avoid the wire, pilot attempted to fly under it, but main rotor hit wire and aircraft crashed.

Causes: Command-Ground reconnaissance and flight of full length of airfield conducted earlier the same day failed to

detect wire hazard (inadequate survey IAW AR 95-1, par. 3-14). Airfield-Appropriately marked as closed but was presumably open for helicopter operations during this operation. Other-Evening shadows may have masked the wire from pilot's view.

Corrective Actions: Actions recommended were (1) that the MACOM assign specific responsibility for physically surveying all open and closed airfields within the operation area prior to all exercises; (2) that the results of this survey depict in detail all hazards to flight and/or ground operations; (3) that all airfields considered unsafe are so identified in the survey and are closed to problem play; (4) that a copy of the survey be provided to all participants to include the controlling personnel.

TOTAL MISHAPS FOR 6-12 MAY 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
UH-1	1	3	2	10	16
AH-1	1	1	1	4	7
OH-58	1			9	10
CH-47				1	1
U-8	1			1	2
U-21				1	1
Total	4	4	3	26	37
				Fatalities	4
				Injuries	3
				Estimated Costs	\$1,520,625

Selected mishap briefs

Rotary wing

UH-1

Accident □ During quick stop maneuver, tail rotor hit ground, aircraft spun approximately 180° to the right, and main rotor blades hit ground. Accident is under investigation.

Incidents □ During climbout at 850 feet, loud bang was heard, aircraft yawed to the left, and engine and rotor rpm began decaying. Caused by internal failure of engine. One skid and crosstube were damaged on termination of autorotation. □ During PMD inspection, scissors assembly was found to have contacted washplate bearing cover. Scissors assembly was replaced. □ Aircraft was landing in LZ and wires were discovered in flight path. Go-around was attempted, but right skid and main rotor blade struck wires.

Forced landing □ Crew felt abrupt vibrations and heard popping noise from engine



area. Power was reduced and popping continued. Pilot maintained minimum power to insure reaching area, then executed power-off autorotation. HIT check taken before flight indicated +27° over base line. Internal engine inspection revealed evidence of FOD.

Precautionary landings □ Pilot smelled fuel during takeoff and aborted. Fuel line to fuel manifold was not properly torqued. □ Engine oil pressure dropped to zero. Maintenance replaced engine oil pressure gauge. □ Transmission oil pressure gauge began fluctuating between minimum and maximum operating limits. Caused by failure of transmission oil pressure gauge. □ Battery overheated during cruise flight. Smoke was seen coming from nose compartment, followed by battery acid spurting on windshield. Caused by internal failure of battery. □ Crew smelled strong fuel odor on takeoff. Aircraft was landed and thoroughly inspected before and after shutdown. No leaks were discovered. Aircraft was test flown and released for flight.

AH-1

Accident □ Aircraft was indicating 100 knots airspeed in climbing right turn from low-level flight. Pilot stated the low rpm audio came on as aircraft lost power. During termination of turn, aircraft settled to the ground and rolled over several times. Accident is under investigation.

Forced landing □ When IP retarded throttle for simulated engine failure throttle went past flight idle detent. Engine quit and aircraft was landed. Inspection revealed improper adjustment of flight idle stop.



Precautionary landings □ Hydraulic caution light came on. Maintenance replaced hydraulic pressure switch. □ Aircraft was at a hover when crew chief noticed hydraulic fluid coming from belly of aircraft and motioned for pilot to land. Inspection revealed tee fitting on No. 1 hydraulic system was cracked.

□ Collective was increased for HIT check. As N1 indicated 88 percent, engine rpm decreased, N1 stabilized at 69 percent, then engine tone and TGT started to increase. MOC and test flight could not duplicate problem. □ Forty-two degree gearbox chip detector light came on. Gearbox was replaced.

OH-58

Accident □ During visual reconnaissance mission, pilot made low pass over an "aggressor" vehicle. Following deceleration with left pedal turn, aircraft struck tall pine trees with its main rotor and crashed. Mishap under investigation.

Precautionary landings □ Master caution and hydraulic segment lights came on. Feedback was felt in controls and landing was made. Inspection revealed switch on hydraulic multiple connector failed.

□ Transmission oil pressure light came on. Failure of aft freewheeling unit seal caused loss of transmission oil. This seal had been noted as seeping on preflight, but maintenance had checked it and found it to be within limits. □ During climbout with high power setting, engine oil pressure increased from 130 to 140 psi. When engine power was decreased, oil pressure decreased to 132 psi. Investigation revealed engine oil pressure was out of adjustment. Oil pump output pressure

was adjusted to normal range (90 to 130 psi). □ Transmission chip detector light came on. Inspection revealed heavy concentration of chips on main transmission chip detector plug. Transmission was replaced. □ Engine chip detector light came on and N1 fluctuated. Engine was on a special 5-hour oil sample program before this occurrence. Engine also had a loud noise of an undetermined origin during operation. Teardown analysis of engine has been requested.

CH-47

Precautionary landing □ No. 1 hydraulic flight boost system failed. Investigation revealed No. 1 flight boost pump splines were worn and not engaging AGB drive. Hydraulic boost pump was replaced.

Messages received

□ OH-58 Maintenance Advisory Message, 111315Z May 77 (OH-58-77-4), provides revised criteria for inspection of urethane rubber on OH-58 main rotor hubs and strap assemblies for deterioration and bulging especially on inboard surfaces near bushings (spools).

□ 051400Z May 77 Advisory Message of Developed Team Schedule for Inspection of Engine Transmissions on all CH-47C Aircraft (CH-47, 1977-4).

Fixed wing

U-8

Accident □ (D series) During descent from cruising altitude (7,000 feet) for approach to landing, No. 2 engine malfunctioned, was feathered, and subsequently caught fire. Pilot reported difficulty to approach

control and was cleared to 2,700 feet. Pilot responded he was in an uncontrollable descent and going to crash. Engine separated from aircraft before impact. Aircraft struck ground in a near vertical attitude at approximately 215 knots, killing both crewmembers. Suspect fire was fed by 5 quarts of oil which had been stored in the empty right nacelle battery compartment. Engine is being analyzed at CCAD. (ARNG)

Precautionary landing □ When gear was extended on downwind for landing, fuel fumes were detected. Postflight inspection by maintenance revealed cracked fuel line from auxiliary tank to main tank. (ARNG)

U-21

Precautionary landing □ (A series) Fuel began siphoning from left nacelle fuel cap during cruise flight. Landing was completed and fuel cap adjustment nut was tightened.

Aviation-related

UH-1

□ Tail rotor drive shaft cover, main rotor pitch horn assembly, adapter damper and pillow block were damaged by winds while aircraft was parked and tied down.

OH-58

□ In preparation to tow another aircraft, tug was driven over tow bar, resulting in the other end of the tow bar pitching up and striking OH-58 chin bubble. □ During attempt to ground handle aircraft into a crowded hangar, tail rotor blade of OH-58 struck an AH-1G, damaging OH-58 tail rotor blade.

USAAAVS phone numbers

Commercial 255-XXXX AUTOVON 558-XXXX	
Aircraft Accident Analysis & Investigation3913
Technical Research & Applications4812
Plans, Operations & Education6410
Management Information System2920
Publications & Graphics Division4479
Medical Division6788
Staff Duty Officer (1800-0700 hours)6510

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

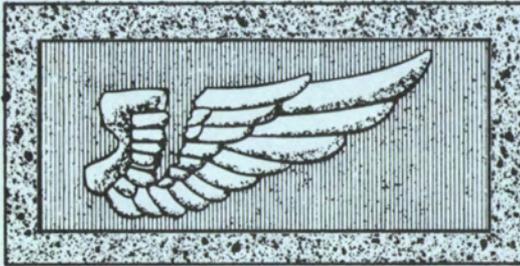
FIRST CLASS

Flightfax

VOL. 5, NO. 33 □ 8 JUN 1977

JUN 4 4 00 Rec'd
 US Army Aviation Training Library
 Fort Rucker, Alabama 36360

Twenty-one receive Broken Wing Award



Twenty-one aviators received the Army Aviation Broken Wing Award during the first five months of 1977.

The Broken Wing Award is given to aircraft crewmembers who demonstrate a high degree of professional aviation 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 Change 5 to AR 385-10.

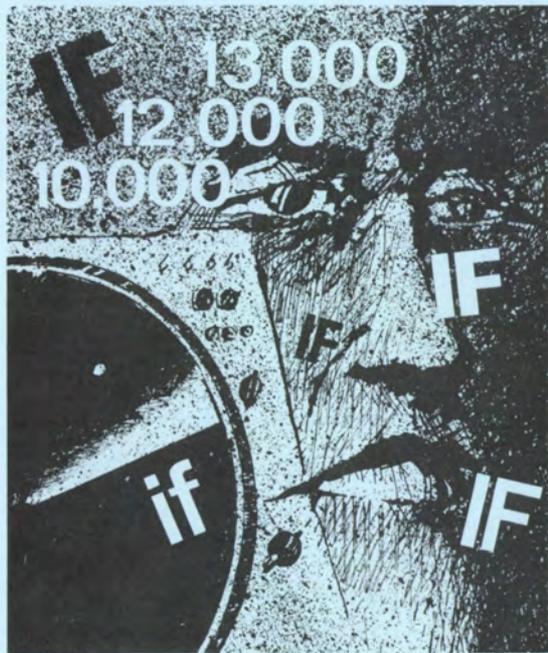
Nominations can be made by any person having knowledge of the event. They should be submitted within 15 days of the event in letter form, without indorsements, to the Commander, U.S. Army Agency for Aviation Safety, ATTN: Chairman, Broken Wing Award Committee, Fort Rucker, AL 36362.

Broken Wing Award recipients

CW2 Ande J. Albert
 118th Avn Co, APO 96225
CW2 Charles S. Barnes
 Co B, 4/77, Ft. Campbell
WO1 James A. Carlsen
 Ttp C, 3/5 Cav, Ft. Lewis

CW2 James C. Cole
 Indiana ARNG
CW3 John R. Dougherty
 USAACEBD, Ft. Bragg
CW2 Curtis L. Franklin
 HHC, 172 Inf, APO 98749
CW2 Frank T. Klotz
 155 Avn Co, Ft. Ord
MAJ William McCormick
 Avn Sup Fac, West Virginia ARNG
CPT James P. McKinney
 271 Avn Co, APO 96271
DAC Billy B. McPhail
 A Ttp, 7/17 Cav, Ft. Hood
1LT James A. Moen
 Co B, 158 Avn Bn, Ft. Campbell
CW4 Raul Ortiz
 USMAAG, Ethiopia
CW2 Michael A. Pancake
 9th Avn Bn, Ft. Lewis
CW2 Allen L. Pegram
 C Ttp, 4/9 Cav, 6 Cav Bde, Ft. Hood
CW2 Dean M. Resch
 USAADTA, Ft. Rucker
WOC Russell Schindelheim
 62 Co, Ft. Rucker
CPT Jerome P. Shoemaker
 40th Inf Div, California ARNG
2LT David D. Skala
 40 Inf Div, California ARNG
DAC James R. Smith
 Doss Aviation, Inc., Ft. Rucker
CW2 Marion F. Standridge
 DUFT, Ft. Rucker
CW3 Gregory A. Woltz
 1 Avn Co, Ft. Riley

Combination of errors



The pilot leveled the aircraft at 10,000 feet. At this altitude, the passengers could ride in comfort in the unpressurized cabin without any need to don the available oxygen masks. All aspects of flight planning had been properly performed, and the mission was progressing smoothly as the aircraft winged its way through the veil of clouds and haze. By all rights, this should have been another relatively short, pleasant and uneventful flight. It was short. Approximately 43 minutes after takeoff, the aircraft plowed into the side of a mountain.

Despite the exceptional qualifications of the crew, the stage for this accident had been inadvertently set during the planning phase when the crew elected to follow a less frequently used route over a mountain instead of the more common one

around it—a decision made because the TACAN feature of a NAVAID was out of service. The route selected required a minimum en route altitude of 13,000 feet for the second leg of the flight, after crossing the first intersection at a minimum crossing altitude of 12,000 feet.

Following takeoff, radar contact was established with departure control, and after a series of vectors, the pilot was cleared on course and instructed to maintain 10,000 feet as he had requested. Approximately 25 minutes later, the pilot was contacted by the center and told that radar service was terminated. He was then instructed to contact the center on another frequency. This was a transfer of control from the center radar sector to the center nonradar sector. The pilot acknowledged the instructions to change radio frequency, but when he was unable to make contact, he requested an alternate frequency. Another was issued him, but again he could not make contact; so he reestablished communications with the center on the original frequency. The center responded twice, but received no further transmission from the aircraft.

Although numerous contributing factors were present, the basic cause of this accident stemmed from the combination of two human errors: Failure of the aircrew to request clearance to 12,000 feet before reaching the first intersection; and failure of air traffic control personnel to clear the aircraft to the minimum en route altitude in sufficient time for the aircraft to cross the first intersection at or above the minimum crossing altitude specified. Both of these errors were committed in violation of regulations, and resulted in the aircraft's

crossing the first intersection at an altitude that was insufficient for it to clear the mountain that lay ahead.

Two possibilities have been advanced as to why this highly experienced aircrew continued flight below the minimum crossing altitude and MEA at the first intersection. One, the pilots may have failed to realize a minimum crossing altitude existed, and thinking they could climb after crossing the first intersection, waited to establish contact with the nonradar sector controller for climb clearance. (The low altitude en route chart contains considerable clutter in the portion that depicts the first intersection. Relatively insignificant data is displayed in much larger type and is more readily visible than the minimum crossing altitude marker, altitude and crossing direction—a case of poor priorities in depicting important information.)

Two, the pilots may not have been aware of their position and may have failed to identify the first intersection. Because of a natural tendency to relax and feel secure in a radar environment, where no requirement for position reports exists, the crew may have neglected to keep an accurate fix on their position along the airway, relying instead on ATC to provide terrain clearance.

When the controller failed to indicate that a higher altitude was necessary, the aircraft continued en route below the minimum crossing altitude for the first intersection. This failure on the part of the controller was aggravated by a shift change at which time the new controller was informed the aircraft needed radar service terminated. The relieving controller terminated radar service and issued a frequency

change to a nonradar sector frequency without noticing the discrepancy in altitude.

In retrospect, we can muse over what might have been. If the TACAN feature of the NAVAID had been functioning properly . . . If the pilots had been cleared to the minimum altitude before crossing the first intersection . . . If this minimum crossing altitude had been more prominently displayed on the low altitude en route chart . . . If the pilots had been aware of their position . . . If, after crossing the first intersection, the crew had not been reluctant to climb above their cleared altitude of 10,000 feet without waiting for clearance from ATC (as authorized by par. 1-7, AR 95-1, November 1976, and par. 91.3, FAR part 91). . . If the controller had not failed to indicate a higher altitude for the aircraft was necessary . . . If he had noticed the aircraft was cleared below the minimum crossing altitude for the first intersection . . . If a shift change of controller personnel had not been made. . . .

Many “ifs” exist, but the sad fact remains: The accident happened. The least we can do is learn from it and insure that other accidents from similar causes do not occur—ever.

Clarification

Reference FLIGHTFAX, Vol. 5, No. 26 (1-7 April 1977) Aviation-Related Ground Mishaps. The second mishap description implied that a tug was the only proper towing vehicle for ground movement of aircraft. This is not so since most TO&E units are provided utility vehicles for this purpose.

Accident synopsis

SYNOPSIS 77-3

Type aircraft: OH-58A

Time: 1702

Classification: Major

Injuries: 0 Fatalities, 1 Injury

Estimated materiel damage cost: \$21,000

Mission: Service

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CPT	25	243	243

Description: Aircraft was orbiting over the crash site of previously crashed AH-1G at approximately 40 knots and 100 feet agl. Pilot and passengers were attempting to pinpoint the crash site on the crash grid map. Pilot made a right turn into what he thought was the direction of the prevailing wind, but this was

actually downwind. Loss of antitorque control occurred. Pilot reduced collective pitch in an attempt to regain antitorque control. Aircraft crashed as a result of loss of antitorque control and loss of lift.

Cause: Pilot did not compute weight and balance on DD Form 365F or consult applicable performance charts in the dash 10 operators manual. This resulted in an overgross condition with power required exceeding power available at the altitude, airspeed, and wind conditions under which he attempted to operate the aircraft.

Corrective action: Commander has directed that a DD Form 365F representative of the normal loading be maintained as a current work form for all Class I aircraft.

TOTAL MISHAPS FOR 20-26 MAY 1977

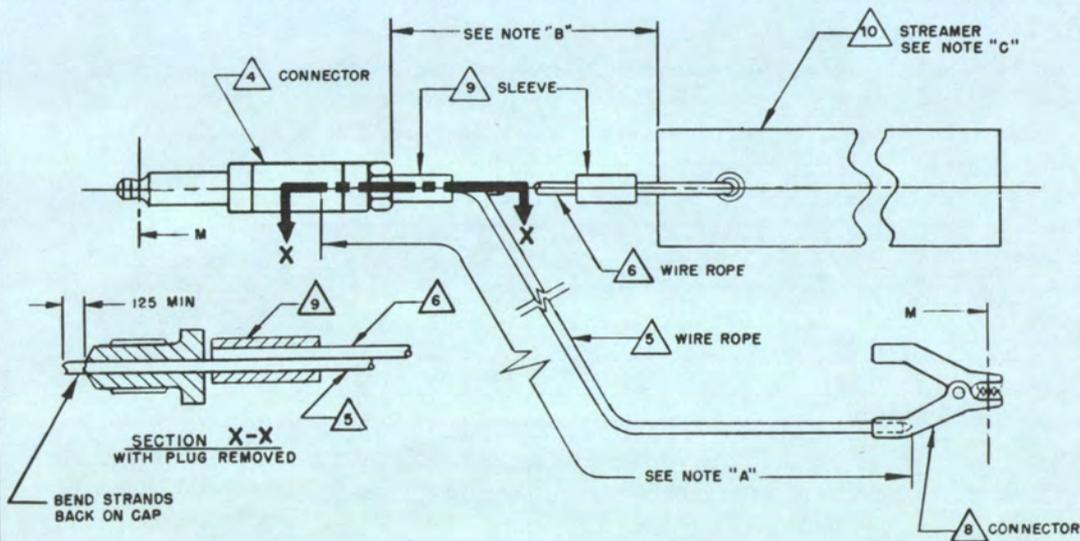
Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
AH-1	0	2	0	5	7
UH-1	3	0	4	19	26
OH-58	0	1	0	5	6
T-42	0	1	0	0	1
RU-21	0	0	0	1	1
OY-1	0	1	0	1	2
U-8	0	0	0	1	1
U-10	1	0	0	0	1
Total	4	5	4	32	45

1 Fatality, 0 Injuries, Estimated Costs: \$188,880

Grounding cable configuration

USAAAVS field visits reveal some units are using incorrect procedures for constructing aircraft ground cables. Mil Spec 27574 gives correct material for construction of

the grounding cable used in Army aviation. TM 55-1500-204-25/1, page 1-13, par. 1-52d(3), provides detailed information and alternate methods of cable construction.



ITEM	DESCRIPTION	PART OR SPECIFICATION
2	Aircraft to earth ground cable configuration	
4	Connector, plug, and cap, electric, grounding (mates with aircraft installed receptacle MS90298-2)	MS3493-3
5,6	Wire rope to be 7 by 7 construction, .094 NOM. DIA. with translucent 1/37 inch thick plastic coating, color international orange in accordance with FED-STD-595, color 12197. If coated wire rope is not available, use uncoated wire rope with suitable plastic sheathing or sleeving. Preferred—Wire rope, steel (corrosion-resisting) flexible, preformed (for aeronautical use) Alternate—Wire rope, steel (carbon) flexible, preformed	MIL-W-5424 or equal MIL-W-1511 or equal
8	Connector, electrical, ground	MS27610
9	Sleeve-cut crimp end from terminal lug (size to suit), swage securely	MS20699 (as modified or equal)
10	Streamer, warning	MS51700-36 Existing streamers in accordance with NAS1089 may be used until current supply is exhausted

NOTES:

- A. Length shall be determined by user requirements. Length shall be continuous, splices are prohibited (see note D).
- B. Length as necessary to permit a minimum of 24 inches of streamer to be visible outside aircraft. Maximum length of attaching cable and streamer shall not permit entanglement with aircraft rotors, propellers or engine inlets. Length of cable = B+3 inches.
- C. Warning streamer rope shall be securely attached near 4 connector.
- D. Maximum permissible resistance between contact points M=5 ohms.
- E. For age, if reels are not used, the user shall provide brackets or other suitable means to stow the cable.
- F. Alligator clips shall not be used.
- G. USE OF STREAMER LENGTHS OTHER THAN AS SHOWN SHALL BE APPROVED BY APPROPRIATE USING COMMAND HQS.

Selected mishap briefs

Rotary wing

UH-1

Accidents □ Crew smelled and saw smoke in cockpit during takeoff. Pilot turned to land and noted engine oil pressure fluctuation. After landing, fire was noted in engine compartment. Accident is under investigation. □ During landing phase of formation flight, pilot lost visual contact with the ground in blowing dust and sand. Aircraft landed hard. Investigation is in progress. □ Collective was lowered after landing. Aircraft rocked back, striking tail on ground. Pilot pulled in power and aircraft rocked forward to nose-low attitude and turned 90°. Skid struck ground and aircraft rolled onto right side. Accident is under investigation.

Forced landings □ During final approach from maintenance test flight pilot rolled throttle to flight idle and lowered collective for autorotational landing. Master caution and engine oil pressure caution lights came on and N1 indicated 25%. Inspection revealed failure of flight idle solenoid. □ Engine compressor stall occurred during straight and level flight at 9,000 feet msl. Maintenance replaced engine. □ Pilot heard loud noise and torque meter went to zero. Postflight inspection revealed compressor blade missing and another coming loose on first stage compressor. □ Engine failed during straight-in autorotation. Caused by failure of flight idle solenoid switch.

Precautionary landings □ During cruise flight pilot smelled JP-4 and saw fuel bubbling up from left rear floor paneling. Inspection revealed fuel cell rupture.

□ Vertical vibration of moderate intensity developed during cruise flight. Post-landing inspection revealed skin had separated on top side of red main rotor blade. □ Fire warning light came on. Caused by loose cannon plug. Cannon plug was secured and flight continued. □ On termination of approach to hover, tail rotor pedals became extremely stiff. Pilot cleared runway and landed aircraft. Caused by failure of tail rotor servo. □ Transmission oil pressure dropped to zero. Maintenance replaced oil pressure transmitter.

AH-1

Incidents □ After aircraft performed aerial recon mission and returned to assembly area, postflight inspection revealed damage to both main rotor blades. □ Aircraft had been performing authorized NOE flight. Both main rotor blades were found damaged during postflight inspection.

Precautionary landings □ During power application from 25 to 30 pounds torque, compressor stalls occurred. Caused by malfunction of bleed band actuator. □ While hovering for takeoff, pilot noticed master caution and transmission oil pressure segment light illuminations, followed by rapid decrease in transmission oil pressure. Caused by failure of internal oil filter gasket. □ Pilot noted stiffness in tail rotor pedals during landing. Caused by failure of tail rotor silent chain.

OH-58

Incident □ During takeoff from confined area, main rotor blades struck tree. Both main rotor blade tips were damaged.



Precautionary landings □ Engine chip detector light came on. Plug shorted internally. □ Aircraft was hovering when ground observer noticed oil leaking in the vicinity of oil cooler area. Investigation revealed engine drain valve had been left open. □ Pilot noticed ammeter reading was beginning to increase. Mission was terminated. Caused by thermal runaway of battery.

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

U-10

Accident □ Immediately after landing, aircraft veered left into ground loop. Right gear, wing, and fuselage were damaged. Gusty winds from approaching thunderstorm may have contributed to loss of control. (ARNG)

T-42

Incident □ Smooth touchdown was made on main gear but nose gear was lowered too fast, causing a bounce. Right prop struck runway and pilot elected to go around. Postlanding inspection revealed damage to right prop blades.

OV-1

Incident □ Pilot smelled smoke before approach for landing. Postlanding inspection of battery compartment revealed a fire, which was extinguished by the crew. Damage was limited to battery compartment, wiring, and inverters. (ARNG)

Precautionary landing □ IP initiated simulated single engine by pulling No. 2 fire handle. After approximately 5

minutes, air restart could not be accomplished. After landing, fire handle was reset and engine started normally. (ARNG)

RU-21

Precautionary landing □ (H series) Avionics access door popped open on takeoff. Pilot remained airborne until fuel was burned down to landing weight. Avionics personnel had failed to secure door and pilot neglected to check for security.

For more information on fixed wing mishaps, call 558-3901/3913.

Maintenance

OH-58

Precautionary landings □ Pilot was hovering during test flight when he felt binding in cyclic control. KY-28 cannon plug was not secured and became entangled in flight controls. □ During test flight, landing was attempted with the tail into the wind. Aircraft began to rotate to the right after full left pedal was applied. Forward motion stopped the rotation. Aircraft was turned into the wind and landed with no damage. Tail rotor was out of rig.

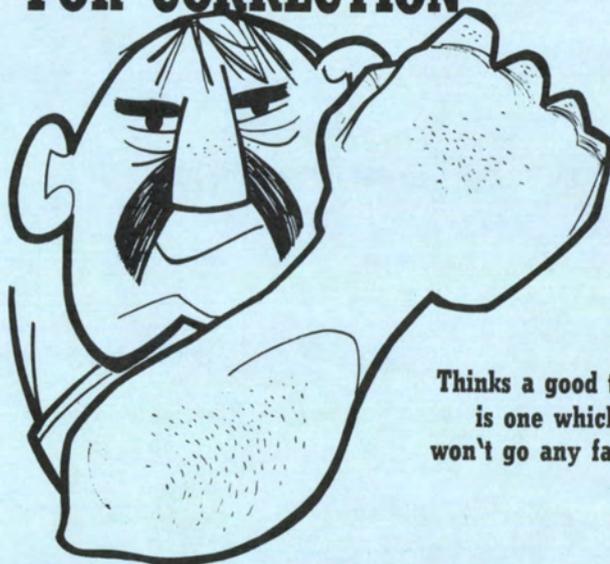
U-8

Precautionary landing □ (D series) As landing gear handle was placed in down position, left main gear safe indicator light failed to illuminate. Gear warning horn sounded when manifold pressure was reduced below 14 inches Hg. Maintenance had installed landing gear lock pin, NSN 1560-00-327-1367, improperly. Pin was repositioned, set screw reset and retorqued, and retraction test performed.

For more information on maintenance mishaps, call 558-3901/3913.

WANTED

FOR CORRECTION



Disregards
torque limits

Thinks a good turn
is one which
won't go any farther

"Big Fist" MURPHY

REWARD

BETTER MAINTENANCE

AND SAFER FLYING

MURPHY'S LAW
"If an aircraft part can be installed improperly — someone will install it that way."

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

JUN 23 Rec'd

ARMY AIRCRAFT MISHAP PREVENTION DATA

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Flightfax

VOL. 5, NO. 34 □ 15 JUN 1977

OH-58 safety-of-flight message



□ 061630Z June 1977, subject: Safety-of-Flight Message No. OH-58-77-5, One-Time Inspection of OH-58 Oil Cooler Blowers, TB 55-1520-228-20-22. Summary: Two failures of oil cooler blowers have been reported. Failure in both cases was caused by separation of impeller blades from aft vane attaching ring of rotor assembly. During manufacture, the aft vane attaching ring of the oil cooler rotor assembly is machined to obtain dynamic balance of the assembly. In some cases excessive amounts of metal may have been removed. The purpose of this message is to verify by dimensional inspection that the aft vane attaching ring was not ground below a minimum thickness of 0.025 inch. Contact: John Blakey, AVSCOM, AUTOVON 698-3891, commercial (314) 268-3891. ■

Aviation life support equipment

ALSE authority

There appears to be much confusion in determining the authority necessary to requisition certain items of aviation life support equipment. If the item you are requisitioning is not listed in the body of the TOE/TDA, it must be carried in one of the publications listed in section I of the TOE/TDA and that publication must be used as a basis of issue and authority to requisition. ■

Aural sound protector

The aural sound protector (Mickey Mouse muffs), NSN 4240-00-691-5617, is an expendable item listed in CTA 970 and costs \$3.29. There are no replacement earcups for this item; so as the cups become unserviceable, order the complete item. ■

Correction

USAAVSCOM message 182015Z Mar 1977 quoted in FLIGHTFAX, Vol. 5, No. 32, 1 June 77, listed P/N 84200A7 for the unserviceable T53-L-13B fuel control. This is not correct. The modified fuel control carries P/N 84200A7. ■

Selected mishap briefs

Rotary wing

UH-1

Forced landing □ During practice 180° autorotation, on short final, IP noticed drop in engine oil pressure and N1 winding down through 68 percent. Inspection of engine and all components related to the engine revealed no materiel deficiencies. Maintenance could not duplicate the problem.

Precautionary landings □ On final approach for landing, IP noticed that tail rotor control pedals were stiff. Running landing was made. Maintenance replaced tail rotor servo. □ Master caution and hydraulic warning lights came on. Controls appeared to be functioning normally and running landing was made. Maintenance replaced hydraulic pressure switch. □ N2 tach generator failed in flight. Maintenance replaced generator. □ Transmission oil hot light came on. Caused by failure of thermo switch, NSN 5930-00-299-1066. □ Overtorque of 53 psi occurred during takeoff from confined area. Aircraft was inspected and released for flight.

AH-1

Incident □ Main rotor blade struck tree during NOE flight. Pilot saw flying debris and landed to inspect for damage. Main rotor blade was replaced.

Precautionary landings □ While in cruise flight, pilot saw wing store (M200 pod) hanging by front lug only. Landing was made and wing store was secured. □ While in cruise flight crew heard whine of hydraulic system. No. 2 hydraulic warning light flickered on twice but no

control stiffness was noted. Inspection revealed loose fitting on hydraulic manifold.

OH-58

Precautionary landing □ Cyclic magnetic brake stuck in full aft position. Pilot was able to override magnetic brake and land aircraft with no damage. Magnetic brake was replaced.

OH-6

Forced landings □ During maintenance recovery at hover/taxi, engine ceased to develop adequate power. Flight was terminated and shutdown procedures initiated, but engine would not shut down. Caused by broken engine compressor discharge tube. □ N2 went above 120 percent before pilot could pull pitch and manually regain control of engine rpm. Landing was made using manual control of throttle. Teardown analysis of power turbine governor revealed bearing which supports governor drive shaft failed, causing the overspeed. AVSCOM is evaluating the problem.

TH-55

Precautionary landing □ During training flight at hover/taxi, engine began to run rough. Caused by defective magneto.

CH-47

Precautionary landings □ Pilot smelled smoke in cockpit. Caused by internal failure of No. 2 generator. □ During service mission on short final, crew chief stated that hydraulic fluid was leaking from combining transmission area. Caused by cracked hydraulic return line in No. 1 flight



boost system. □ During training mission in descending right turn, pilot heard popping noise and landed. Inspection revealed 8-inch piece of fiberglass had torn loose on bottom of aft yellow blade, approximately 6 inches inboard from blade tip cap. Bonding separation was found between spar and fiberglass. Blade was replaced.

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

T-42

Accident □ During takeoff, after becoming airborne, IP heard loud noise and aircraft yawed left of runway. IP assumed control, paralleled runway, lowered landing gear, and landed aircraft. During rollout, aircraft rolled through two fences causing extensive damage to aircraft. No. 1 prop and hub with portion of crankshaft separated from aircraft while on or over the runway. Cause of prop failure unknown. Investigation is underway.

C-12

Precautionary landing □ During climb, No. 1 engine torque and oil pressure dropped to zero, followed by engine failure. Pilot secured engine and landed. Suspect internal failure of oil pump quill shaft.

U-21

Precautionary landing □ Gear handle was placed in down position, and unsafe condition was indicated on left main gear. Landing gear was recycled and lights

still indicated unsafe condition. A fly-by of the tower was made, and IP was advised by tower personnel that left main gear appeared to be canted. Gear was retracted and pumped down manually. Unsafe gear condition was caused by broken wire in landing gear indicator system.

U-8

Precautionary landing □ (D series) While aircraft was on downwind for landing, cylinder head temperature started dropping, followed by loss of power. Caused by burnt exhaust valve on No. 5 cylinder.

For more information on fixed wing mishaps, call 558-3901/3913.

Maintenance

U-8

Precautionary landing □ (D series) Condition inspections were being performed on U-8s. Subject aircraft had been inspected first so it could be used on a scheduled mission. Unit maintenance personnel were assisting in removal/reinstallation of panels. Tail cone was reinstalled but inspecting and assisting personnel did not insure screws were tightened. Inadequate preflight was performed.

For more information on maintenance mishaps, call 558-3901/3913.

Aviation-related

CH-47

□ Tail rotor of Navy SH-3 struck main rotor blade of parked CH-47 as SH-3 pilot was parking in limited space area of municipal



airport. Corrective action: Publish in DOD FLIP that limited parking space is available and that transient aircraft use of flight ramp requires prior approval. □ After MOC, individual checking No. 1 engine for oil leaks slipped and fell from engine workstand, fracturing left elbow. Handhold was not used. □ Crew chief parked warehouse tractor upslope from CH-47, leaving engine running, gear shift in neutral, and handbrake off. Crew chief entered helicopter to perform maintenance. Tractor rolled downhill and hit nose of CH-47, damaging right lower windshield. □ Aft vertical hinge pin struck open butterfly cowling during towing operation. Caused by failure to close cowling before towing.

For more information on aviation-related mishaps, call 558-3913/3901.

AVSCOM T-42A newsletter No. 18

T-42A aircraft problems and recommended corrective action, letter No. 18, dated 12 May 1977, has been sent to the field. T-42A owners who have not received a copy should contact AVSCOM, ATTN: DRSAV-FEW, St. Louis, Missouri 63166.

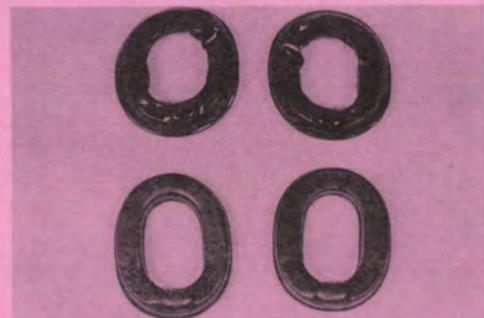
AVSCOM advisory

U.S. Army Aircraft Delivery Procedures, dated 1 March 1977, contains updated instructions for aviators ferrying aircraft. This new publication has many improvements and changes to help pilots perform ferry missions. You can get a copy by contacting the U.S. Army Aviation Systems Command, ATTN: DRSAV-QN, P.O. Box 209, Main Office, St. Louis, Missouri 63166, AUTOVON 698-2727.

What you can't hear can hurt you

To tell an aviator or aircrewmember he is in a noisy business is like telling a fish he is in water; but, if you tell the fish he may drown in that water one day, maybe you'll get his attention. Hearing loss is the most frequently encountered disability in the aviation community, yet people tend to accept this loss and ignore the problem until permanent damage is done. Hearing loss, in most cases, is insidious. You can't notice a change day to day for it is much too gradual. However, if you compare your hearing today to your hearing a year ago you may notice a definite change for the worse. Why? Not because of the noise environment itself, but because of complacency.

If you fly and wear a properly fitted SPH-4 flight helmet, you are afforded very adequate protection. Inadequate fitting and/or age hardening of the earcup seals will cause a drastic loss in sound attenuation. Earcups tend to harden with use. In many cases as little as three months of use can cause sufficient hardening to compromise proper protection. This hardening, as with loss itself, is insidious. The only way to properly check for hardening is to compare your earcups with a new set. If you notice it's time for a change, request a new pair.



Replace hardened and wrinkled earcups.

Accident synopsis

SYNOPSIS 77-4

Type aircraft: OH-58

Time: 1435 Classification: Major

Fatalities/Injuries: None

Estimated materiel damage cost: \$83,734

Mission: Scout/Cobra recon

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CW2	34	1,632	3,784

Description: While OH-58 was hovering downwind during NOE mission, main rotor struck sand dune. Aircraft came to rest

upright after main rotor and transmission separated from airframe.

Cause: Pilot failed to maintain adequate clearance between main rotor blades and terrain.

Corrective action: Commander reemphasized to all subordinate commanders and safety officers the requirements of FM 1-1 that pilots must maintain adequate terrain and obstacle clearance.

TOTAL MISHAPS FOR 27 MAY-2 JUNE 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
UH-1	0	0	1	4	5
AH-1	0	1	0	4	5
OH-58	0	0	0	1	1
OH-6	0	0	2	1	3
TH-55	0	0	0	1	1
CH-47	0	0	0	4	4
T-42	1	0	0	0	1
C-12	0	0	0	1	1
U-21	0	0	0	1	1
U-8	0	0	0	1	1
Total	1	1	3	18	23

0 Fatalities, 0 Injuries, Estimated Costs: \$36,000



STACOM

STANDARDIZATION COMMUNICATION



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FT. RUCKER, AL 36362
STACOM 18 ■ 15 JUNE 1977
COL CLEMENT A. WYLLIE ■ 558-2603/3514

UH-1H NOE performance charts

The long-awaited "UH-1H NOE Performance Charts" have now been published. These two charts appear as Change 17 to TM 55-1520-210-10, and are titled respectively MAXIMUM TORQUE AVAILABLE 30 MINUTE LIMIT and HOVER. A method for using these charts to predict hover performance for NOE flight has been developed by the Directorate of Training Developments, USAAVNC, in conjunction with AVSCOM, St. Louis. This procedure will be published as a change to TC 1-35 and incorporated in the new Operator's Manual and Flight Training Guides. In the interim, use the following example in determining the power requirements for NOE flight with the UH-1H.

EXAMPLE:

Known:

- A. Pressure Altitude - Ft. = 500.
(Determine by contacting the weather forecaster or by setting 29.92 on the aircraft altimeter Kollsman Scale and reading the altitude.)
- B. OAT (FAT) - °C = +35.
(For convenience, it is suggested that a list of aircraft with the corresponding engine calibration factors be maintained in the flight planning area of your operations office.)
- C. Calibration Factor = 56.

1. Enter pressure altitude (500 feet) at Point A.

a. From Point A, move right to the 35°C OAT line.

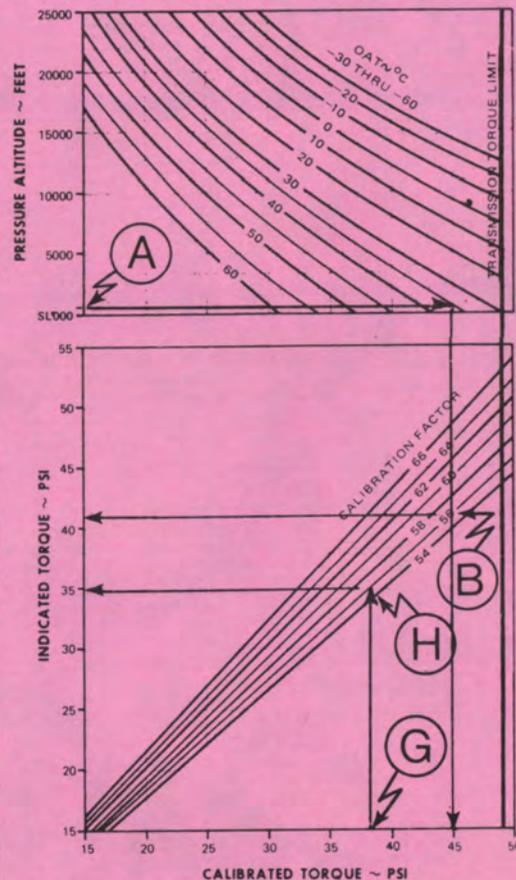
b. From the 35°C OAT line, move down through the chart and read 45 psi maximum calibrated torque available.

c. From the intersection of the vertical line and the 56 calibration factor line (Point B), move left and read 41 psi maximum indicated torque available.

- Record these two torque values for use with the Hover Chart.
- Next, refer to the Hover Chart.

Maximum torque available 30 minute limit
Anti-ice and bleed air off
324 rotor/6600 engine rpm
JP-4 fuel TAS 0-60 knots
Installation losses included

MAX TORQUE
UH-1H
T-53-L-13

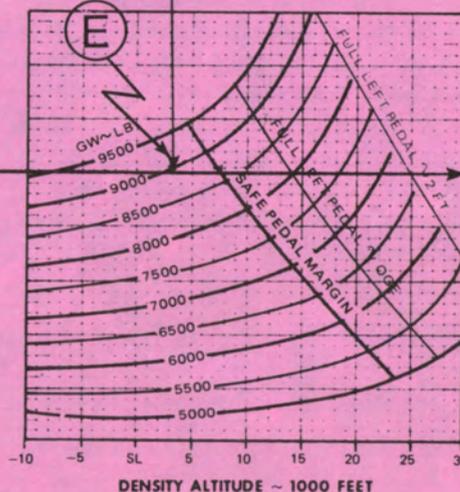
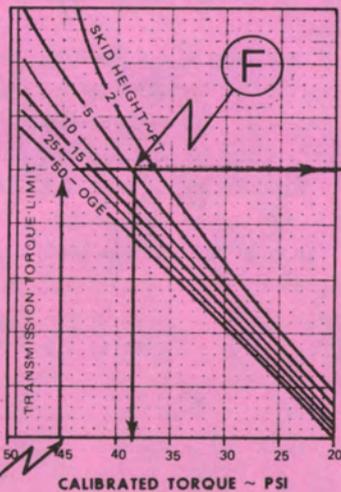
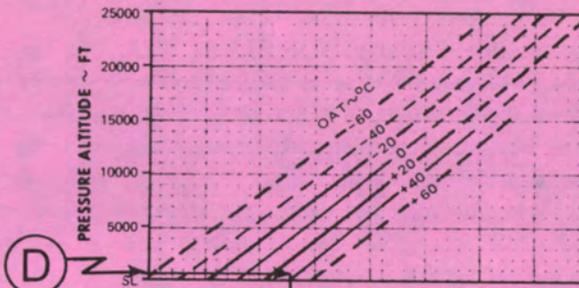


DATA BASIS: Calculated from model spec 104.33, 6 May 66, corrected for installation losses based on flight test, ASTA-TDR 66-04, November 1970.

Hover

324 rotor/6600 engine rpm
Calm wind Level surface

HOVER
UH-1D/H
T53-L-9/11/13



DATA BASIS: Derived from YUH-1H flight test, ASTA-TDR 66-04, Nov 70

- Enter 45 psi maximum calibrated torque at Point C.
 - From Point C move up to the 50-OGE SKID HEIGHT FT line.
 - From the 50-OGE line, the line is drawn completely across the chart.
- Reenter the chart at pressure altitude of 500 feet at Point D.
 - From Point D, move right to the 35°C OAT line.
 - From the 35°C OAT line, move down to intersect the horizontal line at Point E and read 8900 lbs. maximum gross weight for hover OGE. If your gross weight exceeds 8900 lbs., weight must be reduced prior to flight.
- In the left chart at the intersection of the horizontal line and 5-foot skid height (Point F), move down to read 38.5 psi calibrated torque required to hover at 5 feet with a gross weight of 8900 lbs.
- Next, convert the 38.5 psi calibrated torque to indicated torque by reentering the MAXIMUM TORQUE AVAILABLE Chart at 38.5 calibrated torque (Point G).

From Point G, move up to the 56 calibration factor (Point H), then move left to read 35 psi indicated torque.

5. We now have the three values that must be considered prior to NOE flight:

a. Indicated maximum torque available (41 psi). An attempt to increase collective pitch beyond 41 psi indicated torque can result in N2 rpm "bleed off."

b. Maximum gross weight for hover OGE (8900 lb). The aircraft must not be loaded above that gross weight.

c. Indicated torque required to hover at 5 feet is 35 psi. This becomes the GO-NO-GO torque. When the helicopter is hovered at 5 feet, the torque indication must be 35 psi or less to "GO" NOE. If the torque indication at a 5-foot hover is greater than 35 psi, NOE flight is a "NO-GO" for that gross weight so the load must be reduced before NOE flight is attempted.

Position reports, questions and answers

□ Considering the accuracy and reliability

of the new digital watches, how about using them in place of the clock or watch with sweep second hand currently required for IFR by paragraph 4-22, AR 95-1?

Absolutely not. Accuracy and reliability are important, of course, but that sweep second hand requirement is there for two other reasons—legibility and ease of computation. The sweep second hand, in effect, provides the pilot with a "plan view" of one minute. All he/she has to do is note the position of the hand relative to the face to know seconds elapsed or remaining—very little mental arithmetic is necessary.

The digital watch, on the other hand, forces the pilot to add or subtract in order to time any period other than exactly one minute. Furthermore, the display on most models is illuminated by pressing (and holding) a switch, so another hand is needed. This in turn means letting go of something else, like the cyclic, just to check the time.

In short, using a digital watch in place of a conventional one would just create a lot of unnecessary work—something like taking tap dancing lessons in a hammock.

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

JUL 1 Rec'd

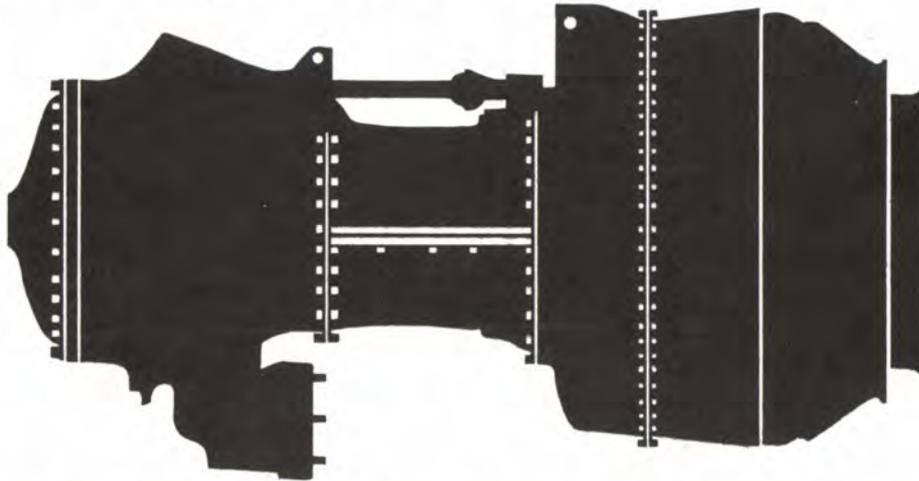
ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

VOL. 5, NO. 35 □ 22 JUN 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Turbine engine facts

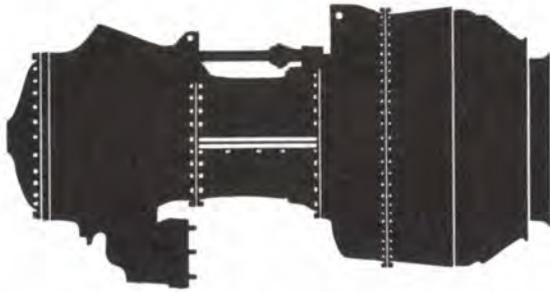


To begin with, a commendation is in order. Because of the outstanding professional attitude displayed by Army-maintenance personnel, a serious engine problem has been eliminated. Before August 1975, an average of one first-stage compressor blade failure occurred every 60 days on Army turbine engines. Then, in the 30 July 1975 issue of FLIGHTFAX, USAAVS addressed this problem in an article titled "Care and Cleaning of Lycoming T-53 Series Engines." The crux of the article was that we should never spray anything into an operating engine. USAAVS is pleased to report that since publication of this article (approximately 21 months), Army units have not reported a single gas turbine engine first-stage compressor blade

failure. The point is clear: While USA-AAVS and other Army agencies can point out problem areas and recommend cures, only YOU can get the results. A big USAAVS thanks to all of you! Following are other important facts concerning gas turbine engines.

Failure to follow proper procedures when using engine gas path cleaning compound, NSN 6850-00-181-7594 (better known by part number BB3100), continues to cause bleed band actuators and fuel control air bleed valves to malfunction.

The preferred method for cleaning an engine is to use a metered air source, not to exceed 60 psi, to close the bleed band. This procedure permits cleaning of the "hot" section as well as the "cold" section. If the alternative method of



protecting the bleed band actuator with a waterproof covering is used, the bleed band will remain open, allowing most of the cleaning fluid to drain out the bleed ports.

With the hot summer months upon us, proper and precise cleaning procedures must be used. In addition, the time is ripe to analyze the HIT data and spot those weak engines that won't be able to hack it as temperatures soar. Further, USAAVS and the manufacturer recommend that all gas turbine engines operated in a salty or highly corrosive environment be sprayed internally with some type of anti-corrosion compound, such as WD-40 or RUST-LICK, after each day's operation and any time they are to remain idle for an extended period.

TM 55-2840-229-24, par. 5-149, page 5-81, calls out the bleed band closure check for the T53-L-11, T53-L-13, and T53-L-703 engines. The note on page 5-81, paragraph 5-149(3)e, states that figures 5-60 and 5-61 are valid regardless of airframe inlet configuration (i.e., sand and dust separator and/or foreign object damage screen). Adjustments are to be made in one percent increments. Since the range differs between fuel regulators, as shown in figure 5-61, be sure to use the correct portion of the graph when making these adjustments. The bleed band closing speed for fuel regulators (P/N 8400A4/A5/A6/A7) may be reduced to the lower limit of fuel regulators (84200A1/A2/A3 and 100770-A2) only if it is necessary to relieve bleed band cycling problems.

The note, as stated, is correct for new or new-condition engines. Moving the

bleed band closing point to the lower limit of the range will provide quicker engine acceleration but it will also reduce the surge margin. This reduced surge margin will make the engine more susceptible to compressor stall. Therefore, moving the bleed band opening point to the lower limit on an engine that has considerable compressor erosion could induce compressor stall during rapid power changes. If the bleed band is adjusted to the high end of the permissible operating range, the engine will accelerate slower and may lag during abrupt pitch-pulls, but it will be much less susceptible to stall. Consequently, if the engine is set up for maximum acceleration, a sticking or dragging bleed band actuator is sure to cause a stall during rapid power changes.

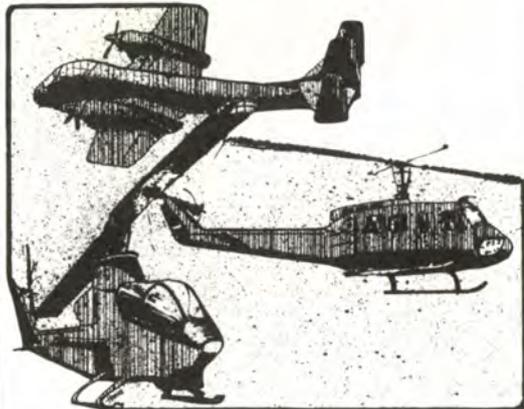
If the bleed band does not perform as required, proceed with paragraph f. This paragraph calls out the correct procedures for adjusting the point at which the bleed band will close.

If proper operation cannot be obtained, proceed with the interstage airbled troubleshooting checks listed under paragraph g. Paragraph h lists the procedures for correcting the defects listed in paragraph g, to include cleaning of the "Fuel Control Airbled Valve" depicted with the cover removed in figure 5-63. Information received from the field indicates that the fuel control airbled valve has not previously been considered as a cause for bleed band malfunction. In several cases, it appears that mechanics replaced the fuel control unit instead of cleaning the airbled valve which would have corrected the problem. Improper operation of this valve will cause erratic

operation of the bleed band and can induce bleed band cycling.

Turbine engine inspection and overhaul schedules for T53 series engines

The current dash 20 for the UH-1H, UH-1M, and AH-1G helicopters stipulates a 900-hour hot end inspection for the T53-L-13B and also refers to TM 55-2840-229-24. The correct inspection schedule is listed on the right side of the table of contents as "Chapter 13, Overhaul Interval and Inspection Interval." This chapter was added by change 12, dated 26 June 76, and deletes scheduled hot end inspections for all T53 series engines except the T53-L-13Bs equipped with a P/N 1-110-520-21 first-stage gas producer nozzle. These engines can be identified by "NOZ-21" stamped on the engine data plate. Engines fitted with the P/N 1-110-520-21 first-stage gas producer nozzle still require the 600-hour hot end inspection. Engines fitted with the P/N 1-110-520-19 first-stage gas producer nozzle no longer require a scheduled hot end inspection.



T1 bellows problems

The USAAAVS data bank indicates that since CY 1971, eight T1 bellows failures have occurred. Officially designated as the main bellows assembly (NSN 2915-00-992-1138, P/N 74865) this item is listed in TM 55-2840-229-23P, dated 30 Sep 76, page 203, figure 73, item 3.

The T1 bellows is located in the computer section of the fuel control, and its function is to adjust fuel flow to compensate for temperature changes. This entire assembly (temperature sensing element and capillary tube) is matched to the fuel control on the test stand and must remain with the same control unit. (See TM 55-2840-229-24, page 5-30, par. 5-70c.)

A number of fuel controls have been shipped for overhaul with the main bellows spring holder (NSN 2915-00-842-055, P/N 80153, reference TM 55-2840-229-23P, page 195, item 71-26) installed in the inverted position. While the holder should not be removed from the control for any reason, the correct position is with the flange down. If it is not installed in this position, pressure will not be applied to the spring and incorrect temperature sensing will result. This condition is very likely to cause a severe engine overtemp when the engine is started. Professionalism and performance always go together. Keep up the good work!

For more information on turbine engine care and procedures, contact Clarence J. Carter, Environmental Factors Branch, Directorate for Aircraft Accident Analysis and Investigation, USAAAVS, AUTOYON 558-3913/3901, commercial (205) 255-3913/3901.

Selected mishap briefs

Rotary wing

UH-1

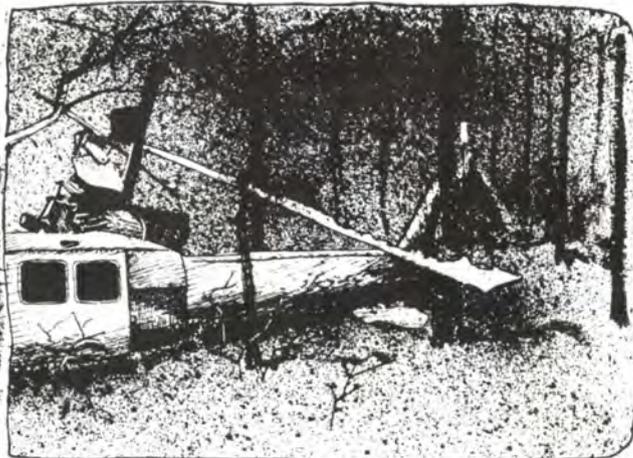
Accident □ Aircraft was landing to hover on lake shore. Pilot on left-side controls was flying and looking to the right. Copilot on right side was on the radios. Aircraft struck 8-inch tree to the left front. Investigation is in progress.

Incidents □ Dent was found on leading edge of left synchronized elevator during postflight inspection. Aircraft had been participating in smoke dispensing mission. □ After landing, throttle was rolled to flight idle. Rotor rpm decreased more rapidly than usual and continued decreasing below matching engine rpm. Pilot increased throttle slightly to determine if clutch would reengage. This was not successful and pilot shut down engine. Shortly after engine shutdown, aircraft shuddered, followed by loud pop and rattling noise. After main rotor stopped, it was determined that No. 1 section of tail rotor drive shaft had failed. Tunnel area surrounding drive shaft was damaged and

main mast was bent and twisted. Suspect sprag clutch malfunction. □ During NOE training, main rotor blades struck unmarked phone wires, denting both blades.

Forced landing □ Aircraft was at 2-foot hover when N2 rpm decreased to 6000, stabilized momentarily, then continued to decrease further. Aircraft was autorotated and engine was immediately shut down. Caused by malfunction of fuel control.

Precautionary landings □ Pilot smelled fumes and noticed spray on windshield. Voltage regulator was set too high, causing battery to overheat. □ Fire detector light illuminated. When control alarm was inspected by maintenance, corrosion was discovered on couplers. Corrosion was removed and fire light went out. □ After takeoff, IP noticed transmission oil pressure gauge had dropped to zero. Maintenance replaced transmission oil pressure indicator. □ Right fuel boost pump caution light came on. Maintenance replaced fuel boost pump.



AH-1

Precautionary landings □ Master caution and fuel filter segment lights came on. Water, from recent aircraft washing, was found in engine compartment electrical connection. Water was removed and aircraft released for flight. □ While in cruise flight aircraft began left roll. Sufficient right cyclic was not available to correct the situation. Spiraling approach was made to landing. Suspect failure of servo control unit assembly. □ Aircraft was at OGE hover when No. 1 hydraulic light came on, followed by stiffening in antitorque pedals. MOC was performed and malfunction could not be duplicated. □ During OGE hover, SCAS went off line and No. 1 hydraulic system segment light came on. Antitorque pedals became stiff and aircraft turned approximately 180° before control was regained. Running landing was made. MOC could not duplicate malfunction.

OH-58

Incident □ Aircraft struck two strands of 1/8-inch wire approximately 75 feet above ground level, resulting in incident damage to windshield, OAT gauge, FM antenna, transmission fairing, and right engine cowling.

Forced landing □ During climbout at 1,300 feet msl, master caution and engine oil bypass lights came on. Pilot entered autorotation and engine failed at 200 feet agl. Internal engine failure was caused by lack of lubrication.

Precautionary landings □ N2 decreased to 101 percent. Pilot increased N2 to 103 percent with increase/decrease switch. Shortly afterward, N2 decreased to 97

percent. Pilot made power-on approach and landing. Inspection revealed power turbine governor failure. □ Hydraulic caution light illuminated. Hydraulic pressure switch was replaced. □ During cruise flight, engine oil temperature exceeded red line. Caused by failure of engine oil temperature indicator. □ Fuel filter caution light came on. Fuel system was drained and flushed, and fuel filter cleaned. After analysis of fuel sample, aircraft was released for flight. □ Transmission chip detector light came on during hover. Metal chips were found in chip detector. Aircraft is awaiting transmission change.

TH-55

Incident □ Student pilot landed hard on rear of left skid while drifting rearward, resulting in incident damage.

Precautionary landing □ Engine oil pressure fluctuated between 90 and 105 psi during cruise flight. Caused by failure of engine oil pressure sending unit.

CH-47

Precautionary landings □ Oil leak was discovered in combining transmission area during cruise flight. Retaining nuts on support assembly were not tightened during last overhaul. □ High frequency vibration was discovered in aft right side of aircraft. Inspection revealed the two right combining transmission mount retaining nuts had backed off one-half turn. □ No. 2 hydraulic caution light illuminated during climbout. Maintenance inspection revealed air lock in system which caused reservoir to decavitate. System was bled and serviced. □ During cruise flight over water, forward transmission chip detector



light came on. Pilot continued flight at low altitude for 25 miles and landed. Inspection revealed large metal chips on chip detector. Transmission was replaced.

AVSCOM messages received

□ Maintenance Advisory Message on CH-47C engine mechanical transmissions (CH-47, 1977-5).

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

OV-1

Precautionary landings □ Hydraulic pressure dropped to zero after takeoff.

Emergency landing gear extension system was used and aircraft landed. Hydraulic line to No. 1 engine hydraulic pressure transmitter came loose. (ARNG)

□ Cockpit filled with smoke immediately after takeoff. Crew donned their oxygen masks and pilot landed without further incident. Caused by failure of a.c. generator.

T-42

Precautionary landing □ On level-off, IP made wing check and saw fuel siphoning from left wing fuel cap. Aircraft returned to base where cap was repaired and aircraft released for flight.

U-21

Precautionary landings □ After aircraft was leveled off at flight altitude, fuel was seen siphoning out of left wing fuel cap. Aircraft was landed, cap resecured, and flight continued. Pilot failed to

properly seat fuel cap on preflight. □ No. 2 engine was shut down to simulate engine failure. Engine could not be restarted. Caused by insufficient fuel flow to fuel control unit. Engine-driven fuel pump was replaced and engine ran normally.

For more information on fixed wing mishaps, call 558-3901/3913.

Lube oil to be placed in hold status

□ USAGMPA Message 071833Z June 77, subject: Lubricating Oil, MIL-L-22851, Type II, NSN 9150-00-168-6889, Moraine Industries, DSA 600-76-C-4997, Batch 1176, DOP Nov 76.

1. Subject product was recently tested by Army lab and found to fail specification requirement for percent ash. Product is used as lubricating oil in aircraft reciprocating engine.

2. Request all activities under your command be notified to place in hold status the following product, as supplied by Moraine Industries:

NSN: 9150-00-168-6889 (QT)

DSA Contract No.: 600-76-C-4997

Batch No.: 1176

DOP: November 1976

Report locations and quantities to Defense General Supply Center, ATTN: DGSC-OB4, Richmond, VA, with information copy to USAGMPA, ATTN: STSGP-FT, by 8 July 77. Negative replies are not required. Instructions on claim for credit and disposition will be issued later.

3. Point of contact is USAGMPA, STSGP-FT as follows: Commercial (717) 782-6445/6053, AUTOVON 977-6445/6053.

Accident synopsis

SYNOPSIS 77-5

Type aircraft: UH-1H

Time: 1200 Classification: Minor

Fatalities/injuries: None

Estimated materiel damage cost: \$16,500

Mission: Tactical

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot MAJ	34	2,555	2,990	
Copilot 2LT		200	200	

Description: Aircraft was lead in flight of seven. At 6 to 10 feet on final, aircraft began to settle and landed hard. Crew attempted to land fully loaded, downwind, to a 12- to 17-degree slope. Landing area

was also adjacent to the leeward side of a ridge and treeline.

Cause: Crew error was indicated by an inadequate consideration of the capabilities and limitations of the aircraft and improper analysis of the terrain and weather, specifically wind direction and speed.

Corrective action: Unit SOP has been developed covering all aviation operations conducted within local command. Monthly safety meeting topics will include rotary wing flight in NOE environment and downwind operations, aircraft capabilities and limitations, and terrain flight.

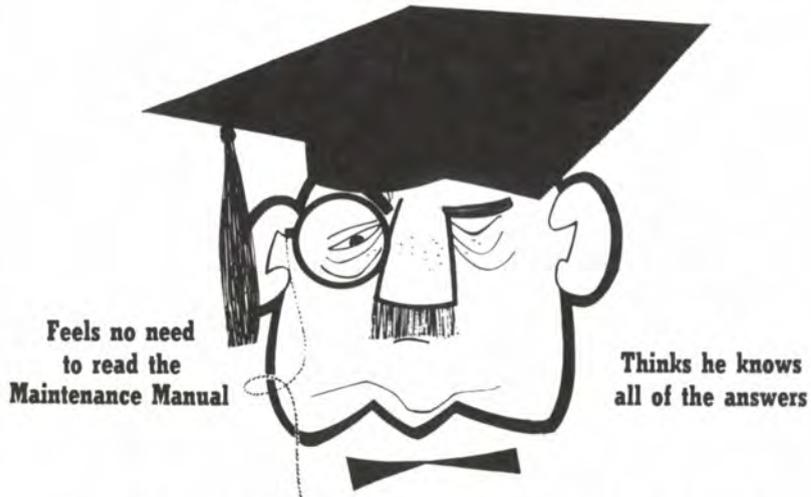
TOTAL MISHAPS FOR 3-9 JUNE 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
AH-1	0	0	0	4	4
UH-1	1	3	1	17	22
OH-58	0	1	1	6	8
TH-55	0	1	0	2	3
CH-47	0	0	0	4	4
OV-1	0	0	0	2	2
U-21	0	0	0	3	3
T-42	0	0	0	1	1
Total	1	5	2	39	47

0 Fatalities, 0 Injuries, Estimated Costs: \$67,088

WANTED

FOR CORRECTION



"Professor" MURPHY

**REWARD
BETTER MAINTENANCE
AND SAFER FLYING**

MURPHY'S LAW
"If an aircraft part can be installed improperly - someone will install it that way."

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

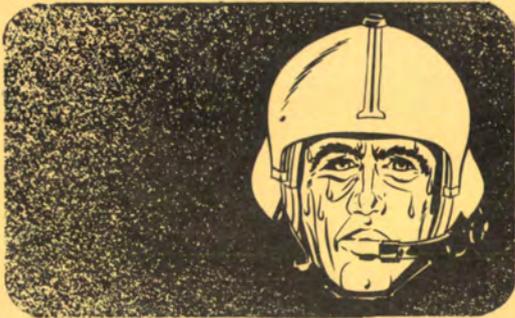
FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 36 □ 29 JUN 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360



Heat illness

It's that time of year again—time for trips to the beach, dips in the pool, fishing at the lake, and cool ones on the patio, while steaks, if you can afford them, broil to perfection over hot hickory coals. On the other side of the coin, it's time for paved flight lines to become enormous frying pans, cockpits to become saunas, hangars to become ovens, and PT fields communal sweatboxes; time for sunburn, heat exhaustion, heat cramps, and heat strokes unless good preventive medicine practices are followed at all levels of command. Heat injuries are considered totally preventable and, when they occur, are indicative of individual or supervisory negligence. To those of us involved in aviation safety, the role heat plays in causing fatigue and in the degradation of aircraft performance becomes a matter of real concern. Judgment can be affected and stamina reduced; powerplants begin to operate less efficiently. Together, they set the stage and the environment for

Continued on back page

CH-47 safety-of-flight message

□ 161330Z Jun 77, subject: Safety-of-Flight Advisory Message—CH-47C Crash Resistant Fuel System Overpressure (CH-47, 1977-6). Summary: The purpose of this safety-of-flight message is to provide operating instructions to be used should fuel tank overpressure and/or overfilling occur in CH-47C aircraft equipped with the crash resistant fuel system. Fuel can be transferred into a main or auxiliary tank if that tank has a boost check valve stuck open (contamination) or installed backwards. Fuel transfer can also occur if fuel line fittings leak within a tank or if the suction line check valve is installed incorrectly in the main tank. Contact: Mr. Michael Hoffman, AVSCOM, AUTOVON 698-2326, commercial (314) 268-2326. ■

Clarification of silent chain inspection

Reference article on "Silent Chain Inspection," FLIGHTFAX, Vol. 5, No. 32, 1 June 1977. This article stated that the inspection of the chain described in paragraph 2c of message (UH-1-77-8 and AH-1-77-6) is to be performed every 100 hours instead of every 25 hours. This applies only to that portion of the inspection requiring removal and microscopic examination of the chain. The silent chain must be inspected at 25-hour intervals as outlined in the special inspections chapter of the appropriate TM (dash 20) and message, UH-1-77-8 and AH-1-77-6. ■

Selected mishap briefs

Rotary wing

UH-1

Accident □ Aircraft lost power on takeoff and settled to ground. Accident is under investigation.

Incident □ While aircraft was hovering in confined area to pick up passengers, main rotor blades struck tree. Blades were replaced.

Precautionary landings □ Right fuel boost pump warning light came on during hover. Maintenance replaced right fuel boost pump. □ Master caution and hydraulic warning lights came on. Maintenance inspection revealed failure of left lateral irreversible valve. □ Fire warning light illuminated. Fire detector malfunctioned. Maintenance replaced fire alarm control. □ While on approach, pilot noticed what appeared to be steam coming from battery vent and radio compartment door. Maintenance replaced battery and released aircraft for flight. □ Tail rotor chip detector light came on. Maintenance replaced tail rotor gearbox.

AH-1

Forced landing □ On short final to FARRP aircraft rotated to right. Application of left pedal failed to halt rotation. Copilot attempted to fly aircraft away from FARRP site. IP took control of aircraft and made hovering autorotation. Inspection revealed silent chain link connecting pin slipped from link connection and jammed against sprocket guard.

Precautionary landings □ While in cruise flight, pilot saw transmission temperature

reading 115°. No caution or warning lights illuminated. Aircraft was landed and temperature reached 140° before shutdown. Caused by broken wire. □ Transmission oil hot light came on. Transmission and engine oil temperature was 105°. Oil cooler was clogged with dirt.

OH-6

Precautionary landing □ Mid-frequency vibration occurred in cruise flight. Condition increased when left pedal was added. Extreme lateral vibration was noticed in tail section after landing. Suspect out-of-round drive shaft.

OH-58

Forced landing □ During ferry flight, engine chip detector light came on momentarily, went out, blinked a few times, then came on and stayed on. Pilot headed for the nearest airport 6 to 7 miles away. Grinding noise was heard during landing and engine failed approximately 100 feet agl. Suspect turbine wheel bolt nut came loose, allowing compressor assembly to pull centrifugal compressor forward into diffuser. Teardown analysis is being performed.

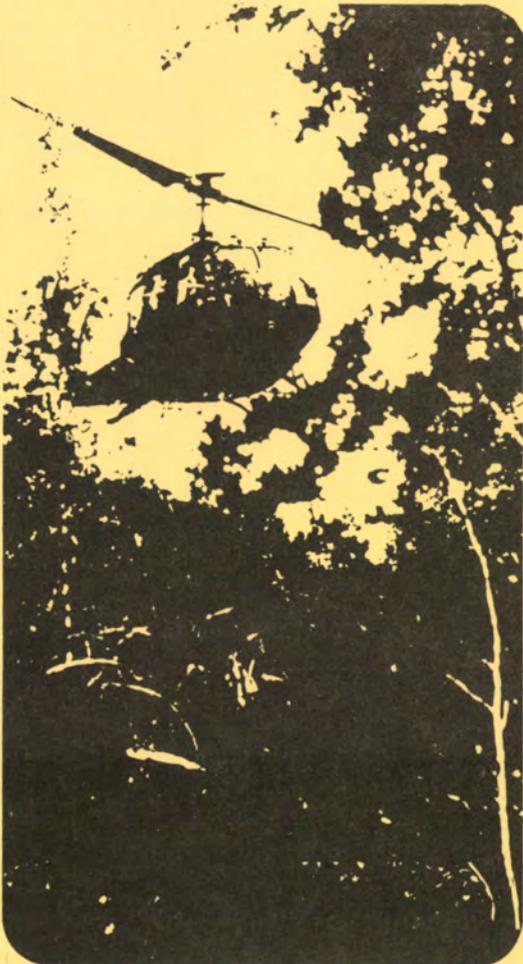
Precautionary landings □ Pilot smelled fumes in cockpit during cruise flight. DC loadmeter went to 75-80 amps. Battery was turned off and landing made. Maintenance checked voltage regulators and found no problem. Battery overheated. □ Fuel filter warning light came on. Inspection revealed clogged fuel filter. Special fuel sample, along with clogged filter, was submitted for analysis. □ Engine oil bypass caution light came on. Caused by cracked oil line at accessory gear case.

TH-55

Precautionary landing □ Engine oil pressure exceeded maximum limits during takeoff. Caused by failure of engine oil pressure sending unit.

CH-47

Incident □ During test flight, lower No. 1 engine cowling access door separated from aircraft. Mishap is under investigation.



Forced landing □ While at hover with sling load crew heard loud bang and No. 2 engine torque needle dropped to zero. Attempt was made to recover engine torque with emergency trim. Previous routine oil sample indicated high iron content existed in engine oil. Suspect bearing package failure.

Precautionary landings □ During cruise flight, flight engineer reported that utility hydraulic filter bowl was hot and smoking. Utility pressure filter overheated. □ No. 2 engine dropped off line and stabilized at 78 percent N1 during takeoff. Engine would not respond to normal or emergency beep. Investigation revealed failure of engine No. 1 bearing package.

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

U-21

Forced landing □ During service mission in level flight, cockpit suddenly became extremely hot. All attempts to shut off or override heater failed. Temperature gauge indicated 50° C. Within minutes console and switches became too hot to touch. At flight level 200 smoke started coming from behind console. When power was reduced to zero torque during descent, all heat and smoke stopped. When power was applied for landing, heat returned but no smoke was noted. Caused by failure of cabin sensing unit solenoid.

Precautionary landing □ (A series) After takeoff, gear partially retracted and

Selected mishap briefs

showed intransit light in handle. Tower confirmed partially retracted condition during flyby. Gear was manually extended and aircraft landed. Splines on gear motor sheared.

T-42

Precautionary landings □ Both precautionary landings were caused by fuel siphoning from right main fuel tank cap. Fuel caps were not installed properly during preflight.

U-8

Precautionary landing □ Immediately after takeoff, cabin door opened at main center latch. Broken spring resulted in failure of rod handle release to retract far enough to allow latch to fully secure door. (USAR)

For more information on fixed wing mishaps, call 558-3901/3913.

Maintenance

AH-1

Incidents □ During tracking operation, crewmember left torque wrench on top of rotorhead. Torque wrench was thrown into tail boom during takeoff, causing 2" x 6" hole in right side of tail boom. □ Pilot landed after main rotor tracking check. After trim adjustment crew chief called clear and pilot pulled start trigger without physically clearing rotor blades positioned at 90°. Tail rotor drive shaft, gearboxes, and tail rotor assembly were damaged when blade tiedown block flew off. Crew chief had placed tiedown block on main rotor blade but did not tie blade to aircraft.

For more information on maintenance mishaps, call 558-3901/3913.

Aviation - related

U-21

□ U-21 was being towed from hangar to parking ramp. Wing walkers were not used and hangar door was partially open. Left wing hit hangar door, damaging left landing light.

OH-58

□ Aircraft was tied down in assigned parking area. Taxiing airliner struck underside of main rotor blade with right wing tip.
□ Wind blew top of rotor blade container onto OH-58 horizontal stabilizer.

UH-1

□ Mechanic was climbing on top of aircraft to remove pitot cover. Mechanic's right knee slipped on rain-soaked surface and went through right window assembly.
□ Maintenance man was standing on work platform applying grease to UH-1 rotor blade for ultrasonic inspection. While changing position, individual caught his heel in grillwork, fell from platform, and received cuts and lacerations to the head. Greasy hands prevented adequate use of handrails.

For more information on aviation-related mishaps, call 558-3913/3901.

USAAAVS phone numbers

Commercial 255-XXXX	AUTOVON 558-XXXX
Aircraft Accident Analysis & Investigation	3913
Technical Research & Applications	4812
Plans, Operations & Education	6410
Management Information System	2920
Publications & Graphics Division	4479
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

Accident synopsis

SYNOPSIS 77-6

Type aircraft: AH-1G

Time: 2000

Classification: Major

Fatalities/Injuries: 0 fatalities, 2 injuries

Estimated materiel damage cost: \$120,400

Mission: Training (CRF)

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	EW3	30	2,572	2,572

Description: Engine failed during night flight. Pilot entered autorotation and landed hard on dirt road. Tail boom was severed, skids collapsed, and underside of fuselage was damaged.

Causes: Engine failure was caused by P1 multiplier connector assembly failure.

Searchlight did not illuminate when activated by pilot and there was limited forward visibility from the rear seat.

Corrective action: All fuel control units are to be replaced with the modified A7 fuel control unit which incorporates a redesigned P1 multiplier. Production schedule for the modification has been accelerated with project completion in July 1977. A DA Form 2028 has been submitted to add a caution for pilots of the AH-1 that forward visibility will be limited from rear seat during termination of an autorotation.

TOTAL MISHAPS FOR 10-16 JUNE 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
AH-1	0	2	1	2	5
UH-1	1	1	0	5	7
OH-6	0	0	0	1	1
OH-58	0	0	1	3	4
TH-55	0	0	0	1	1
CH-47	0	1	1	2	4
U-21	0	0	1	1	2
T-42	0	0	0	2	2
U-8	0	0	0	1	1
Total	1	4	4	18	27

0 Fatalities, 0 Injuries, Estimated Costs: \$63,335

Tree strikes on the rise

Although wire strikes continue to present a safety hazard we must constantly guard against, tree strikes have suddenly loomed into prominence. In one year's time, for example, the number of tree strikes skyrocketed from 22 to 111, and damage costs rose to nearly \$2½ million.

Undoubtedly, the growing emphasis placed on NOE flight, including night training missions, has played a major role in this increase. Since the very nature of NOE training requires us to operate our

aircraft close to trees, we cannot eliminate the hazard. However, we can substantially reduce the risk of tree strikes by better understanding the conditions that can inadvertently cause them.

When a helicopter hovers, the rotor system moves a tremendous volume of air every second. This air, drawn from the surrounding air mass, results in a giant pumping process. When an obstacle is placed near the air flowing through the rotor system (figure 1), it causes the



airflow to swirl vertically upwards and then back down through the rotor. If the object happens to be a tree with flexible

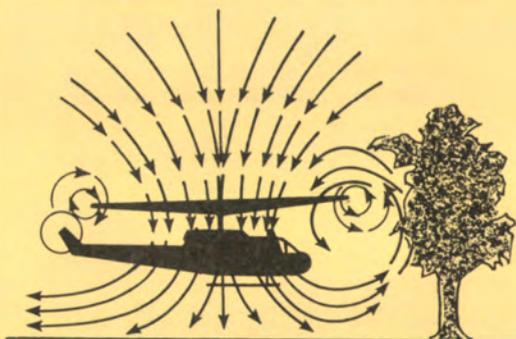


FIGURE 1

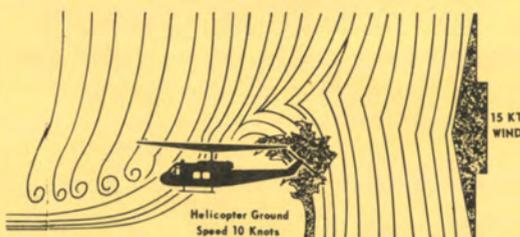


FIGURE 2

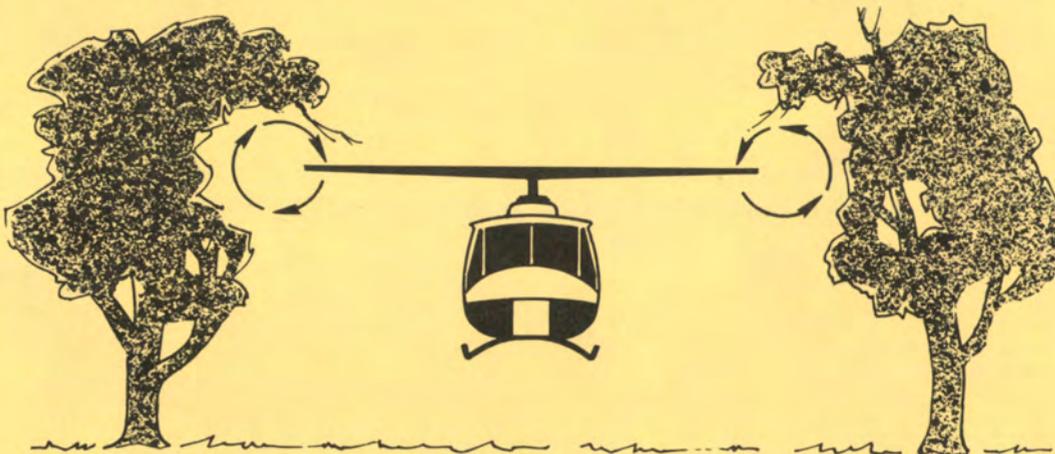


FIGURE 3

limbs, then branches and leaves may be sucked into the rotor. This situation is more likely to occur during hover in a confined area or when landing downwind without adequate rotor clearance.

During an NOE approach downwind into a confined area, the airflow through the rotor at translational lift will likewise tend to draw tree limbs into the rotor, particularly from the rear (figures 2 and 3) when passing through a narrow opening in the trees.

Because of the many variables involved, such as the flexibility of tree limbs and unpredictable winds, it is not possible to establish a realistic minimum tree clearance that would insure safety in all instances. However, the frequency of tree strikes can be greatly reduced by pilots maintaining the maximum distance from trees, commensurate with their respective missions, and remaining aware of the aerodynamics of a hovering helicopter as well as the conditions that cause limbs and branches to be drawn into the rotor. ■

Continued from front page
an "accident happening."

Three categories of heat injury

Generally speaking, there are three categories of heat injury: (1) heat cramps, (2) heat exhaustion or heat prostration, and (3) heatstroke. In heat cramps and heat exhaustion depletion of sodium chloride (salt) and water due to excessive sweating is a primary factor. Heat-dissipating mechanisms of the body are overactive. In heatstroke they are completely overwhelmed.

Preventive measures

- Limit exposure to direct sunlight by early morning scheduling of outdoor activities, providing shaded work areas, and ensuring that proper clothing is worn.
- Make sure plenty of potable water is available.
- Make certain troops consume extra

salt, preferably with food at mealtime. Follow recommendations of TB Med 175, Appendix B, and DA Circular 40-17.

- Acclimatize all personnel and all newly assigned troops from cool geographic areas throughout warm months.
- Maintain a high level of physical fitness in all personnel. The best candidate for heat injury is the desk jockey who works half the summer in an airconditioned headquarters before being told on 15 July that tomorrow is the day he does his first 25-mile march.

All heat injuries require medical attention. Heatstroke is a life or death medical emergency.

The Wet Bulb Globe Temperature Index is provided by your supporting medical activity. It is to be followed, not ignored, unless you are willing to risk your career on an unnecessary fatality in your command due to preventable heat injuries. ■

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

VOL. 5, NO. 37 □ 6 JUL 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36860

Double-check valve malfunction fix

During the period 1 January 1971 to 5 April 1977, 1 major accident, 1 incident, 17 forced landings, and 24 precautionary landings were directly attributed to malfunction of the double-check valve, NSN 2915-00-924-7789. Terrain, weather, and other factors could have turned any of the lesser mishaps into fatal accidents except for prudent judgment, crew expertise, and simple luck. Installation of a diaphragm-operated check valve and a PC air filter appears to have eliminated the same double-check valve problem in Allison C18 (T63-A-700) powered civilian aircraft.

MWO 55-2840-231-50-13, Installation of Second Accumulator and High-Force Check Valve on T63 Series, 20 August 1976, has been issued. The new diaphragm-operated double-check valve will first be installed on T63 engines going through overhaul. The Allison model 250-C20C (Army model T63-A-720) engine to be installed on the OH-58C will have the new check valve.

The new double diaphragm-operated check valve is also listed in TM 55-2840-231-23P, change 1, figure 13, item 24, NSN 4820-00-626-8108, as a replacement for the old double-check valve, NSN 2915-00-924-7789. Additional hardware required for installation is depicted in figure 13, page 20.

TM 55-1520-228-20, chapter 3, requires removal and cleaning of double-check valve (NSN 2915-00-924-7789) every 150 hours. National Guard maintenance personnel clean this valve every 100 hours. This action may serve as an

interim measure until the new valve that does not stick can be installed. Local commanders have the option to increase inspection intervals should they deem it necessary. ■

OV-1 safety-of-flight message



□ 281935Z June 77, subject: Safety-of-Flight One-Time Inspection for all OV-1 Series Aircraft, TB 55-1500-217-30-1, Urgent With Limitations, Message Control Number OV-1-77-3. Summary: A potential hazardous condition exists within the propeller auxiliary motor electrical cable assemblies and the engine ring cowl de-ice electrical cable assembly as a result of manufacturing defect in the amphenol electrical connectors. An unknown quantity of these connectors has been assembled using No. 4 sockets with incorrectly sized tangs. Installation of defective connector assemblies on OV-1 series aircraft cannot be positively established and, therefore, one-time inspection is required. Contact: Mr. Don Heyden, AVSCOM, AUTOVON 698-3015. ■

Selected mishap briefs

Rotary wing

UH-1

Incidents □ During NOE flight, pilot's attention was drawn to obstacles on the right of the flight path. Pilot failed to see tree branches on left side of aircraft, resulting in 3-inch tear in one main rotor blade. □ During contour flight, while parallel to a ridgeline, aircraft struck triple-strand, 1/4-inch copper weld powerline, causing loss of VHF/UHF antenna and scratches on front cross tube, FM antenna, transmission cowling, left and right cyclic trunnion, and swashplate assembly. □ During practice autorotative landing, SP applied initial and cushion collective pitch too high. Aircraft fell through and landed hard, resulting in damage to landing gear and attachment. □ During cruise flight at 1,500 feet agl, engine failed, aircraft yawed, and warning lights illuminated. Pilot executed emergency procedures and autorotated to a grass field. Rear skids were spread on termination of autorotation. Teardown analysis was requested on suspected fuel control failure.

Precautionary landings □ Engine oil temperature rose to 160°, engine oil pressure rose from 80 to 95 psi, and egt was 500°. Aircraft was flown in this condition for 10 minutes due to darkness and hazy conditions, until suitable precautionary landing area was found. Maintenance replaced engine. Cause unknown pending teardown analysis. □ Aircraft was in traffic pattern on standardization flight when hydraulic caution light came on and

controls stiffened. Pilot executed hydraulics-off landing. Inspection revealed failure of hydraulic tubing due to chafing. □ Aircraft was in cruise flight at 100 knots when bird flew into windshield. Aircraft was landed in factory parking lot. Inspection revealed no damage and flight was resumed. □ Aircraft was at 30-foot stationary hover when M-5 system was fired at a target approximately 400 meters downrange. Seven to ten rounds impacted short of the target, 20-30 meters in front of the aircraft. One crewmember in cargo compartment was injured and red main rotor blade was damaged by shrapnel. Inspection revealed failure of sight handle sync gear assembly. □ Master caution light came on with no segment light illuminations. Master caution panel assembly was replaced.

AH-1

Accident □ Tail rotor failure occurred at 20 feet on short final for landing. Caused by tail rotor silent chain failure.

Incident □ Aircraft was in shallow dive descending from 250 feet agl with DA of 6,100 feet. Insufficient power was available for recovery. Aircraft hit a tree, resulting in damage to turret, crosstube fairings, and both synchronized elevators.

Forced landing □ During NOE flight, loud pop was heard, followed by illumination of master caution and engine chip detector lights. Engine oil pressure decreased as loss of power occurred. Suspect internal engine failure.



Precautionary landings □ Ninety-degree gearbox chip detector light came on after takeoff. Aircraft landed and gearbox was flushed. Aircraft departed LZ and 90° gearbox chip detector light came on again. Maintenance replaced gearbox. □ Fuel filter caution light came on. Wire was broken where it attaches to cannon plug on fuel filter transmitter switch. □ Transmission oil bypass light illuminated. Maintenance replaced pressure switch. □ IP had just initiated an NDB missed approach when engine surged. Fluctuations noted were: torque—20 lbs; N₂ rpm—30; and fuel pressure—12 lbs. Suspect fuel control malfunction.

CH-47

Incidents □ During takeoff from confined area, bordered by 60-foot trees, forward rotor blades hit trees, causing incident damage to two blades. □ During training flight on NOE portion of standardization ride, rotor blades struck tree on right side of aircraft.

Precautionary landings □ During training flight, No. 1 engine was beeped to 62 percent N₁. N₁ then dropped to 50 percent and egt went to 800° C. Engine was secured. Investigation revealed that N₁ actuator had failed internally. □ Crew smelled fuel fumes on approach for landing. Fuel was leaking from right main fuel cell filler neck. Caused by failure of filler neck gasket. □ During cruise flight, noise was heard from left side of aircraft. No. 1 torque needle began fluctuating, No. 1 chip detector light illuminated, and No. 1 engine N₁ dropped

through 50 percent. Crew chief heard loud noise and felt vibrations from No. 1 engine. Cause unknown. Suspect bearing failure.

OH-6

Forced landing □ During low-level training flight at 100 feet agl and 60 knots, engine made loud whine and failed. IP autorotated to a road. Cause is under investigation.

Precautionary landing □ Fuel low warning light flashed intermittently after 1.9 hours of flight. Suspect incorrect setting of low fuel warning system.

OH-58

Accidents □ During takeoff, main rotor struck telephone wires. Wires wrapped around mast and severed push-pull tubes. Aircraft settled to ground, struck uphill slope, bounced, and turned 12° to the right before coming to rest. Accident is under investigation. □ During practice low-level autorotation, aircraft rolled forward, became airborne, traveled 20-30 feet, touched down hard, bounced, and came to rest. Accident is under investigation.

Precautionary landings □ Engine oil temperature gauge indicated 110°. Caused by carbon deposit on connecting prongs of engine oil temperature gauge. □ Generator and inverter caution light came on. Caused by broken wire at terminal A on starter-generator. □ Master caution and hydraulic pressure caution lights illuminated. Caused by failure of hydraulic pressure switch. □ On ground run, during acceleration from flight idle, compressor stall occurred. Caused by faulty bleed valve.

Selected mishap briefs

TH-55

Incident □ Main rotor blades struck tail boom tube during shutdown. Weather change, including rain and wind shift, occurred as clutch was disengaged.

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

U-21

Precautionary landings □ (F series) At 17,000 feet, No. 2 engine had noisy vibration and N1 fluctuated. All other indications were normal. No. 2 engine was secured and landing made. Cause of vibration was failure of internal fan and motor bearing of air conditioner motor. □ (JU series) After one hour and forty-five minutes of flight, No. 2 engine was shut down so IP could demonstrate a ram air start. Attempt was unsuccessful as was a restart attempt using the starter. Single-engine landing was made. Failure of engine to start was caused by oil accumulation on ignitor plugs.

OV-1

Precautionary landing □ (D series) During normal cruise, No. 1 and No. 2 hydraulic pressure gauges registered zero. Emergency gear extension procedures were used and landing was made. Caused by fatigued hydraulic line.

T-42

Precautionary landing □ During postflight inspection it was noted that right main landing gear door had come loose at forward attaching point. This allowed door

to rotate around rear attaching point and kink right main brake line. (Inspection criteria of gear door will be contained in T-42 Letter #19 to be published soon.)

For more information on fixed wing mishaps, call 558-3901/3913.

USAAVSCOM message

□ 211735Z Jun 77—subject: Maintenance Advisory Message on Low Reflective Infrared Aircraft Paint, Color Variations (GEN-77-14). ■

Tail rotor tip

With summer officially upon us and the rainshowers what they are, is the tail rotor of your aircraft getting the attention it deserves? TM 55-1520-210-20, chapter 3, page 3-24, Inspection Requirements, states: "To purge, lubricate the tail rotor hub and blade grip bearing after the helicopter has been operated in rain, ice, or heavy snow." (Pilots should be made aware of this as it is not in the operators manual. Mechanics have their instructions in the TM.) ■

Aviation-related

OH-58

□ Inexperienced mechanic was attempting to track main rotor without assistance from other ground-support personnel. Main rotor blade was damaged. Tracking flag used was constructed improperly. The metal pole ran the full length of the tracking flag.

For more information on aviation-related mishaps, call 558-3913/3901.

Accident synopsis

SYNOPSIS 77-7

Type aircraft: AH-1G

Time: 1555 Classification: Major (total)

Injuries: 0 fatalities, 2 injuries

Estimated materiel damage cost: \$509,833

Mission: Training

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CW2	28	2,464	2,589
Copilot	ILT	27	306	306

Description: Aircraft was flying 150 feet agl at 12,400 feet msl. Engine rpm decreased to 6350 and rate of climb stopped. Pilot elected to fly over ridge-line in his flight path and dissipated his airspeed to 10 knots. At this point, a left tum was initiated and aircraft crashed with engine rpm at 6000.

Cause: Pilot attempted to operate the aircraft in a configuration that exceeded operational gross weight/service ceiling limitations.

Contributing factors: Flight leader failed to maintain flight integrity and disregarded

two requests from the pilot of the crashed aircraft to slow down because he was unable to keep up. Commanders were not enforcing local directives/SOPs addressing weight and balance, e.g., 8,400 pounds max gross weight for AH-1G operating at PTA range; filing DD Form 365F with flight plan when AH-1 is in armed configuration.

Corrective action: Pilot has been relieved from PIC pending his demonstration of a level of competency commensurate with position responsibilities. Policy has been established to conduct out-of-ground-effect hover checks on all AH-1 flights when operating in this area. Division policy was established requiring DD Form 365F be prepared for AH-1 aircraft before each flight. Command policy has been published and disseminated on VFR departure procedures with appropriate routing and altitude restrictions. Strong command emphasis has been placed on existing regulations for operating in this area. ■

TOTAL MISHAPS FOR 17-23 JUNE 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
UH-1	0	4	0	18	22
AH-1	1	1	1	5	8
OH-6	0	0	1	1	2
OH-58	2	0	0	6	8
TH-55	0	1	0	0	1
CH-47	0	2	0	3	5
U-21	0	0	0	4	4
OV-1	0	0	0	1	1
T-42	0	0	0	1	1
C-12	0	0	0	1	1
U-8	0	0	0	3	3
Total	3	8	2	43	56

0 Fatalities, 3 Injuries, Estimated Costs: \$220,371

Complacency and the aviator



Complacency is formally defined as "self-satisfaction, smugness." In the vernacular of aviation this definition is carried a step further and is usually used to describe the act of becoming so accustomed to serious hazards as to accept them as normal.

Complacency in aviation manifests itself when known hazards to flight exist and are not corrected for such a lengthy period of time that they become accepted as part of the standard day-to-day operation.

USAAAVS files contain many reports of mishaps that could have been avoided had the aviators involved refused to accept and fly aircraft with known serious discrepancies. It is a known fact that there is a judgment factor involved in the "go-no-go" decision. It is also known that certain pressures exist that cloud the issue. However, self-discipline can put

these pressures into proper perspective, particularly when it comes to accepting an aircraft that common sense dictates is unacceptable. Yet, a recent survey revealed that aviators are accepting and flying aircraft with known powerplant deficiencies that can, and do, cause internal engine failures.

In the past 22 months, one fleet of multi-engine aircraft had 20 engine failures, 19 of which ended with successful precautionary landings. One resulted in a fatal accident. During this time, the odds appear to be 19 to 1; but can anyone identify which aircraft will be the one to end in disaster out of the next 20 occurrences? Would you bet your life on these odds? Unfortunately, some who do, lose.

One reason that aviators are accepting and flying these aircraft with known discrepancies is complacency. The engine problems have been around long enough to be accepted as a normal part of aircraft operation.

There are thousands of pilots with thousands of flying hours who have never been involved in a mishap. The secret to their success is they apply all of their knowledge all of the time to insure that everything is in their favor **before** taking off.

Their sense of values is such that there is no mission that can be so important as to risk lives on the chance that a known serious aircraft deficiency will not reach disastrous proportions in flight.

This is a way to fight complacency and win. ■

Timely submission of PRAMs

If electronic communication facilities are not available, the following addresses should be used for timely submission of PRAMs (Preliminary Report of Aircraft Mishap). Reference AR 95-5, par. 13-2.

HQDA (DACS-ZA)	} HQDA () WASH DC 20310
HQDA (DAIG-SM)	
HQDA (DAMO-ODA)	
HQDA (DAAR-OT)	
HQDA (NGB-OAC-AVN)	

Commander
AFIP
Washington, DC 20306

Commander
USAAAVS
Fort Rucker, AL 36362

Commander
U.S. Army Forces Command
Fort McPherson, GA 30330

Commander
U.S. Army Training & Doctrine Command
Fort Monroe, VA 23651

Commander
U.S. Army Intelligence Agency
Fort Meade, MD 20755

Commander
U.S. Army Military District of Washington
Fort McNair
Washington, DC 20315

Commander
Ballistic Missile Defense Systems Cmd
Huntsville, AL 35809

Commander
U.S. Army Security Agency
4000 Arlington Blvd.
Arlington, VA 22212

Commander
U.S. Army Communications Command
Fort Huachuca, AZ 85613

Commander
U.S. Army Research & Development Cmd
(AMCSF-A)
5001 Eisenhower Avenue
Alexandria, VA 22331

Commander
USAAVSCOM
St. Louis, MO 63102

Commander
First U.S. Army
Fort Meade, MD 20755

Commander
Fifth U.S. Army
Fort Sam Houston, TX 76234

Commander
Sixth U.S. Army
Presidio of San Francisco, CA 94129

Commander
Naval Safety Center
Norfolk, VA 23511

Deputy Inspector General/Safety
Norton AFB
San Bernardino, CA 92409

Delete: U.S. Army Air Defense Command

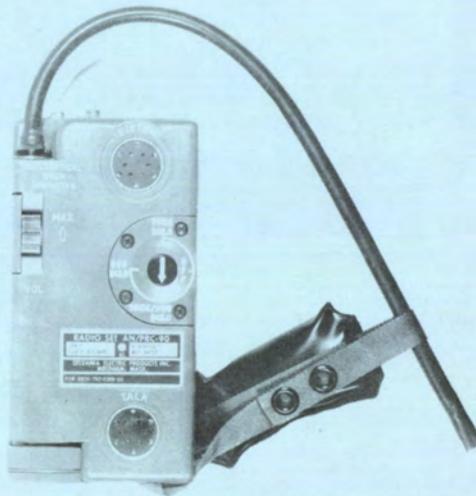
Aviation life support equipment

AN/PRC-90 survival radio

The AN/PRC-90 survival radio, NSN 5820-00-782-5308, LIN Q38335, is PEMA (Procurement of Equipment and Missiles, Army) funded and is "free issue" to those aviation units which have it listed as authorized on their MTO&E.

If the MTO&E does not list the AN/PRC-90, aviation units must initiate action to have it authorized. Your requisitions should be submitted to Code B16 (U.S. Army Electronics Command).

If further information is required, contact the DARCOM Readiness Project Officer for ALSE, ATTN: DRCPO-ALSE, P.O. Box 209, St. Louis, MO 63166, or call AUTOVON 698-3241/3291. Action officer is Mr. Ed Daughety. ■



Attention

ASO students

Students arriving at Fort Rucker to attend the USAAVS Aviation Safety Officer Course will now report to building 6606, the new location of the 63rd Company, 6th Battalion. ■

AAPC students

AAPC students are reminded that graduation exercises will take place in seasonal Class A uniform. Students should insure they have the appropriate Class A uniform before arriving at Fort Rucker. ■

DEPARTMENT OF THE ARMY

United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

US Army Aviation Training Library
Fort Rucker, Alabama 36360
JUL 18 Rec'd

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 38 □ 13 JUL 1977

Maintenance inspections clarified

USAAVS recently requested clarification from HQDA concerning scheduled maintenance inspections for nuclear cargo missions. The following was excerpted from DA's reply to this request.

Scheduled inspections referred to in AR 50-5 include daily, intermediate, and periodic inspections. Criteria for establishing and performing these inspections are discussed in paragraph 2-2, section II, TM 55-1500-328-25. Special inspections as discussed in paragraph 2-3B, section II, TM 55-1500-328-25, which are not compatible with airframe operating time or airframe inspection intervals and are not critical to safety of flight may be deferred until the next intermediate or periodic inspection. The inspection must be completed at this time for the intermediate or periodic inspection to be complete. Special inspections are published in chapter 3 of the applicable aircraft organizational maintenance manual (dash 20).

The information above pertains to aircraft under the PMI/PMP system of maintenance. The UH-1D/H and CH-47A/B/C are changing to the new phased maintenance system. Instructions for implementing this system and for accomplishing special inspections are outlined in TB 1500-337-24. ■

After four inspections, FOD

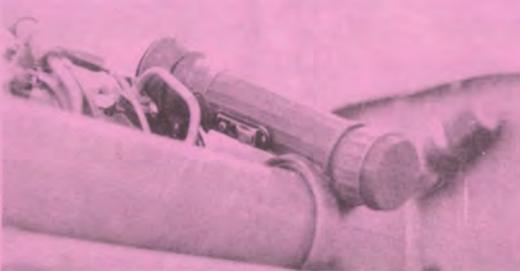
Why are we constantly reminded to guard against FOD? One good reason is because it can occur so easily and in the most unexpected ways as happened after

maintenance was performed on the engine of an OH-58. The entire engine area was carefully inspected following maintenance. In addition, the pilot who was to pick up the aircraft performed a preflight inspection, being careful to thoroughly check the engine area. Further, to be sure all was well, maintenance personnel rechecked the entire aircraft—especially the engine area.

When he was satisfied the aircraft was ready for MOC and flight, the pilot momentarily went into the hangar. Taking advantage of his absence, a mechanic decided to give the engine area one final check for good measure. He found no discrepancies.

On his return, the pilot proceeded to perform the MOC with the help of two mechanics, then flew the aircraft to his unit's hangar. Following shutdown—you guessed it—the crew chief found the melted flashlight shown in the photograph. No, they didn't all overlook it; the well-meaning mechanic who took one last look—just to be sure—while the pilot went into the hangar, inadvertently forgot it.

That's the way it goes—and another good example of why we must constantly stay on guard against FOD. Any more questions? ■



Selected mishap briefs

Rotary wing

UH-1

Incidents □ During NOE flight, both main rotor blades were damaged due to tree strike. □ During IFR flight and while being radar-vectorred by approach control, aircraft received lightning strike to FM antenna. Lightning strike inspection is in progress.

Forced landings □ During termination of normal approach, aircraft started to tum to the right. Pilot applied left pedal with no effect. Aircraft made one and one-half revolutions. Pilot reduced rpm and executed hovering autorotation. Maintenance inspection revealed failure of tail rotor silent chain. □ While performing TEAC, power was reduced to 25 psi. Aircraft yawed 10° to 15° and 5 to 7 loud explosions were heard from engine area. Suspect fuel control failure. □ Suspect compressor stall occurred while aircraft was hovering at 10 feet to avoid blowing a runway marker. Cause not reported. □ During low-level autorotation, IP saw N1 decreasing through 60 percent. Autorotation was completed. Suspect malfunction of engine flight idle stop solenoid.

Precautionary landings □ Tail rotor chip detector light illuminated. Maintenance replaced defective tail rotor gearbox. □ During approach to ridgeline with seven troops on board, copilot made fast approach. During go-around, aircraft was over-torqued to clear ridge. Maintenance inspection was performed and aircraft released for flight. □ Pilot noticed engine oil temperature had risen to 97° C. Landing was made and temperature increased to

104° C., then decreased to 95° C. Faulty engine oil temperature gauge was replaced. □ During cruise flight at 4,000 feet, pilots smelled strong odor of JP-4 in cockpit. Odor dissipated but 5 minutes later crew smelled fumes again. Emergency was declared and precautionary landing made. Inspection revealed fuel filler cap was not seated properly and fumes were drawn into cargo compartment area. □ While aircraft was downwind in traffic pattern, low rpm light and audio came on and rotor tach indicated zero. Inspection revealed broken rotor tach generator shaft.

AH-1

Accident □ After pretakeoff check was made, copilot attempted to bring aircraft to a hover. As copilot applied collective, aircraft rolled over on right side. Investigation is in progress.

Precautionary landing □ During climbing left tum, pilot induced an overtorque to reduce increasing rotor rpm. Aircraft was landed and maintenance conducted over-torque inspection.

OH-6

Precautionary landing □ Master caution and generator lights came on, followed by fluctuations in loadmeter. Caused by loose wire at generator.

OH-58

Incident □ Aircraft was descending to land at forward area refueling point and struck wires 60 feet agl one-half mile from refueling point. Pilot's windshield was broken, copilot's windshield was scratched, and airframe and antenna were damaged.



Precautionary landings □ Transmission oil hot light came on. Caused by short in temperature switch. □ On downwind turn in NOE flight, rotor rpm decreased to 330 and engine N1 was 97 percent. Cause is under investigation. □ Engine oil bypass and master caution lights illuminated during downwind leg of NOE approach. Engine was burning three-fourths of a quart of oil in 5 hours. Rpm sometimes bled as low as 90 percent N2 on approach. Caused by bearing failure. □ On short final to confined area, transmission oil hot light came on. Aircraft was inspected and dead grass was removed from oil cooler. MOC was accomplished and aircraft released for flight. □ Crew smelled smoke during approach. Upon landing, pilot found smoke emitting from battery compartment. Caused by battery failure.

CH-47

Forced landing □ During takeoff for training mission No. 2 engine fire detector light came on. Pilot completed emergency procedures but could not verify fire in No. 2 engine. Subsequent inspection revealed that paint in the end of the No. 2 engine cowling had burned off. Caused by failure of combustor seal on fuel injection nozzle.

Precautionary landings □ During takeoff, No. 1 engine power would not advance beyond 78 percent N1 and 39 pounds torque. Normal and emergency engine trim would not respond. No. 1 engine condition control circuit breakers popped and, when reset, No. 1 engine control caution light came on. Caused by failure of No. 1 engine N1 actuator. □ During hover, No. 1 engine failed without warning. All

significant engine instruments were normal. Cause unknown pending teardown analysis.

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

T-42

Precautionary landing □ Gear would not retract after takeoff. Crew made several unsuccessful recycling attempts, then flew by tower to confirm gear was down for landing. Torn rubber boot on safety switch prevented proper contact with main gear strut.

C-12

Precautionary landing □ Cockpit filled with smoke during IFR approach. Landing was completed and maintenance found forward vent blower motor had failed and overheated.

OV-1

Precautionary landing □ During climb to altitude, No. 1 engine chip detector light came on. Landing was completed with reduced power. Caused by failure of reduction gear assembly.

U-8

Precautionary landing □ During missed approach from practice GCA, No. 2 engine lost power, then surged. Engine was immediately secured and landing completed. Low fuel state caused fuel starvation. Fuel gauge gave inaccurate indication.

For more information on fixed wing mishaps, call 558-3901/3913.

Selected mishap briefs

Maintenance

AH-1

Precautionary landing □ During takeoff at 50 feet agl, No. 2 hydraulic light came on. Caused by maintenance error. As a result of nonavailability of seal to correct a leak in the copilot's fore and aft cyclic servo, servo was blocked off with a line running from the pressure to the return side, causing pressure loss in No. 2 hydraulic system.

U-21

Precautionary landing □ (F series) Pilot noticed torque pressure fluctuation and drop in oil pressure to 50 psi. Visual check revealed oil leaking from No. 2 engine area. Engine was secured for single-engine landing. Oil cap was not properly secured.

For more information on maintenance mishaps, call 558-3901/3913.

Recap of USAAVSCOM messages

AVSCOM message 301950Z June 1977, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 January-30 June 1977 for the AH-1.

AH-1-77-1 Authorizing New Lubrication/Inspection Requirements of Tail Rotor Flexible Couplings on AH-1/UH-1 Helicopters

AH-1-77-2 Use of Nonstandard/Locally Manufactured, Heavy-Duty Ski Shoes on UH-1/AH-1 Series Aircraft

AH-1-77-3 Tail Rotor Grip Assy, P/N 284-811-728-15, Installed on AH-1G/Q and TH-1S Series Helicopters

AH-1-77-4 AH-1S Helicopters

AH-1-77-5 M158A1 Launcher for AH-1Q Attack Helicopter

AH-1-77-6 Tail Rotor Control Assy Publication Change

AH-1-77-7 Amendment to Msg 152200Z Mar 77 Pertaining to Clarification of Tail Rotor Assy Publication Change on UH-1/AH-1 Helicopters

AH-1-77-8 Chafing of the Elevator Control Rigid Connecting Link on AH-1S Mod Aircraft

AH-1-77-9 AH-1G/Q/S Attack Helicopter, Firing of Weapons Under Icing Conditions

AH-1-77-10 Cobra Door Warpage Problems, AH-1G, AH-1Q & AH-1S (Mod)

AH-1-77-11 Attachment of 5th Mount Assy To Transmission Case on AH-1S Helicopters

AH-1-77-12 AH/UH Helicopters Concerning Mismatch of Tail Rotor Drive Shaft Hanger Assembly Parts

AH-1-77-13 Main Rotor Hub to Pitch Change Link Attach Bolts

AH-1-77-14 AH-1G/Q and all UH-1 Helicopters Concerning Improper Grease in 42-Degree Gearbox Couplings ■

Accident synopsis

SYNOPSIS 77-8

Type aircraft: UH-1H

Time: 1145

Classification: Major (total)

Injuries: 1 fatality, 1 injury

Estimated materiel damage cost: \$618,055

Mission: Training

	Grade	Age	RW Hrs	Tot Flt Hrs
IP	CW2	28	2,302	2,302
P	CPT	31	1,050	1,050

Description: After touchdown of simulated hydraulics-off landing, slightly nose right, aircraft abruptly lifted from runway and yawed right in an extremely nose-high attitude. Aircraft then went into a hard right yaw, causing nose to hit runway. Main rotor blade struck the ground and aircraft flipped over and crashed in right nose-low inverted configuration.

Causes: IP delayed too long in applying corrective measures for an unsafe condition. Pilot failed to maintain proper lane

alignment and execute the correct sequence of control application to bring the aircraft to a straight-ahead stop. The pilot died from head injury. He had failed to properly adjust the helmet chin and nape straps and the helmet came off on impact. Chronic fatigue may have been a contributing factor to the accident.

Corrective action: The Standardization Board will publish specific guidance to pilots, IPs, and SIPs concerning the requirements for simulated hydraulics-off landings. Each aviation unit is directed to conduct an inspection of all its flight helmets. Local supplement to AR 95-1 required the flight surgeon to inspect and fit each helmet during the annual flight physical. Additionally, each aviation unit will conduct a formal class on the proper wearing of survival equipment with emphasis on correct procedure of wearing the helmet. The flight surgeon will discuss the indication and effects of fatigue.

TOTAL MISHAPS FOR 24-30 JUNE 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Precautionary Landings	Total
UH-1	0	2	4	20	26
AH-1	1	0	0	2	3
OH-6	0	0	0	1	1
OH-58	0	1	0	8	9
CH-47	0	0	1	2	3
U-21	0	0	0	2	2
OV-1	0	0	0	1	1
T-42	0	0	0	1	1
C-12	0	0	0	1	1
U-8	0	0	0	3	3
U-3	0	0	0	1	1
Total	1	3	5	42	51

0 Fatalities, 0 Injuries, Estimated costs: \$144,029

Just another incident?



Five UH-1s chummed their way through the darkness in loose trail formation. The aircraft had just taken off on the last leg of a cross-country flight back to their home station. VFR conditions were forecast and no problems were anticipated.

However, shortly after takeoff, the flight encountered light rain and decreasing ceilings; but knowing the weather at their intended destination to be VFR, the flight commander elected to proceed by intercepting and following an interstate highway that lay along their route.

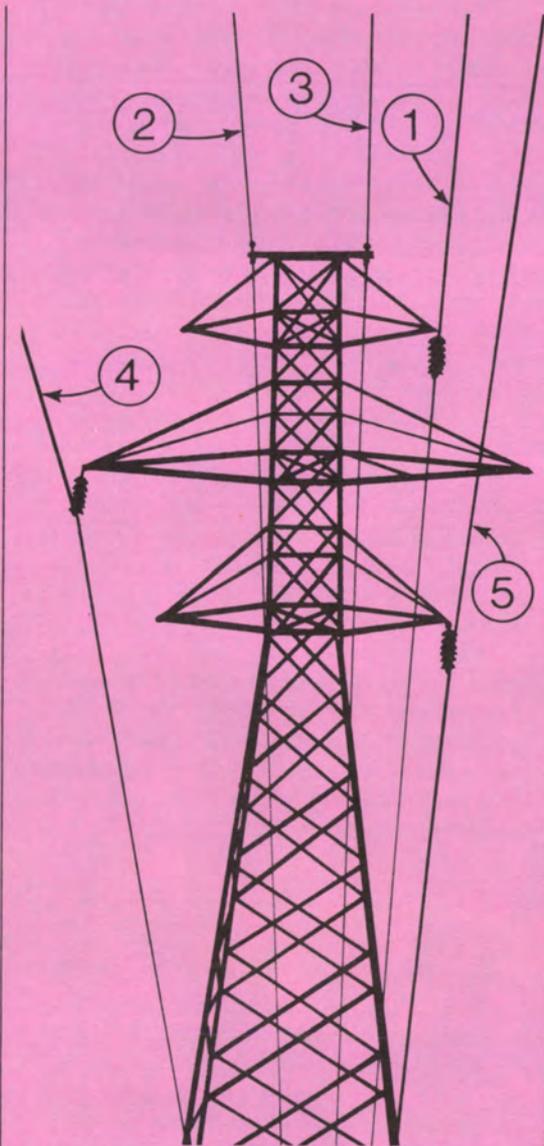
Noting the weather was deteriorating and not wanting to follow a highway in the darkness, the pilot of Chalk 5 notified the flight commander of his decision to file IFR, and immediately afterwards, climbed into the clouds.

After approximately 15 minutes of flight the remaining four aircraft began encountering lower ceilings of 400 to 500 feet, with 1 to 2 miles' visibility in haze. Airspeed varied from 40 to 60 knots. As the flight continued, weather conditions worsened, forcing the aircraft to progressively descend to lower altitudes.

Because of near total darkness—no moon, stars, or nearby towns to provide illumination—the crews found themselves totally involved in maintaining visual contact with the highway and could not accomplish a constant map reconnaissance for obstacles.

Suddenly, while about 120 feet agl, the lead aircraft smashed into a 66,000-volt powerline that spanned the highway, snapping the cable in half. Almost immediately Chalk 3 and Chalk 4 climbed into the clouds and went IFR while Chalk 2 remained low level to observe the lead ship. After ensuring the lead aircraft was under control, Chalk 2 also elected to climb IFR.

The flight commander remained low level until he could ensure the aircraft was responding normally. Then, he too went IFR, continuing flight to his intended destination. Although one aircraft landed at an alternate airfield, all five completed the flight without further incident. On landing, inspection of the lead aircraft revealed incident damage to the flow fin, chin bubble, antennae, cross tubes, and searchlight. Just another incident!



Closeup of tower supporting the wire that was hit (1). Distance from (2) to (1) at the pole is 6 feet. From (1) to (4) is approximately 15 feet. Due to the large span between towers the wires had enough sag to allow the aircraft to pass below wires (2) and (3) and above (4) and (5).

But was it? Let's take a closer look. To begin with, it was miraculous, to say the least, that the wire strike did not result in the immediate loss of both aircraft and personnel. Although the cable was $1\frac{1}{2}$ inches in circumference, it did not contact any critical aircraft component, and gave way by breaking without destroying the integrity of the aircraft. It was even more miraculous that contact with this particular wire was made in the manner described, considering that to strike the wire, the aircraft had to fly under two other wires either of which could have made contact with the main or tail rotor. As a matter of fact, investigators determined that the maximum separation between the tail rotor and the uppermost wires was approximately $3\frac{1}{2}$ feet. Finally, the occupants were fortunate that no critical structural or control member sustained any initial damage that could have caused loss of control or in-flight breakup during the latter portion of the flight following the mishap.

In addition, the sudden, unplanned manner in which the flight of aircraft entered IFR conditions could have readily resulted in a midair collision. Fortunately none of these events occurred. But this was not a case of "just another incident." The results could have been catastrophic; so the important question is why did this mishap happen?

Before departing on the final leg of the cross-country flight, the flight commander had no indication of possible problems, and he neglected to plan in advance for some contingency. Consequently, he did not give his flight an updated briefing—an omission that was to strongly influence his decisions during flight.

When the flight initially encountered light rain and a lower ceiling, the flight

commander probably felt justified in electing to follow the highway. Although he had not updated his VFR sectional map to show all the wire hazards present, he had flown this route approximately a month earlier and knew of them. He also knew the highway led to their home field where the weather conditions were known to be VFR. In the absence of any other plan, he made his first decision.

However, shortly afterwards he was forced to make a second one—to continue following the highway or to go IFR. At this point of the flight, weather was obviously deteriorating and ceilings lowering. Visibility was restricted and haze prevented use of searchlights. Already, Chalk 5 decided IFR was the answer and had gone that “route.” The other aircrews also felt that they should execute inadvertent IMC procedures, but did not do so because of a strong feeling that the “integrity of the flight” should be maintained.

Once again, a lack of prior planning influenced the flight commander’s decision. He knew they were about 40 miles from their destination where weather conditions were VFR, but he was uncertain as to whether or not all the pilots in the other aircraft were instrument qualified and current. Consequently, he elected to continue following the highway—a decision that resulted in the wire strike.

After the mishap occurred, he was left with one final decision: land or continue.

He knew the terrain was extremely hazardous. This, coupled with the near-total darkness and poor visibility brought on by the inclement weather, resulted in his decision to continue flight after he ascertained the aircraft was responding normally—a lucky guess.

What would you have done under the same circumstances? Obviously, a long-winded discussion with pros and cons could readily develop. But the real point is not so much the course of action the flight commander in question elected to take but rather that the major decisions would have already been taken care of had thorough planning and briefing of all the pilots been accomplished before the flight. One portion of the recommendations concerning the mishap makes this point quite clear: “. . . That commanders ensure all aviators are familiar with all requirements in AR 95-1, with special attention given chapter 4, paragraph 4-1, c, e, i—‘preflight action for all flights will include a careful evaluation of the following: appropriate charts and maps, alternate course of action if flight cannot be completed as planned, and routes, obstructions, hazards and equipment requirements.’”

In conclusion, we may note a touch of irony. Along the route followed by the flight of aircraft, high tension lines cross the interstate highway at 14 points. Only one set of wires is depicted on the current VFR sectional map. That was the set the aircraft struck. ■

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 39 □ 20 JUL 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

OV-1 safety-of-flight message

□ 131730Z July 1977, subject: Safety-of-Flight One-Time Inspection/Spacer Installation for FY 67 and FY 68 OV-1C, all OV-1D and all OV-1D (Conversion) Series Aircraft, TB 55-1500-217-30-2, Urgent With Limitations, Message Control Number OV-1-77-5. **Summary:** The aft outboard corner of the AN/ARN-103 receiver transmitter mount can cause chafing damage to the landing gear hydraulic line as the result of flight dynamics and/or ground taxi. Chafing rupture of the hydraulic line, 134H10014-779LGU-8, will cause malfunction of TACAN system and necessitate an emergency landing as a result of loss of hydraulic fluid. **Contact:** Mr. Don Heyden, TSARCOM, AUTOVON 698-3014, commercial (314) 268-3014. ■

Aircraft refuelers

Hydrostatic testing of hose

A change is now being prepared to FM 10-68, and TM 10-1113 is being revised and will be designated FM 10-71. Both publications are scheduled for printing in early FY 78.

Below is the information pertaining to hydrostatic testing of hose as it will appear in the change to FM 10-68 and in FM 10-71.

New hose: Test the hose at the operating pressure of the system or vehicle in which it will be used before you put the

hose into operation.

Recoupled hose: Recoupled hose must not be used in aircraft refueling unless the hose has been hydrostatically tested at one and one-half times its design pressure. This testing can be accomplished at the appropriate maintenance facility.

In-service or in-storage hose: Test the hose monthly at the operating pressure of the system or vehicle in which it will be used.

Inspection: During each of these tests, check the hose for bulges, blisters, tears, cuts, soft spots, tightness, and leaks.

This info furnished by USAQM, Fort Lee, Virginia. ■

Low reflective paint defective

USATSARCOM message 051425Z Jul 77, subject: Maintenance Advisory Message on Lacquer, Low Reflective, MIL-L-46159, NSN 8010-00-083-6588 (GEN 77-15), reports that paint produced by Enmar, Inc., Wichita, Kansas, in lots 76-89, 76-90, and 76-91 is failing the specification requirements for condition in container and for fineness of grind. This paint should not be used. Quality Deficiency Report (SF-368) will be forwarded to the GSA servicing region where the merchandise and consignee are located. TSARCOM point of contact is Mr. J. W. Dean, AUTOVON 698-6496, commercial (314) 268-6496. ■

Selected mishap briefs

Rotary wing

UH-1

Accidents □ Twenty-five seconds into start with N1 at 32% and egt at 420°, crew chief told pilot that a fire had started at intake area. Emergency shutdown was completed. Cause unknown. Investigation is in progress. □ Engine failed during cruise flight at approximately 500 feet agl. Tail boom was chopped off by main rotor blades at touchdown. Investigation is in progress.

Precautionary landings □ During takeoff, engine chip detector light activated for the second time the same day. Maintenance replaced engine. □ During rappelling exercise, while aircraft was at 75-foot hover, loud noise was heard from engine area. Aircraft landed and maintenance inspection revealed FOD on first-stage compressor blades. □ During cruise flight, pilot noted engine oil temperature indicating 110°. Aircraft landed and on shutdown engine oil temperature indicated 120°. Maintenance test flight could not duplicate condition. □ All segment and master caution lights came on during hover/taxi. Maintenance replaced master caution panel assembly. □ On final approach, battery overheated, spraying liquid on windshield. The 120-day calendar inspection on battery was 13 days overdue.

AH-1

Precautionary landing □ Engine oil gauge indicated an oil temperature of 132° during landing. Inspection revealed malfunction of engine oil temperature gauge.

OH-6

Incident □ Main rotor blades struck tree during hover. Pilot landed and maintenance replaced two main rotor blades.

OH-58

Forced landing □ Engine lost power and TOT decreased during cruise flight. When collective was lowered, power returned and TOT increased to normal. This cycle was repeated several times until pilot entered autorotation. Aircraft was landed and engine ran normally on the ground. Caused by malfunction of double-check valve. WELL DONE to CW3 Philip C. Snyder, D Troop (Air), 1st Squadron, 194th Cav, Waterloo, Iowa, for landing on rough terrain without damage.

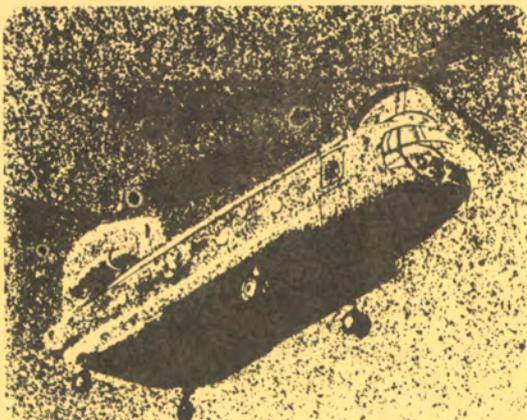
Precautionary landings □ During hover for takeoff, IP heard loud rushing noise from engine and noticed TOT at 860° C. Power on landing was made and TOT was noted at 749° C. Caused by failure of bleed air elbow assembly at scroll, NSN 4720-00-165-4304. □ Fuel filter warning light came on. Aircraft was landed, fuel filters were changed, and fuel samples taken. Suspect electrical malfunction in warning system. □ Engine chip detector light illuminated. Numerous large metal particles were found on chip detector plug and oil filter screen, and in oil tank. □ Fuel filter caution light came on and went out 50 feet before landing. As aircraft was landed, engine oil bypass light illuminated and went out. Caused by short in annunciator panel. □ After takeoff, N2 dropped to 95 percent and stabilized. Aircraft was landed. Maintenance inspected aircraft and performed MOC. N2 would not increase above 102 percent. Caused by improperly adjusted linear actuator. Linear actuator was readjusted and helicopter test flown and released for flight.

TH-55

Accident □ While pre-solo SP was hovering

aircraft in parking area, aircraft was allowed to drift rearward and descend to the ground. IP was late with corrective action, rear of left skid struck edge of parking area, and aircraft rolled on left side.

Human factors mishap □ SP was unable to continue solo flight because of numbness in left foot and ankle. SP is undergoing evaluation by flight surgeon.



CH-47

Incident □ During cruise flight, forward latch on left aft work platform broke, causing aft latch assembly to be torn from its mounting point and work platform to drop down. The mishap went unnoticed until final approach when crew was notified by another aircraft that the work platform was open. Caused by broken latch assembly.

Precautionary landings □ During cruise flight aircraft shuddered severely, followed by violent vibration in yaw axis. Aircraft was landed and inspection revealed that No. 1 SAS link was defective. Aircraft was returned to home station with No. 1 SAS system disabled. No. 1 SAS link was replaced and aircraft released for flight. □ During cruise flight, crew chief reported smoke in aft transmission area. Nonmetallic backup washer on utility pump pressure

fitting was not installed. This allowed fluid to escape from system in mist form and caused utility pump to overheat and fail. Utility hydraulic pump was replaced, washer installed, and aircraft released for flight.

For more information on rotary wing mishaps, call 558-4198/4202.

Fixed wing

C-54

Accident □ On return flight from logistics mission, instructor pilot in right seat was giving training to a qualified pilot. When IP retarded No. 1 throttle after passing V1 speed, pilot elected to abort takeoff and closed all throttles. Insufficient runway remained for the abort and IP unsuccessfully attempted ground loop. Aircraft continued through sea wall and came to rest in 3 feet of water.

U-21

Precautionary landing □ (A series) No. 2 fuel boost pump light came on. Caused by internal failure of boost pump.

OV-1

Precautionary landing □ No. 2 engine torque pressure dropped to zero, followed immediately by oil pressure. Engine was secured and single-engine landing completed. Oil pump had seized, shearing oil pump drive shaft shear pin. (ARNG)

U-8

Precautionary landing □ No. 2 engine failed at 300-400 feet after takeoff during maintenance test flight. Engine was secured and pilot returned for immediate landing. Engine failed internally.

For more information on fixed wing mishaps, call 558-3901/3913.

Accident synopsis

SYNOPSIS 77-9

Type aircraft: UH-1H

Time: 1150

Classification: Minor

Fatalities/injuries: None

Estimated materiel damage cost: \$16,500

Mission: Service

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CW2	30	315	315
Copilot	CPT	32	1,209	1,251

Description: Aircraft was on a mesa, 6,200 feet msl, when pilot picked up to 2-foot hover and departed into the wind. Near the mesa edge, aircraft went through effective translational lift, encountered adverse winds, ran out of left pedal, and started a spin to the right around the vertical axis. Aircraft spun three times, traveling 128 feet downwind before arriving over suitable landing area. Pilot reduced throttle and collective pitch and landed hard. Skids were spread 9 inches.

Cause: Pilots were unfamiliar with the UH-1H operator's manual caution and warnings on possible left pedal limitations under certain gross weight, density altitude, and wind conditions. Pilots exercised poor judgment by continuing to fly without adequately reducing aircraft gross weight after having insufficient left pedal problems on two previous approaches. Pilots added unnecessary power on takeoff in a situation where availability of left pedal control was already marginal.

Corrective actions: Unit commanders will insure that all assigned pilots are knowledgeable of all procedures contained in the operator's manual for aircraft flown. In

addition, commanders will insure that proper preflight planning is conducted before flights in areas of unusual operations. All pilots will refer to the appropriate charts in the operator's manual and compute those items necessary to safely conduct the mission, i.e., power available at certain density altitudes and forecast wind effects upon tail rotor control. Aircraft will not be assigned to a mission where mission requirements are in conflict with limitations imposed by its configuration. Go-no-go procedures will be completed before every takeoff as a part of the "before-takeoff checklist." In units subject to flying in mountain conditions on short notice, a contingency training program will be instituted.

TOTAL MISHAPS FOR 1-7 JULY 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	2	0	0	18	20
AH-1	0	0	0	1	1
OH-6	0	1	0	0	1
OH-58	0	0	1	7	8
TH-55	1	0	0	0	1
CH-47	0	1	0	2	3
OV-1	0	0	0	1	1
U-8	0	0	0	1	1
U-21	0	0	0	2	2
C-54	1	0	0	0	1
Total	4	2	1	32	39

0 Fatalities, 0 Injuries

Estimated costs: \$189,350

Hats off!

Our hats are off to the members of the 73d Military Intelligence Company (AS) pictured here for their heroic efforts in providing lifesaving crash rescue assistance following a helicopter crash at Stuttgart AAF, FRG, on 24 June 1977.

On seeing a helicopter crash while on approach to a helipad, Pinkston, Tillar, Chuzas, and Mousseau scaled a triple barbed wire reinforced chain link fence and sprinted approximately 100 yards to the crash site where they immediately began crash rescue assistance. Seconds later, they were joined by Valdes, Floyd, Livingston, and Mathews who had commandeered an M880 truck and proceeded to the scene with a 50-pound fire extinguisher.

Despite the constant threat of flash fire and explosion from the smouldering aircraft, they persisted in their efforts until the arrival of trained rescue personnel. Then, when the occupants had been safely evacuated, they administered first aid to the injured until professional medical teams took over the job.

Their response to the emergency not only provided reassurance and comfort to the injured but also was highly instrumental in preventing possible fatalities and more serious injuries to the aircraft's occupants.

We commend the men of the 73d for their actions in the face of danger. Congratulations for a job well done! ■



Shown left to right are SGT Edward Mathews, SP4 James D. Mousseau, SSG Melvin Floyd, SGT Walter Livingston, SGT Donald R. Tillar, SP4 Daniel Chuzas, SSG Robert Pinkston, and SFC Edmund Valdes.

STACOM

STANDARDIZATION COMMUNICATION



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FT. RUCKER, AL 36362
STACOM 19 ■ 20 JULY 1977 COL CLEMENT A. WYLLIE ■ 558-2603/3514

IFE annual flight evaluation

Since the publication of the "new" AR 95-63, we have received several inquiries regarding the procedures to be followed in conducting annual IFE evaluations.

Granted, there is currently no TC or other publication which outlines the requirements of an IFE evaluation, but paragraph 2-9(4), AR 95-63, generally describes the proficiency level expected of the IFE examinee. We envision this evaluation as essentially serving three purposes:

- 1) Determining the examinee's knowledge of current instrument procedures and flight regulations.
- 2) Determining the examinee's ability to both instruct and evaluate an aviator on instrument flight procedures.
- 3) Evaluation of the examinee's proficiency in instrument flight from the copilot's seat and ability to safely simulate and evaluate engine-out or autorotation procedures.

We see no problem in conducting this evaluation as a "back-seat eval," or as a separate one-on-one flight in conjunction with the annual instrument renewal ride provided:

- That the examinee demonstrates proficiency from the copilot's seat.
- That the flight is conducted in an aircraft rather than a simulator. The reason for this is that recovery from the simulated emergency procedures must be visually monitored. Furthermore, the examinee's ability to conduct a checkride while monitoring and avoiding other traffic must also be analyzed.

When conducted in conjunction with the annual instrument renewal the ride must be given during the 90-day period preceding the aviator's birthdate.

A formal flight evaluation guide for instrument flight examiners is in the works. In the meantime, you IFEs who are giving the rides use the maturity and good solid judgment for which you are noted.

Position reports, questions and answers

□ I was recently reviewing STACOM 12 and found that you had stated that one could legally fly IFR without a fuel gauge. I disagree. AR 95-1, paragraphs 1-5 and 1-6, states that unless modified by ARs, the FAR will govern operation of Army aircraft. The AR does not address fuel gauges; therefore, FAR 91.33 applies. Furthermore, a fuel gauge is necessary to comply with item 6 of the UH-1 level-off check.

As we stated in our STACOM 12 response we definitely do not recommend IFR operation with an inoperable fuel gauge. However, we'll have to stick by our guns in stating that this fault does not, by regulation, restrict the aircraft from IFR flight. The FAR 91.33 which you referenced is concerned only with civil aircraft instrumentation requirements. If it had been intended to apply to all aircraft, the word "civil" would have been omitted. As an example, note that Part 91.61, Flight Rules Applicability, just uses the term "aircraft."

Insofar as the checklist is concerned, you have an excellent point, but the checklist states only "Fuel consumption check initiate" without regard to the conditions of flight, and without specifying how the check is to be accomplished. Thus, a fuel consumption check could be initiated for an aircraft with a known consumption rate based on time alone and still be entirely valid.

As we pointed out earlier, we certainly do not recommend IFR operations without

an operable fuel quantity indicator, but there is simply nothing published which prohibits the practice.

□ STACOM 17, on renewal of instrument ratings for dual-rated aviators, does not entirely answer the mail. Some of the "guardhouse lawyers" still have room to pick it apart. The addition of one more statement would have cleared it up once and for all. Consider this:

"You quickly recognize that it is entirely feasible that a dual-rated aviator **COULD** fly both categories for the remainder of his career and **NEVER** take an instrument renewal ride in one or the other with an IFE."

Is that the intent? Can a dual-rated aviator operating both categories elect to renew his instrument ticket in a U-21 and have his rotary wing ticket revalidated by an IP/SIP year after year? That's how I interpret AR 95-63, paragraph 2-8c, and STACOM 17. Please straighten this "guardhouse lawyer" out.

STACOM 17 convinced us of two things: (1) attempting to "clarify" something that is already pretty well understood is a real dumb move, and (2) STACOM is read by an awful lot of people—all of whom have access to a phone or typewriter. The purpose of this offending STACOM topic was only to point out to our IPs and SIPs that paragraph 2-8c, AR 95-63, did not make them "instant instrument examiners." The regulation does, however, specifically authorize IPs and SIPs to validate an aviator's instrument proficiency in one category after the successful completion of the annual instrument renewal in the other category, thereby eliminating the requirement to take two full instrument rides a year.

To answer your question—yes, it is possible that a dual-rated aviator could go for the remainder of his career without

taking an annual instrument renewal ride with an IFE in one category. A requirement to alternate renewals between categories could have been written into the regulation. It was, in fact, considered, but was rejected in favor of having the aviator take the instrument flight evaluation in the aircraft most appropriate to his TO&E/TDA position. If there is no appropriate TO&E/TDA position, then use of an alternating system is simply a matter of common sense.

□ I feel there is one area you standards people have really missed—failing to prescribe use of aircraft force trim. I have seen very little published on this subject and believe you should take a firm stand on the use of it. Either everybody uses force trim, or nobody does. What about it?

Quite frankly, we would just as soon not start another civil war. Aviators tend to be very jealous of their prerogatives regarding the use of force trim and so long as the checklist requirements are met, we're perfectly agreeable to letting them use it any way they wish. As a matter of fact, the Aviation Center went through a "force trim flap" a couple of years ago. The USAAVNC Standardization Board settled the dust by publishing the following guidance for the Center aviators at that time.

"Use of Force Trim. USAAVNC flight instructors will teach the use of force trim (off and on) in flight to insure maximum student exposure. After the student demonstrates his ability to perform flight maneuvers satisfactorily with force trim **OFF** and **ON**, its use will be left to the student's discretion. If any component of the force trim system is inoperative, force gradients will be unequal, and, therefore, force trim should not be used."

Believe me, that's as "standard" as we're going to get on the subject. ■

Recap of USAAVSCOM messages

AVSCOM message 301950Z June 1977, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 January-30 June 1977 for the UH-1.

UH-1-77-1 Authorizing New Lubrication/Inspection Requirements of Tail Rotor Flexible Couplings on AH-1/UH-1 Helicopters

UH-1-77-2 Use of Non-Standard/Locally Manufactured, Heavy-Duty Ski Shoes on UH-1/AH-1 Series Aircraft

UH-1-77-3 UH-1 Tail Rotor Hub Assy

UH-1-77-4 Determination of and Recommendation for UH-1D/H Center Service Deck Discrepancy

UH-1-77-5 UH-1D/H Helicopters/TB 55-1520-210-20-3, Defective Control Cables

UH-1-77-6 Main Rotor Retention Strap Assemblies Utilized on UH-1D/H Series Helicopters

UH-1-77-7 Clarification of UH-1D/H and CH-47B/C Phased Maintenance Checklists (PMCs)

UH-1-77-8 Tail Rotor Control Assembly Publication Change

UH-1-77-9 Amendment to MSG 152200Z Mar 77 Pertaining to Clarification of Tail Rotor Assy Publication Change to UH-1/AH-1 Helicopters

UH-1-77-10 UH-1B/D/H Helicopters, Re: Swashplate P/N 284-811-400-11

UH-1-77-11 Special Installation/Usage Instructions for the UH-1B/C/D/H/M Glass Windshield, P/N NP 104401-1, L/H and NP 104401-2, R/H

UH-1-77-12 AH-1/UH-1 Helicopters Concerning Mismatch of Tail Rotor Drive Shaft Hanger Assembly Parts

UH-1-77-13 AH-1G/Q and All UH-1 Helicopters Concerning Improper Grease in 42-Degree Gearbox Couplings ■

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS

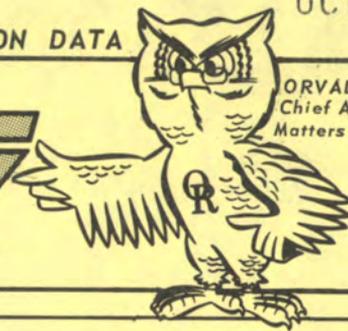


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 4 ■ 27 OCTOBER 1976

mishaps for the period of 8-14 OCTOBER 1976

US Army Aviation Training Library
Fort Rucker, Alabama 36360

SEE PAGE 3



Please complete the readership survey on page 3 now. We need your answers to all questions to improve FLIGHTFAX. The questionnaire is pre-addressed. Fill it out, tear along dotted line, fold as indicated, and put it in the mail. Space is allowed on back for any ideas or comments you want to add.

AWARD OF EXCELLENCE



The Department of the Army Aviation Accident Prevention Award of Excellence is presented in lieu of a second Award of Honor. It will only be presented to aviation company size units with nine or more aircraft. These units must have achieved 72 consecutive months of accident-free flying. Mail nominations to Commander, USAAAVS, ATTN: IGAR-PP, Fort Rucker, AL 36362.

PROCEDURES FOR NICAD BATTERY OVERHEAT

The article titled "A Cool Look At A Hot Situation," which appeared in FLIGHTFAX, Vol. 4, No. 48, dated 22 September 1976, was adopted from the Fall 1976 issue of MECH, a Navy publication. Paragraphs (2) and (3) in this article concerning procedures to be accomplished if battery overheats in flight do not agree with Army policy. The Army's procedure is contained in the emergency procedures of applicable dash 10 operators' manuals. The UH-1 and AH-1 manuals are presently being revised to read:

- If airborne, turn battery switch off.

- If condition continues, proceed to safe landing area.

WARNING

Do not open battery compartment and attempt to disconnect or remove overheated battery. Battery fluid will cause chemical burns; the overheated battery will cause thermal burns and may explode.

- Exit aircraft until battery cools.

Pending revisions to the dash 10 operators' manuals, USAAVSCOM Technical Advisory Message 181430Z August 1976 will be followed.

U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate	4479
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	6404/6410
Plans, Operations, and Education	4479/4812
Management Information System	5286/4200
Publications and Graphics Division	6385/3493
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 76 ACCIDENT BRIEF

SYNOPSIS 59-76

Type Aircraft: **UH-1H**
 Time: 1020 Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$74,239**
 Mission: **Training**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CPT	35	1,473	-	1,473
P	2LT	23	152	25	177

Description of Accident: During practice autorotation, aircraft struck ground tail low. Ninety-degree gearbox and tail rotor separated from aircraft. Synchronized elevator sustained damage from tail rotor blade.

Causes of Accident:

Initial: Pilot used poor judgment in managing the aircraft at the point of deceleration and at initial pitch-pull during straight-in autorotation.
Contributing: Instructor pilot failed to take proper corrective action in time to prevent ground contact.

SYNOPSIS 61-76

Type Aircraft: **AH-1G**
 Time: 1240 Classification: **Major (total)**
 Fatalities/Injuries: **No Fatalities, 2 Injuries**
 Estimated Materiel Damage Cost: **\$509,833**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	1LT	24	367	40	407
CP	1LT	28	417	-	417

Description of Accident: Helicopter was placed in steep angle dive (35°) and recovery was at-

SYNOPSIS 62-76

Type Aircraft: **OH-58A**
 Time: 1405 Classification: **Major**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$40,345**
 Mission: **Training (CRF)**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	33	822	501	1,323

Description of Accident: A battery start was being initiated for the first flight of the day. At 16% N₁, throttle was rolled to flight idle, there was a light off, and engine started accelerating to flight idle N₁ percentage (62%-64%). At this time, popping noise, followed by loud crack and white smoke emitting from exhaust stacks, occurred. Engine was shut down.

SYNOPSIS 60-76

Type Aircraft: **AH-1G**
 Time: 1535 Classification: **Minor**
 Fatalities/Injuries: **None**
 Estimated Materiel Damage Cost: **\$64,940**
 Mission: **Training**
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	29	2,134	1,966	4,100
P	CW2	39	1,560	-	1,560

Description of Accident: During practice touchdown autorotation, aircraft touched down aft skids low, then rocked forward and rearward. One main rotor blade flexed down and severed tail rotor drive shaft.

Causes of Accident

Initial: Pilot used improper technique in performing practice touchdown autorotation.
Contributing: Instructor pilot allowed maneuver to progress to a point that safe recovery could not be accomplished.

tempted at insufficient altitude to avoid crash.
Cause of Accident: Suspect pilot attempted to demonstrate a return to target maneuver to a nonrated Cobra pilot and exceeded the capabilities of the aircraft and himself.

Corrective Action: USAAAVS initiated a DA Form 2028 to change page 8-3 of TM 55-1520-221-10. This change added the following *warning*: "If mushing is experienced in an abrupt dive recovery, do not increase collective pitch. Application of increased collective will aggravate condition."

Inspection revealed main rotor mast sheared at main rotor hub split cones.

Causes of Accident

Initial: Pilot failed to abort start when rotor had not started to turn by 30% N₁.

Contributing: Main rotor mast failed during start due to torsional overstress. Suspect power turbine hangup and/or malfunction of sprague clutch. Maintenance was also suspected as transmission oil was highly contaminated with water and debris.

Corrective Action: As a result of this and one previous mast failure under similar circumstances (i.e., subfreezing temperatures during engine start), USAMRDL has initiated a special study on this problem. The command is also emphasizing importance of caution and warning notes contained in the operator's manual.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

A. What is your present active duty grade? (Check one)

- 1 General Officer
- 2 Field Grade
- 3 Company Grade
- 4 Warrant Officer
- 5 E-5 to E-9
- 6 E-1 to E-4
- 7 Civilian

B. Which of the following describes your current duty status? (Check one)

- 1 Active Army (includes all active duty components, i.e., Regular Army, reservists on active duty, and national guardsmen on active duty)
- 2 Army Reserve
- 3 Army National Guard
- 4 Civilian contractor or government employee
- 5 U.S. Air Force
- 6 U.S. Navy
- 7 U.S. Coast Guard
- 8 Foreign Ally
- 9 Industry

C. What is your total flight time? (Check one)

- 1 Not rated to fly
- 2 1-500 hours
- 3 501-1000 hours
- 4 1001-1500 hours
- 5 1501-2000 hours
- 6 2001-2500 hours
- 7 2501-3000 hours
- 8 3001-3500 hours
- 9 More than 3500 hours

D. Which item in paragraph D or E best describes your current duty assignment? (Check only one after reading all items in blocks D and E.)

- 1 Operational flying—unit commander
- 2 Operational flying—staff
- 3 Operational flying—primary duty
- 4 Aviation safety—unit
- 5 Aviation safety—division headquarters or lower
- 6 Aviation safety—MACOM
- 7 Aviation safety—DA
- 8 Aviation staff—unit
- 9 Aviation staff—HQ

E.

- 1 Aviation staff—MACOM
- 2 Aviation staff—DA
- 3 Nonaviation staff—mostly proficiency flying
- 4 Maintenance/Supply
- 5 Student—flight
- 6 Student—other
- 7 Contract or civilian employee
- 8 Industry

F. How long have you been a reader of FLIGHTFAX? (Check one)

- 1 Less than 3 months
- 2 3-6 months
- 3 6 months-1 year
- 4 1-2 years
- 5 2-3 years
- 6 More than 3 years

G. How long does it take FLIGHTFAX to reach you? Check number of days elapsed since 29 October 1976.

- 1 2-4 days
- 2 5-7 days
- 3 8-10 days
- 4 11-13 days
- 5 14-16 days
- 6 17-19 days
- 7 Longer

H. Listed below are several uses made of FLIGHTFAX. Indicate how you use each of these items in your job and to what degree. (Use check mark for each item.)

	Use Regularly	Use Occasionally	Might Use	Rarely Use	Never Use
	1	2	3	4	5
H _a Topics for safety meetings . . .	<input type="checkbox"/>				
H _b Topics for unit safety pubs	<input type="checkbox"/>				
H _c Items for the bulletin board.	<input type="checkbox"/>				
H _d Topics for directives	<input type="checkbox"/>				
H _e Items for reading file	<input type="checkbox"/>				
H _f To keep myself informed	<input type="checkbox"/>				
H _g Source of authority on safety positions/policies	<input type="checkbox"/>				

List in remarks any other ways you use FLIGHTFAX.

FLIGHTFAX READERSHIP SURVEY

Please answer each question, cut along dotted line, fold, and mail to USAAAVS. Space is provided on back for remarks.

I. On a scale of 1 to 9, rate each section of FLIGHTFAX in terms of its benefit to you in your current assignment. Use check mark. The more benefit you get, the SMALLER the number you should give it.

	→ decreasing benefit →								
	1	2	3	4	5	6	7	8	9
I _a Front page articles	<input type="checkbox"/>								
I _b Mishap briefs by type aircraft.	<input type="checkbox"/>								
I _c Accident synopses	<input type="checkbox"/>								
I _d STACOM, questions/answers about flight standardization	<input type="checkbox"/>								
I _e Maintenance briefs	<input type="checkbox"/>								
I _f Aviation-related ground mishap data.	<input type="checkbox"/>								
I _g Reprints of safety-of-flight messages.	<input type="checkbox"/>								
I _h Recap of AVSCOM AIG 8881 messages	<input type="checkbox"/>								
I _i Life support equipment information	<input type="checkbox"/>								

J. On a scale of 1 to 7, rate each of the following safety publications in terms of the one which is the most beneficial to you in your current assignment. Use check mark. The more benefit you get, the SMALLER the number you should give it.

	→ decreasing benefit →							Not Available
	1	2	3	4	5	6	7	
J _a AVIATION DIGEST.	<input type="checkbox"/>							
J _b APPROACH	<input type="checkbox"/>							
J _c FLIGHTFAX	<input type="checkbox"/>							
J _d PS MAGAZINE.	<input type="checkbox"/>							
J _e AEROSPACE SAFETY	<input type="checkbox"/>							
J _f DRIVER	<input type="checkbox"/>							
J _g USAAAVS Mishap Experience Reports by Type Aircraft, e.g., CH-47, etc.	<input type="checkbox"/>							

K. Listed below are several types of material available for publication in FLIGHTFAX. On a scale of 1 to 9, indicate how much or how little you would like to have each type of information in FLIGHTFAX. The more you need each type, the SMALLER number you should give it.

	→ decreasing need →								
	1	2	3	4	5	6	7	8	9
K _a In-depth reports of accidents, causes and cures	<input type="checkbox"/>								
K _b Maintenance topics	<input type="checkbox"/>								
K _c Safety articles on seasonal topics (e.g., weather, cold injuries, etc.)	<input type="checkbox"/>								
K _d Accident rates by command.	<input type="checkbox"/>								
K _e Lessons learned type articles.	<input type="checkbox"/>								
K _f Humorous articles	<input type="checkbox"/>								
K _g Technical articles on equipment and aircraft systems	<input type="checkbox"/>								
K _h Articles on new developments, equipment, etc.	<input type="checkbox"/>								
K _i Statistical studies.	<input type="checkbox"/>								

L. Check your duty location. 1 CONUS 2 Overseas

M. How do you receive FLIGHTFAX? (Check one)

- 1 Directly from USAAAVS
- 2 Through local distribution

REMARKS

fold



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

Commander
U.S. Army Agency for Aviation Safety
ATTN: IGAR-PG
Fort Rucker, AL 36362

fold

staple

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$14,692

UH-1

2 Incidents ■ IP was conducting standardization ride. While demonstrating use of emergency governor, throttle was not retarded to 6400 rpm before governor was placed in emergency position. Engine rpm surged to 7000. ■ Plexiglas window of cargo door failed in flight, causing damage to synchronized elevator. Door was secured in open position.

16 Precautionary Landings—following are selected briefs ■ Crew noted high frequency vibration during flight. Maintenance replaced tail rotor servo assembly. ■ Fire warning light illuminated. Maintenance replaced fire detector box. ■ During climbout, right fuel boost pump light came on. Caused by failure of right fuel boost pump. ■ Tail rotor chip detector light illuminated. Maintenance replaced 90° gearbox. ■ Transmission oil pressure gauge fluctuated, then dropped to zero psi. Caused by loose wire on pressure transmitter.

AH-1

2 Incidents ■ During flight on aerial gunnery range, battery access door came open and broke off. ■ Pilots were participating in live fire exercise. IP was having difficulty maintaining hover within torque limits and made a right turn to depart his position. Aircraft settled near trees. Postflight inspection revealed damage to main rotor blades.

1 Forced Landing ■ Aircraft was in cruise flight at 6600 rpm. Test pilot saw rpm bleed to 6300, then to 6000, and finally to 5600. At 400 feet and 80 knots, over active runway, engine failed. Pilot completed successful autorotation with no further problems. Suspect internal failure of governor assembly. WELL DONE to CW2 Marvin Beck, B Trp, 2/10 Air Cav Sqdn, Ft. Ord, CA.

2 Precautionary Landings ■ Master caution light and inverter segment light illuminated. Smoke filled cockpit and pilot landed at heliport. Maintenance inspection revealed charred standby inverter. ■ While in cruise flight pilot saw both engine and transmission oil temperature rising. Maintenance inspection revealed failure of oil cooler bearing. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

2 Accidents, 0 Fatalities, 2 Injuries, Estimated Costs: \$169,777

OH-58

2 Accidents ■ Aircraft struck cable on closed runway at 40 feet agl. Main rotor blade severed tail boom and control was lost. Aircraft was a total loss. ■ Aircraft struck powerlines and struck ground right side up. Wires were marked on NOE hazards map, but sun and haze obscured pilot's vision.

TH-55

1 Incident ■ During postflight inspection, maintenance personnel discovered tail skid missing and damage to tail rotor. Investigation revealed tail skid had separated while aircraft was hovering from departure lane.

CH-54

1 Incident ■ Aircraft was being test flown with four-point load (empty cargo pallet) attached. As aircraft entered autorotation, four-point load became airborne and flew up into underside of aircraft. Damage consisted of punctures in underside of fuselage and dent in right tank. *DA Form 2028 is being submitted to revise maintenance test flight manual to prohibit autorotations under these conditions.*

CH-47

3 Precautionary Landings ■ During engine start, No. 1 engine fire light came on and fire was reported by flight engineer. Engine was shut down and fire extinguished. Fuel manifold O-ring failed. ■ Transmission chip detector light illuminated during taxi. Inspection of aft transmission chip plug and filter revealed brass particles. Aft transmission failed internally. ■ Pilot heard humming noise and smelled hydraulic fluid. Caused by internal failure of utility hydraulic pump assembly.

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$430

U-21

1 Incident ■ On short final at night, two unusual sounds were heard by crew; the first, a light sound and the second, like a small explosion. No damage was found on postflight inspection, but the daily inspection in daylight hours revealed bird strike damage to both wings.

OV-1

1 Precautionary Landing ■ During maintenance test flight for previous air restart problems, No. 2 engine was shut down. N1 would not increase on several restart attempts. Single-engine landing was made. Inspection revealed first-stage turbine rotor rubbing on gas producer cylinder. Cylinder was found to be out of round, apparently caused by high temperatures. The following items were found which contributed to the problem: (1) Gaps in packing material. (2) Two places on turbine seal spring had lost tension. (3) Splash pads on combustor liner were clogged. (4) Vaporizer assemblies were burned. (5) Vanes on gas producer nozzle were bent and cracked. (6) One igniter was not working. □

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

CH-47

1 Precautionary Landing ■ Master caution light and No. 2 hydraulic boost off lights illuminated during flight. Hydraulic boost pressure dropped because of improper torquing of hydraulic fitting. (ARNG) □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

2 Mishaps, 0 Fatalities, 1 Injury, Estimated Costs: \$34,700

CH-47

■ During refueling operation, truck driver failed to use ground guide while backing. Top of fuel truck struck one main rotor blade.

C-123

■ Paratrooper boarding aircraft for training mission slipped on boarding ramp, injuring his back. □

AVSCOM MESSAGES RECEIVED

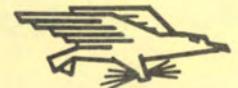
- CH-47 maintenance advisory message, 141800Z Oct 76, provides inspection criteria for inspection of bolts and landing gear spindle on a recurring basis.
- AH-1S maintenance advisory message, 181444Z Oct 76, lists changes to be made on turbine gas temperature gauge.
- AH-1S maintenance advisory message, 181444Z Oct 76, lists serial numbers of aircraft from which decals restricting minimum crew weight should be removed.
- Maintenance advisory message, 142010Z Oct 76, on UH-1 troop seatbelts, gives instructions about installation.
- Technical advisory message, 182005Z Oct 76, concerns procedures for suspected engine failure for UH-1 and AH-1 helicopters.
- OH-58A maintenance advisory message, 181800Z Oct 76, concerns internal main drive shaft corrosion. □

DEPARTMENT OF THE ARMY

UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

US Army Aviation Training Library
Fort Rucker, Alabama 36360



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 40 □ 27 JUL 1977

REDEYE missile flight safety hazard

Word has it that inert REDEYE Field Handling Trainers (M46) are commonly being handcarried uncased aboard aircraft during practice heliborne assault training exercises. This is a potentially hazardous policy. Should this practice be carried into a tactical operational environment where "live" missiles are used, an extremely hazardous situation would result.

Tests have shown that transportation of XM 41 E2 REDEYE weapons is hazardous if the weapons are not shielded by mono-paks or other devices that provide comparable protection. Should an electrostatic charge that has accumulated on a helicopter, for example, be discharged through an uncased REDEYE missile as the weapon is being lowered to the ground, the

ejector motor could be ignited. Voltages as low as 25 kilovolts were shown to consistently ignite the ejector motor electric initiators. Voltages that can be generated by electrostatic/electromagnetic energy range much higher.

Consequently, a Product Improvement Proposal is being prepared for the development of a protective barrier bag which, if approved, would provide troops the capability of safely handcarrying REDEYE weapons on board aircraft without the logistic burden of present containers.

Meanwhile, all REDEYE missiles as well as inert field handling trainers to be transported by air will be cased in mono-pak or some other type of approved container stipulated in FM 23-17. ■

UH-1/AH-1 unmodified fuel controls

The prime fuel control having the P-1 multiplier modification used on the T53-L-13B engine is NSN 2915-00-223-7004, P/N 84200A7. This is the only configuration being issued to field customers from NICP accounts. The source of supply is entirely dependent upon receipt of unserviceable returns of prime and substitute fuel controls from the field which are promptly inducted into overhaul/modification programs at CCAD. Delay on the part of maintenance or supply activities in the field in adhering to automatic return of unserviceable fuel controls slows down the programs at CCAD, and the impact is felt by the field customer in not getting timely issuance of a serviceable unit in response to requisitions. All activities should give

highest priority to returning the following controls:

NSN	Part number
2915-00-223-7004	84200A7
2915-00-781-7917	84200A3/A4/A5/A6
2915-00-945-5832	84200A1/A2

In addition to unserviceables, some activities may have an oversupply of serviceable unmodified units on the shelf. Since the AVSCOM (now TSARCOM) goal is to convert all unmodified units to the prime configuration as rapidly as possible, return of serviceable unmodified units is encouraged provided the unit mission is not placed in jeopardy. -From USAAVS-COM Materiel Readiness Information Bulletin ■

Vest-type survival kit

Survival kit, NSN 8465-00-177-4819, has among its components a tropical personnel aid kit, NSN 6545-00-782-6412, which contains ingredients classified as controlled substances by the Comprehensive Drug Abuse Prevention and Control Act of 1970, Public Law 95-513. To effectively meet the requirements of this law, as outlined by The Surgeon General, action is being taken to remove the aid kit as a preassembled component of the survival kit. Authorized Army activities designated to receive controlled substances by The Surgeon General may submit requisitions for the tropical aid kit directly to RIC S9M: Defense Personnel Support Center, ATTN: Dir of Medical Materiel, 2800 South 20th Street, Philadelphia, PA 19101. All other Army elements, including National Guard installations, will be required to contact their nearest authorized Medical Base Supply Account for supply support.

To maintain continued supply support, survival kit, NSN 8465-00-177-4819, is currently being issued without the required lensatic compass. Billing has been reduced accordingly.

NARADCOM has authorized the combat casualty blanket, NSN 7210-00-935-6667, to be included as a component item in the assembled SRU-21/P survival vest. Initial issue of the assembled survival vest with the new component was scheduled for March 1977. Field units using the survival vest without the new component should submit funded MILSTRIP requisitions for blanket, NSN 7210-00-935-6667, to the Defense Personnel Support Center, RIC S9M. AMDF cites unit cost of item as \$6.29 each. ■

Training of aviation life support specialists

Inquiries from the field indicate a need for trained aviation life support specialists to inspect and maintain the growing inventory of equipment. The Army has not established this specialty as a career field and all training is done by the Air Force or Navy. Limited training spaces are available for Army personnel at the U.S. Air Force Aircrew Life Support Specialist Course 3ABR 92230-0 at Chanute AFB, IL. The course length is six weeks. Interested personnel must have their local training channel paperwork completed and initial fund approval before contacting Headquarters TRADOC, ATTN: TAM-S, Fort Monroe, VA 23651. Applicants should be high school graduates and have good retention potential and a high degree of language skills. Additional information is available by contacting Commander, USAAAVS, ATTN: IGAR-TA, Fort Rucker, AL, AUTOVON 558-4510/3493. ■

Attention ASO students

Before leaving your home station for Fort Rucker to attend the ASO Course, make sure your orders have the following paragraph:

Additional TDY and travel is authorized during this course for participation in a U.S. Army Flight Mishap Prevention Survey. Participation in the survey is a requirement for course completion and award of the appropriate ASI.

If you have trouble getting this on your orders, refer your unit personnel officer to paragraph 7a(9), DA Circular 351-74, 25 February 1977. ■

Accident synopsis



SYNOPSIS 77-10

Type aircraft: AH-1Q

Time: 1335

Classification: Major

Fatalities/injuries: None

Estimated materiel damage cost: \$277,173

Mission: Training

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CW3	29	2,841	2,841
Copilot	CW2	27	953	953

Description: Four aircraft were in loose trail formation. Snowstorm approaching along intended flight path prompted aircraft to land in open field. On short final, pilot and copilot of No. 4 aircraft experienced whiteout conditions from blowing snow. Right skid hit the sod and was embedded 8 inches in ground. Aircraft bounced forward and started to roll to the right. Main rotor system struck the ground, separating transmission, main rotor, and mast from aircraft.

Cause: Pilot allowed his aircraft to enter a whiteout condition which was mechanically induced by the rotor system. Pilot and copilot failed to take corrective action in sufficient time to prevent major damage to the aircraft. The flight commander and local commander allowed the flight to depart when en route weather was forecast to be below VFR minimums due to snow. The unit had received little training concerning hazards of flying in snow. An adequate flight briefing was not conducted before the flight concerning the forecast weather, terrain, and hazards to flight.

Corrective action: Unit's training program will emphasize the proper analysis of

proposed operating environments, i.e., mission, terrain, weather, and capabilities/limitations of aircraft and crew. Command emphasis at all levels will be placed on the use of DD Form 175-1 to amplify and explain marginal weather conditions that could either preclude or facilitate a flight over a desired route. The command will initiate an aggressive program, through its safety and standardization board, to educate flight duty personnel on the interpretation of the entire weather system, with special emphasis on the phenomenon for ceilings to be forecast at a uniform altitude above mean sea level by varying altitudes above ground level. Training programs will be initiated to educate flight crews on a semi-annual basis on the hazards of flying in snow.

TOTAL MISHAPS FOR 8-14 JULY 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	1	4	1	15	21
AH-1	0	2	0	13	15
OH-6	0	0	0	1	1
OH-58	0	0	2	5	7
U-8	0	0	0	1	1
OV-1	0	0	0	3	3
Total	1	6	3	38	48

0 Fatalities, 0 Injuries

Estimated costs: \$73,506

Selected mishap briefs

Rotary wing

UH-1

Accident □ Crew was practicing emergency governor operations. IP inadvertently turned off main fuel switch instead of placing emergency governor switch to emergency position, thereby inducing engine failure. Low rotor rpm autorotative touchdown resulted in main rotor blades severing tail boom. Investigation is in progress.

Incidents □ During practice autorotation runout (slide) on sod, aircraft yawed to right. Inspection revealed 10-inch tear in right skid tube. Inspection of landing area did not disclose object hit by skid. □ Main rotor blades struck tree during confined-area, maximum-performance takeoff, damaging both main rotor blades. □ During engine start, engine was placed in motion with main rotor blade secured. Tiedown broke, allowing weighted end to strike red tail rotor blade, damaging blade beyond repair. □ During takeoff at approximately 600 feet agl and 70 KIAS, left lower engine cowling separated from aircraft. Cowling contacted synchronized elevator, both tail rotor blades, and tail rotor slider. Cause undetermined.

Forced landing □ Aircraft was on final approach when N2 rpm bled to 5800. Pilot entered autorotation and landed. Inspection revealed failure of overspeed governor assembly.

Precautionary landings □ Transmission oil pressure fluctuated during landing. Maintenance replaced transmission oil pressure relief valve. □ Compressor stalls occurred during takeoff from confined area. Cause unknown pending teardown analysis.

□ While flying as Chalk 3 in a flight of five, lead aircraft encountered IMC. Chalk 3 turned left and began to climb. When it broke out of the clouds it was in extremely close proximity to a mountain. Pilot increased torque to 51 psi. Aircraft was inspected and released for flight. □ During night vision goggle NOE flight, main rotor blades struck tree limb. Postlanding inspection was performed and aircraft released for flight. □ During hover crew chief noticed trail of fluid behind aircraft. Aircraft landed and shut down. Inspection revealed internal failure of main fuel filter drain valve.

AH-1

Incidents □ During night autorotation, pilot pulled initial pitch at approximately 30 feet. Rpm deteriorated at a rapid rate and aircraft landed hard. Crosstube was spread in excess of 82 inches and rivet was sheared on right rear pylon support assembly. Inspection is continuing. □ Copilot was flying aircraft and asked the pilot for directions. When pilot answered, copilot assumed that pilot had taken control of aircraft. Aircraft assumed nose-down attitude and entered a dive. During recovery, tail section hit trees.

Precautionary landings □ Engine oil pressure caution light and master caution light illuminated. Caused by failure of engine oil pressure switch. □ During cruise flight at approximately 400 feet agl, pilot detected burning odor. Odor was caused by rain removal switch being left in "on" position. □ During final approach to LZ, d.c. generator segment warning light came on. Maintenance replaced voltage regulator. □ Two compressor stalls occurred during hover to ream point. Cause is under



evaluation. □ During hover/taxi for takeoff, engine oil pressure light came on. Caused by engine oil pump failure.

Human factors mishap □ During engine runup, both pilots were incapacitated by CS gas. Pilots were unable to continue and mission was aborted. Both pilots were later cleared by the flight surgeon for flight after a 30-minute shower.

OH-6

Precautionary landing □ Transmission oil pressure light came on. Transmission oil filter and pressure switch were changed. Transmission was flushed and MOC indicated normal operation.

OH-58

Forced landings □ On takeoff at 30 feet agl, engine surged. Pilot reduced collective and throttle to prevent engine overspeed and overtorque. Suspect governor and/or fuel control malfunction. □ Engine chip detector light flickered intermittently. Aircraft diverted for home base. Chip detector came on steady and engine surged. Aircraft shuddered and yawed. Pilot entered autorotation and checked instruments. N1 indicated 50-55 percent. Assuming high-side governor failure, pilot attempted power recovery and engine failed. Suspect internal failure.

Precautionary landings □ As aircraft was climbing through 400 feet agl, pilot felt high-frequency airframe vibration. Climb was aborted. Pilot landed in clear field with no further damage. Impeller blade in oil cooler fan broke off, causing damage to two other blades. USAAVSCOM message

OH-58-77-5 had been complied with.

Suspect metal fatigue. □ Transmission oil pressure light came on during hot refueling. Caused by loose connection at oil pressure switch. □ During cruise flight, master caution and oil bypass light came on for 1 minute and went off for 1 minute. When light came back on, pilot was in descent looking for a place to land. On 1-mile final, engine oil pressure fluctuated. Aircraft was landed with power. Caused by broken oil line to No. 1 bearing. □ Loadmeter indicator increased to 150 amps during cruise flight. Caused by battery failure.

For more information on rotary wing mishaps, call 558-4198/4202.

Messages received

- 071833Z Jul 77—From CDR, USAGMPA, New Cumberland, PA, STSGP-FT—subject: OFF Specification NSN 9150-00-985-7099, Lube Oil Aircraft, MIL-L-23699, Batch DRA-1, Date of Pack, May 77, Bray Oil Contract DSA 600-77-C-0668.
- 081720Z Jul 77—subject: Maintenance Advisory Message Concerning the Incorrect Installation of Four HI-LOCK Fasteners in the Transmission Mount Support Structure of the AH-1S (MOD) Aircraft (AH-1-77-15).
- 131910Z Jul 77—subject: Maintenance Advisory Message for AH-1 Series Helicopters Concerning New Driveshaft Lubricant (AH-1-77-16).
- Letter, DRS AV-FEW, subject: U-3A&B Aircraft Problems and Recommended Corrective Actions, Letter No. 14, dated 15 June 1977.

Selected mishap briefs

Fixed wing

OV-1

Precautionary landings □ During right turn in IMC at 14,000 feet, both gyro flags unmasked momentarily. Pilot leveled aircraft, checked all instruments, which appeared normal, and engaged autopilot. Aircraft immediately entered severe left turn and lost 2,000 feet before autopilot could be disengaged and backup compass engaged. Aircraft lost an additional 5,500 feet before pilot could recover from inverted flight using his standby attitude indicator. Cause is undetermined but an ID 882, primary attitude indicator, malfunction is suspected. □ After pilot recovered from inverted flight on training mission, No. 1 fire warning light illuminated. Another OV-1 confirmed smoke coming from engine. Engine was secured and pilot stated both fire bottles were discharged. Postlanding inspection revealed no evidence of fire and neither fire bottle had been used. Two days later during runup, fire light illuminated again. Inspection of detector box revealed electrical malfunction.

For more information on fixed wing mishaps, call 558-3901/3913.

Maintenance

U-8

Precautionary landing □ (F series) No. 2 engine feathered when power was applied for takeoff. Maintenance found plastic cap in oil system that blocked oil flow to oil screen and prop governor, causing prop to feather.

For more information on maintenance mishaps, call 558-3901/3913.

Aviation-related

AH-1

□ Improperly secured main rotor blade of one AH-1 swung loose and damaged the canopy of another AH-1. The two aircraft were parked side by side on a wash rack when a UH-1 hovered by, causing movement of improperly secured blade.

UH-1

□ An auxiliary power unit (APU), NSN 6115-00-074-6396, with a weak (low charge) battery was hand cranked. The crank failed to disengage properly, was thrown into the air approximately 50 feet, landed on and damaged main rotor blade of UH-1. EIR was submitted for modification of the APU.

CH-47

□ Two mechanics were removing a dampener bolt from aft rotor blade of CH-47. One mechanic was pushing and one was pulling on the bolt. As the bolt was extracted, the right index finger of the mechanic who was pushing followed the bolt through the hole. The blade shifted and severed the tip of the finger at the first joint.

OH-58

□ Crew chief was preparing to track an OH-58 main rotor while standing below and just outside the tip path plane. With the main rotor at operating rpm, crew chief, leaning toward the helicopter to give instructions to the pilot, inadvertently pulled the pole of the flag into the rotor blades, causing blade damage. Estimated cost was \$4,229.

For more information on aviation-related mishaps, call 558-3913/3901.

Recap of USAVSCOM messages

AVSCOM message 301950Z June 77, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 January-30 June 1977 for the OH-6, OH-58, and CH-47.

OH-6A-77-1 Seatbelt and Shoulder Harness

OH-58-77-1 Main Rotor Hubs and Strap Assemblies

OH-58-77-2 Improved Seatbelt and Attachment Points

OH-58-77-3 Main Rotor Tension Torsion Strap Assy

OH-58-77-4 Main Rotor Hubs and Strap Assemblies

OH-58-77-5 Oil Cooler Blowers

CH-47-77-1 CH-47C Revised Operating Instructions

CH-47-77-2 Clarification of UH-1D/H and CH-47B/C Phased Maintenance Checklists (PMCs)

CH-47-77-3 One-Time Inspection of Engine Mechanical Transmissions on All CH-47C Aircraft, TB 55-1520-227-20-17

CH-47-77-4 Developed Team Schedule for Inspection of Engine Mechanical Transmissions on all CH-47C Aircraft

CH-47-77-5 CH-47C Engine Mechanical Transmissions

CH-47-77-6 CH-47C Crash Resistant Fuel System Overpressure ■

What is partial blockage?

Experience indicates that there is still some confusion among some T53 engine operators about what constitutes partial air inlet blockage, a condition which can be detrimental to T53 engine operation. The best definition for partial inlet blockage is:

Partial blockage exists when an obstacle (leaves, paper, rags, plastics, etc.) with an area equivalent to approximately half or more of the area between two inlet guide vanes is lodged in any location in front of the variable inlet guide vanes.

—From Avco Lycoming “Turbine Talk” ■

AVSCOM and TROSCOM merge

If you've been wondering what TSARCOM is, it's the acronym for the new Army Troop Support and Aviation Materiel Readiness Command. Effective 1 July 77, the Troop Support Command (TROSCOM) and Aviation Systems Command (AVSCOM) merged. The new TSARCOM is located at 4300 Goodfellow Blvd., St. Louis, MO 63120. The aviation research and development mission/function of the old commands will be located at 12th & Spruce Streets (Mart Building), St. Louis, MO 63102, under the name of Aviation Research and Development Command (AVRADCOM). ■

Tower signal placards available

COLOR AND TYPE OF SIGNAL	MEANING		
	AIRCRAFT ON THE GROUND	AIRCRAFT IN FLIGHT	MOVEMENT OF VEHICLES, EQUIPMENT & PERSONNEL
STEADY GREEN ■ ■ ■ ■	CLEARED FOR TAKEOFF	CLEARED TO LAND	CLEARED TO CROSS, PROCEED, GO
FLASHING GREEN ■ ■ ■ ■	CLEARED TO TAXI	RETURN FOR LANDING (TO BE FOLLOWED BY STEADY GREEN AT THE PROPER TIME)	NOT APPLICABLE
STEADY RED ■ ■ ■ ■	STOP	GIVE WAY TO OTHER AIRCRAFT AND CONTINUE CIRCLING	STOP
FLASHING RED ■ ■ ■ ■	TAXI CLEAR OF LANDING AREA/RUNWAY IN USE	AIRPORT UNSAFE--DO NOT LAND	CLEAR THE TAXIWAY/RUNWAY
FLASHING WHITE □ □ □ □	RETURN TO STARTING POINT ON AIRPORT	NOT APPLICABLE	RETURN TO STARTING POINT ON AIRPORT
RED & GREEN ■ ■ ■ ■	GENERAL WARNING SIGNAL--EXERCISE EXTREME CAUTION		
U.S. ARMY AGENCY FOR AVIATION SAFETY □ FORT RUCKER, ALABAMA			

To order yours, write Commander, USAAAVS, ATTN: IGAR-PG, Fort Rucker, AL 36362.

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

VOL. 5, NO. 41 □ 3 AUG 1977

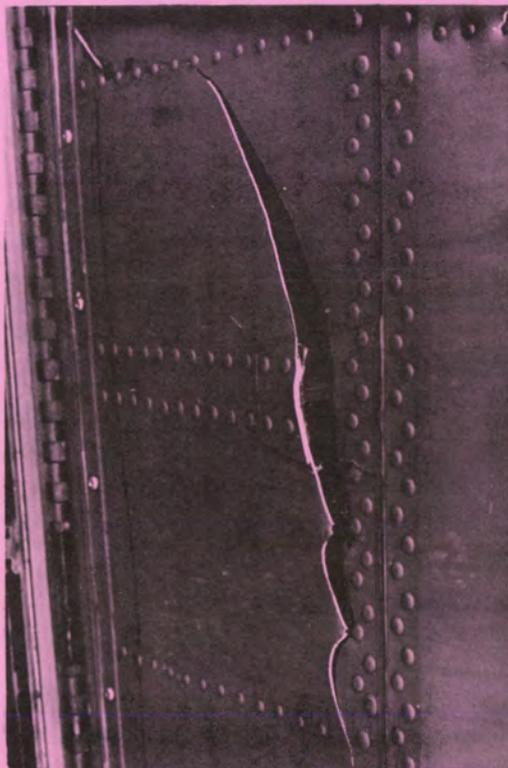
CH-47 mishaps caused by fuel tank overpressure

Fuel tank overpressure has resulted in two recent CH-47 mishaps, one of them a major accident. Overpressure of fuel tanks can occur if fuel tank check valves are faulty and boost pumps for an affected tank are turned off. Fuel can then be transferred from tank to tank on the affected side without any abnormal indication. Antispill valves in the fuel tank vent system can prevent fuel from going overboard. These valves will close if sloshing of fuel in the affected tank occurs. Once closed, pressure in the affected tank builds immediately and the valves will not return to the normally open position until that pressure is relieved.

TSARCOM message 161330Z Jul 77 lists the following symptoms of fuel tank overpressure: 1) fuel venting overboard through the vents or filler cap during flight or hot refueling; 2) evidence of pressure relief when fuel cap(s) is removed; 3) an increase in the fuel quantity indicator for any one tank during flight; 4) structural damage to the fuselage in the areas adjacent to the main and auxiliary fuel cells.

As soon as problem occurs, turn off boost pumps on affected side and open crossfeed valve. When evidence of tank overpressure no longer exists, turn all fuel boost pumps on and close crossfeed valve. If overpressure condition cannot be corrected, land as soon as possible.

To prevent overpressure, ensure that the provisions in TM 55-1520-227-10, par. 9-35, are strictly adhered to. ■



Closeup of sheared fuselage due to tank overpressure.

For more information, contact Mr. Mike Hoffman, TSARCOM, AUTOVON 698-2326, or MSG R. G. Farris, USAAAVS, AUTOVON 558-4202.

Selected mishap briefs

Rotary wing

UH-1

Accidents □ Pilot, landing after night VFR service mission, thought he was 150-200 feet agl. Depth perception was lost and left skid hit ground. Aircraft rolled to left side. Investigation is in progress.

□ Aircraft, landing to assist downed Marine helicopter, crashed during heavy rains, low ceilings, and limited visibility. Crash occurred approximately 1,000 meters from Marine helicopter. Investigation is in progress.

Incidents □ On takeoff, lead aircraft in flight of four was just approaching translational lift. Aircraft settled in nose-low attitude, catching left front skid shoe on psp. Shoe separated from skid. □ Main rotor blades struck tree as aircraft was being repositioned in LZ. Both main rotor blades were damaged within 4 feet of tip. □ Aircraft landed on maintenance apron to discharge cargo and personnel. Material handler removed 12-foot length of tubing and allowed it to swing up into main rotor system. Piece of tubing was severed and hole was torn in one blade. □ During climbout from stagefield on training mission, SP felt aircraft shudder and landed immediately. FM antenna had separated from aircraft and struck tail rotor blades. □ During dual training mission, SP was attempting simulated stuck right pedal antitorque failure landing. Erratic landing with low rotor rpm caused damage to aft crosstube mounting points.

Forced landing □ Torque was increased to 36 pounds during simulated instrument takeoff. At approximately 50 feet, rpm started to bleed off and did not return to normal until after touchdown. Suspect low side governor failure.

Precautionary landings □ Crew smelled and saw smoke coming into forward cabin area and No. 2 hydraulic light came on. Caused by failure of hose assembly, P/N M58001E330P. □ Crew heard hydraulic pump whining while IP was hovering to takeoff position. IP landed and hydraulic pressure was lost. Caused by failure of hydraulic metal tube assembly (P/N 205-076-201-1). □ Noise was heard by passengers and master caution and hydraulic segment lights came on, followed by normal stiffness in controls. Severe cyclic feedback, fore and aft, was detected. This graduated into one abrupt cyclic movement per revolution of the main rotor. Caused by failure of O-ring, NSN 5330-00-582-2213. □ When throttle was retarded during shutdown, rotor rpm decayed below N2 rpm. Three to four seconds after closing throttle, unusual noises were heard from transmission area. Sudden stoppage occurred and rotor continued to coast to a halt. Caused by failure of free-wheeling unit. Transmission was sent to CCAD for analysis. □ Pilot noticed what appeared to be battery fluid hitting windshield. Loadmeter read normal. Pilot turned off battery switch, which stopped the fluid. Battery vent line was crimped. □ Battery acid was seen coming from battery vent on left windshield. Caused by battery failure. □ During cruise flight rotor rpm indicator decreased to zero. Caused by failure of tachometer generator. □ Aircraft was on test flight for compressor stall. Bleed band had been adjusted, engine flushed, and FOD inspection completed. After leveling off, series of loud bangs were heard and aircraft yawed. Caused by erosion of fourth, fifth, and sixth compressor sections.

AH-1

Incidents □ During NOE training, white



main rotor blade struck tree, causing tear on underside of blade. □ Aircraft landed hard during low-level, low-speed autorotation. Pylon rock occurred.

Forced landing □ Aircraft started spinning when power was applied at termination to landing. Pilot performed hovering autorotation. Caused by failure of silent chain assembly, NSN 1615-00-624-6963.

Precautionary landings □ Engine oil caution light came on and pressure dropped to 30 pounds. Caused by failure of oil pressure sensing unit, NSN 5930-00-738-1640. □ Master caution and engine oil bypass light illuminated. Caused by defective cannon plug, NSN 5935-00-788-4984. □ Pilot could not get full rpm while on the ground. Pilot brought aircraft to a hover and rpm dropped from 6500 to 6200. Caused by dirty bleed band.

OH-6

Precautionary landing □ Transmission chip detector light came on. Suspect internal failure.

OH-58

Incident □ Rotor blades struck tree during hover in masked area. Both main rotor blades were damaged.

Forced landing □ IP simulated engine-out procedures during standardization check-ride. Engine flamed out. IP took controls and landed. Fuel control linkage was out of adjustment.

Precautionary landings □ Master caution and hydraulic lights came on and controls stiffened. Caused by loose connection on hydraulic line at solenoid valve. □ While making slight climbing right turn, pilot noticed flickering transmission oil hot

warning light. At 200 feet agl, warning light came on steady and pilot landed. Caused by leaking transmission input quill. □ Oil bypass light came on and engine oil pressure dropped to zero. Caused by oil fitting threads stripped on accessory gearbox housing. □ Master caution and transmission chip detector lights came on. Caused by failure of free-wheeling unit.

TH-55

Accident □ SP was performing the first normal approach of second supervised solo when aircraft was allowed to descend below desired glidepath. During attempted correction, excessive throttle was added, activating engine antioverspeed device. Aircraft yawed left and right. SP overcorrected with pedal and lost control, resulting in crash on approach lane.

CH-47

Precautionary landings □ Aircraft developed high-frequency vibration in vicinity of No. 2 engine. Drive shaft adapter splines and engine transmission output had insufficient lubrication. Splines had been lubricated approximately 30 hours before this mishap. □ During service mission with sling load, at approximately 30 knots, load started to spin. Airspeed was reduced with no success in stabilizing the load. Spinning of load caused cargo cable to overstress and snap. Caused by improper rigging. This is the third time a mishap of this nature has been reported. □ No. 1 engine chip detector light came on. Investigation revealed metal chips on detector. Caused by internal failure of No. 1 engine transmission.

For more information on rotary wing mishaps, call 558-4198/4202.

Selected mishap briefs

Fixed wing

T-42

Precautionary landing □ After gear was raised following takeoff, nose gear indicated down. Visual check, using nacelle mirror, confirmed gear was up. Pilot extended gear and landed. Nose gear indicator linkage was broken.

OV-1

Incident □ After 15 minutes in flight, pilot noticed left drop tank was missing. Cause is being investigated.

U-8

Precautionary landings □ No. 2 engine lost power on takeoff for test flight. Insufficient runway remained for abort. Pilot secured engine and continued in pattern for single-engine landing. Ram air duct hose collapsed. Improper hose had been installed. □ Loud bang was heard from left side during climbout at 1,000 feet. Engine was kept on line until turn was completed back to field. No. 1

engine was then secured before landing. Cause unknown. Teardown analysis is being performed.

U-21

Precautionary landings □ (A series) Gear was lowered for landing and left main did not give safe indication. Chase aircraft reported gear appeared full down. Pilot flew to airfield with 5,000 feet more runway and better facilities and made safe landing. Wire in landing gear down-lock light circuit failed. □ Outboard left wing flap would not lower during approach. Pilot made no-flap landing. Flap drive retainer assembly, located under cabin floor, came loose when allen screw worked loose. □ No. 1 engine torque pressure dropped from 650 to 400 pounds and oil pressure decreased to 20 psi. Engine was secured. Oil cap latch spring had improper tension and vibrated open.

For more information on fixed wing mishaps, call 558-3901/3913.

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 42 □ 10 AUG 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Was weather a cause factor?

Accident reports often include weather as a cause or contributing cause factor when, in reality, weather was not involved. Such inadvertent inclusion of weather-related factors can result in erroneous information being recorded and stored in the USAAAVS data bank. Consequently, information subsequently withdrawn from stored data for use in analyses and studies of various sorts may contain inaccuracies.

Safety officers should advise aircraft accident investigation boards that weather can be assessed as a cause factor only in accordance with the conditions stipulated in AR 95-5, par. 10-12c. In brief, they are paraphrased as follows:

A weather element or condition can be assessed as a cause factor when severe weather is unexpected or unknown and when it affects the control or performance of an aircraft so that an accident is inevitable; or when an adverse weather element or condition is known to exist but avoiding it is beyond the capability of the aircrew (e.g., aircraft flying above forecasted heavy fog develops engine problems, forcing pilot to autorotate through fog).

However, a weather element or condition is not always a cause factor simply because it exists (e.g., a pilot elects to make a descent with full knowledge of the existence of adverse weather conditions

when he has suitable alternatives available).

Nor is a weather element or condition necessarily a cause factor when an alternate course of action has been taken (e.g., a pilot diverts because of weather at intended destination, reports sufficient fuel, and changes flight plan to go to an alternate. He then crashes because of fuel exhaustion).

When in doubt as to whether or not an accident contains weather-related factors, check AR 95-5. ■

SRU-21/P survival vests misrouted

Upon receipt, some SRU-21/P survival vests are being stored in ammo storage areas due to the labeling of the shipping container. Although the container displays the survival vest NSN 8465-00-177-4819, it is labeled "Hand Signal Devices" and "Explosive C" because of the pen gun flares. Therefore, all organizations with outstanding requisitions for survival vests should check with their supply personnel to see if requisitioned vests have been inadvertently stored in the ammo storage areas. ■

Our thanks to CW3 James Vick of Fort Hood, Texas, for this information.

Selected mishap briefs

Rotary wing

UH-1

Incident □ During start, power turbine section of engine failed, throwing turbine blade debris aft. Main rotor and tail rotor blades were damaged. Suspect improper clearance between first PT nozzle and first PT wheel.

Forced landings □ Loud bang was heard during hover and aircraft yawed to left. Hovering autorotation was made. Engine failed. □ While hovering for takeoff, pilot detected abnormal feeling in tail rotor pedals. Aircraft started turning to right. Left pedal could not be moved. Pilot lowered collective and landed after approximately 90° rotation. Caused by airlock in hydraulic system.

Precautionary landings □ During final approach transmission oil pressure fluctuated from 0 to 100 psi several times. Transmission oil pressure sending unit cannon plug was loose. □ During cruise flight transmission oil pressure went from 42 psi to 80 psi. Caused by failure of pressure transmitter. □ While aircraft was at hover/taxi, unusual vibration was felt in pedals and collective. Mag brake assembly was replaced. □ Master caution and fuel filter segment lights illuminated. Fuel filter was replaced. □ On final approach, pilot felt binding in tail rotor pedals. Caused by failure of tail rotor force gradient. □ During approach pilot detected smoke coming from upper battery vent. Maintenance found voltage regulator defective and battery failed internally. □ During takeoff from helipad, four loud bangs were heard, accompanied by rise in egt and N1 and N2 fluctuation. Pilot made 180° turn and landed. Suspect compressor stall. Special inspection is being performed. □ While descending from 10,000 feet to

3,000 feet, power was applied to check descent. Three mild reports were heard from engine. Torque fluctuated from 20 to 35 psi and aircraft yawed left and right. Bleed air had been turned on to clear windshield. Fuel control malfunctioned.

AH-1

Precautionary landings □ During pretakeoff check, oil pressure gauge peaked out to high side. Aircraft was shut down. Engine oil pressure transmitter failed. □ At cruise flight, 25 psi torque, 100 KIAS, aircraft yawed violently 30° left, 60° right, then 20° left. SCAS was disengaged and aircraft landed. Inspection revealed improper rigging of tail rotor controls. □ No. 1 hydraulic segment warning light came on and antitorque pedals became stiff. Running landing was made. Maintenance personnel were unable to duplicate problem and aircraft was released for flight. **Same pilot, same day** (but at night), in a different aircraft had identical problem with same results. □ During straight and level flight at 1,200 feet msl, N2 decreased to 6100 rpm, then increased to 6900 rpm. Pilot took manual control of throttle and landed. Governor malfunctioned.

OH-58

Incident □ While aircraft was at hover during reconnaissance mission, main rotor blades struck tree.

Precautionary landings □ Engine oil bypass caution light illuminated and emergency descent was initiated. On final approach, oil pressure went to zero and chip detector light came on. Engine oil temperature and TOT exceeded limits during landing. Caused by failure of elbow assembly. □ During downwind hover, N2 decreased to 90 percent. IP landed and aircraft was shut down. Maintenance could not duplicate the



problem. □ Tail rotor chip detector light came on. Caused by internal failure of tail rotor gearbox. □ During cruise flight, engine oil temperature rose to 199° C. Aircraft was inspected by maintenance, engine oil flushed and refilled, and MOC was OK. Condition could not be duplicated. □ Engine chip detector light came on. Landing was made and aircraft inspected by TI. During runup, grinding noise was heard. Aircraft was shut down immediately. Oil sample was taken and numerous metal particles found.

TH-55

Precautionary landings □ Loss of power occurred during hover. Maintenance inspection revealed internal failure of fuel injector. □ Engine tachometer was low and erratic during cruise. Inspection revealed failure of tachometer indicator. □ Rough-running engine was detected during magneto check before takeoff. Inspection revealed failure of right magneto.

CH-47

Precautionary landings □ During takeoff on service mission, crew chief indicated there was a hydraulic leak in flight control closet area, followed by No. 1 SAS caution light and hydraulic failure light illumination of No. 1 flight boost system. Caused by failure of No. 1 flight boost system due to fatigue crack at 90° bend in hydraulic line in flight control closet area. Line was replaced. □ During emergency procedure training, No. 2 engine condition lever was placed to ground position. Upon power recovery, No. 2 engine condition lever was placed back in flight detent and engine accelerated to 73 percent N1 and stabilized. No. 2 engine N1 condition control caution light came on. N1 engine connecting link assembly hung up on engine cowling and N1 actuator overheated.

A field modification had been made to the engine cowling to provide room for engine connecting link assembly to function. N1 actuator was replaced. □ During cruise flight, No. 1 engine oil temperature went to 141° C. and oil pressure to 49 psi. Investigation revealed faulty temperature bulb and low oil pressure setting. Temperature bulb was replaced and oil pressure adjusted.

TSARCOM messages received

□ 222040Z Jul 77—Maintenance Advisory Message Concerning Main Rotor Grip Assemblies, P/N 204-011-121-1/5, Utilized on UH-1B/D/H Series Helicopters (UH-1-77-14) ■

For more information on rotary wing mishaps, call 558-4198/4202.

TOTAL MISHAPS FOR 22-28 JULY 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	0	1	2	19	22
AH-1	0	0	0	7	7
OH-58	0	1	0	6	7
TH-55	0	0	0	3	3
CH-47	0	0	0	5	5
T-42	1	0	0	0	1
U-8	1	0	0	0	1
OV-1	0	1	0	0	1
U-21	0	0	0	1	1
Total	2	3	2	41	48

3 Fatalities, 0 Injuries
Estimated costs: \$126,422

Selected mishap briefs

Fixed wing

T-42

Accident □ Aircraft was on crosswind after initial takeoff on test flight when power was evidently lost in both engines. Left turn was made to downwind and aircraft crashed with three fatalities. Investigation is in progress.

U-8

Accident □ (D series) IP gave transition pilot simulated single engine on downwind. Gear and flaps were retained up until safe landing was assured, then checklist was completed. Student placed gear handle down and IP confirmed it. Airspeed was higher than normal at roundout, causing student to assume nose-high attitude. When tail skid struck runway, IP recognized an emergency and took control. He immediately reconfirmed gear handle down with no transition lights and no warning horn. Mixtures were closed prior to touchdown

and IP held aircraft off runway until imminent stall. Props struck runway with no power on engines and all three landing gear were still in the well. Lowering of gear handle evidently did not activate circuit due to malfunction of gear switch. Investigation is in progress. (USAR)

OV-1

Incident □ (B series) During postflight inspection pilot noticed cowling missing from outboard side of No. 2 engine. No other damaged area was found. Moderate turbulence had been encountered during mission.

U-21

Precautionary landing □ No. 2 engine secondary low pitch light came on. Secondary idle stop switch failed.

For more information on fixed wing mishaps, call 558-3901/3913.

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

AUG 22 1977

Flightfax

VOL. 5, NO. 43 □ 17 AUG 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Safety-of-flight message

□ 052045Z Aug 77, subject: Safety-of-Flight Message (One-Time Inspection) for UH-1B/C/D/H/M, AH-1G/Q/S/S (Mod) and TH-1G Helicopters, TB 55-1500-200-20-17, Defective Tail Rotor Servo Cylinder Assembly (UH-1-77-15/AH-1-77-17). **Summary:** A number of tail rotor servo cylinder assemblies were manufactured to too close a tolerance between the shaft and body. This condition makes the assembly vulnerable to binding which inhibits directional control of the helicopter. In nine documented, previously known instances, the pilot has been able to break the binding/jamming by exerting force on pedals. The assemblies have been identified by serial number. The purpose of this message is to locate the defective parts, remove them from service, and have them shipped to a facility where repairs can be made. **Contact:** Mr. James Dixon, TSARCOM, AUTOVON 698-5066, commercial (314) 268-5066. ■

Aviator mishap experience can't be provided

USAAAVS receives many requests for accident information on individuals. In order to protect the confidentiality of the accident reports under the exemptions

provided by the Freedom of Information Act, the reports are not accessible by name, social security number, or other personal identifier; hence we are unable to provide such information.

Commanders seeking mishap experience of assigned or prospective aviators should consult the aviator's Individual Flight Record File (DA Form 759) for accident information entered there as required by par. 7-2a(2), AR 95-5, and par. 3-9b(5), AR 95-64.

A recent random check of the DA Form 759s at USAAAVS showed the information is not always entered as prescribed. The responsibility for this entry lies with the accident board recorder and president. However, commanders and ASOs should ensure that the entry is made. ■

Change to Aviation Resources Management Guide

The nickel-cadmium battery supplement to this FLIGHTFAX replaces item 16, page 30, of the seventh edition of the Guide to Aviation Resources Management for Aircraft Mishap Prevention. Just mark out item 16 and place pages 30a, b, c, and d in your Guide. The checklist was developed by U.S. Army Electronics Command. ■

Selected mishap briefs

Rotary wing

UH-1

Forced landing □ During cruise flight at 90 knots and 1,000 feet agl, severe vibrations occurred with loud cracking noise in rotor system. Aircraft was landed with power. Postflight inspection revealed 6 inches of white main rotor blade outer skin peeled away from bottom of blade tip.

Precautionary landings □ As power was applied for formation takeoff, complete loss of hydraulics occurred. Pilot executed run-on landing from 2 feet. Caused by internal failure of antitorque hydraulic servo. □ Engine chip detector light illuminated. After landing, chip plug was cleaned and engine was run two additional times. Metal chips were found both times and oil filter had metal chips. Engine was changed. Caused by internal engine failure. □ Intermittent fire warning light came on during runup. Resistor assembly was replaced. □ Transmission oil pressure dropped to low green. Inspection revealed failure of transmission electrical harness. □ During cruise flight engine oil temperature was 110°. After temperature reached 115°, pilot made normal landing. After landing, temperature went to 150° before shutdown. Caused by failure of thermostat flow control. □ Cyclic became stiff and appeared to lock up during landing. Caused by failure of cyclic servo.

AH-1

Precautionary landing □ During cruise flight at 500 feet agl pilot noticed slight binding in left center and aft quadrant of cyclic. Aircraft was landed and inspection

revealed hydraulic seep in turret. Fitting was retorqued.

OH-58

Accident □ As aircraft landed at radar site, it began to pitch forward and back. Emergency shutdown procedures were initiated. Vertical fin, tail rotor drive-shaft, gearbox, and blades were damaged. Investigation is in progress.

Precautionary landings □ Transmission chip detector light came on. Oil pressure was lost and loud banging noise came from transmission. Suspect internal failure. Transmission was submitted for teardown analysis. □ While on base leg, pilot heard loud bang. All instruments were normal. Caused by compressor stall. □ Aircraft landed upslope with full down collective and spike knock occurred. Aircraft was inspected, test flown, and released for flight.

TH-55

Accident □ Blue main rotor blade struck and severed tail boom during touchdown practice autorotation at stagefield.

Precautionary landing □ Engine ran rough during hover. Inspection revealed malfunction of right magneto.

CH-47

Ground accident □ During runup one aft rotor blade passed through fuselage. Aft transmission and pylon separated from aircraft. Mishap is under investigation.

Incident □ During service sling load mission, at hover over load, aircraft struck



load, causing minor sheet metal damage to aircraft.

Precautionary landings □ During training NOE mission, No. 1 engine oil low light illuminated, followed by loss of engine oil pressure. Caused by materiel failure of engine oil filler cap. □ High-frequency vibration occurred in cruise flight. Caused by insufficient lubrication of combining box adapter splines. □ Loud SAS squeal developed at hover. Squeal stopped when No. 1 flight boost system was turned off. Caused by failure of hydraulic pressure regulating valve.

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

TOTAL MISHAPS FOR 29 JUL-4 AUG 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	0	0	1	14	15
AH-1	0	0	0	1	1
OH-58	1	0	0	3	4
TH-55	1	0	0	1	2
CH-47	1	1	0	4	6
C-12	0	0	0	1	1
OV-1	0	0	0	2	2
U-8	0	0	0	3	3
U-21	0	0	0	3	3
Total	3	1	1	32	37

1 Fatality, 0 Injuries

Estimated Costs: \$3,059,791

Fixed wing

RU-21

Precautionary landings □ (H series) Twenty minutes after takeoff, pilot noticed increase in No. 1 engine oil temperature. Three minutes later, oil was noted seeping from engine cowling. Pilot started descent to return to base, using reduced power on No. 1. Oil pressure dropped to 45 psi, and engine was secured for single-engine landing. Oil cap was found loose. **Pilots and crew chiefs! Check your oil caps as well as your fuel caps. Several recent mishaps have resulted from improper preflight inspections. So far this has only resulted in precautionary landings, but let's eliminate those by doing the job right!** □ No. 2 engine rpm dropped from 2000 to 1780. Torque pressure rose 50 pounds and primary pitch light flashed on momentarily as ITT rose from 720 to 730 and oil pressure fluctuated 7 pounds. Propeller overspeed governor failed.

Human factor mishap □ Heater worked only intermittently for short periods, and crew was forced to descend from 22,000 feet to 14,000 feet. Both pilots placed their feet inside their helmet bags in an attempt to keep warm. Mission was discontinued after 45 minutes due to extremely cold hands and feet. Fuel pump motor failed.

U-21

Precautionary landing □ (A series) After leveling off for cruise flight, pilot noticed fuel siphoning from right nacelle tank and returned to base. Fuel cap was resecured properly.

OV-1

Precautionary landings □ (D series) Pilot noticed loss of hydraulic pressure and turned on windshield wipers to confirm loss. Hydraulic line in left gear wheel well had cracked. □ On left base for landing, pilot noted left gear indicated unsafe. After a go-around, pilot had gear checked by tower, then used emergency gear extension before landing. Gear down-lock switch was out of adjustment.

For more information on fixed wing mishaps, call AUTOVON 558-3901/3913.

Aviation-related

AH-1

□ During test firing of 40mm ammunition, system malfunction occurred, causing tube to digress. This caused two rounds to land short. Shrapnel from one round struck an armament specialist who was standing to the left and behind the aircraft. Injuries included a broken rib and bruised lung.

UH-1

□ Maintenance stand rolled 100 feet

in 47-knot winds and struck UH-1. Winds developed in such a short time weather station was unable to notify all units to secure equipment.

□ Mechanic inspecting upper cabin area of UH-1 was standing on left gun mount. Individual slipped and fell, breaking a bone in his right ankle.

CH-47

□ Mechanic was standing on short work-stand while removing CH-47 fuel pod weighing 300 pounds. When last bolt was removed pod hinged down, causing work-stand to slip. Mechanic fell, injuring nerve in lumbar region and hip.

YC-7

□ YC-7A was damaged when high winds (15 knots gusting to 50 knots) caused tiedowns to break. One tiedown wrapped around left gear and gear door, causing structural damage to door. Investigation revealed tiedowns were deteriorated by weather.

For more information on aviation-related mishaps, call AUTOVON 558-3913/3901.

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

Flightfax

(R) VOL. 5, NO. 44 □ 24 AUG 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Fuel starvation in the OH-58

Three OH-58 engine failures have been reported recently. In each instance, the cause was traced to fuel starvation. Specifically, the upper and lower clamps that attach the rubber fuel hose between the boost pump and the upper fuel fitting inside the fuel tank are losing torque, allowing air to be drawn into the fuel line. The result is fuel starvation and engine failure. This problem appears to be widespread—22 percent of the aircraft inspected at one unit were grounded because of this condition.

The problem stems from the tendency of the synthetic rubber to cold flow from under the clamping area over a period of time, causing a loss of effective clamp torque—even though the clamps were properly tightened at installation.

Because of the serious nature of this problem, it is imperative that all maintenance and inspections of these clamps and hoses be performed by the book, and that fuel servicing be accomplished with extreme care in accordance with TM instructions.

TM 55-1500-204-25/1, page 7-31, states the following:

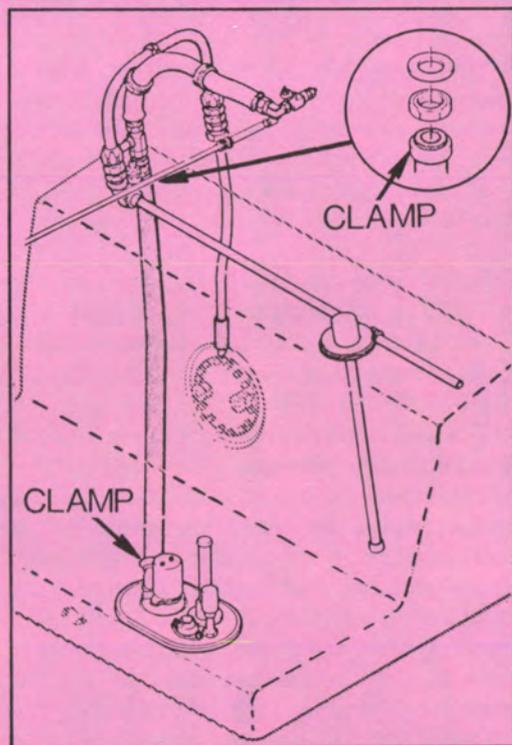
NOTE

Aircraft hose constructed with synthetic compound has tendency to cold flow; therefore, when new hose is installed, clamps should, after a time, be retightened to maintain original torque value. This is

caused by synthetic rubber flowing from under clamping area and not from loosening of clamps.

a. Clamps on self-sealing hose. Hose clamps on self-sealing hose shall be tightened to a torque of 25 inch-pounds minimum to 30 inch-pounds maximum for original installation, and maintained at this torque value. When sealing is not

Continued on back page



Selected mishap briefs

Rotary wing

UH-1

Accident □ Aircraft was in low-level gunnery run when crew lost orientation with ground. Aircraft crashed in level attitude. Investigation is in progress.

Incident □ Windsock on helipad blew off and struck white main rotor blade during landing.

Forced landings □ Engine compressor stall occurred during cruise flight at 9500 feet msl. Partial power approach was completed to airport where aircraft landed with no damage. □ Aircraft in formation flight lost power during level off. N2 rpm dropped to 6000. Pilot entered autorotation and checked instruments. N1 was at 80 percent. As pitch was applied, engine responded and aircraft landed with power. Maintenance troubleshooting could not duplicate condition. Overspeed governor was changed and aircraft released for flight.

Precautionary landings □ N2 rpm bled down to 6200 on approach to confined area. Upon landing, engine rpm bled down to 5800. Inspection revealed inlet guide vane activator linkage was broken. □ Transmission hot oil light came on in cruise flight. Inspection revealed corrosion on cannon plug connector to indicator. □ Crew heard high whining noise in transmission area during cruise flight. Inspection and test flight failed to duplicate noise and aircraft was released for flight. □ Crew heard loud pop coming from engine area, accompanied by a slight yaw during cruise flight. Engine chip detector light illuminated and aircraft landed with no damage. Engine was

replaced. □ Tail rotor chip detector light came on during cruise flight. Tail rotor gearbox was replaced.

AH-1

Incident □ Pilot heard loud noise during cruise flight and saw an object fly by. Crew chief informed pilot that battery compartment door had come off. Postflight inspection revealed damage to one main rotor blade. Battery compartment door was not secured before takeoff.

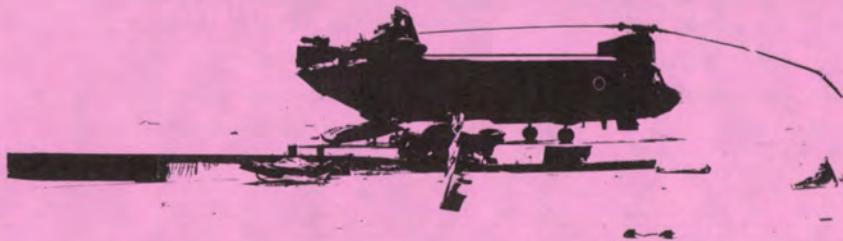
Precautionary landings □ Collective binding occurred during movement to down position during hovering autorotation. Inspection revealed droop cam linkage binding due to lack of lubrication. □ No. 1 hydraulic segment warning and master caution lights came on in cruise flight. Inspection revealed failure of No. 1 hydraulic pressure switch.

OH-6

Incident □ Only 102 percent N2 could be attained with maximum governor increase during engine runup. Pilot retarded throttle to check flight idle and engine quit before reaching flight idle stop. Inspection revealed stress failure of lower bearing retainer of collective torque tube bracket assembly. Overcenter spring moved upward, forcing pilot's collective to move aft approximately one inch. Suspect bearing retainer failed when collective was moved to its upper limits without engine/rotor in operation.

OH-58

Incidents □ Aircraft touched down with low rotor rpm during practice autorotation. Landing resulted in excessive oscillation and spike knock for a period of 3 seconds.



□ During landing from hover in confined area, main rotor blade tips struck 6-inch diameter tree. Inspection revealed damage to rotor blade tip assembly. Drizzle, rain, and fog on windows obstructed pilot's vision.

Precautionary landings □ Master caution and transmission chip detector lights came on during cruise flight. Maintenance cleaned fuzz from chip detector plug, performed MOC, and released aircraft for flight. On completion of mission, maintenance again checked and found metal chips. Transmission was replaced. □ Transmission oil pressure light came on during cruise flight. Caused by failure of switch, NSN 5930-00-168-8019. □ Pilot noted high TOT at low torque setting and heard strange noise from engine during cruise flight. Engine compressor failed. Suspect compressor liner separated forward of third stage compressor wheel during cool-down after landing. □ Tail rotor gearbox chip detector light came on during takeoff. Inspection of plug revealed metal chips. Suspect internal failure of gearbox.

TH-55

Precautionary landings □ Engine ran rough during hover. Inspection revealed malfunction of fuel injector. □ Engine ran rough after takeoff. Inspection revealed malfunction of fuel injector.

CH-47

Accident □ During takeoff with aircraft light on gear, oscillation was felt, followed by loud "thumps" and meshing of rotor blades. Pylon separated from aircraft. Investigation is in progress.

Precautionary landings □ No. 1 hydraulic boost caution light and No. 1 SAS caution light illuminated on takeoff. No. 1 flight control hydraulic pressure indicated 3,300 pounds. No. 1 hydraulic pump was replaced. Light illumination occurred when system pressure switch harmonized with resonant range of pump, causing switch to malfunction. □ High-frequency vibration was noticed by crew chief on ramp check during cruise flight. Caused by failure of the No. 8 drive shaft bearing. Teardown analysis to be performed. □ High-frequency vibration occurred in combining transmission area during cruise flight. Caused by insufficient lubrication of adapter spline. Splines were lubricated and aircraft was test flown and released for flight. □ During sling load mission on ground at flat pitch, No. 1 engine N1 dropped from 96 percent to 68 percent. N1 was regained by using emergency trim. This was the second occurrence for this aircraft. Cause not reported. □ Crew observed low oil pressure indication on forward transmission during cruise flight. Caused by broken wire on cannon plug at forward transmission pressure transducer. □ No. 1 engine chip detector light came on during landing. Caused by failure of engine torque drive assembly.

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

Fixed wing

U-8

Incident □ No. 1 engine backfired and began to run rough. As mixture was reduced engine began to run smoothly.

Selected mishap briefs

Cylinder head temperature and manifold pressure were low. No. 5 cylinder exhaust valve failed and separated from the cylinder, causing damage to engine cowling. Cylinder was replaced and engine repaired.

C-7

Precautionary landings □ No. 1 engine low oil light came on, followed by fluctuation of oil and fuel pressure. Engine was shut down and normal landing made. No. 10 cylinder had separated from engine case, breaking cylinder hold-down studs. Engine was replaced. □ On completion of test flight for No. 1 engine change, landing gears were lowered and nose gear indicated unsafe. Emergency blow-down bottle was used, and normal landing was made. Caused by defective nose gear microswitch. Switch was replaced and aircraft was released for flight.

C-12

Precautionary landing □ Gear warning horn and in-transit lights remained on after takeoff. Up limit switch in nose gear well was out of adjustment.

OV-1

Precautionary landing □ No. 2 fire handle light came on in flight. No visible fire. Light would not go out after emergency procedures were followed. Engine instruments indicated normal operations so engine was not secured. Caused by water in cannon plug of fire detection system.

U-21

Precautionary landings □ In two precautionary landings crews noticed fuel siphoning from left wings. Caused by

improperly seated fuel caps.

For more information on fixed wing mishaps, call AUTOVON 558-3901/3913.

Maintenance

AH-1

Precautionary landings □ M200 rocket pod fell from aircraft during hover. Inspection revealed M200 pod was incorrectly installed by DS maintenance. □ Master caution light and transmission oil hot segment lights illuminated during cruise flight at 2,000 feet agl. Inspection revealed transmission oil line was improperly installed, preventing oil from advancing through cooler.

For more information on maintenance mishaps, call AUTOVON 558-3901/3913.

Aviation-related

UH-1

□ Left-hand chin bubble broke and minor airframe damage occurred when improperly secured maintenance stand struck nose compartment of parked aircraft. Maintenance stand, which had been used in lubricating UH-1 tail rotor, was moved a short distance from the aircraft. Mechanic failed to lock brakes after stand was moved. Another aircraft was being ground guided into a parking place adjacent to damaged aircraft. The crew of this aircraft saw maintenance stand begin to move, landed immediately, and went to flat pitch; however, the maintenance stand continued rolling and struck the parked aircraft.

For more information on aviation-related mishaps, call AUTOVON 558-3913/3901.

Accident synopsis

SYNOPSIS 77-11

Type aircraft: UH-1M

Time: 0945 Classification: Major

Fatalities/injuries: 0 fatalities, 1 injury

Estimated materiel damage cost: \$16,125

Mission: Service

	Grade	Age	RW Hrs	Tot Flt Hrs
Pilot	CW2	28	1,794	1,794

Description: During final approach to airfield, engine failed due to fuel exhaustion. Pilot entered autorotation and, during descent, saw wire in his path at 20 feet. To avoid wire, pilot initiated pitch-pull high, depleting rotor rpm and causing near-vertical descent from 20 feet. Aircraft landed hard.



Cause: Pilot attempted mission with insufficient fuel on board to reach destination with remaining fuel reserve of 30 minutes as required by par. 4-2a, AR 95-1. Engine flamed out on final approach.

Contributing factors: At time of departure, fuel quantity gauge indicated approximately 100 pounds more fuel than was in tanks. Discrepancy was not noted on maintenance forms. Twenty-minute fuel light came on seconds before engine flameout. Fuel gauge error of +261 pounds when tanks were full went undetected for an unknown period of time. Fuel quantity was being incorrectly noted on 2408-13. Fuel service

personnel were not servicing aircraft after each flight and/or crew chiefs were not requesting fuel when needed.

Remarks: One-half gallon of fuel was all that could be drained from sump. The aircraft was equipped with crashworthy fuel system with a 225-gallon capacity. The aircraft was refueled and held 226.3 gallons. Aircraft records (dash 13) indicated the aircraft was fueled with 245 gallons (noncrashworthy capacity). The flight plan was filed for 2:45 minutes flight and the aircraft had been in flight for 1:12 minutes. ■

Use of JP-5 fuel in T55-L-7C engines

References:

- Maintenance Advisory Message on the CH-47A/B/C T55-L-7C Engine (CH-47, 1975-21) DTG 241845Z Nov 75.
- TB 55-9150-200-25, TM 55-1520-209-10, TM 55-1520-227-10.

Purpose: The purpose of this Maintenance Letter is to reemphasize that the operating limitations when using JP-5 (emergency fuel) in T55-L-7C engines have been increased from a 50-hour cumulative limitation to a 100-hour cumulative limitation between hot end inspections. This increase was first released by reference a message. Formal changes to reference b publications were to have followed reference a message, however, they were overlooked. Corrective action has been taken to insure that the necessary changes to the above publications will be forthcoming. ■

STACOM

STANDARDIZATION COMMUNICATION



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FT. RUCKER, AL 36362
STACOM 20 ■ 24 AUGUST 1977 COL CHARLES WINGATE ■ 558-2603/3514

Col Wingate new director of Evaluation & Standardization

Colonel Charles Wingate has been designated the Director of Evaluation and Standardization, succeeding Colonel Clement Wyllie, who has been reassigned to Redstone Arsenal.

Colonel Wingate, a Master Army Aviator, was rated in 1956 and is both fixed and rotary wing qualified. Colonel Wingate's previous assignment was Chief, Aviation Division, DPT, HQ USAFAC, Fort Sill, Oklahoma. ■

Sprag clutch malfunctions

About the time we think we've covered every possible aircraft malfunction with an appropriate emergency procedure—along comes a new one. In this case, clutches that won't clutch when they should.

Since 1972, there have been several of these failures reported worldwide, six of them at Fort Rucker alone, one of which resulted in a fatal accident. At first glance, a clutch failure would appear similar to a short shaft failure with an autorotation as the inevitable result. This is true, but there is one very important exception. Let's take a look at it.

The aircraft free-wheeling unit consists essentially of an outer (driving) and an inner (driven) race. Arranged between these races is a series of metal wedges (sprags). When everything is working as it should and power is applied to the outer race, these wedges gradually shift to provide a positive lock between the engine and transmission. Conversely, when engine power is reduced the wedges unlock, thus allowing the driven portion of the clutch to rotate at a higher speed than the driving portion (free wheeling). The problem arises when these wedges do not

correctly position themselves as power is applied at the termination of a power recovery autorotation or when the throttle is reduced to flight idle during engine shutdown. In these cases, the rotor rpm will eventually drop below the corresponding engine rpm. When this happens, the clutch is subject to violent reengagement as the sprags attempt to reposition in order to again provide a positive lock between the engine and transmission. Remember the clutch driving race is now rotating at a speed higher than the driven race and the sprags intend to make up that difference—RIGHT NOW. So what's the exception to an ordinary autorotation if the clutch doesn't reengage during power recovery? Just this—the engine rpm (N2) must not at any time be permitted to override the rotor (reverse needle split). To prevent this from happening, you must shut that engine down—but only after confirming that your problem is not merely a rotor tach failure.

Should the rotor tach drop below the engine while operating at flight idle during cool down, the same rule applies—shut the engine down immediately. This action could well save both you and the aircraft a considerable amount of grief because, if that clutch reengages, some awesome things can happen. Main rotor masts become twisted and displaced; tail rotor drive shafts fail and the entire drive train undergoes a severe overtorque.

The specific mechanism which causes a clutch to malfunction is not entirely certain. What is certain, however, is that each clutch inspected following a failure showed evidence of previous hard clutch engagements, most probably as a result of improper power recovery technique.

Since prevention of a failure is much preferable to executing an emergency procedure, let's review the proper technique of performing the power recovery



portion of an autorotation. It's simplicity itself.

a. Smoothly increase throttle to full operating rpm.

b. Increase collective only after the needles are joined.

c. DO NOT simultaneously increase throttle and collective.

Treat that clutch as though your life depended on it. Give yourself plenty of time to make a power recovery, then be silky smooth about it. If, despite your best efforts, you experience a clutch malfunction, check to be sure it's not just a rotor tach failure, then SHUT THAT ENGINE DOWN. ■

FAA weather avoidance radar

On or about 26 August 1977 the Atlanta Air Route Traffic Control Center will begin a demonstration of a Weather Radar Data Remoting System that will provide near real-time weather information to pilots within the Atlanta Center Flight Advisory Area. This system will utilize data received from National Weather Service weather radars at Athens, GA, Centreville, AL, and Volens, VA. The radar data will be digitized at these radar sites, transmitted via telephone lines to Atlanta ARTC Center and presented within 2 minutes of real-time on a repeater radar scope which the facility Weather Coordinator will monitor. The data will be received from within a 200-mile radius of each radar site. It will include storm location, size and height information as well as intensity levels established by the NWS Video Integrated Processing System. This system, incorporated in the NWS weather radar, measures the strength of radar weather echoes for the purpose of

categorizing the strength of the storm. Each intensity level is identified by a number and an adjective, plus a brief description of the meteorological conditions the National Weather Service associates with each.

a. Level 1 (WEAK) and Level 2 (MODERATE). Moderate to severe turbulence possible.

b. Level 3 (STRONG). Severe turbulence possible, lightning.

c. Level 4 (VERY STRONG). Severe turbulence likely, lightning.

d. Level 5 (INTENSE). Severe turbulence, lightning, organized wind gusts. Hail likely.

e. Level 6 (EXTREME). Severe turbulence, large hail, lightning, extensive wind gusts.

As this information is made available to the Atlanta Center Weather Coordinator he will disseminate it to controllers in the Center and in adjoining ATC facilities, and coordinate with airline dispatchers, military operations and flight service stations, providing a timely and meaningful weather information service heretofore unavailable. Pilots in receipt of this valuable data will be able to decide on terminating their flight or altering course or altitude before adverse weather conditions are encountered.

This demonstration is scheduled to last through 31 October 1977, which should include the remaining period of thunderstorm activity for this year. If this program proves successful, it is anticipated that a similar program will be adopted nationally by the FAA Air Traffic Service.

System users are invited to comment on this service. Send your comments to:

FAA Army Liaison Officer

ATZQ-ES

U.S. Army Aviation Center

Fort Rucker, AL 36362 ■

Fuel starvation - OH-58

Continued from front page

effective at 30 inch-pounds, component parts of connection shall be examined, and unserviceable parts replaced. Under no circumstances shall hose clamp be tightened in excess of 30 inch-pounds in an attempt to effect sealing. This added torque will reduce safety factor of hose clamps as well as destroy hose and connection.

b. Clamps on nonself-sealing hose. Hose clamps installed on nonself-sealing hose shall be installed and maintained at a torque of 25 inch-pounds minimum to 30 inch-pounds maximum. If satisfactory sealing is not accomplished at a torque of 30 inch-pounds, component parts of connection shall be examined and unserviceable parts replaced.

In addition, TM 55-1520-228-20, page 3-16, requires that the hose clamps be retorqued after 100 hours of aircraft operation following their installation or replacement.

During servicing, the following precautions (TM 55-1520-228-20, page 1-8) should be strictly observed:

CAUTION

Internal fuel cell hoses and clamps can be jarred loose with fuel nozzles. Insert nozzle carefully in a generally downward direction; avoid contact with internal fuel

hose. Fuel nozzles must be hand-held during servicing.

TSARCOM is in the process of revising the PMS to include a torque check of the clamps in question at specified time intervals. Look for this addition in the near future. ■

TOTAL MISHAPS FOR 5-11 AUGUST 1977					
Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	1	1	2	25	29
AH-1	0	1	0	5	6
OH-6	0	1	0	1	2
OH-58	0	2	0	5	7
TH-55	0	0	0	2	2
CH-47	1	0	0	6	7
OV-1	0	0	0	2	2
C-7	0	0	0	2	2
C-12	0	0	0	1	1
U-8	0	1	0	0	1
U-21	0	0	0	3	3
Total	2	6	2	52	62
0 Fatalities, 0 Injuries					
Estimated costs: \$208,206					

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

VOL. 5, NO. 45 □ 31 AUG 1977

 US Army Aviation Training Library
 Fort Rucker, Alabama 36360

Aviation life support equipment

Leaking seal fix for survival kit firestarter

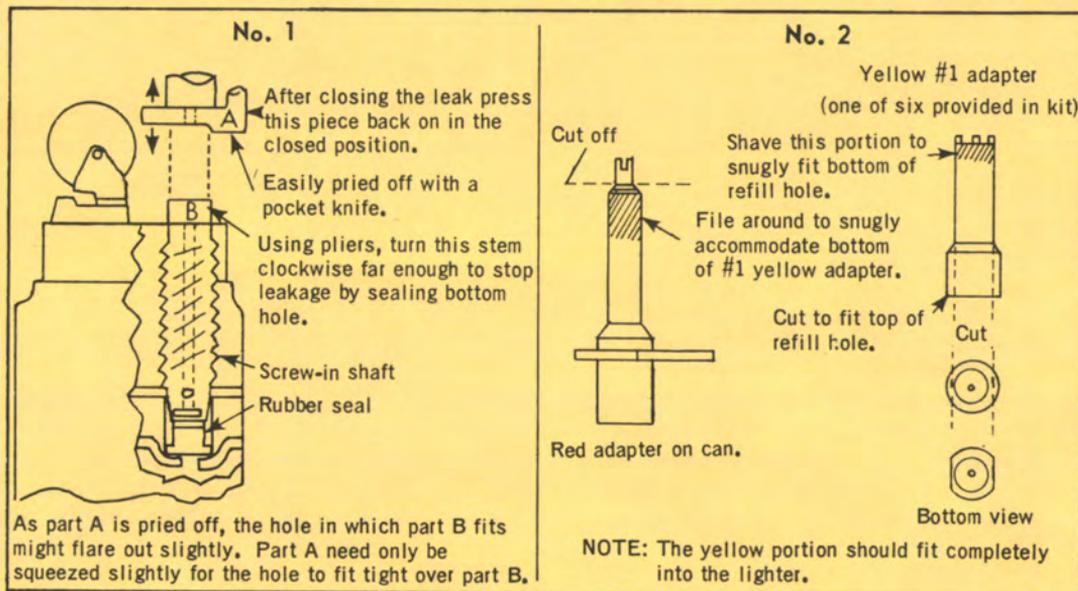
Recent Equipment Improvement Recommendations indicate that many butane lighters, NSN 9920-00-999-6753, are being received empty or only partially full due to a leaking seal. Pending improved quality control and depot storage investigation of the lighter, two solutions are recommended.

□ A refill kit which is good for about 100 refills is available for the butane lighter. It is called "Life Firestarter A-31" and consists of ISO butane fuel (6 oz.), refueling instructions, and an adapter refueling nozzle. The kit costs \$2.00 plus postage and can be locally purchased from Lifesaver Products, Inc.,

6210 Wilshire Blvd., Los Angeles, CA 90048. This address corrects the erroneous Van Nuys, CA, address as listed in the Supply Information Letter No. 3-77, published by the U.S. Army Support Activity, Philadelphia, PA.

□ Individuals can fabricate their own refill kit by using a Scripto refill kit and combining two of the furnished adapters as shown in diagram No. 2. Prior to this, however, the seal must be stopped from leaking by following the instructions in diagram No. 1.

Our thanks to CW3 James Vick, Fort Hood, Texas, for this information and diagrams. ■



Prepared by the U.S. Army Agency for Aviation Safety, Fort Rucker, AL. AUTOVON 558-4479. Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition. Data is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.



Selected mishap briefs

Rotary wing

UH-1

Accident □ Governor switch was inadvertently placed in emergency governor position while aircraft was at 6600 rpm. Power train oversped to approximately 8000 rpm plus for 1 second. Engine was shut down without further incident. Suspect copilot's helmet bag caught governor switch while being stowed.

Incidents □ While in cruise flight, pilot heard loud bang and sharp snap, with accompanying vibrations. Pilot entered autorotation and made hard landing in wheat field, damaging landing gear cross tubes and FM antenna. White main rotor blade weights had separated from aircraft during flight. □ During practice for air assault demonstration, main rotor blades struck tree branches, damaging both blades.

Precautionary landings □ During low-level cruise flight, engine tachometer dropped to zero, rpm warning light illuminated, and low rpm audio activated. Inspection revealed sheared N2 tachometer generator shaft. □ During cruise flight, tail rotor pedals became progressively stiff until there was no response at all. Caused by failure of tail rotor servo. □ After touchdown from simulated stuck right pedal, left fuel boost light came on. Caused by failure of fuel boost pump. □ During cruise flight over water and halfway from departure to destination, pilot noticed high engine oil temp reading (130° C.). Pilot flew to nearest landing area which was 10 NM from location. Oil temp gauge had pegged at 150° C. when aircraft landed. Caused by failure of thermostat, flow control valve.

AH-1

Forced landing □ During cruise flight, pilot noticed repeated engine surges, followed

by illumination of rpm warning light (high side). Pilot entered autorotation and switched to emergency governor. As throttle was increased, surges continued. Pilot then reentered autorotation and landed. Cause is under investigation.

Precautionary landings □ During cruise flight, loud bang was heard and No. 1 hydraulic caution light came on. Antitorque pedals became stiff and running landing was made. Caused by failure of No. 1 hydraulic pump pressure line. □ IP took controls from student before termination of left antitorque maneuver. Upon touchdown, IP noticed engine fuel pump segment light was on. N1 was at 50 percent with throttle at flight idle stop. IP told pilot to turn fuel switch off and completed engine shutdown, suspecting engine failure. After shutdown, pilot told IP that he turned the fuel off and back on, mistaking fuel switch for rpm warning switch.

CH-47

Incident □ During service mission at dusk aircraft made an approach to a lighted inverted "Y" and landed in tall grass. Aiming stake concealed by tall grass punctured fuselage skin just below cabin door.

Precautionary landings □ No. 2 engine transmission oil pressure fluctuated and dropped to 15 psi. Temperature remained normal. Caused by failure of No. 2 engine transmission oil pressure transducer. □ No. 1 engine transmission low oil warning light came on. Caused by failure of No. 1 engine transmission oil pressure transducer.

OH-6

Incident □ Pilot felt impact while descending to 1,500 feet msl. Postlanding inspection revealed impact damage to horizontal and upper vertical stabilizers, with evidence of bird strike.



Forced landing □ During simulated forced landing when power recovery was attempted engine would not increase N1. Engine-out warning was received and landing completed. Caused by fuel control malfunction.

Precautionary landings □ Fuel filter caution light came on. Suspect poor electrical connection. Filter was changed, loose connection was secured, and aircraft released for flight. □ During ground runup, crew noticed smoke and fumes coming from battery compartment. Caused by thermal runaway. One-hundred-and-twenty-day battery inspection was due the next day.

OH-58

Incidents □ While aircraft was maneuvering during NOE flight at 25 to 30 knots, main rotor blades hit small tree. □ Practice autorotation was terminated with less than 225 rotor rpm, causing spike knock with resulting airframe damage. □ During shutdown, crew chief allowed tiedown to hit main rotor. Tiedown deflected into vertical fin.

Precautionary landing □ After termination of normal approach, master caution and hydraulic segment lights illuminated. Hydraulic pressure was normal. Caused by failure of hydraulic pressure switch.

TH-55

Incident □ One aircraft with IP and SP aboard overran another aircraft during final stages of approach. Lead aircraft noted that his proximity warning device had activated with left rear and above indication. By this time the trailing aircraft had descended to the same altitude and was close enough that the main rotor blades were almost touching. The pilot of lead aircraft applied right cyclic and down collective. At this point the three main rotor blades of trailing aircraft struck the forward tip of the left skid gear on the lead

aircraft. Both aircraft landed without further damage.

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

Fixed wing

C-12

Precautionary landing □ (A series) After takeoff, No. 1 torque started dropping and TGT began to rise. Power was reduced to 65 to 70 percent torque where TGT could be stabilized below maximum (705° C.). Caused by failure of high pressure bleed valve on No. 1 engine.

U-8

Precautionary landing □ (G series) On climbout, crew smelled fuel in cockpit. Aircraft was returned to home station. When gears were lowered for landing, right main gear gave an unsafe indication. Gears were retracted and manually lowered. Aircraft was landed without further incident. Fuel odor was caused by loose fuel pressure line to fuel quantity indicator. Unsafe gear indication was caused by defective gear microswitch.

U-21

Human factor mishaps □ (H series) Heater failed after 40 minutes of flight. Outside temperature was -18° C. at 22,000 feet msl. Heater had to be recycled every 2 to 3 minutes to give any heat at all. Both pilot and copilot finally had to resort to putting their helmet bags over their boots and flight jackets over their legs to keep cold air from hitting them. Mission was not aborted. Heater cycling switch failed. □ While flying at 22,000 feet msl pilot experienced pain in right shoulder. After approximately 3 minutes pain became more intense; descent was made to 20,000 feet,

Accident synopsis

but pain persisted. Descent was made to 18,000 feet and pain subsided after 5 minutes. Mission was completed with no further complications.

For more information on fixed wing mishaps, call AUTOVON 558-3901/3913.

Maintenance

UH-1

Precautionary landings □ Crew chief detected fuel leak during aircraft start. Aircraft was shut down. Maintenance found fuel control servo filter O-ring pinched. □ After flight of approximately 30 minutes, aircraft landed at field site for passenger pickup. While aircraft was waiting for passengers, master caution and hydraulic caution warning lights came on, followed by control feedback and loud squealing noise. Hydraulic control switch was turned off and noise stopped. Aircraft was shut down. Hydraulic failure was caused by chafing hydraulic lines.

For more information on maintenance mishaps, call AUTOVON 558-3901/3913.

SYNOPSIS 77-12

Type aircraft: CH-47B

Time: 1556

Classification: Major (total)

Injuries: 0 fatalities, 3 injuries

Estimated materiel damage cost: \$1,063,448

Mission: Training

	Grade	Age	RW Hrs	Tot Flt Hrs
IP	CW2	29	2,038	2,038
P	CW2	44	1,799	4,628

Description: During demonstrated single-engine failure at 100 feet agl hover, aircraft lost power and struck concrete runway. Aft gear was sheared and forced through engine work platforms. Aircraft impacted on aft jack points, bounced, and came to rest 22 feet from initial impact.

Cause: Due to a misinterpretation of instruction given by IP, pilot moved both engine condition levers to ground, causing aircraft to lose power and crash.

Contributing factors: IP did not monitor the movement of the condition levers and was demonstrating unauthorized maneuver.

Corrective action: The maneuver was immediately discontinued within the unit upon determination that it was an unauthorized maneuver. ■

DEPARTMENT OF THE ARMY

United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

Flightfax

VOL. 5, NO. 46 □ 7 SEP 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Birds pose health hazard

Those bird droppings in your hangars and shops can be a serious health hazard. Starlings and blackbirds are known to harbor the organism that causes histoplasmosis, a disease that incapacitates people of all ages. This disease, especially prevalent in the Ohio and Mississippi River valley, is spread by human contact with dried bird droppings. Inhalation of the dust, especially from old

droppings, can cause this lung condition. With time, histoplasmosis will impair one's ability to breathe and can shorten lifespan. Fields near one fort have been placed off limits to all personnel because of excrement lying in the fields.

Any facility harboring this potential disease producer should be closed and/or a massive cleanup and bird eradication campaign conducted. ■

FY 78 schedule of aviation safety courses

Aviation Accident Prevention Management Course (AAPMC)

Class	Start	Close
78-1	7 Nov 77	18 Nov 77
78-2	28 Nov 77	9 Dec 77
78-3	20 Mar 78	31 Mar 78
78-4	1 May 78	12 May 78
78-5	11 Sep 78	22 Sep 78

Aviation Safety Officer Course (ASOC)

Class	Report	Start	Close
78-1	4 Oct 77	5 Oct 77	16 Dec 77
78-2	8 Jan 78	9 Jan 78	17 Mar 78
78-3	26 Mar 78	27 Mar 78	2 Jun 78
78-4	9 Jul 78	10 Jul 78	15 Sep 78

Aviation Accident Prevention Course (AAPC)

Class	Start	Close
78-1	16 Jan 78	27 Jan 78
78-2	3 Apr 78	14 Apr 78
78-3	28 Aug 78	8 Sep 78

Eligibility requirements are contained in DA Circular 351-74, dated 25 Feb 1977. ■

Selected mishap briefs

Rotary wing

UH-1

Incident □ Aircraft yawed sharply during flight. On landing, pilot ran out of left pedal, rolled back throttle, and made hovering autorotation. Caused by failure of tail rotor silent chain. Flailing of chain damaged skid and drive shaft.

Forced landing □ Engine quit and aircraft was autorotated to field. Caused by fuel exhaustion. Aircraft was on circle red X for defective fuel gauge and limited to 1.5 hours of flight. Twenty-minute light did not come on until 1 minute of fuel remained.

Precautionary landings □ Engine oil pressure gauge fluctuated plus/minus 18 psi, then fluctuated from zero to 100 psi twice. Caused by corroded contacts on pressure switch. □ Tail rotor chip detector light came on. Inspection revealed excessive metal particles on 90° gearbox chip detector plug. Suspect internal failure of 90° gearbox. □ During climbout, pilot heard squeal from hydraulic pump and smelled hydraulic fluid. Master caution and hydraulic segment lights flickered and then remained on, accompanied by loss of hydraulics. Caused by failure of O-ring preformed packing. □ Torquemeter fluctuated in flight. Caused by failure of pressure indicator. □ Transmission oil hot light came on. Caused by water and dirt in thermostatic switch. □ Severe vertical vibration occurred during final approach and aircraft became uncontrollable. IP took over and finally regained control at about 40-50 feet agl as vibration became less severe. Bonding separation occurred 36 inches from blade tip and extended from

over the main spar 1½ inches toward trailing edge. Approximately 50 hours out of last PE, aircraft had developed moderate lateral vibration. Nineteen ounces of weights were required in red main rotor blade. The presence of corrosion on the main spar indicates the possibility of moisture entering through a very small crack developed at the same time as the lateral vibration. □ Transmission oil segment caution light activated. Caused by failure of manifold assembly. □ Crew heard loud popping noise from engine area during takeoff. Pilot aborted takeoff and returned to airfield. On termination of approach, rpm bled to 5800 and rpm warning light and audio activated. Suspect compressor stall. □ Engine oil temperature rose from 80° C. to 125° C. within 30 seconds and remained at 125° C. until engine shutdown. Thermostat flow control was replaced.

AH-1

Incident □ After aircraft was shut down for fuel, inspection revealed No. 5 tail rotor drive shaft cover was missing and there was a ¼-inch hole in vertical fin. Caused by failure of fifth direct support cover stiffener.

Precautionary landings □ Engine-driven fuel pump failed during hover. Fuel pressure switch was replaced. □ Prior to lift-off after refueling, No. 1 hydraulic light and master caution illuminated. Noise was heard from hydraulic pump area. Aircraft was shut down. Packing in tail rotor servo check valve was flattened.

OH-58

Accident □ Aircraft hit wires about 30 feet agl and landed hard, damaging both main rotor blades, transmission, pilot's wind-



shield, both skids, and cross tubes.

Incidents □ Main rotor blades struck tree limb during NOE hover, damaging blades.
□ Main rotor blade struck tree during NOE training flight, damaging one blade.

Precautionary landings □ Engine oil temperature rose to 110° C. and engine oil pressure dropped to 80 psi during takeoff. After landing, IP cycled bypass switch and temperature returned to normal. Oil pressure returned to normal after 2-3 minutes at idle. Bypass switch stuck in open position. □ Low rpm audio and light came on with no loss of power. Caused by failure of low rpm circuit breaker and sensor. □ During pretakeoff check at hover, pilot noticed engine oil temperature at 115° C. Postlanding inspection revealed engine oil reservoir failed internally, causing contamination of engine oil supply. □ Transmission oil hot light came on. Caused by faulty switch in lighting system.

TH-55

Precautionary landing □ SP detected change in engine noise while hovering. Inspection revealed hole on top side of manifold assembly for cylinders 1 and 2.

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

Fixed wing

C-12

Precautionary landing □ (A series) Pilot's windshield outer layer cracked from top to bottom. Electric windshield heat was in use. There was no evidence of delamination associated with cracks.

U-8

Precautionary landing □ (F series) Fuel leak developed in No. 2 engine nacelle. Caused by in-flight failure of petcock selector valve strainer.

For more information on fixed wing mishaps, call AUTOVON 558-3901/3913.

Maintenance

UH-1

Precautionary landing □ Moderate vibration developed during takeoff. Caused by loose skid cross tube assembly.

AH-1

Precautionary landing □ Crew heard loud squeal from hydraulic compartment and running landing was made. On short final No. 2 hydraulic light came on. Hydraulic line leading to turret was loose.

U-8

Precautionary landing □ Left main gear did not indicate down and locked. Recycling and manual extension procedures failed to produce proper indication. Tower personnel said gear appeared to be down and landing was made. Dirty sensitive switch did not allow plunger to operate properly.

OV-1

Precautionary landing □ (D series) During climb to 17,500 feet msl, passing 15,700 feet msl, at 85 pounds torque, 140 knots, and 1600 rpm, aircraft yawed slightly right and torque dropped 20 pounds on No. 2 engine and stabilized. Pilot reduced power on both engines to 60 pounds, then advanced power on both engines to 85 pounds. One minute later No. 2 engine again dropped

Accident synopsis

20 pounds torque. Pilot reduced power on both engines and landed. Bleed air line to fuel control on No. 2 engine was disconnected and No. 1 engine bleed air line to fuel control was loose. Aircraft had just been received from manufacturer's rebuild facility.

For more information on maintenance mishaps, call AUTOVON 558-3913/3901.

Aviation-related

OH-58

□ After aircraft was refueled, pilot asked refueler to check his running light. Refueler approached front of aircraft and struck airspeed indicator, causing severe laceration to right arm.

C-12

□ As aircraft was being towed out of hangar right wing tip struck hangar door, which was not completely open. Clearance guide was being used on left wing, but not on right wing. Damage to wing required replacement of wing tip assembly and outboard deice boot.

For more information on aviation-related mishaps, call AUTOVON 558-3913/3901.

SYNOPSIS 77-13

Type aircraft: T-42

Time: 2120

Classification: Major

Fatalities/injuries: None

Estimated materiel damage cost: \$20,783

Mission: Training

	Grade	Age	FW Hrs	Tot Flt Hrs
IP	Civ	52	3,555	15,634
Pilot	MAJ	34	288	2,091

Description: IP was demonstrating night single-engine approach and landing (No. 2 engine was at zero thrust) with pilot reading checklist. IP failed to assure gear was down and landed gear up. Aircraft skidded approximately 1,000 feet, damaging engines, flaps, and underside of fuselage.

Cause: IP failed to insure gear was extended before landing.

Contributing factor: Pilot did not verify gear was down.

Corrective action: IPs have been briefed on checks to insure that landing gear is extended.

DEPARTMENT OF THE ARMY

United States Army

Agency for Aviation Safety

Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

OCT 3 Rec'd

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 47 □ 14 SEP 1977

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Cooling care

"Cooling care" is what all gas turbine engines must have for a long and useful life. This is the mark of the truly professional aviator. The two minutes spent in properly cooling the engine before shutdown can be the deciding factor as to whether the engine will perform efficiently to time before overhaul (TBO) limit or whether it must be removed prematurely for coked seals.

Temperature at the flame center in the combustion chamber may reach 3,900 degrees F. Most metals used in the construction of hot end components melt at 2,400 to 2,800 degrees F. So what keeps the hot end from melting? Cooling air!

Seventy-five percent of the air inducted into a gas turbine engine is used for cooling. The combustor liner is designed to insure that the flame is maintained in the center of the combustion area by the cooling air flow pattern. When the engine slows down, so does the air and fuel flow—but at a much faster rate than the cooling down of the hot end components. The accompanying chart depicts actual readings taken from Allison T63-A-700 (OH-6, OH-58) and T63-A-720 (OH-58C) engines after shutdown without cooling. These components do not operate at these temperatures but attain them as heat from the hottest portions

Continued on back page

CH-47 safety-of-flight message

□ 011430Z Sep 77, subject: Safety-of-Flight Message: One-Time Inspection of CH-47A, B, C Aircraft, TB 55-1500-210-20-35 (CH-47, 1977-7). Summary: In two recent ground incidents on CH-47C aircraft the forward and aft rotor blades contacted, the aft pylons were torn loose and the aircraft were damaged extensively. Investigations to date have not identified any material failures nor any other specific causes for the incidents. However, evaluation of the damage patterns on components in conjunction with analytical studies indicates the most probable cause was a

combination of the forward and aft rotor systems being improperly phased, and aircraft ground response from dynamic interactions between tires and landing gear oleos. The purpose of this TB is to inspect aircraft to insure compliance with requirements for rotor system phasing, tires, landing gear and oleos and to emphasize the need for continued full and strict compliance with TM requirements.

Contact: Mr. G. Adkins, TSARCOM,
AUTOVON 698-6042, commercial (314)
268-6042. ■

Prepared by the U.S. Army Agency for Aviation Safety, Fort Rucker, AL. AUTOVON 558-4479. Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition. Data is subject to change and should not be used for statistical analyses. Direct communication is authorized by AR 10-29.



Selected mishap briefs

Rotary wing

UH-1

Accident □ Tail rotor control was lost as aircraft was descending with sling load to landing area. Sling load was jettisoned and directional control was maintained by entering autorotation. Directional control was lost at slow airspeed prior to touchdown. Aircraft landed upright, damaging tail boom, main rotor blades, main transmission, skid gear, tail rotor, and 90° gearbox. Pilot and copilot sustained back injuries.

Incident □ Aircraft hit tree during low-level flight, breaking chin bubble.

Forced landing □ Pilot heard loud multiple explosions from engine area, with subsequent loss of power, yaw, and vibrations. Hovering autorotation was made. Inspection revealed foreign object damage to first, second, and third stage engine compressor.

Precautionary landings □ Copilot noticed sparks coming from behind instrument panel in vicinity of inverters. Bearing race in PU-543C inverter bell end moved forward and shorted into straight brush assemblies. □ Master caution light flickered four to five times, followed by illumination of transmission oil hot light. Transmission temperature gauge indicated 85°. Caused by failure of transmission thermostatic switch. □ Hydraulic warning light came on. Caused by failure of hydraulic pump. □ Loud popping noise was heard during NOE quick stop, accompanied by increase in egt and slight loss of power. Hot air valve assembly was stuck in open position. □ Failure of engine oil pressure relief

valve caused oil pressure to fluctuate.

□ Battery fumes were detected on short final. Caused by overheated battery. IP sustained eye irritation from battery fumes.

AH-1

Accident □ Aircraft was in climbing right turn at 60 feet agl and 65 knots when low rpm audio and low rpm light activated. Aircraft struck the ground and rolled over, coming to rest on right side. Pilot and copilot sustained minor injuries.

Precautionary landings □ Series of bangs and engine overspeed occurred while aircraft was at OGE hover. Caused by overspeed governor malfunction. □ No. 1 hydraulic pressure warning light came on, accompanied by loss of antitorque control hydraulic pressure. Caused by ruptured hydraulic line.

CH-47

Precautionary landings □ No. 1 flight boost hydraulic system caution light came on and pressure indicator dropped to zero. Caused by failure of O-ring at flange fitting on forward pivoting actuator. □ During starting procedures, No. 2 generator failed four times but was recovered each time. Approximately 30 minutes into flight, electrical fire fumes and smoke were detected in cockpit and cargo compartment. Fumes and smoke dissipated when No. 2 generator was secured. Caused by failure of generator control panel. □ Crew chief felt high frequency vibration in aft section of aircraft during cruise flight. Inspection of No. 2 engine revealed damage to inlet guide vanes and compressor blades. Engine and fuel control have been submitted for teardown analysis.



OH-6

Forced landing □ Engine chip detector light came on and loud grinding noise was heard. Landing with power was made and engine failed completely. Teardown analysis will be performed.

Precautionary landing □ Transmission oil pressure light illuminated. Caused by failure of pressure switch.

OH-58

Incident □ Main rotor blades struck tree during authorized, supervised NOE flight. Both blades were damaged.

Precautionary landings □ During pretakeoff check at hover, pilot noticed engine oil temperature at 115° C. Failure of engine oil reservoir caused contamination of engine oil supply. □ Turbine outlet temperature increased to 850° C. Power was reduced and TOT returned to normal. Minimum power running landing was made. Bleed air elbow failed at scroll. Elbow had failed 2 months earlier and had been repaired by DS maintenance.

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

TSARCOM message

□ 261711Z Aug 77, Maintenance Advisory Message for OH-58A Helicopters, Inspection of the Upper Clamp on the Fuel Hose, Message No. OH-58A-77-7.

Fixed wing

U-8

Precautionary landing □ (F series) During taxi after landing, copilot noted unusual

smell in cockpit and saw smoke coming from left nacelle and engine cowl. Battery was deteriorated from heat inside case.

U-21

Precautionary landings □ (A series) Left main landing gear brake locked on takeoff. Caused by failure of lining assembly. □ During takeoff roll at 1,200 pounds torque aircraft would not indicate airspeed and takeoff was aborted. Vibration was felt and noise was heard in main landing gear during rollout. Caused by failure of main landing gear outer bearing.

Human factor mishap □ (H series) At 22,000 feet, copilot felt removed from his immediate surroundings and had metallic taste in his mouth. He checked oxygen regulator and noted that 100/normal switch was in normal position. Suspect copilot may have knocked it into this position when he was using drift sight window. Symptoms of hypoxia disappeared after 100 percent oxygen was selected.

For more information on fixed wing mishaps, call AUTOVON 558-3901/3913.

C-12 users

There may be some problems associated with the C-12 landing gear system. To gather more info on this possibility, we are requesting that all discrepancies involving landing gear assemblies, wheels, tires, and brakes be reported to USAAAVS by PRAM. To identify this report from normal PRAMs, insert "C-12 Landing Gear Report" at the end of the subject line in place of precautionary landing, incident, etc. ■

Selected mishap briefs

Maintenance

UH-1

Precautionary landings □ On 3-mile final approach, yellow insect smashed on copilot's windshield, followed by mist spray from battery vent. Battery switch was turned off and landing made. Suspect yellow jackets nested in upper battery vent. □ Hydraulic pressure caution light came on and hydraulic pressure was lost. Hydraulic hose assembly below lateral servo was chafed. □ Fire warning light came on. Loose connector and moisture caused electrical short. Aircraft had been in light rain showers about 2 minutes before illumination of light. □ Immediately after takeoff crew smelled fuel fumes. Engine had just been washed and flushed with solvent. Solvent was not properly rinsed.

CH-47

Precautionary landing □ At 300 feet msl and 90 knots, flight engineer noticed No. 2 engine was leaking oil. Low oil light came on and single-engine landing was made. Oil filter O-ring was pinched during installation.

OH-58

Precautionary landings □ Loose mounting screw contacted base of light bulb receptacle, causing electrical arcing. □ Loss of hydraulic fluid was caused by loose hydraulic hose fastener on hydraulic return line to reservoir.

OV-1

Precautionary landing □ (D series) No. 1 engine was shut down during maintenance test flight. Pilot tried to restart engine, but couldn't. After third attempt at restart,

pilot lost inverter, generator, and battery power. Single-engine landing was made. Battery was overcharged, putting out more voltage than No. 2 d.c. generator. Reverse current cutout relay was energized. No. 2 generator dropped off line and failed to reset, so all systems were running off battery. Attempt to start secured engine caused battery to fail.

U-21

Precautionary landing □ Fuel was siphoning around fuel cap during cruise flight. Fuel cap lock assembly was out of adjustment.

For more information on maintenance mishaps, call AUTOVON 558-3913/3901.

Recap of USAVSCOM messages

AVSCOM message 301950Z Jun 77, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of all AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 January-30 June 1977 for the OV-1, U-21, and U-8.

OV-1-77-1 No message

OV-1-77-2 OV-1 Ejection Seat MK-J5 Delta on OV-1 Aircraft

OV-1-77-3 Safety-of-Flight One-Time Inspection for All OV-1 Series Aircraft TB 55-1500-217-30-1 Urgent With Limitations

U-21-77-1 U-21 Series Aircraft T74-P-700 Engines (Hot-End Inspection)

U-21-77-2 U-21 and RU-21 Series Aircraft (Secondary Idle Stop Check)

U-8-77-1 U-8/RU-8 Aircraft, Pitot Heater Operational Check ■

Accident synopsis

SYNOPSIS 77-14

Type aircraft: U-21A

Time: 1030

Classification: Major

Fatalities/injuries: None

Estimated materiel damage cost: \$314,944

Mission: Test/training

	Grade	Age	FW Hrs	Tot Flt Hrs
IP	DAC	52	3,878	12,023
Pilot	CPT	40	576	3,589

Description: At 8,500 feet, IP was demonstrating maximum glide with power off (power levers in idle and both props feathered). At 4,500 feet, props were unfeathered and power remained in idle position. Transition pilot, who was flying the aircraft, entered the traffic pattern for a normal approach. IP, realizing final approach was going to be short of intended runway, pushed props and power levers full forward at about 500 feet agl with 90 KIAS and in excess of 1200 fpm rate of descent. Neither engine responded in time to prevent impact with the ground approximately 900 feet short of runway. All gears were torn from aircraft and fuselage, wings, and engines had structural damage.

Cause: IP failed to insure adequate forced landing area was available during simulated emergency procedure, and was slow to initiate corrective action.

Contributing factors: IP was using outdated flight standardization guide. Sufficient guidance was not provided to insure adequate aircraft transition program.

Corrective action: IP's orders have been temporarily suspended until he successfully completes a standardization ride.



TOTAL MISHAPS FOR 26 AUG-1 SEP 1977

Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	1	1	1	34	37
AH-1	1	0	0	3	4
OH-6	0	0	1	2	3
OH-58	0	1	0	9	10
TH-55	0	0	1	0	1
CH-47	0	0	0	5	5
OV-1	0	0	0	1	1
C-12	0	0	0	1	1
U-8	0	0	0	1	1
U-21	0	0	0	4	4
Total	2	2	3	60	67

0 Fatalities, 5 Injuries
Estimated costs: \$1,242,258

STACOM

STANDARDIZATION COMMUNICATION



DIRECTORATE FOR EVALUATION AND STANDARDIZATION, USAAVNC, FT. RUCKER, AL 36362
STACOM 21 ■ 14 SEPTEMBER 1977 COL CHARLES S. WINGATE ■ 558-2603/3514

Approach from a holding pattern

We have received a sudden rash of questions regarding the correct procedure to be followed when clearance is received for an approach at a facility using a holding pattern in lieu of a procedure turn. Just as we were about to request a position from the FAA, their flight standards people published the following in the Instrument Comer Section of the FAA General Aviation News magazine. Looks as though they've had a few inquiries too. Here it is. How about that for being timely?

TO HOLD OR NOT TO HOLD

Question: Please clear up a point concerning an instrument approach that shows a holding pattern in lieu of a procedure turn. There is a difference of opinion here concerning the proper procedure to follow when approaching from a fix that is not an initial approach fix ("NoPT" not indicated on chart). We all agree that the appropriate holding pattern entry should be executed. Then some say that if you are in a position for final approach, just go ahead and do it. Others feel that at least one turn in holding must be made before commencing the final approach. Who's right?

Answer: The holding pattern in this case is a prescribed type of procedure turn, allowing an aircraft to reverse direction or otherwise maneuver to become established on an inbound track to the final approach fix. The pilot should make an initial crossing of the fix, execute a holding pattern entry, and return to the fix on the

prescribed inbound course. If cleared for the approach, before or during the holding pattern entry, prior to recrossing the holding fix, and if the aircraft is at the prescribed altitude, additional circuits of the holding pattern are not necessary or expected by ATC. If the pilot elects to make additional circuits to lose excessive altitude or to become better established on the inbound course, he must advise ATC when he receives his approach clearance.

Position reports, questions and answers

□ There is an apparent inconsistency in the U-8D Operator's Manual, TM 55-1510-201-10/4. Item 14 of the engine runup states that engine power will be checked at Field Barometric pressure. Item 24 of the Before Starting Engines Checklist, on the other hand, says to note the manifold pressure reading. Now I've always been told that the reason for noting this reading is that it will be the manifold pressure at which the power check will be made. So, what is the correct procedure? Do we make the power check at the static pressure indicated on the gauge, or at field barometric as furnished by the tower?

Use the pressure indicated on the manifold pressure gauge during pre-start for your power check. The TSARCOM power plant engineers tell us that this is the preferred method, as it would compensate for any gauge error. For example, the gauge may read 29.00" Hg when Barometric is actually 30.00". In this case, setting the power at 30.00" would not give a valid rpm indication because the power setting

is actually 1" Hg more than it should be. The dash 10 will be corrected in the future.

□ As an Instrument Instructor Pilot, I frequently put the hood on in order to demonstrate a particular technique or procedure. The question is, can I log this time as IP-H and receive credit for it on my 759?

There is nothing in the ARs which would prevent you from logging IP-H time, except possibly for IP/IFE evaluations. But what reason would you have for putting the hood on in the first place? Stop and think about it a minute. The hood is a training device which you, the IP, are to use for the purpose of restricting the trainee's vision to the aircraft interior so his abilities to control and navigate the aircraft by instrument reference may be perfected. On the other hand, when you put the hood on, training ceases while the student assumes the role of safety observer. You are really not accomplishing anything other than to prove that the aircraft can be flown by instruments—a fact of which the student was most likely already aware. If you want to give your student a break and let him gaze outside while you sharpen your skills under the hood—fine, but since you're not instructing anybody, be honest and log the time as P-H.

□ To remain current as a pilot in a particular MDS aircraft, must I take my standardization evaluation by my birthdate or by the end of my birth month? I know what the reg says, but I've recently been told on good authority that it's okay to go to the end of the birth month.

Afraid your "good authority" may not be all that good. Your evaluation is due each year during the 90-day period preceding your birthdate just like par. 1-16b(1)(c), AR 95-63, says it is.

□ Ever since we (ARNG) picked up the U-3s we've heard that the Army was going to phase out the Air Force Flight Manual and replace it with our own TMs. Apparently, the phase-out of the AF Manual went pretty well because we can't get any more. Now what about the Army manual? Is it available, and if so what's the number?

The U-3A/B Operators Manual has been published by the Army as TM 55-1510-216-10. This manual, as well as the following U-3 pubs, is currently available for issue:

TM 55-1510-216-MTF
TM 55-1510-216-23-1, 2, 3, 4, and 5
TM 55-1510-216 PM and PMD

The urgency of the reprint requirement, unfortunately, did not allow any Army-oriented changes to be incorporated in the operators manual. To rectify this, USAAVNC recently hosted a conference of ARNG/USAR SIPs to draft the changes necessary to align this manual with those of our other twins. You should be seeing revisions to chapters 2 and 3 and the checklist, TM 55-1510-216-10, early in FY 78.

Incidentally, the Directorate of Evaluation and Standardization now has a U-3 SIP on its staff, so we're ready to give equivalency evaluations to those U-3 IPs who have been functioning on waivers.

Cooling care

Continued from front page

soaks throughout the engine when it is shut down without being cooled. This action exposes the parts to drastic temperature changes that can warp, twist and, in extreme cases, cause cracks.

The compressor and turbine shaft bearings and seals are exposed to a slow heat soak in unscavenged oil that leaves them coated with shellac and carbon. This unscavenged oil will then be drawn from the oil cavities by capillary action, flowing through bearings and seals into the combustor itself.

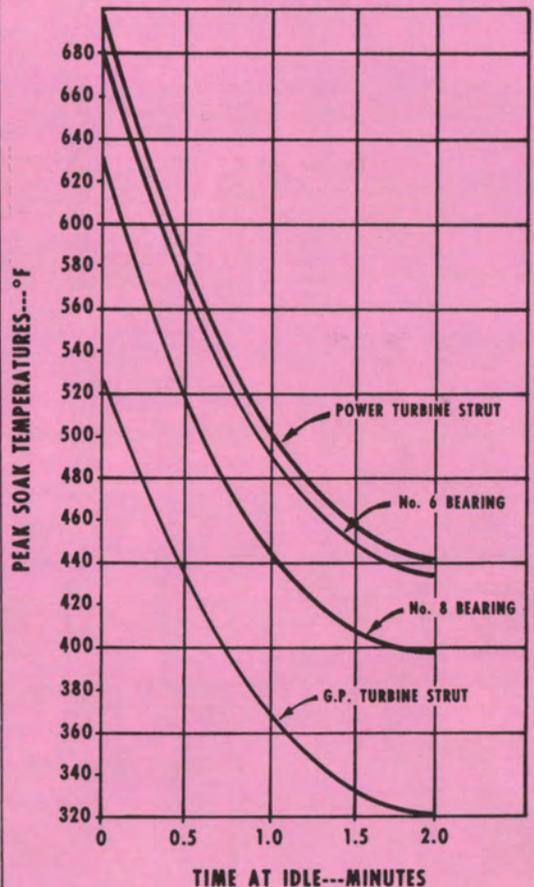
Continued mistreatment of this kind causes the bearings and seals to become heavily coated with shellac and carbon. In extreme cases, the carbon buildup can lock the turbine wheels because of the buildup in the seals. Long before this stage is reached, the buildup is heavy enough to break away in chunks and destroy the more delicate carbon and rubber seals in the engine. The engine then exceeds safe oil consumption limits, and we spend another \$22,000 for an unnecessary engine overhaul. These basic fundamentals apply to all gas turbine engines in both fixed and rotary wing aircraft. To prevent premature engine failures, reduce maintenance costs, and insure your safety, treat them like your beer—keep them cool. ■

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS

PEAK SOAK TEMPERATURES vs TIME AT IDLE

T63-A-700, T63-A-720



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

OCT 21 Rec'd

US Army Aviation Training Library
Fort Rucker, Alabama 36360

Twelve receive Broken Wing Award



Twelve aviators received the Army Aviation Broken Wing Award during June, July, and August 1977.

The Broken Wing Award is given to aircraft crewmembers who demonstrate a high degree of professional aviation 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 Change 5 to AR 385-10.

Broken wing award recipients

CW2 Herbert A. Berry
D Troop, 4/12 Cav, Fort Polk

CW3 Billy G. Blackman
Air Cav Troop, Fort Bliss

2LT Ludford T. Creef
30th Inf Bde, NC ARNG

CPT Gary W. Jones
Co A, 42nd Avn Bn, NY ARNG

CW2 Robert L. Kappler
Air Cav Troop, Fort Bliss

CW2 Steven P. Kelly
HSC, USAFS, Korea

CW2 Wallace K. Kinder
HHC, 1st Bde, 101st Abn Div

CW2 Mark E. Metzger
DGFT, USAAVNC, Fort Rucker

CPT Daniel J. Petrosky
117th Avn Co, Korea

CW2 Richard A. Petty
77 USARCOM, Fort Totten

CW2 John R. Schieding
281st Avn Co, Scott, IL

CW2 George C. Wenschhoff
HHB, 28th Inf, PA ARNG ■

OH-58A operations reminder

Par. 7-22, TM 55-1520-228-10, states whenever an OH-58 is operated without its passenger doors:

a. All soundproof blankets must be in serviceable condition and snap fasteners firmly attached. Pilot must verify.

b. Rear seat cushions must be removed, and seatbelts must be looped through shoulder harness (at buckle), tightened, and fastened. This restriction does not apply if seat cushion is occupied.

USAAVS recommends that all seat and seat back cushions be removed to prevent them from coming out of the cabin and hitting the tail rotor. ■

Selected mishap briefs

Rotary wing

UH-1

Forced landing □ Master caution and transmission oil pressure warning lights came on and transmission oil pressure went to zero. Aircraft landed in field. Machine threaded plug blew out of transmission, stripping with it all the threads of the cavity in the transmission.

Precautionary landings □ Torquemeter dropped to zero in flight. Caused by broken splice in torquemeter gauge wiring. □ Loud whistling noise was heard from main rotor blade during landing, followed by severe vibration. Skin on main rotor blade came unbonded. □ IP was demonstrating low-level techniques to newly arrived aviator en route to NOE course. Aircraft was being flown at 80-90 knots and 10-15 feet above vegetation. IP noticed wires at "eye-level" about 30-40 feet ahead, initiated climb, and pulled 58 pounds of torque for 1½ seconds. Aircraft was landed in open field. Maintenance officer and TI inspected aircraft and released it for one-time flight to home station. Oil samples were submitted for analysis and aircraft was released for flight after completion of overtorque inspections. □ Engine oil temperature rose to 115° C. and exhaust gas temperature rose to red line. Collective pitch was reduced and minimum power descent with egt under red line was made. Caused by internal engine failure. No. 1 and No. 2 engine bearings allowed compressor to move forward, rubbing compressor housing. □ Copilot felt collective start to bounce and controls stiffen. Hydraulic segment and master caution lights came on. Hydraulics-off landing was made. Caused by failure of hydraulic pump.

AH-1

Precautionary landings □ Engine oil pressure caution light came on. Caused by failure of oil pressure switch. □ No. 1 hydraulic system pump made howling noise during hydraulic check. Inspection revealed loss of fluid due to cracked washer and O-ring assembly.

OH-58

Accident □ Suspect loss of tail rotor control. One fatality. Investigation in progress.

Precautionary landings □ Hydraulic pressure light came on. Caused by malfunction of hydraulic pressure switch. □ N1 and N2 decreased during cruise flight. When pilot reduced collective, instruments returned to normal. As collective was increased, N1 and N2 decreased again. Pilot made power-on descent and landed with partial power. Caused by internal malfunction of turbine power governor assembly. □ Pilot noted excessive vibrations from main rotor system. Caused by bonding separation on tip of main rotor blade. □ Left-side engine cowling came open in flight. Aircraft had refueled at field location. Pilot had inspected aircraft before departure from field location, but failed to insure cowling was properly secured. Pilot of another aircraft told pilot cowling was open. □ Pilot was landing because of fog. While increasing power to land, pilot noticed TOT rise to 850° C. Internal threads on bleed air elbow assembly tube were stripped.

TH-55

Precautionary landing □ Engine ran rough during hover. Caused by malfunction of fuel injector.



CH-47

Precautionary landing □ Short in transmission selector switch caused transmission oil hot light to come on.

TSARCOM message

□ 071315Z Sep 77, subject: Maintenance Advisory Message Concerning Main Rotor Retention Strap Assemblies Utilized on UH-1C/D/H/M and AH-1G/Q/S Series Helicopters (UH-1-77-17 and AH-1-77-19).

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

Fixed wing

U-21

Precautionary landing □ (H series) No. 1 engine oil pressure was noted at 96 pounds about 30 minutes into flight. Caused by loose wire in oil pressure gauge cannon plug.

Human factor mishap □ Copilot began 100 percent oxygen prebreathing 30 minutes before takeoff. He experienced mild pain and pressure in both ears just below earlobes after takeoff. Aircraft was leveled at FL 150 for 30 minutes and pressure was still present. Pain and pressure subsided after 35 minutes at FL 220 and total flight time of 1 hour and 35 minutes, and there were no problems during descent or after landing.

U-8

Precautionary landing □ Right main strut collapsed during landing roll. Caused by failure of shock absorber pin assembly.

For more information on fixed wing mishaps, call AUTOVON 558-3901/3913.

Maintenance

UH-1

Precautionary landings □ Crew heard loud bang when starter engaged. Start was aborted. Inspection revealed buckled battery cover. Battery had internal explosion. Upper vent tube was restricted and two different cell types were found in battery. □ Transmission oil pressure went to zero. Transmission internal oil filter cover was improperly torqued. □ Shortly after auxiliary fuel pump was turned on in cruise flight, crew smelled fuel fumes in cockpit. Crew chief found fuel leaking into cabin from auxiliary tank fuel line. Pump was turned off and aircraft landed. Caused by insufficiently tightened fuel line.

OH-58

Precautionary landing □ N2 decreased to 100 percent during cruise flight at 600 feet. Pilot confirmed throttle was full on and attempted full beep with no results. Application of collective caused N2 to fluctuate from 94 percent to 103 percent. Minimum power descent and running landing were made. Caused by improperly rigged linear actuator.

For more information on maintenance mishaps, call AUTOVON 558-3913/3901.

Maintenance Test Flight Course graduates

A major change to the CH-47 Test Flight Handbook is now available to CH-47 test flight graduates. If you are a graduate of this course and want to receive this new book, send your address to: Maintenance Test Flight Division (CH-47), AMMD, DOT, USATSCH, Ft. Eustis, VA 23604. ■

Accident synopsis



SYNOPSIS 77-15

Type aircraft: UH-1H

Time: 1126

Classification: Major

Fatalities/injuries: None

Estimated materiel damage cost: \$99,422

Mission: Training

	Grade	Age	RW Hrs	Tot Flt Hrs
IP	CPT	31	1,285	1,285

Description: Engine failed during cruise flight at 800 feet msl. Hard touchdown from autorotation resulted in aft portion of tail boom being cut off by main rotor blades.

Cause: Engine failure due to suspected malfunction within fuel control assembly.

Contributing factors: IP failed to hear low audio rpm due to cycling tone of FM radio. IP was preoccupied with administrative duties. IP from previous flight failed to write up suspected governor/fuel control malfunction which occurred on runup the previous night.

Corrective action: Emphasize at all safety briefings division of attention between inside and outside the aircraft. Accomplish maximum coordination of daily administrative requirements before takeoff. Caution all pilots about becoming excessively mission oriented and disregarding dash 10 CL minimum standards for aircraft acceptance. ■

Training of aviation life support specialists

Amy training quotas for the U.S. Air Force Aircrew Life Support Specialist Course 3ABR 92230-0 at Chanute AFB, IL, are filled through FY 78. Major commands without Air Force training requestor codes should program training requirements for FY 79 in anticipation of TRADOC solicitations for school requirements due in December 1978 or January 1979. Initial information pertaining to this course was published in FLIGHTFAX, Vol. 5, No. 40, dated 27 July 1977. ■

DEPARTMENT OF THE ARMY

United States Army

Agency for Aviation Safety

Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS

ARMY AIRCRAFT MISHAP PREVENTION DATA

Flightfax

® VOL. 5, NO. 49 □ 28 SEP 1977

OCT 3 Rec'd

Accident analyses to be featured

Beginning in this issue the *accident synopsis*, an accident report recap, is being replaced by the *accident analysis*. This information is based on a systematic analysis of information contained in the accident report to determine the causes which brought the accident about and the practical cures.

This new approach views pilot/human error accidents as a deviation from job performance required by the operational situation. "Required job performance" includes that stipulated by (a) school training, (b) on-the-job training, (c) Army-wide regulations and guidelines, (d) standing operating procedures, and (e) commonly accepted practices. Human error is cited as a cause only when it is judged that a person of normal or reasonable competence could have performed the task correctly in the existing operational situation.

The causes are those elements in the aviation system that did not operate as intended or designed and which caused, allowed, or contributed to the human error. This is the focal point of the new analytical effort. The analysis is aimed at improving the aviation system and goes beyond identifying the error committed by the pilot (and others) to identifying the deficiencies in the system—training, supervision, facilities, design, etc.—that caused the error.

The cures are actions required to correct or reduce the operational impact of



the inadequacies identified as causes. More than one cure may be given for any one cause, and the remedial measures may be directed at any command level for implementation.

Eighty-two of the 94 FY 76 accidents involved human error and were subjected to this analytical approach. This led to the identification of a number of practical cures recommended for accident-producing inadequacies in the aviation system. The accidents featured in FLIGHTFAX will be based on analyses of FY 77 accidents.

USAAAVS analysts are also applying these methods to materiel failure/malfunction accidents. These analyses will be carried in future issues. ■

Accident analysis

ANALYSIS 77-1

Type aircraft: UH-1H

Time: 0833

Classification: Major (total loss)

Injuries: 1 major

Estimated cost: \$633,630 (aircraft, injury)

Mission: Training

	Grade	Age	RW Hrs	Tot Flt Hrs
IP	CW2	37	905	2,359
Rated SP	CW2	37	358	3,439

The accident

During simulated hydraulics-off landing, aircraft began sliding off the right edge of the runway. IP took control and attempted go-around with hydraulics off. He was unable to maintain control and the aircraft assumed a nose-down, right rolling attitude. The main rotor blade struck the ground and the aircraft rolled over and crashed in a right, nose-low, inverted position.

The causes

- IP improperly monitored the SP's performance and delayed corrective action because of his overconfidence in the SP. The SP had shown normal progress throughout the IP course and this was his last training flight before a final checkride. Therefore, the IP was caught off guard when the SP placed the aircraft in a critical situation. Also, the SP had told the IP what he was doing to correct the drift, which further caused the IP to believe the SP had the aircraft under control.
- IP used poor judgment in attempting a hydraulics off go-around. Although not prohibited by written procedures, a hydraulics off go-around is a poor choice of action which should be used only as a last resort. The best course of action for a safe recovery in this situation would



have been to straighten the aircraft in the direction of travel using antitorque pedals and to slide off the lane straight ahead.

- IP attempted the hydraulics off go-around because of inadequate facilities at the field. When it became apparent that the aircraft would slide off the lane, the IP feared the aircraft would hit a runway light in a concrete vault.

- SP improperly corrected for the drift because of inadequate school training. Although this was the SP's last training flight before an IP checkride, he did not understand the cross control technique for maintaining lane alignment. He applied antitorque pedal in the direction the aircraft was turning instead of in the opposite direction which caused the aircraft to slide sideways. He also applied forward lateral cyclic which caused the slide instead of placing the cyclic left of center.

The cures

- Include as a topic for safety meetings the problem of overconfidence of IPs in their students' abilities. Stress that IPs should develop and maintain skeptical attitudes toward the abilities of all students.

- IPs must increase their ability to recognize the point at which students have reached the limit of their capabilities to perform a particular maneuver and be prepared at all times to cope with unforeseen events.

- Revise the UH-1 Contact Instructor Pilot Flight Training Guide to include hydraulics-off go-around procedures. These procedures have already been developed in USAAVNS

Message 161401Z March 77, subject: Qualification and Standardization, UH-1 (), change 3. Essentially, the procedures consist of making a decision to abandon the approach before the aircraft speed decreases below ETL.

- Survey training facilities to insure that there are no obstructions located in close proximity to runways or other landing areas used for emergency procedure training.

- Upgrade IP MOI school training course to insure student pilots understand the maneuver requirements and control techniques prior to actual flight training. This can be accomplished by expanding the UH-1 Contact Instructor Pilot Flight Training Guide to include a more detailed discussion and analysis for each maneuver.

TOTAL MISHAPS FOR 9-15 SEP 1977					
Type Aircraft	Accidents	Incidents	Forced Landings	Prec. Landings	Total
UH-1	1	6	0	24	31
AH-1	0	1	0	3	4
OH-6	0	1	0	1	2
OH-58	1	1	2	7	11
CH-47	0	0	0	4	4
C-12	1	0	0	0	1
OV-1	0	0	0	2	2
T-28	0	0	0	1	1
U-8	0	0	0	1	1
Total	3	9	2	43	57
0 Fatalities, 1 Injury Estimated costs: \$262,563					

Selected mishap briefs

Rotary wing

UH-1

Accident □ Right skid dug into sod and aircraft pitched up on nose during practice running landing. Collective was applied and aircraft recovered. IP landed from hover. Skids were collapsed and nose and underside of aircraft were damaged.

Incidents □ Litter patient was being moved from aircraft to ground ambulance. Poncho came loose from under patient and entered rotor system, damaging main rotor blade. □ Engine failed when power was applied during HIT check. Small engine part struck tail rotor. Blade was replaced. □ During low-level flight pilot descended to avoid midair collision with jet. On climbout, aircraft struck wire. Pilot sustained bruised shoulder. □ Aircraft struck small tree while landing in confined area. Main rotor blades were damaged. □ Aircraft struck tree during takeoff from confined area, damaging main rotor blades. □ Aircraft, on approach to inverted Y during night landing training, struck 20-foot metal pole about 150 yards short of the Y. Left chin bubble was broken. Ground party which set up landing zone at dusk did not see pole.

Precautionary landings □ Transmission oil temperature went to 135° C., OAT was 30° C., and transmission oil pressure was 45 pounds during cruise flight. After power reduction on approach, temperature decreased to 110° C. Caused by clogged transmission pressure relief valve. □ Engine fuel pump light came on during landing. Caused by failure of engine-driven fuel pump. □ Crew noticed unusual smell in flight. Caused by defective battery. □ Unusual odor was noticed in flight, followed immediately by

loud pop and bang. Pilot detected loss of hydraulic pressure in controls and master caution and hydraulic segment lights came on. Controls momentarily locked in right-and-up steep turn, and both pilots made running landing to grass area next to closed runway. Postflight inspection revealed hydraulic fluid on exterior of aircraft. Caused by internal failure of collective servo irreversible valve. □ Left fuel boost pump warning light came on. Boost pump was replaced. □ Failure of main fuel filter electrical bypass activated fuel filter segment light with no loss of system pressure.



AH-1

Incident □ Aircraft settled to left in unusual attitude during completion of hovering autorotation. Inspection revealed forward cross tube had failed at left attaching point through rivet holes in cross tube where retainer is riveted to tube.



Precautionary landings □ No. 1 hydraulic light came on. Hydraulic pump pressure line ruptured. □ Aircraft was being flown NOE into simulated firing position between tree lines. Pilot climbed over tree line and made immediate left turn. Due to left quartering tailwind and rotorwash from lead aircraft, aircraft settled quickly. Pilot pulled in power to prevent ground contact. Torque pressure went to 62 pounds for about 1 second, egt indicated 580, and N1 was 99%. Aircraft was landed and main rotor hub assembly, drive shaft assembly, transmission, mast assembly, and rotor blades were removed and forwarded for inspection.

CH-47

Precautionary landings □ Compressor stall and loss of power on No. 2 engine occurred during hover check. Fastener was missing from engine drive shaft cover. Engine had foreign object damage. □ Aft transmission lube line was leaking in flight. New line was installed. Line is of local manufacture and appears to have failed from normal wear and tear. □ When aircraft was banked for turns in either direction, increased vibration in No. 8 synchronized main drive shaft was noted. Caused by failure of No. 8 hanger bearing.

OH-6

Incident □ While aircraft was hot refueling at FARE point using closed circuit refueling system, fuel cells overpressurized, resulting in buckling of cargo compartment floor and warping of metal skin on sides and bottom of fuselage. Closed circuit refueling nozzle failed to shut off, causing overpressurization.

OH-58

Accident □ At approximately 500 feet agl, partial loss of power was indicated. Pilot reduced pitch, split the needles, and noted engine speed building. Use of governor rpm switch resulted in erratic fluctuations of engine, and pilot rejoined needles and added pitch. Aircraft had continued descent and pilot decided to make partial power approach to illuminated street near the edge of town. At about 35 feet agl, main rotor blade struck street lamp pole. Aircraft then landed upright in street and main rotor blades struck the corner of a building. Aircraft sustained major damage. Pilot stated engine was running after impact and that he shut off fuel valve, closed throttle, and turned off battery switch.

Incident □ During recon mission, pilot was hovering behind stone building to observe aggressor tanks. Aircraft drifted right and both main rotor blades hit building, damaging tips of blades.

Forced landings □ N2 increased to 107%, then decreased below 100% during cruise flight. Pilot attempted turn toward airfield when N1 decreased to 28-30%. Autorotation was made after closing throttle. Caused by failure of double check valve. □ Generator light came on and pilot turned off generator. About 10 minutes later, inverter light came on and pilot turned off everything except VHF radio, landing light, and instrument lights. On base for landing, low rpm light and audio activated, and N2 decreased to 94%. Pilot reduced collective and N2 stabilized at approximately 95%. Running landing was made. Caused by failure of starter generator switch.

Precautionary landings □ Engine chip

Selected mishap briefs

detector light came on. Large metal particles were found on chip detector plug.
□ Engine tachometer jumped from 92% to 108%. Caused by failure of engine tachometer.

For more information on rotary wing mishaps, call AUTOVON 558-4198/4202.

Fixed wing

C-12

Accident □ (A series) During takeoff roll, No. 1 engine ran away just before aircraft became airborne. Aircraft went immediately to the right and pilot pulled power off to abort takeoff, then went to reverse to slow aircraft and regain directional control. Aircraft went off right side of runway. As engines were being shut down and feathered, nose gear struck ditch and collapsed. Aircraft sustained major damage.

U-8

Precautionary landing □ (D series) Right engine propeller could not be controlled. Caused by defective prop governor.

T-28

Precautionary landing □ Gear handle was placed in down position for landing during test flight. Nose gear indicator showed up with main gear indicators showing down and locked. Gear was recycled with the same results. Tower personnel told pilot nose gear appeared to be down and locked, and landing was made. Caused by sticking nose gear up-lock switch. Switch was lubricated and aircraft released.

OV-1

Precautionary landings □ Torque and egt on

No. 2 engine dropped to zero during takeoff. Engine gear assembly speed reduction seized. □ No. 2 engine egt rose and fell slowly during flight, and engine failed at cruise power setting. Caused by fuel control malfunction.

For more information on fixed wing mishaps, call AUTOVON 558-3913/3901.

TSARCOM message

□ 081800Z Sep 77, subject: Maintenance Advisory Message for OV-1D and RV-1D Series Aircraft, Message Control Number OV-1-77-6. ■

Maintenance

UH-1

Precautionary landings □ Rotor tachometer and transmission oil pressure gauge went to zero. Electrical connector plug was loose, causing break in electrical circuit. □ Chafed hydraulic line caused loss of hydraulic fluid and hydraulic failure.

AH-1

Precautionary landing □ Pilot heard hydraulic pump cavitate and felt high frequency vibration in collective. No. 1 hydraulic segment warning light came on. Running landing was made. Lock nut on cyclic accumulator lockout valve was not adequately tightened.

OH-58

Precautionary landing □ Battery odor was smelled in flight. Voltage regulator was improperly adjusted.

For more information on maintenance mishaps, call AUTOVON 558-3913/3901.

Damage to torquemeter roller assembly during hot-end inspection, T55-L7/7B/7C engines

The following Maintenance Letter, dated 18 Aug 1977, was distributed by the U.S. Army Troop Support and Aviation Materiel Readiness Command. It is reprinted here for your information.

1. References:

- a. TM 55-2840-234-24/1, page 3-48, par. 3-75, and page 9-10, par. 9-21.
- b. TB 55-9150-200-25.

2. Purpose: The purpose of this Maintenance Letter is to reemphasize the importance of using the Power Output Shaft Holding Device, LTCT 1427, NSN 4920-00-907-7018, when removing or installing the power turbine assembly on subject engines. The use of this device is essential to preclude damage to the torquemeter roller assembly.

3. A considerable number of torquemeter roller assemblies have failed shortly after completion of a hot-end inspection on the engines in which they were installed. This has caused concern that the holding device may not have been used. The power turbine assembly can be removed and reinstalled without the holding device, and without immediate indication of damage to the torquemeter roller assembly. However, damage may have occurred, and if so may result in failure of the roller assembly within the subsequent 100 to 200 hours of operation.

4. Failure of the torquemeter roller assembly allows the ball bearings to escape their cage. They can enter the accessory drive gears, the gearbox itself, or the N₂ overspeed governor drive and cause a failure. A failure of the N₂ overspeed governor drive will cause the engine to overspeed which may result in a catas-

trophic engine failure.

5. If additional information is required, contact Mr. E. Mundy, or Mr. L. Leuschke, TSARCOM, AUTOVON 698-5416, commercial (314) 268-5416. ■

Recap of USAAVSCOM messages

AVSCOM message 301950Z June 77, subject: Safety-of-Flight and Worldwide Technical Messages. Following is a list of AIG 8881 addressed messages transmitted by AVSCOM (DRSAV-F) from 1 January-30 June 1977.

- GEN-77-1 Defective Fuel Cell Sealant
- GEN-77-2 Grease, Aircraft, MIL-G-23827, American Oil Co DSFSOD-12359, Lot 3291, NSN 9150-00-985-7245, DOP Aug 66
- GEN-77-3 Application of Low Reflective Lacquer, MIL-L-46158
- GEN-77-4 Interim Change to TB 746-93-2 on Painting of Rotor Blades
- GEN-77-5 High Visibility/Conspicuity Marking of Army Helicopters
- GEN-77-6 Battery Water, NSN 6810-00-297-9540
- GEN-77-7 Aviation Life Support Equipment: Extension of Service Life for Army Aircraft Personnel Restraint Equipment
- GEN-77-8 Battery Water, NSN 6810-00-297-9540
- GEN-77-9 Status Reporting of Aircraft Door Lock Device and Ignition Switch Lock Installations (RCS AMC-232)
- GEN-77-10 Army Aircraft Utilizing Rotary Aircraft Motor Generators (Inverters)
- GEN-77-11 Painting of Helicopter Cockpits With Low Reflective Lacquer
- GEN-77-12 Movement of the Barometric Pressure Setting of the AAU-32/A Encoding Altimeter
- GEN-77-13 Status Reporting of Aircraft Door Lock Device and Ignition Switch Lock Installations (RCS AMC-232)
- GEN-77-14 Low Reflective Infrared Aircraft Paint, Color Variations ■

Aviation life support equipment



Oxygen mask problems

Users of oxygen masks are having problems with the breathing valves freezing. Only gaseous oxygen, MIL-O-2710, should be used.

Cockpit/cabin heater should be used whenever possible to help prevent the oxygen mask from freezing. The oxygen mask should be cleaned and disinfected after use in accordance with U.S. Air Force Manual T.O. 15X5-4-4-12.

If further information is required, contact Commander, TSARCOM, ATTN: DRSTS-MAPL (2) Mr. Jim Dittmer, P.O. Box 209, St. Louis, MO 63166, or call AUTOVON 698-3016. ■

T-42, U-21, and U-8 schools

Because of the many inquiries for information about maintenance courses on T-42A, U-21A and G, and U-8D and F aircraft held at Beech Aerospace Services,

Inc., Wichita, Kansas, the following is provided:

Beech's Training Department will conduct the following courses on dates indicated:

T-42A

3-14 April 1978

17-28 July 1978

23 October-3 November 1978

U-21A and G

20-31 March 1978

12-23 June 1978

18-29 September 1978

4-15 December 1978

U-8D and F

1-12 May 1978

2-13 October 1978

For information about the above courses, write or call:

Beech Aerospace Services, Inc.
9709 E. Central

ATTN: Training Department (Dept 500)
Wichita, KS 67201

Phone: (316) 684-1032

Units desiring training should contact Beech Aerospace Services Training Department at least 3 weeks before the starting date. Units will be responsible for the cost of training (tuition, TDY). All courses are 2 weeks in duration at the tuition cost of \$325 per person. ■

DEPARTMENT OF THE ARMY
United States Army
Agency for Aviation Safety
Fort Rucker, Alabama 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

FLIGHT FAX

A USAAAVS PUBLICATION

VOL. 5, NO. 5 ■ 3 NOVEMBER 1976

mishaps for the period of 15-21 OCTOBER 1976

static electricity in clothing

Recently an aviator received first- and second-degree burns when his underclothes were ignited by static electricity. He was preflighting a U-8 which had just been refueled and moved into the hangar because of cold weather. The fuel expanded as the temperature increased. When the pilot opened the fuel cap during his inspection, fuel gushed out, soaking his arm and legs. The pilot went immediately to the locker room and removed his Nomex flight suit. Static electricity ignited the fumes as he started to remove his winter underwear.

In another incident, a fuel tanker operator received second- and third-degree burns when the fuel he was recirculating was ignited by static electricity. He was wearing a cotton uniform and a nylon jacket.

Outer clothing builds a charge not only by absorbing part of the body charge but also by rubbing against the body and underwear. When

the charged clothes are removed, the electrical tension or voltage increases to a danger point. If the clothes are wet with fuel, the danger is even greater. Fuel-soaked clothes can burst into flames as they are removed. Sparks can also be generated by worn footwear. Soles so worn that nails are exposed present a serious danger since fuel spills in refueling areas are common and fuel vapors near the ground ignite easily.

Recent tests by the Air Force indicate that the buildup of static electricity does not differ greatly by uniform type. A blend or synthetic uniform is no more dangerous than a pure cotton uniform. The tests do show that it is possible to exceed 2650 volts when the uniform is removed. Theoretically, 2650 volts can ignite gasoline-air mixtures (vapor). Other variables such as temperature and humidity may affect the static buildup, but regardless of this, the tests indicate there is a potential danger and it differs little with uniforms or mixes of uniforms.

If fuel gets on your clothes, leave the refueling area immediately and deluge or thoroughly soak the clothes before you take them off. If there is not enough water at the site to soak the clothes thoroughly, ground yourself to a piece of grounded equipment by taking hold of it before you take off the fuel-soaked clothes.

Read FM 10-68 for more information on static electricity.

U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate	4479
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	6404/6410
Plans, Operations, and Education	4479/4812
Management Information System	5286/4200
Publications and Graphics Division	6385/3493
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 76 ACCIDENT BRIEF

SYNOPSIS 63-76

Type Aircraft: TH-55A
 Time: 1345 Classification: Major (total)
 Fatalities/Injuries: No Fatalities, 2 Injuries
 Estimated Materiel Damage Cost: \$35,590
 Mission: Training
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	DAC	28	1,094	26	1,120
SP	2LT	23	50	37	87

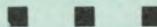
Description of Accident: During practice auto-rotation, SP touched down fast with low rotor

rpm. IP took controls and attempted a power recovery. Aircraft became airborne, spun right, and tail rotor and skid heel struck ground. Damage to tail rotor, drive shaft, tail boom, main rotor, landing gear, and center frame resulted.

Cause of Accident

Initial: IP—Corrective action late and inappropriate.

Contributing: SP—Touched down fast and with low rpm. Training—IP apprehensive of sliding off runway onto sod.



SYNOPSIS 64-76

Type Aircraft: UH-1H
 Time: 1130 Classification: Major (total)
 Fatalities/Injuries: 7 Fatalities, 2 Injuries
 Estimated Materiel Damage Cost: \$344,813
 Mission: Service
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	25	1,224	-	1,224
CP	2LT	25	331	-	331

Description of Accident: Aircraft flew into marginal weather conditions in mountainous area, struck trees, and crashed.

Causes of Accident

Initial: Crew—Tried to maintain VMC in IMC.

Contributing: Accurate weather forecast for area of operation was not available. Duties of the air mission commander were not clearly defined. Unit SOP did not provide adequate guidance for inadvertent IMC flight. No established training program was developed for mountain flying.

Corrective Action: Unit SOP was updated to provide definitive guidance to flight crews operating in mountains, and a training program for mountain flying was established.



SYNOPSIS 65-76

Type Aircraft: UH-1H
 Time: 1832 Classification: Major (total)
 Fatalities/Injuries: 3 Fatalities, No Injuries
 Estimated Materiel Damage Cost: \$344,813
 Mission: Service
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	24	830	-	830
CP	CPT	32	2,017	7	2,024

Description of Accident: Mishap occurred while

crew was attempting to operate low level during severe weather conditions (squall line). Accident was nonsurvivable.

Causes of Accident

Initial: Flight crew exercised poor judgment by continuing flight into forecast severe weather conditions. Aircraft was either blown into ground by strong wind gust or flown into ground during squall line passage.

Contributing: Command supervision—Improper operational control in response to severe weather warnings.

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$16,403

UH-1

5 Incidents ■ Main rotor blade tiedown hit tail boom when start was attempted. Start was aborted at 12% N1. ■ When aircraft was picked up to hover after refueling, loud pop was heard, but was discounted as skids moving through loose gravel. At approximately 100 feet agl pilot felt severe vibration in pedals and landed. Inspection showed main rotor tiedown had come unhooked from main rotor blade and damaged tail rotor blades. *There was no mention of a checklist in either of these two incidents.* ■ While conducting night insertion, aircraft had strikes on both main rotor blades. Strikes occurred during approach to unlighted LZ with nav lights on dim. ■ Tree strikes during NOE flight accounted for the other two incidents.

2 Forced Landings ■ Crew heard loud rushing noise from aft section of aircraft. Engine seized on shutdown. Cause of failure unknown; inspection in progress. ■ Crew heard loud grinding noise during hover. Output quill to tail rotor completely disengaged. Suspect internal failure of main transmission.

13 Precautionary Landings—following are selected briefs ■ Aircraft lost hydraulic control assist. Fluid loss caused by chafed line. ■ Aircraft developed moderate 1:1 vertical vibration during flight. White main rotor drive link lower bearing failed. ■ Crew heard low hissing noise and detected smell of electrical fire. Main inverter failed. ■ Transmission oil pressure fluctuated and caution light flickered. Caused by malfunction of transmission drain. ■ On final approach, engine rpm bled down to 5800. Cause of failure not reported. ■ Crew heard loud banging noise from aft area of aircraft. Top left engine cowling was partially open due to failure of forward cowling latch. ■ Tree strike occurred during NOE flight. No damage reported.

AH-1

3 Precautionary Landings ■ Pilot noticed egt climbing through 675°. Maintenance could not duplicate. ■ Lateral cyclic control was binding. Inspection revealed wiring bundle from airborne laser tracking system restricting movement of lateral cyclic servo control tube and contaminated fluid in both hydraulic systems. ■ Chip detector light for 42° gearbox came on. Gearbox was replaced. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$6,750

OH-58

1 Incident ■ UH-1 took off from parking spot next to operating OH-58. OH-58 shuddered and rocked violently, with loud banging noise coming from transmission area. Inspection revealed mount transmission was hitting support mount.

2 Precautionary Landings ■ Engine oil temperature went to zero. Gauge was replaced. ■ Airspeed indicator operated erratically on takeoff. At cruise flight, airspeed indicated zero. Indicator failed.

TH-55

3 Precautionary Landings ■ Aircraft was landed to check strange sound. Inspection revealed hole in exhaust manifold. ■ SP reported aircraft vibrated severely during runup. Engine fuel ejector was changed. ■ Aircraft vibrated in flight. Right magneto was changed.

CH-54

1 Incident ■ Nose wheel axle broke during runup. Aircraft rotated approximately 5° left and settled on lower portion of nose wheel strut. UHF antenna was damaged. Cause unknown. Analysis of axle is being performed.

CH-47

1 Precautionary Landing ■ No. 2 engine PTIT began to fluctuate. Caused by failure of PTIT gauge. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$1,200

OV-1

1 Incident ■ Left outboard gear door closed before gear retracted, causing wheel to rest on outer door. Door was curled back and hole was punched in bottom of wing. Valve, lift check, P/N 128H10107-1, was faulty.

1 **Precautionary Landing** ■ Hydraulic pressure was lost and aircraft returned for landing. O-ring in valve, relief, pressure, P/N 134SCH120-1 in nose wheel-well was deteriorated.

U-21

4 **Precautionary Landings** ■ (A series) Pilot lowered flaps during test flight, but right inboard failed to extend. Others extended full downward and would not retract. Full left aileron and half left rudder were required for flight home and successful landing was made. Actuator end of right inboard flap drive cable swage had failed, allowing housing and drive cable to disconnect from actuator. WELL DONE to CW3 Jack D. Morgan, 222nd Aviation Bn. ■ (D series) Forward engine compartment latch popped out after level-off. Crew returned for landing and properly secured latch. ■ (H series) About 2 hours into mission, fluctuation of No. 2 engine torque (± 100 psi), N_1 ($\pm 4\%$) and fuel flow (± 10 lbs) was noticed. Aircraft returned for landing. Main turbine fuel control unit malfunctioned. ■ Copilot noticed fuel siphoning from rear of No. 2 nacelle fuel panel. No. 2 nacelle main fuel gasket was replaced.

U-8

1 **Precautionary Landing** ■ (F series) During climbout, No. 2 engine ran rough and cylinder head temperature redlined. Crew returned for landing. Maintenance replaced three cylinders because of faulty valve guide covers.

T-42

1 **Precautionary Landing** ■ No. 2 engine began running rough and smoking. Maintenance changed engine because of internal failure. □

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

OH-58

1 **Precautionary Landing** ■ Engine oil temperature rose to 107° . Maintenance personnel installed damaged gauge, thinking it would work properly. Damaged gauge was replaced. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

7 Mishaps, 0 Fatalities, 4 Injuries, Estimated Costs: \$10,332

UH-1

■ UH-1 was being repositioned inside hangar when tail rotor struck overhanging walkway, damaging blade. No ground guide or observer was used. ■ During refueling operation, fuel truck was parked on 7° incline. Assistant truck operator chocked truck front wheel and driver set emergency brake and departed. Seconds later, truck began moving down the slope, ran over chock, and rolled into right side of aircraft. Primary cause of accident was failure of truck's emergency brake system. Contributing factors were: (1) driver used poor judgment by parking upslope and 90° to aircraft instead of parallel; (2) supervisor did not train personnel to refuel aircraft IAW FM 10-68; (3) assistant operator placed chock under front wheel, instead of under rear dual wheels; and (4) pilot made poor selection of landing site, parking aircraft cross slope and 90° to other aircraft parked in same area. This accident could have been prevented had each individual done his part within established procedures.

AH-1

■ Crewmember was climbing down from top of aircraft, lost his balance, and fell, injuring his back.

OH-58

■ Crew chief was pushing aircraft into hangar and stopped to clear area where aircraft was to be parked. After clearing area, he went back to continue pushing. A tug was parked in the area crew chief had just cleared and aircraft was pushed into tug. No observer or ground guide was used in accordance with local SOP. ■ Aviation maintenance officer attempted to hand crank APU, and after one-half revolution, crank reversed, flew off APU, and struck parked OH-58. Magneto adjustment on APU was improperly set, causing excessive compression buildup and kickback which hurled crank handle.

CH-47

■ At 800 feet agl and 55 knots during slingload operation, cargo net broke, causing loss of load. Load struck house, resulting in three injuries. Cargo net was not property of U.S. Army and owner would not release it for inspection.



STACOM 9 ■ 3 NOVEMBER 1976

DEPUTY FOR STANDARDIZATION, USAAVNC, FT. RUCKER, AL 36362
COL CLEMENT A. WYLLIE ■ 558-2603/3514

NEW T-42 EMERGENCY GEAR EXTENSION PROCEDURES

The current gear extension procedure, as stated by paragraph 9-11b, TM 55-1510-208-10, which cautions against further movement of the handcrank when resistance is felt, could result in the gear not being fully extended at touchdown. The reason for exercising this caution was to guard against the remote possibility of damage to the retraction mechanism but—if the gear position lights are inoperative *and the emergency is for real*, crank away until the handle can't be budged. Should the cranker be a well motivated heavyweight arm wrestler, damage to the drive mechanism *may* occur, but fixing it is much cheaper than buying a new T-42.

Pending a change to TM 55-1510-208-10, the following revised procedure has been authorized by AVSCOM, and will be used when manual gear extension is necessary:

Par. 9-11b. Emergency Landing Gear Extension

The gear may be extended manually if the electrical system fails. When making a manual gear extension, proceed as follows:

1. Landing gear motor circuit breaker—OUT.
2. Gear handle—DOWN.
3. Landing gear handcrank—Turn counterclockwise until green indicator light illuminates (approximately 50 turns).
4. Gear warning horn—CHECK. Retard either throttle below 11 inches hg.
5. If complete electrical failure has been experienced—turn handcrank counterclockwise AS FAR AS POSSIBLE.

Delete CAUTION—"Proceed cautiously when . . . landing gear electrically."

PRESCRIPTIONS?

A sharp-eyed reader has called our attention to a rather unusual requirement—that of recording eyeglass prescriptions on the Individual Flight Record. This stipulation is contained in the last sentence of paragraph 10-26d, AR 40-501, and reads as follows:

"In addition, appropriate entries, such as prescriptions for glasses to be worn while flying, will be made in item 24, DA Form 759 (Individual Flight Record and Flight Certificate—Army)."

Since only the medics would be interested in this sort of thing, we suspected something may have been lost in the interpretation of the word "prescription." A check with the Army Aeromedical Center confirmed this suspicion. The intent of the sentence was to require that the 759 be annotated simply to indicate when corrective lenses are to be worn. For example, "Must wear corrective spectacle lenses while flying which provide no less than 20/20 near and distant visual acuity." Your flight surgeon can provide further guidance on this, or call the U.S. Army Aeromedical Center, Fort Rucker, AL, AUTOVON 558-4101.

POSITION REPORTS, QUESTIONS & ANSWERS

■ The OH-58 HIT check procedures listed in the dash 10 differ from those shown in the dash 20. Which one is the pilot expected to follow?

Follow the procedure outlined in paragraph 3-21.1, TM 55-1520-228-10. The HIT check procedure was deleted from the dash 20 by Change 18.

■ The Company to which I've recently been assigned (AHC) performs some test flights at night. Being a "Newby," I sure don't want to start a fuss, but the previous outfits I've been in never did this and I just assumed it was against the law. I might add that this company is really busy and probably wouldn't make their commitments without night test flights. Anyway, what's the story?

Your new commander appears to be quite familiar with TM 55-1500-328-25. Paragraph 3-3c states that maintenance test flights will *normally* be conducted under VFR conditions during daylight hours. Paragraph 3-3d then follows with several exceptions to this rule, including authority to perform test flights at night when authorized by the unit commander on a case-by-case basis. Looks like they're straight. As Oliver Wendell Holmes once observed—The young man knows the rules; the old man knows the exceptions.

■ Change 11 to TM 55-1520-227-10 revised the procedures for simulating single-engine procedures and provided for different single-engine rotor rpm and PTIT ranges for the CH-47C. Paragraph 3 stated that these procedures were in effect until the welded power turbines are incorporated in the dash 11 series engines. Recent arrivals to our unit tell us that the CH-47 transition course is now doing single-engine work as it was done prior to change 11. Our aircraft have a mixture of suffix B and ASA engines. Can you tell us which procedures are now correct? When will the new dash 10s and the TC for the CH-47 be published?

The Aviation Center CH-47 fleet is equipped with welded power turbine engines, so the restrictions outlined in change 11 do not apply. Single-engine operation of aircraft equipped with the B engine is prohibited (par. 3d, change 11). Therefore, we do not recommend single-engine practice when flying an aircraft equipped with both a B and ASA engine, due to possible identification error. Single-engine procedures with an aircraft equipped with two ASA engines are as specified in the basic dash 10, TM 55-1520-227-10. Sorry, we can't help with a publication date for the new dash 10; the thing has been delayed and no date has been set. TC 1-39 is moving right along, however, and should be out in the spring of 1977—hopefully March.

■ The type training programs shown in Table 2-1, AR 95-1, seem quite comprehensive so far as the necessary maneuvers and procedures are concerned. Just one problem though. What is meant by a flight period? Are we, for example, expected to spend 33 hours practicing day sling loads (22 x 1.5 hr. period) annually?

The term "flight periods" as used in Table 2-1 is intended to indicate the number of training periods during which the maneuver/procedure is to be practiced throughout the year, not the number of hours to be spent practicing a particular procedure. The length of each flight period and the number and types of maneuvers to be performed are at the discretion of the commander conducting the training.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



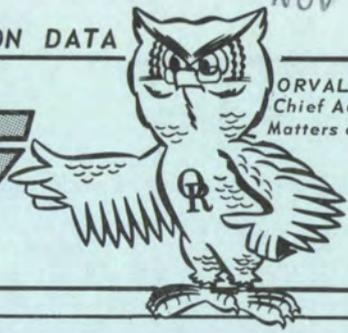
POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

NOV 12 Rec'd



ARMY AIRCRAFT MISHAP PREVENTION DATA

FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 6 ■ 10 NOV 1976

mishaps for the period of 22-28 OCTOBER 1976

Adapted from *RUDDER FLUTTER*

EMERGENCY LANDING TECHNIQUES

US Army Aviation Training Library
Fort Rucker, Alabama

There are several factors that may interfere with a pilot's ability to act promptly when faced with an emergency.

A pilot who allows his mind to become paralyzed at the realization that his aircraft will be on the ground in a very short time, regardless of what he does or hopes, severely handicaps himself in the handling of the emergency.

An unconscious desire to delay this dreaded moment may lead to such errors as: failure to lower the nose to maintain flying speed, failure to lower collective to maintain rotor rpm (in helicopters), delay in the selection of the most suitable touchdown area within reach, and indecision in general.

Desperate attempts to correct whatever went wrong, at the expense of aircraft control, fall into the same category.

A pilot who has been conditioned during his training to expect to find a relatively safe landing area, whenever his instructor closed the throttle for a simulated forced landing, may ignore all basic rules of airmanship to avoid a touchdown in terrain where aircraft damage is unavoidable.

Typical consequences: making a 180-degree turn back to the runway when available altitude is insufficient; stretching the glide without regard for minimum control speed in order to get a better looking field; accepting an approach and touchdown situation that leaves no margin for error.

The desire to save the aircraft, regardless of the risks involved, may be influenced by two other factors: the pilot's financial stake in the aircraft and the certainty that an undamaged aircraft implies no bodily harm.

A pilot should not allow his desire to "save" the aircraft to influence his prime responsibility—the safety of his passengers and crew.

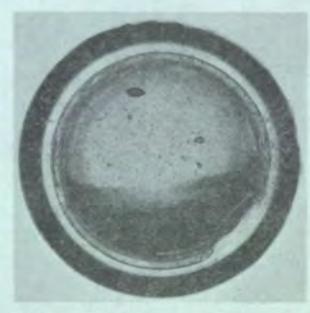
Fear is a vital part of our self-preservation mechanism. However, when fear leads to panic we invite that which we want to avoid the most.

A pilot who allows himself some choice in the selection of a touchdown point for a fully controlled crash has no reason to despair.

The survival records favor those who maintain their composure and know how to apply the general concepts and techniques that have been developed throughout the years.

To summarize the role played by psychological hazards, it appears that the success of an emergency landing under adverse conditions is as much a matter of the mind as of skills.

STAINED SIGHT GLASS



Recent visits to the field show that we are still flying aircraft with excessively stained sight glasses. These stained sight glasses can give a false level indication and the gearbox will appear to have sufficient lubrication. An insufficiently lubricated gearbox or transmission can lead to a catastrophic accident. It is the responsibility of all crewmembers and maintenance personnel to inspect and correct deficiencies in accordance with published TMs.

Periodic inspections as specified by the PMD, PMI, PMP, and the dash 20 should be followed to prevent failures from this cause.

UNITED STATES ARMY AGENCY FOR AVIATION SAFETY, FORT RUCKER, ALABAMA 36362
Prepared from information compiled by the Directorate for Aircraft Accident Analysis and Investigation
LTC Curtis M. Sanders, Director
Distribution to Army commands for accident prevention purposes only. Specifically prohibited for use for punitive purposes, or for matters of liability, litigation, or competition. Information is subject to change and should not be used for statistical analyses. Direct communication authorized by AR 10-29.

FY 76 ACCIDENT BRIEF

SYNOPSIS 66-76

Type Aircraft: UH-1H

Time: 2355 Classification: Major (total)

Fatalities/Injuries: 3 Fatalities, No Injuries

Estimated Materiel Damage Cost: \$344,813

Mission: Service

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	39	919	1	920
CP	WO1	28	207	2,300	2,507

Description of Accident: Flight of three aircraft departed AAF at 2337 local. Chalk 2 was observed by Chalk 3 to be flying a little higher than lead and Chalk 3. Chalk 2 went IMC and then made Mayday call, stating he was spinning. Chalk 3 made a turn and saw the lights on Chalk 2 as he came out of the clouds and struck the ground. Aircraft exploded on impact.

Crash was nonsurvivable.

Causes of Accident

Initial: Pilot went inadvertent IMC, lost control of aircraft, and crashed.

Contributing: (1) Poor judgment in selection of crew, unit guidance was inadequate, and SOP was not enforced; (2) inadequate preflight briefing and failure to maintain adequate control of flight; (3) crew lost control of aircraft due to suspected vertigo; and (4) LZ lighting was single blue bean bag, inadequate for this type of mission.

Corrective Action: The 13 October 1976 issue of FLIGHTFAX, the October 1976 AVIATION DIGEST, and the Summer 1976 PREVENTER contained articles concerning inadvertent IMC procedures. These articles covered the five "Cs"—control, coordination, clearance, course, and call.



SYNOPSIS 67-76

Type Aircraft: OH-58A

Time: 1415 Classification: Major (total)

Fatalities/Injuries: No Fatalities, 1 Injury

Estimated Materiel Damage Cost: \$151,565

Mission: Training-NOE

Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	26	465	-	465

Description of Accident: At low airspeed and low altitude, aircraft lost tail rotor thrust, started uncontrolled spin to right, and hit ground right nose low. Transmission and main rotor separated.

Causes of Accident

Initial: Materiel malfunction—Aft short shaft separated from tail rotor drive shaft. Suspect lock nut came off Thomas coupling.

Contributing: Suspect maintenance did not properly torque bolt, reused self-locking nut, or did not reinstall nut during previous scheduled maintenance. Suspect ground crew—Crew chief failed to detect loose/missing nut on daily inspection.

Corrective Action: AVSCOM released a Maintenance Advisory Message to all users reemphasizing torque procedures on OH-58 Thomas coupling assemblies and recommending all Thomas coupling bolts and nuts be inspected and retorqued.

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$5,507

UH-1

3 Incidents ■ Aircraft landed hard after encountering IMC in dust on short final. ■ Aircraft was in cruise flight at 2,500 feet when large bird hit left chin bubble. ■ Main rotor struck tree during NOE training.

1 Forced Landing ■ Engine lost power at 4,000 feet. Suspect internal failure of fuel control.

13 Precautionary Landings—following are selected briefs ■ Crew smelled smoke in cockpit. Maintenance replaced fuel transfer pump. ■ Antitorque pedals stiffened during landing. Caused by internal failure of tail rotor servo. ■ During start, fireguard saw hydraulic fluid spilling from aircraft. After shutdown, maintenance inspection revealed failure of right lateral servo irreversible valve. ■ Fire detector light came on in flight. Resistor in fire detector warning box failed. ■ Crew saw smoke coming from battery vent. Caused by internal failure of battery. ■ While in cruise flight, aircraft yawed approximately 15° left and egt rose from 520° to 620°. Cause is under investigation. ■ Aircraft was at hover with 2,000-pound sling load when cargo hook shaft assembly broke.

AH-1

3 Precautionary Landings ■ Aircraft was overtorqued while pilot was avoiding tree strike during night NOE. ■ Transmission oil bypass light came on. Caused by worn quick disconnect fitting. ■ While crew was adjusting searchlight before night flight, light went out and main generator went off line for 5 seconds. Maintenance replaced searchlight and repaired short circuit in wiring. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$500

OH-58

1 Incident ■ During preparation for flight, cargo sling gear was thrown in aircraft, causing structural damage.

4 Precautionary Landings ■ Pilot felt unusual vibrations. Inspection revealed broken isolation mount. ■ Due to restricted collective pitch, shallow approach running landing was made. Cause of pitch control problem was not reported. ■ Master caution, d.c. generator lights, and low rpm audio came on. Caused by generator failure. ■ Transmission hot light came on after takeoff. Light went out on touchdown. Maintenance could not duplicate problem and aircraft was released for flight.

TH-55

6 Precautionary Landings ■ Engine oil pressure dropped below lower limit. Caused by failure of sending unit. ■ Throttle control froze and power could not be increased. Inspection revealed broken throttle cable. ■ Gearbox warning light came on. Oil analysis revealed metal particles in gearbox. ■ Engine oil pressure of three aircraft exceeded upper limit. Caused by failure of oil pressure sending unit.

CH-47

2 Precautionary Landings ■ Pilot noted split in torque with No. 1 engine torque needle frozen at 450 pounds, followed by illumination of No. 1 engine chip detector light. Caused by failure of bearing retainer on torquemeter drive shaft assembly. (ARNG) ■ Short, jerky vibrations occurred during cruise flight. Caused by defective vibration absorber in aft pylon. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

OV-1

1 Precautionary Landing ■ Gear would not extend due to loss of hydraulic pressure. Emergency gear extension procedure was used and landing was successful. Internal failure of right brake assembly caused loss of hydraulic pressure.

C-12

1 Precautionary Landing ■ After discussing single-engine procedure with the pilot on a training flight, IP shut down No. 2 engine by moving condition lever to fuel cutoff position. After engine was feathered, thick white smoke trailed from exhaust stacks. As engine cooled, smoke stopped and IP noticed oil puddle in inboard exhaust stack. IP elected not to attempt engine restart and single-engine landing was made. Suspect second- and third-stage bearing air seal failure. Engine is being changed.

T-42

2 Precautionary Landings ■ After placing gear handle in down position, gear down light illuminated but nose gear indicated up. Recycling attempts produced the same indications. Gear was manually extended and landing completed. Defective down limit switch assembly caused gear down light to illuminate without actuating gear motor. ■ No. 2 engine began running rough in cruise flight. Ground check revealed 100 rpm differential in mag drop. Lower plug was replaced. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

3 Mishaps, 0 Fatalities, 2 Injuries, Estimated Costs: \$2,000

UH-1

■ Maintenance platoon was removing UH-1 transmission. While lifting transmission, tail rotor drive quill caught on the fifth mount support beam, damaging main support beam. In future transmission removals, this platoon will use hoist provided in ground servicing set in lieu of a 5-ton wrecker. ■ While preparing to attach aircraft tow bar to towing vehicle, repairman accidentally dropped tow bar on assisting EM, injuring his right foot.

AH-1

■ Aircraft repairman was safety wiring an electrical cannon plug when safety wire and pliers broke loose, injuring his right eye.

CH-3

■ Civilian maintenance contractor, driving tractor pulling a haystacker, drove under rotor blades of CH-3. Top of hay stacker struck and damaged one main rotor blade. Tractor driver violated requirements contained in local supplement to AR 385-10, which states vehicles will not pass under any part of an aircraft unless necessary, and then only after visual check for absolute clearance. □

THOUGHT YOU'D LIKE TO KNOW

One hundred incidents were reported from 1 July through 31 October 1976. Crew error accounted for about half of these. Most were main or tail rotor blade strikes during NOE flight. Following is a breakdown of these incidents:

Main or tail rotor blade strikes.	39	Battery exploded/malfunctions	3
Damage to fuselage-landing gear/FOD	15	Tail rotor gearbox malfunctions	3
Hard landings	7	Transmission malfunctions	2
Doors-windows separated during flight.	7	Miscellaneous (generally one of a kind), i.e., lightning strike, inadvertent movement of flight control, etc.	15
Engine malfunctions	5		
Bird strikes	4		

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

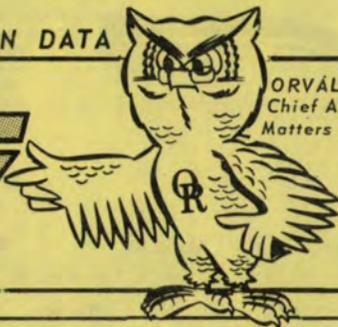


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVS PUBLICATION

VOL. 5, NO. 7 ■ 17 NOVEMBER 1976

mishaps for the period of 29 OCT-4 NOV 1976

FLIGHT SURGEON PHILOSOPHY

The following was extracted from the flight surgeon's analysis and recommendations in a UH-1H accident report. The aircraft was destroyed as a result of an attempted pinnacle landing over gross weight (computed 9,184 pounds) for the 6,405-foot DA existing at the time.

"If God had intended man to fly, He would have given him wings," seems to be the moral of this accident. Man, however, did not listen to these words of wisdom and for the past 60-odd years has been merrily flying through the skies on wings of his own design and manufacture. At times these have served him well and at times they have not.

How often have we seen the osprey unable to lift off the water with its catch due to insufficient lift

from its powerful wings? Or seen a hawk strike in midair and then sink to the earth with its prey, its new gross weight above its capability to stay aloft? The bird's usual reaction when this happens is to release its meal and search for smaller game. This is not based on cowardice on the mighty hawk's part but rather on a realistic instinctive appraisal of the DA, gross weight, aerodynamics, and the expected consequences of being dragged underwater or impacting with the ground at other than zero airspeed.

Man, on the other hand, has no such God-given instincts to help guide him safely through the skies. He must rely on his acquired knowledge of the abilities of his man-made wings and on his unique asset of rational thought.

In this accident the aircraft was loaded without supervision by the crew. The crew did not even know the exact number of passengers or the weight of the cargo aboard. As a result, the ship was over gross in a high DA and man with his man-made wings again went the way of Daedalus. Until such time as all pilots learn to use their ability to think and to apply their knowledge to the aircraft they fly, i.e., its limitations, characteristics and capabilities, we can expect that the wax of our wings will melt again under the hot sun of careless flying.

This accident should never have happened. Commanders and pilots must see to it that aircraft are flown within their limitations.

NOTICE TO COMMANDERS/SAFETY OFFICERS

How many times have you heard the phrase "garbage in, garbage out" or something more descriptive about computer data. This is what will soon happen at USAAVS because preliminary reports of aircraft mishaps (PRAMs) are not being submitted in accordance with AR 95-5, chapter 13, par. 13-4, item 14, dated 1 April 1975. This reference states: "If engine failure or malfunction is a factor, submit engine model, series, serial number, total time, time since overhaul, overhaul facility, date of last overhaul, previous storage history, cause of failure, power settings, and significant engine indications." In other words, if an engine problem is the reason for the PRAM, be sure it includes all of the above. Each word, letter, and number of the data submitted is entered into the USAAVS computer for future use in tracking failure trends and related problems. If the data is not complete, the failure analysis will not be correct and your aircraft might be the next one with engine failure.

WE NEED YOUR QUESTIONNAIRES

If you haven't filled out and returned your FLIGHTFAX readership survey, please do so now. We'd like to receive a questionnaire from every reader. We can only know what you want if we hear from you. The survey was in Vol. 5, No. 4, dated 27 October 1976.

FY 76 ACCIDENT BRIEF

SYNOPSIS 68-76

Type Aircraft: AH-1G
 Time: 1550 Classification: Major
 Fatalities/Injuries: No Fatalities, 2 Injuries
 Estimated Materiel Damage Cost: \$280,076
 Mission: Maintenance test flight
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	26	911	80	991
CP	1LT	25	658	35	693

Description of Accident: During sideward hover on maintenance test flight, pilot failed to negotiate upward sloping terrain, causing aircraft to roll right. Main rotor struck ground and transmission was torn from aircraft.

Causes of Accident

Initial: Pilot/copilot failed to properly negotiate upward sloping terrain during sideward hover.

Contributing: Supervision—Helipad has slope in more than one direction, which is not in accordance with TM 5-803-4. Work orders had been submitted, but action had not been taken to effect repair of helipad.

Corrective Action: Work orders resubmitted to have helipad brought into compliance with TM 5-803-4.

SYNOPSIS 69-76

Type Aircraft: UH-1H
 Time: 1725 Classification: Major (total)
 Fatalities/Injuries: No Fatalities, 2 Injuries
 Estimated Materiel Damage Cost: \$293,070
 Mission: Service
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW4	39	3,452	221	3,673
CP	CW3	30	1,303	97	1,400

Description of Accident: According to crew statements, 5 minutes after departure from airport at 2,500 feet msl, engine chip detector light came on, followed by loss of engine oil pressure and engine failure. Aircraft was autorotated into ocean and sank within 15 to 20 seconds. Overwater life support equipment was on board and used. Crew proceeded to shore with no outside assistance.

Causes of Accident

Initial: Materiel (suspect)—engine failure.

Remarks: Aircraft sank in approximately 150 feet of water and was never recovered. Cargo on board aircraft was not adequately restrained and hindered egress of crewmember in left troop seat.



SYNOPSIS 70-76

Type Aircraft: UH-1H
 Time: 1106 Classification: Major
 Fatalities/Injuries: No Fatalities, 1 Injury
 Estimated Materiel Damage Cost: \$64,000
 Mission: Instrument training
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	MAJ	40	995	1,113	2,108
P	CW3	29	1,255	-	1,255

Description of Accident: At 3,000 feet, tail

rotor and 90° gearbox separated from aircraft. Running landing was attempted. Touchdown was left skid first, collapsing left skid. Main rotor struck ground.

Causes of Accident

Initial: Tailpipe cover blew out of cargo compartment and caused tail rotor assembly to separate from aircraft.

Contributing: Crew did not properly secure engine tailpipe cover in accordance with TM 55-1520-210-CL, 'Interior Check—Cargo Compartment,' Sequence Items 4 and 10.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

SYNOPSIS 71-76

Type Aircraft: OH-58A
 Time: 1240 Classification: Major (total)
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$151,565
 Mission: Training (tactical)
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	27	2,483	-	2,483
CP	CPT	27	748	-	748

Description of Accident: As aircraft was being repositioned in confined area, main rotor struck two trees. Aircraft landed hard and came to rest on right side.

Causes of Accident

Initial: Inadequate crew coordination and communications.

Remarks: Elimination of this type mishap depends on strict adherence to the precautions and training requirements set forth in FM 1-1, page 89.

SYNOPSIS 72-76

Type Aircraft: OH-58
 Time: 1455 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$3,007
 Mission: Training
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	36	2,433	-	2,433
P	CW2	29	2,926	-	2,926

Description of Accident: On termination of touchdown autorotation, IP allowed pilot to overcorrect during tail-low touchdown. Aircraft became airborne with low rotor rpm and terminated with hard landing and major damage.

Causes of Accident

Initial: Pilot-Failed to level aircraft prior to touchdown during autorotation.

Contributing: IP-Failed to take corrective action in time to prevent hard landing.



SYNOPSIS 73-76

Type Aircraft: TH-55A
 Time: 0754 Classification: Major (Total)
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$35,590
 Mission: Primary training-solo
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
SP	1LT	26	28	-	28

Description of Accident: At 200 feet, following takeoff, rotor tiedown blew out of aircraft. In rapid succession, low rotor rpm occurred, aircraft began descent, and engine overspeed occurred, then stopped at 20 feet altitude. Aircraft hit ground and rolled on right side.

Causes of Accident

Initial: SP failed to maintain control of aircraft.

Contributing: Suspect SP released collective to reach for rotor tiedown without frictioning throttle and collective. Low rpm resulted from collective up-movement. Suspect engine surge and stall resulted from erratic application of throttle and collective in an attempt to regain rotor rpm.

Remarks: Engine teardown analysis revealed no power system malfunction or indication of malfunction.

Corrective Action: Preflight checklist and student material were modified to reflect when and where to stow rotor tiedowns.

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

1 Accident, 0 Fatalities, 2 Injuries, Estimated Costs: \$120,900

UH-1

7 Precautionary Landings—following are selected briefs ■ On final approach to LZ, crew noted rpm warning light on high side. Pilot decreased rpm to 6450 and continued approach. Rpm increased to 6650. After touchdown, rpm fluctuated with power changes. Inspection revealed high rpm audio out of adjustment and N2 out of rig. ■ Battery vent began emitting vapor and liquid. Maintenance replaced battery. ■ Engine chip detector light illuminated. Maintenance inspection revealed large amount of metal chips in oil filter. Engine was replaced. ■ Cyclic had excessive play to the forward right position. Maintenance replaced irreversible valve. ■ Crew heard chattering noise, hydraulic caution light flickered, and controls felt sluggish. Maintenance inspection revealed pin-size hole in line from pressure side of lateral servo "T" fitting from hydraulic pump.

AH-1

1 Accident ■ Aircraft crashed on touchdown at 12,000 feet while attempting to circumnavigate mountain top. Suspect wind shear. (See OH-58 accident below.)

1 Incident ■ Aircraft started settling with power and hit ground in normal nose-low (weapons loaded) attitude. After impact, aircraft was brought to hover and damage was found.

2 Precautionary Landings ■ Engine inlet air caution light came on. Inspection revealed loose wire. ■ Slight high frequency vibration was noted in flight. While aircraft was being hovered to parking area, vibrations increased in intensity. Maintenance replaced tail rotor hub and blade assembly.

AVSCOM MESSAGES RECEIVED

■ 282035Z Oct 76—Change 1 (AH-1-76-22), subject: Reference our 181444Z Oct 76, subject: Maintenance Advisory Message—AH-1S, TM 55-1520-234-10, Change 2, 25 Aug 76 (AH-1-76-19).

■ 051450Z Nov 76—Maintenance Advisory Message, subject: Lift Link Assembly Configuration Requirement Applicable to the AH-1 and UH-1 Series Aircraft (UH-1-76-24 and AH-1-76-23).

■ 101655Z Nov 76—Maintenance Advisory Message for AH-1S, TM 55-1520-234-10, Change 2, 25 Aug 76 (AH-1-76-24). □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

1 Accident, 0 Fatalities, 1 Injury, Estimated Costs: \$27,694

OH-58

1 Accident ■ Aircraft was orbiting over crashed AH-1 at approximately 40 knots and 100 feet agl. Pilot made right turn into what he thought was the direction of the prevailing wind; however, this was actually downwind. Loss of antitorque control occurred. Pilot reduced collective in an attempt to regain control, but aircraft crashed due to loss of lift.

U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate	4479
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	6404/6410
Plans, Operations, and Education	4479/4812
Management Information System	5286/4200
Publications and Graphics Division	6385/3493
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

4 Precautionary Landings ■ During refueling operation, throttle was reduced to flight idle and engine quit. ■ Pilot started aircraft with main rotor blade tied down. N₁ reached 50 percent and TOT reached 749°. *Item 5, "Tail Boom—Right Side," page N2 of TM 55-1520-228-CL with Change 9, was not complied with.* ■ After touchdown following low-level autorotation, skid tow rings dug into sod. Aircraft entered nose-low attitude, left ground with low rotor rpm, and traveled 10 to 12 feet, where the second touchdown occurred. During the second touchdown, crew felt unusual vibration, suspected to have been pylon whirl. Inspection by direct support indicated no damage. ■ Aircraft yawed and N₂ was at 108 percent. Collective pitch was increased momentarily and throttle was reduced. Engine torque stabilized at 48 pounds and N₂ was in the green. Autorotation was made. Caused by failure of N₂ governor.

TH-55

4 Precautionary Landings ■ Engine tach became erratic during flight. Inspection revealed malfunction of dual tachometer. ■ Instructor heard change in engine sound. Maintenance check revealed hole in exhaust manifold assembly. ■ Pilot noted 300 rpm drop and rough running engine. Maintenance inspection revealed malfunction of right magneto and fouled spark plugs. ■ Engine oil pressure exceeded upper limits. Caused by malfunction of sending unit.

CH-47

4 Precautionary Landings ■ In cruise flight at 98 percent N₁, 460 pounds of torque and 500° C., No. 1 engine N₁ dropped to 77 percent, and rotor rpm decreased 7-8 rpm. Egt decreased for 5 seconds, then returned to 500° C. Egt decreased again for 5 seconds, returned to 500° C., then decreased 15°-20° C. and fluctuated intermittently. Cause is unknown. Maintenance test flight could not duplicate malfunction. ■ During flight, no oil pressure indication for individual transmission was noted when using selector switch. Pressure indicator was stuck at 26 pounds. Caused by internal failure of transmission oil pressure indicator. ■ No. 1 generator began leaking oil during flight. Rubber portion of oil seal cracked, allowing oil to leak from transmission. ■ No. 2 engine oil pressure dropped to 15 psi during flight. Cause unknown. Mishap is under investigation. □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$850

T-42

1 Incident ■ After lowering gear for landing, nose gear remained half way up. Emergency gear extension procedures produced negative results. Runway was foamed at the request of the IP and an emergency landing with unlocked nose gear was planned. Both engines were shut down on final and props were feathered and placed in horizontal position. Touchdown was on main gear with nose held high until air-speed dissipated, then nose settled into foam. Nose wheel doors, nose cone, heater exhaust, and heater blower intake were damaged. Nose gear actuator retract arm had failed, preventing nose gear from lowering completely or retracting. *WELL DONE to the IP for maintaining a "cool" head and performing in a highly professional manner during an emergency situation, resulting in only minimal damage to the aircraft.*

1 Precautionary Landing ■ When gear would not extend for landing, pilot manually lowered gear and tower confirmed gear appeared down. Landing was uneventful. Landing gear motor was replaced.

OV-1

1 Precautionary Landing ■ During climb through 10,300 feet, pilot detected smoke in cockpit. Except for fluctuating rpm, all instruments appeared normal. After turning off synchrophaser, pilot was attempting to recycle generator when No. 1 engine quit. Pilot returned for single-engine landing. Maintenance was unable to determine cause.

U-21

3 Precautionary Landings ■ (A series) During climbout, pilot heard noise from No. 2 engine. Engine was shut down and single-engine landing was successful. Maintenance was unable to determine cause of malfunction. ■ Aircraft filled with smoke on landing rollout. Crew turned off heater rheostat, shut down aircraft, and alerted fire equipment. Heater combustion blower motor had failed due to worn-out brushes. ■ Copilot noticed fuel siphoning from right wing tank and returned for landing. Fuel cap was only visually checked after refueling and was not properly seated. *If all fuel caps were physically checked IAW par. 3-15 of appropriate dash 10 by flight crews during preflight, many aborted missions and PRAMs could be eliminated!*

U-8

1 Precautionary Landing ■ No. 1 engine lost power on takeoff. Pilot remained in traffic and landed with partial power. Engine blower shaft failed. (USAR)

U-3

1 Precautionary Landing ■ No. 2 engine was shut down during training flight and restart attempts would not bring prop out of feather. Single-engine landing was completed. Teleflex cable housing flange and 'B' nut failed where cable passes through wing rib section of engine nacelle to cockpit prop control lever. (ARNG)

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$2,694

CH-47

1 Incident ■ Pilot's jettisonable cockpit door came off in flight. Caused by improper adjustment of door mechanism. (USAR)

OH-58

1 Precautionary Landing ■ During takeoff, oil bypass light illuminated. Crew chief left engine oil drain valve partially open after taking oil sample. *During the period CY 71-76, maintenance errors cost the Army approximately \$24,691,349.* □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

CH-47

■ During flight to LZ with slingload of 70 bags of cement at an altitude of 200 feet agl and 50 knots indicated airspeed, nylon doughnut broke, causing loss of load. Load impacted on side of mountain ledge. Cargo net and sling assembly is property of a foreign government and would not be released for inspection. This is the second mishap of this nature in the past month. □

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

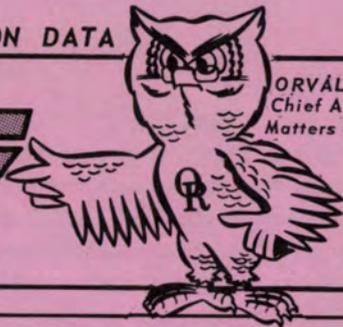


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



ORVÁL RIGHT
Chief Advisor on
Matters of Aviation

A USAAVCS PUBLICATION

VOL. 5, NO. 8 ■ 24 NOVEMBER 1976

US Army Aviation Training Library
Fort Rucker, Alabama 36360

mishaps for the period of 5-11 NOVEMBER 1976

THE COMMON COLD

LTC D. H. KARNEY, MD
USAAVCS



The common cold can cause pilot incapacitation during flight which may result in an aircraft accident. A recent human factor mishap serves to remind us that this is just as true for the low, slow flying helicopter aviator as it is for the faster, higher flying fighter pilot. A Preliminary Report of Aircraft Mishap reported that, following cruise flight at 4,000 feet msl in a UH-1H, a student pilot (SP) and instructor pilot (IP) descended to 700 feet msl in an ILS approach. The SP experienced middle ear discomfort and on final, when a missed approach was declared, developed ear pain. The IP took control of the aircraft, landed, and referred the SP to the flight surgeon. The SP was treated for an ear infection.

Two commonly held misconceptions can cause the Army aircrewmember to disregard the common cold as a significant hazard in helicopter flying. First, it is erroneously assumed that the common cold is a minor

Continued on page 2

INADVERTENT IMC PROCEDURES

DA Message 202037Z Oct 76, subject: Inadvertent IMC Flight Procedures, is quoted for your information: A. Letter, USAAVNC (ATZQ-S-FS), 31 Aug 76, subject as above.

This message in two parts.

Part One for all:

1. A review of 42 rotary wing accidents resulting from inadvertent IMC indicated that the most common reaction by the pilot was an attempt to regain VMC conditions without reference to flight instruments. Since inadvertent IMC is an unplanned event most frequently occurring under the least desirable circumstances—low altitude and airspeed with the crew totally unprepared for instrument flight—it is essential that our aviators be properly trained in inadvertent IMC procedures.

2. Effective immediately the following constitutes approved DA procedures for immediate action by the pilot upon encountering inadvertent IMC:

- Attitude indicator—level aircraft.
- Heading indicator—maintain constant heading.
- Torque meter—adjust to climb power.
- Airspeed—establish climb airspeed.
- IMC/IFR flight recovery procedures—initiate

only after transition to instrument reference is complete and aircraft has reached a minimum safe altitude.

3. Each MACOM will insure that an inadvertent IMC plan be developed at installation level. Deputy

Continued on page 2

SAFETY-OF-FLIGHT MESSAGE

■ USAAVSCOM Message 162200Z Nov 76, subject: Safety-of-Flight Message (One-Time Inspection) for UH-1B/D/H Helicopters, TB 55-1500-219-20-6, Defective Connecting Links (UH-1-76-25).

Summary: Determination has been made that all of the rigid connecting links, P/N 204-076-267-1 and -5, manufactured by Century Metal Products, Inc., under contracts DAAJ01-75-C-0833 and DAAJ01-76-C-0300 are defective. The internal threads of the coupling which connects to the hydraulic servo piston rod are incorrectly formed, with the result that the rigid connecting link can be screwed onto the servo piston rod but is excessively loose to the point of wobble. All of the parts have been delivered by the contractor. A majority of the parts has been found in depot stock. However, 48 total (31 of P/N 204-076-267-1 and 17 of P/N 204-076-267-5) are unaccounted for and are believed to be in unit stocks and/or installed in aircraft. The purpose of this message is to locate the defective parts and remove them from service.

Contact: Mr. James Dixon, USAAVSCOM, AUTOVON 698-5066, commercial (314) 268-5066.

THE COMMON COLD

Continued from front page

illness and only a first class "gold brick" would let a cold keep him from flying a low altitude mission. Second, since we fly close to the earth and altitude changes during flight are relatively small, the physiological effects of altitude are minimal.

The common cold is no minor problem in aviation. Swollen lymph tissue and mucous membranes can block sinuses as well as ears. This can cause incapacitating pain and pressure vertigo during descent which may result in loss of control of an aircraft. Additionally, infection of the inner ear by various cold and flu-like viruses can produce severe vertigo which makes straight and level flight impossible.

Let's consider the above human factor mishap and why the SP had difficulty. It is true that at 4,000 feet msl hypoxia is not a problem. However, atmospheric pressure increases more rapidly with altitude change as one approaches the earth's surface. For example, the gradual change in atmospheric pressure at higher altitudes results in a difference of only 84mm Mercury in a 10,000-foot descent from 40,000 to 30,000 feet msl. Compare this to the 237mm Mercury increase in pressure when descending from 10,000 feet msl to sea level. The atmospheric pressure increase is almost three times as much from 10,000 feet msl to sea level as it is from 40,000 to 30,000 feet msl. Another contributing factor is that the flutter valve-like construction of the eustachian tube which ventilates the middle ear makes it more difficult to keep the pressure across the eardrum equalized the faster the pressure increases.

The point to remember is that change in atmospheric pressure, rather than change in altitude, is the important factor. A pressure differential of only 60 to 80mm Mercury across the eardrum causes severe pain; 100-500mm will cause rupture of the eardrum. The increase in pressure experienced by these pilots in descending from 4,000 to 700 feet msl was about 80mm Mercury, more than enough to cause severe, incapacitating pain. A rapid descent from 10,000 feet msl to sea level with a blocked eustachian tube produces enough middle ear pressure to cause temporary deafness, ringing in the ears, pain and vertigo—conditions which have been known to cause fatal aircraft accidents.

Another problem with the common cold is the tendency of individuals to treat themselves with home remedies or medications which do not require a prescription. The cold capsules your wife took to keep her feeling well enough to clean house, prepare your meals, and drive the kids to school are forbidden when flying. Most of these medications contain antihistamines and carry a warning that they may cause drowsiness and should not be used while driving a

motor vehicle or operating heavy equipment, not to mention flying an aircraft. AR 40-8 prohibits aircrew members from flying for 24 hours after taking antihistamines prescribed by a flight surgeon and requires follow-up by him with an examination to insure ears and sinuses are clear before returning to flying duties. A flight surgeon may treat minor nasal congestion without ear and sinus involvement with nasal sprays and decongestants which do not contain antihistamines, and permit an individual to fly. However, that is the flight surgeon's decision to make, and only after he has made an adequate examination.

Have the sniffles? See your flight surgeon! Don't take a chance on being incapacitated at a critical time during your next flight.

INADVERTENT IMC PROCEDURES

Continued from front page

for Standardization has developed a model plan which will be provided MACOMs per par. 6, this message, for reference. MACOM plans should provide the following guidelines as a minimum:

- a. Training requirements.
- b. Validation of training.
- c. Initial aircraft control procedures for inadvertent IMC/IFR flight as per par. 2a through d above.
- d. IMC/IFR flight recovery procedures giving due consideration to factors such as single ship versus formation flight, geographical area (mountainous/desert) and aircraft IMC capability. These procedures should, as a minimum, contain the following specific items of information:

- (1) Initial altitude and heading for the purpose of providing terrain clearance or radar acquisition.
- (2) Name and frequency of facility to be contacted.
- (3) Transponder set to emergency (7700).
- (4) All aircraft should be equipped at all times with the approach and instrument navigation charts appropriate to the local area.

4. Inadvertent IMC procedures will be reviewed and flight checked during the conduct of all standardization evaluation flights.

Part Two for CDR, USAAVNC

5. Request Deputy for Standardization, USAAVNC, make this a matter of special interest during evaluation/assistance visits in FY 77 and FY 78.

6. Request recommended change to AR 95-1, par. 6, ref. a, be included in the first programmed revision of the regulation. Further, request model provided as an enclosure to reference A be provided to all MACOMs for immediate MACOM distribution to all subordinate commands/installations with aviation assets. HQDA POC for implementation is LTC Kambrod, DAMO-ODA, AUTOVON 225-0091/94.

FY 76 ACCIDENT BRIEF

SYNOPSIS 74-76

Type Aircraft: UH-1H
 Time: 1715 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$9,019
 Mission: Service support-para drop
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	1LT	29	259	-	259
CP	WO1	22	248	-	248

Description of Accident: Climbing through 12,000 feet, oil cooler impeller disintegrated. Flying debris damaged tail boom, tail boom bulkhead, right forward firewall, access door, and one hydraulic line.

Causes of Accident

Initial: Maintenance-Improper fitting (AN919-23D) was installed in turbine nozzle (lacked an airflow restrictor), which allowed turbine over-speed and overstress failure.

Remarks: Damage to hydraulic line also resulted in hydraulic failure.

Corrective Action: USAAVSCOM issued a safety-of-flight message requesting one-time inspection of oil cooler installation on UH-1 and AH-1 aircraft for correct fitting (TB 55-1500-206-20-25).

SYNOPSIS 75-76

Type Aircraft: UH-1H
 Time: 1159 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$17,034
 Mission: Service, support-maintenance recovery
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW3	35	2,422	113	2,535
CE	SSG				

Description of Accident: During level flight at 1,000 feet and 80K+, engine failed. Pilot autorotated to river bank and landed in 4 feet of water. Tail rotor contacted water, causing 90-degree gearbox to fracture, and tail rotor struck pylon.

Causes of Accident

Initial: Materiel-T1 bellows assembly failed, enriching the fuel flow to the engine, resulting in loss of power.

Corrective Action: The TA-7 fuel control used on the T53-L-703 incorporates a stainless steel T1 bellows in place of the brass T1 bellows used in the TA-2S control used on the T53-L-13B. The stainless steel bellows will be incorporated in the TA-2S control when the existing supply of brass bellows is exhausted.



SYNOPSIS 76-76

Type Aircraft: OH-58
 Time: 0940 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$21,000
 Mission: Service
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	33	774	2,500	3,274

Description of Accident: Pilot picked up two passengers and brought aircraft to hover. While hovering backward, tail rotor struck forward main rotor blade of parked UH-1.

Causes of Accident

Initial: Crew-Pilot allowed aircraft to hover

into aircraft parked behind him. Pilot was aware of parked aircraft.

Contributing: No ground guides used; pilot was in a hurry.

Remarks: Aircraft were parked in close proximity to each other due to lack of ground handling equipment. Due to aircraft radio problems, pilot had difficulty hearing hovering instructions which included a warning of the close proximity of the parked UH-1.

Corrective Action: Unit SOP was revised to require ground guides when hovering in close quarters, to eliminate backward hovering unless absolutely necessary, and to prohibit parking aircraft on taxiways.

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 3 Injuries, Estimated Costs: \$29,344

UH-1

3 Incidents ■ Two aircraft had main rotor blade tree strikes, one during approach and the other while on a reconnaissance. ■ On final approach aircraft settled from 10 feet and landed hard, damaging crosstubes and chin bubble.

1 Forced Landing ■ During hover, engine had compressor stall and failed.

25 Precautionary Landings—following are selected briefs ■ Hydraulic caution light came on. Caused by failure of hydraulic pressure switch. ■ Engine fuel pump caution light came on. Fuel pressure switch shorted out. ■ TOW missile launched and took an unusually high flight path despite down command. Wires became entangled in rotor system and aircraft was landed. Suspect missile malfunction. ■ Engine oil pressure fluctuated. Maintenance was unable to duplicate condition and aircraft was released for flight. ■ Crew noticed smoke coming from battery vent in flight. Caused by ruptured battery cell. ■ Right fuel boost pump light came on. Caused by failure of right fuel boost pump.

1 Human Factor Mishap ■ Student pilot experienced middle ear discomfort during flight. SP was sent to flight surgeon. Individual had inner ear infection.

AH-1

5 Precautionary Landings ■ Transmission oil bypass light came on. Bypass pressure switch connection was loose. ■ Engine oil pressure caution light came on. Caused by internal failure of pressure switch. ■ No. 2 hydraulic caution lights of two aircraft came on. One was caused by pressure switch failure and the other by a failed hydraulic line which was damaged during installation. ■ No. 1 hydraulic caution light came on and pilot heard loud squeaking noise from vicinity of hydraulic compartment. Inspection revealed improper installation of O-ring at T fitting on No. 1 system hydraulic line. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$2,699

OH-58

3 Incidents ■ Both tail rotor blades were found damaged on postflight inspection. Pilot did not feel any unusual vibrations or recall striking any object. ■ During training mission, pilot made steep turn at approximately 40 feet agl, saw trees directly in front, and started cyclic climb to avoid them. Lower portion of vertical fin struck trees. ■ During hover, pilot removed hand from collective to change radio selector. Aircraft descended and struck ground.

2 Forced Landings ■ Loud growling noise was heard and pilot entered autorotation. Thinking that transmission had failed, pilot increased throttle, maintaining minimum pitch, rotor in the green. At 100 feet agl, shallow deceleration was initiated and collective was increased. Aircraft would not respond to antitorque pedal application, and throttle was then retarded. Power-off landing was made. Investigation revealed drive shaft just aft of No. 6 hanger bearing was severed. WELL DONE to CW2 Blain M. Wells, Co. A, 38th Avn. Bn., Michigan ARNG. ■ During simulated forced landing, N1 decreased to 42 percent. Aircraft was autorotated to open field. Retaining nut on double check valve backed off, causing loss of engine power.

7 Precautionary Landings—following are selected briefs ■ During hydraulic check, collective was increased and N2 decreased. When N2 decreased through 30 percent, start was aborted. Maintenance could not

**U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362**

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate	4479
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	6404/6410
Plans, Operations, and Education	4479/4812
Management Information System	5286/4200
Publications and Graphics Division	6385/3493
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

duplicate. ■ Pilot heard a "bang" when throttle was rolled off. Maintenance inspection revealed defective forward drive shaft hanger bearing. ■ Aircraft had loss of power and rotor rpm. During autorotation, N1 and rotor were in the green, but when collective was applied, loss of power again occurred. Due to unsuitable landing area, pilot maintained 97 percent and flew 4 miles to helipad. Cause of power loss was suspected to be double check valve malfunction. ■ During throttle application from flight idle to full rpm, flameout occurred, resulting in internal engine damage. Engine will be sent in for teardown analysis.

TH-55

3 **Precautionary Landings** ■ Main transmission gearbox warning light came on. Caused by failure of oil pressure switch. ■ Engine oil pressure exceeded upper limit on two aircraft. Inspection revealed failure of pressure sending units.

CH-47

2 **Precautionary Landings** ■ No. 2 engine chip detector light came on. Caused by internal failure of engine transmission. ■ During test flight, aircraft started yawing excessively as airspeed increased. Side slip lines were crossed on SAS amplifier box. (ARNG) □

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$5,000

U-21

1 **Incident** ■ (A series) Right wing of aircraft struck large crow just after liftoff. Bird impacted wing inboard of tiedown ring. Aircraft remained in traffic and landing was completed.

1 **Precautionary Landing** ■ (G series) After takeoff, No. 2 engine oil pressure dropped to 52 psi. Wear between engine oil filter body neck and check valve stem caused valve to stick in full bypass condition.

U-8

3 **Precautionary Landings** ■ Nose wheel indicator did not give down and locked indication for landing. Emergency gear extension procedures were used and tower confirmed gear appeared down. Landing was uneventful. Gear sensitive switch malfunctioned. ■ On takeoff run, No. 2 engine rpm began a 100-200 variation. Shortly after liftoff, chip detector light illuminated. Power was reduced and engine ran smooth. Aircraft returned for landing. Maintenance found numerous large metal particles on magnetic plug. Engine failed internally. ■ No. 2 engine lost oil pressure in flight. Engine was secured and landing was made. Top compression ring was broken on No. 1 cylinder.

OV-1

1 **Precautionary Landing** ■ Heating and air conditioning system could not be secured. Actuator (DAAJ10-74-M-3873) failed. □

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

OH-6

1 **Precautionary Landing** ■ During practice approach, all electrical instruments, radios, and lights became inoperative. Caused by improper installation of circuit breaker.

CH-47

1 **Precautionary Landing** ■ No. 2 engine transmission oil pressure dropped to 15 psi. Caused by installation of T55-L-7C quill shaft in an engine transmission that should have had a quill shaft installed for a T55-L-11 engine configuration. Quill shaft was too short and it floated in and out, causing damage to engine and engine transmission.

U-8

1 **Precautionary Landing** ■ (G series) At 10,000 feet msl cruise, No. 2 engine surged and manifold pressure dropped to zero. Propeller rpm decreased to 2300. Pilot could not control engine power and engine was secured. Throttle linkage became disconnected at rod end bearing on carburetor. Maintenance personnel had adjusted linkage after last flight. Engine was changed 3.5 hours before this flight. □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

1 Mishap, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

UH-1

■ Civilian contractor mechanic was preparing to relocate helicopter from flight line to maintenance hangar. Individual installed ground-handling wheels, and was operating hydraulic jack handle when support pin, NSN 5315-00-895-6799, and fixed pin, NSN 1680-00-670-7977, slipped out of eyebolt, NSN 5306-00-883-4462, causing jack handle to strike and injure his right hand. An Equipment Improvement Report (EIR) was submitted to incorporate a safety pin that would insure the support pin is properly installed and keep it from slipping out of eyebolt. □

TESTING AND INSPECTION OF LIFTING DEVICES

DA message 112148Z Nov 76 (DAIG-SD), subject: Testing and Inspection Requirements for Lifting Devices, TB 43-0142, is quoted below for your information.

1. TB 43-0142, Safety Inspection and Testing of Lifting Devices, is currently being revised to clarify the intent and application.
2. The purpose of TB 43-0142 is to implement the requirements of the Occupational Safety and Health Act of 1970. Until the current version of the TB is revised to fully implement this purpose, the following should be used as guidance:
 - a. Load testing is required only as follows:
 - (1) Prior to initial use of new equipment.
 - (2) Prior to use of equipment following modifications or repairs to any load-bearing component.
 - (3) When prescribed by specific equipment technical manuals.
 - (4) When required by longshore safety standards published in 290FB1919.15.
3. Periodic inspections shall be accomplished on all lifting devices at intervals not to exceed 1 year. Daily and periodic inspections should follow the existing guidelines in the Occupational Safety and Health Act standards and appropriate technical manual inspection criteria until further notice.

NOTE: The above message in no way alters or changes the requirement for stenciling the load rating and next inspection due date on each piece of equipment. Recommend TB 43-0142, par. 6b(3) be strictly adhered to.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS

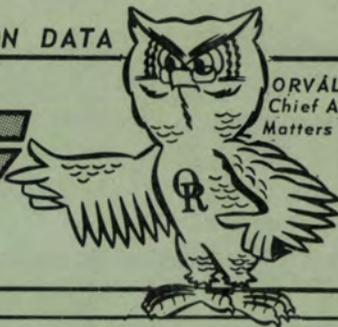


POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314

FIRST CLASS



FLIGHT FAX



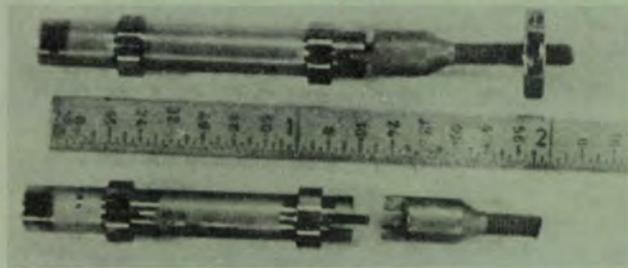
ORVAL RIGHT
Chief Advisor on
Matters of Aviation

A USAAAVS PUBLICATION

VOL. 5, NO. 9 ■ 1 DECEMBER 1976

mishaps for the period of 12-18 NOVEMBER 1976

know your emergency procedures



Failure of this P1 multiplier valve connector caused this.



Since 1971, 12 T53-L-13B-powered helicopters have had P1 multiplier connector failures. Six of these resulted in accidents. Emergency procedures for low side governor failure, where altitude and time were available, would have given the pilot power for a controlled safe landing.

The P1 multiplier bellows senses pressure/altitude changes and automatically adjusts engine fuel flow. When the P1 multiplier fails, the pressure compensating linkage moves toward the minimum flow position and fuel flow is reduced. The resultant fuel flow may be enough to sustain engine operation, but it will not provide the required power to maintain flight.

Stabilized power settings reported after P1 multiplier failures have been different. However, one thing remains constant, and that is a *sudden* loss of power with accompanying yaw as the initial indication of failure.

Successful emergency procedures for P1 multiplier failure require almost instantaneous and accurate evaluation of the situation. The emergency governor procedures contained in the operator's manual are correct and should be followed. The only difference

between an underspeeding N2 governor (low rpm) and P1 multiplier failure is the point at which the N1 (compressor) speed may stabilize. In several cases, the N1 has decreased to as low as 25 percent. If positive manual throttle control is not obtained before N1 speed decreases below 40 percent, it is highly unlikely the pilot will be able to recover usable compressor speed without exceeding exhaust gas temperature limits.

All fuel controls received at Corpus Christi Army Depot (CCAD) are being modified with an improved P1 multiplier assembly which is designed to preclude this type failure. (Fuel controls which have been modified with the improved P1 multiplier are identified as an A-7 in the data plate.)

So, until all T53-L-13 fuel controls are modified, if you are faced with a failure of this type, follow the procedure in the dash 10 for underspeeding N2 governor (low rpm). However, don't expect N1 speed to stabilize at approximately 50 percent. Positive manual throttle control should be achieved as soon as possible. Most important of all, once a course of action has been selected, stick to it until the landing is completed.

U.S. ARMY AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

Prepared from information compiled by the
Directorate for Aircraft Accident Analysis
and Investigation

Lieutenant Colonel Curtis M. Sanders, Director
Distribution to Army commands for accident prevention
purposes only. Specifically prohibited for use for
punitive purposes, or for matters of liability, litigation,
or competition. Information is subject to change
and should not be used for statistical analyses. Direct
communication is authorized by AR 10-29.

COMMERCIAL: 255-XXXX

AUTOVON: 558-XXXX

Questions Concerning Aviation Portions of ARs 95-5, 385-40, and 385-10	4479/4812
For Assistance in Locating Proper Directorate	4479
Aircraft Accident Analysis and Investigation	3913/4202
Technical Research and Applications	6404/6410
Plans, Operations, and Education	4479/4812
Management Information System	5286/4200
Publications and Graphics Division	6385/3493
Medical Division	6788
Staff Duty Officer (1800-0700 hours)	6510

FY 76 ACCIDENT BRIEF

SYNOPSIS 77-76

Type Aircraft: T-42A
 Time: 1910 Classification: Major (total)
 Fatalities/Injuries: 3 Fatalities, No Injuries
 Estimated Materiel Damage Cost: \$102,907
 Mission: Training (CRF)
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	LTC	39	1,152	2,345	3,497
CP	CPT	28	344	244	588

Description of Accident: Aircraft was on VFR cross country flight when it struck cliff at 12,450 feet. Wreckage was found at 12,000-foot level. Accident was nonsurvivable.

Causes of Accident

Initial: Crew-Pilot flew aircraft into box canyon at insufficient altitude.

Contributing: Materiel (suspected)-Stoppage of left engine at a critical point in flight.

Error: Pilot incorrectly planned his climb profile (flight route and power available) to clear the terrain. Incorrect planning was also evidenced by sustained flight over safe single-engine altitude.

Corrective Action: Flight planning.

SYNOPSIS 78-76

Type Aircraft: AH-1G
 Time: 1035 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$14,019
 Mission: Standardization ride
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
IP	CW2	25	1,815	2	1,817
P	O2	26	287	18	305

Description of Accident: During termination of autorotation, aircraft landed hard, damaging skids and support beam.

Causes of Accident

Initial: Crew error-Pilot pulled excessive pitch during touchdown autorotation.

Remarks: Pilot had taken an unsatisfactory standardization ride one month before. In the interim, no additional formal training flights in the AH-1G were flown.

Corrective Action: This installation has restricted practice touchdown autorotations to four per standardization ride, but has imposed no restriction on the number of power termination autorotations.



SYNOPSIS 79-76

Type Aircraft: AH-1G
 Time: 2040 Classification: Major (total)
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$509,833
 Mission: Night training
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CPT	32	1,708	119	1,827
CP	CW2	27	868	-	868

Description of Accident: Aircraft was flown into ground during approach to lighted T. Aircraft struck ground in right side slip, left skid low. Main rotor severed tail boom.

Causes of Accident

Initial: Crew failed to judge rate of closure during approach, resulting in hard landing.

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

FY 76 ACCIDENT BRIEF

SYNOPSIS 80-76

Type Aircraft: UH-1H
 Time: 1400 Classification: Minor
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$21,142
 Mission: Maintenance test flight
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	CW2	33	1,470	-	1,470

Description of Accident: During autorotation, soundproofing made contact with tail rotor assembly. Tail rotor and tail rotor gearbox separated from aircraft.

Causes of Accident

Initial: Pilot did not adequately secure cargo compartment soundproofing during preflight inspection.

Contributing: Poor judgment on the part of the pilot in electing to fly a test flight with the cargo doors open and light items not properly secured in the aircraft.

Remarks: Pilot handled the emergency in a very professional manner, which prevented further damage to the aircraft. However, had the pilot properly secured the soundproofing before takeoff or elected to fly with the cargo doors closed, the mishap would have been prevented. Aircraft was performing test flight with nonessential personnel on board.

Corrective Action: Local directive was published reemphasizing correct test flight procedures, to include securing loose cargo and allowing only minimum essential personnel on board aircraft during test flight.



SYNOPSIS 81-76

Type Aircraft: OV-1D
 Time: 2253 Classification: Major
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$31,745
 Mission: Service support
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
P	1LT	25	212	308	520

Description of Accident: After touchdown, pilot heard grinding noise in nose gear area. Pilot lifted nose gear off runway until speed decreased and nose gear settled to runway. Aircraft ran off right side of runway.

Causes of Accident

Initial: Materiel failure of attaching point for drag brace to nose gear cylinder assembly, P/N 25771-67.

SYNOPSIS 82-76

Type Aircraft: TH-55
 Time: 1600 Classification: Major (total)
 Fatalities/Injuries: None
 Estimated Materiel Damage Cost: \$26,604
 Mission: Training-confined area operations
 Grade/Age/Experience:

	Grade	Age	RW Hrs	FW Hrs	Tot Flt Hrs
SP	WOC	19	69	-	69

Description of Accident: Pilot lost control while hovering in confined area, resulting in hard landing.

Causes of Accident

Initial: Student pilot failed to release lateral cyclic friction before takeoff. When he became aware of control problem, he incorrectly analyzed it as an antitorque failure and reduced collective pitch, resulting in hard landing.

Corrective Action: An appropriate pilot's checklist for use in confined area training sites has been developed and implemented.

FY 76 ACCIDENT BRIEF

UTILITY/ATTACK BRANCH

MAJ William C. Childree, Chief ■ 558-4198

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$1,839

UH-1

1 Incident ■ During hot refueling, tail rotor drive shaft cover was discovered unsecured and flapping against tail boom. Cover was not properly secured during preflight inspection.

18 Precautionary Landings—following are selected briefs ■ Engine chip detector light illuminated. Maintenance inspection revealed excessive amount of metal particles. Engine was changed. ■ Right fuel boost segment panel and master caution lights came on. Maintenance replaced right fuel boost pump. ■ Transmission oil pressure warning light came on and oil pressure dropped to zero. Inspection revealed transmission internal oil filter gasket failure. ■ Hydraulic and master caution lights came on. Maintenance replaced hydraulic pressure switch. ■ Right fuel boost pump warning light came on. Right fuel boost pump was replaced.

AH-1

2 Incidents ■ Aircraft, No. 2 in loose trail formation flying low-level tactical, struck two strands of wire while cruising at 100 knots. ■ During flight, 90° gearbox filler cap left aircraft, striking and cutting one tail rotor blade. Damage was found during postflight inspection.

3 Precautionary Landings ■ Chip detector and master caution lights illuminated. Caused by internal transmission failure. ■ Loud bang occurred, followed by 20° to 40° right yaw, 5- to 10-pound fluctuation in torque, and violent fluctuation in N1. Maintenance inspection is in progress. ■ Aircraft was in cruise flight when battery compartment nose door came off, deflecting off front windshield and up into rotor blades. No damage to rotor blades was found during postflight inspection. □

LOH/CARGO BRANCH

MAJ Robert P. Judson, Chief ■ 558-4202

1 Accident, 0 Fatalities, 0 Injuries, Estimated Costs: \$29,029

OH-58

1 Accident ■ Main rotor blades struck sand dune during NOE flight. Main rotor system and main transmission were torn from aircraft. Investigation is in progress.

1 Incident ■ Crew chief threw smoke grenade from aircraft, striking main rotor blade.

3 Forced Landings ■ In cruise flight, 420 feet agl, aircraft yawed left and engine lost rpm. Pilot saw tach needles falling below green arc and lowered collective. During descent N2 was 70 to 80 percent and 10 pounds torque. Linear actuator failed. ■ On short final, collective was applied, N2 went to 75 percent and engine-out audio and engine light came on. Pilot made successful autorotation. Caused by faulty double check valve. ■ Engine lost rpm during climb. Pilot increased to full beep with no results, and autorotation was made. Suspect condensation in fuel caused ice to form, resulting in fuel starvation to engine. Water was found in fuel filter.

1 Precautionary Landing ■ While performing hover checks, crew heard unusual noise in engine area. Oil and metal particles were found on engine deck. Rear bearing in free wheeling unit failed.

TH-55

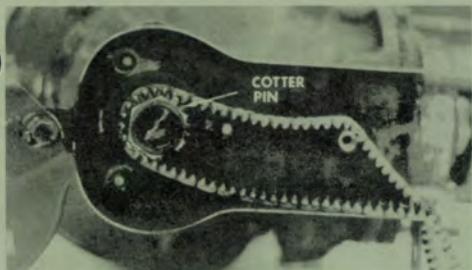
1 Precautionary Landing ■ Engine ran rough. Caused by magneto failure.

CH-47

1 Precautionary Landing ■ Crew chief noticed excessive amount of hydraulic fluid coming from utility reservoir. Fitting to utility hydraulic reservoir cooler failed.

CH-54

1 Precautionary Landing ■ No. 2 engine fire warning light came on. Suspect rotating beacon or moisture in a connection was the cause. □



COTTER PIN INSTALLATION

A recent issue of FLIGHTFAX carried an item describing an accident caused by the failure of a mechanic to install a cotter pin in the silent chain drive sprocket retaining nut. The picture showed an incorrect installation of a cotter pin. The cotter pin should be installed through the hex nut and control quill and bent flat against hex face of retaining nut, in accordance with TM 55-1520-210-20, chapter 9, par. 9-15(g), step 4.

FIXED WING BRANCH

CPT Donald P. Johnston, Chief ■ 558-3901

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

U-21

1 **Precautionary Landing** ■ (A series) While executing missed approach in IMC, No. 1 engine fire warning horn sounded and fire light illuminated. Pilot secured engine, declared emergency, and received vectors for successful single-engine landing. Aircraft had been in heavy rain approximately 20 minutes before malfunction and water may have shorted fire warning system.

U-8

3 **Precautionary Landings** ■ Shortly after takeoff, No. 2 engine developed severe vibrations. Several loud explosions were heard, accompanied by fire flashes over engine cowling. Engine was secured and single-engine landing was completed. Caused by internal engine failure. (USAR) ■ Pilot selected gear down for landing but did not get green light on left main. Pilot returned to home base and extended gear manually. Dynamic braking relay solenoid (P/N 5945-258-1408) failed. ■ While performing simulated single-engine landing with No. 2 engine at 2750 rpm/12 inches MP, pilot noted surge on engine and manifold pressure. On second attempt to increase No. 2 engine power, chip detector light came on and oil streamed from top of engine cowling. Engine was secured and single-engine landing was successful. Maintenance found 2- by 4-inch hole in cylinder lower case half caused by internal engine failure. (USAR)

OV-1

2 **Precautionary Landings** ■ Training mission was aborted during IFR conditions when windshield wiper ceased working. Wiper motor O-ring on output shaft failed. ■ Right main gear would not fully retract after takeoff. Pilot performed landing check and gear indicated down. Lift check valve failed, allowing air to enter hydraulic system.

C-12

1 **Precautionary Landing** ■ While aircraft was flying in and out of light icing conditions at 11,000 feet, inner layer of copilot's windshield suddenly cracked about halfway across. Cause is undetermined.

U-3

1 **Precautionary Landing** ■ During cruise flight, No. 2 engine oil temperature exceeded red line on gauge. Engine was secured and landing was completed. Investigation revealed broken ground wire lead on engine oil temperature gauge. (ARNG) □

MAINTENANCE BRIEFS

MSG B. R. Bailey ■ 558-3913

0 Accidents, 0 Fatalities, 0 Injuries, Estimated Costs: \$0

U-8

1 **Forced Landing** ■ (G series) No. 2 engine lost power shortly after rotation, with airspeed just at or possibly slightly below VMC. Takeoff was aborted and aircraft was landed straight ahead on remaining runway. Engine had been thoroughly washed down the day before. Water had accumulated in induction system.

AVSCOM MESSAGES RECEIVED

- 161830Z Nov 76—subject: Maintenance Advisory Message on Temporary Extension of Approval for Dust, Fume, Mist, Organic Vapor and Paint Spray Respirators (GEN 76-27).
- 181400Z Nov 76—subject: Lift Link Assembly Configuration Requirement Applicable to the AH-1 and UH-1 Series Aircraft (UH-1-76-26 and AH-1-76-25). □

AVIATION-RELATED GROUND MISHAPS

William P. Christian ■ 558-4202

4 Mishaps, 0 Fatalities, 1 Injury, Estimated Costs: \$796

UH-1

■ During attempted refueling operation, mechanic was removing a kink from fuel hose when truck driver pressurized the hose, causing nozzle to twist around, striking mechanic in the mouth. ■ A tug, towing APU, was parked next to UH-1 with the APU electrical cord plugged into aircraft for engine start. A transient aircraft requested an APU start and a crew chief from another section saw the tug and APU and started moving them to the transient aircraft. Tug driver did not notice that APU cord was plugged in and when cord separated from aircraft it damaged aircraft skin forward of external power receptacle. The unit's SOP was revised, stating that APUs will not be plugged into aircraft until crew is in position and ready for engine start.

OH-58

■ Mechanic was working in a squatting position on aircraft. When he straightened up his knee popped. He reported the problem, which at the time seemed unimportant. The next day his knee had swollen and was giving him severe pain. Due to possible prolonged squatting position, he received a torn fluid sac in his right knee.

TH-55

■ Student pilot placed his flight helmet on antitorque control pedals while performing visual inspection in preparation for his second flight. He moved antitorque control actuating mechanism on tail of aircraft, causing cockpit pedals to move. This forced his flight helmet against plexiglass bubble, breaking bubble. All instructors and students were advised to use stowage hooks for hanging helmets in the cockpit. □

U-21 AND T-42 MAINTENANCE TRAINING FOR 1977

Courses of instruction have been established to provide systems familiarization and line maintenance on T-42 and U-21A/G series aircraft. The U-21A and G Course is two weeks in duration and is offered to users of the aircraft on a per man rate of \$325. The T-42 Course is one week in duration at a per man rate of \$170 (cost to be borne by user). Both courses will be conducted at the Beech Aerospace Training Center, Wichita, Kansas, on the following dates

U-21A and G		T-42	
21 Mar-1 Apr	22 Aug-2 Sep	28 Feb-4 Mar	15-19 Aug
13-24 Jun	5-16 Dec	23-27 May	28 Nov-2 Dec

Should you wish to enroll personnel in any of the courses, direct your correspondence to Beech Aircraft Corporation, 9709 East Central, Wichita, Kansas 67201, ATTN: Frank Sulanke, Dept. 92a; or call Mr. Sulanke or Vic Zaldivar, AUTOVON 962-1110, commercial (316) 689-7180. It is requested that your response be made at least two weeks before commencement of the course so necessary classroom preparation can be made. If a unit desires to train a large number of personnel or has special training requirements involving Beech products, contact Mr. Sulanke or Mr. Zaldivar about the possibility of on-site training classes.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY
AGENCY FOR AVIATION SAFETY
FORT RUCKER, ALABAMA 36362

OFFICIAL BUSINESS



POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD-314
FIRST CLASS