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CRASH INJURY ECONOMICS: THE COSTS OF TRAINING AND MAINTAINING AN ARMY AVIATOR

April 1971

U. S. ARMY AEROMEDICAL RESEARCH LABORATORY

Fort Rucker, Alabama

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A radom sample of five Army aviators in each grade level was used in the study. Cost data following their hypothetical death in an Army aircraft accident were projected using Social Security Administration and Veterans Administration actuarial figures, data, and tables.

The minimum cost for training a beachelor rotary wing Warrant Officer Candidate with no previous military experience is $38,035. The total cost to the United States Government up to and after the accidental death of an Army aviator in an Army aircraft can range from $102,670 to $759,954.

Monetary costs to replace the aircraft crew often exceed by several times the cost to replace the aircraft.

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CRASH INJURY ECONOMICS: THE COSTS OF TRAINING AND MAINTAINING AN ARMY AVIATOR

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April 1971

U. S. ARMY AEROMEDICAL RESEARCH LABORATORY

Fort Rucker, Alabama

U. S. Army Medical Research and Development Command

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The author is deeply indebted to Colonel James V. Preuit, Retired, former Comptroller of the U.S. Army Aviation Center, Fort Rucker, Alabama, for his kind assistance in providing the training and maintenance cost data of this report.

ABSTRACT

While the hardware costs of Army aviation accidents are known, the monetary costs of injuries and fatalities have not been determined. In order to ascertain these costs, the training and maintenance costs of aviators are needed. This report represents a study of training and maintenance costs of Army aviators in all grade levels from training up to, including, and after an accidental death.

A random sample of five Army aviators in each grade level was used in the study. Cost data following their hypothetical death in an Army aircraft accident were projected using Social Security Administration and Veterans Administration actuarial figures, data, and tables.

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Monetary costs to replace the aircraft crew often exceed by several times the cost to replace the aircraft.

APPROVED: ROBERT W. BAILEY
Colonel, MS
Commanding

CRASH INJURY ECONOMICS: THE COSTS OF TRAINING MAINTAINING AND REPLACING AN ARMY AVIATOR

INTRODUCTION

Statistical records of Army aviation accidents, including hardware costs, are maintained by the United States Army Board for Aviation Accident Research (USABAAR). While a list of both injuries and fatalities are kept, the monetary cost of these human losses has never been determined. In many cases these injuries and deaths could have been avoided by the incorporation of safety practices currently within the state of the art; however, aircraft manufacturers have not incorporated such practices maintaining that hardware costs would be unnecessarily increased.

It is the contention of many safety oriented personnel that the cost of human losses incurred in aircraft accidents would more than justify the additional expenditures in improved safety equipment.

Over the past several months the United States Army Aeromedical Research Laboratory (USAARL) has been conducting a study to ascertain the medical costs and death benefits costs resulting from accidents in UH-1 aircraft in Fiscal Year 1969. In order to correctly assess these total costs. aviator replacement costs had to be determined. Throughout this paper, the term "replacement costs" will be used to represent the total value of training, maintenance, direct and indirect support costs of an Army aviator. It is these replacements costs which form this report. (Total medical treatment costs for the entire Fiscal Year 1969 in UH-1 aircraft will be provided in a report in preparation.) This report is divided into three parts:

1. The cost of training a bachelor rotary wing Army aviator.

2. The cost of training and maintaining an Army aviator until accidental death.

3. Death costs to United States government following accidental death.

MATERIALS AND METHODS

Cost data was compiled utilizing actual training and maintenance costs at Fort Rucker, Alabama and was provided by the Office of the Comptroller, United States Army Aviation

Center, Chief of Staff (USAAVNC/S), Fort Rucker, Alabama. In the determination of costs up to and following accidential death a sample of five aviators in each grade level was randomly selected from the files of aviators currently at Fort Rucker. Other costs relating to death gratuities, Death and Indemnity Compensation (DIC), and survivors' benefits were provided by the Veterans Administration and the Social Security Administration.

RESULTS AND DISCUSSION

A. MINIMUM COST OF TRAINING A ROTARY WING AVIATOR

While approximations of aviator training costs have been made in the past,(1,2) a thorough analysis of Army rotary wing aviator costs has not been published prior to this report. Operating costs of the Army Aviation School and maintenance costs of Fort Rucker were averaged for a yearly population of student pilots. To obtain a minimum cost for training a rotary wing aviator the following conditions were established for each student:

(1) That he be a Warrant Officer Candidate (WOC) with no prior military service.

(2) That he be a bachelor.

(3) That he reside in an Army billet while in training.

It should be noted in Table I on page 3 that the cost shown is the dollar cost per rotary wing student and includes those determinable costs relating to a bachelor enlisted man undergoing student training, from the student's first day at the induction station to the day that he graduates from Fort Rucker as a Warrant Officer. Since past WOC classes indicate that only 20% of all WOC's are still bachelors upon completion of their course, the figures in Table I represent a minimum cost.

TABLE I

ROTARY WING AVIATION TRAINING COSTS

STATION	INDUCTION	FT POLK	FT WOLTERS	FT RUCKER	TOTALS
DAYS PER STATION	3	66	140	116	325 days
PROCESSING					
Induction Cost	$62				$ 62
Flight Phys		$ 24		$ 24	48
PAY & ALLOWANCE					
Base Pay(2)		269	$1,189	997	2,455
Flight Pay			224	232	456
TDY(2)				232	232
Travel Pay	44	32	48 (5)		124
Food allowance		98	207	171	476
EQUIPMENT & CLOTHING					
Permanent clothes		260		108 (6)	368
Temporary clothes		20			20
Text & Equip			19 (7)		
TRAINING COST(8)					
OMA(9)		227	6,742	8,820	15,789
PEMA(10)		79	1,457	6,861	8,397
MPA(11)		695	2,896	5,998	9,589
COST PER STATION	$106	$1,704	$12,763	$23,462	$38,035
TOTAL COST					$38,035

FOOTNOTES TO TABLE I

1. Induction cost is an average cost for each person processed through an induction station. This includes food, shelter, induction test, and physical.

2. Base pay, per diem, and travel pay are computed for the bachelor WOC with no prior service.

3. Average travel pay for inductees from induction station to basic training.

4. Travel cost from Fort Polk to Fort Wolters by group transportation request.

5. Travel pay from Fort Wolters to Fort Rucker by personal owned vehicle (POV) (800 miles @ 6¢ per mile).

6. Flight suits, helmet, gloves, jacket, bag, and glasses to be turned in on estimated termination of service or when individual leaves flight status.

7.

$26.00 printing cost of textbooks - average life 2 candidates	$13.00
$30.00 cost of briefcase, computer, flashlight and plotter - average life 10 candidates	3.00
$60.00 cost of field equipment - average life 20 candidates	3.00
TOTAL per candidate	$19.00

8. Training cost includes the maintenance of the aircraft, depreciation of the aircraft, cost of fuel and oil, maintenance of the airfields and overall maintenance of the post. Not included in the table are the initial purchase cost of land at Fort Rucker, Fort Wolters, and construction costs of other training facilities on these posts.

9. Operation and Maintenance, Army (OMA) cost includes civilian pay, supplies and equipment, and miscellaneous expenditures for the following areas: instructional department, school overhead, school support, command and installation support, less student travel pay, clothing cost (permanent and temporary), and text - equipment cost (permanent and temporary).

10. Procurement of Equipment and Missiles, Army (PEMA) cost includes ammunition and major depreciation of aircraft and gun systems.

11. Military personnel, Army (MPA) cost include pay and allowances to military personnel in the instructional department, school support, command, installation support and other

overhead military personnel. The Military Personnel, Army cost does not include student pay and allowance which can be found in the Pay and Allowance - Base Pay section of Table I.

The total figure of $38,035 must be increased further for costs which are undeterminable, and yet are a part of the overall aviation training program costs. These intangible costs are divided into four major categories:

1. Support of higher command cost. The support of higher command costs includes prorata share of costs incurred at Third United States Army (TUSA), Continental Army Command (CONARC), Department of the Army (DA), Department of Defense (DOD), for expenses incurred by these levels of command which support the aviation training program, and therefore are a cost of student training. Other supporting activities in the supply field must also be considered as a part of the cost of training an aviator. These activities are Defense Supply Agency (DSA), Army Materiel Command (AMC), Aviation Systems Command (AVSCOM).

2. Research and Development Costs. Research and Development (R&D) costs include a portion of those costs incurred by all tenant activities at Fort Rucker: US Army Aviation Test Board (USATB), US Army Combat Development, Command Aviation Agency (USACDCAUNA), US Army Board for Aviation Accident Research (USABAAR), US Army Aeromedical Research Laboratory (USAARL), US Army Aviation Human Research Unit (USAAVNHR), Human Research Organization No. 6 (HUMRRO), and any Research and Development (R&D) costs, at other levels, which are related to procurement of aviation systems for advancement of aviation training programs. R&D costs also include a portion of those costs incurred by these other activities not at Fort Rucker. Among these are Natick Laboratories, Natick, Massachusetts; Eustis Directorate Air Mobility Laboratory (AVLABS), Ft Eustis, Virginia; and the Army Aviation Test Activity, Edwards Air Force Base, California.

3. Service Benefits Costs. The service benefit costs are disability and hospitalization expenses, funeral costs, and death benefits to survivors of the deceased. The injury and fatality costs are incurred as a result of accidents during student aviator training.

4. Nonproductive Training Costs. The nonproductive training costs have included those costs expended on candidates who fail to complete the WOC flight program. These costs must be charged prorata to the cost of each successful candidate.

Without detailed statistical analysis of these intangible cost factors, the additional costs incurred cannot be deter-

mined. Therefore, the total cost of a WOC aviator training as determined in this study does not include these intangible costs.

B. TRAINING AND MAINTENANCE OF ARMY AVIATORS UNTIL ACCIDENTAL DEATH

All Army aviators spend a certain length of time in each grade prior to being promoted.(3) Currently a WO1 (Warrant Officer) spends an average of one year as a WO1 prior to promotion. The aviator with the rank of Captain spends an average of four years in grade prior to promotion, but his average total time in service is six years (including three years as a Lieutenaut). It is this average length of time in service that was selected as the hypothetical death point.

TABLE II

LENGTH OF SERVICE AT TIME OF DEATH

RANK	PAY GRADE	YEARS
WO1	W-1	1
WO2	W-2	2
WO3	W-3	8
WO4	W-4	16
2LT	O-1	1
1LT	O-2	2
CPT	O-3	6
MAJ	O-4	10
LTC	O-5	16
COL	O-6	22

Using the actual flight records of the aviators in this study, the fixed wing and rotary wing flying hours were totaled for each grade. This number was then divided by five to determine the average fixed wing flying time and rotary wing flying time for the aviators in each grade level.

It is assumed that the Fort Rucker flying hour costs used in this study, both rotary wing and fixed wing, are representative of all Department of the Army flying hour costs in CONUS and are lower, if absolute costs are considered, than those experienced in Southeast Asia. (These costs represent a statistical accumulation of past actual costs and will be subject to change.)

TABLE III

FLYING COSTS

RANK	F/W HRS @ $45.09/HR	TOTAL F/W COST	R/W HRS @ $67.71/HR	TOTAL R/W COST	FLYING COST TO DATE OF DEATH
WO1	-	-	1628	$110,232	$110,232
WO2	-	-	1341	90,799	90,799
WO3	580	$ 26,152	3841	260,074	286,226
WO4	3109	140,185	3337	225,948	366,133
2LT	5	255	951	64,392	64,618
1LT	361	16,277	960	65,002	81,279
CPT	160	7,214	1002	67,845	75,060
MAJ	566	25,521	2108	142,733	168,254
LTC	2402	108,306	1429	96,758	205,064
COL	3279	147,850	646	43,741	191,591

It should be noted in Table III that the total flying cost to death is less for a WO2 compared to a WO1. Similarly, the flying cost to death of a Captain is less than for a First Lieutenant. To assure that no sampling bias occurred, the sampling method was the same for all grades. The cost differences resulted from the averages of the randomly selected flight records of each group.

In the case of a Colonel's flying costs being approximately one-half those of a WO4, one should note that much of a Colonel's training time is gaining administrative experience in his particular branch schools, command and staff college and perhaps in acquiring advanced college degrees. Following his training, many of his assignments are largely administrative with few hours flown.

TABLE IV

TRAINING AND SUPPORT COSTS

RANK	TRAINING COST	O&MA SUPPORT (4000 x YRS)	MPA COST TO DEATH	TOTAL
WO1	$22,500	$ 4,000	$ 7,344	$ 33,844
WO2	22,500	8,000	16,076	46,576
WO3	22,500	32,000	82,185	136,685
WO4	22,500	64,000	195,410	281,910
2LT	22,500	4,000	7,434	33,934
1LT	22,500	8,000	16,225	46,725
CPT	22,500	24,000	60,333	106,833
MAJ	22,500	40,000	122,413	184,913
LTC	22,500	64,000	234,307	310,807
COL	22,500	88,000	370,263	480,763

Table IV is a comparison of the training costs, O&MA support costs and MPA costs. The training cost (Table IV) of $22,500 has been averaged for all grades and includes flight training. This training cost is lower than the training cost of a warrant officer candidate because the higher ranking officers (WO3, WO4, LTC, COL) were trained several years ago when costs were lower.

O&MA support training cost (see Table IV) is the average yearly cost required to support an individual member multiplied by the number of years he served prior to death. This O&MA support training cost is a figure arrived at by the Comptroller's office, Fort Rucker for the purpose of this study and is an approximation of the cost outlined in Table I, footnote 9, on Page 3.

The "MPA to Death Cost" (see Table IV) represents pay and allowances authorized for each member of the sample up to the point of his death. It can be noted that the MPA cost to death of a WO1 (ie., $7,344) is less than the MPA cost portion of training a rotary wing aviator (ie., $9,590); however this latter figure includes the pay of the instructors and school support.

TABLE V

TOTAL COSTS TO DEATH

RANK	FLYING COST TO DATE OF DEATH	TOTAL TRNG & SUPT COST TO DEATH	TOTAL COST TO DATE OF DEATH
WO1	$110,232	$ 33,844	$144,976
WO2	90,799	46,576	137,375
WO3	286,226	136,685	422,911
WO4	366,133	281,910	648,043
2LT	64,618	33,934	98,551
1LT	81,279	46,725	128,004
CPT	75,060	106,833	181,893
MAJ	168,254	184,913	353,167
LTC	205,064	310,807	525,871
COL	191,591	480,763	672,354

Table V is the sum of Table III and Table IV. As stated in the introduction, these figures represent a replacement cost at various grade levels. One might question the validity of calling all of the flying cost figures a replacement cost, since these aviators were actually performing useful work for the Army during much of their flying time. In order to make

a comparison between all grade levels, Fiscal Year 69-70 cost figures were assigned to all flying hours costs. The position is taken that if one of these aviators dies today, then these are costs to train another aviator to the deceased's level of proficiency and experience.

C. DETERMINATION OF COSTS AFTER DEATH

Following an aviator's accidental death in an aircraft, there are three agencies which provide funds to the next of kin: the Department of the Army, the Veterans Administration and the Social Security Administration.

The Department of the Army provides a six months death gratuity, which is a lump sum paid to the heirs of the deceased aviator.(4) It is also paid to any service member who dies while on active duty, weekly reserve training or within 120 days after release from duty if the death was due to a service connected disability. The purpose of this sum is to help the survivors in their readjustment and to assist in meeting unusual expenses normally incurred at such a time. The amount of the death gratuity paid is determined by multiplying by six the monthly basic pay (plus all incentive, special, and proficiency pay) to which the deceased was entitled at the date of his death. Allowances for quarters and subsistence are not included. The amount paid is always a minimum of $800 and a maximum of $3,000 and is paid to the benficiary. In Table VI it can be seen that only the rank of WO1 and 2LT would receive less than the maximum amount.

TABLE VI

GRATUITY PAY

RANK	AMOUNT
WO1	$2,873
WO2	3,000
WO3	3,000
WO4	3,000
2LT	2,918
1LT	3,000
CPT	3,000
MAJ	3,000
LTC	3,000
COL	3,000

The Dependency and Indemnity Compensation (DIC) is paid by the Veterans Administration to eligible survivors of service members who die on active duty, inactive training (such as weekly drills) or within 120 days if the death is due to a service connected disability.(5) It is the most important and probably the largest of the benfits paid to the widow or next surviving kin. The DIC is payable for the life time of the widow provided she does not remarry.

Income from other sources is not taken into consideration in determining eligibility of a widow for dependency and indemnity compensation. The only requirement in addition to proof of relationship is that the cause of death be service connected. If surviving widow has one or more children below the age of 18, the DIC shall be increased by $20 monthly for each child. The surviving widow shall, in addition to the monthly DIC payment, receive an additional $50 per month if she is a patient in a nursing home or helplessly blind or so nearly so that she requires regular aid or attendance of another person. Some brief examples: A widow of a WO1 would receive a monthly rate of $219 per month so long as she does not remarry, a CPT's wife would receive a DIC of $234 per month so long as she does not remarry. A full Colonel's wife would receive a sum of $306 DIC so long as she does not remarry.

In this study, the DIC amounts were determined through utilization of the following determinants:

1. The number of dependent children and their ages in Table VII are representative of families of Army aviators in the grades shown.

TABLE VIII

AGES OF CHILDREN

RANK	NUMBER OF CHILDREN	AGE OF 1ST CHILD	AGE OF 2ND CHILD	AGE OF 3RD CHILD
WO1	None	-	-	-
WO2	1	1	-	-
WO3	2	9	7	-
WO4	3	15	13	11
2LT	None	-	-	-
1LT	1	1	-	-
CPT	2	5	3	-
MAJ	2	9	7	-
LTC	2	15	13	-
COL	None	-	-	-

2. The number of dependent children and their ages of each dependent spouse at the time of her remarriage are representative of Army aviators in the rank shown:

TABLE VIII

AGES OF CHILDREN AT TIME OF SPOUSE'S REMARRIAGE

RANK	NUMBER CHILDREN	AGE OF 1ST CHILD	AGE OF 2ND CHILD	AGE OF 3RD CHILD	AVERAGE TIME IN YRS THAT SPOUSE IS UNMARRIED
WO1	None	-	-	-	-
WO2	1	4	-	-	3
WO3	2	13	11	-	4
WO4	1	-	-	21	10
2LT	None	-	-	-	-
1LT	1	3	-	-	2
CPT	2	8	6	-	3
MAJ	2	12	10	-	3
LTC	2	20	18	-	5
COL	None or over age 22	-	-	-	-

Each child is assumed to be a dependent until age 22 (18-22 formal education period). In this table it can also be seen that a WO1's wife would be unlikely to remain unmarried for longer than a year, following the accidental death of her husband; a Captain's wife would, on an average, remain unmarried for three years; a Colonel's wife, might remain unmarried for ten years. While it is possible for any widow to never remarry, the DIC payments presented below in Table IX are based on the Figures in Tables VII and VIII. Both WO1's and Second Lieutenants are shown as having no children and wives who remarry in less than one year.

TABLE IX

DEPENDENCY INDEMNITY COMPENSATION (DIC)

RANK	AMOUNT
WO1	None
WO2	$ 6,386
WO3	10,672
WO4	27,518
2LT	None
1LT	4,175
CPT	8,683
MAJ	9,175
LTC	16,934
COL	29,104

Social Security payments were based upon the assumptions set forth in Tables VII, VIII and IX plus information received from the Social Security Administration (6) as stated below:

1. A childless widow (or with children over 18 years) may receive a lump sum of $255 at the time of her husband's accidental death. She then receives no further payment until age 60 if she is not disabled or age 50 if she is disabled.

2. Monthly payment to widow and children (Representative of 1969 cost figures):

TABLE X

MONTHLY PAYMENTS

FAMILY SIZE	WIDOW	EACH CHILD	TOTAL
1 child	$146	$146	$293
2 children	120	120	362
3 children	90	90	362

3. The widow loses her payment if she remarries; however, the children's payments will increase. Example: Widow with three children remarries, her children receive $120 each rather than $90. The payments to the children may continue to age 22 if they remain in full-time school attendance and are unmarried.

The total Social Security benefits computed from Tables VII, VIII, IX, and X are shown below. Both WO1's and Second Lieutenants are shown as having no children and wives who remarry in less than one year.

TABLE XI

SOCIAL SECURITY BENEFITS

RANK	AMOUNT
WO1	None
WO2	$ 6,386
WO3	10,672
WO4	27,518
2LT	None
1LT	4,175
CPT	8,683
MAJ	9,175
LTC	16,934
COL	29,104

An additional sum is also received by the next of kin from the Servicemen's Group Life Insurance (SGLI). Although administered by the Veterans Administration, it is not a cost to the government since the administration costs of the SGLI and payment of claims are met by the monthly premiums of all participating servicemen.

Funeral costs are provided for by the Department of the Army.(7) They consist of transportation of the remains, preparation of the grave, cost of the casket, military escorts of the casket, flag draping of the casket, clothing or a suitable uniform belonging to the deceased in which the deceased is dressed, cremation if desired by the next of kin, transportation of the remains, funeral coach, flowers, vault, church services, clergyman's fees, obituary notices, passenger car for the immediate family, services of cemetery equipment, and even a bugler if so desired by the next of kin. The maximum allowance for funeral costs is $1200.

The total cost after death to the government is summarized in Table XII. The paradox in costs between a WO4 and a Colonel result from the differences in Social Security benefits.

TABLE XII

TOTAL COST AFTER DEATH

RANK	6 MOS DEATH GRATUITY	DEPENDENCY INDEMNITY	SOCIAL SECURITY	FUNERAL COST	TOTAL AFTER DEATH
WO1	$2,873	-	-	$1,200	$ 4,073
WO2	3,000	$ 6,285	$36,583	1,200	47,068
WO3	3,000	10,672	46,310	1,200	61,183
WO4	3,000	27,518	80,193	1,200	111,911
2LT	2,918	-	-	1,200	4,118
1LT	3,000	4,175	34,519	1,200	42,894
CPT	3,000	8,683	56,440	1,200	69,324
MAJ	3,000	9,175	44,863	1,200	58,238
LTC	3,000	16,934	30,391	1,200	51,526
COL	3,000	29,104	255	1,200	33,449

The total cost to the government of the accidental death of an aviator is presented in Table XIII. The total cost per aviator rank shown represents a statistically less than average cost since all the preceeding tables were calculated using average or less than average figures. Nonetheless, the total cost figures are substantial.

TABLE XIII

TOTAL COST TO GOVERNMENT

RANK	TOTAL COST TO DEATH	TOTAL COST AFTER DEATH	TOTAL COST
WO1	$144,076	$ 4,073	$148,149
WO2	137,375	47,068	184,443
WO3	422,911	61,183	484,094
WO4	648,043	111,911	759,954
2LT	98,551	4,118	102,670
1LT	128,004	42,894	170,898
CPT	181,893	69,324	251,217
MAJ	353,167	58,238	411,405
LTC	525,871	51,526	577,396
COL	672,354	33,559	705,913

PRACTICAL TRADEOFFS

The figures in Table XIII indicate that it would be much more economical to keep the aviator alive than to perpetuate a hazardous situation, for example, lack of adequate safety equipment. Some practical comparisons are now presented:

Example 1. The loss of one WO1 and one 2LT in an aircraft accident (total $257,819) is equal to the total price of a UH-1 aircraft (approximately $250,000).

Example 2. The death of one WO1 ($148,149) secondary to an aircraft fire and who might otherwise have lived would allow 30 UH-1 aircraft to be retrofitted with crash resistant fuel systems (at $5,000 per aircraft).

Example 3. UH-1 transmission tiedown moorings are stressed to 8 G's. The human torso can withstand impacts of up to 18 G's. From 1967 to 1969, there were at least 23 UH-1 accidents in which there was a failure of the transmission moorings which on impact allowed the transmissions to move forward into the crew compartment. This resulted in 17 fatalities, 9 of which were pilot or copilot.

Their ranks and replacement costs are shown below:

TABLE XIV

REPLACEMENT COSTS

NUMBER	RANK	REPLACEMENT COST	TOTAL
3	WO1	$148,149	$444,447
1	2ND LT	102,670	102,670
3	CPT	251,217	753,651
1	MAJ	411,405	411,405
1	Civilian	Unknown	Unknown
		TOTAL	$1,712,173

The eight remaining fatalities were non-aviators for which replacement costs are not available. This total replacement cost, for less than half the number of those killed, is greater than the cost of seven UH-1 aircraft.

Example 4. A study done by Boeing Vertol Division has shown that 155 out of 322 fatalities (48.2%) which occurred in Army helicopters from 1958 to 1965 could have been avoided with an inflight recovery system.(8) If all those killed were WO1's, the total aviator replacement costs would be 155 x $148,149 or $22,963,101. Even at an estimated cost of $20,000/aircraft to provide an inflight recovery system for a helicopter (preliminary discussion with industry indicates about half that figure), over 1,000 UH-1 aircraft could be modified to provide this additional inflight safeguard.

These practical examples are not presented as an indictment. They do, however, illustrate that the cost to replace an aviator represents a substantial amount of money to the government and the taxpayer (not just to the Army) and that no longer should mission and performance at ANY cost be the only criterion of military aviation cost effectiveness decisions.

CONCLUSIONS

The minimum cost for training a bachelor rotary wing Warrant Officer Candidate with no previous military experience is $38,035.

Total cost to the United States Government following the accidental death in an Army aircraft can range from $102,670 for a Second Lieutenant to $759,954 for a WO4.

Individuals in higher grades have had, in many cases, cheaper training costs and have been economically productive to the Army during their military careers. Nevertheless, to compare all grade levels, the total costs shown are replacement costs to the United States Government at FY 1969-1970 estimates.

Monetary costs to replace the aircraft crew often exceed by several times the cost to replace the aircraft.

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