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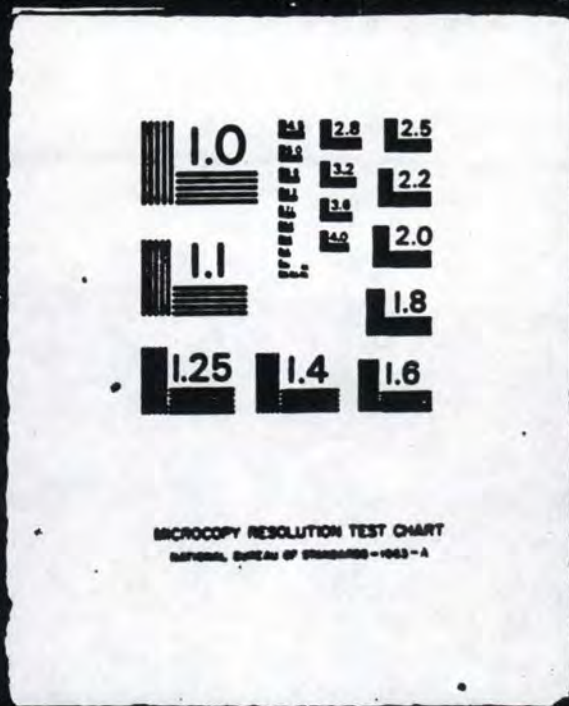
TR-51

GENERAL
DECLASSIFICATION
SCHEDULE

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EO 5209 1 R & EXECUTIVE ORDER 11652

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HELICOPTER DAMAGE BY MINES AND BOOBY TRAPS
IN THE REPUBLIC OF VIETNAM
(1962 THROUGH JUNE 1970) (U)

1. ~~(CONFIDENTIAL)~~ INTRODUCTION

The war in the Republic of Vietnam (RVN) by its very nature has caused helicopters (rotary wing aircraft) to become a major combat weapon system. From a very low level of activity in 1962, this system has grown to be one of the mainstays of U.S. Army operations. By July 1970, there were 3,739 Army helicopters of different types, conducting various missions, flying, and being hit by ground-fire every day.

This increased activity, measured in millions of sorties, performing an increasing number of tactical and logistical tasks, has exposed helicopters more and more to enemy ground-fire, resulting in thousands of aircraft hit incidents. However, this report addresses only a small portion of this combat activity, i.e., those aircraft reported damaged by mines and/or booby traps (M/BT).

The Army Materiel Systems Analysis Agency (AMSAA) and the Ballistic Research Laboratories (BRL) have collected, processed, and analyzed Army aircraft combat statistics from a variety of data sources (see Appendix A). A bibliography of published reports is included herein. From January 1962 through June 1970, a total of 218 incidents of helicopter damage by M/BT are recorded. Since it is likely that such incidents would be recorded in one source report or another, the sample should approach very nearly the total number of these occurrences. Aircraft damage ranged from minor to complete destruction.

The primary objective of the analysis presented in this report is to place helicopter hit and loss incidents in RVN from the M/BT threat into proper perspective, validate or negate previously formed opinions on the importance of the threat, identify principal causes of aircraft losses, and determine the major causes of personnel casualties.

Some of the devices and their employment are described, and their damage effects on the various helicopters are analyzed and compared (Appendixes B and C). Statistics on circumstances and reactions are presented as well as data on overall aircraft operations and damage (Appendixes D and E). Finally, short individual case histories are appended (Appendix F).

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2. (~~CONFIDENTIAL~~) DISCUSSION OF DATA ANALYSIS

2.1 Operational Data.

Table B-1 of Appendix B contains data reported to AMSAA on the number of aircraft hit, total sorties, combat support sorties, and flying hours for all rotary wing aircraft deployed in RVN during CY 1966 through June 1970, a period of 4-1/2 years. Operations data are included mainly to provide proper perspective for the mine and booby trap analysis in the report.

These data reflect the degree of helicopter activity during this time period. No data are shown for CY 1962 through 1965 because available information is incomplete, and also because very few M/BT incidents occurred before 1966.

Examination of the data reveals that a total of 22,065 aircraft were hit by ground-fire; 26,125,423 sorties were flown, of which 19,987,043 or approximately 76 percent were combat support sorties; a total of 9,324,695 flying hours were accumulated. These statistics reveal that there were:

850 aircraft hit per 10^6 sorties
1100 aircraft hit per 10^6 combat support sorties
2370 aircraft hit per 10^6 flying hours.

Further analysis of the data shown in Table B-1 reveals that the number of combat support sorties flown in 1967 increased over those flown in 1966 by a factor of 2.40, but that the number of helicopters hit increased by a factor of only 1.45, or about one-half as many. Explanations of the many factors contributing to this fact are beyond the scope of this report.

Following the surge of heliborne combat operations, the aircraft hit rate settled down to a relative constant at approximately 1000 aircraft hit per 10^6 combat support sorties, while throughout this period the average combat support sortie duration remained relatively constant at about 27 minutes per sortie.

From these data, it appears that the overall nature of helicopter combat operations did not significantly change during the period under consideration.

2.2 Combat Loss Data.

Combat losses from ground-fire of all types are shown in Table B-2 as a function of aircraft type and calendar year. Again the data reported encompassed only CY 1966 through June 1970.

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Of all the aircraft that were hit, only 5.6 percent resulted in loss of aircraft.

Two aircraft types, the OH family and the UH-1D/H transports, accounted for 73 percent of all combat losses, evenly divided between them. Although these aircraft incurred equal combat losses, the UH-1D/H aircraft conducted more than six times as many combat support sorties, and incurred three times as many aircraft hit incidents.

Only 4.6 percent of the UH-1D/H aircraft hit were losses, while 14.5 percent of the OH aircraft hit were losses. It is readily seen that during this time period an OH aircraft was three times as likely to be a loss, if hit, as was a UH-1D/H aircraft. The difference in the size and vulnerability of these two aircraft and the difference in their respective roles contributed to the difference in observed loss rates. Similar observations on the other helicopters are also evident.

The ratio of losses versus aircraft hit incidents increased sharply from 17.5 per 1000 in 1966 to 68 per 1000 in 1968 and then tended to level off.

2.3 Case Histories.

Tables F-1 through F-11 contain the detailed case histories of helicopter (M/BT) incidents as reported to AMSAA, upon which the bulk of the statistics presented herein rest. These case histories consist of detailed reports of the 218 recorded incidents of which 32 were aircraft losses.

These data are presented as a function of aircraft type, date of incident, aircraft reaction, altitude, mission, activity, cause, and geographical location of the incidents. In addition, personnel casualties have been identified as wounds and injuries, fatal and non-fatal, and their causes noted, such as fragments, debris, or burns.

These various incident categories are analyzed in detail in subsequent sections of this report.

3. ~~(CONFIDENTIAL)~~ DESCRIPTION OF MINE/BOOBY TRAP TECHNIQUES

The Viet Cong (VC) employ mines and booby traps (M/BT) as a key weapon system in offensive and defensive roles and to interdict movement of U.S. and allied forces throughout the RVN. Operational experience in RVN has clearly demonstrated that the VC are imaginative, resourceful, and tenacious in the use of M/BT. Viet Cong forces have developed a high degree of expertise in the use of M/BT in their own familiar environment. A few of the more common devices and their installation techniques are described to help orient the reader to this type of warfare.

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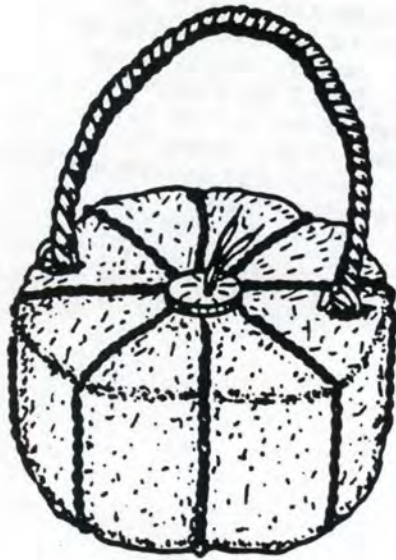
The most common device reported as causing helicopter damage incidents is the directional fragmentation mine which is similar to the U.S. Claymore M18A1 mine. This VC mine is composed of two parts, the mine body and the bipods. The concave front or fragmentation face of the mine contains steel fragments embedded in a matrix, and is backed up by cast TNT. The mine body is shaped like a large saucer, weighs about 20 pounds, is from 12 to 18 inches in diameter and from 2 to 4 inches in depth. The mine mounted on the adjustable bipods about a foot high can be placed on various types of surfaces and aimed in any direction. It is designed for electrical detonation but can be initiated by various means, including pressure devices and pull-wire friction fuzes (Figure 3.1).



Figure 3.1 (C) Directional Fragmentation Mine (DH-10) (U).

Other types of mines used include those constructed of concrete and explosive TNT such as the Betal box mine, 8 inches in diameter by 7 inches high; the concrete fragmentation mine, cylindrically shaped, 10 inches long, 6 inches high, with a 7-inch flat side for stable emplacement; the concrete mound mine which is about 6 inches in diameter by 14 inches long; and the concrete turtle mine, a 5-inch diameter by 9-inch-long device (Figure 3.2); and several types of cast-iron fragmentation mines, 2 to 5 inches in diameter and 6 to 9 inches long (Figure 3.3).

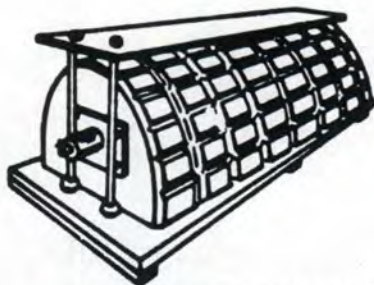
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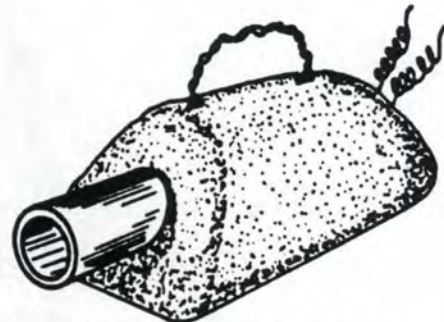
BETAL MINE



CONCRETE FRAGMENTATION MINE



CONCRETE TURTLE MINE



CONCRETE MOUND MINE

Figure 3.2 (C) VC Mines Constructed of Concrete (U)

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An example of how Claymore type mines are employed against helicopters is illustrated in Figure 3.4. Enemy mine activities against heliborne operations and helicopters are largely confined to potential landing zones.

The majority of these VC mines are activated by simple pressure devices, common examples of which consist of two boards held apart at each end. Bare electric wires or metal contacts are fastened to the inside faces of the parallel boards. These boards vary in length from 1 to 10 feet and are held apart a distance appropriate to their intended purpose and desired sensitivity. Pressure forces the boards and wire contacts together completing the electric circuit and detonating the mine (Figure 3.5).

There are many variations of these pressure firing devices, some of which sense the pressure of helicopter rotor wash (downdraft) and detonate directional mines into adjacent landing zones. In some the rotor wash spins a pinwheel propeller, shakes an adjacent tree, or bends a bamboo pole to initiate the detonation by means of a trip wire. Common among these pressure-sensitive mines are "slapsticks," which are hollowed-out electric-firing devices made of boards or bamboo carved out to enable them to bow under pressure and make contact between the two parts closing the electric circuit (Figure 3.6).

Viet Cong antiaircraft mines are very simple home-made affairs. One of them is a 10-inch, four-bladed, fan-like prop with blades about 1-inch wide made of bamboo. The shaft has a capstan and a taut line that runs out to a greased pin on the mine. The mine is about the size of a large sardine tin, only of a triangular shape (Figure 3.7).

These mines are set in trees or in the grass near anything that might attract an aviator's attention. The down wash from the rotor blades would almost instantly wind up the line, pull the pin, and detonate the mine.

Other devices used against helicopters are classified as booby traps which take on many forms and are cunningly and ingeniously employed. However, the types most generally employed against helicopters are the types that utilize the common fragmentation grenade in a variety of ways.

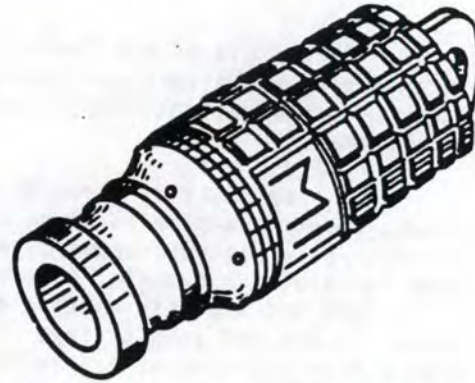
The grenade launcher (Figure 3.8) is an improvised antiaircraft weapon used against helicopters. A charge of TNT is placed in the bottom of a funnel shaped hole approximately 2 feet deep in a potential helicopter landing zone. A board about 2 feet square with attached hand grenades held in place by nails, which prevent the safety levers from releasing and detonating the grenades, is placed over the hole and camouflaged. When the charge is command detonated, the grenades are thrown into the air where they detonate.

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CAST-IRON FRAGMENTATION MINE.



CAST-IRON FRAGMENTATION MINE, AP.

Figure 3.3 (C) Cast-iron VC Mines. (U)

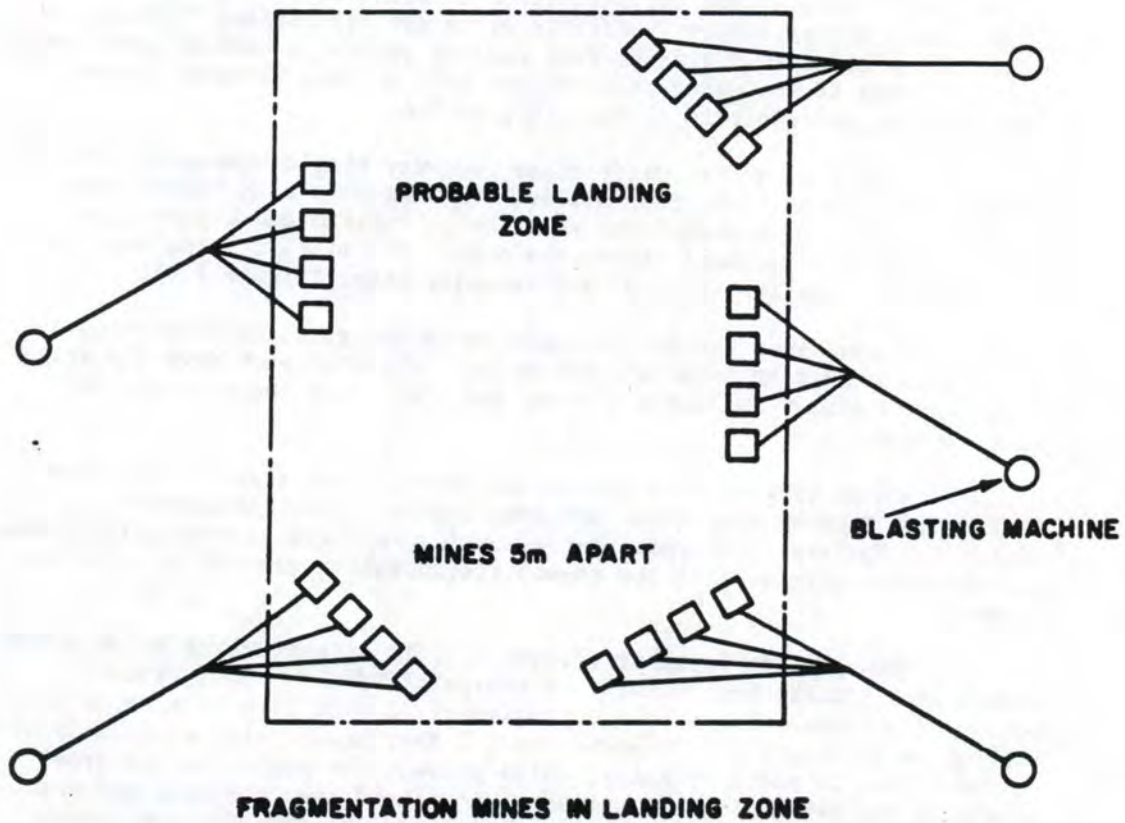


Figure 3.4 (C) Example of How Claymore-Type Mines are Employed Against Helicopters (U).

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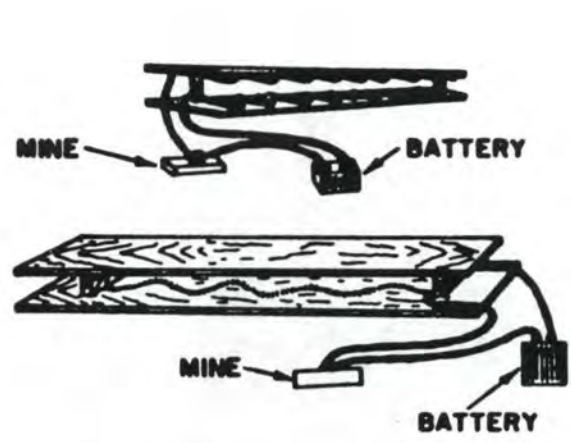


Figure 3.5 (C) Pressure Electric Firing Devices (U)

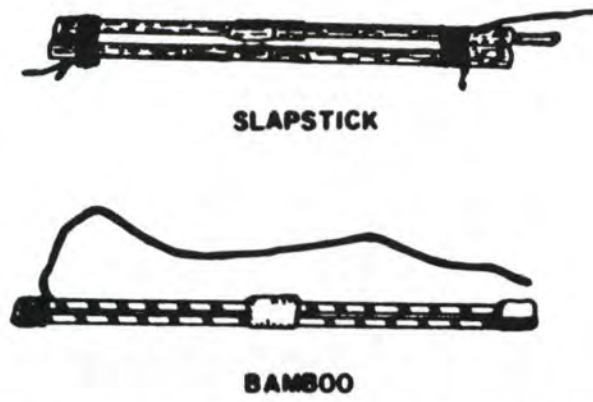


Figure 3.6 (C) Hollowed-out Firing Devices (U)

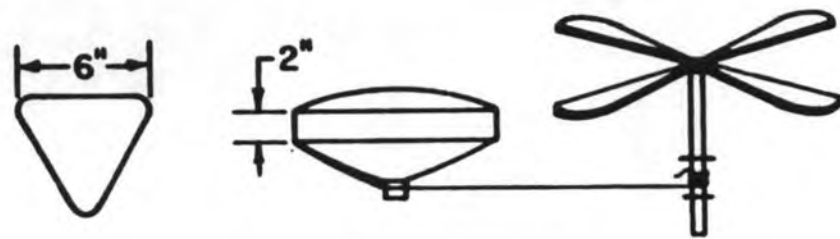


Figure 3.7 (C)

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Figure 3.8 (C) Improvised Grenade Launcher (U)



EXPOSED FOR
ILLUSTRATIVE PURPOSES OTHERWISE DIFFICULT TO DETECT

Figure 3.9 (C) Helicopter Can Trap (U)

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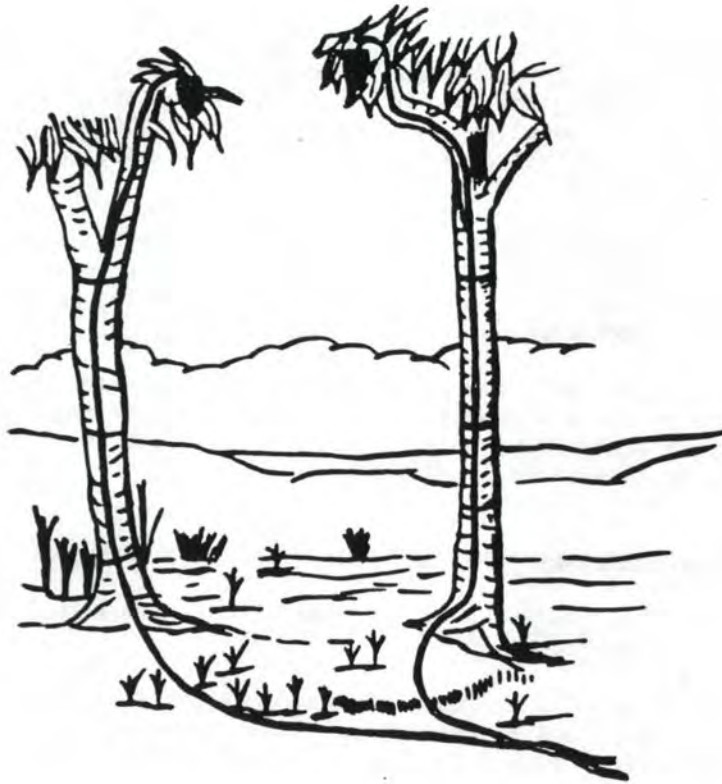


Figure 3.10 (C) Treetop Boobytraps (U)

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In the helicopter can trap (Figure 3.9), bamboo poles are placed in the ground with a tin can attached to the top of each pole. Hand grenades with safety pins removed are placed inside the cans and trip wires are attached to the grenades from one pole to another in an "X" pattern. When a helicopter touches the trip wires, the grenades drop to the ground and explode.

Grenades with pulled safety pins wrapped in paper are also placed in the landing zone. As the helicopter lands, the propwash forces the paper into the air, releasing the pressure on the safety levers and setting the grenades off. In a variation of this technique, pieces of sheet metal are placed in the landing zone. The rotor wash from the landing helicopter presses the sheet metal down and explodes mines placed beneath it.

Figure 3.10 shows booby traps in trees. These command or pressure detonated explosive devices can be either grenades, bombs, or shells. To combat helicopters, they are installed in dense growth around the perimeter of likely landing zones.

This small sample of devices and employment techniques should give the reader a reasonable understanding of the ingenuity and general methods of VC M/BT operations. Many of the figures in this section are taken from References 1 and 2.

4. (~~CONFIDENTIAL~~) MINE AND BOOBY TRAP INCIDENTS AND LOSSES

4.1 Mine and Booby Trap Incidents and Losses Versus Time and Aircraft Type.

Table C-1 presents a breakdown of all M/BT incidents and losses by month, year, and aircraft type; Table C-2 summarizes these data for the time period CY 1962 through June 1970 by month and aircraft type.

From Table C-1 it is seen that there were only four incidents and no losses from CY 1962 through 1965, indicating the low-level of the M/BT threat during the period. However, in CY 1966 the number of incidents was four times as great as in all previous years while in CY 1967 the number of incidents increased again by a factor of four over those of CY 1966. From CY 1968 through June 1970 the rate of incidents remained approximately stable at the CY 1967 level.

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There was only one aircraft loss during CY 1966 and then the losses jumped to approximately eight per year for the last 3-1/2 years.

One data point in Table C-1 needs a little explanation. The number of reported incidents experienced by UH-1D/H helicopters in March 1967 is fourteen, twice as large as the number for any other month. Investigation revealed that eleven of these incidents occurred on the same day in the same landing area.

Table C-2 shows that there was a total of 218 M/BT incidents during this time period of which 32, or approximately 15 percent, resulted in aircraft losses.

The data also reveal that 47 percent of all incidents occurred in December, January, February, and March at a rate of approximately 26 per month, while the rate for the rest of the year was about one-half of this, or 14 per month.

Losses followed a similar pattern with 40 percent occurring in December, January, February, and March at a rate of 3.2 per month, and 60 percent, or 2.4 per month, for the remainder of the year.

One also observes that 66 percent of all incidents and 67 percent of all losses were accounted for by UH-1D/H aircraft, while no AH-1G or CH type aircraft sustained losses due to M/BT incidents.

These statistics reflect that 65 percent of all combat support sorties were flown by UH-1D/H aircraft, that AH-1G's do not normally land in the combat area, and that the CH types which are larger helicopters are usually not committed in the first waves to landing zones.

4.2 Mine/Booby Trap Incidents and Losses Versus Other Ground-Fire Incidents and Losses.

Table C-3 shows the relationship between aircraft encounters with M/BT and other types of ground-fire by aircraft type and year. Examination of the data reveals that of the 22,065 aircraft sorties that were hit by ground-fire during the period under consideration, only 218 or 1.0 percent were caused by mines or booby traps. Of the 1231 aircraft lost to ground-fire, only 32 or 2.6 percent were due to mines or booby traps.

It can readily be seen from these data that aircraft hit incidents and losses due to mines and booby traps are a small percentage of the total. Therefore, it does not appear essential to modify aircraft to counter this threat. On the other hand, tactics should be adjusted as appropriate to account for this contingency.

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4.3 Aircraft Reaction to M/BT Incidents.

Table C-4 presents data on the reaction of aircraft to M/BT incidents. Examining the 32 aircraft losses, one readily sees that 91 percent were caused by crashes and of these, 69 percent had no attendant crash fire. Only about one in three aircraft losses was associated with fire. Therefore, additional weight penalties and design complexities do not appear to be warranted specifically and solely to protect against fires caused by M/BT incidents.

Note that the UH-1D/H aircraft accounted for 69 percent of all the losses due to M/BT encounters. Also, of the 186 aircraft encountering M/BT incidents that were not totally destroyed, 49 percent continued to fly and presumably completed their missions, 17 percent aborted their missions, and about 22 percent made forced landings; 2 percent crashed but were recovered and reactions were unknown in 10 percent of these cases.

In all of the above categories, the UH-1D/H aircraft accounted for over 50 percent of all incidents. This is not surprising since 65 percent of all combat support sorties were carried out by UH-1D/H aircraft.

4.4 Incidents and Losses by Aircraft Flight Operation.

4.4.1 Aircraft Altitude. Tables C-5 through C-8 present data on incidents and losses by altitude and aircraft type. Of all the incidents reported, 59 percent occurred at altitudes below 25 feet and of those for which the altitude was specified, i.e., eliminating the unknowns, 73.4 percent occurred at altitudes below 25 feet.

For all aircraft types, the largest percentage of incidents occurred at altitudes below 25 feet except for the AH-1G aircraft where a larger percentage occurred at altitudes between 25 and 50 feet.

As expected, losses followed the same general pattern with the largest percentage occurring at altitudes below 25 feet.

4.4.2 Aircraft Mission. Tables C-9 through C-12 break down incident loss data by mission and aircraft type. The missions are listed in the order of frequency of aircraft hit incidents.

Inspection of Table C-10, which presents the data as percentages of incidents, reveals, as one would expect, that the reconnaissance mission has the largest percentage of incidents for the AH, OH, and UH-1B/C type aircraft. The largest percentage of incidents for the resupply mission is associated with the CH family of aircraft. The two missions which require aircraft landings, the combat assault and the medical evacuation, contribute 73 percent of the UH-1D/H aircraft incidents.

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Referring to Tables C-10 through C-12, one notes that although only 37 percent of all incidents occurred during combat assault missions, this mission accounted for 52 percent of aircraft losses, all UH-1D/H Hueys.

4.4.3 Aircraft Activity. Incidents and losses as a function of aircraft type and activity are shown in Tables C-13 through C-16.

It is seen from Table C-13 that the maximum number of incidents occurred during landing activities (35 percent). The next two activities in order of frequency of incidents, hover and on-ground, together accounted for an equal percentage. Table C-15 shows that losses follow substantially the same pattern of occurrence.

Table C-15 reveals that the AH-1G aircraft suffered no losses, although they experienced 80 percent of their hit incidents during target attack missions.

4.5 Incidents and Losses by Cause.

Tables C-17 through C-20 present incidents and losses by cause and aircraft type. These tables show that 85 percent of the incidents and 81 percent of the aircraft losses were due to Claymore type mines and booby traps. However, Claymore type mines accounted for three times as many incidents and over 1.5 times as many losses as did booby traps.

When one considers aircraft losses, the data indicate that OH type aircraft are three times as likely to be total losses if hit by Claymore type mines than are UH-1D/H transports. However, if the damage incident was caused by booby traps, the UH-1D/H's are 1.5 times more likely to be total losses than are OH type aircraft.

Insufficient information concerning the circumstances surrounding these incidents prevents an adequate explanation of these apparently contradictory relationships.

5. ~~(CONFIDENTIAL)~~ CASUALTY ANALYSIS

Tables D-1 through D-4 present personnel casualty data by year and aircraft type for both wounds and injuries, fatal and non-fatal. Wound type casualties are defined as resulting from direct projectile impact (fragments, bullets, aircraft debris, etc.) while injury type casualties are the result of hard landings and crashes (contusions, broken bones, burns, etc.)

For the years 1962 and 1963, no casualties resulting from M/BT incidents were reported. Table D-1 shows a breakdown by aircraft and year, and Table D-2 summarizes all data for this time period.

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Chronological history of personnel casualties reveals that five times as many casualties resulted in CY 1967 (67) as in all previously recorded years; the number of casualties then remained relatively stable at an average of 70 per year for the next 2-1/2 years.

Table D-2 shows that the total number of casualties caused by M/BT incidents is 257, of which 70 percent were wounds and 30 percent were injuries. Also 78 percent of all casualties occurred in UH-1D/H aircraft and only 1 percent in AH-1G aircraft. These casualties accumulated at an average rate of approximately one per M/BT incident. Of the total number of casualties, 10 percent were fatal wounds, 60 percent non-fatal wounds, 13 percent fatal injuries, and 17 percent non-fatal injuries.

Table D-3 summarizes casualty types and their causes. It shows that fragments accounted for 66 percent of all casualties and 94 percent of all wounds. On the other hand crash injuries accounted for 26 percent of all casualties and 87 percent of all injuries.

Table D-4 summarizes casualties by type such as wounds, injuries, fatalities, and non-fatalities. It is seen that 23 percent of all casualties were fatalities and were about evenly divided between wounds and injuries. On the other hand, of the 77 percent of all non-fatal casualties reported, there were 3.5 times as many wounds as injuries.

6. ~~(CONFIDENTIAL)~~ GEOGRAPHICAL DISTRIBUTION OF INCIDENTS AND LOSSES

Distribution of M/BT incidents by geographical location (Figure E-1) reveals that 113 incidents or 57 percent of all incidents occurred in the four coordinate blocks surrounding Saigon. Fifty-two incidents or 26 percent occurred along the Northern coast. These two areas accounted for over 80 percent of all reported incidents. It should also be noted that of the 58 incidents occurring in XT coordinate zone, 11 or 19 percent occurred in the same landing zone on the same day in March 1967.

Figure E-2 showing the geographical distribution of aircraft losses follows the expected general trend.

7. ~~(CONFIDENTIAL)~~ SUMMARY

Although many observations resulting from this study could be included in this summary, only a few which are considered to be of major significance will be listed.

Only 1 percent of all aircraft hit incidents and 2.6 percent of all aircraft losses reported during the period CY 1962 through

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June 1970 were caused by mines/booby traps. Moreover, of the number of aircraft hit by these devices only some 15 percent were losses. As these are relatively small percentages of the totals, it does not appear that any major actions should be taken to counter this enemy threat.

The "Claymore type mine" accounted for over three times as many aircraft hit incidents and over 1.5 times as many aircraft losses as did all types of booby traps.

All of the data examined indicate that, from CY 1967 to the end of the period under consideration, helicopter combat activity had become relatively stable both in terms of incidents of aircraft hit and of aircraft losses.

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TABLE A-1 (U) LIST OF SOURCE CODES

- A - U. S. Army Aeronautical Depot Maintenance Center Reports, Corpus Christi, Texas (ARADMAC Report).
- B - Bell Helicopter Technical Representative Report
- D - Dynalectron Aircraft Battle Damage Report
- X** F - Abbreviated Aircraft Accident/Combat Damage Report Form for Combat Area (USARV Form 232).
- H - Hughes Tool Company, Aircraft Division, Technical Representative Reports.
- J - Joint Service Anti-Aircraft Fire Incident and Damage Reports (MACV Dir. 381-34).
- X** M - Crash Facts Message (Teletype) AR 385-40.
- T - Boeing Vertol Technical Representative Reports.

TABLE A-2 (U) AIRCRAFT REACTION CODES AND DEFINITIONS

For Purposes of Coding in the Aircraft Combat
Data Analysis Information Recall Program

HOSTILE INCIDENT:	Any hit(s) by any projectile(s) or missile(s) on an aircraft (or its contents) with power on - usually in flight but including hits while waiting on the ground powered and manned. Excludes hits on parked aircraft, pure accidents on combat (or non-combat) missions or in combat territory and accidents caused by combat events other than weapon hits.
CRASH (CR):	A hostile incident resulting in an uncontrollable landing, i.e., the aircraft is incapable of being governed, guided or restrained at touch-down.
FORCED LANDING (FL):	A hostile incident, not a crash or mission abort, resulting in a landing prior to its intended time or in prevention of take-off as intended or subsequent landing in place other than original destination (includes various shades between emergency hard landings with severe damage to pure precautionary landings for damage inspection and resumption of flight and mission).
MISSION ABORT (MA):	A hostile incident which disrupts intended mission or flight plans but does not prevent return to base, i.e., not a crash or forced landing.
CONTINUED TO FLY (CF):	A hostile incident which disrupts neither the intended mission nor the flight plans to destination(s) and return home.

S A M P L E

THE U.S. ARMY AERONAUTICAL DEPOT MAINTENANCE CENTER
Corpus Christi Naval Air Station, Texas

REPORT NUMBER:

Aircraft Type:

Aircraft Serial Number:

Aircraft Total Time:

Engine Type:

Engine Serial Number:

Engine Time Since Overhaul:

Engine Time Since New:

Engine Total Time:

Transmission Serial Number:

Transmission Total Time:

Part Noun:

Part Number:

Part Serial Number:

Data of Damage:

Nature of Damage:

Army Unit Number:

Number of Hits:

Date Aircraft Received:

Date Aircraft Examined:

Date Log Book Screened:

1. Remarks:

2. Description:

SAMPLE

 BELL HELICOPTER COMPANY		FIELD FAILURE/DISCREPANCY REPORT										REPORT NO. 76 79	
M & R PROGRAM												PAGE 1 OF	
DATE OF OCCURRENCE 6		BASE CODE 7		AIRCRAFT ENVIRONMENT 8		MILITARY SERIAL NUMBER 16		SHIP TIME 17		QUANTITY REPORTED 21-22		PART NUMBER 37	
PART SERIAL NUMBER 43		46		PART NAME & IDENTIFICATION 79						80		FEDERAL STOCK NUMBER 13	
PART TIME 14		17		18		PART NEXT ASSEMBLY 32		33		NEXT ASSEMBLY SERIAL NUMBER 40		TYPE-OF-OCCURRENCE 47	
												CODE	
												PRIMARY (1) OR SECONDARY (2) FAILURE?	
												42	
												SYSTEM FAILURE? YES (1) NO (2)	
												43	
F/D NOTED DURING: INTER. INSP (4), DAILY INSP (1), PERIODIC INSP (5), FLIGHT (2), SPEC. INSP (6), AFTER FLIGHT (3), OTHER (7)				MISSION ABORTED CODE 44		45		46		PROBLEM FILE NUMBER		REPORT FOR CSO (1) EIR (2)	
												60	
												61	
												62	
												63	
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S A M P L E

WHEN COMPLETED THIS FORM IS CLASSIFIED CONFIDENTIAL

AIRCRAFT BATTLE DAMAGE INSPECTION

Survey Report No. _____ Date of Report _____

Inspection Location _____

BACKGROUND INFORMATION

1. Date Damage Occurred _____ Army Aviation Unit _____

2. Aircraft Type _____ Aircraft S/N _____ Engine S/N _____

3. Total No. Hits _____ Aircraft Armed _____

CONDITIONS AND REACTIONS WHEN AIRCRAFT WAS HIT

1. Activity :

☐ On Ground ☐ Landing ☐ En Route ☐ Other _____

☐ Hovering ☐ Take Off ☐ Target Attack _____

2. Altitude (Above Grd, Ft) _____ Air Speed (Kts) _____ Visibility _____

3. Aircraft Reaction (Check one or more)

☐ Cont'd to Fly ☐ Mission Abort ☐ Precaution Land Fix and/or Took Off

☐ Forced to Land ☐ Crashed ☐ Recovered ☐ Destroyed

Remarks: _____

4. Fires and Explosions

☐ Fire in Flight ☐ Fire Upon Landing

☐ Explosion in Flight ☐ Explosion Upon Landing

5. Knew When Aircraft Was Hit ☐ Yes ☐ No

PACAF, TAB, JAPAN

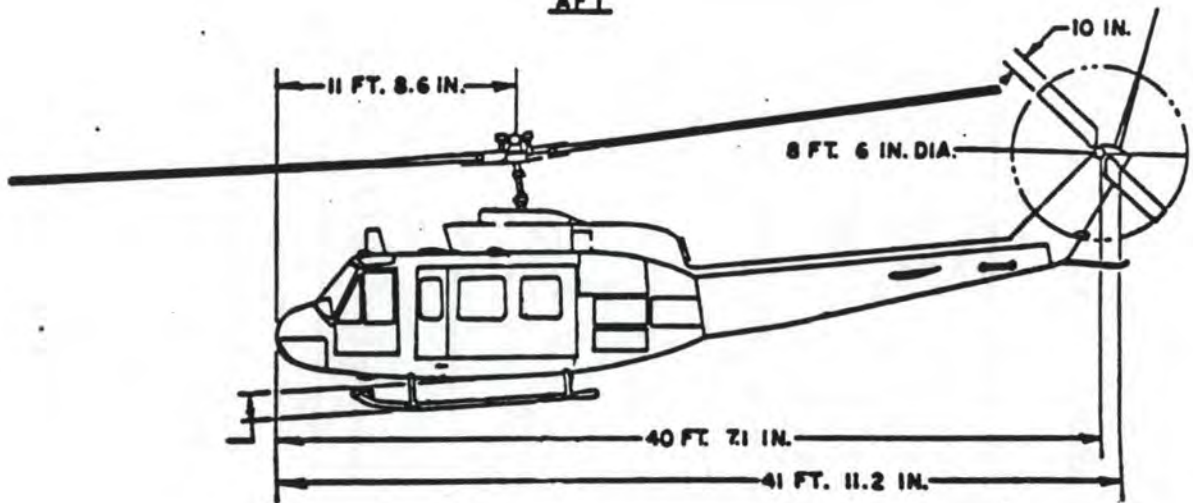
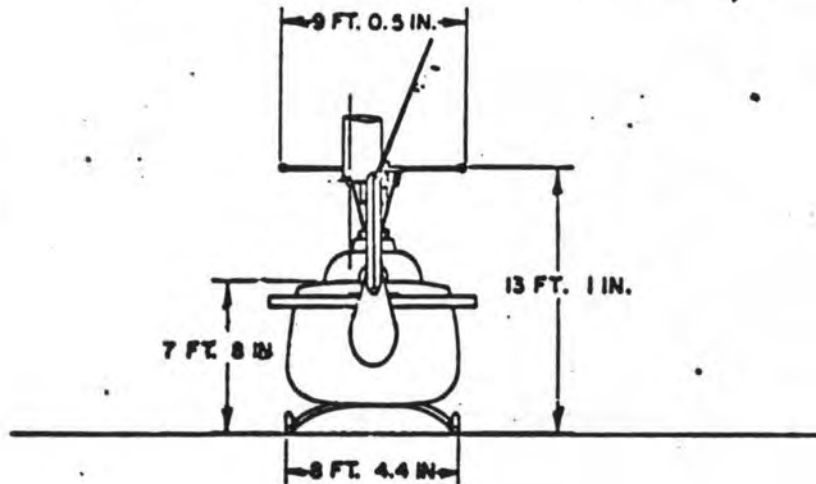
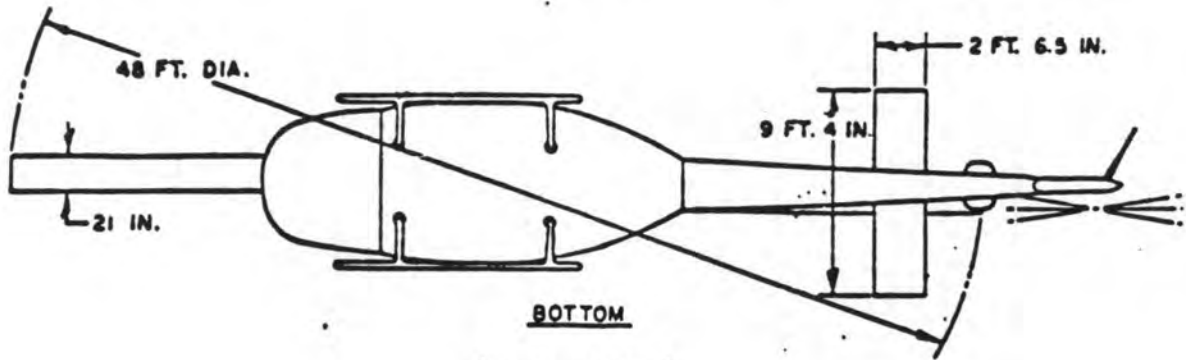
DYNALECTRON CORPORATION



aerospace operations division
4800 CAMP BOWEN BLVD., FORT WORTH, TX 76106 PHONE (817) 342-1000

Description of Damage:

SAMPLE



RIGHT SIDE

TYPE AIRCRAFT _____ DATE DAMAGE OCCURRED _____ LOCATION OF REPAIR SHOP _____
AIRCRAFT SERIAL NO. _____ DATE AIRCRAFT INPUT _____
DATE AIRCRAFT FLY-AWAY _____

[illegible]

Reason For Delays If Any: _____

Remarks: _____

Revised 30 June 1966

S A M P L E

ABBREVIATED AIRCRAFT ACCIDENT/COMBAT DAMAGE REPORT FORM FOR COMBAT AREA										REPORTS CONTROL SYMBOL	
To: _____				From: _____							
SECTION A - LOCATION AND TIME											
1 DATE OF ACCIDENT				2 TIME				3 PLACE OF ACCIDENT			
SECTION B - AIRCRAFT											
1 AIRCRAFT SERIAL NUMBER				2 TYPE MODEL AND SERIES				3 UNIT ASSIGNED			
SECTION C - DAMAGE CLASSIFICATION											
1 COMBAT LOSS OR DAMAGE (as a direct result of hostile action)						2 ACCIDENT (Blame or Error as defined by AR 365-25)					
SECTION D - OPERATOR AND/OR OPERATORS											
PERSONS AT CONTROLS AT THE TIME OF THE ACCIDENT ☐ PILOT ☐ INSTRUCTOR PILOT ☐ COPILOT ☐ ACFT COMMANDER											
1 LAST NAME - FIRST NAME - MIDDLE INITIAL						2 GRADE		3 SERVICE NUMBER		4 AS WAS ON DUTY	
5 AGE		6 SERVICE (Army, Air Force, Navy)				7 ORGANIZATION TO WHICH ASSIGNED					
8 PRESENT AERONAUTICAL RATING						9 DATE RECEIVED		10 DUTY STATUS AT TIME OF TEST			
11 LAST NAME - FIRST NAME - MIDDLE INITIAL						12 GRADE		13 SERVICE NUMBER		14 AS WAS ON DUTY	
15 AGE		16 SERVICE (Army, Air Force, Navy)				17 ORGANIZATION TO WHICH ASSIGNED					
18 PRESENT AERONAUTICAL RATING						19 DATE RECEIVED		20 DUTY STATUS AT TIME OF ACFT			
SECTION E - INJURIES											
DUTY AT TIME OF ACCIDENT		NUMBER FATAL		NUMBER NOT INJURED		LOCATION OF INJURY			CAUSE OF INJURY		
1 PILOT											
2 COPILOT											
3 ACFT COMMANDER											
4 HOST PILOT											
5 CREW											
6 SUMMER											
7 OBSERVER											
8 PASSENGERS											
SECTION F - CREW EXPERIENCE											
1 HOURS FLYING TIME		TOTAL TIME		TOTAL FIXED WING			TOTAL ROTARY WING			TOTAL TIME PRESENT TOUR	
				ID D EP			ID D EP			INSTR QUAL	
PILOT										TOTAL TIME PRESENT TOUR	
COPILOT										FLYING TIME	
ACFT COMMANDER											
HOST PILOT											
SECTION G - CAUSE FACTORS											
1 CREW ERROR ☐ ESTABLISHED ☐ SUSPECTED ☐ NONE ☐ UNKNOWN											
2 MATERIAL FAILURE ☐ ESTABLISHED ☐ SUSPECTED ☐ NONE ☐ UNKNOWN											
3 CTR CONTROL NUMBER:				DATE SUBMITTED:							
4 MAINTENANCE ERROR ☐ ESTABLISHED ☐ SUSPECTED ☐ NONE ☐ UNKNOWN											
SECTION H - DAMAGE											
1 EXTENT OF DAMAGE ☐ TOTAL LOSS ☐ REPAIRABLE				2 AMOUNT OF DAMAGE (Dollars)				3 SERVICE TO REPAIR			
SECTION I - WEATHER											
1 WEATHER CONDITION						2 PRESSURE ALT			3 DENSITY ALT		
SECTION J - DESCRIPTION OF MISAP (continues on page 2)											
To include details of situation, flight circumstances, operators' actions/omissions, maintenance deficiencies, material failure and supervisory action.											

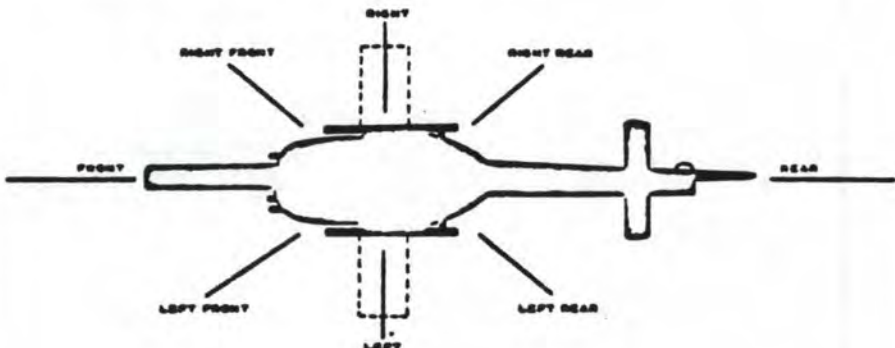
ISARY FORM 232

37

FOR FORM 42 100 JAN 50 PREVIOUS EDITIONS ARE OBSOLETE

ABBREVIATED AIRCRAFT ACCIDENT/COMBAT DAMAGE REPORT FORM FOR COMBAT AREA			
SECTION J - DESCRIPTION OF MISHAP (continued)			
SECTION K - FINDINGS			
List all established and contributing cause factors. (Identify units or activity responsible for cause factors.)			
Recommendations to prevent recurrence			
1. INVESTIGATING OFFICER	2. NAME	3. GRADE	4. AERONAUTICAL RATING
SECTION L - STATEMENT OF APPOINTING AUTHORITY/UNIT COMMANDER			
Statement of command or commandant of appointing authority/unit commander and actions taken to prevent recurrence.			
1. DATE	2. SIGNATURE		
SECTION M - APPROVAL BLOCK			
1. APPROVED			
2. DATE	3. SIGNATURE		

USARV FORM 232

ABBREVIATED AIRCRAFT ACCIDENT/COMBAT DAMAGE REPORT FORM FOR COMBAT AREA														
SECTION H - AIRCRAFT COMBAT DAMAGE														
NUMBER HTS ON AIRCRAFT <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">1 TOTAL</td><td style="width: 50%;"></td></tr> <tr><td>2 NONE</td><td></td></tr> <tr><td>3 NO</td><td></td></tr> <tr><td>4 UNKNOWN</td><td></td></tr> <tr><td>5 OTHER</td><td></td></tr> </table>	1 TOTAL		2 NONE		3 NO		4 UNKNOWN		5 OTHER		6. NUMBER OF HTS ON AIRCRAFT 			
1 TOTAL														
2 NONE														
3 NO														
4 UNKNOWN														
5 OTHER														
7. NUMBER LEFT ON GROUND		8. ALTITUDE (Feet above runway)												
9. LOCATION WHERE HTS FROM SHOT FIRE WERE RECEIVED ON THE AIRCRAFT (Check applicable box)														
 ☐ FRONT ☐ RIGHT FRONT ☐ RIGHT SIDE ☐ RIGHT REAR ☐ REAR ☐ LEFT REAR ☐ LEFT SIDE ☐ LEFT FRONT ☐ TOP ☐ BOTTOM														
10. FLIGHT CONDITION	CHECK APPLICABLE ITEM	REMARKS												
NORMAL CRUISE (IN COMBAT)														
LANDING														
TAKING OFF														
HOVERING														
CLIMB CRUISE														
11. FLIGHT ATTITUDE	CHECK APPLICABLE ITEM	REMARKS												
STRAIGHT AND LEVEL														
WING UP														
WING DOWN														
TURNING RIGHT														
TURNING LEFT														
12. WAS CRASH LANDING REQUIRED? ☐ YES ☐ NO														
13. DAMAGE TO COMPONENTS OR SYSTEMS WHICH PREVENTED FURTHER FLIGHT (Check applicable items)														
<table style="width: 100%; border: none;"> <tr> <td>☐ CONTROL SYSTEM</td> <td>☐ SUPERCHARGE</td> <td>☐ FUEL SYSTEM</td> <td>☐ POWER TRANSMISSION SYSTEM</td> </tr> <tr> <td>☐ NOSE SYSTEM</td> <td>☐ ELECTRICAL SYSTEM</td> <td>☐ OIL SYSTEM</td> <td>☐ PROPELLER</td> </tr> <tr> <td>☐ ENGINE</td> <td>☐ HYDRAULIC SYSTEM</td> <td>☐ ENGINE</td> <td></td> </tr> </table>			☐ CONTROL SYSTEM	☐ SUPERCHARGE	☐ FUEL SYSTEM	☐ POWER TRANSMISSION SYSTEM	☐ NOSE SYSTEM	☐ ELECTRICAL SYSTEM	☐ OIL SYSTEM	☐ PROPELLER	☐ ENGINE	☐ HYDRAULIC SYSTEM	☐ ENGINE	
☐ CONTROL SYSTEM	☐ SUPERCHARGE	☐ FUEL SYSTEM	☐ POWER TRANSMISSION SYSTEM											
☐ NOSE SYSTEM	☐ ELECTRICAL SYSTEM	☐ OIL SYSTEM	☐ PROPELLER											
☐ ENGINE	☐ HYDRAULIC SYSTEM	☐ ENGINE												
14. EXTENT OF DAMAGE ☐ TOTAL LOSS ☐ REPARABLE		15. AMOUNT OF DAMAGE (Dollars)												

USARV FORM 232

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DD-232

[FOR FORM 232 JAN 68] PREVIOUS USARV EDITIONS ARE OBSOLETE

AIRCRAFT COMBAT DAMAGE REPORT

1. DATE		2. SUBJECT OF REPORT		3. ACTION NO.		4. DATE OF INCIDENT D M Y	
5. MODEL NO.		6. MODEL SERIAL NO.		7. MODEL HRS./RND.		8. TECHNICAL REFERENCE	
9. TIME SINCE NEW		10. ASSEMBLY NAME		11. ACTIVITY OR OWNER			
12. LOCATION		13. FAILED PART NO.		14. DASH NO.			
15. FAILED PART SERIAL NO.				17. INFORM. SOURCE First Hand Relay			
16. TIME SINCE NEW							

18. WHEN NOTICED	19. HOW NOTICED	20. CONDITION OF PART
CCM COMBAT OPERATION	713 BATTLE DAMAGE	073 BROKEN
FTE FLIGHT TEST	040 BINDING MECHANISM	120 CHAFED
FTF FLIGHT TEST ACCFP.	712 CRASH DAMAGE	170 CORRODED
HND HANDLING	233 ERRATIC	190 CRACKED
INS INSPECTION	037 FLUCTUATE	200 DENTED
NOR NORMAL OPERATION	066 INOPERATIVE	803 NO DEFECT-TBO
REC RECEIVING	901 INTERMITTENT	385 RIVENTS Loose/Missile
SMT SCHED. MAINT.	730 LOOSE	935 SCORLD
SPI SPECIAL INSPECTION	008 NOISY	196 SHORTED
TST TEST	307 OIL LEAK	670 UNBALANCED
UNS UNSCHED. MAINT	690 VIBRATION EXCESS	020 WORN EXCESSIVELY
OTHER See Below	100 WARNING LIGHT ON	NOT APPLICABLE
	OTHER See Below	OTHER See Below

21. CAUSE OF PROBLEM	22. TYPE OF REPORT	23. HOW A/C RET. TO OPER.
37 ASSEMBLED Improperly	FAILURE REPORT	C ADJUST
97 DESIGN DEFICIENCY	PROBLEM MEMO	A EQUIP. AWAIT. PARTS
01 F. O. D.	INFORMATION ONLY	B NOT APPLICABLE
86 HANDLING DAMAGE		3 NOT SALVAGEABLE
40 INSTALLED Improperly		5 O.K. LIMITED USE
46 MAINTENANCE		7 REMOVE AND REPLACE
91 OPERATOR ERROR		0 RETURN TO HTC-AD
92 PILOT ERROR		2 REPAIRED
57 PROCESSED Improperly		OTHER See Below
77 TRANSPORT DAMAGE		
89 UNKNOWN		
90 VIBRATION EXCESS		
OTHER See Below		

SAMPLE

24. SUBSYSTEM CODE			
01	HELICOPTER COMPLETE	41	ELECTRICAL
10	MAIN ROTOR	42	LIGHT INT./EXT.
16	TAIL ROTOR	44	RADIO
20	FUSELAGE	45	INSTRUMENTS
35	TAIL BOOM	47	ARMOR/ARMAMENT
36	STABILIZER	50	DRIVE SYSTEM
40	EQUIPMENT	60	LANDING GEAR
		70	FLIGHT CONTROLS
		77	ENGINE CONTROLS
		80	POWER PLANT
		81	FUEL SYSTEM
		82	EXHAUST SYSTEM
		83	OIL SYSTEM
		99	GSE or GHE

25. REMARKS

JOINT SERVICES
ANTI-AIRCRAFT FIRE INCIDENT AND DAMAGE REPORT

- INSTRUCTIONS:
1. Aircraft receiving fire only (no hits) complete Items A through E (telephone or TWX requirement Items A through E).
 2. Aircraft receiving hits complete entire form (telephone or TWX requirement Items A through G).
 3. Telephone (TACC) Tan Son Nhut 2614.
 4. Mail completed forms for items required to Cdr, 7th Air Force, ATTN: DI-DISB, APO 96307. Weekly consolidate mailing is required.

A. REPORT IDENTIFICATION:

1. Unit Reporting _____
2. Complete A/C SN. _____
3. Date/Time of Incident _____
4. A/C Type, Model, Series _____
5. Coord. of Fire (UNT GRID) _____

B. AIRCRAFT ACTIVITY: (Circle one underlined item only)

1. Take off from: a. Landing Zone b. Pickup Zone c. Base
2. Landing to: a. Landing Zone b. Pickup Zone c. Base
3. Target Attack: a. Approach b. Withdrawal c. On Target
4. Enroute: a. Level b. Climb c. Descend

C. ALTITUDE: Estimated Aircraft & Absolute Altitude When Hit (Feet) _____

D. TYPE FIRE RECEIVED:

1. Weapon Type: a. Small Arms b. Auto Weapon
c. Other (Specify) _____
2. Caliber: a. Cal. .30 b. Cal. .50 c. 20mm
d. 37mm e. Airburst f. Other (Specify) _____

E. INTENSITY OF FIRE (Circle one):

1. Light (1-10 Rounds)
2. Moderate (11-25 Rounds)
3. Intense (25 Rounds or More)

F. HITS: Number of Individual Hits _____.

G. AIRCRAFT REACTION (Circle one):

1. Continued to Fly; Mission Completed.
2. Continued to Fly; Mission Not Completed.
3. Forced to Land; Insp/Quick Fix/Took Off.
4. Forced to Land; Later Destroyed.
5. Forced to Land; Later Recovered.
6. Crashed; Aircraft Recoverable.
7. Crashed: Aircraft Not Recoverable.

H. CAUSES: System Hit Causing Aircraft Reaction (Circle One)

- | | |
|------------------------|-----------------------|
| 1. <u>Engine</u> | 5. <u>Main Rotor</u> |
| 2. <u>Transmission</u> | 6. <u>Power Train</u> |
| 3. <u>Fuel System</u> | 7. <u>Casualties</u> |
| 4. <u>Controls</u> | |

I. ARMAMENT:

1. Was any aircraft armament being employed at time of hit? Yes No
2. What type weapon(s) were being employed at time of hit? (Specify) _____.
3. What type aircraft armament systems aboard aircraft? (Specify) _____.

J. MISSION TYPE (Circle one):

- | | | |
|---------------------|-------------------------|----------------------------|
| 1. <u>Vis Recon</u> | 7. <u>Flr Drop</u> | 14. <u>Combat Cgo</u> |
| 2. <u>Armd Esct</u> | 8. <u>Psywar</u> | 15. <u>Log TC</u> |
| 3. <u>Tac Recy</u> | 9. <u>Cmd & Cnt</u> | 16. <u>Log Cgo</u> |
| 4. <u>FAC</u> | 10. <u>Defol</u> | 17. <u>Close Air Spt</u> |
| 5. <u>Cas Evac</u> | 11. <u>RDF/Elec</u> | 18. <u>Photo/Infra-red</u> |
| 6. <u>Lolax</u> | 12. <u>SLAR</u> | 19. <u>Other (Specify)</u> |
| | 13. <u>Combat TC</u> | |

K. AIR SPEED: Air Speed at time of hit (knots)? _____

L. FORMATION: 1. Type _____ 2. Position _____

M. GROUND FIRE INFORMATION:

1. Source Observed? Yes No
2. Direction of Enemy Fire (O'clock position) _____
3. Type of Projectile that hit aircraft? (Circle one)

a. <u>Steel Jacket</u>	b. <u>Tracer</u>	c. <u>Incendiary</u>
d. <u>Armor Piercing</u>	e. <u>Other (Specify)</u>	
4. Estimated Range of Source (Meters) _____
5. Aircraft Heading _____

N. NUMBER & TYPE ESCORT A/C:

	Armed Type-Number	Unarmed Type-Number
Fixed Wing		
Rotary Wing		

O. NUMBER ON BOARD A/C: 1. Passengers _____ 2. Crew _____

P. POSITION OF CASUALTIES:

	Fatal	Non-Fatal	Location - Cause
1. Pilot			
2. Co-Pilot			
3. Crew Chief			
4. Gunner			
5. Passengers			
6. Observer			

(For additional casualties use the remarks section.)

Q. PROJECTILE ENTRANCE LOCATION (Write in Number of Hits):

	Top	Bottom	Left	Right	Center
1. Nose & Cockpit	—	—	—	—	—
2. Pass. Comp.	—	—	—	—	—
3. Engine Comp.	—	—	—	—	—
4. Wing or Main Rotor System	—	—	—	—	—
5. Tail Empennage or Tail Rotor	—	—	—	—	—

R. EXTENT OF DAMAGE & REMARKS: (Describe damaged components, especially those causing A/C reactions other than continue to fly. Include effectiveness of self-sealing tanks, body armor, and recommended tactics that might prevent similar damage.)

S A M P L E

SAMPLE CRASH FACTS MESSAGE

This is a Crash Facts Message, Army Aircraft Accident, RCS CSGPA-159.

- (1) 13 Jun 63, 1555C, 3 miles north of Ft Bayonet, Ga.
- (2) II-13II, 56-7281, 175th Avn Co (Corps), Ft Bayonet, Ga.
- (3) Major, skids and cross tubes broken, bubble broken, tail rotor damaged.
- (4) Pilot; service; Jones, Robert M. 0783216, 1st Lt; 175th Avn Co (Corps), Ft Bayonet, Ga; shoulder harness, safety belt, and protective helmet utilized; no injuries. Ejection seat or parachute NA.
- (5) None.
- (6) Smith, Donald R., 055652, Capt; 35th Engr Bn; safety belt and shoulder harness utilized; slight cut above left eye. Ejection seat or parachute NA.
- (7) Engine failed at 300 ft after takeoff; struck ditch bank in running autorotation damaging skids, cross tubes and tail rotor blades.
- (8) Weather not a factor.
- (9) Engine failure.
- (10) Not known, pending teardown analysis.
- (11) 0-435-238; L-563-31; total time 534:00; time since last overhaul 534:00; date of last overhaul 21 Feb 63; new; previous storage history, new; cause of failure unknown; power settings were at cruise; lost oil pressure, manifold pressure and RPM.
- (12) Engine chip detector warning system installed; 16 hours since last oil sampling conducted.
- (13) FAA not notified.
- (14) EIR control number (46783).

COMBAT DAMAGE REPORT

SAMPLE

DATE	TIME	DAY	NIGHT	LOCATION	SERIAL NO.
GRASS BLIGHT AT HIT	MISSION		☐ SLING ☐ TOWING		PHASE OF OPERATION
INDICATED ALTITUDE	AIRFIELD	LOADING	WIND DIRECTION/VELOCITY	CEILING/VISIBILITY	FLIGHT G.A.T.
PERSONNEL	CREW	PASSENGERS	INJURIES		PASSENGERS
TERRAIN	ELEVATION _____ FT.	☐ LEVEL ☐ ROLLING ☐ MOUNTAINS ☐ WOODED ☐ WATER ☐ DESERT			
TOTAL HITS ON A/C	RIFLE HITS	RIFLE CALIBRE	MACHINE GUN HITS	MACHINE GUN CALIBRE	OTHER

WAS CREW AWARE THAT OPERATION WAS IN HOSTILE AREA?	YES	NO	WAS A/C EQUIPPED WITH PROTECTIVE ARMOR?	YES	NO
WAS CREW AWARE THAT HOSTILE FIRE WAS DIRECTED AT A/C?	YES	NO	WAS PROTECTIVE ARMOR PENETRATED?	YES	NO
WAS CREW WEARING PROTECTIVE EQUIPMENT?	YES	NO	(Indicate the location and position of penetration on the inside diagrams)		

WAS EVASIVE ACTION TAKEN UPON BEING HIT?	YES	NO	EVASIVE ACTION CHANGES		
			DIRECTION	ALTITUDE	SPEED
EVASIVE ACTION, ☐ WAS ☐ WAS NOT EFFECTIVE IN ☐ REDUCING ☐ ELIMINATING FURTHER DAMAGE					
MISSION CONTINUED?	YES	NO	UPON LANDING WAS REPAIR REQUIRED?		
LANDING REQUIRED?	YES	NO	FIRE - INFLIGHT?		
DID FURTHER DAMAGE RESULT FROM LANDING?	YES	NO	FIRE - POST LANDING?		

SYSTEM DAMAGE (IDENTIFY COMPONENTS AFFECTED)

AIRFRAME/LANDING GEAR
COMM/NAV
DRIVE
ELECTRICAL
EQUIPMENT
FLT. CONTROLS
HYDRAULIC
INDICATING
POWER PLANT (INC. FUEL SYSTEM)
ROTOR
WISC.

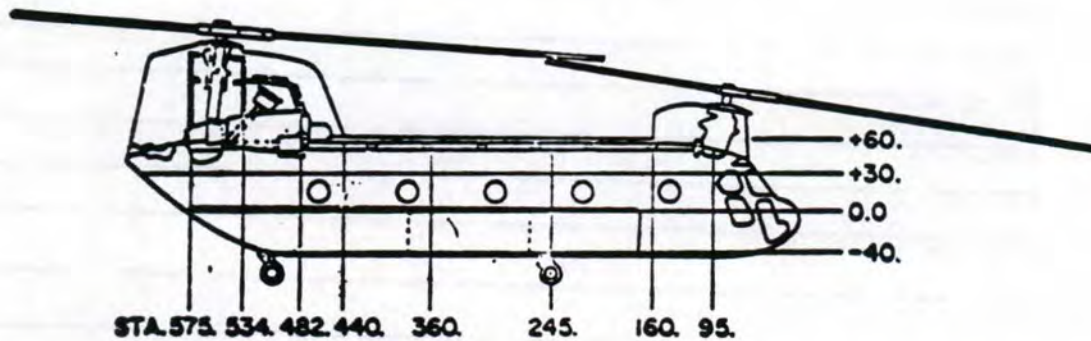
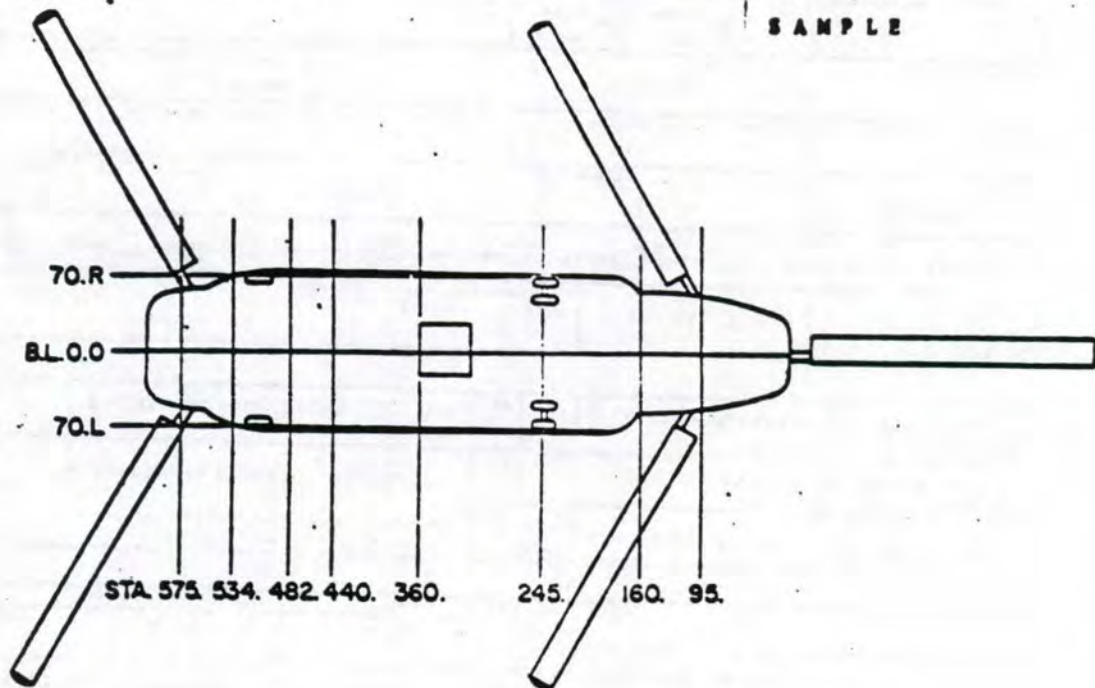
FORM 45001 (2/60)

FROM _____ 47

DATE: _____

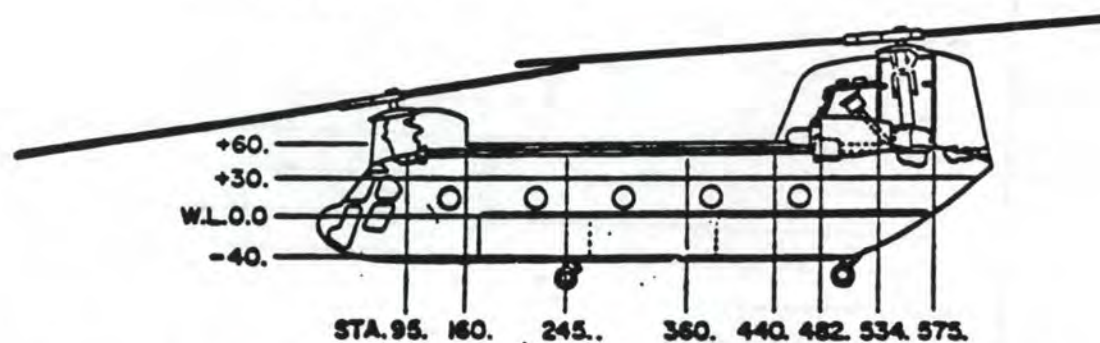
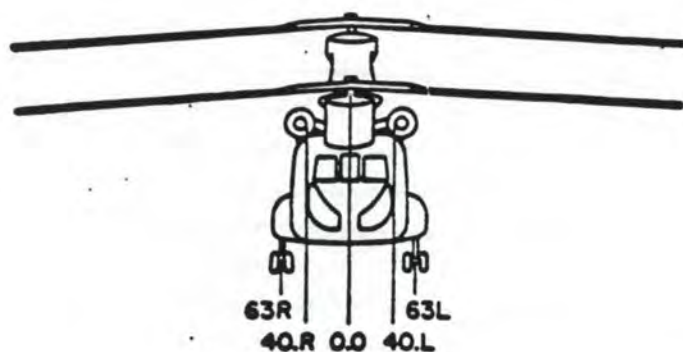
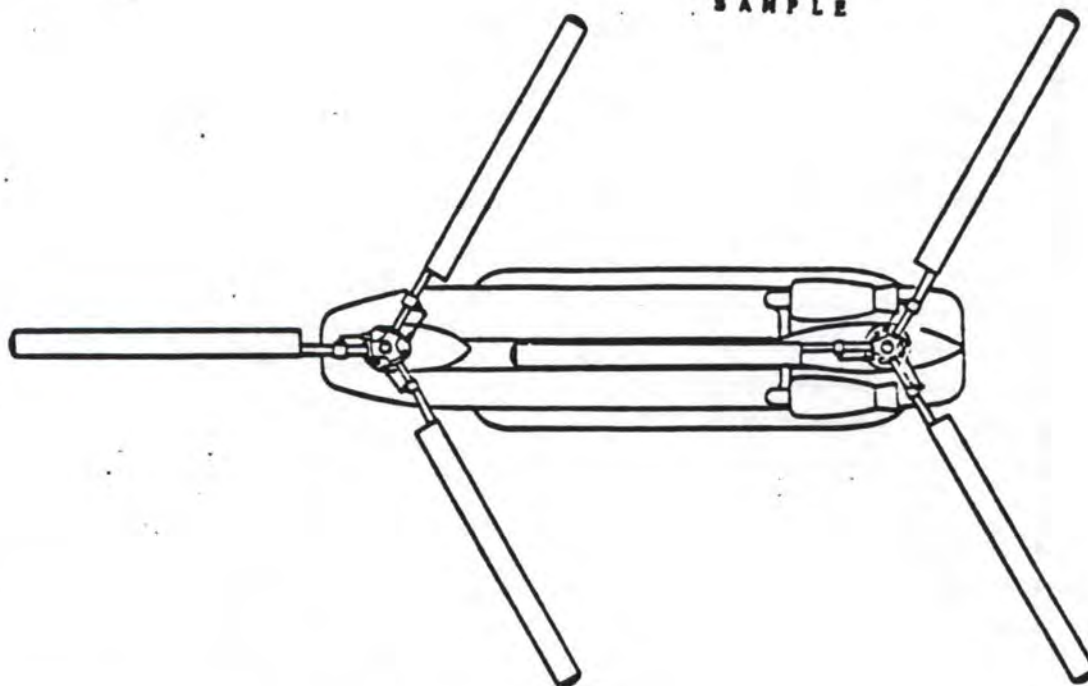
If any answers occur in shaded areas use reverse side "REMARKS" to explain/describe, degree, extent or condition.

SAMPLE



INDICATE ON THE DIAGRAM THE LOCATION, ANGLE, AND CALIBRE OF PROJECTILES STRIKING THE AIRCRAFT. CODE ALL HITS SHOWN ON TWO OR MORE ILLUSTRATIONS. PROVIDE SKETCHES

SAMPLE



OF SIGNIFICANT IMPACT DAMAGED AREAS. LIST ON REVERSE SIDE ALL SYSTEM COMPONENTS DAMAGED AS A RESULT OF HIT (NOMENCLATURE, P/N).

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APPENDIX B

HELICOPTER OPERATIONAL DATA
(CY 1966 THROUGH JUNE 1970)

TABLE

- | | |
|-----|---|
| B-1 | AIRCRAFT HIT, SORTIES, AND FLYING HOURS (U) |
| B-2 | TOTAL COMBAT LOSSES FROM GROUND FIRE BY AIRCRAFT
TYPE AND YEAR (U) |

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TABLE B-1 (C) AIRCRAFT HIT, SORTIES AND FLYING HOURS (CY 1966 THROUGH JUNE 1970) (U)

CY	AIRCRAFT TYPE ITEM	AH-1G	CH-47/54	CH-13/23/6/58		UH-1B/C		UH-1D/H	TOTAL
				Armed	Unarmed	Armed	Unarmed		
1966	Aircraft Hit	0	168	112	69	1,239	95	1,059	2,742
	Total Sorties	0	130,636	54,225	195,386	370,400	227,116	1,586,461	2,564,224
	*Combat Sorties	0	94,903	29,903	73,940	289,118	92,511	762,526	1,342,901
	Flying Hours	0	45,968	34,945	76,026	217,986	93,493	494,430	962,848
1967	Aircraft Hit	0	305	154	100	1,335	231	1,840	3,965
	Total Sorties	0	403,397	95,055	399,713	570,269	166,633	3,360,940	4,996,007
	*Combat Sorties	0	320,517	79,252	216,492	530,052	81,825	1,996,005	3,224,143
	Flying Hours	0	127,439	50,292	147,913	272,173	64,752	1,015,501	1,678,070
1968	Aircraft Hit	313	416	395	365	1,679	81	2,344	5,593
	Total Sorties	164,917	615,818	174,606	547,636	733,305	44,238	4,459,280	6,739,800
	*Combat Sorties	146,376	587,695	138,190	336,868	679,429	34,784	3,700,577	5,709,919
	Flying Hours	101,416	192,903	94,398	206,246	324,424	21,173	1,392,134	2,332,694
1969	Aircraft Hit	724	350	542	724	1,203	9	2,702	6,254
	Total Sorties	492,593	645,413	204,314	858,418	456,397	16,251	5,176,298	7,848,684
	*Combat Sorties	446,106	612,493	174,409	598,199	414,843	6,623	4,215,260	6,467,933
	Flying Hours	311,938	223,098	126,078	324,238	221,493	7,659	1,620,282	2,834,786
1970 Thru June	Aircraft Hit	450	182	310	403	491	0	1,675	3,511
	Total Sorties	295,825	344,654	121,910	440,815	180,824	286	2,592,394	3,976,708
	*Combat Sorties	265,123	320,748	100,340	280,198	164,780	26	2,110,938	3,242,153
	Flying Hours	181,274	127,506	76,187	174,788	93,603	288	862,651	1,516,297
TOTALS:									
	Aircraft Hit	1,487	1,421	1,513	1,661	5,947	416	9,620	22,065
	Sorties	953,335	2,139,918	650,110	2,441,968	2,311,195	454,524	17,175,373	26,125,423
	*Combat Sorties	857,605	1,936,356	522,094	1,505,697	2,078,222	215,769	12,871,306	19,987,049
	Flying Hours	594,628	716,914	381,900	929,211	1,129,679	187,365	5,384,998	9,324,695

Source: USARV Reg. 95-10 OPREP-5

* Combat Support Sorties

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TABLE B-2 (C) TOTAL COMBAT LOSSES FROM GROUND FIRE / AIRCRAFT TYPE
AND YEAR (U)

YEAR	AH-1G	CH-47/54	OH-13/23/6/58	UH-1B/C	UH-1D/H	TOTAL
1966	0	1	9	23	15	48
1967	0	5	27	51	71	154
1968	14	15	133	78	145	385
1969	37	6	182	50	114	389
1970 Thru June	17	5	107	24	102	255
TOTAL	68	32	458	226	447	1,231
PERCENT	6	3	37	18	36	100

Source: USARV Reg. 95-10 OPREP-5

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APPENDIX C

~~(CONFIDENTIAL)~~ MINE/BOOBY TRAP INCIDENT AND LOSS DATA (CY 1962
THROUGH JUNE 1970)

TABLE

- C - 1 Incidents and Losses by Month and Year (U)
- C - 2 Summary of Incidents and Losses by Month (U)
- C - 3 Incidents Vs. Total Sorties Hit and Losses Vs. Total Combat
Losses Due To Ground Fire by Year (U)
- C - 4 Reactions to Incidents by Aircraft Type (U)
- C - 5 Incidents by Altitude and Aircraft Type (U)
- C - 6 Percent of Incidents by Altitude and Aircraft Type (U)
- C - 7 Losses by Altitude and Aircraft Type (U)
- C - 8 Percent of Losses by Altitude and Aircraft Type (U)
- C - 9 Incidents by Mission and Aircraft Type (U)
- C - 10 Percent of Incidents by Mission and Aircraft Type (U)
- C - 11 Losses by Mission and Aircraft Type (U)
- C - 12 Percent of Losses by Mission and Aircraft Type (U)
- C - 13 Incidents by Activity and Aircraft Type (U)
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- C - 17 Incidents by Cause and Aircraft Type (U)
- C - 18 Percent of Incidents by Cause and Aircraft Type (U)
- C - 19 Losses by Cause and Aircraft Type (U)
- C - 20 Percent of Losses by Cause and Aircraft Type (U)

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TABLE C-1 (C) INCIDENTS AND LOSSES BY MONTH AND YEAR (CY 1962 THROUGH JUNE 1970) (U)
 Note: There were only four incidents of H/ST (no loss of AC) from
 CY 1962 through 1965:

Date	Aircraft Type					No of Incidents	
May 1963				CH-21		1	
Oct 1964				UH-1B		1	
Dec 1965				UH-1B		2	

Month	AM-1G	CH-47	CH-11/ 23/6	UH-1B/C	UH-1D/H	Total Incidents	Total Aircraft Losses
CY 1966							
Jan							
Feb							
Mar					1	1	
Apr					2	2	
May							
Jun		1			1	2	
Jul							
Aug			1 (1)	1		2	1
Sep				1		1	
Oct							
Nov				1		1	
Dec				1	5	6	
TOTAL		1	1	4	9	15	1
CY 1967							
Jan				1	7 (1)	8	1
Feb					3 (1)	3	1
Mar					14 (2)	14	2
Apr				2 (1)	2	4	1
May				1	5	6	
Jun					4	4	
Jul				4	4	8	
Aug			1 (1)	2 (1)		3	2
Sep					4	4	
Oct				1	1	2	
Nov		1	1		2 (1)	4	1
Dec		1	1		2	4	
TOTAL		2	3	11	48	64	8
CY 1968							
Jan					6 (1)	6	1
Feb					3	3	
Mar			2 (1)		5	7	1
Apr							
May							
Jun	1				1	2	
Jul			1		1 (1)	2	1
Aug			2		1	3	
Sep		1			3	4	
Oct	1		1 (1)			2	1
Nov		1	2		2 (2)	5	2
Dec			2 (1)		3 (1)	5	2
TOTAL	2	2	10		25	39	8
CY 1969							
Jan	1		1		4	6	
Feb	1				5 (1)	6	1
Mar		1	1	1 (1)	3	6	1
Apr			2		5 (2)	7	2
May		3			4 (1)	7	1
Jun					6 (2)	6	2
Jul		1	3 (2)		3 (1)	7	3
Aug		1	2		4 (1)	7	1
Sep							
Oct			2		3	5	
Nov			1		3	4	
Dec		1	1	1	2	5	
TOTAL	2	7	13	2	42	66	11
CY 1970							
Jan				1	5 (2)	6	2
Feb				3	6	9	
Mar	1	1			4 (1)	6	1
Apr			3		1	4	
May					2	2	
Jun		1			2 (1)	3	1
TOTAL	1	2	3	4	20	30	4

NOTE: Numbers in parentheses in columns 2 through 6 indicate number of aircraft losses.

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TABLE C-2 (C) SUMMARY OF INCIDENTS AND LOSSES (CY 1962 THROUGH JUNE 1970)
BY MONTH AND AIRCRAFT TYPE

MONTH	AH-1G	CH-21/ 47/54	OH-13/26/ 6/58	UH-1B/C	UH-1D/H	TOTAL INCIDENTS	AIRCRAFT LOSSES
Jan	1		1	2	22	26	4
Feb	1			3	17	21	2
Mar	1	2	3	1	27	34	5
Apr			5	2	10	17	3
May		4		1	11	16	1
Jun	1	2			14	17	3
Jul		1	4	4	8	17	4
Aug		1	6	3	5	15	4
Sep		1		1	7	9	0
Oct	1		3	2	4	10	1
Nov		2	4	1	7	14	3
Dec		2	4	4	12	22	2
TOTAL INCIDENTS	5	15	30	24	144	218	32
% OF TOTAL	2	7	14	11	66	100	15
TOTAL LOSSES	0	0	7	3	22		32
% OF TOTAL	0	0	23	10	67		100

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TABLE C-3 (C) M/WT INCIDENTS VERSUS TOTAL SORTIES HIT AND M/WT LOSSES VERSUS TOTAL COMBAT LOSSES DUE TO GROUND FIRE BY YEAR (U)

Aircraft Type	Total Sorties Hit*	M/WT Incidents Only	%	Total Combat Losses*	M/WT Losses Only	%	Cumulative Totals	
							Incidents	Losses
<u>CY 1963</u>								
CH-21		1			0		1	0
<u>CY 1964</u>								
UH-1B		1			0		2	0
<u>CY 1965</u>								
UH-1B		2			0		4	0
<u>CY 1966</u>								
CH-47/S4	168	1	0.6	1	0	0		
OH-13/23/6	181	1	0.5	9	1	11.0		
UH-1B/C	1334	4	0.3	23	0	0		
UH-1D/H	1059	9	0.8	15	0	0		
	2742	15	0.5	48	1	2.1	19	1
<u>CY 1967</u>								
CH-47/S4	305	2	0.6	5	0	0		
OH-13/23/6	254	3	1.2	27	1	3.7		
UH-1B/C	1566	11	0.7	51	2	4.0		
UH-1D/H	1840	48	2.5	71	5	7.0		
	3965	64	1.5	154	8	5.2	83	9
<u>CY 1968</u>								
AH-1G	313	2	0.6	14	0	0		
CH-47/S4	416	2	1.0	15	0	6.7		
OH-13/23/6	760	10	1.3	133	3	2.3		
UH-1B/C	1760	0	0	78	0	0		
UH-1D/H	2344	25	1.1	145	5	3.4		
	5593	39	1.1	385	8	3.0	122	17
<u>CY 1969</u>								
AH-1G	724	2	0.3	37	0	0		
CH-47/S4	350	7	2.0	6	0	0		
OH-13/23/6/58	1266	13	1.0	182	2	0		
UH-1B/C	1212	2	0.1	50	1	2.0		
UH-1D/H	2702	42	1.5	114	8	7.0		
	6254	64	1.0	389	11	2.5	188	28
<u>CY 1970 (6 Months)</u>								
AH-1G	450	1	0.2	17	0	0		
CH-47/S4	182	2	1.1	5	0	0		
OH-13/23/6/58	713	3	0.4	107	0	0		
UH-1B/C	491	4	0.8	24	0	0		
UH-1D/H	1675	20	1.2	102	4	4.9		
	3511	30	0.8	255	4	2.0	218	32
<u>TOTALS</u>								
	22065	219	1.0	1231	32	2.6		

*Source: USARV Regulation 95-10, OPREP-3

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TABLE C-4 (C) REACTIONS TO INCIDENTS BY AIRCRAFT TYPE (U)

AIRCRAFT REACTION	AIRCRAFT TYPE					TOTALS	
	AH-1G	CH-21/ 47/54	CH-13/ 23/6/58	UH-1B/C	UH-1D/H	No.	%
I. Aircraft Losses							
a) Crashed & Burned			1	1	7	9	4.1
b) Crashed (No Fire)			6	2	12	20	9.2
c) Destroyed by fire on ground					3	3	1.4
SUB-TOTAL			7	3	22	32	14.7
II. Forced Landing	1	5	4	3	28	41	18.8
III. Crashed-Recovered			1		2	3	1.4
IV. Mission Abort	1	1	3	1	25	31	14.2
V. Continued to Fly	3	6	10	15	58	92	42.2
VI. Unknown		3	5	2	9	19	8.7
TOTAL INCIDENTS	5	15	30	24	144	218	100

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TABLE C-5 (C) INCIDENTS BY ALTITUDE AND AIRCRAFT TYPE (U)

ALTITUDE (FT.)	AH-1G	CH-21/ 47/54	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTALS	
						No.	
0-25	1	9	11	9	97	127	59
26-50	3	1	3	8	12	27	12
Over 50	1		4	4	10	19	9
Unknown		5	12	3	25	45	20
TOTALS	5	15	30	24	144	218	100

TABLE C-6 (C) PERCENT OF INCIDENTS BY ALTITUDE AND AIRCRAFT TYPE (U)

ALTITUDE (FT.)	AH-1G	CH-21/ 47/54	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTALS
0-25	20	90	61	43	81	73.4
26-50	60	10	17	38	10	15.6
Over 50	20		22	19	9	11.0
TOTALS	100	100	100	100	100	100

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TABLE C-7 (C) LOSSES BY ALTITUDE AND AIRCRAFT TYPE (U)

ALTITUDE (FT.)	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
0-25	2	0	15	17	53
26-50	1	1	1	3	10
Over 50	1	0	0	1	3
Unknown	3	2	6	11	34
TOTALS	7	3	22	32	100

TABLE C-8 (C) PERCENT OF LOSSES BY ALTITUDE AND AIRCRAFT TYPE (U)

ALTITUDE (FT.)	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL
0-25	50	0	94	81
26-50	25	100	6	14
Over 50	25	0	0	5
TOTALS	100	100	100	100

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TABLE C-9 (C) INCIDENTS BY MISSION AND AIRCRAFT TYPE (U)

MISSION	AH-1G	CH-21/ 47/54	CH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
Combat Assault		2	1	2	70	74	34
Reconnaissance	3		24	7	12	46	21
Medevac					25	25	11
Resupply		12			8	20	9
Troop Extraction				3	7	10	5
Command and Control			2	1	5	8	3
Combat Support				5		5	2
Armed Escort	2			2		4	2
Administration			1		2	3	1
Recovery Support			1	1		2	1
Target Marking				1		1	1
Defoliation					1	1	1
Test Flight		1				1	1
Unknown			2	2	14	18	8
TOTALS	5	15	30	24	144	218	100

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TABLE C-10 (C) PERCENT OF INCIDENTS BY MISSION AND AIRCRAFT TYPE (U)

MISSION	AH-1G	CH-21/ 47/54	CH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL
Combat Assault		13		9	54	37.0
Reconnaissance	60		86	33	9	23.0
Medevac					19	12.5
Resupply		80			6	10.0
Troop Extraction				14	5	5.0
Command and Control			8	4	4	4.0
Combat Support				23		2.5
Armed Escort	40			9		2.0
Administration			3		2	1.5
Recovery Support			3	4		1.0
Target Marking				4		0.5
Defoliation					1	0.5
Test Flight		7				0.5
TOTALS	100	100	100	100	100	100

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TABLE C-11 (C) LOSSES BY MISSION AND AIRCRAFT TYPE (U)

MISSION	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
Combat Assault			16	16	50
Reconnaissance	6	2	1	9	29
Command and Control		1	1	2	6
Medevac			2	2	6
Resupply			1	1	3
Troop Extraction			1	1	3
Armed Escort					
Combat Support					
Administration					
Defoliation					
Target Marking					
Recovery Support					
Test Flight					
Unknown	1			1	3
TOTALS	7	3	22	32	100

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TABLE C-12 (C) PERCENT OF LOSSES BY MISSION AND AIRCRAFT TYPE (U)

MISSION	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTALS
Combat Assault			73	52
Reconnaissance	100	67	5	29
Command and Control		33	4	6.5
Medevac			9	6.5
Resupply			4	3
Troop Extraction			5	3
Armed Escort				
Combat Support				
Administration				
Defoliation				
Target Marking				
Recovery Support				
Test Flight				
TOTALS	100	100	100	100

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TABLE C-13 (C) INCIDENTS BY ACTIVITY AND AIRCRAFT TYPE (U)

ACTIVITY	AH-1G	CH-21/ 47/54	CH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
Landing		6	4	10	55	75	35
Hover		9	4		25	38	17
On Ground			1		33	34	16
En route	1		8	1	7	17	8
Take-Off			1		15	16	7
Orbiting			3	8	2	13	6
Target Attack	4		6	3		13	6
Unknown			3	2	7	12	5
TOTALS	5	15	30	24	144	218	100

TABLE C-14 (C) PERCENT OF INCIDENTS BY ACTIVITY AND AIRCRAFT TYPE (U)

ACTIVITY	AH-1G	CH-21/ 47/54	CH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL
Landing		40	14	45	40	36.4
Hover		60	14		18	18.5
On Ground			4		24	16.5
En route	20		30	5	5	8.2
Take-Off			4		11	7.8
Orbiting			12	36	2	6.3
Target Attack	80		22	14		6.3
TOTALS	100	100	100	100	100	100

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TABLE C-15 (C) LOSSES BY ACTIVITY AND AIRCRAFT TYPE (U)

ACTIVITY	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
Landing			10	10	31
Hover	1		7	8	25
Target Attack	3	1		4	12
On Ground			3	3	10
Take-Off	1		2	3	10
En route	1	1		2	6
Orbiting					
Unknown	1	1		2	6
TOTALS	7	3	22	32	100

TABLE C-16 (C) PERCENT OF LOSSES BY ACTIVITY AND AIRCRAFT TYPE (U)

ACTIVITY	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL
Landing			45	33
Hover	17		32	27
Target Attack	50	50		13.3
On Ground			14	10
Take-Off	16		9	10
En route	17	50		6.7
Orbiting				
TOTALS	100	100	100	100

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TABLE C-17 (C) INCIDENTS BY CAUSE AND AIRCRAFT TYPE (U)

CAUSE	AH-1G	CH-21/ 47/54	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
Claymore Type Mine	4	9	11	22	96	142	65
Booby Trap		5	10	1	28	44	20
Grenade			4		7	11	5
Bomb			1		3	4	2
Unknown	1	1	4	1	10	17	8
TOTALS	5	15	30	24	144	218	100

TABLE C-18 (C) PERCENT OF INCIDENTS BY CAUSE AND AIRCRAFT TYPE (U)

CAUSE	AH-1G	CH-21/ 47/54	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL
Claymore Type Mine	100	64	42	96	72	70.5
Booby Trap		36	38	4	21	22
Grenade			16		5	5.5
Bomb			4		2	2
TOTALS	100	100	100	100	100	100

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TABLE C-19 (C) LOSSES BY CAUSE AND AIRCRAFT TYPE (U)

CAUSE	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL	%
Claymore Type Mine	3	3	10	16	50
Booby Trap	2		8	10	31
Bomb			2	2	6
Grenade	1			1	3
Unknown	1		2	3	10
	—	—	—	—	—
TOTALS	7	3	22	32	100

TABLE C-20 (C) PERCENT OF LOSSES BY CAUSE AND AIRCRAFT TYPE (U)

CAUSE	OH-13/ 23/6/58	UH-1B/C	UH-1D/H	TOTAL
Claymore Type Mine	50	100	50	55
Booby Trap	33		40	34.5
Bomb			10	7
Grenade	17			3.5
	—	—	—	—
TOTALS	100	100	100	100

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APPENDIX D

CASUALTY DATA

TABLE

- D-1 PERSONNEL CASUALTIES BY CATEGORY, AIRCRAFT TYPE, AND YEAR (U)
- D-2 CASUALTY SUMMARY (U)
- D-3 SUMMARY OF CASUALTY TYPES AND CAUSES (U)
- D-4 SUMMARY OF CASUALTIES BY TYPE (U)

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TABLE D-1 (C) PERSONNEL CASUALTIES BY CATEGORY, AIRCRAFT TYPE, AND YEAR (U)

AIRCRAFT TYPE	1964				1965				1966				1967			
	WOUNDS		INJURIES		WOUNDS		INJURIES		WOUNDS		INJURIES		WOUNDS		INJURIES	
	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL
AH-1G																
CH-21/47/54													1			
CH-13/23/6/58									1		2		2			
UH-1B/C		2				2			3				3	4	6	
UH-1D/H									3				5	31	6	9
TOTALS		2				2			7		2		5	37	10	15
TOTALS/YR		2				2			9				67			

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AIRCRAFT TYPE	1968				1969				1970 Through June			
	WOUNDS		INJURIES		WOUNDS		INJURIES		WOUNDS		INJURIES	
	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL	FATAL	NON-FATAL
AH-1G		1										
CH-21/47/54		7				3						
CH-13/23/6/58	2	2	2			3		2		3		
UH-1B/C								4	1	1		
UH-1D/H	4	20	2	6	9	52	15	8	5	15	4	6
TOTALS	6	30	4	6	9	58	15	14	6	19	4	6
TOTALS/YR		46				96				35		

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TABLE D-2 (C) CASUALTY SUMMARY (U)

AIRCRAFT TYPE	WOUNDS		INJURIES		TOTALS	PERCENT
	FATAL	NON-FATAL	FATAL	NON-FATAL		
AH-1G		1			1	1
CH-21/47/54		11			11	4
OH-13/23/6/58	2	11	2	4	19	7
UH-1B/C	1	11	4	10	26	10
UH-1D/H	23	121	27	29	200	78
TOTALS	26	155	33	43	257	100
PERCENT	10	60	13	17	100	

TABLE D-3 (C) SUMMARY OF CASUALTY TYPES AND CAUSES (U)

CASUALTY TYPE	CASUALTY CAUSES					TOTAL	%
	FRAGS.	BULLETS	DEBRIS	CRASH	BURNS		
Wounds - Fatal	23	3				26	15
Wounds - Non-Fatal	147	4	4			155	85
Wound Totals	170	7	4			181	70
Injuries - Fatal				25	8	33	43
Injuries - Non-Fatal				41	2	43	57
Injury Totals				66	10	76	30
Grand Total	170	7	4	66	10	257	100
Cause Percent	66	3	1	26	4	100	

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TABLE D-4 (C) SUMMARY OF CASUALTIES BY TYPE (U)

CASUALTY TYPE	TOTALS	PERCENT	
Fatalities			
Wounds	26	44	
Injuries	<u>33</u>	<u>56</u>	
Total Fatalities	59	100	23
Non-Fatalities			
Wounds	155	78	
Injuries	<u>43</u>	<u>22</u>	
Total Non-Fatalities	198	100	77
TOTAL CASUALTIES	257		100

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APPENDIX E

DISTRIBUTION OF INCIDENTS BY
GEOGRAPHIC LOCATION (U)

Figure

- E-1 Location of Helicopter M/ET Incidents
CY 1962 Through June 1970 (U)
- E-2 Location of Helicopter M/ET Losses
CY 1962 Through June 1970 (U)

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- Location of Helicopter M/BT Incidents
- CY 1962 Thru June 1970
- Number of Incidents Reported with Coordinates = 197
- Number Reported Without Coordinates = 21
- TOTAL 218

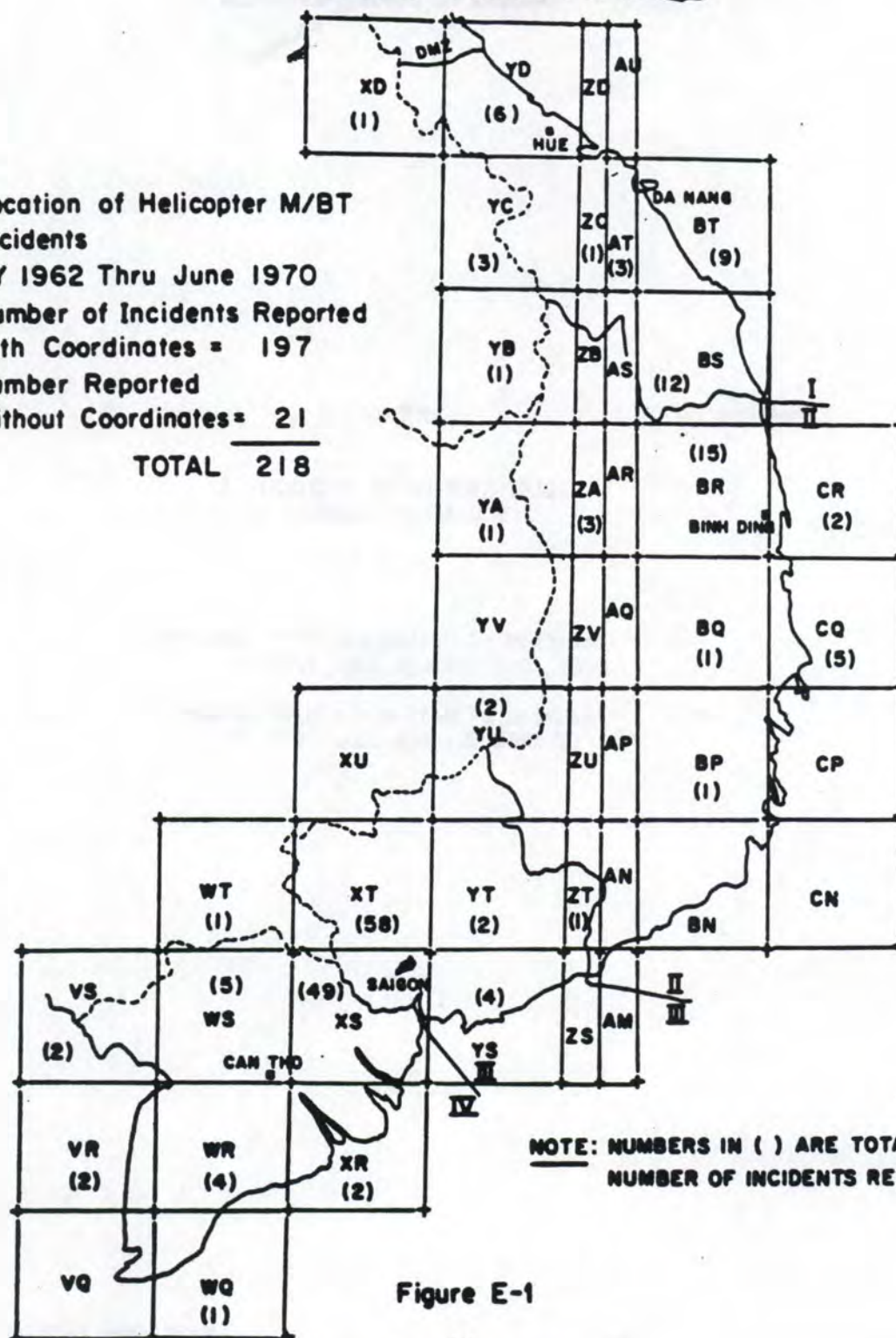


Figure E-1

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**Location of Helicopter M/BT
Losses**

CY 1962 Thru June 1970

**Number of Losses Reported
with Coordinates = 29**

**Number Reported
Without Coordinates = 3**

TOTAL = 32

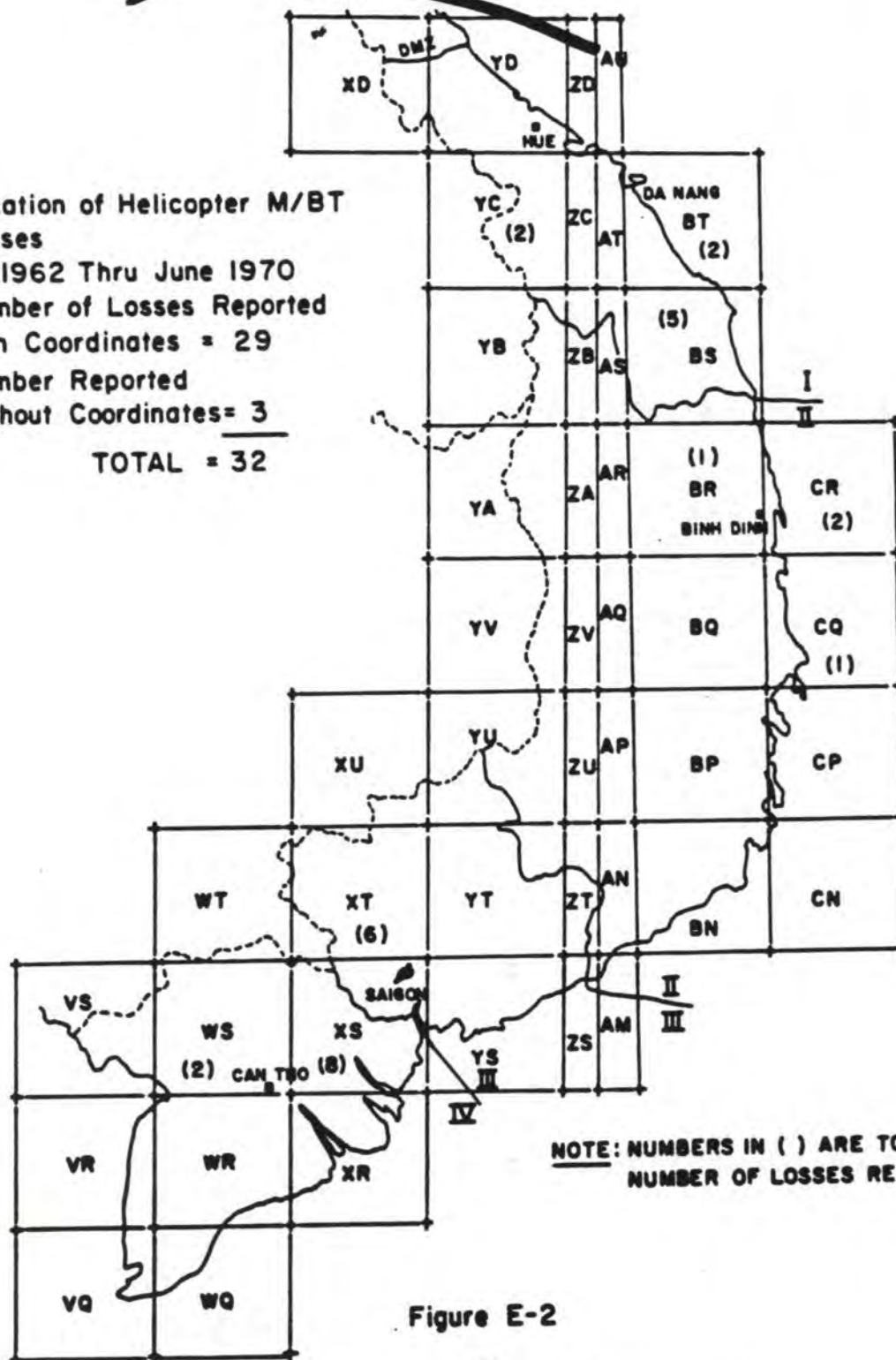


Figure E-2

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APPENDIX F

MINE AND BOOBY TRAP CASE HISTORIES

TABLE

F-1	AH-1G Case Histories (U)
F-2	CH-21 Case Histories (U)
F-3	CH-47 Case Histories (U)
F-4	OH-13/23 Case Histories (U)
F-5	OH-6A Case Histories (U)
F-6	UH-1B/C Case Histories (U)
F-7	UH-1D/H Case Histories (Crashes) (U)
F-8	UH-1D/H Case Histories (Forced Landings) (U)
F-9	UH-1D/H Case Histories (Mission Aborts) (U)
F-10	UH-1D/H Case Histories (Continued to Fly) (U)
F-11	UH-1D/H Case Histories (Unknown Reaction) (U)

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Table F-1. (C) AH-1G Case Histories (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
11 Mar 70 AH-1G 67-15771	VS 720 365	Recon	En route 50	None	Forced to land	Aircraft was hit by shrapnel from a jeep blown up by a command detonated mine. Fragments hit wing stores, rocket pods and main rotor. A/C was forced to land and was later recovered.
02 Jun 68 AH-1G 66-15312	WS 650 975	Recon	Target Attack 40	1-MIA (frag)	Mission Abort	While making a target attack, explosion occurred about 60 meters from aircraft. Source believed to be Claymore mine type device. Unknown how detonated. Fragment damage to skin along top right side of aircraft wounding the copilot (non-serious arm wound). Principal damage was to main rotor blades resulting in an aborted mission.
05 Oct 68 AH-1G 67-15568	XT 489 319	Recon	Target Attack 10	None	Continued to fly	While making a target attack, at an altitude of 10 feet, aircraft received six fragment hits — two in cockpit area and four in rotor blades. Unknown ordnance — possible mine/booby trap device.
27 Feb 69 AH-1G 67-15765	XS 992 965	Escort	Target Attack 50	None	Continued to fly	Claymore mine detonated directly below aircraft by rotor wash. Minor damage to rotor blade and tail boom.
26 Jan 69 AH-1G 67-15606	VR 880 150	Escort	Target Attack 100	None	Continued to fly	Aircraft was over a proposed landing zone when it received 12 hits from a Claymore mine. Unknown how mine was detonated. Two hits in nose section (one hit mini-gun), 5 hits in main rotor blades, and 5 hits in tail boom.

Table F-2. (C) CH-21 Case Histories (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
14 May 63 CH-21C 52-8636	Unknown	Test Flight	Hovering 6	None	Unknown	Rotor wash detonated two grenades rigged in a fence as a booby trap. Numerous fragment holes aft of station 359 and holes in forward and aft rotor blades.

Table P-3. (C) CH-47 Case Histories (U)

Base A/C Type A/C S/N	Certification	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
03 Sep 66 CH-47A 63-15005	EX 630 327	Resupply	Hovering Dth	None	Forced to land Recovered	A 50-pound M161-link mine was detonated by aircraft rotor wash causing major damage to rotor blades, fuselage and extensive sheet metal damage to rear pylons.
18 Mar 69 CH-47A 66-00102	IN 560 860	Resupply	Hovering 10	None	Forced to land Took Off	Rotor wash detonated a friendly M161-personnel mine resulting in about 36 fragment hits in the right rear area of aircraft. Damage to three rotor blades, right fuel pod and aircraft skin.
09 May 69 CH-47C 68-15847	CY 030 330	Resupply	Landing 10	None	Forced to land Took Off	Aircraft was landing at a MX campsite when rotor wash blew a hole into perimeter mine field detonating a M161. Fragment damage to two forward rotor blades and the left main fuel pod. Fuel leakage occurred because fragment penetrated above seal-sealing portion of call.
18 May 69 CH-47A 67-18483	Unknown	Resupply (Sling)	Landing 25	None	Forced to land	Aircraft was over outer perimeter when rotor wash detonated a Claymore mine. Damage limited to aft rotor blades -- hole in one and large dents in the other two. Aircraft was forced to land and all aft blades were changed -- unknown whether blades were changed in field or if aircraft lifted out.
24 Jun 70 CH-47A 67-18350	Unknown	Resupply (Sling)	Hovering 25	None	Forced to land Took Off	Aircraft received damage to rotor blades, all windows and aircraft commander's door blown out by Claymore mine.

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Table F-3. (C) CH-47 Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
20 Mar 70 CH-47A 66-19040	BQ 963 588	Resupply	Hovering 2	None	Mission Abort	Aircraft received three hits from a booby trap while hovering over landing zone. Damage was moderate. Mission was not completed.
26 Jun 66 CH-47A 63-07902	CQ 115 655	Resupply	Landing 30	None	Continued to fly	Aircraft landing with external fuel bags when rotor wash detonated two <u>land mines</u> resulting in fragment damage to a forward and an aft rotor blade. Minor damage to ramp and underside of fuselage.
25 Nov 67 CH-47A 66-19008	XT 606 389	Resupply	Landing 10	None	Continued to fly	Aircraft received skin damage along entire left side -- door blown off, and all windows blown out. Unknown if ordnance was <u>mine or mortar</u> -- if mine, how detonated.
30 Dec 67 CH-47A 66-19038	WR 020 870	Combat Assault	Hovering 10	1-WIA	Continued to fly	While at a ten-foot hover an explosion occurred beneath aircraft. Ordnance believed to be an enemy <u>mine</u> detonated by rotor wash. Damage consisted of several dents and one 2 by 4 inch hole forward of the left rear landing gear.
27 Nov 68 CH-47A 66-19090	XT 104 475	Resupply	Hovering Unk	1-WIA	Continued to fly	Aircraft was hovering to pick up a sling load when rotor wash detonated a booby trap <u>grenade</u> causing minor skin damage.
15 May 69 CH-47A 66-19082	Unknown	Resupply (Sling)	Hovering 20	None	Continued to fly	Aircraft received seven fragment hits uniformly distributed over left side from <u>Claymore mine</u> detonation. Minor skin damage only. No other information available.

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Table F-3. (C) CH-47 Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
23 Jul 69 CH-47C 67-18351	Unknown	Resupply (Sling)	Hovering Unk	2-WIA (debris)	Continued to fly	Aircraft was hit by a mine blast rigged from a 105mm or a 155 mm shell. Pilot and copilot injured by planiglas debris from copilot's door. A/C returned to base.
04 Dec 69 CH-47C 67-18342	YD 934 072	Combat Assault	Landing Unk	1-WIA (frag)	Unknown	Crew chief wounded by fragments from booby trap set off by rotor wash. — both legs. No information pertaining to aircraft damage or reaction to being hit.
28 Aug 69 CH-47A 65-87986	Unknown	Resupply	Landing Unk	None	Unknown	Aircraft received damage to basic structural member from booby trap. Fragment damage to former, fuel line and a few holes in skin.

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Table F-4. (U) OH-13/23 Case Histories (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
06 Aug 66 OH-23C 63-12838	Unknown	Unknown	Take Off Unk	1-WIA (frag) 2-IIA (crash injuries)	Crashed - Total loss	Aircraft rotor wash detonated an enemy mine. Fragments struck the aircraft and dust and debris completely obscured the pilot's vision. Tail boom hit ground, aircraft bounced and crashed in nose-low attitude. Aircraft was a total loss.
18 Aug 67 OH-138 64-15349	CR 032 693	Recon	Hovering 3 or 4	1-WIA (frag)	Crashed - Total loss	Aircraft in a low-altitude hover while observing a suspected VC. Individual under surveillance tossed a fragment type grenade under the aircraft. Fragments cut tail rotor cable causing loss of directional control. Aircraft crashed and was declared a total loss and used for salvage parts.
06 Mar 68 OH-23C 63-12874	BS 342 889 KEATON, DONALD E. 178 00E, 23 1NE	Recon	Unknown Unk	3-KIA (frag & burns)	Crashed & Burned	Aircraft reported shot down. Aircraft commander and observer were killed by mine fragments and pilot died from body burns.
20 Dec 67 OH-138 63-09187	YU 173 173	Recon	En route 150	None	Continued to fly	Climbing to safe altitude after completing low-level recon when a land mine explosion was heard below the aircraft. Unknown type of ordnance or how it was detonated. Upon landing at home base, two holes in bubble and one in fuel tanks (non-selfsealing) were observed.
25 Mar 68 OH-138 63-09184	XT 762 840	Admin	En route 25	None	Continued to fly	An undetermined type explosion was set off under aircraft by hostile elements while it was flying low level to avoid artillery. Pilot took evasive action to avoid further explosions by making a sharp right turn and climb. Aircraft struck a rubber tree causing minor damage to main rotor blades, bubble and console. A/C was returning to home base when incident occurred.
14 Nov 67 OH-23C Unknown	XT 544 101	Recon	On Ground 0	1-WIA (frag)	Unknown	Observer was debarking from aircraft when he was hit by fragments from a hostile booby trap grenade. Unknown how grenade was detonated or the extent of damage to the aircraft.

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Table P-5. (X) OH-6A Case Histories (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Status
08 Oct 68 OH-6A 67-16304	IM 487 693	Recon	En route 70	1 KIA SP4 ANDERSON, HARRIS, USA 1ST AVN. BDE.	Crashed - Total Loss
10 Dec 68 OH-6A 67-16438	IM 071 401	Recon	Target Attack IM	2 KIA	Crashed - Total Loss
16 Jul 69 OH-6A 67-16674	IM 142 578	Recon	Target Attack 50	1 KIA	Crashed - Total Loss
16 Jul 69 OH-6A 67-16606	IM 142 578	Recon	Target Attack 25	2 KIA	Crashed - Total Loss
03 Oct 69 OH-6A 67-17984	Unknown	Unknown	Unknown Dk	None	Crashed - Recovered

Aircraft on visual recon when it received ground fire and crashed into a river. CHARTERED was exploded in area. Unknown if aircraft was damaged by mines or ballistic damage.

Aircraft making gun pass when it was hit. Force of explosion and shrapnel literally knocked aircraft from sky.

Aircraft received heavy fire at 30 foot elevation while attacking a beach. A/C lost power and tail boom struck a tree. A/C spun around several times and crashed. During spin and crash aircraft was observed to set off several booby traps. These went off to rear of ship - unknown if any shrapnel hit it.

Aircraft, flying trail to A/C 67-16674 above, picked up downed crew and took off. Pilot observed command and control ship moving into area and turned to warn of booby traps. During return it set off several booby traps and experienced multi-engine failure. Aircraft settled to ground in a spin and turned over on its left side.

Aircraft was badly damaged after striking a wire trap. There were no injuries. Aircraft was returned to COMUS for repair then returned to RVN.

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Table F-5. (S) OH-6A Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
08 Mar 69 OH-6A 67-16100	XT 641 531	Recon	Landing 0	None	Forced to land Recovered	Aircraft landed on a <u>booby trap</u> . Explosion blew off the tail rotor and the main rotor was hit by shrapnel.
18 Apr 69 OH-6A 65-13001	XS 512 760	Recon	En route Unk	None	Forced to land Recovered	Aircraft, flying low level, detonated a <u>booby trap</u> . Pilot lost tail rotor control and landed in a dry rice paddy without further damage.
06 Oct 69 OH-6A 68-17177	XT 513 305	Command & Control	Hovering 10	None	Forced to land Recovered	Aircraft rotor wash detonated a <u>40-pound bomb</u> at a range of 5-6 meters. Fragments penetrated the aircraft skin behind pilot's seat (no seat hit) and engine cowlings. Serious blast damage to tail boom airframe prevented further flight and was recovered by a OH-1H.
08 Apr 70 OH-6A 68-16013	XS 400 530	Recon	En route Unk	2-WIA (frag)	Forced to land	While on low level recon a <u>grenade or booby trap</u> exploded directly beneath the aircraft causing major damage. Aircraft made forced landing with no additional damage. Pilot and observer were both wounded. Aircraft was slung back to Vinh Long.
08 Aug 68 OH-6A 66-17793	Unknown	Recon	Orbiting Unk	None	Mission Abort	Aircraft screening area when rotor wash set off two <u>booby traps</u> . Main rotor blade, pitch housing, right fuel cell and left engine access door were hit. Aircraft flew 45 minutes after hit and landed at forward camp. Aircraft was later sling-loaded back to Vinh Long.

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Table F-5. (C) OH-6A Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
07 Apr 70 OH-6A 65-12949	YD 933 077	Recon	En route Unk	None	Mission Abort	Aircraft was making low level pass when rotor wash detonated an anti-personnel mine. Fragments hit engine mount, two support beams in engine compartment and fuel cell. Aircraft was flown to base for assessment of damage.
08 Apr 70 OH-6A 66-07930	NR 091 087	Recon	Target Attack 20	1-WIA (frag)	Mission Abort	Aircraft, applying suppressive fire, made low pass over area when command detonated mine exploded. Aircraft received five fragmentation holes in fuselage and one hole through left fuel cell. Cell sealed.
04 Jul 68 OH-6A 66-07843	Unknown	Recon	Orbiting 80	None	Continued to fly	Aircraft received minor fuselage damage from booby trap fragments. No other information.
08 Aug 68 OH-6A 67-16048	Unknown	Recon	Hovering 5	Unknown	Continued to fly	Aircraft was hovering to investigate enemy equipment when command detonated mine exploded under the aircraft. Pilot continued to fly for one hour. Upon return to base 18 shrapnel holes were found in aircraft. All were repaired.
21 Nov 68 OH-6A 67-16270	XS 304 828	Recovery Support	Hovering 10	None	Continued to fly	Fragments from booby trap struck stabilizer, tail boom, main rotor blade and lead/lag bar for main rotor blade.
22 Nov 68 OH-6A 66-14413	XS 716 408	Recon	En route 30	None	Continued to fly	On scout mission received six hits. Tech. Rep. report states four rounds and two Claymore mine explosions. Minor damage.

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Table F-5. (C) OH-6A Case Histories (Continued) (U)

Data A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
28 Dec 68 OH-6A 66-07911	WB 651 103	Recon	Target Attack 10	None	Continued to fly	Aircraft received two shrapnel hits from a booby trap. Minor damage to fuselage. No other information.
15 Jan 69 OH-6A 66-14405	XB 597 603	Recon	En route 75	None	Continued to fly	Aircraft received five hits from a Claymore mine with only minor fuselage damage.
14 Jul 69 OH-6A 67-16559	SA 150 710	Recon	Target Attack 50	None	Continued to fly	Aircraft received a grenade fragment hit in bottom of cockpit causing minor damage. Unknown if grenade was thrown or part of a booby trap.
16 Aug 69 OH-6A 68-17158	XT 918 425	Recon	Landing 10	None	Continued to fly	An explosion occurred about two feet behind aircraft as landing approach was being conducted. Device believed to be mine or M-79 (canister-pellet) device. Minor skin damage.
20 Apr 69 OH-6A 67-16154	Unknown	Recon	En route Unk	Unknown	Unknown	Aircraft, flying low level, contacted a wire and set off mine on ground. Aircraft received tail boom damage. No other information.
14 Aug 69 OH-6A 67-16100	XT 472 780	Recon	Unknown Unk	Unknown	Unknown	Aircraft hit by two grenade fragments in tail boom section causing minor damage. Unknown if grenade was thrown or part of a booby trap.
17 Nov 69 OH-6A 68-17308	XT 550 439	Recon	Landing Unk	1-WIA (frag)	Unknown	Crewer received a minor fragment wound of the left hand when aircraft reportedly "hit a mine." Aircraft did not crash or burn. No other information.
26 Dec 69 OH-6A Unknown	YD 385 283	Command & Control	Landing Unk	1-WIA (frag)	Unknown	Pilot received non-serious fragment wound to torso when aircraft landed on a hostile booby trap. Aircraft did not crash or burn. No other information.

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Table P-6. (U) UM-1B/C Case Histories (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Cause/Effect	Aircraft Status	Remarks
16 Apr 67 UM-1B 63-08736	DS 800 480	Recon	Unknown Dak	4-KIA (crash injuries) Total Loss	Crashed - Total Loss	No eye witness to this incident - Investigation board determined that the aircraft was flying low when a <u>missile</u> exploded in crew compartment (photographs show numerous fragment holes on bottom of A/C). The aircraft went out of control and crashed - all four occupants died from crash injuries. The aircraft was recovered, evacuated to COMUS and declared a total loss.
23 Aug 67 UM-1B 63-12063	IR 795 543	Command & Control	In route 30	6-KIA (crash injuries)	Crashed - Total Loss	Aircraft flying over far enemy when crack struck a <u>missile</u> . Fragment hit tail rotor of aircraft causing it to spin out of control and crash.
23 Aug 69 UM-1C 64-13224	DS 676 567	Recon	Target Attack Dak	4-KIA (crash injuries)	Crashed - Total Loss	While on target attack an explosion occurred beneath aircraft and blew tail boom off. Some confusion concerning nature of explosion - <u>missile</u> detected by rotor wash or a secondary type explosion. Main portion of aircraft landed inverted and burned.
12 Dec 65 UM-1B 64-13976	IR 125 485	Combat Support	Landing 30	1-KIA (frag)	Forced to Land Recovered	Aircraft was at 30 feet altitude and 20 knots when <u>anti-aircraft</u> fire exploded - 25 fragment holes in rotor blades and fuselage.
09 Dec 66 UM-1B 63-08715	IR 300 505	Recovery Support	Landing 15	None	Forced to Land Recovered	On approach to landing zone, reported "cleared of mine" as explosion occurred beneath aircraft. The aircraft was landed short of its intended area and inspected. The determination was that A/C was unflyable and was recovered by a CM-47 shortly thereafter.

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Table F-6. (U) UH-1B/C Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
25 Jan 70 UH-1C 66-15132	XS 616 684	Combat Support	Target Attack 100	1-KIA 1-WIA (frag)	Forced to land	Aircraft was making gun run when an M-16A1 AP mine was command detonated from area of palm trees. Aircraft received five fragment hits with no systems damaged. Crew chief was killed and pilot was wounded. Aircraft was forced to land, casualties were removed. Aircraft was inspected and took off.
11 Oct 64 UH-1B Unknown	XS 570 870	Combat Assault	Landing 3	2-WIA (frag)	Mission Abort	Landing zone was at edge of friendly mine field. While unloading troops mine detonated about 15 feet from aircraft -- 9 fragment holes in fuselage. No serious damage.
02 Dec 65 UH-1B 62-01892	BS 715 708	Combat Support	Landing 4	1-WIA (frag)	Continued to fly	Aircraft was hovering at four feet altitude when anti-personnel mine exploded resulting in 20 fragment holes in cabin, fuselage and main rotor mast.
25 Aug 66 UH-1B Unknown	XS 658 915	Combat Support	Landing 25	None	Continued to fly	Crew felt explosion directly below aircraft -- possible mine.
16 Sep 66 UH-1B 64-14007	XS 005 636	Armed Escort	Orbiting 40	1-WIA (frag)	Continued to fly	While flying low-level cover for a medical evacuation, aircraft detonated a Claymore mine placed in trees. Minor damage to chin bubble, windshield and rotor blades.
10 Jan 67 UH-1B	Unknown	Unknown	Landing Unk	1-WIA (frag)	Continued to fly	On approach to landing some aircraft was damaged by Claymore mine (possibly command detonated).

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Table F-6. (S) UH-1B/C Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
17 Apr 67 UH-1B 63-08674	NR 773 781	Recon	Orbiting 50	None	Continued to fly	Aircraft was making a low-level recon- naissance of landing zone (in con- nection with airborne combat assault) when a mine was detonated in the landing zone. Minor skin damage only.
01 Jul 67 UH-1C 64-14183	NR 440 750	Recon	Orbiting 20	1-WIA	Continued to fly	Mini-gun exploded aboard aircraft — unknown reason — wounding crew chief. Aircraft received three caliber .30 holes in one main rotor blade. Air- craft also damaged by Claymore mine detonation — fragment holes in main rotor blade. No other information available.
03 Jul 67 UH-1C 64-14183	NR 537 798	Recon	Unknown 20	None	Continued to fly	Aircraft received four fragment hits from a Claymore mine and returned to home base for repairs.
12 Jul 67 UH-1B 63-08669	NR 332 970	Combat Support	Orbiting 20	None	Continued to fly	While conducting low-level recon- naissance of proposed landing zone, a small mine or grenade was detonated in tree tops causing minor skin damage to aircraft.
28 Jul 67 UH-1C 63-09431	NR 235 910	Armed Escort	Orbiting 100	None	Continued to fly	Aircraft hit by projectile from abo- gun or fragments from Claymore mine. Minor damage. No other information.
01 Aug 67 UH-1C 63-09451	NR 083 614	Recon	Orbiting 30-100	None	Continued to fly	Aircraft received numerous fragment hits from Claymore mine — minor damage. No other information.

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Table F-6. (C) UH-1B/C Case Histories (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
23 Oct 67 UH-1C 64-00339	WS 935 280	Target Marking	Orbiting 25-30	None	Continued to fly	Aircraft was flying low-level night mission along a canal when hit by fragments from <u>Claymore type mine</u> . No other information available.
27 Dec 69 UH-1C 65-09423	BN 575 615	Unknown	En route 300	None	Continued to fly	Aircraft received 15 hits from a <u>Claymore mine</u> explosion. No other information.
03 Feb 70 UH-1C 67-17148	XT 145 728	Troop Extraction	Landing 50	None	Continued to fly	Aircraft, one of three, was landing to pick-up some when a <u>Claymore mine</u> exploded. Aircraft received 15 fragment hits with only minor damage.
03 Feb 70 UH-1C 68-16202	XT 145 728	Troop Extraction	Landing 50	None	Continued to fly	Aircraft, one of three, was landing to pick-up some when a <u>Claymore mine</u> was exploded. Aircraft received two fragment hits with minor damage.
03 Feb 70 UH-1C 67-17442	XT 145 728	Troop Extraction	Landing 50	None	Continued to fly	Aircraft, one of three, was landing to pick-up some when a <u>Claymore mine</u> was exploded. Aircraft received 27 fragment hits with minor damage.
10 Nov 66 UH-1B Unknown	CQ 035 566	Combat Assault	Landing 0	2-WIA (frag)	Unknown	Aircraft landed in booby trapped area causing detonation of <u>unknown ordnance</u> .
15 May 67 UH-1C 64-14151	XT 325 088	Recon	Target Attack 25	1-WIA (frag)	Unknown	Breaking away from a target attack when a <u>Claymore mine</u> exploded in top of trees about 35 meters away. Aircraft took two hits in tail rotor system and the crew chief suffered a fragment wound of right foot.

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Table P-7 (P) UN-10/N Case Histories (Crashes) (U)

Case No.	A/C Type	Coordinates	Mission	Activity	Altitude (feet)	Casualties	Aircraft	Remarks
							Section	
68 Jan 67	UH-1B	IR 612 317	Combat	Hovering	2	7-11A Crash Injuries (4 crew 3 par)	Crashed & burned - Total loss	Miss detonated beneath A/C while at lower in LT. A/C overboard (fuel cables ruptured) and was totally destroyed by fire.
65-09932			Assault					
63 Feb 67	UH-1B	IR 649 815	Combat	Taking off	3	2-11A (frag.) 1-11A (frag.) 1-11A (Crash)	Crashed - Total loss	After off-loading 10 troops in landing zone A/C lifted off. At about three feet altitude a mine was command detonated near the A/C causing it to crash and roll over. The A/C was declared a total loss.
64-09908			Assault					
19 Mar 67	UH-1B	IR 303 703	Combat	Landing	0	1-11A 1-11A (frag.)	Destroyed by fire	On ground in landing zone, A/C hit by fragments from command detonated mine, causing a fire. A/C completely destroyed.
65-09943			Assault					
19 Mar 67	UH-1B	IR 303 703	Combat	Landing	0	6-11A (Injuries & burns)	Destroyed by fire	Aircraft landed down in zone primarily to a command detonated device. The result - total destruction of the A/C and six fatalities (one crewmember survived). Inspection of the landing zone by ground troops revealed several 175mm rounds, fused-wired for command detonation.
64-13799			Assault					
04 Nov 67	UH-1B	IR 554 904	Combat	Landing	12		Crashed & burned - Total loss	Aircraft was on short final when a mine exploded directly below. Pedal control was lost and went into right spin, rolled on left side and burned.
64-09975			Assault					

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Table F-7 (C) UH-1D/H Case Histories (Crashes) (Continued) (U)

Date A/C Type A/C SN	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
14 Jan 68 UH-1D 65-10062	Classified	Combat Assault	Hovering 3	2-WIA (frag.) 2-KIA (frag.)	Crashed & Burned - Total loss	Aircraft was at hover at the termination of an approach into the landing zone when a Claymore mine detonation occurred. Aircraft hit ground hard and burned. A/C commander suffered leg wounds -- fragments. Three passengers (non-U.S.) were also hit by fragments -- two fatal and one non-fatal.
29 Jul 68 UH-1D 65-12890	BT 167 079	Resupply	Hovering Unk	4-IIA (Crash Injuries)	Crashed - Total loss	While A/C was hovering in landing zone to drop off combat supplies, an enemy mine (250 pound bomb) was detonated. Aircraft landed hard causing extensive damage to all major systems -- declared a total loss. Unknown if A/C burned. No fatalities.
05 Nov 68 UH-1H 67-17397	BT 232 162	Medevac	Hovering Unk	2-IIA (Crash Injuries)	Crashed - Total loss	As A/C came to a low hover in a landing zone, an explosion (unknown device) occurred about 20 feet away. Major damage to rotor blades, cabin section and tail boom. Aircraft declared uneconomical to repair -- deleted from inventory.
29 Dec 68 UH-1H 66-16295	Unknown	Combat Assault	Landing Unk	2-WIA (frag.)	Crashed - Total loss	Aircraft was close to touchdown in landing zone when it exploded a <u>ping</u> , unknown if by contact or rotor wash. Aircraft rolled on its side and was a total loss. No other information.

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Table F-7 (C) UN-10/H Case Histories (Crashes) (Continued) (U)

Date A/C Type A/C SN	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
12 Feb 69 UH-1H 67-17527	XT 636 261	Unknown	Landing 0	1-IIA (Crash Injury)	Crashed - Recovered	On touchdown a mine detonated (unknown how mine was detonated) causing fragment damage to A/C (extent unknown) and slightly wounding one individual. Aircraft reported as "crashed and recoverable."
20 Feb 69 UH-1H 67-17466	YC 765 962	Combat Assault	Landing Unk	1-KIA (pax) 4-IIA (Crash Injuries)	Crashed - Destroyed	On touchdown in landing zone a mine was command detonated. Aircraft flipped over causing severe damage to all main systems. Aircraft was destroyed. One passenger pinned beneath A/C and suffered fatal injuries.
15 Apr 69 UH-1H 67-17156	XS 610 226	Combat Assault	Hovering 3	1-WIA (frag.)	Crashed - Total loss	Aircraft was at three feet altitude and landing when a 105mm artillery shell, rigged as a booby trap, exploded, blowing off tail boom. Rotor blades struck ground causing major damage to all main systems. Crew chief suffered broken leg and arm from shrapnel hits.
22 Apr 69 UH-1H 67-17656	Classified	Combat Assault	Landing 10	1-KIA (burns) 2-IIA (burns) 1-WIA (frag.) 6-ARVN-Unk	Crashed & Burned - Total loss	Aircraft was reported as "destroyed by command detonated mine." All four crewmen were casualties -- the crew chief was killed -- unknown wounds and/or injuries to 6 ARVN passengers. The aircraft was destroyed in resulting fire.

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Table F-7 (C) UH-1D/H Case Histories (Crashes) (Continued) (U)

Date A/C Type A/C SE	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
13 May 69 UH-1H 67-17399	BS 621 418	Combat Assault	Taking Off 30	3-KIA (bullet) 1-MIA 2-KIA (ARVN)	Crashed & Burned - Total loss	While landing in landing zone, A/C hit a booby trap causing it to crash and burn. Three crewmen killed by bullet wounds to head and chest area; one crewman missing in action. Two passengers, probably ARVN killed — unknown if they were killed in the crash or by small arms fire.
11 Jun 69 UH-1H 67-17753	BS 805 334	Combat Assault	On Ground 0	4-MIA (frag.) 5-KIA (ARVN)	Total loss	Aircraft landed in landing zone. An infantry man stepped out right side of aircraft setting off a booby trap — unknown size. The five individuals reported killed — were probably ARVN. The aircraft was a total loss. No other information.
30 Jun 69 UH-1H 66-17125	BS 733 470	Medevac	Hovering Unk	1-MIA (Crash Injuries) Total loss 1-KIA (not inside of A/C)	Crashed - Total loss	At a night defensive position, an individual on the ground tripped a booby trap causing a hovering A/C to crash on top of him resulting in his death. Crew chief suffered fractured right arm. Aircraft not flyable and later declared a total loss — no fire.
24 Jul 69 UH-1D 66-00879	XS 270 910	Racon	Hovering 5	9-KIA (7-US & 2-ARVN - Crash)	Exploded - Total loss	Aircraft was firing at a submerged sampan. The rounds or vibrations detonated a 750 lb booby trapped bomb. Aircraft exploded in mid-air and was totally destroyed.

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Table F-7 (C) UN-ID/H Case Histories (Crashes) (Continued) (U)

Date A/C Type A/C SN	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
14 Aug 69 UH-1H 66-16311	CQ 295 272	Combat Assault	Landing 0	2-WIA (frag.)	Crashed - Total loss	Aircraft detonated <u>land mine</u> on landing in landing zone. Aircraft was carrying seven passengers and a crew of four. Pilot and one passenger were slightly wounded. Aircraft was destroyed in place.
18 Jan 70 UH-1H 68-15587	XT 528 436	Command & Control	Landing 15	None	Crashed - Total loss	Aircraft was on short final at approximately 15 feet when a Vietnamese radio telephone operator ran under the helicopter. A trip wire was pulled by the RTO which caused an artillery round, or facsimile, to explode directly beneath the helicopter. Shrapnel severed the tail rotor drive shaft causing loss of directional control. The aircraft landed hard causing major structural damage. A/C was a total loss.
24 Jan 70 UH-1H 67-17559	WS 950 523	Troop Extraction	Landing Unk	4-KIA 2-WIA (Crash)	Crashed - Total loss	Aircraft went into landing zone to pick up some ARVN and some captured equipment. Either a command detonated <u>mine</u> or a booby trap from the equipment went off. Advisor and gunner were killed, aircraft commander and crew chief were wounded, also two ARVN were killed. A/C was a total loss.
06 Mar 70 UH-1H 68-15312	XS 591 193	Combat Assault	Landing 0	3-KIA 6-WIA - ARVN (frags.)	Crashed - Destroyed	Aircraft touched down in pickup zone and booby trap exploded destroying the A/C. Three ARVN troops were killed and three were wounded. Three crewmen were wounded.

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Table F-7 (C) UH-1D/H Case Histories (Crashes) (Continued) (U)

Date A/C Type A/C SN	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
31 Mar 70 UH-1H 66-16828	WC 306 990	Combat Assault	Landing 0	2-IIA (Crash)	Crashed - Recovered	Aircraft was first ship into landing zone which was booby trapped with obstruction stakes. Aircraft's tail rotor struck a stake shattering the tail rotor. The ship went into a spin and crashed sustaining major damage. A/C was sling-loaded to maintenance and later returned to COMUS. Additionally, pieces of the tail rotor were thrown into the main rotor blades of the second ship causing a sudden stoppage and damaging the drive train. This A/C also was forced to land and later sling-loaded out for repair.
23 Jun 70 UH-1H 67-17327	CR 018 670	Combat Assault	On Ground 0	4-IIA (Crash)	Crashed & Burned Destroyed by fire	Aircraft landed on a booby trap and received numerous fragment hits. A/C caught fire and was destroyed. Three crewmen and one passenger were injured.

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Table F-8. (C) UH-1D/N Case Histories (Forced Landings) (U)

A/C Type	Coordinates	Mission	Activity	Altitude (feet)	Casualties	Aircraft	Reaction	Remarks
UH-1D	IR 649 630	Unknown	Landing	40	1-WIA (frag.)	Forced to land	Recovered	Aircraft was landing when a gas can under it and exploded a land mine.
UH-1D	Unknown	Unknown	Landing	Unknown	1-WIA (frag.)	Forced to land	Recovered	Aircraft landed too close to friendly mine field. Eject with detonated grenades mounted on sticks. A/C evacuated to COMUS for repair.
UH-1D	IR 383 703	Combat	Hovering	5	1-WIA (frag.)	Forced to land	Recovered	While hovering at an altitude of five feet, a compass detonated mine was exploded to the right of the aircraft. Severe counterbalance was observed off coming severe vibrations. Aircraft was blown out of the landing zone but was spread to land (hard) and later recovered.
UH-1D	IR 383 703	Combat	Hovering	5	1-WIA (frag.)	Forced to land	Recovered	Fragment from compass detonated mine hit left side of aircraft — engine length — causing damage to tail rotor and fuel, hydraulic and control systems. Aircraft was blown out of landing zone but was forced to land and recovered later.
UH-1D	IR 383 703	Combat	Hovering	5	None	Forced to land	Recovered	Aircraft at hover preparing to land when hit by fragments from a mine — unknown if mine was detonated from rotor wash or on command. Damage to rotor head caused forced landing. Eight door armor plates stopped round — unknown if ballist or fragment.

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Table F-8. (C) UH-1D/H Case Histories (Forced Landings) (Continued) (U)

Date	A/C Type	Coordinates	Mission	Activity	Altitude (feet)	Casualties	Aircraft	Remarks
19 Mar 67	UH-1D 65-09840	ET 383 703	Combat Assault	Landing 5		1-VIA (frag.)	Forced to Land Recovered	Aircraft hit by fragments from ground detonated mine and flew out of landing zone. Aircraft forced to land in burning elephant grass. Extensive damage to underside fuselage and tail boom. Reverted to COMUS for repair.
19 Mar 67	UH-1D 65-09815	ET 383 703	Combat Assault	Landing 0		1-VIA (frag.)	Forced to Land Recovered	Aircraft hit by caliber .30 bullet and fragments from ground detonated mine. Forced landed because of damage to tail boom and engine compartment.
20 Jul 67	UH-1D 66-16006	ET 668 023	Command & Control	On Ground 0		4-VIA (frag.)	Forced to Land Recovered	While in landing zone to evacuate B.B., wounded, a mine was detonated near tail boom. Gunner and three passengers wounded by fragments. Tail rotor cable severed preventing takeoff. Aircraft recovered later.
12 Sep 67	UH-1D 65-09890	BT 065 226	Combat Assault	Taking Off 20		2-VIA 1-VIA (frags)	Forced to Land Recovered	Departing landing zone when a mine detonated beneath aircraft causing extensive damage. Aircraft forced to land -- recovered and evacuated to COMUS for repair. Three crew casualties -- all resulting from mine fragments.
12 Sep 67	UH-1D 65-09840	BT 065 226	Combat Assault	Hovering 2 - 4		3-VIA (frag.)	Forced to Land Recovered	Aircraft had unloaded troops and was wait- ing with another able to extract crew of a downed aircraft when two mines exploded nearby. All oil pressure was immediately lost. Aircraft was forced to land -- engine oil starvation. Three crewmen suffered minor fragment wounds.

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Table P-8. (U) UN-1B/M Case Histories (Forced Landings) (Continued) (U)

Date	A/C Type	Coordinates	Mission	Activity	Altitude (feet)	Comments	Aircraft	Remarks
13 Jan 66	RB-1B 63-12899	AT 990 250	Reupply	Unknown	Unknown	None	Forced to Land Recovered	Aircraft was conducting an approach when a large explosion occurred. Pieces of wreckage blew the plane and caused aircraft to hit the ground hard -- after damage. Aircraft crashed to OZMS for repair.
10 Jan 66	RB-1B 66-16772	AT 000 352	Unknown	Landing	75	None	Forced to Land Recovered	Aircraft on final approach at 70 knots when left wing detached shortly before landing. Major damage to engine and left side of aircraft. Forced landing was required, resulting in hard landing and damaged left tail boom.
30 Jan 66	RB-1B 66-16893	AT 583 350	Combat Aerial	Landing	10	None	Forced to Land Recovered	Just prior to touchdown in landing zone, aircraft caused a hard landing to determine. Aircraft flew to nearby enemy area, inspected, and declared unsafe for further flight. No other information.
12 Feb 66	RB-1B 66-16195	AT 919 424	Aerial- Interdictive	Landing	10	1-UTA (freq)	Forced to Land Recovered	On final approach to landing zone, three command aircraft released mines exploded beneath aircraft resulting in damage to fuel cell, main rotor, and extensive skin damage. Mission aborted -- aircraft flew to home base where a successful forced landing was made. Owner received frog-meat wound to leg.
19 Mar 66	RB-1B 67-17165	Unknown	Unknown	Landing	Unknown	Unknown	Forced to Land Recovered	Aircraft on final approach when anti-aircraft fire exploded underneath. A/C received shrapnel damage to fuel cells, tail boom, forward, and lateral structural damage to main fuselage. A/C was returned to OZMS.

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Table F-8. (C) UN-1D/H Case Histories (Forced Landings) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
21 Mar 68 UH-1H 66-16430	XY 962 308	Medevac	Landing 50	None	Forced to land Recovered	Aircraft came under rifle fire as it prepared to land. Claymore mine was detonated and caused only minor skin damage. Aircraft was forced to land because of bullet damage to 42 degree gear box, severed tail rotor cable, stabilizer bar and severed hydraulic line.
17 Nov 68 UH-1H 67-17402	BE 844 006	Combat Assault	On Ground 0	4-KIA (2-frags) (2-injuries) 2-WIA (frags)	Forced to land Total loss	On landing, two passengers departed aircraft; one individual detonated a hostile booby trap and both were killed instantly. Fragments hit aircraft fuel line/a fire developed. A/C lifted off but pilot realized that the A/C was in trouble and was forced to land. All but two individuals departed A/C and they were killed when it exploded.
28 Feb 69 UH-1H 66-16606	ZA 919 883	Combat Assault	Taking Off Unk	None	Forced to land	On take-off a close heavy explosion moved A/C three feet and inflicted major structural and body damage to the A/C. Unknown if mortar or booby trap exploded. A/C flew to near by airstrip and made a running landing (hydraulics failed in flight).
16 Mar 69 UH-1H 67-17232	ZA 847 222	Combat Assault	Landing Unk	3-WIA (frags)	Forced to land Recovered	Aircraft landed at fire support base, a passenger jumped off and stepped on a land mine resulting in 17 holes in rotor blades, damage to head assembly, and 40 holes throughout fuselage and tail boom. Two crewmen and one passenger suffered non-serious wounds.
22 Mar 69 UH-1H 66-16220	XB 571 275	Combat Assault	Landing 0	1-WIA (frag)	Forced to land Took Off	On landing, aircraft detonated a Claymore mine booby trap device causing fragment damage to windshield and right pilot door. Pilot suffered minor wounds to right arm and neck.

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Table F-8. (C) UN-ID/N Case Histories (Forced Landings) (Continued) (U)

Base A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
15 Apr 69 UH-1H 67-17467	28 413 446	Rescue	On Ground 0	2-41A (frag)	Forced to land Recovered	While on a road landing patients when an enemy plastic charge was detonated toward rear of aircraft. Subsequent attempted but severe vibrations caused forced landing. Aircraft later re- covered. Crew chief and one passenger suffered minor wounds.
15 Apr 69 UH-1H 66-16137	28 610 226	Combat Assault	Landing 10	1-41A (frag)	Forced to land Took off	Aircraft was on short final when land- ing gear off a body trap (100m altitude) (11). This aircraft was slight damaged. (See SEC 67-17467)
20 May 69 UH-1H 67-17467	28 642 403	Resupply	Landing 0	None	Forced to land Recovered	Aircraft landed on wire setting off a Claymore mine at some unknown distance. Extensive damage to tail boom and tail rotor system necessitating recovery by another ship.
07 Jun 69 UH-1H 67-17465	28 767 613	Command & Control	On Ground 1	1-41A (frag) 2-41A (frag) (NOK par.)	Forced to land Recovered	Aircraft on ground when mine detonated at about seven meters distance. Ap- proximately 30 fragments hit the air- craft on top, bottom and left side, resulting in minor wound to the crew chief and two passengers. Unknown if rotor was detached by command or rotor wash.
29 Jun 69 UH-1H 66-16666	28 573 235	Combat Assault	Hovering 2	1-41A (frag)	Forced to land Recovered	Aircraft was at a two foot hover when it detonated a body trapped 100m altitude shell. Large pieces of shell casing caused severe damage to engine oil cooler, radios, electrical buses and extensive in- cluding tail boom. Crew chief suffered fragment wounds — broken leg. Aircraft was evacuated to CDRS for repairs.

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Table F-8. (U) UM-1D/H Case Histories (Forced Landings) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Disposition	Remarks
29 Nov 69 UH-1H 64-16278	IR 633 304	Combat Assault	Landing 10	2-MIA (Frag)	Forced to Land Recovered	Aircraft right main detached belly item about 15 meters from ship. Two passengers were wounded. Aircraft received fragment damage to tail boom, tail rotor blade, fuel tank and oil system. Oil was leaking - unknown if fuel cells leaked. Aircraft forced landed and was later being fixed out.
31 Dec 69 UH-1H 64-16339	IR 345 638	Combat Assault	En route 50	1-MIA (Frag)	Forced to Land Took Off	Aircraft received 20 hits from a Claymore mine which was in a tree. One crew member slightly wounded. Aircraft was forced to land, inspected and/or quick fix was made. A/C took off again.
06 Jan 70 UH-1H 63-17616	TD 375 293	Combat Assault	On Ground 0	2-MIA (Frag) 2-MIA (Frag)	Forced to Land Recovered	Aircraft landed in landing zone and troops were unloading. Land mine was exploded nearby. Left door was blown off, blade twisted, wiring and insulation torn up. Two passengers were killed and one passenger and one crew member were wounded. Aircraft was being loaded out by CH-47, returned to COMUSMACV for repair and later returned to RVN.
31 Mar 70 UH-1H 64-16192	IR 639 396	Combat Assault	Landing 3	1-MIA (Frag)	Forced to Land Recovered	Aircraft was inserting troops into a land- ing zone when a mine exploded beneath it (Unknown if command or rotor wash detonated). Aircraft sustained major combat damage to tail boom, main rotor blades, blades and undersides. One passenger was wounded. Air- craft was forced to land and was later re- covered by CH-47.

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Table P-9. (C) UM-1D/M Case Histories (Mission Aborts) (U)

Base A/C Type A/C #/M	Coordinates	Mission	Activity Altitude (feet)	Causing	Aircraft Reaction	Remarks
15 Dec 66 UM-1D 66-15063	UM 175 110	Combat Aerial	Landing Dut	None	Mission Abort	While preparing to land in straggling area for subsequent combat aerial mission, three wing, placed along runway, were observed detached. Aircraft returned to base base.
21 Dec 66 UM-1D 65-10079	XX 151 377	Weather	Hovering 160	None	Mission Abort	Aircraft came to hover at 160 feet preparing for vertical descent into pickup area when Claymore mine was detonated causing fuel tank leakage. Aircraft immediately flew to Tay Ninh Airfield where emergency landing was made with no additional damage.
03 Jan 67 UM-1D 66-13066	XX 875 761	Troop Extraction	Landing 200	2-WTA (frag)	Mission Abort	Approaching the pick-up area, a mine exploded directly beneath aircraft resulting in minor damage. Aircraft also hit by one Caliber .50 projectile.
26 Apr 67 UM-1D 66-16030	Unknown	Bacon	On Ground 0	None	Mission Abort	While sitting on the ground, shot down, a Claymore mine was detonated directly at the edge of the clearing. Intense small arms fire followed briefly. Aircraft was hit five times with minor skin damage. There were no casualties and aircraft was flown out.
11 Jan 67 UM-1D 66-13733	XX 920 287	Supply	Hovering 4	1-WTA (frag)	Mission Abort	While landing at an ARVN outpost, a Claymore mine exploded about 20 meters to left rear of aircraft (unknown how mine was detonated — on command or by A/C). Aircraft was returned to base base for medical attention for passenger (finger most wound of leg) and damage assessment.

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Table F-9. (C) UH-1D/H Case Histories (Mission Alerts) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
03 Mar 68 UH-1H 67-17247	BT 430 109	Medevac	On Ground 0	1-WIA (frag)	Mission Abort	As aircraft landed, two explosions occurred nearby. The medic aboard received a fragment wound to the shoulder and the mission was aborted and post flight inspection revealed fragment damage to main rotor blade, engine cowling and tail boom fairing.
01 Dec 68 UH-1D 66-16879	XY 619 299	Combat Assault	On Ground 0	1-WIA (frag)	Mission Abort	Aircraft on ground when mine detonated at two meters distance. About 25 fragments hit all along the left side of aircraft resulting in a minor wound to the crew chief and only minor damage to aircraft. Unknown if mine was detonated on command or by rotor wash.
07 Jan 69 UH-1H 66-16319	BR 764 615	Combat Assault	Hovering 2	None	Mission Abort	At hover, in process of taking off, aircraft rotor wash detonated a mine. Aircraft received 30 fragment hits, 20 of which were in the main rotor system. These 20 hits were the probable cause of the aborted mission.
24 Jan 69 UH-1H 67-17828	XS 342 422	Combat Assault	Hovering 3	6-WIA (frags) (1 crew and 5 pax)	Mission Abort	Aircraft at a three-foot hover and crew reported being hit with several fragments of "scrap metal" resulting in one crew and five passenger casualties. Unknown how device was detonated.
18 Feb 69 UH-1H 66-16245	Classified	Recon	Landing 0	2-WIA (frag.)	Mission Abort	Aircraft touching down in landing zone (one skid on ground) when detonation occurred within 40 meters. Damage along right side of aircraft and to rotor blade.

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Table P-8. (C) WH-ID/M Case Histories (Mission Aborts) (Continued) (U)

Date	A/C Type	Coordinates	Mission	-Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
16 May 69	UH-1H 64-13617	IR 665 235	Combat Assault	Landing 1-2	None	Mission Abort	While landing in landing zone, aircraft was at two feet altitude when a light exploded directly ahead - unknown origin. Damage to cockpit area and main rotor blade. Aircraft controls were affected and mission was aborted.
24 May 69	UH-1H 64-15867	IR 209 239	Command & Control	Landing 45	3-WIA (frag)	Mission Abort	On final approach, aircraft <u>hit</u> and <u>set off a friendly mine</u> . Mission was aborted to seek medical aid for three non-seriously wounded crewmen. Aircraft damage limited to fragment holes in fuselage skin - no systems hit.
21 Jun 69	UH-1H 64-16870	IR 905 012	Resupply	Landing 0	1-WIA (frag)	Mission Abort	Aircraft hit along left side by fragment from a reported "friendly mine". Unknown how mine was detonated. Mission aborted to seek medical aid for wounded crew chief. Upon landing aircraft was grounded for repairs.
14 Jul 69	UH-1H 64-15992	IR 143 481	Combat Assault	Landing 0	2-KIA (ARVN) 7-WIA (frag) (3 Crew & 4 ARVN)	Mission Abort	Aircraft set down in a supposedly secure landing zone. ARVN unloaded from ship stepped on a land mine. Two ARVN were killed and four wounded. Aircraft was evidently severely damaged as it was returned to COMUS for repair. Aircraft has since returned to RVN. Three crewmen were wounded.

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Table F-9. (C) UH-1D/N Case Histories (Mission Aborts) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
04 Aug 69 UH-1D 63-12989	XT 563 227	Combat Assault	On Ground 0	1-WIA (frag)	Mission Abort	<u>Rocky frag</u> was set off five feet from aircraft by infantry soldier. Aircraft received 47 fragment holes. Fuel cell leaked. Crew chief did not have visor down and fragment hit him in the eye. He was flown to aid station for treatment and released.
16 Aug 69 UH-1H 67-17831	XT 400 210	Resupply	Landing 0	1-WIA (frag)	Mission Abort	Aircraft received approximately forty fragments hits when command detonated mine was set off as it was landing. Mission was aborted and aircraft returned to base for repair.
06 Oct 69 UH-1D 66-00983	XT 652 265	Combat Assault	On Ground 0	None	Mission Abort	Aircraft received 38 holes in tail boom, main rotor, and tail rotor from a <u>suspected mine</u> explosion. No other information.
19 Oct 69 UH-1H 67-17549	BR 996 708	Combat Assault	Taking Off 50	None	Mission Abort	Aircraft, taking off from landing zone, received 7 hits from a <u>Claymore mine</u> . Damage was sustained in fuel system and main rotor. Mission was aborted. No other information.
23 Oct 69 UH-1H 68-16206	BS 664 984	Combat Assault	Landing 0	1-WIA (frag)	Mission Abort	Upon landing aircraft tripped a <u>wired fragment grenade</u> and received 37 fragment hits. The gunner was wounded and fuel cell was also hit -- unknown if leaked. Mission was aborted and aircraft returned to home base.
07 Nov 69 UH-1H 66-16757	XT 568 629	Troop Extraction	On Ground 0	1-WIA (frag)	Mission Abort	Aircraft was sitting in pick-up zone waiting for inner ring of Claymores to be set off. As the inner ring went off one <u>Claymore</u> , 25 meters to the left rear of the ship, exploded causing one casualty and 57 hits to A/C. A/C returned to base camp.

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Table F-9. (C) UH-1D/H Case Histories (Mission Aborts) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
09 Feb 70 UH-1H 68-16354	BR 565 805	Recon	En route 25	None	Mission Abort	Aircraft was en route level when a <u>Claymore mine</u> was detonated directly beneath aircraft. A/C received 19 fragment hits with moderate damage. Mission was aborted due to damage to main rotor system which received six hits.
23 Feb 70 UH-1H 68-16447	BR 990 070	Recon	En route 50	None	Mission Abort	Aircraft received five hits from a <u>command detonated mine</u> explosion beneath the aircraft. Mission was aborted due to damage to fuel system. Aircraft described as being moderately damaged.
28 Feb 70 UH-1H 68-16224	XT 412 094	Combat Assault	On Ground 0	1-WIA (frag)	Mission Abort	Aircraft landing in landing zone and tripped a <u>wired booby trap</u> . Crew chief was wounded. Aircraft received minor skin damage. Mission was aborted and casualty was flown to hospital.
13 May 70 UH-1H Unknown	XC 175 981	Combat Assault	On Ground 0	None	Mission Abort	Aircraft received one fragment hit in the main rotor when one of the troops detonated a <u>booby trap</u> . Aircraft flew to Camp Evans for inspection where it was found to be flyable.
25 May 70 UH-1D 67-17282	XT 719 387	Recon	On Ground 0	None	Mission Abort	Aircraft was landing in landing zone when a <u>Claymore mine</u> was set off approximately five meters away. Aircraft received 8-10 fragment hits in tail boom with minor damage to tail rotor cable. Mission was aborted due to damage to controls. No other information.

Table F-10. (K) UH-1D/N Case Histories (Continued to Fly) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
03 Jun 66 UH-1D 65-09612	XT 415 156	Resupply	Taking Off 20	None	Continued to fly	Taking off aircraft passed between two trees and an explosion occurred directly below causing fragment holes on underside of tail boom.
09 Dec 66 UH-1D 64-13873	XT 526 313	Combat Assault	Landing 0	None	Continued to fly	On touchdown in landing zone a <u>command detonated mine</u> was exploded causing damage to fuselage, rotor system and fuel system.
09 Dec 66 UH-1D 65-10128	XT 526 313	Combat Assault	Taking Off 100	None	Continued to fly	While taking off from landing zone aircraft received hit in tail boom section by fragments from <u>command detonated mine</u> -- minor damage.
09 Dec 66 UH-1D 64-13810	XT 526 313	Combat Assault	Taking Off Unk	1-WIA (frag)	Continued to fly	While taking off from landing zone aircraft was hit in empennage by fragments from <u>command detonated mine</u> -- minor damage.
05 Jan 67 UH-1D 65-10121	XT 773 205	Command & Control	Landing 0	1-WIA (frag)	Continued to fly	On landing rotor wash <u>detonated a Claymore mine</u> booby trap device. Minor skin damage to underside of aircraft.
09 Jan 67 UH-1D Unknown	XT 581 332	Combat Assault	Landing Unk	1-WIA	Continued to fly	Preparing to land, aircraft <u>detonated a Claymore mine</u> causing one passenger to be thrown out. The extent of damage to aircraft is unknown.
17 Jan 67 UH-1D 65-12873	XT 907 171	Medevac	On Ground 0	None	Continued to fly	While loading wounded a <u>command detonated Claymore mine</u> hit aircraft. Mission was continued and aircraft was grounded for repair on post-flight inspection.

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Table F-10. (C) ~~UM-1D/H~~ Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
22 Jan 67 UH-1D 64-13761	XT 907 318	Recon	Orbiting 20	None	Continued to fly	During low-level reconnaissance at 80 knots, aircraft was struck by <u>command detonated mine</u> . Aircraft then flew to secure area for inspection (9km).
03 Feb 67 UH-1D 64-13859	XS 670 860	Combat Assault	Taking Off 60	None	Continued to fly	Taking off from landing zone after troop drop and aircraft was hit by fragments from <u>mine</u> . Unknown if mine was detonated by aircraft rotor wash or on command.
06 Feb 67 UH-1D 65-10082	YT 072 299	Medevac	Hovering 100	1-WIA (bullet)	Continued to fly	During hoist operation to extract wounded personnel, a <u>Claymore mine</u> was detonated and heavy automatic fire broke out. Aircraft and patient (on hoist) were hit by hostile fire.
16 Mar 67 UH-1D 66-00756	YA 767 394	Troop Extraction	Landing 5	1-WIA (frag)	Continued to fly	Aircraft was landing when <u>command detonated mine</u> exploded nearby. Aircraft commander wounded and flew to nearest medical facility. Aircraft returned to continue mission.
19 Mar 67 UH-1D 66-01034	XT 383 703	Combat Assault	Hovering 5	None	Continued to fly	While hovering at an altitude of five feet a <u>command detonated mine</u> was exploded to left front of the aircraft. Minor damage -- Plexiglas and buckled doors.
19 Mar 67 UH-1D 65-10128	XT 383 703	Combat Assault	Hovering 3	1-WIA (Plexiglas)	Continued to fly	While at hover, <u>command detonated mine</u> exploded 60 feet to left front of aircraft. Fragment entered left windshield and exited roof over gunners station on right.

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Table F-10. (C) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
19 Mar 67 UH-1D 65-09957	XT 383 703	Combat Assault	Landing 0	None	Continued to fly	On ground in landing zone, aircraft hit by <u>command detonated mine</u> causing damage to <u>main and tail rotor blades</u> .
19 Mar 67 UH-1D 64-13722	XT 383 703	Combat Assault	Landing 0	None	Continued to fly	On ground in landing zone, aircraft hit by fragments from <u>command detonated mine</u> resulting in four 2 to 3 inch cuts in main rotor blades.
19 Mar 67 UH-1D 65-09909	XT 383 703	Combat Assault	Hovering 5	1-WIA (frag)	Continued to fly	Aircraft in landing zone sustained skin damage caused by <u>mine</u> fragments -- unknown if mine was detonated by rotor wash or on command.
28 Mar 67 UH-1D 65-09859	XT 866 453	Combat Assault	Landing 20	None	Continued to fly	Aircraft entering landing zone was hit by one fragment from a <u>mine</u> that exploded 75 feet to left. Minor skin damage to drive shaft cover.
01 Apr 67 UH-1D 64-13721	XR 450 950	Medevac	Taking Off 15	None	Continued to fly	While taking off from a landing zone a <u>mine</u> exploded 15 feet below the aircraft. Minor skin damage only.
03 May 67 UH-1D 65-09909	XT-499 099	Troop Extraction	Landing 2	None	Continued to fly	Aircraft received about nine fragment hits from a <u>grenade</u> attached to concertina wire surrounding a friendly landing zone. Light damage to chin bubble and left side of aircraft.
06 May 67 UH-1D 66-01004	Unknown	Unknown	Unknown Unk	None	Continued to fly	Minor main rotor blade damage caused by fragment from " <u>land mine</u> ." No other information available.
12 May 67 UH-1D 66-00975	Unknown	Combat Assault	Unknown Unk	None	Continued to fly	Minor skin damage to tail boom caused by fragment from " <u>land mine</u> ." No other damage.

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Table F-10. (C) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
25 May 67 UH-1D 66-01004	Unknown	Unknown	Unknown Unk	None	Continued to fly	Fragment from "land mine" cracked cockpit's window. No other information.
11 Jun 67 UH-1D 65-09930	XT 495 763	Troop Extraction	On Ground 0	1-WIA (frag) 2-WIA (bullet) (Pax)	Continued to fly	Aircraft on ground in landing zone to extract a reconnaissance team when it received six hits from small arms and a <u>grenade</u> — unknown if grenade was a booby trap. One passenger suffered wound (from grenade) to abdomen.
13 Jun 67 UH-1D 66-01022	BS 782 397	Medevac	On Ground 0	None	Continued to fly	While loading patients, aircraft received fragment damage from <u>explosion</u> of unknown origin. Aircraft immediately departed landing zone and returned to station without difficulty.
27 Jun 67 UH-1D 65-09612	XB 949 913	Medevac	Hovering 1	None	Continued to fly	Aircraft hovering from medical evacuation pick-up when <u>rotor wash detonated</u> several <u>anti-personnel booby traps</u> . Minor damage to cargo door and main rotor blade. Mission was continued.
04 Jul 67 UH-1D 66-01004	XB 850 450	Combat Assault	On Ground 0	1-WIA (frag)	Continued to fly	After troop pick-up, aircraft was preparing to depart landing zone when <u>explosion</u> occurred nearby — unknown if booby traps or mortar rounds. Pilot suffered fragment wound of leg. Aircraft grounded after reaching a medical facility because of damage to tail boom, tail rotor, drive shaft, main rotor blade, fuel cell, Plexiglas and skin.

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Table F-10. (C) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
04 Jul 67 UH-1D 64-13702	BS 850 450	Combat Assault	Taking Off 1	None	Continued to fly	Aircraft departing landing with another ship (UH-1D, 64-01004) when a nearby <u>explosion</u> of undetermined origin caused minor fragment damage to tail boom.
07 Jul 67 UH-1H 64-16213	YS 113 795	Troop Extraction	On Ground 0	None	Continued to fly	While loading troops in landing zone, aircraft was hit two fragments from a <u>mine or mortar</u> . No other information.
12 Sep 67 UH-1D 64-01031	BT 065 226	Combat Assault	Hovering 100	None	Continued to fly	Aircraft had unloaded troops and was waiting for crew of downed ship (UH-1D, 65-09890) when a second <u>mine</u> exploded in the area causing minor damage to skin and fuel cell of this aircraft and forcing aircraft 65-09840 to land.
19 Sep 67 UH-1H 64-16396	YS 102 944	Medevac	Landing 10	None	Continued to fly	On approach to landing zone, a <u>mine</u> detonated beneath aircraft causing minor skin damage. Mission was completed.
07 Oct 67 UH-1H 64-16404	BR 128 226	Resupply	En route 30	None	Continued to fly	En route to forward area at low level when hit by fragments from <u>canister-type weapon</u> -- unknown if booby trap. Three holes in tail rotor and tail boom.
24 Nov 67 UH-1H 64-16722	XT 702 245	Medevac	Taking Off 3	1-WIA (frag) 1-WIA (blast)	Continued to fly	Aircraft was departing landing zone after picking up several casualties when a <u>mine</u> exploded to left rear. Aircraft gained altitude then returned to landing zone for additional casualties then completed mission. One crewman wounded -- fragment, one suffered minor concussions; aircraft damage unspecified.

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Table F-10. (C) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
18 Dec 67 UH-1H 66-16427	TS 218 956	Medevac	On Ground 0	None	Continued to fly	On touchdown, a <u>mine or booby trap</u> was detonated resulting in 81 fragment holes in tail boom section. Mission was completed and aircraft returned to base for repair.
23 Dec 67 UH-1D 66-00910	WR 085 210	Troop Extraction	Hovering 10	None	Continued to fly	While hovering in landing zone, <u>rotor wash detonated a mine</u> causing minor damage to tail section of aircraft. No other information available.
06 Jan 68 UH-1H 66-16463	BS 655 905	Medevac	On Ground 0	1-WIA (frag)	Continued to fly	While loading casualties a <u>mine</u> was detonated about 15 feet from rear of aircraft damaging rear cargo door and tail rotor. Mission was completed. Crew medic received fragment wounds to leg and back.
27 Jan 68 UH-1H 66-16396	TU 183 068	Medevac	On Ground 0	None	Continued to fly	Aircraft on ground in landing zone when friendly gunfire detonated a <u>Claymore mine</u> -- minor damage. Aircraft completed mission and returned to standby.
01 Feb 68 UH-1H 66-16462	BS 665 875	Medevac	On Ground 0	None	Continued to fly	Aircraft was in landing zone waiting for wounded to be placed aboard when a booby trap (either <u>mine or grenade</u>) was detonated about 10 meters away. Post-flight inspection revealed two fragment holes in pilot's door and one in the main rotor blade.
05 Feb 68 UH-1D 63-13880	XS 705 839	Combat Assault	Landing 0	1-WIA (frag)	Continued to fly	Fragment from a <u>mine</u> detonated on landing wounded gunner. Aircraft received approximately ten hits. Minor damage.

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Table F-10. (C) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
29 Mar 68 UH-1H 66-02655	XT 217 770	Combat Assault	Taking Off Unk	None	Continued to fly	As aircraft took off rotor wash detonated a friendly M-16 anti-personnel mine, on the perimeter of the area resulting in hydraulic failure. Aircraft flown to home base where inspection revealed a severed hydraulic elbow on the tail rotor servo assembly.
13 Jun 68 UH-1D 65-16084	YD 987 148	Admin.	En route Unk	None	Continued to fly	Aircraft flying low-level under Phu Bai traffic pattern and struck a wire 3/8 inch thick and 70 feet long. The wire was an apparent anti-helicopter booby trap.
23 Aug 68 UH-1H 66-16793	XT 920 195	Medevac	On Ground 0	None	Continued to fly	Aircraft in landing zone for medevac pickup when Claymore mine booby trap was detonated. Minor damage to rotor blades and tail boom.
27 Sep 68 UH-1D Unknown	XB 581 791	Medevac	Landing Unk	4-WIA (frags)	Continued to fly	Aircraft detonated booby trap in landing zone. Four passengers received minor fragment wounds. Damage to aircraft was unspecified.
30 Sep 68 UH-1D Unknown	XT 250 685	Defoliation	Unknown Unk	1-WIA (frag)	Continued to fly	Gunner received a non-serious fragment wound when rotor wash detonated a mine. No other information available.
01 Dec 68 UH-1D 66-00970	XT 610 292	Combat Assault	On Ground 0	1-WIA (frag)	Continued to fly	Aircraft in landing zone when mine detonated at about 30 meters distance. Several fragments hit aircraft in nose/cockpit area resulting in minor neck wound to copilot. Unknown if mine was detonated on command or by rotor wash.

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Table F-10. (P) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
07 Jan 69 UH-1D 65-09393	XY 845 149	Unknown	On Ground 0	1-WIA (frag)	Continued to fly	Crew attempted to move aircraft as fire in nearby field set off friendly <u>Claymore</u> mine. As aircraft took off, a mine detonated causing minor damage and wounding the aircraft commander.
21 Jan 69 UH-1H 67-17715	BP 949 467	Troop Extraction	Hovering 30	None	Continued to fly	Aircraft received 15-20 fragments on bottom of passenger and equipment sections. <u>Unknown ordnance</u> type or source of detonation. Self sealing portion of fuel cell was punctured and sealed perfectly.
20 Feb 69 UH-1H 67-17247	BS 525 813	Medevac	On Ground 0	None	Continued to fly	While picking up casualties from pick-up zone, aircraft received three <u>grenade</u> fragments. Unknown if grenade was thrown or was an aircraft-detonated booby trap. Aircraft damage was minor.
16 Mar 69 UH-1H 67-17703	BR 054 737	Combat Assault	Landing Unk	None	Continued to fly	Passengers exiting in landing zone detonated a <u>mine</u> causing minor skin damage to main rotor blades, tail rotor blades and tail boom.
18 Apr 69 UH-1H 67-17846	WT 650 120	Medevac	On Ground 0	2-WIA (frag) (outside A/C)	Continued to fly	Aircraft landed to pick up casualty. Individual carrying patient to aircraft stepped on a hostile <u>mine</u> . The result was minor skin damage to aircraft and fragment wounds to crew chief and a passenger, both were outside of the aircraft.
12 Jun 69 UH-1D 63-00853	XR 545 745	Resupply	Taking Off 10	None	Continued to fly	Aircraft hit in bottom of tail boom by a fragment from a <u>grenade</u> -- unknown if grenade was thrown or rigged as a booby trap. Minor skin damage.

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Table F-10. (C) UM-1D/H Case Histories (Continued to Fly) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
27 Jul 69 UM-1H 67-17526	XT 480 470	Recon	Unknown 50	None	Continued to fly	Aircraft received five hits from suspected <u>booby trap</u> and sustained minor damage only. No other information.
11 Jan 70 UM-1H 68-15486	VR 970 140	Unknown	Landing Unk	None	Continued to fly	Aircraft hovered over a banana tree setting off <u>booby trap</u> in trees. Aircraft received one fragment hit in tail boom.
14 Feb 70 UM-1H 68-16145	CQ 023 428	Recon	En route 50	None	Continued to fly	Aircraft was en route level when it received 15 hits from mine fragments and automatic weapons. Main rotor blade was damaged, fuel cells leaked, other hits were scattered throughout aircraft. Pilot did not notice leak, etc., until he landed and shut down.
15 Feb 70 UM-1H 68-16263	BR 955 655	Recon	Landing 1000	1-WIA (frag)	Continued to fly	Aircraft received two fragment hits from a <u>Claymore mine</u> . Observer was wounded in arm. Aircraft damage was very minor.
28 Feb 70 UM-1H 68-15650	YT 103 976	Recon	En route 100	None	Continued to fly	Aircraft received three hits in chin bubble and tail from a <u>Claymore mine</u> explosion. No systems were hit. No other information.
14 Mar 70 UM-1H 66-16667	YC 809 935	Medevac	On Ground 0	None	Continued to fly	Aircraft was in landing zone on a slope with front part of skids resting on ground. As patient was being loaded rotor wash set off a <u>booby trap</u> near the rear of the ship causing minor damage to right skid and underside of aircraft. Aircraft completed mission.

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Table F-10. (C) UH-1D/H Case Histories (Continued to Fly) (Continued) (U)

Data A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
03 Apr 70 UH-1H 66-16467	YD 543 074	Medevac	Landing 30	1-WIA (frag)	Continued to fly	Aircraft was descending into pick-up zone when a <u>booby trap</u> was set off (unknown if rotor wash or command detonated). Aircraft received multiple fragment hits but was able to complete its mission. Medic was slightly wounded.
30 Jun 70 UH-1H 66-16317	YB 798 069	Recon	En route 125	None	Continued to fly	Aircraft received 12 fragment hits when a <u>Claymore mine</u> was detonated in some trees. Aircraft sustained light damage only. No other information.

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Table F-11. (C) UH-1D/H Case Histories (Unknown Reaction) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
30 Mar 66 UH-1D 63-08782	Unknown	Unknown	Unknown Unk	Unknown	Unknown	Aircraft log book states extensive fragment damage caused by detonation of <u>land mine</u> . Aircraft evacuated to COMUS for repair.
17 Jan 67 UH-1D 65-09910	XT 988 129	Unknown	Landing 0	2-WIA (metal frag) 1-WIA (plexiglas)	Unknown	On touchdown at home base a <u>Claymore mine</u> , located within two feet of the aircraft, was detonated by an enemy located in a tree 1200 feet away. A/C not a total loss.
01 May 67 UH-1D 65-12871	BS 831 971	Combat Assault	Landing 5	None	Unknown	Descending into landing zone, aircraft received about 15 <u>fragment holes</u> in main rotor blades and fuselage. A/C was reported as "not flyable" (probably recovered later and repaired). No other information available.
21 Mar 68 UH-1D Unknown	BS 723 561	Unknown	On Ground 0	1-WIA (frag)	Unknown	Aircraft landed to check VC suspect when passenger either in or outside of aircraft was wounded by fragment from <u>grenade or booby trap</u> . A/C reaction unknown.
25 Sep 68 UH-1D Unknown	XS 650 730	Combat Assault	Landing 0	1-WIA (frag)	Unknown	Aircraft landed in landing zone setting off <u>booby trap</u> . Gunner was wounded. Aircraft did not crash or burn. No other information.
16 Aug 69 UH-1D Unknown	XT 405 918	Unknown	Landing Unk	2-WIA (frag)	Unknown	Aircraft detonated hostile <u>mine</u> when landing. Aircraft did not crash or burn. No other information.
01 Nov 69 UH-1D 66-16065	XT 653 401	Combat Assault	Landing 0	1-KIA 5-WIA (frags)	Unknown	Aircraft, inserting troops, landed on a <u>mine</u> . It sustained moderate damage which was repairable within 7 days. One passenger was killed and four passengers and one crewman were wounded.

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Table F-11. (C) UN-ID/H Case Histories (Unknown Reaction) (Continued) (U)

Date A/C Type A/C S/N	Coordinates	Mission	Activity Altitude (feet)	Casualties	Aircraft Reaction	Remarks
19 Dec 69 UH-1H 68-15438	XT 684 362	Resupply	Landing 2	None	Unknown	Aircraft on short final at about two feet from touchdown when an explosion occurred about 25 meters from ship inflicting major structural damage to tail boom. Explosion was caused by a <u>booby trap 8 inch artillery round</u> . Troops found three booby traps (8 inch artillery rounds) in area. No information concerning aircraft reaction.
27 Jan 70 UH-1H 66-16405	XS 780 620	Medevac	Hovering 3	1-WIA (frag)	Unknown	Aircraft was making an approach to landing zone for Medevac. At 3 feet hover a booby trap exploded. Aircraft received 13-20 holes in main rotor blades, numerous holes on underside and left side, a hole in tail rotor drive shaft and numerous holes in tail boom. Gunner received fragment wound to leg. Aircraft reaction was not specified.

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