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# SEARCH AND RESCUE OPERATIONS

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## COMBAT EXPERIENCES

## LESSONS LEARNED NO. 72

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HEADQUARTERS
UNITED STATES MILITARY ASSISTANCE COMMAND, VIETNAM
APO 96222

MACJ3-053 16 November 1968

SUBJECT: Vietnam Lessons Learned No. 72: Search and Rescue Operations in Southeast Asia

SEE DISTRIBUTION

1. Contained herein is Lessons Learned information from current combat operations in South Vietnam.

2. This information may be of value for direct application to training, or to reinforce existing doctrine, based on combat experiences in South Vietnam.

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FOR THE COMMANDER:

R. F. TUCKEY
Major, USA
Asst AG

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MACJ3-053

VIETNAM LESSONS LEARNED NO. 72

## SEARCH AND RESCUE OPERATIONS IN SOUTHEAST ASIA

### SECTION I. ORGANIZATION AND CAPABILITIES

1. (U) GENERAL:

a. During the early days of the Vietnam conflict, rescue capabilities in Southeast Asia were at best limited and not fully responsive to the task at hand. This is no longer the case, for today the search and rescue requirements in Southeast Asia are supported by a well organized, disciplined, and experienced capability. The individuals supporting this capability are truly professionals who have located and rescued downed aircrew members from the southern tip of the Ca Mau Peninsula to points deep into the Red River Valley of North Vietnam.

b. To ensure successful recovery, it is essential that each aircrew member be thoroughly familiar with survival and rescue procedures and that tactical aircrews be fully capable of performing rescue combat air patrol (RESCAP) and rescue escort (RESCORT) functions. Rescue and recovery is as strong as its weakest link; therefore, it is essential that all involved be fully trained and capable, especially the downed aircrew member, for he is, in most cases, the key to success or failure. The fact that the aircrew member is not involved in the search and rescue business on a day to day basis makes it all the more important that he learn his lessons well in advance.

2. (CMHA) ORGANIZATION AND RESOURCES:

a. The Commander-in-Chief, Pacific, has delegated search and rescue (SAR) responsibility for the Saigon, Bangkok, and Rangoon Flight Information Regions (FIR) to the Commander, Seventh Air Force. This area includes the Republic of Vietnam (RVN), North Vietnam (DRV), Laos, Cambodia, Thailand, Burma, and water areas within the FIRs. The

Commander, Seventh Aif Force, has operational control of USAF rescue capable resources and has designated the Commander, 3rd Aerospace Rescue and Recovery Group as executive agent for search and rescue activity in his assigned area of responsibility.

b. The Commander, 3rd Aerospace Rescue and Recovery Group, is on the Seventh Air Force Staff as the Director of Search and Rescue (DSAR) and commands, controls, and operates, through the Joint Search and Rescue Center (JSARC) at Tan Son Nhut Air Base, all USAF aerospace search, rescue and recovery forces in Southeast Asia.

c. Primary search and rescue forces are those specifically assigned, equipped and trained for SAR and combat aircrew recovery missions.

(1) USAF rescue resources include HC-130P and A-1 aircraft and HH3E, HH53B and HH43B/F helicopters.

(a) The HC-130P Hercules, call sign "Crown" - 1, 2, 4 and 6, are on airborne alert inland and over the Gulf of Tonkin during daylight hours. "Crown" 3 and 7 are on ground alert at Udorn and Tuy Hoa respectively 24 hours daily. The aircraft commander of the C-130 serves as Airborne Mission Commander (AMC) during the conduct of a SAR mission. He coordinates the activities of all elements of the SAR Task Force and designates the initial on-scene commander and changes the on-scene commander, if necessary, as the mission progresses. "Crown" is equipped with highly sensitive UHF/DF equipment to obtain accurate bearings from emergency radio signals. "Crown" also serves as a tanker for in-flight refueling of the Jolly Green helicopters, and as a communications relay between forces on-scene, the Sector Rescue Coordination Centers (SRCCs), Joint Search and Rescue Center (JSARC), and the Navy Destroyer (call sign Harbormaster) which directs Navy SAR activities in the Gulf of Tonkin.

(b) The A-1 fighter aircraft (single engine, propeller aircraft) call sign "Sandy" or "Spad" 11, 12 and 13, are used for escorting the helicopters (RESCORT), searching for and pinpointing the position of the survivor, and the suppression of small arms and automatic weapons fire in close proximity to the downed aircrew member.

(c) HH-43 "Pedro" helicopters are strategically located at tactical fighter bases throughout the Seventh Air Force area of responsibility to perform Local Base Rescue (LBR) and aircrew recovery missions within their 75 mile radius of action. They stand alert around the clock and scramble with a fire suppression kit whenever an aircraft crashes or an emergency landing is imminent.

(d) The HH-3 helicopters, call sign "Jolly Green", are located

at Da Nang, RVN and Nakhon Phanom, Thailand to provide rescue coverage throughout the "I" Corps, Laos, North Vietnam and the Gulf of Tonkin. The range of this helicopter is virtually unlimited because it possesses an in-flight refueling capability. It is hoist equipped and amphibious. Maximum speed is 140 knots.

(e) The H-53 helicopter, "Super Jolly", is a large, hoist equipped, single-rotor rescue vehicle. It too has an air-to-air refueling capability and a maximum speed of 155 knots. It is armed with two miniguns and one M-60 machine gun. These helicopters are located in Thailand. They are not amphibious.

(2) US Navy rescue resources include SH-3 "Big Mother" and UH-2 "Clementine" helicopters, and rescue combat air patrol (RESCAP) aircraft and surface vessels. These forces, prepositioned in the Gulf of Tonkin, are responsive to rescue and recovery requirements in support of US Navy, Marine, Air Force and Army operations in the area.

3. (U) OTHER RESOURCES AVAILABLE:

a. The limited SAR resources in Southeast Asia necessitates that a high degree of cooperation exist between rescue units and all US Military and Allied Forces. The Commander, Seventh Air Force, as the Southeast Asia Sub-Region SAR Coordinator, may request assistance as necessary from US Army, Navy, Coast Guard, Marines and Allied Forces for specific SAR duties when they are operating in the vicinity of a SAR incident.

(1) US Army potential rescue resources include over 3,200 helicopters and 650 fixed wing aircraft. An aircrew member downed in South Vietnam who declares an emergency can usually expect to have an Army helicopter overhead within minutes after giving his position.

(2) Marine Corps helicopters, when nearest to the scene of an air-water incident, often rescue airmen of other services. Marine Corps fighter aircraft are occasionally used to suppress ground fire around a downed survivor or as MIG Combat Air Patrol (MIG CAP) for the primary SAR force.

(3) Coast Guard vessels patrolling offshore often recover survivors who bail out in their area.

b. Although successful search and rescue involves many facets of the overall search, rescue and recovery capability, this issue of Lessons Learned concentrates on those actions concerning the downed aircrewman in the hope that what is learned will save his life and result in his recovery.

## SECTION II. PLANNING REQUIREMENTS AND TECHNIQUES

1. (U) PLANNING:

a. The time to start planning for survival, rescue and recovery is before flying the first mission in Southeast Asia. According to most aircrewmen who have been recovered, prior training and briefings on escape, evasion and rescue have aided immeasurably in their recovery. Be prepared for any situation. Every individual who flies in Southeast Asia should be skilled in each life-saving technique and device at his disposal. If rescue equipment is lost, and life saving and emergency equipment are not operational or readily available, alternate courses of action must be followed.

b. The time to accept the fact that a search and rescue situation is in the making, is when the pilot first realizes that the aircraft is not functioning properly. It is at this point that an emergency should be declared and a decision as to what course of action will be taken must commence. The decision must be based on training and logic rather than panic. If each pilot or aircraft commander will accept this fact, the chances of survival are increased considerably.

c. A thorough understanding of basic survival, evasion, rescue and recovery equipment and techniques are prerequisites to a successful recovery. Each aircrew member must know his personal equipment thoroughly and condition his thinking to accept the fact that he is a potential rescuee. The normal inclination to say, "It won't happen to me" must be changed to, "It could happen to me."

2. (U) TECHNIQUES:

a. If the aircraft is abandoned over Thailand or the Gulf of Tonkin, chances for survival are increased considerably. Several major problems of search and recovery are minimized: location, ease of identification and environment. While it is realized that this is not always possible, this is a salient point to remember. If not possible, then knowing the enemy; i.e., where he is located in relation to your position, is the next most important consideration. Abandoning the aircraft in a location as far from the enemy as possible is the next best course of action, all factors considered.

3. (CMHA) ALERTING PROCEDURES:

a. Once an emergency situation is contemplated or known, the aircraft commander or pilot, as the case may be, must ensure that members

of the flight, radar flight facilities and SAR agencies are alerted to the situation, location and planned course of action. In each case, an emergency should be declared as soon as the pilot determines that a potential aircraft emergency exists. This alerts the SAR forces and increases chances of rescue and recovery considerably.

(1) If good radio reception is possible on the radio frequency being used and contact has been established, it is not necessary to change to the emergency frequency. If not, switch to UHF guard channel (243.0), call "Mayday", give your position, heading, the nature of the emergency and intentions. The SIF Transponder should be switched to emergency to alert ground radar to fix your position.

(2) If not under radar control or if SAR aircraft are not in the vicinity, it is extremely important that accurate information be given to the accompanying aircraft, other aircraft in the area, or any agency contacted. Inadequate or inaccurate location information can cause much confusion and lost time. This is especially true if it appears that the aircraft will be abandoned over jungle terrain. Thick foliage and mountainous terrain limit the range of emergency radio transmission; thus, search aircraft have to be relatively close to the rescuee's ground position to receive a reliable signal.

(3) If available, TACAN range and bearing information is extremely valuable. Distance and bearings from identifiable landmarks are useful also. If the aircraft in trouble or another aircraft in the element or flight has Ground Control Intercept (GCI) radio contact, the controller can determine location and alert the SAR forces.

(4) The pilot of the first aircraft on the scene becomes the temporary On-Scene SAR Commander.

b. Experience has demonstrated that doppler map coordinates are the source of greatest location error. The accompanying aircraft should keep the downed aircrewman in sight until the rescue force takes over. This procedure simplifies rescue efforts considerably. However, discretion must be used while observing the position of the downed aircrewman. This is best illustrated by an actual case reported following a pilot bail-out.

> After ejection, the pilot had a good chute, a good beeper and satisfactory voice communications. All seemed to be going well. The first aircraft on the scene continued to circle directly over the pilot to mark his position on the ground. Naturally, this attracted enemy attention to the pilot's location. In short order, enemy ground forces in the area closed in on the rescue site. By the time the

> Jolly Green Giant arrived, so had the enemy. If the "Sandies" (A-1 aircraft) hadn't arrived on the scene to neutralize the enemy, the pilot would have been lost.

As can be surmised, the aircrew observing the downed pilot should have orbited the aircraft nearby rather than over the pilot to ensure that his position was not fixed.

4. (U) POST EJECTION OR BAILOUT PROCEDURES AND TECHNIQUES:

a. After ejecting or bailing out of the aircraft, time and visibility permitting, scan the area terrain features and the situation to determine if people or enemy forces are in the area, the best hiding places or avenue of escape and the possible obstruction to rescue and recovery efforts.

b. If a tree landing is contemplated, the survival kit should not be deployed, since it will provide added protection upon contact with the trees as well as preventing it (the survival kit/raft) from becoming entangled in the branches of the tree.

c. After a successful descent, the survivor should gather his survival equipment and if possible move away from the immediate area of impact, especially from the chute, until an assessment can be made of the area and situation. Stay away from people. It is very difficult to identify friend from foe. If apprehended by natives, remain calm and give them a chance to establish their identity.

d. The downed aircrewman should not try to walk out but should move away from strong enemy positions. Chances are there may be too many people around to avoid contact completely. The SAR Task Force will be searching in the vicinity of the bailout area. Movement on foot through the jungle and hill country of SEA is extremely difficult, even without enemy interference. In the Delta, movement during the daylight hours is easily detected by the enemy. In many areas, flight boots do not provide adequate traction for movement on steep slick hillsides. One downed pilot in rugged mountainous terrain stated:

> Regulation jump boots with slick rubber soles are unacceptable. The climb up the mountainside was much more exhausting than it should have been. This deficiency in equipment almost resulted in my capture. I needed jungle boots for climbing rocks, on the hard dirt paths, to get a foothold in thickets, on moss and practically everywhere on the trail while climbing up the mountain.

5. (U) SURVIVAL RADIO PROCEDURES: The single most important factor to a successful rescue is to establish voice contact with friendly forces once on the ground. The proper procedure for use of the emergency radio is:

a. Activate the beeper for 15 seconds, give your voice call sign then listen in voice mode for 15 seconds.

b. Repeat this sequence until voice contact is established. The 15 second tone allows time for UHF/DF equipment in search aircraft to provide an accurate bearing on your position.

c. The sequence of 15 seconds "on", 15 "off" is easily identified as an actual emergency and not confused with the testing or accidental sounding of emergency radios.

d. As soon as practical, the rescuee should contact his accompanying aircraft or other aircraft in the area to establish his identity, relay his physical condition, location, and obtain necessary instructions. The importance of immediate two-way voice communications using the survival radio, cannot be overemphasized. In many SAR operations, the survivor has assisted the rescue force considerably by utilizing the radio to state if medical attention was needed, to direct cover aircraft toward enemy positions, to guide the rescue helicopter to his exact position, and to stop hoist operations when he became entangled in vines and/or branches. The following should be remembered about the survival radio:

(1) The downed aircrewman must use his survival radio sparingly to conserve battery power. If it is necessary to suspend radio transmissions for security or other reasons, the SAR force should be advised when contact will be attempted again, i.e., in 15 minutes, 30 minutes, first light or first opportunity. It is common practice for F-100 or F-4 forward air controller pilots to make a low-level pass and light their afterburner at the time they want the rescuee to come back on the air.

(2) Since the personnel locator beacon (beeper) signal interferes with other survival radios and airborne communications, maximum effort should be made to turn the beeper "off" before attempting voice contact with rescue forces. Before abandoning the parachute, the parachute beeper (if so equipped) must be turned "off" to prevent it from blocking voice contact.

(3) The ideal position for two-way radio communications is an opening clear of foliage on high terrain. When in forest and mountainous forest areas, the foliage and terrain features limit the radio

signal capability to rescue aircraft considerably. The survival radios in use in SEA (with few exceptions) transmit on line-of-sight only; therefore, for planning purposes, the survivor should not be influenced by the foliage directly overhead but by the foliage in a direct line to the rescue aircraft. If the survivor cannot move from his position, he will have to work under the conditions at hand. If time and circumstances permit, he should move to an area where the foliage is thinnest and no terrain features are between him and the aircraft. The surrounding terrain and altitude of the receiving aircraft determines the possibility and quality of reception. Also operating the equipment in a canyon or ravine severely restricts line-of-sight transmission.

(4) The survival radio has a null (cone of silence) directly above the top of the antenna. Pointing the antenna tip directly at an aircraft reduces good reception of tone or voice. When rescue aircraft arrive over the survivor's position, he should move the antenna to a horizontal position rather than a vertical position in relation to the rescue aircraft.

(5) When using the radio, identify the recipient aircraft; i.e., "Sandy, you just passed north of my position." There will be several types of aircraft searching, so identify the aircraft by type or call sign if possible.

(6) The survivor must remember to retract his radio antenna when moving through the brush, or when landing in trees. There have been several reports of radios not functioning correctly because the antenna was broken in the first few minutes of use. The following order of importance was emphasized by a pilot rescued from the top of a mountain:

> "The radio was the most important recovery item, water second and physical conditioning was third." Do not discard your radio at any time.

6. (U) OTHER EQUIPMENT:

a. If the rescuee's radio is not operating, foliage permitting, the mirror is the preferred second choice. The enemy can see flares and smoke, but the mirror can be focused where desired without attracting attention. If a mirror is not available, any object that will glitter or reflect sunlight can be substituted. Finds have been made with the aid of the light from a cigarette lighter. When voice contact is possible, visual signals should be used only when directed by the on-scene commander or the helicopter pilot approaching for pick-up.

b. The MK-13 Mod-0, day/night flare is an effective signaling

device if employed properly. However, these flares will not always penetrate a thick foliage canopy and should be used with discretion. Chances of a successful signal can be improved by fastening a smoke flare to a parachute shroud line, throwing it over a high limb of a tree, then igniting the flare, and hoisting it back up into the tree. The flare should be used only when exact location must be determined. In any event, the rescue aircraft should be in a position where the signal can be observed. The MBA-201 projectile signal flare has proven to be a highly effective signal flare and will penetrate thick foliage canopy. However, to increase effectiveness, the thinnest portion of the foliage should be used for penetration.

c. Firing tracer bullets is a last choice unless used in conjunction with two-way radio communications. The rescue forces may think that the tracers are enemy fire if they are not notified. Tracers do have the advantage of penetrating a jungle canopy better than flares or smoke. If tracers must be used as a last resort, the survivor should fire several tracers rapidly but not toward the rescue aircraft. If in voice contact, fire a flare or tracer only if requested to do so. During one successful night rescue mission involving three aircrew members, the last person to be retrieved signaled his location by building a grass fire which was seen by the Jolly Green rescue helicopter.

d. If down in dense jungle foliage, chances of rescue without injury are increased commensurate with the knowledge and training of the rescuee. One item of particular emphasis has been the aircrew helmet. On more than one occasion, serious head injury was avoided because the rescuee was wearing his helmet. This is particularly true when the jungle penetrator is required for recovery. During this type operation, rescuees have received one or several heavy blows on the head during jungle penetration operations. In some cases from the penetration and in others from the tree branches and/or bottom of the helicopter while being hoisted. In each case, the rescuee stated that had he not been wearing his helmet he would have received a serious head injury.

e. On several occasions, improper knowledge of the functions and use of the jungle penetrator has precluded successful rescue and recovery and the loss of SAR helicopters and aircrews. In each case, it was because the rescuee did not know how to operate or use the jungle penetrator. It is essential that each aircrew member be thoroughly familiar with the jungle penetrator, how it functions, how to use it and how the rescuee is hoisted up and into the helicopter.

7. (U) WATER RESCUE AND RECOVERY TECHNIQUES: Although over water recoveries are normally less hazardous than overland recoveries, there

are several important techniques and procedures that should be applied by the rescuee. The most prevalent deficiency which has precluded survival or successful rescue, has been improper knowledge of water landing techniques, use of water survival equipment, and the problems associated with helicopter recovery. This has resulted in the rescuee becoming entangled in his parachute shroud lines and/or failure to rid himself of extraneous survival equipment. In most cases this has been caused by preoccupation, i.e., trying to use his radio during descent. If the rescuee knows his parachute water landing, water survival and recovery techniques and procedures well, his chances of survival and recovery are increased considerably. The following should be remembered:

a. It is essential that the life vest be inflated completely and that the oral inflating valves be checked "closed" prior to contact with the water.

b. The parachute should be released from the harness as soon as the feet contact the water.

c. The life raft should also be inflated and released prior to contact with the water.

d. After boarding the raft and establishing radio contact with the rescue helicopter, the rescuee should be advised of the type of recovery to be attempted, i.e., landing on water, hoist with sling or hoist by other means. The rescuee should advise the helicopter of his condition.

e. The next most important point is to ensure that the rescuee retains the life raft until recovery is assured.

(1) When a helicopter approaches an uninjured survivor in the water for a hoist pick-up or water landing, the survivor should keep his life preserver "on" and "inflated", get out of his raft but retain it until recovery is assured.Prior to entering the recovery device, he must make certain that he is detached from the raft or raft lanyard. If the survivor is injured, he should remain in his raft and await the assistance of the pararescueman or other medical technician who will leave the helicopter and swim to him.

(2) If a high sea state exists or other than an amphibious helicopter is used, a hoist pick-up will have to be made. This requires the use of a rescue sling or a litter. The rescue sling (horse collar) should be entered with the bottom end under the arms and across the back, with the arms then locked around the outside of the sling. It may be necessary to partially deflate one side of the life vest to allow donning of the sling. It is extremely important that the individual free himself from the parachute canopy, raft and shroud lines before entering the sling or the litter. The rescuee should not attempt to help himself aboard the helicopter but leave this to the helicopter crewmen.

## SECTION III. HELICOPTER RESCUE

1. Most recoveries in Southeast Asia are performed by helicopters. As these helicopters are provided from the various services, the procedures and equipment used for recoveries vary somewhat because of the helicopter capabilities and equipment within the different services. In each case, however, the method of operation is basically the same.

a. When approaching for a hover recovery, the pilot will normally hover the helicopter into the wind. Though not mandatory in all cases, this procedure is usually desirable. The following is a list of do's and don'ts when being recovered by a helicopter:

(1) The altitude at which a helicopter will hover is determined by its weight, terrain, wind, unit procedures, pilot preference, and the length of the hoist cable. Some helicopters do not have a hoist cable long enough to penetrate vegetation over 100 feet high. It may be necessary for the rescuee to find a new location. In such cases, physical condition of the rescuee, natural hazards, distance to be traveled and enemy proximity will determine the feasibility of this action.

(2) In some situations the helicopter may hover close enough so that the rescuee can climb onto a skid or into the cabin. Of course, the pilot will land the helicopter if possible. Amphibious helicopters may land on the water and taxi to the rescuee's position with the crewmen assisting him aboard.

2. HOW TO ASSIST IN RECOVERY: The following are salient points to remember during recovery operations:

a. Don't panic. Remain calm and think. This is the key in any survival situation.

b. Conserve signaling equipment; have it ready for use, and use it when it will do the most good. In dense jungle, the smoke from an MK 13, Mod 0 day/night distress flare may not penetrate the foliage. In this situation: (1) Tie a cord or rope to the MK 13, Mod 0 flare, (2) Throw the flare over a tree limb, (3) Let the flare fall to the ground, (4) Ignite the flare, and (5) Hoist the flare into the tree. A MK 13, Mod 0 flare will assist the pilot in evaluating wind conditions. Don't forget the mirror. This piece of equipment is one of the best signaling devices.

c. If possible, before touching the hoist rescue device, allow the

hoist device to touch the ground or water to dissipate any static electricity.

3. RESCUE SLING: (Figure 1).

a. Rescue slings are known by several names and come in slightly different shapes and configurations. These devices are normally referred to as a survivor's sling or "horse collar." In general, the rescue sling is a padded buoyant loop which supports a rescuee across the back and under the arms while being hoisted. The loop is about three feet long. Some have a chest safety strap. The proper way to get into the sling is as follows:

(1) Allow the sling to contact the surface before you touch it.

(2) Deflate one side of the life preserver, if necessary.

(3) Don the sling as though it were a coat.

(4) Make certain the arms are around the outside of the sling and crossed. Fasten the safety strap, if included.

(5) Give a "thumbs up" signal, signifying that you are ready for hoist.

(6) Do not attempt to assist the helicopter crew in getting you into the helicopter.



Figure 1. Rescue Sling (Horse Collar)

4. FOREST PENETRATOR: (Figure 2)

a. The forest penetrator is rapidly becoming the primary military hoist rescue device. This piece of equipment is basically a rescue seat with folding prongs and a weighted "nose". The Navy version incorporates a floatation collar around the shank. To use this equipment, proceed as follows:

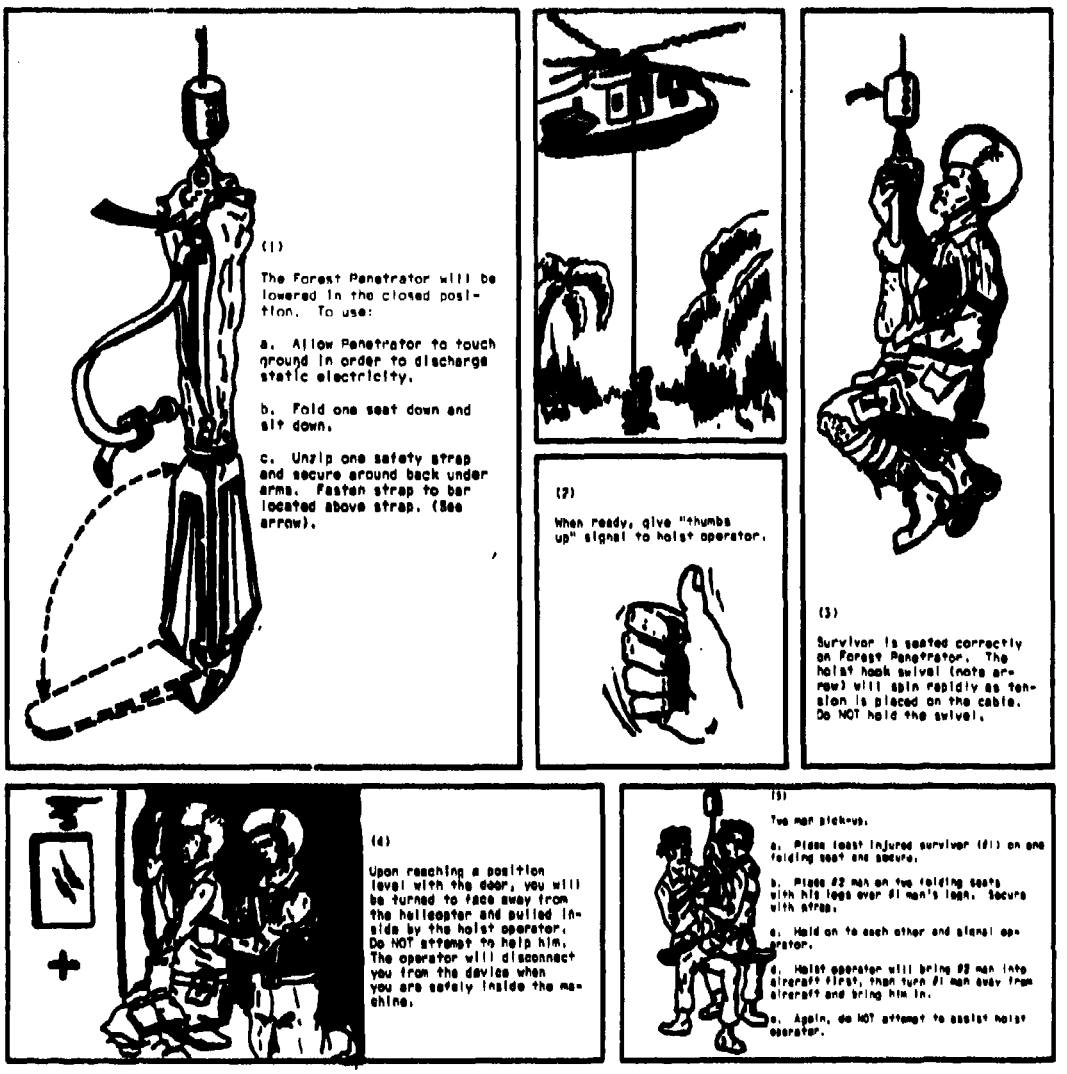



**Figure 2, THE FOREST PENETRATOR**

(1) Allow the penetrator to contact the surface before touching it.

(2) Go to a kneeling position - it is awkward to hold the device and get into it from a standing position.

(3) Hold the penetrator in front and upright and pull down on the seat(s) to lock in a "down" position.

(4) Pull down on zipper or velcro tape. Remove the safety strap from the protective cover.

(5) Slip the safety strap over the head and arms, down and around the body under the arms, as was done with the rescue sling and pull it tight.

(6) Straddle the seat while facing the shank. Give the "thumbs up" signal.

(7) Hold on with both arms around the shank. Keep the penetrator close to the crotch and the head and shoulders close to the cable.

b. When two men are being hoisted at the same time, one gets on the penetrator as previously described. The other man sits on two seats with his legs resting over the first man's legs. Each holds on to the other. If both are injured, the most seriously injured man should be placed on the penetrator first.

5. THE STOKES LITTER: (Figure 3). The Stokes Litter is a special type of stretcher frequently employed in helicopter rescue operations involving recovery of injured personnel. It consists of wire mesh attached to a metal frame and is used to hoist litter patients. If required to assist in a Stokes Litter pick-up, the following procedure should be followed:

a. Allow the litter to touch the surface before being touched.

b. Unhook the litter from the hoist cable hook. Do not fasten the hoist cable to anything on the surface.

c. Lay the suspension cables on the deck or ground alongside the litter.

d. Unfasten the safety straps.

e. Place the patient in the litter. If the patient is on a stretcher, remove him from the stretcher before placing him on the litter.

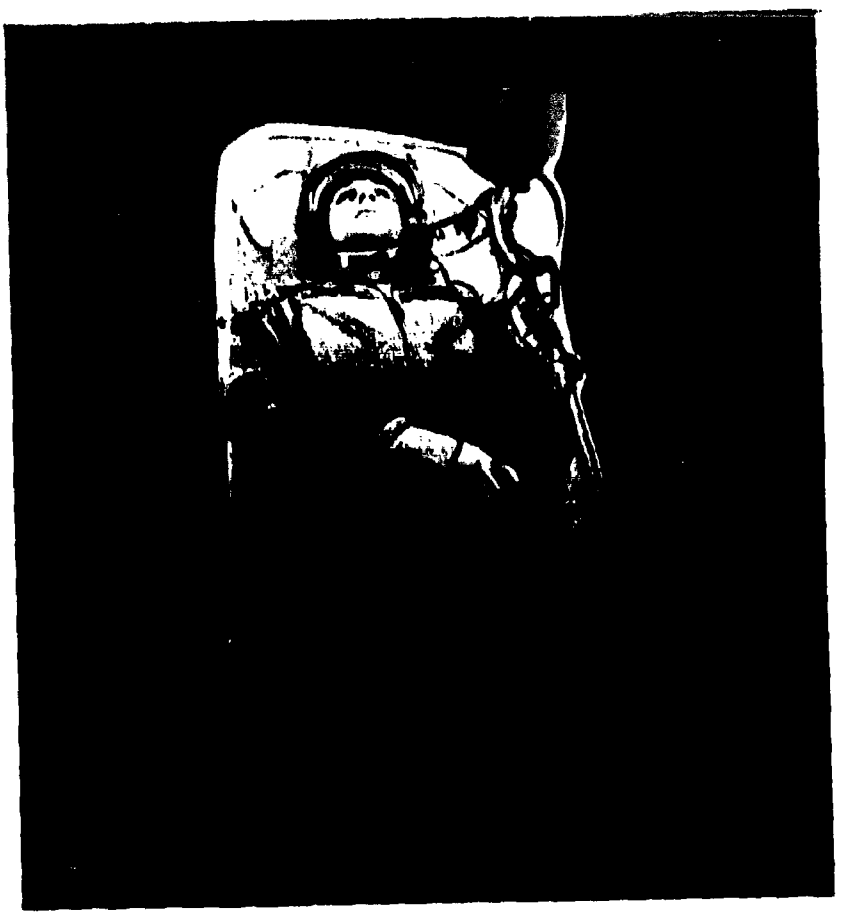


Figure 3. Stokes Litter

f. Secure the safety straps.

g. Place the two lifting rings (attached to the suspension cable) together over the center of the litter and snap them into the hoist cable hook.

h. Do not put any equipment in the litter with the patient.

i. Signal the hoist operator that the patient is ready for pick-up.

j. Steady the litter until it is out of reach.

k. A steadying line should be attached to one end of the litter to steady it during ascent.

6. RESCUE SEAT: (Figure 4). The rescue seat (three-pronged seat) resembles a small anchor with three prongs set 120° apart. The shank may have a web belt type safety strap. This is an easy device to use on land but is somewhat more difficult when used in the water.

a. Allow the seat to contact the surface before touching it.

b. Hold the seat upright in front.

c. Straddle one or two prongs.

d. Put the safety strap (if provided) around the body, as was accomplished for the rescue sling, and pull it tight. The strap is often used for an incapacitated survivor. In this case, another survivor or a rescue crewmember will assist in rigging the strap.

e. When securely on the seat, the rescuee should hang on (facing the cable) and give a signal (thumbs up) to indicate that he is ready to be hoisted.

f. Keep the seat close to the crotch and keep both arms around the shank.

7. RESCUE BASKET: (Figure 5). A Rescue Basket is a device made of wire mesh on a metal frame and is ideal for hoisting untrained persons for they need only sit in the basket. The rules for using the basket are simple:

a. Allow the basket to contact the surface before being touched.

b. Sit in the basket. Do not stand up while being hoisted.



Figure 4. Rescue Seat



UNCLASSIFIED



Figure 5. Rescue Basket

c. When ready to be hoisted, signal the hoist operator.

d. Remain seated until the basket is in the helicopter.

8. ROPE PROCEDURE: If a rope is lowered from a helicopter, the rescuee should not attempt to climb it. He should tie a loop in the rope and use it as a survivor's sling. The rescuee should be careful not to make the loop too large and not tie a slip knot. The crewman in the helicopter probably will not be able to pull the rope in hand-over-hand. For this reason, the rescuee should not be surprised if the helicopter flies away while he is still hanging in the loop. The pilot will locate a safe place to put the survivor down and will then land so that he may enter the aircraft. This procedure will only be used in an emergency when there is no alternative.

a. When being hoisted, the survivor should keep his hands away from the hoist cable swivel, since it will spin rapidly as tension is placed on the cable.

b. The rescuee should always allow the crewman to pull him into the helicopter and take him out of the rescue device. The hoist operator may turn the survivor so that he is facing away from the helicopter before pulling him inside. He should hang on until told how he can help.

9. OTHER DEVICES: Several other recovery devices are under consideration as of this writing. Two such devices include a rescue net designed to literally scoop the survivor out of the water and a modified version of the Forest Penetrator which incorporates a plastic shield to protect the survivor from obstacles during hoist operations.

## SECTION IV. SEARCH, RESCUE AND RECOVERY EXPERIENCES

(CMHA) Search, rescue and recovery of downed aircrews have been successful in Southeast Asia for the most part; particularly when the rescuee used good judgment and understood and followed proper survival, rescue and recovery techniques and procedures. In most cases where rescue efforts have not been successful, the failure to use correct procedures and/or techniques has meant the difference between successful and unsuccessful rescue and recovery. The experiences summarized within this section are presented in the hope that they will serve as "Lessons Learned" to further improve the rescuee's chances of successful recovery. The accounts presented are extracts from actual experiences related by downed aircrewmen or individuals involved in SAR operations. Related below are some of these experiences.

a. High speed ejection: This is an account of a F-105 high speed ejection. The aircraft was uncontrollable and in a 20 degree nose-down attitude between three and five thousand feet. Indicated airspeed was 510 knots; the pilot assumed proper body position, gloves on, helmet on but visor up. The pilot related the following:

> "I reached for the handles, pulled hard, and then squeezed the triggers. I remember thinking that it wasn't going to work,...there was a delay before seat firing. I had been briefed on this but didn't remember. On ejection, my gyrations were of such magnitude that both my legs were broken and my helmet was lost. The chute opened with a very violent shock. I looked at the seat flying away horizontally at great speed and then lost sight of it because I was swinging wildly in the chute. Four shroud lines on my left side were broken but the chute was working well. I looked the other way and the air was filled with so much junk I could not believe it. It almost looked as if my plane had disintegrated but there was no fire visible. At the same time, I heard a loud report more like a large gun firing than an explosion, and I assumed that to be the plane. As my wingman's aircraft zipped by, I came to my senses and stopped star gazing. I reached down, took out my radio, and turned it on. The chute beeper was blocking out voice transmissions, so I began to fumble around behind my left shoulder in an attempt to turn it off. Unable to locate it by feel, I craned my neck to look around and was surprised to learn you can actually see it in your chute if you crane hard enough. I fumbled with the switch and shut it off. I

then transmitted a premature call to my wingman that I was okay. Subsequently, I noticed my right leg was dangling in a weird position, and revised my estimate. I also noted a lot of blood on the radio as I switched it off, and vaguely remember wondering where it came from. I began to survey the area I was approaching. The karst ridges below me were nearly perpendicular, and I pulled hard on the risers in an attempt to slip back in the wind to hit short of the ridges. I just made it, landing about ten feet from the face of the karst, suspended in a tree. I was hanging in what looked like a giant fern, which was about 50 feet high. I was about thirty feet above the ground and fifty feet below the top of the jungle canopy. My chute had settled over the top of the tree, providing me with an excellent marker."

The pilot's descent took approximately five minutes. He had little or no control over his tumbling or oscillations, which had gradually decreased to a gentle swinging when he reached the jungle canopy. Before hitting the trees, he covered his face with his arms and hands and attempted to put his legs together. As he related:

"I hung in space, unable to reach a limb or tree trunk, although there was one less than seven feet from me. Try as I might, my dead legs would not swing me over to them. I was hanging at a 45 degree angle on my left side with my feet pointing downward and was able to reach only my radio, knife, and medicine kit (though I never did use the kit). It was then that I realized I was in a pretty good state of shock. The crazy angle at which I was hanging caused my legs to become numb from lack of circulation. I remember reporting that I had two broken legs and was stuck in a tree. I became extremely worried because I thought I was too close to the karst ridges for a helicopter pick-up. Things were pretty hazy during this waiting period and I'm sure I passed out several times.

A Sandy came on the scene and assured me that th[illegible] would be able to hover above my position. My [illegible] soared but my mind sagged and I passed out ag[illegible] awoke hearing the radio hissing in my hand. [illegible] the radio cor[illegible] around my hand because I was too [illegible] hold it...Sandy called and said to get a smoke f[illegible] ready because the chopper was coming in. I apol[illegible] and said I had been trying but just could not ge[illegible] it....

> The big beautiful chopper came in creating a wild cyclone that blew me out of my tree and over against a tree trunk, where I hung ten feet off the ground. The Pararescueman (PJ) came down ten feet from me and settled to the ground. I swung in the harness and unhooked, falling almost on top of him like a giant rag doll. The PJ tried hard to get my legs on each side of the penetrator paddle but they were flailing around like spaghetti. Finally I yelled to the PJ to forget about the seat and called for the strap. He nodded, strapped me on, and we went up slowly; my legs were dangling straight down. He fended off the branches as we went up through the trees and I held on with every ounce of energy I had left. Once clear of the trees, we picked up speed. Sporadic small arms fire broke out then but we were not hit, and hung there watching the jungle fall away until we were pulled inside the chopper for an uneventful ride home."

During ejection, both of the pilot's legs were broken at the thigh, and numerous facial cuts and bruises were sustained. With the exception of a few minor scratches which occurred during descent through the trees, the pilot related that he believed his injuries were incurred immediately after ejection. During the ejection phase, he lost his helmet, seat pack, and a water filled baby bottle from his G-suit.

The pilot stated that he believed his training for ejection and parachute techniques was adequate. He was able to direct his descent toward the desired direction. He was unable to control his oscillations, but attributes this to his speed at ejection, the explosion of the aircraft, and the fact that his lower limbs were broken and useless.

"Lesson Learned" The above account points out one of the salient Lessons Learned - High speed ejection will in many cases result in body injury - especially when heavy or bulky items of equipment are carried in the leg pockets of the flying suit or in the G-suit and ejection is at lower altitudes. The helmet visor in this case should have been lowered and all equipment such as the life preserver should have been fitted tightly. In this account, the circumstances precluded reduction of aircraft speed prior to ejection. However, as this incident points out, the pilot should always remember that chances of serious injury during ejection are reduced considerably if airspeed prior to ejection is reduced, circumstances permitting.

b. Medium Speed Ejection: This is an account of a F-105 ejection at reduced speed. The aircraft was on fire but was flyable until the pilot was able to prepare for bailout. At ejection, indicated airspeed was 200 knots. The following are extracts from the experience

as related by the pilot following his recovery:

"Preparation for ejection took about 20 seconds. I took my clipboard off and threw it on the forward panel. I lowered my seat, fastened my chin strap very tight, and lowered my visor. I did not notice that I still had my standard-issue sunglasses on. I had slowed the aircraft to 200 knots calibrated, was holding 230 degrees at about 10,000 feet, and had the nose high about 15 degrees. As I remember, my last comment to the rest of the flight was 'Adios'.

Using the primary ejection system, I pulled the handles up. I forgot that the F-105 had been modified recently so that this action would not jettison the canopy. Consequently, I reached down and used the alternate jettison position to blow the canopy. As the canopy went, I assumed my ejection position with feet hard against the rudder pedals and squeezed the triggers. After I left the aircraft, I never saw it again, as it immediately entered clouds.

My acceleration was very mild. The automatic system kicked me out of the seat, I tumbled two to three times, and was still tumbling as the chute deployed. This entire sequence was automatic, with no actions on my part. The chute opening was relatively mild. Nevertheless, the lower pocket on my G-suit tore, and I lost both water containers. The side pocket on my left arm also ripped, but the pen and pencils remained.

As I came out of the cloud bank, I raised my visor, took off the sunglasses and put them in my pocket, and began to survey the terrain. The terrain below me looked fairly bad. I had what I thought was....in view, slightly behind me. I spotted a fairly good looking area to my southeast and began pulling the lines until I achieved the desired drift. I am not airborne qualified and do not remember the specific procedures I used in pulling the alternate risers. It seemed instinctive, however, to pull until the proper drift was established. I was not overly exhausted by these actions....

When it became apparent that I would hit the trees, I turned myself so that I was facing into the wind. I pulled the visor down, put the mask on, retightened chin straps, got into the parachute landing position with my

legs bent and together, and crossed my arms over my face. I had thought about deploying the survival kit earlier, but had decided not to because of a possible hang-up in the trees. As I physically hit the top of the trees, I could hear the limbs breaking. I felt a definite thump as the collapsed chute dragged above me....

I landed on my back in fairly soft ground. As I rolled with the impact, my head hit a log, knocking the helmet and mask off. The impact was hard. This combined with the blow to my head, left me dazed - possibly for several minutes. When I became aware of my surroundings, my legs felt stunned at first, leading me to think I'd broken my back. Feeling came back gradually, however, and my morale improved as I realized that I was down and safe. I activated my harness separation mechanism, and it worked smoothly. My training for ejection and parachute descent had been excellent. It allowed me to safely accomplish a difficult landing."

The pilot suffered no broken bones or injury. He recalled, however, that he received a hard blow on his head as he contacted the ground but was protected from serious injury by his helmet. After he was on the ground, he used his equipment wisely and was recovered in short order. His final comments at his debriefing pointed out the importance he gave to his helmet and knowledge of recovery procedures.

"At 0405Z, I left the ground. I estimate it took 45 seconds before the 170 feet of cable was reeled in. The Jolly Green's down wash was knocking off numerous large branches which fell all around me. None hit me, but if they had, only my helmet would have protected my head. I can't stress the importance of the helmet too much. It probably saved my life when I first landed, and it very nearly had to serve the same purpose on ascent. I remembered my briefings on Jolly Green rescue procedures, so I left myself totally limp and didn't attempt to give any help to the rescue crew as they rolled me into the chopper. The entire rescue went like clockwork."

"Lesson Learned". This account stresses the importance of reducing speed before ejection, the importance of the helmet, and knowing your survival, rescue and recovery procedures. Not mentioned in this account is the excellent attention given by the rescuee to radio discipline and procedures. He also related that he feels each aircrew member should be fully current on his authentication procedures and code words. He had a few trying moments in this area but otherwise

the entire sequence of events went well.

c. Water Recovery: The following is an account of an actual ejection over and recovery from the Gulf of Tonkin. This experience is an extract from the account as related by the pilot following his recovery.

"At 6,000 feet, mean sea level (MSL) (over water), 230 KTS CAS, I ejected using the lower ejection handle. Head and body were erect against the seat, helmet strap was fastened, visor was up. Windblast was unnoticed. There was some tumbling, but it wasn't violent. Seat separation and chute deployment were automatic. Opening shock was noticeable but not painful. The descent was smooth and there were no oscillations. No terrain evaluation due to darkness. Feet and legs were extended and hands were over harness releases. Released chute after water impact without any problem. The descent took approximately four minutes. I had suffered no major injuries. Small cut on the back of my right hand, harness burns on neck and left leg, stiffness in back and neck after three to four hours. I had lost my helmet and mask during ejection. Everything worked normally with no significant difficulties.

The landing itself seemed real gentle and I don't think my head even went under the water. The first thing I did following impact was release my parachute. The right riser disconnected right away, but it took two tries to release the second one but I think that was due to nervousness. The risers went off behind me and I never saw them or the chute again. Then I pulled my raft over and climbed aboard using the techniques taught in survival school. That was no easy task, but after a few tries I got aboard OK. Then I just relaxed for a few minutes and tried to settle down a bit. I then pulled my survival kit aboard, cut one part loose and discarded it, and tried to take stock of what I had. Shortly afterwards helicopters were in the area and flares were being dropped from aircraft overhead.

Along with aiding the chopper in finding me, the flares were a big help because then I could see more of what I was doing plus the light was a big comfort. The choppers came quite close several times, and I popped three flares to aid them in locating me over a period of time. I popped three night ends and two day ends because I thought the smoke would be visible under the flare light. I tried

several times to make radio contact, but neither of my radios would work after water impact.

Finally, a chopper spotted me, came over, dropped a sling and got so low that I thought he would crash right on top of me. Also, his rotor wash blew me around quite a bit and blew my survival kit completely out of the raft. I didn't make an attempt to pull it back in but the zipper was opened because I had just removed a flare and I'm sure the contents were spilled when it blew overboard. After he lowered his sling I got out of my raft and then cut it loose so it wouldn't cause any problems. As it turned out, this was a mistake because after they tried to get the sling to me for five minutes or longer, they departed. Luckily my raft was still in sight so I swam back to it, rested a while, then reboarded it, again after much effort. My flares had been lost so then all I could do, or did anyway, was to relax and wait. I yelled for my Aircraft Commander several times but I never saw him nor heard an answer.

Before long another chopper came over, hovered, and again I got out of my raft. This time I held onto a handle because it wasn't tied to me any longer, and I did not want to lose it. I guess he stayed there approximately five minutes also, but he couldn't get a sling to me either and then he left. By this time I was about halfway angry plus I was getting tired and a little discouraged. I worked again to get back into the raft and then I relaxed again. During this time I could see a chopper hovering not too far away and I think I saw someone in a sling, but I didn't get a real good look. Approximately ten minutes after I boarded the raft, a third chopper, I think the same one that had been hovering near me, came over to me and lowered his sling. Again I got out of my raft but again I held on to it. Finally I managed to grab the sling and put it around me and they hoisted me up into the chopper. I made no attempt to enter the chopper and I didn't release my grip on the sling until I was lying completely inside the chopper."

"Lessons Learned". This account illustrates that night recoveries are feasible but more difficult and require more time. As illustrated by the above account, the pilot did most things correctly but made two mistakes. Either of these mistakes, i.e., failure to lower his helmet visor before ejection or failure to make certain that he retained his life raft until recovery was assured, could have resulted in an

unsuccessful recovery. Fortunately, in this case, these mistakes were not amplified by inclement weather and a successful recovery was completed.

d. Jungle Survival: The following is extracted from an experience related by an OV-1 pilot who was forced to eject over dense jungle at night. Although faced with some trying moments, he survived and was recovered.

> As the aircraft became uncontrollable, the pilot determined that he would have to eject. Ejection was normal with no malfunctions or complications. As the pilot descended, he observed that he was descending into what appeared to be heavy jungle.
>
> His landing was uneventful except for bruises and cuts sustained while impacting in the trees and descending to the jungle floor. The sky was completely obscured by the time the pilot was on the ground so he elected to remain in his position until first light. He bedded down using his mosquito bar to protect his hands and face.
>
> Shortly after bedding down, he was approached by a tiger. Not wanting to reveal his position by discharging his weapon, he lay perfectly still. The tiger sniffed his head and fortunately for him, departed.
>
> Throughout the remainder of the night, the pilot, using his survival radio, attempted to contact every aircraft he heard. No contact could be established. At first light, he attempted to walk out of the jungle. (His parachute was obscured by the triple canopy and could not be seen by SAR aircraft). As he moved through the jungle, he was able to navigate to some extent by brief glimpses of the sun through the thick jungle canopy. Unable to find any paths or trails in the area, he decided to use a stream bed as a path in the general direction he thought he should travel. Finally, he emerged into an area where the foliage was relatively thin, so he elected to wait there until he heard an aircraft and try to establish radio contact. Finally, after another night and approximately 36 hours on the ground (272100 to 290900), he established contact with a passing aircraft. The pilot was rescued shortly thereafter.
>
> Throughout this period the only food available was candy

bars in his survival kit. His only water was that which was available in the one plastic container in his survival kit. The only gunfire he heard during his stay in the jungle was automatic gunfire, approximately one half mile northeast from his position. The pilot suffered a collapsed lung, broken nose, sprained left arm, cuts, abrasions, and exposure. Upon reaching the hospital, it was determined that the pilot was both mentally and physically exhausted from his ordeal. The pilot related that he felt the thick jungle canopy seriously hindered the operation of the RT-10 Survival Radio. The ability of the pilot to keep a clear head was a major factor in his survival and recovery.

"Lessons Learned". This account illustrates the affects of jungle canopy on emergency radio transmission, the need for composure in a survival situation and the importance of survival training.

e. Night Survival: The following account illustrates the importance of knowing your survival training when you are in strange surroundings at night after ejection or bailout. The account as related was extracted from a previous "Lessons Learned" document published by this headquarters but is considered worth repeating. The account follows:

The pilot, a Lieutenant, noted that he would land in the trees as the full moon lit up the tree tops. He prepared for a tree landing. He went into the trees and stopped abruptly. After stopping, the chute came down to his level and his inflatable raft ended up about a foot away. He was suspended in vines with a tree close by. He hooked a leg over the limb and using one of the longer vines pulled himself onto the limb. He released one riser of his chute and moved to the tree trunk, about eight inches in diameter.

The pilot activated his radio and heard a garbled transmission. He asked for a repeat and again the transmission was not readable. Since there were no planes in the area, he asked: "If this is the Major (the aircraft commander), give me two clicks on the mike button." Two clicks were received. The Lieutenant then heard the RESCAP airplane. He made radio contact, and RESCAP asked if he was OK. He gave his condition and what knowledge he had concerning the other pilot. RESCAP told him that Sandy A-1 aircraft, and a Jolly Green Giant, HH-3 rescue helicopter, would be in at first light and to activate his beeper then.

The RESCAP then departed the area at approximately 0015 hours local time.

After shutting down his beeper, the Lieutenant tried to get comfortable. He strapped his helmet to the tree limb, put a bandage on a cut finger, drank some water and was rather comfortable except that the limb he was sitting on was too small. He attempted to rest, sleeping off and on for 30 minute periods.

Later that night, he heard a sound like something falling through the trees perhaps 75 yards away. About 30 minutes later he heard the same sounds again. When daylight came, he saw that he was on the side of a mountain, 2000-3000 feet above the valley floor. Across the valley, the mountains rose 3000-4000 feet. He also spotted the Major's chute about 75 yards to the east. It was about four feet from the top of a tree approximately 45 feet tall.

About 30 minutes after the first light, two Sandies appeared and he activated his beeper. They circled, went away for 20-30 minutes, and finally returned. Voice contact was intermittent. The Lieutenant told the Sandies that because of the fog and overcast they could not get in. The two planes stayed in the area from 0700 to 0935 hours at which time they were relieved by two more Sandies. When the clouds lifted, the Jolly Green Giant came in under the clouds. Finally one of the Sandies flew down his ridge. He told the Sandy pilot that he had just flown down his ridge line; the Sandy came back down the ridge line. Two pen flares were fired and were seen by the Sandy pilot. The Sandy pilot directed the Jolly Green in. The Lieutenant then fired three more pen flares which were seen by the helicopter. Then he fired a red smoke flare to establish wind direction when the helicopter was closer.

At Jolly Green's direction, the Lieutenant secured himself to the trees and donned his helmet. By means of the radio, he vectored the helicopter to his position. When the forest penetrator was lowered, it was four feet out of reach, so he bent his radio antenna into a hook, snagged the penetrator, and pulled it over to him. After he was securely on the penetrator, he cut himself free from the tree with his hook knife. Shortly thereafter, he was safely aboard.

The aircraft commander, although his ejection and tree

landing were successful, was not as fortunate. Available information indicates that he elected to descend from the trees during the night by releasing the quick disconnects on his chute harness. Evidently the sounds of movement which the Lieutenant heard the night before were from the Major's dropping through the trees. He sustained fatal injuries as a result of his fall.

"Lessons Learned". As this account demonstrates, the rescuee must act with judgment and assess the situation before acting once he finds himself in a survival situation. Unless absolutely necessary, because of the immediate enemy situation, he should never chance any action that could possibly result in disaster. Survival, rescue and recovery are based on training, planning and logic; not snap decisions or guessing. Know your equipment and procedures and use them wisely. If you are in a strange position or situation and time permits, assess the situation before acting.

f. Emergency Recovery: This is an account of a downed pilot who because he used good judgment in what seemed an impossible situation, survived and was recovered. Extracts from his account follow:

"My wingman and I completed our bomb runs. As I was pulling out from my last strafing pass, my aircraft became uncontrollable.

I decided to punch out and found myself drifting eastward into enemy positions.

'Charlie' must have been shooting at me, because I heard the popping of ground fire."

After ejection and a normal descent, the pilot landed in a rice paddy bordering a narrow canal sparsely lined with trees. As he landed, the nearest GCI vectored two F-100 pilots to the area to provide suppressive fire cover. The downed pilot's situation soon became critical.

"I saw two enemy soldiers coming in my direction so I ducked under water. They must have walked right by me because I could distinctly hear them firing automatic weapons at the FAC."

Shortly after landing, the pilot was advised by his flight leader that a pair of Army Cobra helicopters were heading for the area.

"One set down about 20 yards in front of me but couldn't spot me and started to lift off.

For the first time, I exposed myself. I jumped up and waved my arms and started through the mud and slime toward that beautiful chopper. All the time, I was expecting to get a bullet in the back.

They couldn't take me inside, since it was a two-seated tandem cockpit, so they dropped a gun bay door cover and motioned to me to lie down on that and hang onto the skid.

It was rather windy riding out there, but I was really relieved to see that Vietnamese countryside going away from me."

"Lessons Learned". Though the above account represents only a portion of the total episode as told by the pilot, it illustrates one important point, the pilot used exceptionally good judgment and composure during a survival situation. The act of being recovered in a Cobra was a "first", but again it demonstrates that survival is based on training, knowing your equipment and the desire to survive. This account was later related by a North Vietnamese prisoner of war who stated that they saw the pilot but were unsuccessful in their attempts to find him because he was very clever. The PW relates that they saw the pilot when he was recovered by the Cobra helicopter but were unable to fire on him for fear they would give their position away to the aircraft in the area. This is a case of each party in the recovery using good judgment in a critical situation.

## SECTION V. SUMMARY OF SALIENT LESSONS LEARNED

1. The most favorable recovery areas are Thailand, Gulf of Tonkin, safe areas in Laos, and isolated areas in South and North Vietnam.

2. An emergency should be declared by the pilot as soon as a malfunction which could result inan emergency situation develops.

3. Thorough knowledge of basic survival, evasion and rescue techniques and of the employment of personal life saving equipment by the survivor is essential to a successful recovery.

4. The downed aircrewman must learn to remain calm, plan his actions and make his decisions based on logic and common sense during the entire rescue operation.

5. Prior training in survival, evasion and rescue will aid the rescuee considerably for he is the key to survival and recovery.

6. If equipment is lost or inoperative, alternate courses of action must be planned.

7. The most useful piece of equipment in an actual rescue situation is the survival/emergency radio. Know how to use it and its limitations.

8. Timely and accurate location information transmitted to the rescue task force eliminates confusion and saves time.

9. The effects of jungle foliage, mountainous terrain and line-of-sight characteristics, must be considered when using the survival radios.

10. RESCAP aircraft should not circle directly overhead when maintaining surveillance over the rescuee.

11. If a tree landing is imminent, do not deploy the survival kit or raft; know your landing procedures.

12. If possible after arrival on the ground, move away from your parachute and hide until an assessment of the situation can be made.

13. The downed airman should normally not attempt to walk out when downed in SEA because of terrain features and danger of interception by unfriendly forces.

15. The helmet is an important piece of survival equipment, guard it well.

16. Know all survival and recovery procedures and equipment well. Review survival, rescue and recovery training procedures and equipment operations regularly. Know the limitations and capabilities of the SAR equipment.

17. If survival equipment is not a part of the ejection system, it should not be carried loosely in the aircraft but on the person of the aircrewman. Experience has demonstrated that unless this procedure is followed, essential items of equipment such as firearms, water and signal equipment are lost during crash landings or hasty exit of the aircraft.

18. Be search and rescue oriented.

## SOURCE MATERIAL

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2 - COMDT, USA Trans Sch
2 - COMDT, USA Sig Sch

5 - CG, III CORPS
45 - DIA (DIACO-3)
5 - CG, 82d Abn Div
5 - CG, 1st Armd Div
5 - CG, 2d Armd Div
5 - CG, 5th Mech Div
3 - CG, USAMC
10 - CG, USACDC
2 - CG, USACDEC
1 - CO, USACDCIA
3 - COMPHIBPAC
3 - COMPHIBTRAPAC
3 - COMPHIBTRALANT
5 - COMUSMACTHAI
2 - COMUSJAPAN
20 - CHMAAGCHINA
2 - CHMAAGJAPAN
2 - CHPROVMAAGKOREA
2 - CHMILTAGINDONESIA
2 - CHMEDTBURMA
5 - Chief, R&D
2 - Chief, ARPA RDFU (THAI)
11 - Chief, JUSMAG, PHIL
2 - JFK Center SW
5 - Defense Document Center
2 - CO, NIOTC
1 - CO, BOATSUPPU ONE
1 - CO, UDT ELEVEN
1 - CO, UDT TWELVE
3 - CO, USA Lim War Lab
3 - CO, Seal Tm 1
3 - CO, Seal Tm 2
1 - PAC Msl Range
1 - NAV Ops Spt Gp LANT
7 - COMRIVFLOT ONE
6 - COMCOSRON ONE
5 - COMRIVRON FIVE
2 - COM NAV Ops Spt Gp PAC
1 - COM NAV Const Bn LANT
2 - COMDT, NWC
5 - COMDT, AFSC
2 - COMDT, ICAF
5 - COMDT, USAWC
2 - COMDT, Air War College
2 - President, Naval War College
5 - COMDT, USAINTS
5 - COMDT, USAARMS
10 - COMDT, USAIS
5 - COMDT, USAAVNS
2 - COMDT, USA Jungle Warfare Sch
2 - COMDT, USMC Sch
2 - COMDT, USN Amph Sch
12 - COMDT, USA CA Sch
2 - COMDT, USAPHS
2 - COMDT, USAQMS
6 - COMDT, USASWS
2 - COMDT, USAAD Sch
50 - COMDT, USAAMS
2 - COMDT, USACMLCS
2 - COMDT, USAES
5 - COMDT, USACGSC
5 - COMDT, USARPAC Intel Sch
2 - Supt, USNA
2 - Supt, USNPGS
3 - Supt, USMA
2 - Supt, USAFA
5 - USA Sch of Americas
2 - CO, NAVPHIBSCOL, CORO
2 - CO, USA Cbt Surv Sch
1 - CO, USNOTS
1 - USA Combat Dev Com
1 - Hq, Foreign Tech Div, AFSC
2 - PACAF (IGSL)
4 - USAF (AFISP-S)
5 - Dept Air Police Tng
1 - Dir, Air Univ Library
1 - Dir, Special Air Warfare Sch
1 - DIA (DIAAP-10A2)
1 - ATC (ATOPT-S)
1 - 3636 CCTG (CCT-OT)
2 - CO, 1041 USAF Sec Pol Sqdn
1 - General Research Corp
10 - Hq, USASA
1 - Det 2, 39 Air Div
2 - 39th Air Div
10 - DA, ACofS, FD
1 - ASD (ASBEE-10)
1 - CINCPACREP PHIL
1 - USN Mine Def Lab
5 - CGUSARHAW
1 - JCB Library, USMC
1 - FTD (TDB)
10 - XVIII Abn Corps, Arty
2 - USA F/TC

2 - USAAC
5 - USAIC (Ft Benning)
5 - USAIC (Ft Campbell)
5 - USA S/TC (Ft Gordon)
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