In Southeast Asia a pilot downed in hostile territory has only one hope of escaping death or capture and that is by air rescue. To date there is no escape and evasion of the World War II variety with its underground contact groups. Agents do exist in NVN and the hostile portions of Laos, but the risk of compromise is too great for use in escape and evasion schemes.[117] Special E&E teams have been introduced in some areas, but a value judgment of their effectiveness will have to be made at a future time.[118] To date, no one has 'walked out.' The terrain is too formidable and the area too hostile. Very few have escaped from prison. Lt. Klusmann, with the aid of dissident Pathet Lao, escaped in September 1964.[119] In July 1966, a small group made the first escape from a prison in NVN. Luckily, one of the escapees was spotted from the air in a forest in NVN, and was picked up by the Jolly Greens.[120]

Evasion is, at best, only temporary. The longer a man is on the ground the less chance he has of being rescued. The pilot must remain in the general area of his landing, work himself into a good position for pickup, remain hidden from the enemy, and establish communications with the SAR force.

The 'Mayday' signal will be picked up by the Crown aircraft or one of the GCI stations at Udorn, Nakhon Phanom or Da Nang and relayed to the RCC at Udorn and the JSARCC at Tan Son Nhut. Infrequently, an IFF Mayday squawk will be picked up by a GCI station or by the HU-16 Crown aircraft which, unlike the HC-130H, is equipped with an IFF interrogator.

If the pilot, in the judgment of those on the scene, ejected successfully (i.e. if a good chute is seen or a beacon signal is immediately heard) the SAR mission is launched by the controlling RCC. From that point on the JSARCC monitors the mission, keeps the Commander 7AF informed, and acts in an overall supervisory capacity. The TACC (Udorn) insures that jet fighter RESCAP is available. The SAR then takes precedence over all other air missions, and strike aircraft intercepting the Mayday signal divert to form a RESCAP. The Crown aircraft closely monitors this phase to ensure that only sufficient aircraft are diverted into the area for combat patrol. The number required depends upon the nature of the ground environment, as assessed by the aircraft on the scene at the time, and the likelihood of MIG encounters.

When the mission is launched,two Sandies proceed directly to the reported location, assume duties as OSC, and attempt to establish visual and electronic contact with the crew on the ground. The other two Sandies form the RESCORT for the two helicopters, which proceed toward the target at an altitude of eight or nine thousand feet, out of the range of .50 cal machine guns. Each pilot carries a flak map, which is frequently updated at the Udorn TUOC, so that the least hazardous route can be taken into the target area. The Jolly Greens remain high and outside the target area until the Sandies positively locate the downed aircrew and determine that the helicopter can survive the environment. If the mission is in NVN, final clearance must be obtained from 7AF/JSARCC before the SARTF crosses the border.

If the wingman is unable to direct the SARTF to the distressed pilot the Sandy aircraft conduct an electronic search trying to home on the URT-21 beacon which automatically starts transmitting when the pilot's chute opens, and to establish voice radio contact via the survival RT-10 radio. The 'beeper' and the RT-10 both transmit on the same frequency and, occasionally, a problem can arise if the pilot forgets to turn the beeper off or cannot get to it to do so. The signal strength is such that it can override the voice transmission and complicate the pickup. If a beeper is heard but no radio voice or visual contact is made, the Sandies will not bring the Jolly Green into the area until they have further investigated the situation. The enemy has captured enough beepers, strobe lights, and other signal devices to set up inviting flak traps for the SARTF. It is not too unusual for the Sandies to receive a beeper signal from a nearby village. Voice contact then becomes extremely important. Such contact can be established, yet some doubt may remain as to the identity of the person on the ground. In this case the personal authenticator can be used to verify the identity. The Crown or RCC must radio the pilot's unit or the JSARCC, where the pilot has left on file personal information such as his wife's maiden name. the make of his car, his favorite sport, and also what kind of visual signal he will give to the rescue aircraft. This means of identification is rarely used but can be indispensable in avoiding a trap. If voice contact cannot be established via the RT-10 radio, the pilot has been instructed to send the first initial of his last name in morse code by turning the beeper on and off. This provides at least

a partial solution to the problem of detecting a beeper but making no other contact. It does not furnish a total solution, however. The pilot may be injured or in a state of shock and unable to function effectively. Some visual search will still be called for and this engenders a certain risk of being caught in a flak trap.

In circumstances where the evidence of survival is dubious, but possible, suspension of the mission will always be a matter of critical judgment. In the absence of overriding considerations known only at higher levels, the on-site commander has the best feel for, and knowledge of, the situation. The judgment is left to him. There is an intense interest at all levels of command in recovering a downed pilot. This has in some cases caused the SAR forces to overextend themselves in dangerous situations.

The downed pilot has pen-gun flares, smoke grenades, a signal mirror, colored panels, a strobe light and, if all else fails beneath the thick jungle canopy, .38 tracer ammunition to make his exact location known. Once the Sandies have located and identified the man, they give him instructions to assist in the pickup including the determination whether it is safe for the helicopter to approach. They might make a low pass or a firing pass to draw fire from possible enemy positions. If hostile fire results, they neutralize it with their ordnance or by calling in and controlling jet aircraft in the RESCAP. White phosphorous bombs are effective in creating a smoke screen to seal off the area and are often used.

When it is determined that the area is safe enough for the helicopter to survive, the Sandy OSC advises the pick-up helicopter of the terrain and optimum approaches for avoiding ground fire. While waiting for the helicopter, the Sandies orbit in the general area of the downed pilot but not directly overhead (in order to protect his concealment). The high helicopter continues to orbit and assumes the role of OSC as the pick-up helicopter descends. The helicopter's external tanks are generally dropped before the approach because of their explosive potential and the necessity to lighten the helicopter to the point where it can take-off from a low hover in event it loses one of its two turbine engines.

Such an emergency occurred on 25 May 66. The enemy held its fire until the helicopter came to a hover and then cut loose. An engine was knocked out when the helicopter was 50 feet over the target. Although a crash landing seemed imminent, the application of full power on the good engine enabled the Jolly Green to balloon over a ridge and recover with minimum fuel at a friendly airfield. 121/

In approaching the target the helicopter will usually make a fast identification pass with a Sandy at each wing, then a tear drop turn, or a close downward spiral, into a hover. The tactics depend on the terrain, location of hostile forces and personel preference. Because of the dense forests, it is often necessary to position the helicopter precisely over the survivor. The paramedic, flight mechanic, and the survivor himself give the RCC corrections.

When the helicopter is positioned, the forest penetrator is lowered to the survivor. If he is injured or in a state of shock, which is often the case, the paramedic is lowered to assist him. The penetrator is designed so that both men can be retrieved simultaneously.

The general assumption is that if a route proved to be safe on approach, it will also be safe for departure. This, however, is not always true. On 19 February 1966, an F-105 pilot was downed in the heavily defended Mu Gia Pass area. The Sandies and the Jolly Green, with the paramedic and flight mechanic firing M-16's from the doorway, had to fight their way in and out of the pass. The RCC had to lift off while the survivor was suspended 100 feet below the aircraft. 122/

If a second survivor is involved in the operation, the low Jolly Green will usually make the pick-up. However, if it is low on fuel because of the high power requirements in the hover, the high helicopter descends for the recovery. The high helicopter also provides an immediate recovery capability if the low helicopter is shot down.

Enroute to the recovery base the survivor is given necessary first aid.

Previous USAF combat SAR operations were conducted in the Korean War. According to Major Baylor Haynes the nature of that war and the equipment then available dictated the tactics significantly different from those used today in Southeast Asia. Because the threat

to the SARTF was primarily from the air and not the ground, low approaches were made to the target. Since the majority of aircraft lost were a result of air battle, the SAR forces were not usually required to extract survivors from such heavily defended areas. The tactics described here are the results of necessary innovations to meet the needs for effective SAR in Southeast Asia.

One example, which illustrates some of the tactics described above and which also brings out how involved a mission might become, occurred on 22 and 23 April 1966. A Marine F-4B went down in Laos at 1618N and 10638E. The Jolly Greens at Nakhon Phanom were alerted and airborne at 0520 hours. 123/

The approaching Sandy aircraft made radio contact with both crew members. It appeared that the radar observer had a broken leg and the pilot was being pursued by the enemy. The Sandies easily spotted the pilot's position when he released his smoke grenade and, since the area seemed to be relatively secure, Jolly Green 55 was called in and made a successful pickup.

The RO's position was more difficult to pinpoint since no visual observation of him was made. Jolly Green 55 hovered over the forest at the approximate position. The pilot, Captain Matthews, lowered the paramedic to look for the RO and aid in getting him onto the penetrator. When the PJ, Airman George Hunt, was near the ground the enemy opened fire. Airman Hunt could hear bullets hitting all

around him and hitting the helicopter. The firing was so close that Lt. Rice, the co-pilot, thought that Captain Huey, the rescued pilot who was in the rear, was returning the fire. Later he discovered that none of the weapons on the aircraft had been fired. SSgt Loughry, the flight mechanic operating the hoist, was badly wounded in the shoulder. The pilot attempted to reel in Airman Hunt from the cockpit controls but could not do so. Because the flight mechanic, who normally provides the "eyes" for the pilot when the helicopter is in a hover, was incapacitated, the pilot was unable to keep the aircraft positioned. Although this PJ was on the ground, he decided to circle to reposition the aircraft.

Crown called in Bango Alfa, (USAF F-4C) to neutralize the gun positions before another pickup attempt was made. When it was discovered that the hoist on Jolly Green 55 was malfunctioning, Crown directed it to proceed to the Khe Sanh (SVN) Special Forces camp with the wounded while Jolly Green 52 and the Sandy aircraft continued the search.

The SARTF failed to spot the survivors before Jolly Green 52 was at bingo fuel and had to recover at Dong Ha. It returned with Marine Huey gun ships and a Navy SH-3A (version of the USAF CH-3C). Jolly Green 53 flew in from Nakhon Phanom and joined the Navy helicopter in high orbit. The gun ships, whose use is more characteristic of ACR in South Vietnam,descended to neutralise the enemy positions and to fix the survivors. They in turn received heavy fire and the resulting damage forced them to leave the area.

At 1050 hours, the Sandies spotted a signal mirror and thought they saw one man in a tan flying suit and another in fatigues. The RO had crawled about 200 yards from his chute to a clearing for easier pickup. The Sandies made several strafing passes and laid down a white phosphorous smoke screen before Jolly Green 52 moved in for the pickup. The paramedic directed the pilot over the RO who was able to get on the tree penetrator by himself, and was recovered. The paramedic applied an inflatable splint to the RO's broken leg and gave him morphine while the helicopter evacuated him to Dong Ha. The rescue problem was by no means complete since Airman Hunt was still on the ground.

An intense search continued for four hours, with another helicopter supplementing the effort. Since no visual or electronic signal was received from Airman Hunt, the forces returned to base at 1630 hours to continue the search at first light the next day.

When Airman Hunt got to the ground, he found himself in the midst of the enemy. Bullets were pock marking trees around him. As he ran for cover, a tree crashed against his leg and broke a bottle of insect repellent, which ran into one of his RT-10 radios and ruined it. Hunt ran a short distance and dived under a bank covered by logs. He remained hidden for about two hours while troops searched the area. At one point, Hunt watched a pair of tennis shoes approach and kick the logs above him.

At mid-afternoon, it began to rain. Hunt took advantage of the noise to move a quarter of a mile to the east, the only direction from which he had not heard firing. Aircraft bombed near his position so he moved further east, where he hid during the night. Airman Hunt tried to contact the rescue force with his radios but, after discarding the one ruined by insect repellent, he found that his second had a broken antenna.

At first light, he displayed the red signal panel, from his survival vest, in a clearing he had located during the night by light of aerial flares. The Sandies spotted his signal at approximately 0500 hours and the Jolly Greens arrived shortly thereafter. The helicopter crews suspected a trap and were approaching very cautiously until they identified Hunt through field glasses. Airman Hunt was retrieved in routine fashion which was a sharp anti-climax to the day and night he spent evading the enemy.

In conjunction with other components of the total SAR force, the HH-3E, with its extended range, permits a theoretical coverage of most of NVN: however, survivability and chances of success north of the Red River and in Route Package VI are so questionable that few rescues are attempted. An example of a very deep rescue occurred on 10 May 1966 when Captain Martin Mahrt ejected from his F-105 along the Red River between Hanoi and Red China.

Exerpts from the mission narrative of the Jolly Green pilot, Captain Robert D. Furman, give vivid details of the rescue, including a rare encounter with MIG's:

Jolly Green 56 and 51 were maintaining strip alert at L-59 and keeping listening watch on HF. Approximately 1500H local, we heard that an aircraft had been shot down in the vicinity of the Red River in North Vietnam. We then quickly plotted a course of the crash area located 21 56N 104 35E a few miles from the Ra' River and over 120 miles northeast of our take-off point. Compress (Call sign for Udorn RCC) alerted us and directed us to proceed to the area at approximately 1503L. We were airborne at 1510L and proceeded north on our planned course. Our first heading was 015° for approximately 65 miles and then to a heading of 043° until reaching the area located approximately 35-40 miles from Communist China.

Our course naturally was dog-legged to avoid hazardous areas and SAM sites. Our altitude most of the way up was between 8M and 10M. The 8M was not enough to clear the high mountains and ridges of North Vietnam. The cloud base was 8M over the entire course and required IFR flight for many miles through unfamiliar and mountainous terrain. We attempted to stay clear of most villages and crossed roads at right angles.

We arrived in the target area approximately 1615L and contacted the Sandy aircraft already in the area. They had located the pilot and had radio contact with him. We could also hear him on our ground frequency. Sandy aircraft said that there was no reported ground fire in the area. We flew over the area at a high altitude and switched to guard channel to talk to the downed pilot. He stated that he was injured and was unsure if he could get into the sling. We advised him that we would use the forest penetrator and told him how to use it. If he had not been able to get into the seat by himself, we were prepared to lower the paramedic into the area to assist the injured pilot. Sandy aircraft dropped a white phosphorous bomb to pinpoint the area, determine winds, and to effectively seal off an entrance to the area. Once we had visual contact with the survivor, we proceeded to the pickup point which was in a densely tangled jungle type foliage and terrain in a very steep canyon. There was a very small clearing within the canyon to which we asked the survivor to proceed. The survivor had started a large fire in the area by accident when his flare landed in the brush. The fire caused thermals and updrafts which in turn caused available engine power to drop off. Auxiliary fuel tanks were jettisoned prior to our entrance into the confines of the canyon.

In order to position the helicopter for a hoist recovery, we had to hover sideways into the steep canyon. This maneuver, of course, caused the helicopter to be below the rims of the canyon and helpless from snipers shooting down at us. We had asked the pilot to climb to a better pickup area higher up the canyon walls, but he was injured and unable to walk up the steep canyon sides. Our helicopter mechanic along with the rest of the crew could hear sporadic automatic small arms fire but we could not determine the location. As far as we know, we did not receive any hits from these weapons. As we approached the survivor, we lowered the tree penetrator

to its full length of cable (240 feet). The survivor attempted to reach the penetrator but could not. Since we had all the hoist cable out, we then had to lower the helicopter into the canyon in order for the hoist to reach the ground. We then had to plan our way out over the canyon walls with an additional man aboard the aircraft already at topping power.

Upon recovery of the pilot, we proceeded out of the area on a heading of 220°. Our paramedic administered first aid to the survivor as soon as we were clear of the area. He was badly bruised and had a severe sprain or broken arm.

Approximately 35 miles out we were jumped by a flight of MIG type aircraft. Sandy 11 and 21 saw the aircraft also and advised the two Jolly Green's to hit the deck. Since we were quite high, I flew into the clouds instead of taking to the ground. It was apparent that the hostile aircraft were interested in the Jolly Greens since they turned away from Sandies 31 and 41 and flew in the opposite direction back to our position. The F-4's maintaining MIG cap came to our rescue and gave chase to the MIG's and we were not further harassed. [124]

The deep recovery missions, such as the one on 10 May 1966, require quick reaction time. On 30 May 1966, another deep recovery attempt was made when an F-105 was shot down across the Red River, 30 miles from the Chinese border. The SARTF was launched and contacted the survivor via his survival radio five minutes before its arrival in the area. The pilot said that he was under his chute in the forest and was awaiting pickup. The chute was easily spotted but the pilot could not be located and was apparently captured. [125]

E. Summary

Brigadier General John Murphy has written a concise appraisal of SAR in Laos and NVN:

> The evolution of the Rescue Team, i.e., HH-3E/A-1E Tactical Fighters/HC-130, and its operational procedures has been a unique development in this Southeast Asia conflict. My personal admiration and respect both for the helicopter crews and the

supporting aircraft knows no limit. Having lived on an intimate basis for the past year with these crews, my estimate of their professionalism and dedication to duty is of the very highest order. [126]

The following summary of combat saves attests to the effectiveness of the SAR force and also indicates the great improvement made as the SARTF evolved. The summary is not broken down by country, since recovery work is equally hazardous in both countries. [127]

Combat Saves in Laos and NVN [128]

1 July - 31 December 1965

HH-43	7
CH-3C	8

[129]

1 January - 26 July 1966

HH-43	28
HH-3E	55

This record has not been attained without losses. In addition to the loss of the seven helicopter crew members in the incidents mentioned above, the 602d ACS has lost 12 aircraft in direct support of SAR missions since August 1965. [130]

The hostility of the environment and the distances involved continue to inhibit rescue efforts north of the Red River and in Route Package VI. In cases where aircraft are shot down in heavily defended areas (and are often alone) the SAR forces have also been limited in their efforts. [131]

V. RESCUE IN THE GULF OF TONKIN

A. The Search & Rescue Task Force (SARTF)

The Mission

The SAR Task Force in the Gulf of Tonkin consists of the HU-16 amphibian, USN helicopters from on-station destroyers and various RESCAP aircraft. The Navy keeps a CAP over the Gulf of Tonkin during all strikes, which can be diverted for the SARTF.

From the beginning of the buildup of the USAF SAR capability in the summer of 1964, HU-16 aircraft have been stationed at Da Nang AB, with personnel and aircraft originally coming from the 33rd ARS at Naha AB, Okinawa. In the spring of 1965, the HC-54D replaced the HU-16 as a rescue control aircraft for Laos and the DRV, and the HU-16's were transferred from Udorn to Da Nang. From the summer of 1965 until the summer of 1966 the duties of providing TDY personnel and aircraft for coverage in the Gulf of Tonkin were shared by the 33rd ARS, Naha AB, Okinawa, and the 31st ARS. These squadrons, in turn, drew upon rescue squadrons in the CONUS to provide pilots on a TDY basis. Rescue duties were assumed by the newly organized 37th ARRS when it became fully operational in September 1966.

If a pilot is hit over North Vietnam, his chances of surviving are greatly increased if he can coax his aircraft over the Gulf of Tonkin. Although recoveries are often made under hostile fire from the shore and deceptive tactics are sometimes necessary. Two major rescue problems are virtually eliminated - locating the downed pilot and then identifying him.

Problems of reaction time and assessment of the hostility of the area are also greatly reduced.

As in all search and rescue, reaction time is extremely important. The alert posture of the Crown aircraft is fragged by the JSARCC after the strike plans for the following day are analyzed. One to three Crown aircraft orbit about 20 miles off the coast, just outside the effective range of Fan Song (SA-2) radar, at the latitudes where the strikes are to take place. When a pilot goes down the Crown usually descends to 1500 feet to avoid possible attack by a SAM and proceeds to the location given by the wingman. The Crown is normally at the scene within ten minutes.

The coastal waters of North Vietnam generally swarm with fishing sampans and junks. The North Vietnamese have apparently organized the crews into a home guard and given them small arms to carry on their boats. These small craft usually converge on a downed pilot; however, pilots have been instructed to avoid being picked up by junks and fishing vessels, both above and below the 17th Parallel.[132/] As a standard procedure, the RESCAP fires a warning shot across the bow as it approaches within small arms range of the man in the water. If this fails to discourage the crew, the fighters then strike the boat. Many pilots must eject quite close to shore and are endangered by ground fire and enemy boats which are launched to recover them. As in land rescues, rescue in the Gulf of Tonkin is often a race between the rescue force and the enemy. The reaction time of the recovery aircraft and the effectiveness of the combat air patrol has been such that, out of 28 known successful bailouts in the

Gulf of Tonkin between January and July 1966, only two pilots have been captured or killed.[133/]

Two USN destroyers are assigned to the Gulf of Tonkin with aircrew recovery as their primary mission. The ships can launch helicopters to make a water or land pickup in NVN, within their range and survivability limitations. The HU-16 is usually the first rescue aircraft to arrive on the scene. However, if the Navy helicopters can arrive within a reasonable time and the downed aircrew is in no immediate danger, the helicopter will make the pickup rather than the HU-16. Open sea landings in the HU-16 involve a certain amount of risk, even though the conditions in the Gulf of Tonkin are usually favorable. Since the HU-16 is the more versatile of the rescue vehicles, the posture is degraded less if the HU-16 remains airborne and on alert.

If it is decided the helicopters should make the pickup, the Crown might find it necessary to carry out diversionary tactics until their arrival. For example, the Crown might drop smoke at a random point and have RESCAP circle it in order to conceal the true location of the pilot from shore batteries and small craft. If the Crown lands to make a pickup and there is no other Crown on station, an HU-16 is immediately scrambled from Da Nang.

Coordination of the rescue is effected through the Rescue Coordinating Center (Det 1 of the 3rd ARRG) at Da Nang and the JSARCC at Tan Son Nhut. In the majority of cases, however, the RCC of the HU-16 can coordinate directly with Navy helicopters and the combat air

patrol. According to Captain Araujo, a controller at the RCC, coordination and cooperation between the USAF and USN SAR forces in the prosecution of missions in the Gulf of Tonkin has been excellent.

On many missions, the HU-16's have encountered ground fire, but, to date, only one aircraft has been destroyed. On 14 March 1966, two USAF F-4C pilots ejected and landed about two miles from shore. Crown Bravo, piloted by Captain Westenbarger, landed to make the recovery. As the aircraft taxied toward the downed crew, it was hit by a mortar shell. The explosion killed the radio operator instantly and the aircraft began to sink. Four of the crew members got out. They and the F-4C crew were rescued by helicopters from the Yorktown and the England. The pararescueman was not recovered and is presumed to have gone down with the plane. 134/

The mission of 1 July 1966 illustrates recovery procedures used in the Gulf of Tonkin. The Rescue Crew Commander, Major Jesse Anderson, received a Mayday call from the wingman of a damaged F-4C. The crew made it out over the water but not very far. One pilot landed a mile and a half off shore, while the other landed within a half-mile of the coast. The RCC homed on the radio signal of the orbiting wingman and requested available helicopters and RESCAP sent to the area. 135/

When the HU-16 arrived, there were small boats converging on the downed crewmen who were under constant enemy small arms and mortar fire from the beach. The RESCAP, consisting of two A-6's, four A-4's, and two A-1's, made firing passes at the small craft and suppressed the

hostile gunfire. During the action, Major Anderson reported that he saw at least one small craft completely destroyed. After taking into account the wind direction and the size and direction of the swells, the RCC landed and taxied a hundred yards to the pilot closest to shore. Because of the hostile fire the pilot had not marked his position with smoke; therefore, the HU-16 was directed by the orbiting wingman. The pararescueman entered the water to aid the survivor and they were both retrieved. (Pararescuemen are trained as scuba divers, as well as parachutists and medical corpsmen.) The RCC taxied a mile out to sea and again ordered the pararescueman into the water for an easier pickup of the second survivor. After being on the water approximately five minutes,the RCC took off, away from the beach, with both survivors. The orbiting aircraft reported mortar hits tracking directly across the wake of the aircraft. 136/

B. Summary

Combat recoveries in the Gulf of Tonkin by USAF HU-16 aircraft:

1 July - 31 December 1965 137/

14

1 Jan - 26 July 1966 138/

12

VI. RESCUE IN SOUTH VIETNAM - LOCAL BASE RECOVERY

A. Search & Rescue Task Force (SARTF)

The SAR Task Force for ACR in South Vietnam usually consists of two HH-43F helicopters, with U.S. Army UH-1B helicopter gun ships and tactical fighters in direct support. The B model of the HH-43 is used for combat ACR only in emergencies or when the environment is not judged to be hostile. Its primary mission is LBR. Other aircraft, such as the O-1, might be incorporated as search aircraft.

B. The Mission - Aircrew Recovery - Battlefield Medical Evacuation

As of July 1965, there were only two detachments of USAF helicopters in South Vietnam, one at Da Nang and one at Bien Hoa. Most of the ACR outside of the areas covered by these two bases was undertaken by U.S. Army helicopters, which were stationed in most parts of the country.[139/] With the activation of the new USAF helicopter detachments, during the latter half of 1965 and the first six months of 1966, complete coverage was attained in South Vietnam.

Battlefield medical evacuation is not a mission assigned USAF SAR forces; however, the circumstances in South Vietnam have dictated their employment on many occasions. The lack of hoist equipment on Army helicopters, adequate to extract survivors from high and dense forests, has necessitated the use of the HH-43 with its 217 foot hoist cable. The majority of the combat saves by USAF helicopters in South Vietnam fall into this category. For example, of the 66 combat saves made by Detachment 6 at Bien Hoa during the period 1 April to 1 July

1966, 63 were battlefield medical evacuations.[140] In the near future, the Army plans to reequip its helicopters with a longer cable, and the medical evacuation requirements for ACR-LBR helicopters will be reduced.

The problems encountered in ACR in South Vietnam and NVN-Laos differ in many respects. U.S. Army and ARVN ground units are operating in many parts of South Vietnam. There is no danger of a MIG attack. The Allied Forces have over a thousand helicopters and fixed-wing aircraft flying over the country. Even in the remote areas, a downed pilot is never more than 50 kilometers from a Special Forces camp. The Viet Cong are not equipped with radar-controlled air-burst weapons.[141] Major Kessler, Commander of Det 6, has indicated that he has never encountered a problem in locating and identifying a survivor.[142]

Recoveries are, however, often made under hostile fire and the proximity of friendly ground forces does not guarantee that a downed pilot will be rescued by them. During the seige of the Plei Me Special Forces Camp, in October 1965, Captain Melvin Elliott bailed out of his crippled A-1E and spent the next 34 hours evading the Viet Cong. Rescue patrols sent from the camp ran into stiff opposition and were unable to recover him. On 23 October, he was rescued by an HH-43 a half-mile from the camp.[143]

Locating and identifying the survivor can occasionally cause difficulty. On 14 June 1966, a VNAF A-1H went down near the coast southeast of Saigon. A search was conducted for the plane and the pilot. The

aircraft could not be found and it was theorized that the pilot crash-landed on the beach and the incoming tide covered the plane. A search was conducted the next day following an aircraft report of sighting a man in an orange flying suit. A VNAF and a USAF FAC were dispatched in a U-10 observation plane to make the search. The Viet Cong shot this aircraft down and there were no survivors. At that point the mission was suspended.[144/] On one occasion a downed pilot's strobe light signal was mistaken for ground fire and the RESCAP strafed and dropped napalm on his position. Fortunately, the bombs fell long. Subsequently, a colored lens was provided for the strobe light.[145/]

C. ACR-South Vietnam

Because SAR tactics in South Vietnam are in many ways like those used in Laos and NVN, a number of details in this account will be omitted. A mission is scrambled by the control tower or the JSARCC and the helicopters proceed in pairs toward the target via a route coordinated to avoid artillery fire. Armed escort is arranged through the Corps DASC or directly with Army units and the rescue helicopters rendezvous with the gun ships enroute. If radio or visual contact is made with the target, the low helicopter proceeds into the area, protected by gun ships on each side. During the pickup, the gun ships orbit the target and neutralize any hostile fire. The high helicopter orbits at about 3500 feet, out of the range of small arms fire. HH-43 pilots seldom wear parachutes due to space limitations imposed by the cockpit and armor-plating.[146/]

During battlefield medical evacuations, the pararescueman descends on the hoist cable to help load the casualties on the Stokes litter. When the low helicopter has loaded two stretcher patients aboard, it leaves the area and the high helicopter descends for another load. The helicopters work as a shuttle until all casualties have been evacuated.

One mission well illustrating rescue work in SVN occurred on 11 April 1966. The U.S. Army had sustained casualties 33 miles southeast of Bien Hoa and three HH-43F's from Detachment 6 were scrambled to evacuate them. The SARTF consisted of the HH-43's, two Huey gun ships, three F-100's and two O-1F light aircraft. In addition, a C-47 flareship was orbiting in case the operation continued into the night. The Army placed artillery fire on hostile positions nearby. The Pedros were vectored in by smoke from the ground party and lowered the Stokes litters through a hole in the jungle canopy. The helicopters then began shuttling the wounded. At one point, friendly artillery fire was landing so close that the low Pedro had to momentarily leave the area. In spite of the close fire support from artillery and aircraft, Viet Cong began closing in. On the fifth sortie, Captain Bachman's helicopter was hit as it was hovering and the throttle jammed full open. Captain Bachman was able to lift-off and made an emergency landing at a friendly field. His pararescueman, A-1C William Pitsenbarger, who had been lowered to assist in the evacuation, was killed when the Viet Cong overran the area. He has been awarded the Air Force Cross (Posthumous). Detachment 6 was credited with nine saves during the mission. 147/

D. LBR

The HH-43B/F also provides the major airfields in South Vietnam with Local Base Rescue coverage. Thai-based American aircraft at Udorn, Ubon, Takhli, and Korat were among the first in the theater to be provided with HH-43 LBR helicopters. The LBR units function much like those in CONUS and are under the operational control of the local Base Commander. The LBR units also perform miscellaneous humanitarian missions, such as medical evacuation of friendly Thai nationals and transport of American doctors in civic action programs.[148/] A noteworthy rescue occurred in June 1966 when the LBR unit at Takhli 'in complete darkness removed a USAF airman from the shear face of a mountain.'[149/]

E. Summary

Saves in South Vietnam[150/]

1 Jan - 30 Jun 1965	
Combat	2
Non-Combat	0
1 Jul - 31 Dec 1965	
Combat	62
Non-Combat	17
1 Jan - 26 Jul 1966	
Combat	177
Non-Combat	10

VII. COMMAND, CONTROL, AND COORDINATION

A. Command and Control in the Theater

CINCPACAF has the overall command responsibility for SAR in the PACOM area. PACAFR 55-90, 2 October 1963, delegated the responsibility for the Southeast Asian sub-theater to the Commander, 13AF.[151] The Commander of the 13AF, in turn, made the Commander, 2AD, responsible for the Rangoon, Bangkok, and Saigon Flight Information Regions (FIR). Operational control of the ARRS Forces assigned to the 3rd ARRG has been given the Cmdr 7AF, through delegated authority from CINCPACAF.[152] In order to exercise his operational control effectively, Commander, 7AF, divided SAR operational control among three agencies:

1. JSARCC (3ARRG). Responsible for rescue operations in RVN, Cambodia, and waters in the Bangkok and Saigon FIR's and charged with central coordination of all SAR activity. The RCC at Da Nang was established as an extension of the JSARCC to act in a liaison capacity only.[153]

2. Deputy Commander, 7AF/13AF (Thailand). Responsible for rescue operations in NVN, Thailand, and Laos (upon request and authorization of the U.S. Ambassador). Control was to be exercised through the RCC/TACC at Udorn.[154]

3. Commander, 631st CSG, Don Muang AB, Thailand. Responsible for rescue operations in the Rangoon FIR.[155]

CINCPACAF, however, by PACAFR 55-90, 20 March 1966, retained operational control of all SAR forces in the PACOM area. The operational control devolves from CINCPAC through the Commander, PARC, to the Commander,

3rd ARRG.[156] The Commander, 7AF, is delegated as SAR Coordinator for Southeast Asia.

B. Control and Coordination in the Theater

1. NVN and Laos

The political context for the necessity of coordinating all military activities in Laos, including SAR, with the U.S. Ambassador has been previously mentioned. Although the political-military situation in Laos remains sensitive and restrictions are still imposed, effective SAR operations can be accomplished within the present constraints. There are few coordination difficulties in that respect.[157] The RCC at Udorn has a direct line to the Air Attache's office in Vientiane, and any minor problems can be resolved immediately.

The physical location of the RCC is adjacent to the TACC and the Current Status room. During a mission, firm coordination is established between the RCC (which controls the SARTF) and the TACC (which supports the mission with additional RESCAP and tanker aircraft, if needed). The latest intelligence information on troop concentrations and reported anti-aircraft weapons is immediately available to pass on to the SARTF. The RCC/TACC controllers maintain close contact with the commander of the HH-3E detachment, during a mission, for advice on tactics.

The Deputy Commander, 7AF/13AF, Thailand, under the division of responsibility mentioned above maintained operational control over missions in NVN and Laos and coordinated closely with the JSARCC/7AF. On

most missions, coordination among the control elements and the SARTF elements was effected smoothly.

2. The Gulf of Tonkin

SAR in the Gulf of Tonkin is a joint USAF/USN endeavor. The comparative simplicity of the missions engenders smooth coordination directly between Crown aircraft and the USN SAR forces. Some problems exist, however, in coordinating the overall posture. For example, the JSARCC frags the SAR forces for the Gulf of Tonkin, based on USN primary targets. If, for climatic or operational reasons, the aircraft strike the secondary target or cancel, the lack of direct liaison delays repositioning of the SAR force. 158/

In April 1966, CINCPAC designated CINCPACAF (in coordination with CINCPACFLT and COMUSMACV) to establish a joint Southeast Asia Search and Rescue Center. 159/ 7th Air Force requested a tri-service planning council with the resultant assignment of a naval liaison officer to the JSARCC. 160/

3. RVN

SAR in South Vietnam is a coordinated effort among the USAF, U.S. Army, U.S. Marines, and VNAF. Coordination is effected through the JSARCC, Corps DASC's, the TACC at Tan Son Nhut, and various other U.S. military control agencies. Few coordination difficulties are experienced. While the VNAF is responsible for its own SAR, their capabilities are extremely limited and the USAF has had to assume the responsibility in this area.

VIII. CONCLUSION

A. Survivability

According to Major Baylor Haynes, the HH-3E is the best aircraft for combat rescue although it does have its shortcomings. Range is less of a problem; from its present operating bases, the HH-3E can cover most of NVN and an air-to-air refueling capability will remove range limitations. The problem is one of survivability and reaction time. Many airmen have been unrecoverable because the environment, by the time the helicopter arrived, was too hostile. 161/

The problem has two parts. The first are the hazards the pilot encounters subsequent to bailout and prior to arrival of the rescue force. The second involves getting the rescue force to the scene rapidly and having it survive during the pickup phase. A solid solution to the latter is especially urgent because of the number of personnel committed to rescue efforts. Presently, there are at least twelve people in the general target area, plus additional aircraft crews required in the RESCAP. Perhaps new concepts will solve both parts of the problem.

Pilots have had to abandon aircraft since their invention. To date, these airmen have fallen, hopefully, in a controlled descent. A device which would slow, or allow the pilot to better control his descent, could be very useful. In slowing the descent, it might be possible to make an air recovery before the pilot reaches the ground, if specially-equipped aircraft were orbiting nearby. Through the means

of controlled descent the pilot could select the more favorable spot for survival and recovery. 162/

The Fulton system itself is a great innovation in recovery operations and might have some application in Southeast Asia, particularly in sea rescue. Colonel Allison Brooks, the Commander of ARRS, personally demonstrated the feasibility of this system in May 1966. For land rescue however, the time required to drop the kit to the downed pilot, the vulnerability of the balloon and the low-flying pick-up aircraft and above all, the dense jungle growth, impose severe limitations. 163/

The characteristics of an aircraft providing a solution for the second part of the problem would include speed, armament, multi-engines and a low silhouette.

ARRS presently has under study several different VTOL aircraft which show some promise of the above characteristic. The principal problem is to negate the cyclonic propeller wash of these aircraft when they are in hover. 164/

Armament such as an M-60 machine gun or a mini-gun for the HH-3E is under current study. More sophisticated armament and fire control systems have also been suggested. One possible system would utilize remote controlled machine guns mounted under the helicopter, which could be fired from a number of positions, including the cockpit. Since there is difficulty in acquiring hostile gun positions under thick

foliage, an acoustic sensing device or flash detector, tied in with the machine guns, could produce a formidable seek-and-fire system. 165/

One major reason for the outstanding success of hazardous rescue missions in Southeast Asia in the slow, tough, versatile A-1 aircraft. The USAF has about 30 of these planes, the USN about a 100. Heavy demands are made on these aircraft to perform many roles in the type of war being waged in Southeast Asia. It is doubtful that the SAR mission can establish a higher priority for these remaining planes over other missions. Perhaps an armed VTOL aircraft could provide its own RESCAP. But, for the immediate future, there is nothing to replace the A-1. As these aircraft are depleted, so the effectiveness of the SAR force will be reduced. There presently exists an urgent need to establish requirements for a follow-on aircraft. 166/

B. Night Recovery

Although the SAR forces maintain a night alert in Southeast Asia, only recoveries under extremely favorable circumstances are attempted. A number of recoveries have been made with the aid of flares, but the rescue force is dangerously exposed. The navigation problems, alone, make it difficult for both the helicopter and the escort aircraft to work at night. The general assumption has been that the pilot and the rescue force have a better chance at first light of day. Presently, several infra-red, low-light level TV and light intensification systems are under study. 167/ One, or several of these should in some measure, improve night capabilities. A more precise locating device would improve

both day and night effectiveness. A small experimental radio system has been developed which in effect makes the pilot a TACAN station. The signal gives the rescue craft the range and azimuth of the pilot. [168]

C. Worldwide Tactical Coverage

The current ARRS Project 'Long Rope' programs ten additional HH-3E helicopters into Southeast Asia, two to be located at Udorn and eight at Da Nang. [169] In July 1966, two of these were positioned at Da Nang to supplement the HH-43 coverage of Southern Laos and NVN. By June 1967, the HH-3E is forecast to replace the HU-16's operating out of Da Nang. With development of an air-to-air refueling capability (KC-130P and the HH-3E) the helicopters will be able to provide adequate coverage for the Gulf of Tonkin. Based on the current USAF flying time per month, the current deployment tactics of the HU-16 and HH-3E, and to allow for some night coverage, 24 helicopters are required to replace the amphibians. [170] Eventually, the ARRS would like to station 32 HH-3E helicopters in Southeast Asia. [171]

Refueling tests, conducted with a Marine tanker aircraft and the HH-3E, proved this concept can be successfully implemented. No turbulance or control problems were experienced. Helicopter refueling appeared safer and easier than fighter refueling. [172] A tanker-control ship could give almost unlimited range to helicopters. This capability should be realized in Southeast Asia by early 1967. [173] A sea-to-air refueling system also appears to have promise and would provide additional flexibility.

Although refueling tests have proved successful, a question arises concerning the replacement of the HU-16 (a simple, highly successful mode of operation) with a more complicated system, part of which has yet to be proven in combat. Theoretically, the new system will permit the SARTF to penetrate NVN from the east to make land pickups. (However, the density of coastal anti-aircraft defenses will limit these missions.) It will also permit improved night coverage since the HU-16 has no night landing capability. Refueling capabilities will not greatly enhance the current SAR operations from Thailand and Laos: assuming that several Lima Sites can be kept open and secure, range is not the most relevant limitation. Furthermore, the altitude and speed at which helicopters must be refueled make the operation hazardous over mountainous and/or hostile terrain.

The real answer lies in a long view of search and rescue In terms of the Gulf of Tonkin operation, perhaps the HU-16 is as good an answer as any. However, in terms of developing a SAR task force which can be responsive in varied geographical areas and combat situations, the new developments are very important. These technical innovations are closely tied to future concepts of search and rescue. The experiences in Southeast Asia have proved several important points: First, that even when fighting a relatively unsophisticated enemy with the most sophisticated jet aircraft, losses can be expected. It follows that effective SAR is, and will continue to be, indispensable to tactical operations. Second, peacetime SAR and wartime SAR cannot be on the same

basis. The evolution of techniques and equipment during the present conflict clearly indicate this, notwithstanding the governing policy of AFR 55-7, Wartime Search and Rescue Procedures, which states: "Wartime SAR procedures are essentially an extension of peacetime procedures."[174/] Following the Korean War, the combat aircrew recovery requirement was deleted from the ARS mission and combat crews were denied a planned and trained rescue recovery force to meet tactical requirements.[175/]

For the foregoing reasons, many of the officers in leadership positions, in the ARRS envisage the creation of a Combat Recovery Group which, in Colonel Beall's words,'will be a task force that goes wherever the action is and have the capability for rapid expansion to suit that action.' In peacetime, the group would develop new equipment and techniques and deploy on exercises with tactical forces. In wartime it would be a nucleous which could rapidly deploy any place in the world and work under the operational control of the theater commander.[176/] The 3rd Aerospace Rescue Recovery Group is, perhaps, the beginning of such an organization.

The Joint Personnal Recovery Center (JPRC), recently activated in MACV MACSOG, is designed to effect combat personnal recovery operations after the normal SAR effort ceases. This organization is a valuable adjunct to the overt SAR effort and is considered to be the type of organization referred to in the above paragraphs.

APPENDIX 1

STATISTICAL SUMMARY

1 Aug - 31 Dec 1964

Total Saves	35

1 Jan - 30 Jun 1965

Combat Saves	
In-Country	3
Out-Country	26
Non-Combat Saves	
In-Country	0
Out-Country	6

1 Jul - 31 Dec 1965

Combat Saves	
In-Country	61
Out-Country	32
Non-Combat Saves	
In-Country	18
Out-Country	3

Total Saves 1965

Combat	121
Non-Combat	27

1 Jan - 26 Jul 1966

In-Country		
Missions	188	
Medevac	110	
SAR	78	
Sorties	697	(including LBR)
Saves	187	(all by HH-43 aircraft)
Combat	177	
Non-Combat	10	

1 Jan - 26 Jul 1966 (Cont'd)

Out-Country

Missions	172
Medevac	21
SAR	145
Misc.	6
Sorties	571
Saves	109
Combat	95
HU-16	12
HH-43	28
HH-3	55
Non-Combat	14
HU-16	0
HH-43	12
HH-3	2

Total Saves, 1 Jan - 26 Jul 1966

Combat	394
Non-Combat	65

Downed VS Recovered Aircrew, 3 Mar - 30 Jun 1966

The period 3 Mar - 30 Jun 1966 was selected to give an indication of the number of aircrew members recovered after being shot down over Laos, NVN/Gulf of Tonkin. These figures do not indicate the effectiveness of SAR, since they include those aircrew members KIA or otherwise unrecoverable. No foreign military aircrews are included.

NVN/Gulf of Tonkin

	Downed	Recovered by			
		USAF		USN	
		NVN	Gulf of Tonkin	NVN	Gulf of Tonkin
USAF	74	8	3	-	6
USN/USMC	64	3	5	-	18

Downed VS Recovered Aircrew, 3 Mar - 30 Jun 1966 (Cont'd)

Laos

	Downed	Recovered by	
		USAF	USMC
USAF	42	14	2
USN/USMC	7	6	-

Statistics on downed aircrew and USN recovery are from PACAF Tactical Evaluation Center Aircraft Loss Summary Sheets. Statistics on USAF recover are from Summary of Air Operations in Southeast Asia, 3 Mar - 30 Jun 1966.

APPENDIX 2

CHRONOLOGICAL AND ORGANIZATIONAL SUMMARY

UNIT	LOCATION	
PARC	Hickam AFB, Hawaii	Dsgd & Orgd & Asgd to ARS 8 Oct 61
Det 3	Tan Son Nhut AB, RVN	Dsgd & Orgd 1 Apr 62 (Disc 1 Jul 65)
Det 4	Bien Hoa AB, RVN	Dsgd & Orgd 20 Oct 64 (Disc 1 Jul 65)
Det 5	Da Nang Aprt, RVN	Dsgd & Orgd 20 Oct 64 (Disc 1 Jul 65)
Det Prov First	Bien Hoa AB, RVN	Dsgd & Orgd 1 Sep 64 Disc 20 Oct 64 (Disc Revoked)
" "	Takhli AB, Thai	PCS 10 Nov 64 LAW Hq PACAF MO 18, 10 Nov 64. (Disc 1 Jul 65)
Det Prov Second	Da Nang Aprt, RVN	Dsgd & Orgd 1 Sep 64 Disc 20 Oct 64 (Disc Revoked)
" "	Nakhon Phanom Aprt, Thai	PCS 10 Nov 64 LAW Hq PACAF MO 18, 10 Nov 64.(Disc 1 Jul 65)
Det Prov Third	Nakhon Phanom Aprt, Thai	Dsgd & Orgd 1 Sep 64 (Disc 16 Nov 64)
" "	Ubon Afld, Thai	Dsgd & Orgd 14 Apr 65 (Disc 1 Jul 65)
Det Prov Fourth	Korat RSI, Thai	Dsgd & Orgd 1 Sep 64 (Disc 1 Jul 65)
Det Prov Fifth	Udorn Afld, Thai	Dsgd & Orgd 3 May 65 (Disc 1 Jul 65)
3 ARRGP	Tan Son Nhut AB, RVN	Orgd & Asgd to PARC 8 Jan 66
Det 1	Da Nang Afld, RVN	Dsgd & Orgd 8 Jan 66
Det 2	Udorn Afld, Thai	Dsgd & Orgd 8 Jan 66
37 ARRS	Da Nang Afld, RVN	Orgd & Asgd to 3ARRGP 8 Jan 66

UNIT	LOCATION	ACTION
Det 1	Udorn Afld, Thai	Dsgd & Orgd 8 Jan 66
38 ARRS	Tan Son Nhut AB, RVN	Redsgd & Asgd 3ARRGP 8 Jan 66
Det 1	Nakhon Phanom Aprt, Thai Phan Rang AB, RVN	PCS 15 Jan 66 IAW Hq PACAF MO 9, 30 Dec 65
Det 2	Takhli AB, Thai	
Det 3	Ubon Afld, Thai	
Det 4	Korat RSI, Thai	
Det 5	Udorn Afld, Thai	
Det 6	Bien Hoa AB, RVN	
Det 7	Da Nang Afld, RVN	
Det 8	Cam Ranh Bay AB, RVN	Dsgd & Orgd 18 Jan 66
Det 9	Pleiku Afld, RVN	Dsgd & Orgd 1 Oct 65
Det 10	Binh Tuy AB, RVN	Dsgd & Orgd 1 Oct 65
Det 11	Tuy Hoa AB, RVN	Dsgd & Orgd 18 Jan 66
Det 12	Nha Trang Aprt, RVN	Dswd & Orgd 8 Apr 66
Prov. First	Cam Ranh Bay	(Disc 15 Jan 66)

INITIAL TDY UNITS		FROM
Det Prov First	Bien Hoa, Aug 64	Det 1, CARC, Glasgow AFB,Mont. Det 4, WARC, Paine AFB, Wash. Det 5, WARCC, McChord AFB,Wash.
Det Prov Second	Da Nang, Aug 64	Det 2, CARC, Minot AFB, N.D.
Det Prov Third	Nakhon Phanom, Jun 64 Ubon, Apr 65	33 ARC, Naha, Okinawa Det 3, CARC, Grand Forks, N.D.
Det Prov Fourth	Korat, Aug 64	Det 10,EARC,Maxwell AFB, Ala.
Det Prov Fifth	Udorn, May 65	Det 3,EARC,Griffiths AFB, N.Y.

3 ARRG Deployment - July 1966

37 ARRS	Da Nang AB	6	HU-16
Det 1	Udorn AB		MC-130
38 ARRS			
Det 1	Phan Rang AB	2	HH-43B
2	Takhli AB	3	HH-43B
3	Ubon AB	2	HH-43B
4	Korat AB	2	HH-43B
5	Udorn AB	2 8	HH-43B HH-3E
6	Bien Hoa AB	3	HH-43F
7	Da Nang AB	4 2	HH-43F HH-3E
8	Cam Ranh AB	2	HH-43B
9	Pleiku AB	2	HH-43F
10	Binh Thuy AB	2	HH-43F
11	Tuy Hoa	currently not operational	
12	Nha Trang	1	HH-43B

APPENDIX 3

LIST OF PHOTOGRAPHS

HH-3E 87

HH-43B 88

HU-16 89

A-1E 90

HC-130H 91

HH-3E being refueled by KC-130 . . . . . 92&93

Forest penetrator 94

Crewman with forest penetrator 95

Pararescueman with pilot on forest penetrator 96

GLOSSARY

ACR - Aircrew recovery

AIRA - Air attache

ARRG - Aerospace Rescue and Recovery Group

ARRS - Aerospace Rescue and Recovery Squadron

ARS - Air Rescue Service; Air Rescue Squadron

ARVN - Army of the Republic of (South) Vietnam

ASOC - Air Support Operations Center

CAP - Combat air patrol

CINCPAC - Commander in Chief, Pacific Area

CINCPACAF - Commander in Chief, Pacific Air Forces

CINCPACFLT - Commander in Chief, Pacific Fleet

COMUSMACV - Military Advisory Chief, South Vietnam

CONUS - Continental U.S.

DASC - Direct air support center

DOCO - Director of Combat Operations

FAC - Forward air controller

FIR - Flight information regions

JCS - Joint chiefs of staff

JSARCC - Joint Services Air Rescue Coordinating Center

LBR - Local base rescue

MAC - Military Airlift Command

MACV - See COMUSMACV

NVN - North Vietnam

OSC - On-the-scene commander

PACAF - Headquarters, Pacific Air Forces

PARC - Pacific Air Rescue Center

PDJ - Plaine des Jarres (Plain of Jars, Laos)

PJ - Paramedic

RCC - Rescue crew commander

RESCAP - Air rescue combat patrol

RESCORT - Air rescue escort aircraft

RLAF - Royal Laotian Air Force

RO - Radar operator

RTAF - Royal Thai Air Force

RVN - Republic of (South) Vietnam

SAR - Search and rescue

SARCC - Search and Rescue Coordinating Center

SARTF - Search and Rescue Task Force

SEA - Southeast Asia

SVN - South Vietnam

TACC - Tactical Air Control Center

TUOC - Tactical unit operations center

USIS - U.S. Information Service

VNAF - (South) Vietnamese Air Force

USAF SEARCH & RESCUE IN SOUTHEAST ASIA

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