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USAF SEARCH AND RESCUE

IN SOUTHEAST ASIA (1961-66)

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USAF SEARCH & RESCUE IN SOUTHEAST ASIA

I. THE PROBLEM

A. Detachment 3, Pacific Air Rescue Center (PARC)

The general increase in the level of American commitment in Vietnam in 1961 meant a considerable increase in the level of air activity. The JUNGLE JIM and FARM GATE programs brought USAF aircraft and pilots into the country to train the Vietnamese and to fly combat missions; the augmented U.S. Army advisory forces introduced more helicopters. These commitments were in recognition of the vital nature of air transport in a country divided militarily and geographically. Not only did the missions of the combined forces of the United States and the Republic of Vietnam dictate a more extensive use of aircraft, but the hostile environment, which included jungle and mountainous terrain as well as enemy activity, increased the hazards involved in these operations. As aircraft and crews were lost, search and rescue efforts had to be mounted to extract the survivors and the deceased, usually from remote and unfriendly areas. The need to coordinate these efforts resulted in the creation of Detachment 3 of the Pacific Air Rescue Center (PARC) on 1 April 1962. ¹)

The mission of Detachment 3 was to control and coordinate search and rescue operations through the Search and Rescue Coordinating Center (SARCC) at Tan Son Nhut Air Base, Saigon. The SARCC was manned by trained rescue controllers; however, there were no search and rescue aircraft assigned. The SARCC had to rely entirely upon

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resources drawn from the U.S. Army, U.S. Marines, ARVN and occasionally the VNAF and USAF. Communications and medical equipment at its immediate disposal were at a minimum. ^{2/}

Successful recovery depends to a large extent upon the reaction time of the search and rescue force, which is especially true in combat zones. Before a professional SAR force with its own assets was stationed in SVN, most successful recoveries were made by ground troops, or fixed or rotary wing aircraft in the immediate area of the crash. In these cases, because of its limitations, the SARCC was precluded from participation in the mission. The SARCC would open its own mission when immediate rescue could not be effected, which meant that the crash site was usually in rugged and/or enemy-held terrain. It also indicated that the chances of recovering survivors was small. Nevertheless, it was imperative to locate and examine the downed aircraft to determine the status of the crew and the cause of the crash. During one period, the latter aspect became paramount when a series of B-26 crashes resulted in temporary grounding of the aircraft. The search and rescue forces were instrumental in determining the cause. ^{3/})

(Before the SARCC had its own resources and a significant ability to control missions centrally, it was forced to employ techniques radically different from those used today. The SARCC chief, or one of his controllers along with a radio operator, a photographer, and possibly an ordnance disposal team would proceed to the crash scene by Army or

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Marine helicopter, USAF C-123, or any other means available, and assume duties as On-Scene-Commander (OSC). The average number of missions per month, until mid-1964, was approximately four; therefore, the five controllers assigned to the SARCC were adequate for field deployment (The number, by month, varied. In July 1963, there were no SAR missions, while in December 1963, there were eight. The numbers increased gradually but the monthly average for the first half of 1964 was roughly six.). ^{4/}

Locating the scene of a crash, and then getting into it often proved to be extremely difficult. In the mountainous terrain and the tree-canopied jungle forests of Southeast Asia, an airplane can be swallowed up and leave no trace for searchers. When the plane was located, the rescue party would find or cut a clearing for a helicopter landing or work its way in on foot. Without pararescue personnel or a helicopter equipped with a hoist cable, it was usually impossible to make immediate entry into the crash area. Quite often the site was found to be insecure and ARVN troops had to be helicopter transported or marched in on foot. Sometimes as much as an infantry battalion had to be committed in order to make the area secure enough to probe the crash site. ^{5/}

Thorough and exhaustive searches were made in all cases and Major Saunders, SARCC Commander, reported that of the 240 air crashes in Vietnam between January 1962 and June 1964, only two remained unlocated. ^{6/} If there were no survivors, the search party removed

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the remains of the crew and portions of the aircraft which could be of value in determining the cause of the crash. They then destroyed anything in the wreckage that might be of use to the enemy.

When air and ground reconnaissance had failed to locate a crash site, or the pilot, leaflet drops were employed as a last ditch effort. One such effort was made in the spring of 1964 in a wild area of Thua Thien province, along the Laotian border southwest of Quang Tri. Two pilots crashed in an unknown location in a USAF TO-1D. Montagnards reported that they had seen a smoking airplane in a particular area, but a methodical and extensive air search, as well as a ground search by 150 U.S. Special Forces and ARVN troops, which lasted several days, failed to produce the slightest trace of plane or crew. The search was suspended, but 200,000 leaflets, printed in Vietnamese and French by USIS, were dropped in the search area. Since the Geneva Convention prohibits the offer of money for human beings, VN \$35,000 was offered for information which could aid in the recovery of a "green American mono-plane," with the pilots alive. VN \$17,500 was offered if the plane was found and the pilots were dead. Thus, the leaflet legally circumvented the ban and provided an incentive for keeping the pilots alive. The U.S. Special Forces spread the message by word of mouth. ^{2/}

Several months later a Viet Cong defector disclosed that a light plane had been shot down in the same time period as the TO-1D, but in a different area. Another 100,000 leaflets were printed and dropped. The

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leaflets in this case gave little promise since the area was rugged,^{8/} sparsely populated, and the tribesmen were generally illiterate.

Neither these leaflets, nor others that were dropped, have succeeded in leading to the recovery of a pilot or plane.^{9/} The present capabilities of the SAR force have made leaflet drops unnecessary.

B. Vietnamese Army (ARVN) Support

These arrangements under which the SARCC conducted search and rescue operations left much to be desired. At times there were delays in getting SAR forces to the scene because of higher priority commitments.^{10/} One special and persistent problem was coordination with the ARVN in obtaining ground forces for the SAR effort. Although MACV had left little doubt as to the emphasis which was to be placed on securing crash sites and recovering deceased personnel, the ARVN did not share this concern to the same extent, particularly when it concerned their own forces. In many cases considerable difficulty and numerous bureaucratic delays were incurred in obtaining ground forces to effect a timely resolution of the SAR effort.^{11/}

One mission, which illustrates several problems, occurred 8-10 March 1964. A senior USAF officer was shot down in a VNAF A-1H near Saigon. The SARCC Commander prepared and briefed a team to take with him to the site only to find that the assigned aircraft had departed with an officer from G-3, who had taken it upon himself to survey the crash. Night fell before another aircraft could be made available to the search party. Because of reported Viet Cong concentrations,

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ARVN troops were to be put into the area the following morning. On the morning of the 9th, the search party flew to a secure area near the crash to await the troops. Although the troops did not arrive, several A-1H's did and proceeded to bomb the site. Originally, troops from Saigon were to be dispatched but it was decided to send troops from Bien Hoa instead. However the appropriate commander could not be found to grant permission. To complicate the situation, the ASOC closed down during the siesta, and matters were not resolved before nightfall. The ARVN had not wanted to commit a force smaller than a regiment but, on the 10th, a company secured the area with little ^{12/} trouble.

Frustrations, concerning ground support and other difficulties, are summarized by the SARCC Chief, Major Alan Saunders, in the report ^{13/} of the mission of 8 March:

"The excessive delays encountered in obtaining ARVN support are not acceptable from a lift-saving standpoint. It also gives the enemy a chance to infiltrate the area...."

"The vertical pictures taken by reconnaissance the first day were unusable. They took new ones on the morning of the 9th. I tried unsuccessfully all afternoon to obtain prints of them. I requested prints for the following morning's briefing. When I went for them I was told that the camera was out of focus and they were no good...."

"Everyone was trying to control the mission at once which resulted in part of the confusion...."

"The striking of the crash site to 'Explode possible mines' and 'neutralize the area' before it is known if survivors exist, is idiotic...."

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The commitment of large numbers of troops to SAR efforts in insecure territory, where the chance of recovering the crew alive is small can be questioned. Recovering the deceased and examining the aircraft might not be sufficient reason for further risk of lives. A related problem, at the time, was getting the ARVN to engage the Viet Cong. It can be rationalized that search and rescue efforts were as good a way as any of doing it.

The ground support issue persisted even after professional USAF SAR forces were introduced, to a limited extent, in the latter half of 1964, and prompted the Commander of the 2AD to address a request to MACV for greater ARVN support of SAR.^{14/} One such incident prompting the request, occurred in II Corps area in late 1964. A USN RA-5C crashed on 9 December and was located on 14 December. The SARCC requested II Corps to secure the area. After constant follow-up and coordination the area was finally secured on 21 and 22 January,^{15/} at which time the remains were removed.

Another incident occurred in late 1964 when two T-28's, with four aircrew members, crashed in I Corps area. The crash site was discovered on 2 January 1965 and the remains at one crash site were immediately removed. The investigation of the second site was delayed because of suspected surveillance of the site by Viet Cong. Although I Corps was requested to secure the area, the security operation failed to materialize. On 22 January, two USAF Air Rescue helicopters, supported by a fire team, flew into the area and removed the two remaining bodies.^{16/}

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On 11 March 1965, a B-57 was observed to crash by a FAC, so the exact location was known. The body of one crew member was recovered on 12 March and III Corps was requested to search a small area for the missing crew member. A ground search operation planned for 14 March was repeatedly delayed until 9 April when a heliborne force of 100 troops landed for a fruitless three-hour search. ^{17/}

The 2AD recognized the need for cautious and careful planning of security and search operations to preclude the unnecessary loss of life. However, it was felt that more positive reaction to requests for assistance was needed.

C. Inadequate Personnel and Equipment

While most of the successful rescues were made on an impromptu basis by aircraft in the vicinity of the crash, it became apparent that many lives were lost because personnel could not do the job without proper rescue and recovery training and without adequate equipment.

Several examples illustrate the shortcomings of the makeshift SAR forces in RVN. One occurred in late 1963 when an Army aircraft crashed in a rain forest on the side of a 6000 foot mountain in the II Corps area. The Marines dispatched an H-34 helicopter to make the pickup, but the effort ended in disaster. The H-34 did not have a cable long enough to reach the ground through the high forest. The helicopter descended too close to the jungle canopy and crashed. Both crew members were critically injured, but further rescue efforts

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were impossible by air. There were no clearings for helicopter landings, there were no helicopters with a cable of sufficient length, and there were no pararescue personnel to put into the area. The rescue was then made on foot. The rescue party took two days to work its way in and when it arrived both crew members were dead. A total of three helicopters were destroyed in the operation. The rescue would have been routine with proper equipment. 18/

Another case involved an U.S. Army helicopter which crashed at night in the ocean near Nha Trang. The four crew members got out and started swimming but they faced an outgoing tide and progress was very difficult. Army helicopters were sent out for the rescue. The pilot of the first rescue helicopter flew into the water. As a result, other aircraft on the mission were withdrawn. The co-pilot of one of the downed helicopters made it to shore, although he had a broken arm and an injured back. The other crew members drowned. 19/

Another helicopter crash in the water, near the mouth of the Mekong River south of Saigon, resulted in a similar disaster. Four of the six-man crew got out of the aircraft before it sank. The Army rescue helicopter made a low-level approach to the scene which created a hazardous rotor wash. According to the co-pilot, this frontal wave drowned the pilot. (A normal overhead rescue approach would have smoothed the water rather than churned it up.) One of the rescue team had another victim, a British Wing Commander, by the hands when an aircraft called for them to clear the area so that Mae West vests could be

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dropped. The crew member holding the victim's hands let go and he went under water. His body washed up on the beach the next day. Only two of the crew members were saved. ^{20/}

D. VNAF Med-Evac

Battlefield medical evacuation is not normally a mission of search and rescue forces. The deplorable situation which existed in 1964 concerning medical evacuation is relevant to this study for two reasons. First, VNAF helicopters were charged with the mission, and their failures inevitably reflected in some measure on the USAF. Second, a significant role in the battlefield medical evacuation did befall USAF SAR forces when they were introduced.

Throughout 1964, U.S. Army and Air Force officers reported that two VNAF H-34 helicopter squadrons were not providing adequate medical evacuation service. Medical evacuation and aerial resupply were the main missions for these squadrons. Nearly every after-action report from the IV Corps area made some comment critical of VNAF performance. Either the helicopters were late or did not arrive; when they did arrive, they departed sometimes without carrying away the wounded. There were 189 requests from IV Corps area during the months of August, September, and October 1964 for med-evac, of which only 38 were honored. ^{21/} The number of requests would have been higher had it not been for the support of Army UH-1B's. The practice was for the Army helicopters to support the VNAF when needed; however, they took a large part of the VNAF responsibility.

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The comments of several officers sum up the VNAF performance in this area:

'The ARVN appears to have a definite lack of confidence in the VNAF H-34 med-evac operation... (The U.S. Army UH-1B's) particularly make the VNAF look bad by making night med-evacs of ARVN in the battle zone...." 22/

"...They can think of many reasons not to fly and appear to wait out the U.S. Army to do the work...they are a slovenly lot in appearance... in contrast to the ordinary ARVN troops in combat boots, the aircrafs look terrible, many wearing blue suede low cut shoes...." 23/

"Inadequate med-evac continued to be a serious problem that is pointed out in nearly every after-action report." 24/

The performance of U.S. Army helicopters was highly praised by both U.S. and Vietnamese officers. However, USAF rescue helicopters would have been of greater use in certain situations for which their equipment was specifically designed.

E. Communications Searches

The problem of overdue aircraft reached major proportions in 1963. When a control agency reported an aircraft overdue, the SARCC undertook an electronic search. During the first seven months of 1963, the SARCC conducted 154 communications searches. The principal source of the problem was the failure of pilots of light aircraft or helicopters to file or close a flight plan or the failure to notify control agencies of their intentions. This problem has continued to exist. 25/

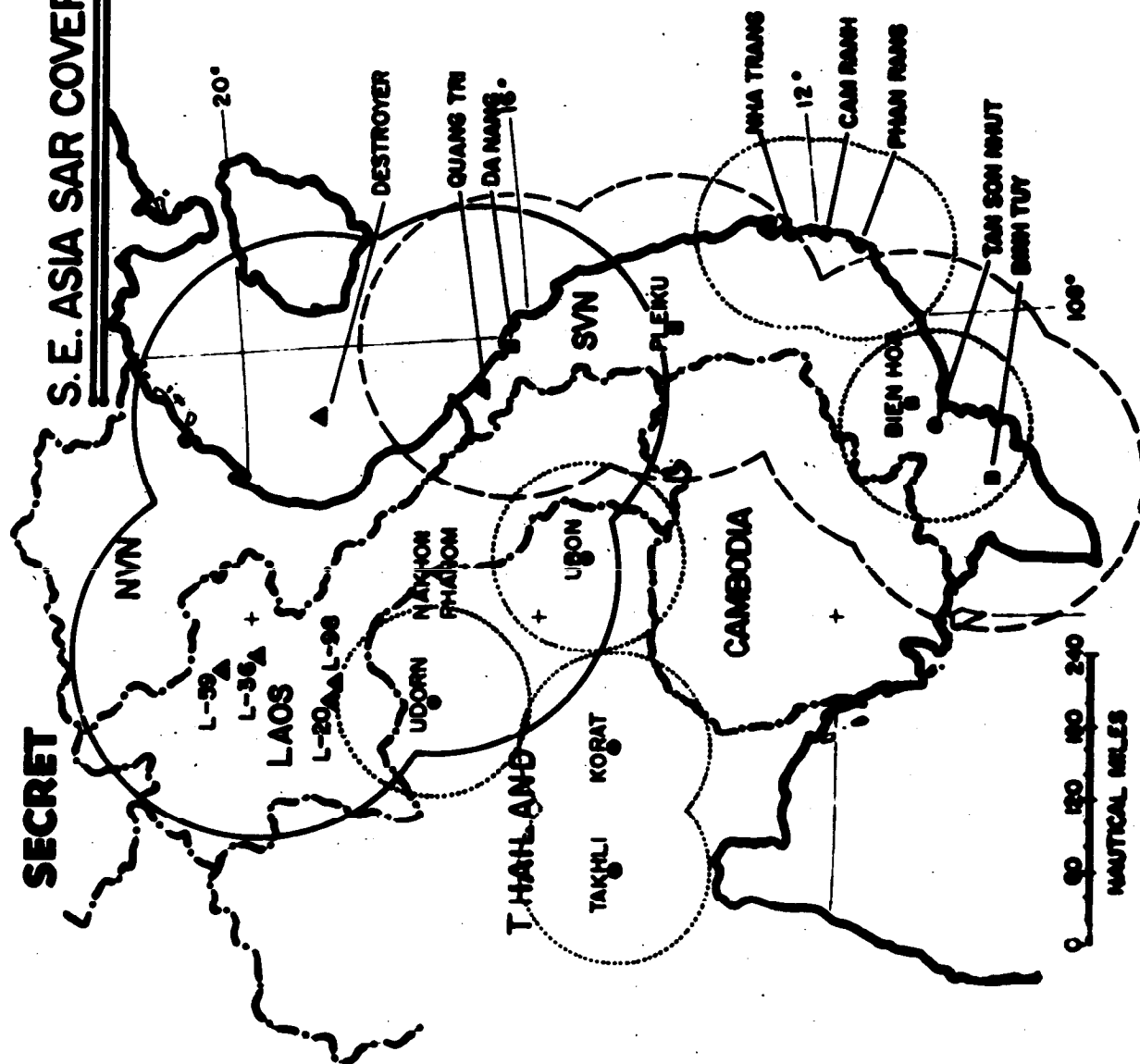
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F. Improvements

During the interim period, April 1962 to June 1964, before a professional SAR force was established in Southeast Asia, some limited improvements in personnel and equipment were made. Detachment 3 was successful in procuring its own communications equipment to dispatch to the crash site with the on-scene-commander. This gave greater control and coordination to the rescue effort. Other important items of rescue equipment such as litter baskets, medical kits, and SARAH (homing) equipment were obtained and put to use.^{26/} The officers of Det 3 also conducted orientation courses in water survival and rescue techniques for the Army aircrews who had not had the training previously. An attempt to send Army pilots to the Air Force instrument school failed, however, because of already over-extended facilities.^{27/} These measures, however, fell far short of those needed to correct a worsening situation.

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S.E. ASIA SAR COVERAGE



LEGEND

HH-3E/HU-16/
7TH FLEET

HH-43F

HH-43B

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II. THE INTRODUCTION OF SAR FORCES

As of 1 July 1964, there had been 143 fatalities resulting from crashes of U.S. aircraft in Vietnam. ^{28/} In the meantime the Air Force had been criticized for not providing professional SAR capability other than a control element.

As early as the summer of 1962, Major E. J. Trexler, the Det 3 Commander at the time, had recommended that ARS personnel and equipment be stationed in Southeast Asia. ^{29/} In the following year several other requests were made. The Deputy Director of the Air Operations Center summed up the situation, in August 1963, when he wrote, "The need for professional SAR forces in this area has been recognized for a long time and has been made a matter of record to 2AD and Pacific Air Rescue (PAR) Hq, on many occasions in the past." ^{30/}

The Joint Vietnamese/U.S. Search and Rescue Agreements, dated 15 November 1962, made the Vietnamese responsible for Civil SAR and their own forces. They had an extremely limited capacity to perform either role. ^{31/}

The first concrete step to remedy this situation was taken in September 1963 when Major Alan Saunders, the Det 3 Commander, prepared a comprehensive study of the needs and requirements in Vietnam from the point of view of the combined efforts of all military forces. Major Saunders pointed out that the increasing sortie rates; the adverse operating conditions; and the lack of personnel trained in pickup

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procedures, aerial delivery, and conducting search patterns, made a professional force mandatory. In recognition of the necessity for quick response, the study recommended that Air Crew Recovery (ACR) detachments be deployed to Da Nang, Pleiku, Bien Hoa, and Can Tho.

The study also proposed that the standard HH-43 helicopter be refitted with a longer hoist cable, armor plating, self-sealing fuel tanks, and other special features which would enable it to operate effectively under combat conditions and over the 200-300 foot densely packed forests of Southeast Asia.

Although the SARCC was responsible for SAR in Cambodia, Laos, and Thailand, as well as in Vietnam, the study concluded that political restrictions and the lack of American activity in these other countries, ^{32/} made South Vietnam the only possible or logical place to station units.

Major General Anthis gave full approval to the study and forwarded it to PACAF in November. ^{33/} During the following five months, the 2d Air Division study bounced back and forth between MACV and CINCPAC. In the meantime, PACAF and ARS began the planning necessary to establish an adequate SAR coverage in Vietnam. For the long term, PACAF felt that the deployment of six modified Sikorsky CH-3 helicopters, with their greater range and speed, would provide adequate coverage. ARS felt that possibly two sites could serve the whole country. Since the CH-3 would not be available immediately, the combat-modified version of the USAF Local Base Rescue (LBR) aircraft, the HH-43, would be a

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minimum acceptable interim vehicle. By using the entire base structure in SVN, six HH-43's could provide satisfactory coverage. ^{34/} As of the summer of 1966, the HH-43 was still being used for ACR/LBR in SVN, and has generally proved itself in its assigned missions.

In March 1964, USAF approved the transfer of three detachments to SVN with a planned deployment date of June 1964. Preliminary action was taken to modify six HH-43B's on a priority basis. ^{35/} The contracts could not be let until approval was received to bring the helicopters into SVN. ^{36/} The time required to modify the helicopter meant that the combat version would not actually arrive in the RVN until October 1964.

By April, however, the entire issue had yet to be resolved between CINCPAC and MACV. There were two principal reasons why the introduction of SAR was delayed. First, the U.S. involvement under the JUNGLE JIM and FARM GATE programs was semi-covert. SAR forces would emphasize U.S. participation. In this same connection, in order to keep the operation covert, very strict ceilings had been placed on manpower. As it was, when SAR forces were approved in May of 1964, the ceilings had to be raised by 86 men. ^{37/} Second, there was the question of conceptual differences between the Army and the Air Force during the period. ^{38/} The mission was eventually given to the USAF by JCS directive. ^{39/}

In April, CINCPACAF, having funded and made the necessary plans for the introduction of SAR forces, made further efforts to have the issue resolved. 13th Air Force was requested to seek information

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regarding MACV's intentions in the matter and CINCPAC was again reminded of the many valid reasons for an immediate deployment of the SAR 40/ forces.

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III. THE BUILDUP

A. The First Year

CINCPAC's approval for the introduction of USAF SAR forces was finally obtained in May of 1964. The Air Force Search and Rescue capability then began to expand rapidly from a detachment of PARC, with only a control function, to the 3d Aerospace Rescue and Recovery Group, with two operational squadrons and two additional detachments. During this period, the SAR forces proved that they were indispensable to combat air operations.

The initial deployment of rescue forces in Vietnam was to have been made to Da Nang, Bien Hoa, and Soc Trang. However, the demonstrated need for SAR forces to support YANKEE TEAM operations in Laos which began in May, altered this decision, and the first rescue helicopters to arrive in the theater were placed on the Laotian border at Nakhon Phanom, Thailand. On 19 June 1964, 36 personnel, with two HH-43B helicopters, arrived on TDY from Naha, Okinawa, to form Detachment 3 (Provisional) of PARC. ^{41/} The 33rd ARS at Naha was also ordered to send two HU-16 aircraft to Korat to perform airborne rescue control for Thailand and Laos. ^{42/} These and follow on units, along with Marine helicopters from Da Nang and Air America aircraft, provided coverage until USAF capabilities could be upgraded in the following year. In July, the 31st ARS at Clark AB sent HU-16 aircraft to Da Nang ^{43/} for rescue duties in the Gulf of Tonkin.

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The Gulf of Tonkin incident in August 1964, further modified the planned buildup of SAR forces. The arrival of jet fighter and air refueling detachments in Thailand placed new demands on ARS. As an interim measure, the Local Base Rescue (LBR) at Takhli, Thailand, was assigned to Det 4 of the 36th ARS at Osan, Korea. ^{44/} PARC, however, did not have the resources to match the sudden build-up, and CONUS LBR detachments on TDY were called upon to provide coverage in and around Bien Hoa, Da Nang, and Korat, Thailand.

One example illustrates how the ARS deployed units rapidly. On 6 August, Captain Philip Prince of the LBR detachment at Maxwell AFB, was notified that he was to have two helicopters loaded aboard two C-124 transports and be enroute to Korat within twenty-four hours. Captain Prince's crews worked through the night disassembling and loading the helicopters. Personnel and equipment were distributed so that a unit could become operational when the first transport arrived at Korat. The detachment reached Korat on 14 August, and shortly thereafter was performing LBR duties for USAF units, as well as the Royal Thai Air Force (RTAF) flying school. ^{45/} The Maxwell unit was replaced in January 1965 by another TDY unit, but by October of that year operations of the Detachment 4 (Provisional) Hq PARC, had been taken over by Det 4 of the 38th ARS, on a PCS basis. ^{46/}

The situation at Korat is also illustrative of the rapid personnel and organization changes taking place during the first year of operations. The CONUS TDY units which in August formed the

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Detachment 1 (Provisional) at Bien Hoa, and Detachment 2 (Provisional) at Da Nang, were redeployed in November 1964, to Takhlí and Nakhon Phanom, respectively. The PARC TDY units at these latter bases were returned to their parent units. Duties at Bien Hoa and Da Nang were assumed by Det 4 and Det 5 of PARC, which were created as PCS units. ^{47/} (See Organizational Summary, Appendix 2) These changes were more than organization, for the new units at Bien Hoa and Da Nang were equipped with the HH-43F combat-modified helicopter. Three were assigned to each unit.

By December of 1964, USAF had a greatly improved SAR capability in Southeast Asia. Brigadier General Adriel Williams, the Commander of the Air Rescue Service, made an inspection trip in December, and at its conclusion sent a message to General Estes which read: "ARS units in SEA outstanding in all respects. We can be very proud of them." ^{48/}

B. The HH-43F

The shortcomings of the B model of the HH-43 for aircrew recovery in a combat zone soon became apparent to rescue personnel in Vietnam. Several suggestions were submitted to ARS for improvements from the field. These included a machine gun mounted on the aircraft to afford the crew some means of protection. This feature was not considered in the combat version of the HH-43 because it was not a suitable gun-platform due to its size. The openings and the crew compartment on the aircraft are not large enough to comfortably mount

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a gun. Small arms are carried by the crew and fire is returned when there is a need or an opportunity.

Kaman Aircraft took the requirements from ARS and the field and produced the F model of the HH-43, which resulted in a more serviceable aircraft. A number of important new features are incorporated. Perhaps the most important is the 800 pounds of titanium armor-plate that is distributed in half-inch sheets around the pilots, along the sides and rear of the personnel compartment, and over the engine cowling. The new self-sealing fuel tanks also provide protection for the bottom of the personnel compartment. The titanium plate is adequate to withstand small arms fire encountered in flight. However, the crew and the engine are still considerably exposed during recovery operations, especially through the canopy area. Because of the increased weight and the necessity for operating under maximum load conditions, the engine was increased in size. The operating radius was extended to 120 nm by the installation of internal fuel tanks. The B model had been equipped with an UHF (Ultra High Frequency) radio set, whereas the F model, in order to successfully coordinate rescue activities, is also equipped with VHF (Very High Frequency) and FM (Frequency Modulation) sets. The final feature is the 217 foot hoist cable, with the forest penetrator attached, which especially equips the HH-43F for recovery in the rain forests of Southeast Asia. ^{49/}

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C. 38th Air Rescue Squadron

The continued buildup of the SAR forces during the first half of 1965 closely paralleled the general strengthening of U.S. forces in Southeast Asia. In April, Detachment 3 (Provisional) Hq PARC, was formed at Ubon Airfield in Thailand. This was followed by the creation of Det 5 (Prov) at Udorn, Thailand in May. ^{50/} Each unit was equipped with two HH-43B helicopters, which were quite suitable for operations outside of the combat zone.

By June of 1965, Detachment 3 of PARC at Tan Son Nhut, had operational control over seven helicopter detachments and two fixed wing detachments, all of which were detachments of the Pacific Air Rescue Center or parent rescue squadrons elsewhere in the Pacific. These command arrangements became increasingly unwieldy. In addition to the confused command lines, several chronic problems with TDY units were experienced during the first year of operations. From an operational standpoint, the crews and support personnel did an excellent job. However, from the standpoint of administration, future planning, ^{51/} and continuity of operations, the TDY units understandably fell short. Therefore, ARS and MATS decided to thoroughly reorganize the SAR forces in Southeast Asia. As of 1 July 1965, all helicopter units were organized as PCS detachments of the 38th Air Rescue Squadron, with headquarters at Tan Son Nhut. ^{52/} Lt Colonel Edward Krafka assumed command. The fixed wing aircraft remained on a TDY status until the 37th ARRS became operational in the summer of 1966.

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Prior to U.S. involvement in Southeast Asia, the 38th ARS had been an active unit stationed at Misawa, Japan. The squadron was activated in November 1952, and its HU-16's performed a number of rescue missions during the Korean War. It was deactivated in September 1957.

D. Problems

Several other problems were encountered during the first year of operations which could almost be considered normal considering the rapid buildup of U.S. forces in the theater. The helicopter units experienced difficulty in establishing supply lines from the CONUS to SEA. Even if there had been no difficulties with transportation, there were difficulties in procuring things to transport. The spare parts back-up was geared to support LBR detachments in the CONUS and not ACR/LBR detachments operating in tropical conditions and sustaining combat damage. ^{53/} One rather serious materiel problem developed with the HH-43 rotor blade. The temperature and the humidity required the replacement of an abnormal number of blades. The HH-43 rotor blade problem is a continuing one and, for a period, it was necessary to ground them during rain storms because of the resultant damage. ^{54/}

Numerous helicopters were damaged or destroyed by enemy action, further complicating the in-commission problem. During the mortar attack at Bien Hoa on 31 October 1964, all of the three HH-43B and two HH-43F helicopters were damaged. One HH-43B received major structural damage and had to be returned to the depot. In March an

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HH-43B was damaged in an accident at Takhli, and in May an HH-43F sustained major battle damage. Both helicopters required major structural repair. On 3 June 1965, an HH-43F was shot down during a recovery mission. The aircraft was totally destroyed but, fortunately, all of the crew members survived and were recovered. A week later another helicopter made an emergency landing and required depot maintenance. ^{55/}

E. Accomplishments

Considering the limited resources, and the increasing demands on these resources as the tempo of the air war quickened, the SAR forces in Southeast Asia distinguished themselves during their first year of operations. Between 1 August 1964 and 31 July 1965, 8780 sorties were flown in support of combat missions resulting in saving 74 lives. ^{56/} The skill and aggressiveness of the crews is attested by the fact that there were over 250 individual decorations awarded during this period, including 16 Silver Stars and ten Purple Hearts. ^{57/}

The rescue units were singled out for praise on numerous occasions. Ambassador Maxwell Taylor, in referring to a highly successful mission, wrote, "This is indeed an outstanding record and testifies to the gallantry of your people in exposing themselves to rescue downed comrades." ^{58/} In one of many communications, the Commander of the Seventh Fleet wrote, "The intensive search was controlled masterfully and its successful completion is a testimonial to the close

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cooperation of the Navy and Air Force units involved." ^{59/} After the successful recovery of one of his pilots, the Captain of the Midway wired, "Again outstanding professionalism has been demonstrated by your courageous search and rescue crews."

As a result of these outstanding efforts by the search and rescue forces during the period from 1 August 1964 to 31 July 1965, the 38th ARS was awarded the Distinguished Unit Citation. Lt Colonel Krafka received the award in Washington from President Johnson in January 1966. The Air Force Association bestowed an Honor Award upon the 38th ARS at its convention in Dallas in March 1966. ^{60/}

F. The Second Year

Although the first year of operation had been a highly successful one in terms of rescuing downed aircrews and performing other missions, such as battlefield medical evacuations, the escalation of the war placed increasing demands on SAR forces. Total allied strike sorties per month increased from 9778 in June 1965 to 16,575 in December 1965. ^{61/} The improved anti-aircraft capabilities of the North Vietnamese meant that future ACR missions would have to be undertaken in a more hazardous environment. This section briefly traces the organization buildup to the summer of 1966. The improved capability will be discussed at greater length in subsequent sections.

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G. "Jolly Greens" (Aircrew Recovery)

In July of 1965, Det 1 of the 38th ARS at Nakhon Phanom, received two CH-3C's, on a TDY basis, from the Tactical Air Warfare Center at Eglin AFB. ^{62/} These were facetiously dubbed the "Jolly Green Giants" because of their size and color. These aircraft considerably improved the coverage in Laos and NVN, but were only interim vehicles pending the arrival of the combat version, the HH-3E.

Owing to the increasingly crowded conditions at Udorn, PACAF wished to locate the additional HH-3E's, which arrived in late November and early December, at Nakhon Phanom. The ZAD effectively ^{63/} argued that, operationally and logistically, this would be infeasible. The issue persisted and it was later proposed that Nakhon Phanom be given over completely to rescue functions. The expense of transferring operations and the removal of rescue forces from the intelligence and ^{64/} control at Udorn made the plan undesirable.

The crews for the HH-3E's assembled under the code name "Limelight 36" at Stead AFB in August 1965. After a brief orientation and training period the unit, under the command of Major Baylor R. Haynes, arrived at Udorn in early October. The detachment was ^{65/} operational upon the arrival of the first helicopter in November. Two more Jolly Greens were added to the unit in March 1966. Detachment 5 presently has 14 combat ready rescue crews. The detachment at Udorn assumed all duties of Detachment 1 at Nakhon Phanom and the ^{66/} latter was discontinued.

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H. "Pedros" ACR/LBR (Aircrew Recovery/Local Base Rescue)

The construction of new operating bases and the increase in traffic necessitated the formation of new HH-43 (Pedro) LBR/ACR units in South Vietnam. The justification for the LBR's was practically identical for each of the airfields. Terrain surrounding the bases was usually flat and marshy or mountainous, and hostile forces were present within the traffic pattern areas, presenting a threat to surface crash rescue operations. ^{67/}

From August 1965 to July 1966, ACR/LBR units were activated as detachments of the 38th ARRS at the following bases: Tan Son Nhut, Pleiku, Cam Ranh Bay, Binh Thuy, Phan Rang, and Nha Trang. These units are equipped with HH-43B/F helicopters, with the B models being used for ACR only in an emergency. ^{68/} (See Organizational Summary, Appendix 2)

I. 3d Aerospace Rescue & Recovery Group

In order to establish more effective command and control over the numerous helicopter detachments, the fixed wing detachments, the JSARCC, and its subordinate Rescue Coordinating Centers, the decision was made to reconstitute the SAR forces, with their wide area of responsibility in Southeast Asia, into the 3rd Aerospace Rescue and Recovery Group. On 8 January 1966, the Group was activated with Colonel Arthur W. Beall assuming command. The Rescue Coordinating Centers at Da Nang and Udorn became Detachment 1 and Detachment 2 of the 3d ARRG respectively. The helicopters continued to operate under

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the 38th ARRS, while the fixed-wing aircraft were organized into the 37th ARRS. The JSARCC is directly under the 3rd ARRG with Lt Colonel Donald F. Karschner as Chief. ^{69/}

The 3rd ARRG had as an antecedent the 3rd Emergency Rescue Squadron, which was activated in 1944 and served in the Pacific until its deactivation in 1957.

J. "Crown" (Fixed-wing ACR & Control Aircraft)

A fixed-wing squadron to incorporate the HU-16's had been proposed but disapproved in late 1964. ^{70/} With the continued increase in air activity and the introduction into the SARTF of more up-to-date control aircraft (HC-130H), the issue was again brought up in 1965. It was felt that the likelihood of prolonged hostilities and the importance of the fixed-wing rescue aircraft warranted a squadron organization. A MAC command decision was made to organize a fixed-wing squadron at Da Nang. The 37th ARRS was activated on ^{71/} 8 January 1966.

There were several arguments against establishing a fixed-wing squadron. First, the ramp space and the maintenance, and general support facilities at Da Nang were very limited and already overcrowded. PACAF was reluctant to station another squadron at that base. Second, the TDY HU-16 operation, unlike some other TDY phases of rescue operations, was highly successful and running very smoothly. Other units supplied airplanes and crews to the 38th ARRS, and personnel

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and maintenance problems in Southeast Asia were at a minimum. Third, as the master ARRS plan developed, the HU-16's were to be phased out of the operation altogether by March 1967 and replaced by HH-3E's. This may not take place since there will probably continue to be a role for the HU-16's in the theater. ^{72/} Nonetheless, their number will be reduced, and this will probably call for an organizational realignment on other than rotary fixed-wing lines. Perhaps TDY operations could have provided a satisfactory solution until then.

To a certain extent a reorganization has already taken place at Da Nang and Udorn. For operations over Laos, it made sense to keep the control HC-130's at Udorn.

The problem of physical separation has been overcome on paper by establishing Detachment 1 of the 37th ARRS at Udorn, which will answer on most matters directly to the commander of the 3rd ARRG. At Da Nang. Lt Colonel Alan R. Vette, who assumed command of the 37th ARRS on 1 June, has done much to streamline rescue operations by consolidating the operations, administration and supply functions of Detachment 7, 38th ARRS (helicopter) and Detachment 1, 3rd ARRG (the Rescue Coordinating Center) under the 37th ARRS. ^{73/} The 37th ARRS was declared operational on 1 May 1966 and during the summer months the TDY HU-16 and HC-130E crews and planes were being phased out.

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IV. SAR IN LAOS AND NVN

A. The First Year

When the coalition government established by the Geneva Conference of 1962, fell apart in May 1964, the communist forces resumed the attack against Souvanna Phouma's Neutralist forces. In short order, the Pathet Lao had overrun their positions on the Plaine des Jarres. The U.S. Government, anxious to bolster Neutralist forces and to demonstrate U.S. interest and determination in Laos, convinced Souvanna Phouma that aerial reconnaissance would prove to the world that the Pathet Lao was receiving help from China and North Vietnam. Although Souvanna Phouma was reluctant to compromise his position as a neutral leader by accepting U.S. help, the critical nature of the situation forced him to take some political risks. Thus, the YANKEE TEAM flights began on 18 May 1964. ^{74/}

The U.S. commitment also created the need for a search and rescue-capability in Laos. Air America, a private airline which supports covert activities in Laos, had provided limited SAR support for Royal Laotian Air Force (RLAF) T-28's, and could be pressed into service in the event a YANKEE TEAM plane went down. The 2AD, however, felt that the Air America SAR forces would be inadequate, and on 29 May, General Moore, 2AD Commander, asked PACAF for authority to employ U.S. aircraft and crews. No reply had been received when the first reconnaissance plane was shot down. ^{75/}

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On 6 June 1964, two USN RF-8A's were reconitering Route 7 near the Plaine des Jarres, when the weather forced them to fly lower in the valley than normal. The aircraft of Lt. Charles Klusmann was hit by ground fire and he ejected. His wingman immediately reported his location on guard frequency and the message was relayed to the SARCC through the Panama GCI station near Da Nang. The SARCC requested that Air American dispatch helicopters to Lt. Klusmann's rescue. Meanwhile, an Air America C-123 and Caribou intercepted the mayday, dumped their cargoes, and flew to the scene. They spotted Lt. Klusmann on the ground and guided the two H-34's to the area. As the first helicopter positioned itself, intense ground fire erupted, a crew member was wounded, and both helicopters were forced to withdraw. ^{76/} At this point in time the rules of engagement did not permit RESCAP aircraft to be scrambled automatically. ^{77/} In fact, the political situation in Laos was so sensitive that Ambassador Unger had suggested that, since the YANKEE TEAM flights had served the purpose of indicating U.S. resolve to the communists, they be curtailed. ^{78/} However, the on-scene-commander in the Caribou requested fighter support and after some discussion T-28's were permitted to scramble from Vientiane. By the time they arrived, the weather precluded fixing the position of the enemy forces and their efforts were ineffective.

In the meantime, CINCPACAF approved the use of USAF aircraft in the RESCAP. Ambassador Unger concurred, and F-100's were scrambled from Takhli. The Navy also dispatched some fighters to the area.

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Shortly thereafter, these measures were countermanned by CINCPAC, who further ordered that all U.S. forces be withdrawn from the SAR effort. This left the continued rescue effort entirely up to Air America and the RLAF. ^{79/}

Air America continued the search until noon on 8 June without any promising indications. Lt. Klusmann had in fact been captured by the Pathet Lao after the first helicopter had been driven off, some ^{80/} three hours after his bailout.

Even though the rescue attempt had almost been successful, the emergency had thrown everyone into confusion. Important decisions had to be made quickly and it was uncertain as to who had authority to make them. Communications were poor. One of the Air America pilots commented that he never knew what type of aircraft had gone down and he assumed that he was looking for an RLAF T-28. The Air America ^{81/} helicopters were not equipped with UHF or radio homing equipment.

As a result of the action on 6 June, the reconnaissance flights on 7 June were escorted by F-8B's. The fighters very quickly got an opportunity to carry out their mission. Commander D. W. Lynn was hit on his second strafing pass over gun positions and was forced to eject. This caused a considerable amount of consternation since the Pathet Lao were then provided with tangible evidence that the ^{82/} U.S. role in Laos was not merely one of passive reconnaissance.

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The ensuing SAR operation was a better coordinated effort among Air America, RLAF, and Bird and Son (A company similar to Air America, which has since been bought by Continental Air Service.) aircraft. Commander Lynn was located by his beeper, in spite of an error in the initial fix of 20 miles, and was picked up early on the morning of 8 June. ^{83/}

Even though this SAR was successful, it again pointed out the limitations of the H-34 helicopter, which was and still is used extensively by Air America. Commander Lynn had worked himself onto a wooded ridge at about 4800' elevation. At that altitude the hover power of the H-34 is limited and Mr. Estes, the Air America pilot, found himself in danger of settling into the trees. Rescue effort were further hampered because the cable was about 15' too short in the 120' high forest. ^{84/}

The need for better coordination and communication highlighted during the attempted rescue of Klusmann, resulted in a meeting at Udorn on 15 June. Colonel Tyrell, the AIRA in Vientiane, partly attributed the success of the 8 June effort to the control of Air America rescue forces by a single agency. When his office and the Special Air Warfare personnel assumed responsibility for coordination and control the operation went very smoothly. Colonel Tyrell was emphatic that one single agency operating through an on-scene-commander should be designated for control. Mr. Ben Moore, representing Air America, indicated that while his company's five H-34's, numerous STOL

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aircraft, and three Caribou, gave them a considerable potential, they were not staffed or equipped to provide round-the-clock, all weather SAR capability. More specifically the Air America communications net needed upgrading if effective coordination was to be attained. ^{85/}

During the next few months, interim measures were worked out using a 2AD plan as a basis. Air America was to provide coverage in the PDJ area during all YANKEE TEAM missions. The newly established Deputy Commander, 2AD, Thailand, was made responsible for all USAF operations in Laos, including search and rescue. However, he was to act only at the request of and within the constraints imposed by the American Ambassador in Vientiane. The Dep Cmdr, 2AD, Thailand, exercised his control through his ASOC at Udorn, which coordinated very closely with the American Embassy's air operations center at Vientiane. ^{86/}

In addition to the coverage that Air American provided from its bases in the northern part of Laos, the USAF moved the two HH-43B's into Nakhon Phanom to give coverage within a 100 miles radius. The Marines began prepositioning H-34's at Khe Sanh in South Vietnam to provide additional coverage in the Laotian Panhandle. An HU-16 from Korat or Da Nang was to orbit during all high risk missions to act as an airborne communications relay and control ship for SAR. ^{87/}

During the emergency, Air America pilots had flown support missions in RLAF T-28's. Since Air America was supposedly a private company, these operations could possibly have led to an embarrassing

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incident for the U.S. Government. In August, the Ambassador withdrew authority for the use of Air America pilots in RESCAP after a sensitive situation developed involving two Thai pilots who bailed out over Laos. ^{88/} Subsequently, the fighter support was to be furnished by Thai-based WATER PUMP/RLAF aircraft (USAF Special Warfare Detachment which trained and supported RLAF activities.) and Navy A-1H's on rotation. Although the general situation remained sensitive, by November USAF F-100's and F-105's were flying RESCAP missions and making strikes in Laos. ^{89/} All of these forces could be scrambled by the SARCC at Tan Son Nhut in coordination with Udorn and Vientiane. The U.S. Ambassador in Laos continued to retain ultimate authority in the prosecution of the mission. SAR operations in North Vietnam were not at that time authorized or needed; however, MACV directed the 2AD ^{90/} to prepare a plan for such contingencies.

Although the USAF rescue capability increased in 1964 and throughout 1965, Air America was the backbone of the humanitarian operation during the first year. Between June 1964 and June 1965, Air America made 21 successful recoveries of American pilots. In that same period, five rescues were made by USAF helicopters; four in March and one in April. Three pilots were reported captured, three were believed to be dead, and the status of three pilots was listed as unknown. Although Air America made most of the recoveries, ^{91/} they worked in close conjunction with U.S. RESCAP and control elements.

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B. ESCALATION OF THE WAR

Increased operations in Laos and strikes against North Vietnam placed new demands on SAR forces in the spring of 1965. Although Air America rescue operations in NVN were not specifically authorized, on several occasions Air America pilots crossed the border to make pick-ups. ^{92/} It was agreed, however, that since Air America could not make a full time commitment of SAR forces, and there were political risks involved in using Air America aircraft to cross the border, USAF aircraft should be introduced and staged forward to positions from which they could reach into NVN. ^{93/} The State Department, in an effort to keep official and visible American activity in Laos at a minimum, suggested that Air America continue to furnish the major SAR effort in Laos. ^{94/} However, the additional helicopters, STOL aircraft, and communications equipment necessary for the company to do this were not forthcoming, and the Air Force was required to assume major coverage in Laos also.

The USAF capability to perform this mission was greatly improved in July 1965 with the arrival, from Eglin AFB, of the two TAC CH-3C helicopters. These were stationed at Nakhon Phanom. The HH-43's were moved to Udorn and increased to four in number. ^{95/} From Udorn they were staged forward to Lima sites in Northern Laos to give limited coverage in the central part of NVN. Fuel cells ^{96/} were prepositioned at the Lima sites for their support.

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In August 1965, the 602nd Air Commando Squadron began rotating its A-1E aircraft from Bien Hoa to Udorn to provide RESCORT. In February 1966, the 602nd Air Commando Squadron moved all of its operations to Udorn, with SAR RESCORT as one of its primary missions. ^{97/}

With this USAF buildup, direct SAR support from Air America in Laos was needed less. Air America continued to provide SAR for the RLAF, their own operations, and on an on-cell basis for U.S. aircraft. At present Air American continues to furnish the USAF SAR forces with staging sites, weather information, and intelligence, all of which are indispensable to successful operations. ^{98/}

The USAF SAR equipment and its disposition in the summer and fall of 1965, was still an interim proposition. The longer range and greater speed of the CH-3C were significant improvements, but their small number, and their lack of survivability in combat, limited their effectiveness. One of the two helicopters assigned was usually out of commission. Consequently, they could not be employed as a pair. This single mode of operation is avoided if at all possible. ^{99/} These two shortcomings were both tragically brought out during a rescue mission, 6-7 November 1965.

On 5 November, Oak Lead, an F-105, disappeared over NVN. There was some possibility that the pilot had survived, since his plane was last seen heading into a cloud, and an electronic search was initiated by two A-1E aircraft on the following day. Although the

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pilots had plotted a course around known gun positions, one of the A-1E's was shot down by automatic weapons fire. A CH-3C was sent to the location where it was believed that the A-1E went down. As it arrived in the area, the helicopter was hit by ground fire and the crew bailed out. Since little ground fire was actually reported by the RESCORT, a second helicopter would probably have had a good chance of recovering the crew. The RCC at Udorn scrambled the two HH-43's at Lima Site 36, but the 2AD Command Post overruled this order and directed a recall of all SAR forces. 100/

The USN, however, had launched a helicopter to attempt a recovery of the CH-3C crew. The A-1E's, which had not withdrawn in spite of the order, were directed to meet this helicopter at the coast and escort it to the scene. On the way to the rendezvous the wingman reported ground fire, pulled into the clouds, and no further contact was ever made with him. The remaining A-1E and the helicopter searched the area until the helicopter had to refuel. Even though it was dark by that time the helicopter returned and made voice contact with one of the crew members. Fortunately, the crew member, SSgt Naugle, had a cigarette lighter which he used to signal the helicopter. A successful pick-up was made but Captain Warren Lilly and his other crew members could not be located. 101/

The next morning the Navy helicopter set out to try to recover the remaining crew members. Enroute a MIG alert was received and the helicopter descended to get between cloud layers. It was hit by

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automatic weapons fire, the fuel lines were ruptured, and it made an emergency landing in North Vietnam. The two escort aircraft were also hit and one of them had to make a gear up landing at Da Nang. The second USAF CH-3C was on its way to the bailout site when it received word about the Navy helicopter in distress. It diverted and between the CH-3C and another Navy helicopter all of the crew members were recovered. Neither had enough fuel, however, to proceed to the other crash scenes. 102/

A first light search was conducted on 8 November for the unrecovered crew members. The A-1E's picked up a beeper signal but, as more aircraft entered the area, heavy ground fire was encountered and several planes sustained battle damage. At this point the mission was suspended. 103/

This mission not only illustrates the shortcomings mentioned above but also indicates how critical judgment and coordination become in a search and rescue effort. The original decision to conduct a search for Oak Lead was based on the slim possibility that, because of the cloud deck and the general confusion in Oak flight at the time, the pilot could have made a successful bailout without being seen. The position originally given for the first A-1E pilot's bailout turned out to be wrong, thus compounding the confusion that existed. At one point the A-1E's and the Navy helicopter were not acting in coordination with the central controlling authority. When disaster follows disaster, at what point should the mission be suspended? Differences of opinion

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and perspective are bound to exist on the complicated problems posed by such missions and where a number of lives are at stake. For example, Brigadier General Murphy, Dep Cmdr, 2AD/13AF (Thailand), felt that the decision to withhold the HH-43's was premature, since it was the last USAF effort that could have succeeded. ^{104/} The outcome of the situation, if other decisions had been made, is only speculative. It can be concluded, however, when complex coordination has to be effected among different elements of the SAR force, the requirement for timely and accurate information among the several levels of control is paramount. General Murphy, in his report on the mission to Lt General Moore, 2AD Commander, went on to recommend that 'The SAR mission in this area of responsibility (Laos-NVN) be run completely by a single agency,' and requested that 'the SAR mission for this area be returned to me and ^{105/} without the restrictions recently imposed.'

One other helicopter was lost over North Vietnam. This was an unmodified HH-43B which was shot down on 20 September 1965. In this instance an F-105 was down and two HH-43 and the RESCORT were scrambled from Nakhon Phanom. The HC-54 control aircraft had picked up the pilot's beeper and the A-1E's believed they had the position pinpointed. No initial ground fire was experienced but troop movement was noticed in adjacent areas. One of the A-1E's was hit and sustained minor damage. The pilot's red smoke was spotted and an HH-43 descended for the pickup. Just as visual contact was made, ground fire erupted ^{106/} from all around the survivor's position and the HH-43 crashed.

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The remaining helicopter jettisoned its auxiliary fuel tank and immediately proceeded to the crash site. As it came to a hover, 50 feet over the wreckage, an automatic weapon continued the heavy fire from the ground. No survivors were spotted and since the helicopter was taking many hits, it climbed out of the area and returned to Nakhon Phanom. The mission was suspended as it was concluded that enemy forces would make the area impenetrable for search and rescue efforts the following day. The RCC, Captain Curtis, and his crew were listed as missing in action. 107/

C. The SAR Task Force (SARTF)

The Sikorsky HH-3E helicopter, the more powerful combat modified version of the cargo CH-3C, constituted a breakthrough for SAR in Southeast Asia. The most significant limiting factors of other rescue helicopters of range and survivability were overcome by the HH-3E. The HH-3E carries two jettisonable 200-gallon external fuel tanks of the type used by the F-100. These give the HH-3E an operating radius of approximately 250 miles, depending on loiter time and other operational factors. The HH-3E also provided additional fuel capacity in the form of an internal fiberglass tank which could be dumped but not purged (a residual danger remained with the fumes.). Fuel can be pumped from the external tanks to the self-sealing internal tank.

The HH-3E has 1000 pounds of half-inch titanium armor plating distributed around the cockpit and the vital parts of the aircraft,

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which greatly increases its survivability. The crew members wear flak suits, as well as survival vests and parachutes. Additionally, the pilots usually don titanium chest protectors when they go in for a pickup. To date the HH-3E's have taken many hits and several crew members have been wounded, but none have been shot down. This record has been aided in a large measure, by the RESCORT Sandy (A-1E) pilots keeping the Jolly Greens out of impossible situations.

Speed and altitude are also crucial for survivability. The 1250 horsepower engine, an increase of 200 horsepower over the CH-3C, gives the HH-3E a ceiling of 12,000 feet, and a top speed of 142 knots. However, at altitudes of eight or nine thousand feet the speed falls off to 100 knots or below. ^{108/}

Other advanced features of the HH-3E include a shatter-proof acrylic glass canopy, an engine ice and FOD shield, and the 600-pound capacity, 240 foot cable with forest penetrator. The aircraft can transport 25 fully equipped troops or 15 litter cases. (See Appendix ^{109/} 3.)

Other elements in the Search and Rescue Task Force have been improved. Until June 1965, HU-16, operating first from Korat and later from Udorn, functioned as airborne control aircraft and communications relay. In June, three HC-54's on rotational TDY from the 79 ARS at Guam and the 36 ARS at Tachikawa were sent to Udorn to assume these duties. The HU-16's were transferred to Da Nang and then limited

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to missions in the Gulf of Tonkin. The HC-54's, with their higher ceilings, were better suited for operating over the mountainous terrain of Laos. Their more spacious interior improved the crew's comfort during the long hours in precautionary orbit. 110/

The HC-54C was not, however, properly equipped to perform the function of a flying command post. Brigadier General John R. Murphy, the 2AD Deputy Commander, felt that it was the weakest link in the rescue operation because it lacked adequate back-up communications equipment, and, like the HU-16, had no special control equipment that would enable the crew to assume effective direction of the mission. The pilot had to try to keep track of the positions of the helicopters, the bingo times of the RESCAP, and many other details from the cockpit. A console arrangement was proposed but never installed. 111/

In December 1965, two HC-130H's arrived as replacements for the HC-54's, which were phased out by April 1966. These aircraft and crews were also provided by the 79th ARS and the 36th ARS. 112/ The HC-130H has proven to be more reliable and has a number of new devices making it a better SAR aircraft. The Cook Aerial Tracker (ARD-17), located in the bulb on top of the fuselage, is an extremely accurate direction finder which, given favorable transmission conditions, can fix the location of a pilot by triangulation. The development of the tracker was funded by NASA for space vehicle recovery work. The folding boom on the nose of the aircraft equips it to pick up stationary

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objects and personnel on the ground with the Fulton system. Later models will be equipped to perform air-to-air refueling with helicopters. But, like the HC-54C, the HC-130H has no special equipment to control involved rescue missions such as those now being conducted in Southeast Asia. Consoles have also been proposed for this aircraft, but little action has, so far, been taken on these proposals. As an interim solution, the Commander of the 3rd ARRG has assigned an officer controller to each HC-130H flight. The communications limitations of the aircraft, however, preclude his doing more than occasionally assisting the pilot. ^{113/} Properly equipped, the aircraft could possibly replace the ground rescue coordinating centers now located at Udorn and ^{114/} Da Nang.

The A-1E aircraft provide RESCORT/RESCAP for the SARTF. Their slow cruising speed, short turning radius, extended range and loiter time, variety of armament and comm/nav equipment make them invaluable for SAR work. In effect, they provide the 'search' in search and rescue and then provide cover while the helicopter makes the recovery.

These aircraft are also sought for many other roles, and the SAR priority for four aircraft per mission was difficult to establish. Numerous requests were made before eight aircraft were provided for the SAR alert postures. ^{115/} Since August 1965, the SAR RESCORT/RESCAP missions have been flown by the 602nd Air Commando Squadron from Udorn.

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Other strike aircraft are incorporated into the mission as necessary for MIG CAP or ground strikes. Currently, BANGO/WHIPLASH (Code name for USAF interdiction and close support in Laos.) alert aircraft provide an immediate resource for RESCAP. When jet aircraft are employed, KC-135's are positioned to insure that a constant cover is maintained.

D. The Mission ^{116/}

The tactics now used for ACR in Laos and NVN have developed around the basic search and rescue task force of two HH-3E helicopters, four A-1E escort aircraft, and an HC-130H rescue control aircraft. These aircraft are on alert in one of several postures during all strikes outside SVN. The entire task force is controlled by the on-scene-commander at the local level, the Crown HC-130H and the RCC at Udorn at the intermediate level, and ultimately by the JSARCC at 3d ARRG Headquarters.

To explain the manner in which these components are coordinated and employed tactically, the sequence of events during a mission will be outlined and illustrated by factual mission narratives. The missions are extraordinary for one reason or another. There are no "typical" missions, each having unique features and problems. The material should impart a general understanding of search and rescue in Laos and NVN. Equipment and tactics will continue to be refined and developed. This description can only present the methods now employed.

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A normal alert posture consists of two HH-3E helicopters (Jolly Greens) and four A-1E's (Sandies) prepositioned on ground alert at Nakhon Phanom to cover the southern portions of Laos and NVN. (See coverage map, page 13.) One Jolly Green and two Sandies are rotated each day. Additional coverage of the area is provided by two Jolly Greens and two HH-43F's (Pedros), which alternate from Da Nang to one of several sites near the NVN border. Khe Sanh, Dong Ha, and Quang Tri are the sites currently used but the daily frag order will depend upon the security and weather conditions existing at each site. Prior to the arrival of the HH-3E's in July 1966, Marine H-34's shared the alerts from Da Nang with the Pedros.

The northern portion of Laos and NVN are covered by two Jolly Greens prepositioned at one of the forward operating sites in Laos. Again, the selection of the site will depend on security conditions, weather, and other operating factors. The Jolly Greens remain on alert overnight if security conditions and political constraints permit. Although conditions change, usually only one site is suitable for twenty-four hour operations. In February, Lima Site 36, one of the primary forward sites, was overrun by the PL/VN (A full report of this action is contained in (TS) Project CHECO Report Lima Site 36.). It has since been recaptured but remains insecure. At one time, political considerations prevented the crews from remaining at any of the sites overnight. This is no longer the case. Now, to "sanitize" the operation, the crews merely remove their personal insignia and the aircraft

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markings. The latter is handily painted on a detachable panel. Since the Laotian sites, which are maintained by Air America, are only STOL strips, the four escort Sandies for these Jolly Greens usually remain on alert at Udorn. However, in June of 1966, the intensity and penetration depths of the strikes in the North increased and, to reduce reaction time, two Jolly Greens and four Sandies orbit in northern Laos during the TOT's. Two other Jolly Greens remain on back-up ground alert in Laos and the Sandies on back-up alert at Udorn. A Crown HC-130 orbits on the Thai-Laotian border from early morning until late afternoon. Both of these postures are fraged daily by the JSARCC, in coordination with DOCO at 7AF.

An emergency is declared when the distressed pilot or his wingman switches to the UHF guard frequency and calls "Mayday". If the pilot successfully ejects, his wingman reports the location and remains in the vicinity to provide RESCAP and to guide the rescue force to the precise location. The initial report of position is in error, to some degree, in a very large percentage of the missions. This is due chiefly to errors inherent in the Doppler navigational system. Therefore, it becomes most important that an aircraft remain in the area until the Sandies arrive. If the fighters depart with bingo fuel before the Sandies arrive and the downed pilot is in an unfavorable position for radio transmission, search efforts will be much more difficult.

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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 ^{119/} dissident Pathet Lao, escaped in September 1964. 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 ^{120/} picked up by the Jolly Greens.

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-130E, is equipped with an IFF interrogator.

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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.

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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

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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.

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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 personnel 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.

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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

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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

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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 neutralize the enemy positions and to fix the survivors. They in turn received heavy fire and the resulting damage forced them to leave the area.

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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.

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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 Nahrt 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:

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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 Red 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 rim 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

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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

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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

1 January - 26 July 1966 ^{129/}

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/}

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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.

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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

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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

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patrol. According to Captain Arauj, 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 pararescue-^{134/}man was not recovered and is presumed to have gone down with the plane.

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

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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 pararescuer 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 pararescuer 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:

^{137/}
1 July - 31 December 1965

14

^{138/}
1 Jan - 26 July 1966

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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

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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 ^{142/} a problem in locating and identifying a survivor.

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 ^{143/} the camp.

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

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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/}

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During battlefield medical evacuations, the pararescuer 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 south-east 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 pararescuer, 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/}

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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' ^{149/} removed a USAF airman from the sheer face of a mountain.

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

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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 ARRC has been given the Cmdr/AF, 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,

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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

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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.

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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

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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
163/
limitations.

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

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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

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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 turbulence 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.

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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

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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 nucleus 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 Personnel Recovery Center (JPRC), recently activated in MACV MACSOG, is designed to effect combat personnel 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.

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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 MH-43 aircraft)
Combat 177
Non-Combat 10

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1 Jan - 26 Jul 1966 (Cont'd)

Out-Country

Missions	172
Medevac	21
SAR	145
Misc.	6

Sorties	571
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Saves	109
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Combat	95
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HU-16	12
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HH-43	28
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HH-3	55
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Non-Combat	14
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HU-16	0
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HH-43	12
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HH-3	2
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Total Saves, 1 Jan - 26 Jul 1966

Combat	394
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Non-Combat	65
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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

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

Laos

	Downed	Recovered by	
		<u>USAF</u>	<u>USMC</u>
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.

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APPENDIX 2

CHRONOLOGICAL AND ORGANIZATIONAL SUMMARY

<u>UNIT</u>	<u>LOCATION</u>	
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 IAW 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 IAW 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	Udon Afld, Thai	Dsgd & Orgd 3 May 65 (Disc 1 Jul 65)
3 ARRG	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	Udon Afld, Thai	Dsgd & Orgd 8 Jan 66
37 ARRS	Da Nang Afld, RVN	Orgd & Asgd to 3ARRG 8 Jan 66

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<u>UNIT</u>	<u>LOCATION</u>	<u>ACTION</u>
Det 1	Udorn Afld, Thai	Degd & Orgd 8 Jan 66
38 ARRS	Tan Son Nhut AB, RVN	Redegd & 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	Degd & Orgd 18 Jan 66
Det 9	Pleiku Afld, RVN	Degd & Orgd 1 Oct 65
Det 10	Binh Tuy AB, RVN	Degd & Orgd 1 Oct 65
Det 11	Tuy Hoa AB, RVN	Degd & Orgd 18 Jan 66
Det 12	Nha Trang Aprt, RVN	Degd & Orgd 8 Apr 66
Prov. First	Cam Ranh Bay	(Disc 15 Jan 66)

INITIAL TDY UNITS

Det Prov First	Bien Hoa, Aug 64
Det Prov Second	Da Nang, Aug 64
Det Prov Third	Nakhon Phanom, Jun 64 Ubon, Apr 65
Det Prov Fourth	Korat, Aug 64
Det Prov Fifth	Udorn, May 65

FROM

Det 1, CARC, Glasgow AFB, Mont.
Det 4, WARC, Paine AFB, Wash.
Det 5, WARCC, McChord AFB, Wash.
Det 2, CARC, Minot AFB, N.D.
33 ARC, Maha, Okinawa
Det 3, CARC, Grand Forks, N.D.
Det 10, EARC, Maxwell AFB, Ala.
Det 3, EARC, Griffiths AFB, N.Y.

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3 ARRG Deployment - July 1966

37 ARRS	Da Nang AB	6	HU-16
Det 1	Udorn AB		HC-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

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APPENDIX 3

LIST OF PHOTOGRAPHS

NH-3E	87
NH-43B	88
HU-16	89
A-1E	90
HC-130H	91
NH-3E being refueled by KC-130	92&93
Forest penetrator	94
Crewman with forest penetrator	95
Pararescueman with pilot on forest penetrator	96

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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

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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

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USIS - U.S. Information Service

VNAF - (South) Vietnamese Air Force

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USAF SEARCH & RESCUE IN SOUTHEAST ASIA

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