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14. ABSTRACT Project CHECO was established in 1962 to document and analyze air operations in Southeast Asia. Over the years the meaning of the acronym changed several times to reflect the escalation of operations: Current Historical Evaluation of Counterinsurgency Operations, Contemporary Historical Evaluation of Combat Operations and Contemporary Historical Examination of Current Operations. Project CHECO and other U. S. Air Force Historical study programs provided the Air Force with timely and lasting corporate insights into operational, conceptual and doctrinal lessons from the war in SEA.					
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PROJECT CHECO SOUTHEAST ASIA REPORT

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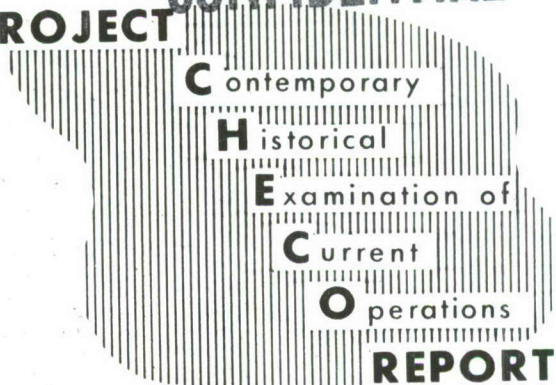
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JET FORWARD AIR CONTROLLERS IN SEASIA (U)

15 OCTOBER 1969

HQ PACAF

Directorate, Tactical Evaluation
CHECO Division

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Project CHECO 7th AF, DOAC

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PROJECT CHECO REPORTS

The counterinsurgency and unconventional warfare environment of Southeast Asia has resulted in the employment of USAF airpower to meet a multitude of requirements. The varied applications of airpower have involved the full spectrum of USAF aerospace vehicles, support equipment, and manpower. As a result, there has been an accumulation of operational data and experiences that, as a priority, must be collected, documented, and analyzed as to current and future impact upon USAF policies, concepts, and doctrine.

Fortunately, the value of collecting and documenting our SEA experiences was recognized at an early date. In 1962, Hq USAF directed CINCPACAF to establish an activity that would be primarily responsive to Air Staff requirements and direction, and would provide timely and analytical studies of USAF combat operations in SEA.

Project CHECO, an acronym for Contemporary Historical Examination of Current Operations, was established to meet this Air Staff requirement. Managed by Hq PACAF, with elements at Hq 7AF and 7AF/13AF, Project CHECO provides a scholarly, "on-going" historical examination, documentation, and reporting on USAF policies, concepts, and doctrine in PACOM. This CHECO report is part of the overall documentation and examination which is being accomplished. Along with the other CHECO publications, this is an authentic source for an assessment of the effectiveness of USAF airpower in PACOM.



MILTON B. ADAMS, Major General, USAF
Chief of Staff

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FOR THE COMMANDER IN CHIEF


WARREN H. PETERSON, Colonel, USAF
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(2) AIR FORCES

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1. DORF 1
2. DI 1
(b) 19AF(DI) 1
(c) USAFSOF(DO) 1

(3) WINGS

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(b) 4TFW(DO) 1
(c) 23TFW(DOI) 1
(d) 27TFW(DOI) 1
(e) 33TFW(DOI) 1
(f) 64TAW(DOI) 1
(g) 67TRW(C) 1
(h) 75TRW(DOI) 1
(i) 316TAW(DOP) 1
(j) 317TAW(EX) 1
(k) 363TRW(DOC) 1
(l) 464TAW(DOIN) 1
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b. SAC

(1) HEADQUARTERS

(a) DOPL 1
(b) DPLF 1
(c) DM 1
(d) DI 1
(e) OA 1
(f) HI 1

(2) AIR FORCES

(a) 2AF(DICS) 1
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(3) AIR DIVISIONS

(a) 3AD(DO) 3

c. MAC

(1) HEADQUARTERS

(a) MAOID 1
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(d) MACOA 1

(2) AIR FORCES

(a) 21AF(OCXI) 1
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(3) WINGS

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(c) ADLCC 1	i. AAC
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(a) AF ICELAND(FICAS) . . . 2	(a) ALDOC-A 2
(3) AIR DIVISIONS	j. USAFSO
(a) 25AD(OIN) 2	(1) HEADQUARTERS
(b) 29AD(ODC) 1	(a) COH 1
(c) 33AD(OIN) 1	
(d) 37AD(ODC) 1	k. PACAF
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(a) ATXPP 1	(b) DI 1
f. AFLC	(c) DPL 2
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(b) ODC/OTA	1
(c) OOT	1
(d) XDC	1

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(c) 17AF	
1. ODC	1
2. OID	1

(3) WINGS

(a) 20TFW(DCOI)	1
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(c) 50TFW(DCO)	1
(d) 66TRW(DCOIN-T)	1
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FOREWORD

"One important factor in deriving capabilities essential for tactical air forces is that we are not restricted to theoretical study but can profit from the experience gained in actual combat. Problems encountered in Southeast Asia underscore the need to revise our concepts and refine our capabilities for waging war in a highly controlled and sensitive environment." 1/

An important by-product of the war in Southeast Asia was USAF experimentation with new aerial tactics...the use of on-board aircraft in unaccustomed roles...for broad and varied functions.

This report outlines the evolution of the jet Forward Air Controllers (FACs) from their initial experimental flight in mid-1967 to their expansion in the Strike Control and Reconnaissance (SCAR) role two years later. Although usually called Forward Air Controllers, the term "jet FACs" will be used throughout this document to distinguish this mission from that of the slow-moving FAC/SCARs flying O-1, O-2A, and OV-10 aircraft.

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CHAPTER I

BEGINNING OF PROGRAM - 1967

The jet Forward Air Controller experiment in Southeast Asia was conducted entirely within the context of U.S. air operations outside the borders of the Republic of Vietnam. The enemy attempted to infiltrate through the Laotian panhandle (STEEL TIGER) into the Republic of Vietnam and to drive the Royal Laotian Government (RLG) from extensive areas of northern Laos (BARREL ROLL). Enemy activity was greatly influenced by weather conditions. Between April and November of each year (the Southwest Monsoon Season), the weather was clear and dry in North Vietnam and wet in Laos--favorable for the stockpiling of supplies above the Demilitarized Zone (DMZ) but unfavorable for movement in Laos. Between November and April (the Northeast Monsoon Season), the weather cleared in Laos and North Vietnam (NVN) movement resumed southward through STEEL TIGER and westward across BARREL ROLL. The weight of the U.S. air response shifted along with this enemy pattern.

According to the Rules of Engagement for air operations, nearly all tactical airstrikes were controlled either by ground radar or, as was more often the case, by an airborne Forward Air Controller who found and marked targets, supervised the strikes, and reported the results. Along with the other air elements, the FACs shifted their operating areas back and forth between NVN and Laos, and between STEEL TIGER and BARREL ROLL, as the seasons changed.

By June 1967, the ROLLING THUNDER air campaign against North Vietnam was well into its third year. In Route Package I (RP I), the southernmost of the six Route Packages into which North Vietnam was divided, a special interdiction

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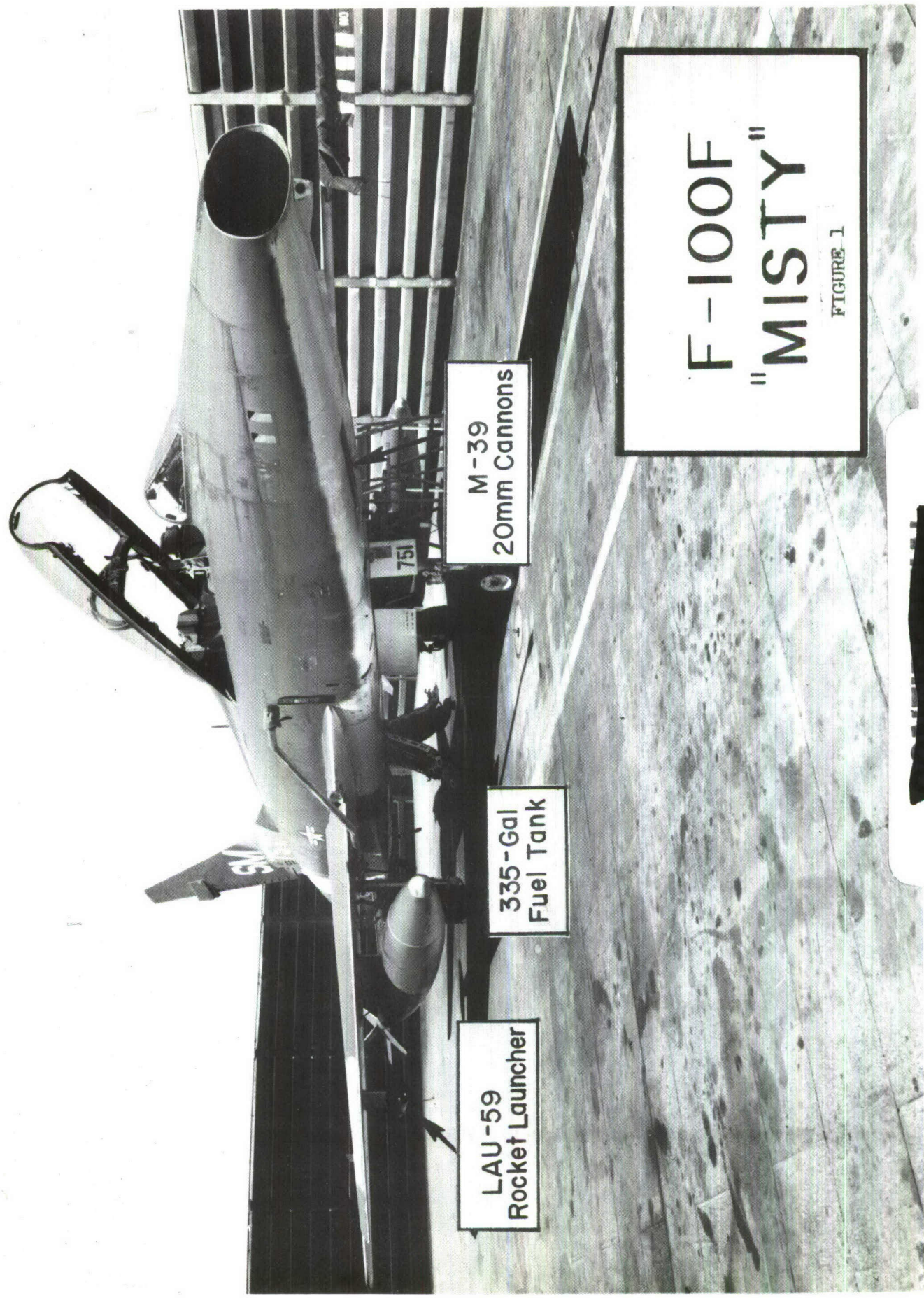
effort called TALLY HO was almost a year old. The TALLY HO area was made up of the Demilitarized Zone and the southern half of RP I. In 1967, the best motorable roads for the NVN movement of supplies were located in the coastal plain which made up the eastern half of RP I. These lines of communications (LOCs) also contained the strongest defenses against airstrikes. As early as August 1966, the ground fire threat to O-1 FAC aircraft had increased to the point these FAC aircraft were prohibited from flying in the eastern half of the TALLY HO area.^{1/}

In May 1967, as the summer bombing campaign gained momentum, 7AF approved a plan to experiment with the use of jet aircraft to perform visual reconnaissance and to control airstrikes in those portions of RP I where the slower FAC aircraft could not operate.^{2/} Only the broadest guidance was provided for the operation. Twin-seater F-100Fs were to operate in RP I/TALLY HO as extensions of the Airborne Battlefield Command and Control Center (ABCCC), which consisted of two C-130s (HILLSBORO and CRICKET). The nickname for the test program was COMMANDO SABRE, and it used the Call Sign Misty.^{3/} Phu Cat Air Base in central South Vietnam was chosen as home base. Since additional F-100Fs could not be procured from the USAF worldwide inventory, seven aircraft were borrowed from in-country resources. Each Supersabre was configured with two LAU--59/A rocket launchers capable of launching fourteen 2.75" white phosphorous marking rockets; two 335-gallon external fuel tanks; and two internally mounted 20-mm M-39 cannons. (Fig. 1.) It was also decided to equip each F-100F with Radar Homing and Warning (RHAW) gear but, since this required removal of the autopilot, the modifications were not made immediately.^{4/}

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LAU-59
Rocket Launcher

335 - Gal
Fuel Tank

M-39
20mm Cannons

F-100F
"MISTY"
FIGURE 1

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A separate Unit Manning Document (UMD) was not developed for the program with the result that the pilots, like the aircraft, had to be obtained from in-country resources and attached TDY to the Misty unit. The period of TDY was set at 120 days or 75 missions, whichever came first. Eight pilots were detached from the three existing F-100 squadrons at Phu Cat, four were transferred from Tuy Hoa and Phan Rang, and four fighter-qualified O-1 FACs were sent from the 504th Tactical Air Support Group (TASG). The Misty unit was designated as a detachment of the 416th Tactical Fighter Squadron (TFS) and received operational and administrative support from the 37th Tactical Fighter Wing (TFW).^{5/}

The guidance provided by 7AF to the program was deliberately broad. "The only direction that had been given," recalled one of the original Misty volunteers, "was to set up a program to employ the F-100F as a Forward Air Controller vehicle in North Vietnam...The 7AF decision to give only the broad outlines of the program and to allow specific details to be worked out at the operations level proved to be extremely farsighted and effective."^{6/}

Between 16 June 1967, when 16 pilots and 7 aircraft assembled at Phu Cat AB, and 28 June 1967, when the first missions were flown, arrangements were completed for training, support personnel and facilities, and a mission profile. The most immediate need was for training, especially in air-to-air refueling. An Instructor Pilot (IP) was qualified and he in turn gave each pilot two refueling check rides. On these missions, the pilots experimented with altitudes, airspeeds, and tactics and brought back information from which they constructed an initial mission profile.

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The Misty FACs were authorized to communicate directly with Bravo Division, Directorate of Combat Operations (DOCB) at 7AF, which did the fragging for the jet FACs. DOCB fragged the FACs only for what the Misty FACs thought they could do and at the pace the jet FACs desired. When the Misty FACs wanted to experiment with different schedules, a call to 7AF was all that was required for a frag change. This arrangement worked well by giving the new group the necessary flexibility to develop its program.^{7/}

The First Summer in RP I

By the eve of the first Misty flight, the experimental group did not yet have a formal Operations Order or concept of operations, but these did appear in the first frag. During the first several flights, the 37th TFW Commander instructed the pilots to remain off the coast of RP I to "feel out the situation" until they knew the area better.^{8/} Gradually a mission profile evolved. At first, two single-ship flights were flown each day. After takeoff from Phu Cat, the F-100F flew into RP I and then immediately to the tanker. After refueling, the FAC returned to a fragged or preplanned area in RP I to perform visual reconnaissance (VR) and to direct strikes until low fuel forced his return to Phu Cat. These early missions lasted approximately two hours and fifty minutes, of which one hour and 10 minutes were spent in the target area.^{9/}

As familiarity with the area increased, the scope of operations expanded. During a mission in mid-July, for example, a Misty pilot performed a second refueling and the length of succeeding missions was increased to about four hours. The number of flights was doubled as two missions of two aircraft each were flown daily. Normally, the first aircraft would arrive in RP I about

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0700 hours and would fly route reconnaissance until the second Misty arrived an hour later. The first aircraft then refueled, taking about thirty minutes to return to the area. The number two FAC then refueled. In this way, each pair of Misty FACs provided four hours of coverage and the area was normally under surveillance from 0700-1100 hours and from 1400-1800 hours each day.^{10/} With minor variations, this mission profile remained the basis for future jet FAC operations.

For the first week, the Misty FACs operated unopposed. The honeymoon ended on 5 July, when Misty 21 directed a flight of F-105s against vehicles at the Quang Khe ferry near the NVN coast. The strike aircraft were met by heavy automatic weapons fire from a village southwest of the target. After that encounter, approximately half of the Misty flights encountered ground fire, 75 percent of which came from weapons of 37-mm or larger.^{11/}

During July 1967, the first full month of operations, Misty FACs flew 82 missions and controlled 126 strikes in RP I/TALLY H0. They were not fragged against preplanned targets but rather performed VR and called in strike aircraft, through ABCCC, when they sighted lucrative targets. The majority of the strikes were made by F-105s and F-4s, with a smattering of attacks by F-100s and A-4s. Nearly all of these strike aircraft had been diverted by ABCCC from the northern route packages. As the FACs came to know the area better, their ability to spot lucrative targets improved. During this first month, they sighted and reported about 150 truck parks, bridges, fords, warehouses, and desirable spots for road interdiction.^{12/}

Through experimentation, the Misty pilots developed tactics which

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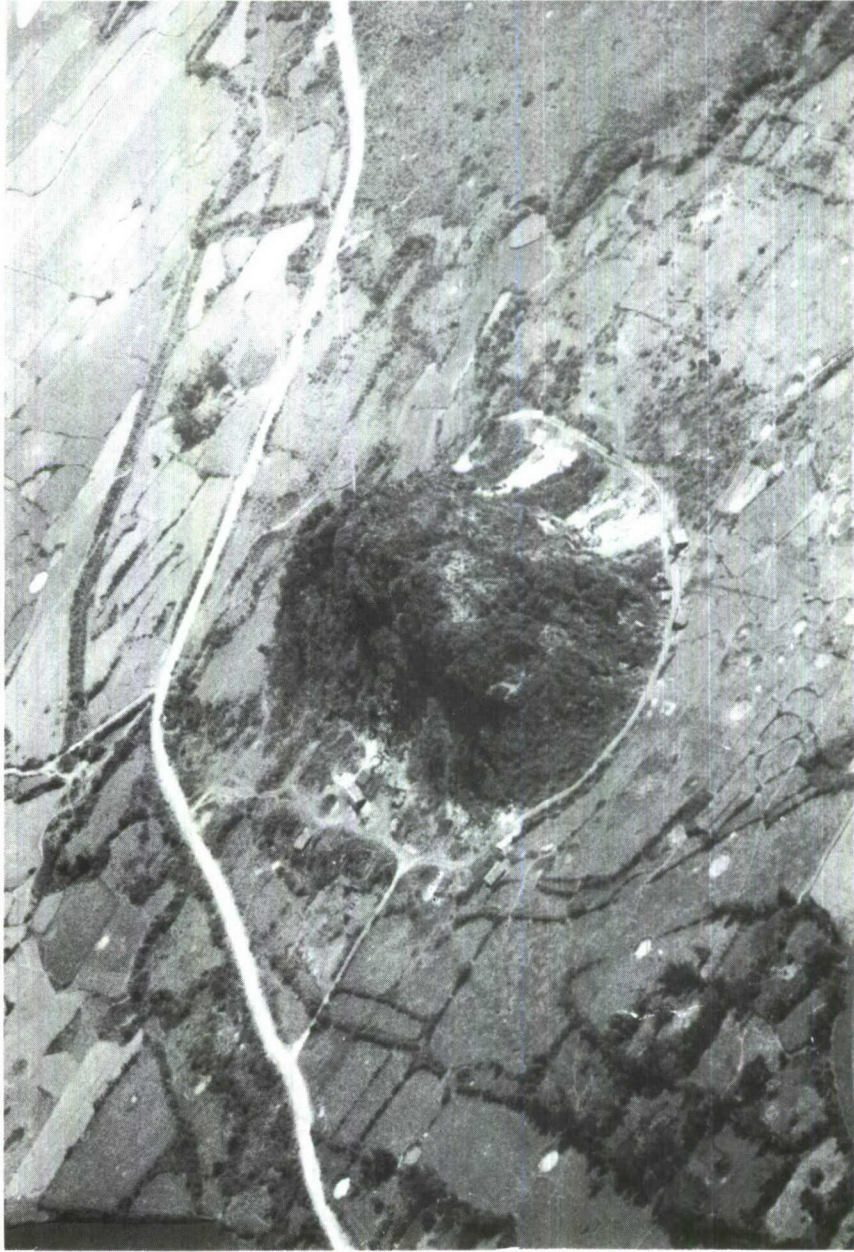
represented a balance between safety and the ability to spot targets and control strikes. While performing VR, the FAC did not spend prolonged periods of time below 4,500 feet nor let his airspeed drop below 400 knots. Maintenance of this airspeed during junking maneuvers required frequent use of maximum power and the afterburner. Since flying under a low ceiling made the aircraft a silhouetted target for ground weapons, the Misty did not make VR runs where the ceiling was below 7,000 feet. In the target area, the pilot kept the aircraft constantly moving in all three planes. During road reconnaissance, the Misty flew an "S" pattern across the road, arcing from side to side.

Misty pilots took turns in the front and rear cockpits. The front seat pilot flew the aircraft while the man in the rear seat recorded VR sightings and took photographs with a hand-held Asahi Pentax 35-mm camera equipped with a 200-mm telephoto lens. (Fig. 2.) If the two pilots agreed that a sighted target looked promising, they relayed the information to ABCCC who in turn directed fighters to the Misty FAC. After orienting the fighters, Misty marked the target with a rocket and cleared the fighters to strike.^{13/}

As with visual reconnaissance, the Misty FACs gradually developed procedures for controlling strikes. They did not control strikes where the ceiling was below 10,000 feet. The Misty varied attack headings and avoided multiple passes in high-threat areas. Jet FACs did not make passes to assess bomb damage immediately after the strikes, but rather worked other areas and returned later for the evaluation. They learned early that 20-mm fire was ineffective against anti-aircraft artillery (AAA) sites and that only a direct bomb hit silenced them. Consequently, use of the aircraft's cannons was reserved for

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ROAD AND KARST IN ROUTE PACKAGE I
FIGURE 2

RESCAP missions. ^{14/}

The Misty pilot's thorough knowledge of his operating area made it natural that he play an important role in search and rescue (SAR) operations. The downed aircraft's wingman acted as on-the-scene commander for SAR operations until he was relieved, if possible, by a jet FAC. After assuming command, Misty contacted CROWN, the Airborne Battlefield Command and Control Center for SAR operations, to get the rescue effort under way. The Misty FAC remained in control of the operation until the AAA was suppressed and, in his judgment, only a small arms threat remained. Then he turned the command over to Sandy or Spad (A-1) aircraft which dealt with the small arms fire and the threat close to the survivor. Only Sandy/Spad had the authority to call in the Jolly Green rescue helicopter. Once the A-1 took over, Misty's job was to assist with information about the location of the downed pilot and enemy positions, to advise on the safest ingress/egress routes, and to direct jet strikes if requested to do so. This SAR function gradually assumed a larger and larger part of the jet FAC's mission. ^{15/}

The jet FACs were involved in their first large-scale joint effort during September and October 1967. Throughout the summer, the NVN in and around the DMZ had gradually stepped up the tempo of their artillery barrage against the U.S. Marine forward positions which dotted the southern rim of the DMZ. Particularly hard hit were Con Thien, Gio Linh, Camp Carroll, and Dong Ha. The U.S. response was Operation NEUTRALIZE--a six-week (12 Sep - 31 Oct) combined air and ground campaign against the NVN artillery. ^{16/} Although poor weather conditions hampered the operation during the first two weeks, the F-100 FACs

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flew 150 missions and controlled more than 350 strikes, mostly in those areas of RP I where the slower moving 0-1 and 0-2 FACs could not operate. Since Operation NEUTRALIZE coordinated USAF and USMC airstrikes with ground artillery, it required closely planned and coordinated targeting. For the first time, the Misty FACs controlled strikes against fragged targets, thereby adding a new dimension to their operations. ^{17/}

It became evident during this first summer that Misty flights were plugging up a hole that had existed in target identification. On armed reconnaissance missions, many strike pilots were failing to identify lucrative targets. It took the Misty pilot, who was himself a highly qualified fighter pilot, a minimum of 20 FAC missions to become a trained crewmember, and he was not considered highly qualified until after 40 missions. Strike pilots, limited as they were by the amount of fuel they carried and by their lack of training in visual reconnaissance, at no point approached the effectiveness of the Misty pilot in visually identifying targets. This was demonstrated during an exchange program in which strike pilots flew orientation flights with Misty pilots over RP I and came to realize that they did not know what small targets, such as camouflaged trucks, looked like. One strike pilot with more than 30 missions in RP I as a flight leader stated after a Misty orientation ride that he saw a gun site and a truck for the first time, even though he had struck both types of targets many times. ^{18/}

This impression was supported by a later study which showed that Bomb Damage Assessment (BDA) occurrences more than doubled when a jet FAC was present

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versus non-involvement of the FAC. By September 1968, sufficient statistics had been compiled to draw a comparison between strike effectiveness with and without jet FACs. The average jet FAC sortie directed 2.03 strike elements, resulting in .97 BDA occurrences per FAC sortie. When FACs were not present, the same 2.03 strike elements produced approximately .41 BDA occurrences. It was believed airstrikes were less than half as effective when conducted without a FAC.^{19/}

At the end of the first summer of jet FAC operations in RP I, the program was evaluated. The absence of RHAW equipment and electronic countermeasure (ECM) pods had limited the success of the Misty FACs in suppressing the SAM/AAA threat. On 13 July, for example, throughout his entire flight, a Misty FAC had received track-while-scan (TWS) warning advisories from other aircraft, indicating the presence of a Fire Can site. Without RHAW gear, however, the Misty was unable to direct strike aircraft against the target.^{20/}

It was suggested that the Misty operation be moved to Da Nang AB.^{21/} Although Phu Cat had the advantage of complete F-100 maintenance facilities and personnel, Da Nang had other advantages. The northern base was closer to RP I and the 45-55 minutes consumed by the round trip from Phu Cat to the target area could be spent over the target if the Misty FACs operated from Da Nang. Also, by staging out of the northern base, the amount of inflight refueling could be reduced. Most importantly, by operating from Da Nang, the intelligence situation would be improved. At Phu Cat, the Misty FACs could not rely too heavily on the 37th TFW intelligence, since it was geared toward in-country data.^{22/} Consequently, the Misty group had to develop its own intelligence shop

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comprised mostly of the FACs themselves.^{23/}

The 366th TFW intelligence unit at Da Nang, on the other hand, dealt with out-country intelligence and could better service the Misty FACs. No secure telephone line connected Phu Cat with 7AF. Daily classified problems had to be resolved by telegram which involved a 24-36 hour delay.^{24/} Finally, it was pointed out, the move to Da Nang would improve communications between the FACs and strike pilots, since both would be stationed at the same base. Since the Misty pilots generated many of their own targets, close coordination on the ground between them and the strike pilots would increase the effectiveness of both the FAC and strike missions.^{25/} Although the Misty FACs remained at Phu Cat until May 1969, the arguments favoring the northern location were instrumental in the creation of a second jet FAC group at Da Nang during 1968.

Overall, the program was judged a success and showed that a high speed fighter could perform well as a controller and VR aircraft. In many ways, the F-100F was the ideal aircraft for the role. Visibility from both seats was excellent and permitted the use of a hand-held 35-mm camera to supplement visual coverage of the target area. It could remain 50 minutes over the target between refuelings and was highly maneuverable at high speeds and low altitudes. Yet, it had some drawbacks. The F-100F was slightly underpowered to perform the tactics necessary to evade AAA and the climb maneuvers required to deliver marking rockets. To maintain a speed of 400K during maneuvers, the pilot frequently had to use the afterburner.^{26/} This, coupled with the high utilization rate of the seven Misty aircraft (79.7 hrs/acft/mo), resulted in a high out-of-commission (NORS) and unscheduled maintenance rate.^{27/} Unless the small

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fleet of Supersabres were augmented, either with more F-100Fs or with another type of jet, the number of jet FAC sorties would have to be decreased.

Seventh Air Force was convinced of the value of the Misty FAC.^{28/} In August 1967, anticipating the coming Northeast Monsoon Season, and the consequent shift in the weight of air operations to the STEEL TIGER area of Laos, another attempt was made to acquire additional F-100Fs. It was estimated that 12 Misty aircraft, flying eight sorties per day, would be needed to provide complete daylight coverage of this larger area and to accommodate the large number of aircraft diverted from the northern Route Packages.^{29/} A proposal for more F-100Fs was sent through PACAF to USAF, who in turn queried the United States Air Forces in Europe (USAFE) and Tactical Air Command (TAC) as to the availability of the aircraft.^{30/} USAFE replied that Supersabres were in short supply and TAC answered that a loss of four F-100Fs from its training program would mean a reduction of 50 students during the coming fiscal year. USAF informed PACAF that it agreed in principle with expansion of the Misty FAC program but that additional aircraft were not available outside PACAF. Two alternatives were proposed: (1) expansion of the program using F-100Fs already assigned to PACAF; or (2) adoption of the A-37 or F-4 as the second generation Misty aircraft.^{31/} As it turned out, PACAF was able at that time to transfer only one F-100F from Tuy Hoa AB,^{32/} bringing the total number of Misties to eight.^{33/}

Seventh Air Force considered neither the A-37 nor the F-4 suitable at that time for the jet FAC role, and preferred the other alternative of trying to obtain more F-100Fs as the best immediate solution.^{34/} The A-37 lacked a

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refueling capability and the necessary speed to survive in RP I and STEEL TIGER, while use of the F-4 would decrease the tactical fighter sorties then available in SEA.^{35/} The decision regarding a second generation jet FAC aircraft was not made until the following spring.

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CHAPTER II

ROUTE PACKAGE I IN 1968

Starting in November 1967 and continuing until April 1968, the end of the Northeast Monsoon Season, the Misty FACs divided their attention between RP I and the northern part of the Laotian panhandle, where the NVN had developed bypasses around the western edge of the DMZ. In the Echo section of STEEL TIGER (Fig. 3), the jet FACs concentrated on the western exits of Mu Gia and Ban Karai passes--major starting points of the Ho Chi Minh Trail. During this six-month period, the Misty FACs flew 565 missions: (296 in RP I and 269 in STEEL TIGER Echo) and controlled 850 strikes (450 in RP I and 400 in Laos).^{1/} The Misty mission profile in STEEL TIGER resembled the one used in RP I, except that, since the target area was closer to the refueling track, mission length increased slightly, to an average of 4.8 hours. The jet FAC took off 40 minutes before his scheduled time over target (TOT) and contacted ABCCC ten minutes before entering the target area. Once there, he performed visual reconnaissance and controlled strikes until he was down to 3,000 pounds of fuel, before departing for the tanker. He returned 15-20 minutes later and repeated the process. After the second refueling, he worked the area until he reached 5,000 pounds of fuel and then departed for home--a 30-40 minute flight.^{2/}

On 1 April 1968, airstrikes against NVN ceased north of the 20th parallel, and two days later the bomb line was moved down one degree of latitude. This resulted in more, not less, activity for the Misty FACs, since U.S. airstrikes against NVN were now concentrated in the condensed area between the DMZ and the 19th parallel.

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During these seven months (3 Apr - 1 Nov), the U.S. pursued an interdiction campaign against enemy infiltration from the north, through RP I and Laos, into South Vietnam. Two important air operations took place in RP I during the summer, both of which involved Misty FACs. Between 1-8 July, the U.S. carried out its 1968 version of Operation NEUTRALIZE, which a year earlier had been the first major air campaign involving jet FACs. The 1968 campaign was called Operation THOR and, like its predecessor, was an all-out effort to subdue the artillery threat to South Vietnam from gun positions in and north of the DMZ. The second major operation began a week later. On 14 July, USAF began a concentrated 30-day interdiction effort against LOCs and transshipment points in RP I. ^{3/} Misty FACs flew in support of both operations and their ability to discover NVN transportation patterns, spot targets, and control strikes against them was part of the reason for the success of both operations.

The effectiveness of the Misty FAC program during this summer must be measured not only in terms of the number of strikes controlled and the amount of BDA reported from these strikes, but also in terms of the service the jet FACs provided in locating targets and analyzing the enemy's logistical habits. Throughout the summer, the jet FACs provided important intelligence for the interdiction program. Route Package I was a relatively small area: 70 miles long and 45 miles across at its widest point. The F-100 could traverse its length in 10 minutes and could perform visual reconnaissance of the entire package in 45 minutes. Through daily observation, the Misty pilots became familiar with the roads, rivers, karsts, forests, and other landmarks. Three major roads entered RP I from the north: in the west, just above the 18th

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MISTY FAC

OPERATING AREAS

1967-1969

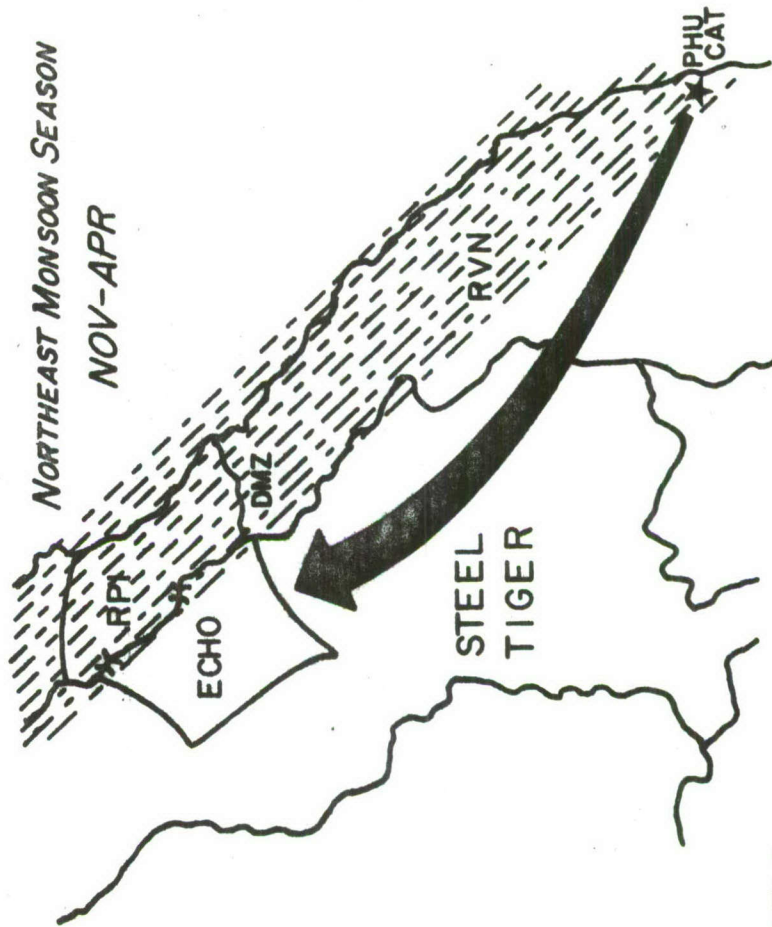
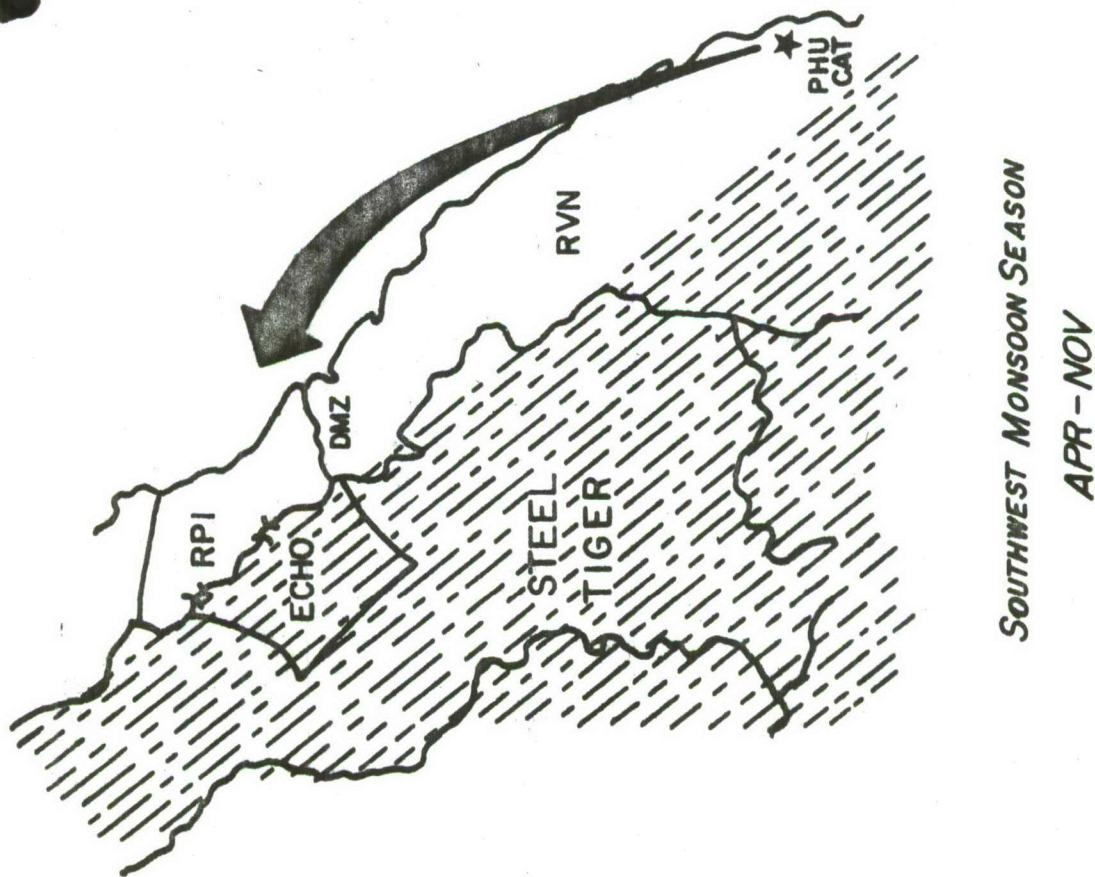


FIGURE 3

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parallel, Route 15 crossed into RP I and wound due south for 25 miles where it pushed thru Mu Gia Pass into Laos; in the center of RP I, Route 82 descended from RP II and immediately turned eastward to join a myriad of other LOCs running southward through the coastal plain; and farther to the east, Route 1A ran the length of RP I, hugging the coastline.

The coastal Route 1A went virtually unused during the summer of 1968. Although there was some important traffic along the central Route 82, the majority of NVN trucks traveled the western Route 15. This was a change from the preceding summer, when the enemy relied heavily on the roads in the eastern coastal plain. About 14 miles below the point where Route 15 entered the Route Package, it was met by Route 101 which branched off in a southeasterly direction and ran parallel to the NVN/Laotian Border. Thirty-five miles from this intersection, Route 101 met Route 137, which then ran southward across the Ban Karai Pass into Laos. Along these three western routes (15, 101, and 137) and their tributaries the Misty FACs kept daily tabs on truck and railroad traffic, staging areas, truck parks, POL storage areas, and road conditions. Interdiction areas were selected at points which would be difficult for the NVN to bypass, such as at major ferry crossings near Dong Hoi and Quang Khe, and near Mu Gia and Ban Karai Passes, where the narrow roads curved through steep hills.^{4/} Although these LOCs were hit daily by Misty-controlled strikes, they were usually repaired by the next morning and showed signs of having accommodated night traffic. By early July, daytime truck traffic had virtually stopped. USAF response was the 30-day interdiction campaign, which included the first experiment with night jet FAC missions.

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Night FAC Experiment

A month earlier, during June, an F-100F had performed night operational tests in South Vietnam using the Starlight Scope (AN-PVS-3), a telescopic device which intensified existing moon or flare light and permitted the viewer to see objects otherwise invisible at night to the naked eye. On 13 June, the scope was tested at dusk and under moonless conditions, and on the next night, it was tested with a full moon. The experiment was carried out at varying altitudes and airspeeds, using different combinations of internal and external aircraft lighting, and around flares dropped by an AC-47 gunship. The scope was rated as excellent when there was light from the moon or from flares, and when the object to be seen was between the viewer and the source of light. It was also found to be useful at dusk. In the absence of a light-source, however, the scope was of no value. It was recommended that Misty FAC operations be extended into the hours of darkness and that further tests of the scope be made in RP I.^{5/}

Nighttime Misty flights began on 8 July, and for five weeks the F-100Fs provided round-the-clock surveillance of RP I/TALLY HO.^{6/} Two of the six daily Misty flights were scheduled for night sorties. The Misty FAC's primary mission at night was to deter movement by their presence over the LOCs and to gather intelligence about the origins of night and early morning traffic. The jet FACs also had a limited capability to control strikes, either in conjunction with flareships or by using their own flares.^{7/}

The Misty FACs gradually discovered a pattern in the NVN night ground operations. The NVN massed their trucks in parks in RP II until after dark and

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until the roads which had been cut during the day were repaired. For about five nights, all traffic moved southward out of these parks to staging areas in RP I. Each evening at about 1930 hours they began to move in convoys, traveling at a speed of 10-15 MPH. The majority of the traffic moved down Routes 15 and 101 to Delta 74, a major staging area near the intersection of Routes 101 and 137. The trip took about nine hours. Near Delta 74 was a large, well-camouflaged truck park which could accommodate up to 200 trucks dispersed under thick foliage. The trucks remained concealed at Delta 74 until the following night, when the southward trip was resumed, either along Route 137 into Laos, or along Route 101 toward the DMZ. The return trip northward of empty trucks to RP II took between 10 and 15 nights and was carried out with smaller convoys or individual trucks, since the destinations were more dispersed than on the southward journey. A major bottleneck was discovered along this route where 101 crossed the Song Troc River, 21 miles northwest of Dong Hoi and just short of Delta 74. During the daytime, the Misty FACs could find no river crossing although the road ran down to the bank on each side of the river. Through night reconnaissance, it was discovered that each evening at about 2230 hours, the NVN floated a large pontoon bridge from a cave located 2,000 meters away and placed it across the river.^{8/}

The enemy moved at night only during periods of poor weather conditions and no moon. Since the Misty FACs lacked all-weather capability and could use the Starlight Scope only on moonlit nights, they made their heaviest attacks on these interdiction points just before dusk, hopeful that poor road conditions would slow enemy movement at night. The NVN reaction to early evening

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interdiction strikes was surprising. The enemy harnessed a massive amount of manpower and equipment and repaired the LOCs quickly. It was also discovered that the North Vietnamese (NVN) did not attempt to repair a damaged road, unless they planned major vehicular movement along it. By conserving their forces and concentrating on essential LOCs, they were able to keep ahead of the air interdiction.

During the five-night period of 19-23 July, more than 300 fully laden trucks were observed moving down Routes 15, 101, and 137.^{9/} It was estimated that a total of 600 tons of supplies passed over the roads in these five nights. Night visual road reconnaissance proved difficult. On dark nights, trucks used a soft blue headlight which could not be seen above 5,000 feet. When flares were dropped near a moving truck, the driver picked up speed and moved out of the illuminated area before he could be struck.^{10/}

After the loss of two Misty aircraft on two consecutive days (16-17 Aug), night flights were discontinued. A review of the program pointed out that although night observations had been valuable, they could have been made by any fighter pilot and did not require the particular expertise of the trained jet FAC.^{11/} The F-100F was hampered by its limited navigational capability and its need to rely on tactical air navigation (TACAN) fixes and visual means to locate targets and rendezvous with strike aircraft. The threat of mid-air collision in the darkness over RP I was a real one.^{12/} Also, the Misty aircraft had a limited flare capability in that it could carry only two SUU-25 flare pods of eight flares each. The Starlight Scope did not prove as effective as had been hoped. It was too long and unwieldy, too heavy, had too small a field

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of vision, and was unproductive on moonless nights.^{13/} It was concluded that Misty FACs were not as effective at night as during the day, and that the increase in pilot fatigue, which resulted from night flights, cut into the daytime effort.^{14/} After 17 August 1968, the six daily Misty sorties were flown only between dawn and dusk and the mission length was reduced to a maximum of four hours.^{15/}

Risk Factor for Misty FACs

Partly as a result of these two successive losses, the question of exposure time in hostile areas was reopened. A year earlier, when the Misty program was still in its infancy, 7AF had been approached on the question of multiple counters for Misty pilots. It was suggested at that time, since the Misty FAC was exposed to hostile fire for a longer period of time (2-2 1/2 hrs per sortie) than was the strike pilot (10-45 minutes per sortie), he should receive credit for one out-country mission (OCM) each time he returned to the operating area from the tanker. In its reply, 7AF reiterated the existing PACAF policy that "a mission is one completed sortie. The maximum number of missions which may be counted on a single sortie is one." Seventh Air Force conceded that a reduced tour length might be appropriate under the circumstances, but that this could be justified only on the basis of survivability figures. Since there had been no losses at the time (early August 1967), there was no way to arrive at a finite risk equation.^{16/}

When the question was reopened in the summer of 1968, however, loss figures were available for use in developing a risk equation. Between the start of the Misty program in July 1967 and 1 March 1968, the Misty FACs had flown 498

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missions in RP I and lost 4 aircraft, for an aircraft loss rate of 8 per 1,000 sorties. During roughly the same period in all air activity in RP I, a total of 101 crewmembers were downed, 62 of whom were not recovered, for a crewmember loss rate of .614. The crewmember risk factor, which is the product of the probability of the plane being downed (.008) and the probability of the crewmember not being recovered if downed (.614), was .0049 for the Misty pilot operating in RP I.

The crewmember risk factor for a strike pilot flying missions in RP I was considerably lower. The attack aircraft loss rate during the same period was 1.4 aircraft per 1,000 sorties. Using the crewmember loss rate of .614, the risk factor for strike crewmembers in RP I was .00085. In short, the chance of a Misty pilot being lost in a mission over RP I was approximately six times greater than that of a strike pilot in the same area. Based on these figures the argument for multiple counters for Misty pilots was a strong one.

When the Misty risk factor was compared to that of the strike pilot operating in RP VI, however, a different picture emerged. The aircraft loss rate there during the same 12-month period was 7.2 per 1,000 sorties. Of 131 crewmembers downed, 30 were recovered, resulting in a crewmember loss rate of .77. The risk factor for a crewmember flying a strike mission in RP VI was .0055, not appreciably different from that of the Misty flying in RP I. Summarizing, the Misty FAC pilot had a probability of survival essentially equal to that of a pilot flying a strike mission in Route Package VI: ^{17/}

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PROBABILITY OF SURVIVAL

Nr. of Missions	Misty FAC in RP I	Strike Pilot in RP VI	Strike Pilot in RP I
20	.90	.89	.98
40	.83	.81	.96
60	.74	.72	.94
80	.67	.64	.92
100	.61	.51	.90

Multiple counters were not authorized.

On 1 November 1968, the bombing of North Vietnam stopped and the Misty FACs moved their operation to STEEL TIGER. During their 16 months in RP I, the Misty FACs had flown 1,441 sorties, lost 9 aircraft, and controlled 3,988 strikes, which constituted 7.1 percent of all USAF strikes (56,112) flown in the Route Package.

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CHAPTER III

SPREAD OF THE PROGRAM 1968 - 1969

Even before the 1968 summer campaign in RP I, steps were taken to choose a follow-on aircraft for the Misty program. The F-100Fs were scheduled to be phased out of the inventory during the calendar year 1970, and the success of the jet FACs dictated continuation of the program.^{1/} The A-37 had been rejected earlier as too slow to perform the FAC role. In March 1968, 7AF ordered the F-4 to be tested as a possible second generation Misty aircraft.^{2/} Between 13-20 March, ten F-4D FAC missions were flown over RP I and STEEL TIGER by the 12th Tactical Fighter Wing (TFW) located at Cam Ranh Bay. From the rear seat on each mission, a Misty pilot from Phu Cat provided instructions on procedures and evaluated the F-4 as a FAC aircraft.^{3/}

The tests showed that although the F-4 would be suitable as a FAC aircraft, it was not clearly superior to the F-100F. The overall observation of the Misty pilot was that the F-100F had proved to be a better aircraft in several areas for the Misty mission and should be retained in the program as long as it remained available.^{4/} The F-4 had certain limitations. Visibility from the rear seat, an essential for the Misty role, was restricted by the engine intake. This was partially compensated for by keeping the aircraft in a 60-degree bank. Only the front seat pilot had forward visibility. Further, due to the high fuel flow at VR working altitudes, the F-4D could spend less time (30-40 minutes) in the target area than the F-100F. This limitation was partially overcome by an increase in tanker support. Finally, the turn radius of the F-4 was somewhat greater than that of the F-100. If the F-4 attempted to stay close in to the

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target, the fuel consumption increased and VR time was reduced. However, the greater speed of the F-4 compensated for its inferior maneuverability. It could attain and maintain the 400-450 KIAS required for survivability without using the afterburner. Also in the F-4's favor was the fact that all models were equipped with RHAW gear, whereas the F-100Fs were still in the process of being equipped with it. In other areas, both aircraft were about equal: each carried a crew of two and each was capable of carrying marking rockets and 20-mm guns.^{5/} As with the F-100Fs, the F-4s to be used as FACs would have to come from those already assigned to SEA units.^{6/}

One other possibility was considered before the final decision was made. In June, the Commander, 7AF, asked the Director of Operations to consider using the F-105F Wild Weasel as a FAC aircraft during the upcoming Operation THOR in RP I. He was advised that the F-105 had the same limitations as the F-4: poor rear cockpit visibility, marginal maneuverability at low altitudes, a large turn radius, and a high fuel consumption rate. In addition, the F-105F was a valuable and limited resource in SEA and its use in the FAC role did not justify the increased exposure to AW and AAA fire which were inherent in the FAC mission. After receiving this evaluation, the Commander penned the terse reply: "Use a couple of F-4s from the 366th (Da Nang) to start a program."^{7/}

A joint training program between the 366th TFW and the Misty FACs began on 12 August 1968. Two F-4 aircraft commanders from Da Nang flew five rear-seat F-100F flights from Phu Cat and then completed three front-seat F-4 rides from Da Nang with a Misty FAC instructor in the rear.^{8/} Training was completed on 26 August, and the first F-4 FACs flew in RP I on 2 September, using the

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Call Sign Stormy. Until the bombing halt on 1 November, the Stormy FACs were fraged for two missions each day into NVN. It was decided to continue using the F-100Fs until the loss rate became prohibitive or the aircraft were dropped from the inventory.^{9/}

A 366th TFW OPlan (10-68) published in September 1968, outlined Stormy FAC procedures for VR, search and rescue, strike control, BDA, direction of naval gunfire, training, crew coordination, operating minimums, and intelligence. As with the Misty operation, a special detachment of the 366th TFW was organized to control the Stormy operation. Pilots were assigned TDY to this FAC section for 90 days or 50 missions. The F-4D was configured with two 370-gallon out-board fuel tanks, one SUU-23 gun pod for the six-barrel 20-mm cannon on the center line, a LAU-59 rocket launcher on each of the two inboard stations, one mounted KB-18 camera, and one Wing Root gun camera. In addition, the pilots carried a 35-mm Pentax hand-held camera.

Stormy tactics differed little from those developed by the Misty FACs. Road reconnaissance was performed between 4,000 and 5,000 feet while maintaining a minimum of 400 knots. The stormy role in search and rescue was identical to that of the Misty. The jet FAC acted as interim on-the-scene commander in contact with CROWN until the arrival of the Sandy/Spad aircraft. After the arrival of the A-1, Stormy directed all strikes on guns and defenses which threatened the Sandy/Spad or Jolly Green helicopter.

An additional function of the Stormy FACs was the calibration and direction of gunfire from USN vessels stationed offshore of RP I. The OPlan

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contained a description of the capabilities and limitations of the naval cruisers and destroyers likely to be involved, the size and rate of fire of their guns, types of ammunition, naval terminology used in a call for fire, and methods for adjusting the strike of the rounds. ^{10/}

A training program was set up at Da Nang to qualify aircrews as Stormy Forward Air Controllers. Only F-4 pilots with at least 20 missions in RP I/TALLY HO and with a minimum of 90 days retainability in the theatre were eligible for the Stormy program. The upgrading course consisted of briefings and seven training missions. The briefings and missions emphasized mission planning and visual reconnaissance.

The 366th TFW Intelligence Division (DCOI) supported the Stormy effort with pre-flight intelligence and post-flight dissemination of the important sightings made by the FACs on each mission. The key to the success of the visual reconnaissance effort of the jet FACs was to get the information gathered by the FACs into the hands of the users as rapidly as possible. Collocation of the F-4 Stormy FACs with F-4 strike squadrons at Da Nang served this purpose well. In addition, a Daily Intelligence Summary (DISUM) was prepared and distributed to all interested agencies. (APP II.) The DISUM contained detailed information on the strikes controlled by each jet FAC each day, BDA, visual sightings, SAR activity, and any other information which could be of use to the interdiction effort in RP I. Misty and Stormy DISUMs were interchanged and used in the pre-flight intelligence briefings.

The Stormy FACs' experience in RP I was brief. After the 1 November 1968 bombing halt, all jet FAC activity moved to the Laotian side of the NVN passes

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and concentrated on interdiction of the Ho Chi Minh Trail in STEEL TIGER. The STEEL TIGER environment was new to the Stormy FACs, but not to the Misty FACs who had operated there throughout the 1967-1968 Northeast Monsoon Season. Since they were located at Phu Cat, the Misty FACs were assigned responsibility for dawn-to-dusk visual coverage of the southern portion of the Trail from the Cambodian Border north to the area around Tchepone. Between November 1968 and June 1969, Misty Facs flew 1,530 sorties (APP. I) in STEEL TIGER and controlled 2,231 strikes, which represented 4 percent of all strikes made in the area during the period.

Wolf FACs

The Stormy FAC program showed that collocation of FAC and strike aircraft improved the results of strike missions and increased the quantity of real time intelligence for target location. Stormy FACs briefed strike crews and passed on their observations directly thereby covering many items that could not be learned from the DISUMs. Other F-4 Wings did not lose sight of these lessons learned. In October 1968, the Commander of the 8th TFW at Ubon RTAFB, Thailand, proposed that a number of his aircrews be trained as jet FACs. The mission of one of his squadrons was to deliver sensors in the COMMANDO HUNT area of central STEEL TIGER, but this rarely required the 18 daily sorties which were were allotted. Use of the 8th Tactical Fighter Wing's F-4s would benefit both the COMMANDO HUNT operation and the 8th TFW. The program was approved and in November, the Wolf FACs joined the Stormy FACs in COMMANDO HUNT. Throughout the campaign (15 Nov-15 Apr), Ubon and Da Nang each furnished 3 jet FAC sorties per day. ^{11/}

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Tiger FACs

Early in 1969, the jet FAC program spread to northern Laos (BARREL ROLL). Although the conflict there between the Royal Laotian Government (RLG) and Pathet Lao/NVA forces had been going on since 1962, the rate of infiltration from North Vietnam had increased after the bombing halt of 1 November 1968. By the summer of 1969, the Pathet Lao were pushing westward from the Plaine des Jarres toward the political capital of Vientiane and the royal capital of Luang Prabang. In addition, in the northwest, the Chinese were constructing a highway southward toward Pak Beng aimed at linking China with the Mekong River. U.S. assistance to the RLG took the form of air support, including strike missions flown from bases in Thailand.

In January 1969, the 388th Tactical Fighter Wing at Korat RTAFB, Thailand, requested permission to use several of their F-4Es as FACs in northern Laos: ^{12/}

"There are advantages in having FACs at the same base as the strike pilots. They may brief and debrief together and exchange intelligence information for their mutual benefit. The marriage of FAC and strike pilots also builds a higher esprit de corps in the individual Wings."

During March, four F-4 crews from Korat were checked out by the Wolf FACs at Ubon and in the next month, the fourth jet FAC program was underway, using the Call Sign Tiger. ^{13/} A Wing OPlan, 301-69, ^{14/} provided the same guidance for the Tiger FACs as was in effect for their three predecessors.

On 1 March, Lima Site 36 (northeast of the Plaine des Jarres) fell to the communists, and along with it, the only TACAN channel which had provided navigational assistance to USAF aircraft in northeastern BARREL ROLL. The

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F-4E Tiger FACs filled this gap during daylight hours. By using his inertial navigation system, pilotage, and reference to predominant landmarks, the Tiger FAC carried out reconnaissance and strike control in the area even in marginal weather conditions.

During their first month of operation (March 1969), Tiger FACs showed the value of the FAC/strike aircraft team concept in Operation RAIN DANCE--the first step in a campaign by the RLG forces under General Vang Pao to turn the tide by capturing the Plain des Jarres. The plan involved USAF/RLAF airstrikes in and around the Plaine and interdiction of Routes 7 and 6, the main logistic avenues entering the Plaine from the east. Between 17 March and 7 April, two Tiger FAC sorties were flown each day into this area. They performed visual reconnaissance and controlled F-4 and F-105 strikes in the Plaine and in the Sam Neua area on Route 6. Whenever possible, they controlled F-4s and F-105s from their own Wing, the 388th.^{15/} The increase in BDA which resulted from these missions suggested that the team concept was working. During the operation,^{16/} the Commander of the 388th Tactical Fighter Wing noted:

"It is becoming increasingly clear that FAC area familiarity, same type of aircraft /strike and FAC/, and face-to-face briefings /between strike and FAC pilots/ provide the highest probability of mission success."

The success of the Tiger FACs on these daylight missions led to a recommendation that they be used at night. At a joint BARREL ROLL working group at Udorn RTAFB, Thailand, on 15 April 1969, concern was expressed over the virtual nighttime immunity experienced by the Chinese along Route 19 in northern BARREL ROLL. During the past six months, round-the-clock logistic

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traffic on this road from Dien Bien Phu into central Laos had gone unopposed.^{17/}
 The suggestion that Tiger FACs be used along this route at night^{18/} was reject-
 ed by the 388th TFW on the grounds that the F-4E lacked Low-Light-Level Tele-
 vision (LLTV) and Infrared (IR) equipment. It was recommended instead that
 the F-4E strike aircraft operate at night under the control of slow-moving
 FACs.^{19/} The Tiger FAC, like the Misty a year earlier, did not develop a
 night FAC capability.

HUNTER-KILLER Operations

The collocation of FAC and strike aircraft of the same type led to yet
 another development in the jet FAC team concept--the HUNTER-KILLER operation.
 On these missions, the jet FAC, combining his knowledge of the terrain with
 his superior navigational equipment, led strike flights directly to the targets.
 Using this concept, the Tiger FAC opened areas for strikes which formerly were
 inaccessible during marginal weather conditions. When the FAC/strike team
 reached the target, the strike lead had the option of either taking over
 command of the strike or of dropping his ordnance under the Tiger FACs guidance.
 FAC-led strike aircraft developed the technique of rolling in on the target as
 soon as the FAC's marking rocket burst, thereby providing an element of surprise
 which had often been missing in earlier FAC operations.^{20/}

The HUNTER-KILLER concept spread to other jet FACs. In April, the Misty
 FACs tested it in STEEL TIGER using F-100 strike aircraft from Phu Cat.^{21/}
 Between 19-29 April, Misty FACs led a total of 15-two-ship flights against
 targets in the Laotian panhandle. The mission was described by one of the
 participants:^{22/}

"The COMMANDO SABRE aircraft [Misty FAC] rendezvoused with the strike flight just prior to dusk and conducted visual reconnaissance in the normal manner while the strike flight followed two to three miles in trail and 5,000 to 7,000 feet above Misty. The Misty pilot kept up a running commentary on his position relative to prominent landmarks, and might fly with his lights on or occasionally light the afterburner so that the strike flight could maintain visual contact with him. This enabled the strike flight to continually be in position to roll in on a fleeting target. If a truck were sighted, the Misty would begin to describe its location while pulling up to mark it with a white phosphorous rocket. If darkness was a factor, the Misty would drop two flares upon sighting the truck, then pull up to reflare or mark as necessary. If no trucks were sighted, enough gunsites were usually activated to provide a lucrative target. If no lucrative targets were found, the flight expended on a fraged alternative target."

Falcon/Laredo FACs

A variation of the jet FAC team concept--the FAC/VR team--was developed by the 432d TRW at Udorn RTAFB, Thailand. In April 1969, the Falcon FAC unit was organized by the 432d Tactical Reconnaissance Wing, whose Commander noted: ^{23/}

"Experience has proved that the Wolf FAC program has increased the effectiveness of the 8th TFW. Our FAC program will be structured along the same concept with the bonus advantage of available precise photo interpretation facilities."

Several F-4 crews were checked out by Stormy FACs at Da Nang ^{24/} and Misty FACs at Phu Cat, ^{25/} and on 8 April, the first Falcon FAC missions were flown in STEEL TIGER. The Falcons were the only jet FACs attached to a reconnaissance, rather than a fighter wing. By being collocated with two RF-4 reconnaissance squadrons, the Falcon F-4D FACs had the advantage of near real time intelligence from the rapidly developed photos that came in from each mission.

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The FAC/Recon team concept involved close coordination in mission planning and flying between the Falcons and the photo reconnaissance RF-4s (Call Sign Atlanta).

The Atlanta/Falcon mission briefing was conducted by the FAC aircraft commander. The Falcon FAC and the Atlanta Recon aircraft took off at approximately the same time. Falcon went to the tanker while Atlanta flew directly to the target area for a weather check. When Falcon reached the target area, he was briefed by Atlanta on weather conditions and on a recommended course of action after refueling. Falcon decided the sequence of target strikes and Atlanta took pre-strike photos of the first target. While Falcon was directing strikes against the first target, Atlanta photographed the next target and then returned to monitor the strike in progress. When the first strike was completed, Atlanta took post-strike photos while Falcon moved on to direct the strikes against the next target. This pattern was repeated throughout the series of targets. In active, high-threat areas, Falcon and Atlanta worked more closely. On VR missions, the Falcon FAC decided which aircraft would do the VR and which would escort. When photo reconnaissance was required, the Falcon FAC served as escort. ^{26/}

The presence of the photo aircraft at his side relieved the Falcon FAC of many of his VR duties and allowed him more time to control strikes. This was reflected in the increased BDA reported from these Atlanta/Falcon missions. During a period in June 1969, for example, the BDA for these missions in STEEL TIGER surpassed those reported for the Wolf FACs which operated in the same

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general area but without RF-4 support. Eight Falcon FAC sorties controlled 54 strikes (6.75 strikes per sortie), while 40 Wolf FAC sorties, relying solely on VR, controlled 67 strikes (1.68 strikes per sortie). The Falcon FACs averaged 1.07 BDA events per strike, while the Wolf FACs averaged .75 events per strike.^{27/} Falcon FACs were able to control such a large number of strikes on each mission, because the pre-flight photo intelligence and the inflight presence of the RF-4 cut down their requirement to perform VR. The large number of BDA events per strike was attributable to the greater accuracy achieved by a combination of photo and visual reconnaissance over VR alone.

In mid-July 1969, the Royal Laotian Government's counteroffensive against the Pathet Lao thrust in BARREL ROLL gained momentum. The RLG campaign, called ABOUT FACE, started as a limited interdiction effort against a portion of Route 7 that ran into the Plaine des Jarres from the east.^{28/} Strongly supported by USAF airstrikes, the operation achieved unexpected success and its objectives gradually broadened. More airstrikes were shifted from STEEL TIGER to BARREL ROLL, including the Falcon FAC sorties.^{29/} For the BARREL ROLL operation, the Falcon Call Sign was changed to Laredo and the Atlanta to Bullwhip. At the same time, the daily scheduled RF-4 Bullwhip sorties increased from two to six,^{30/} as they teamed up with Tiger FACs in BARREL ROLL and Wolf FACs in STEEL TIGER.

During ABOUT FACE, the Laredo FACs experimented with a variation of the earlier HUNTER-KILLER operation--the SNARE DRUM mission. Unlike the war in STEEL TIGER, the conflict in northern Laos was a ground war between opposing armies. For the first time, jet FACs controlled strikes against large troop concentrations. Political sensitivity prevented the use of ARC LIGHT B-52

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raids. SNARE DRUM, or mini-ARC LIGHT strikes were substituted. On these missions, a Laredo FAC led a force of sixteen (or more) F-4s to the target and directed them against it.^{31/} After one 20-ship SNARE DRUM mission, the Air Attache at Vientiane reported:^{32/}

"The pre-strike estimate was that there were over 1,000 troops in the target box... [friendly] patrols stated that casualties were heavy. The success of the strike was also indicated by the ease with which guerrillas reached the enemy headquarters cave complex (after the strike), meeting little resistance.... Both Vang Pao and the unit at Long Lieng are extremely pleased with the results of this strike."

During the first three months of ABOUT FACE (Jul-Sep), Udorn jet FACs flew 125 missions in BARREL ROLL (in addition to 57 in STEEL TIGER), and directed 464 strikes which struck 486 targets and produced 587 BDA events.^{33/}

Night Owl FACs

In mid-October 1969, as weather conditions in Laos began to clear, NVN truck traffic resumed along the Ho Chi Minh Trail in STEEL TIGER and the weight of out-country airpower was again directed toward interdiction of these LOCs. Pressure points were selected around the western exits of the major NVN/Laos entry points to the Trail - Mu Gia and Ban Karai Passes. As a result of experience gained in the preceding year's COMMANDO HUNT I campaign, a greater nighttime effort was scheduled. For this purpose, a Night Owl FAC unit was organized at Ubon RTAFB (497th TFS) to provide all-night F-4 FAC surveillance and to control strikes around these pressure points. From sunset to sunrise, Night Owl FACs illuminated the choke points with flares, marked targets, and controlled strikes under the flares.^{34/} For these missions, the F-4 was

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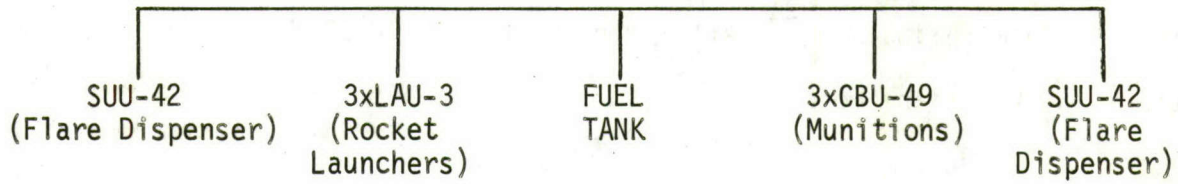
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as follows: ^{35/}



The first Night Owl FAC missions were flown on 18 October 1969. Each FAC spent three periods of 30 minutes over the target, punctuated by refueling. Flares were dropped at random intervals of between 6-9 minutes and, although the illumination from each flare lasted only 3 minutes, the period of darkness between flares was not long enough to allow the enemy to begin repairing the roads or moving his trucks. ^{36/}

During the first month (18 Oct - 17 Nov), Night Owl FACs flew approximately 245 sorties and controlled 464 strikes south of the two passes. Pilot unfamiliarity with the area changed as the FACs gained more experience. ^{37/} Substitution of a different dispenser gradually overcame initial problems with the flare dispenser, ^{38/} and the Starlight Scope was tried again with some success. ^{39/} By the end of November, however, it was still too early to evaluate the night FAC program.

Overview - Late Summer 1969

Early in 1969, the Marines at Da Nang had started their own jet FAC program to control strikes by Marine aircraft in northern STEEL TIGER. These FACs used TA-4Fs and flew under the Call Sign Playboy. Through discussions with USAF Stormy and Misty FACs, ideas were exchanged and the Marine jet FAC operation closely resembled the USAF program. ^{40/} On 25 May, Phu Cat AB completed

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JET FACs IN LAOS

Summer 1969

BARREL
ROLL

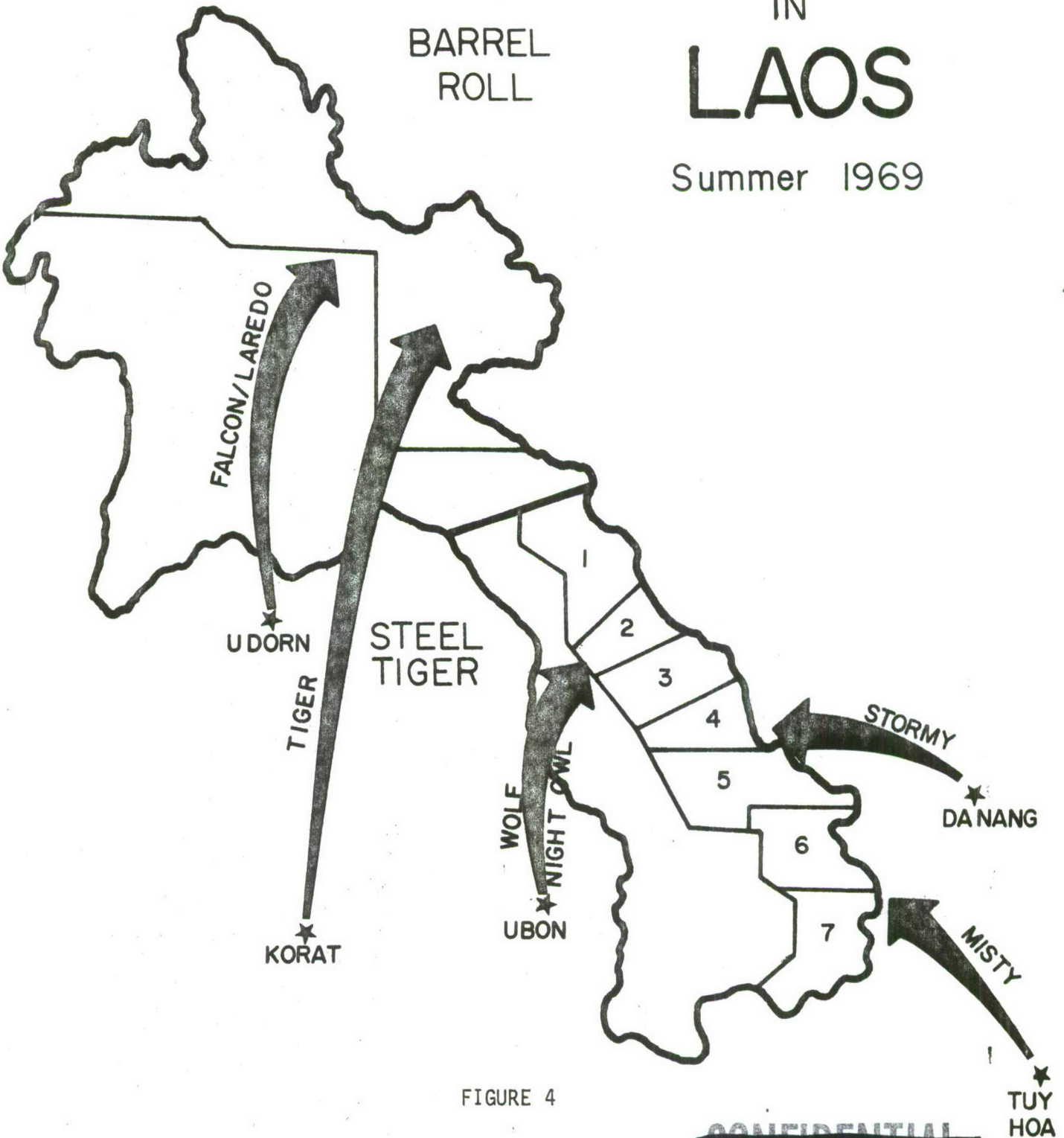


FIGURE 4

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the conversion to F-4s and the Misty F-100Fs moved southward to Tuy Hoa AB.^{41/} By late summer, both areas of Laos (STEEL TIGER and BARREL ROLL) were within reach of jet FACs. To avoid congestion, each jet FAC was assigned a specific operating area. (Fig. 4.) The Misty F-100Fs flew five (often seven) daytime sorties in Sectors 6 and 7 of southern STEEL TIGER. Each day, four F-4 Stormy FACs operated in Sectors 4 and 5 of STEEL TIGER, while Wolf and Night Owl FACs from Ubon averaged 12 daily missions in the northern sectors (1, 2, and 3). In BARREL ROLL, Tiger FACs from Korat flew a daily mission in the Plaine des Jarres and Falcon and Laredo jet FACs from Udorn averaged four daily missions in the same general area. Each day, a total of approximately 91 FAC missions (including slow moving FACs) were frugged into Laos, 30 percent of which were flown by jet FACs in the higher-threat areas.^{42/} Jet FACs were being trained in increasing numbers to supplement the slower moving Forward Air Controllers.

The jet FAC program, which had begun two years earlier with a Misty FAC hovering off the coast of Route Package I "to feel the situation out," had by late 1969 spread to all of Laos and shown that the jet aircraft could perform well in areas where reciprocating aircraft found it difficult to operate.

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FOOTNOTES

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67;
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- 17. (S) Working Paper 68-16, 7AF, DOA, subj: Risk Comparison: Misty FAC versus Route Package VI, 1 Aug 68.

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- 22. (S) Hist Rprt, 37th TFW, Misty, Apr-Jun 69.
- 23. (C) Msg, 432d TRW to 7AF, subj: Request for Approval of F-4 FAC Program for 432d TRW, 260643Z Apr 69.

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- 24. (S) Msg, 7AF to 432d TRW, subj: Request for Approval of F-4 FAC Program for 432d TRW, 190501Z Mar 69.
- (C) Msg, 432d TRW to 7AF, subj: Request Approval of F-4 FAC Program for 432d TRW, 030624Z Apr 69.
- 25. (S) Msg, 240333Z Apr 69.
- 26. (S/NF) Draft, 432d TRW Visual Reconnaissance Program.
- 27. (S) Msg, 432d TRW to 7AF, subj: Atlanta/Falcon FAC Concept and Schedule, 270704Z Jun 69.
- 28. (S) Draft, CHECO Rprt, Hq PACAF, DOTEK, "Air Support of COIN in Laos, Jul 68-Nov 69."
- 29. (S/NF) Msg, 432d TRW to 7AF, 080330Z Jul 69.
- 30. (S/NF) Qtrly Hist Rprt, 432d, TAC/VR, 1st Qtr, FY 1970 (U).
- 31. (S) Msg, 432d TRW to 7AF to 7AF, subj: Atlanta/Falcon FAC Concept and Schedule, 270704Z Jun 69.
- 32. (S/NF) Rprt, CAS, subj: AIRA Attack, 25 Sep 69. (Hereafter cited: Rprt, AIRA Attack.)
- 33. (C) Rprt, 432d TRW, Monthly VR Mission Summary, Jul-Sep 69.
- 34. (S) Ltr, DCO to 7AF, subj: Operation PRESSURE POINTS, 24 Oct 69.
- 35. (U) Talking Paper, NITE OWL Operations, 26 Oct 69.
- 36. (S/NF) Rprt, AIRA Attack, Atch 6.
- 37. (S) Memo, DOCF, subj: NITE OWL Operations, 23 Nov 69.
- 38. (C) Ltr, 497th TFS to DCO, subj: Operation NIGHT OWL, 18-19, 21, 24 Oct 69.
- 39. (S) Ltr, DCO to 7AF, subj: Operation PRESSURE POINTS, 24 Oct 69.
- 40. (S) Msg, 240333Z Apr 69, pg 7.
- 41. Ibid.
- 42. (S) Staff Briefing, 28 Jul 69.

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APPENDIX I
THE MISTY RECORD
ROUTE PACKAGE I

<u>Date</u>	<u>Misty Sorties</u>	<u>Misty-led Strikes</u>	<u>Total USAF Strikes</u>	<u>Misty % of USAF Strikes</u>
<u>1967</u>				
Jul	82	126	3,591	3.5
Aug	110	364	4,615	7.9
Sep	88	231	3,825	6.0
Oct	90	185	2,357	7.8
Nov	47	80	2,238	3.5
Dec	20	57	1,971	2.8
<u>1968</u>				
Jan	24	40	1,962	2.1
Feb	37	32	1,311	2.4
Mar	70	140	1,018	13.7
Apr	98	155	2,848	6.1
May	105	350	3,160	11.0
Jun	125	720	4,090	17.6
Jul	144	900	6,506	13.8
Aug	134	493	6,340	7.7
Sep	110	220	5,202	4.2
Oct	147	120	5,078	2.4
Nov	-	-	-	-
Dec	-	-	-	-
<u>1969</u>				
Jan	-	-	-	-
Feb	-	-	-	-
Mar	-	-	-	-
Apr	-	-	-	-
May	-	-	-	-
Jun	-	-	-	-
<u>TOTAL</u>	<u>1,431</u>	<u>4,213</u>	<u>56,112</u>	<u>7.5</u>

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APPENDIX I (Cont'd.)

STEEL TIGER

<u>Date</u>	<u>Misty Sorties</u>	<u>Misty-led Strikes</u>	<u>Total USAF Strikes</u>	<u>Misty % of USAF Strikes</u>
<u>1967</u>				
Jul	-	-	-	-
Aug	-	-	-	-
Sep	-	-	-	-
Oct	-	-	-	-
Nov	53	80	3,416	2.3
Dec	40	113	4,346	2.6
<u>1968</u>				
Jan	51	80	3,416	2.3
Feb	43	33	4,050	less than 1%
Mar	55	110	4,138	2.7
Apr	27	30	4,230	less than 1%
May	-	-	2,431	-
Jun	-	-	1,596	-
Jul	6	5	1,817	less than 1%
Aug	31	102	1,712	5.9
Sep	20	40	2,095	1.9
Oct	3	5	3,994	less than 1%
Nov	160	85	8,380	1.1
Dec	185	210	8,503	2.5
<u>1969</u>				
Jan	175	175	8,151	2.1
Feb	195	396	7,358	5.4
Mar	215	492	8,357	5.9
Apr	210	399	6,989	5.7
May	210	299	6,087	4.9
Jun	180	175	6,070	2.0
TOTAL	1,859	2,829	97,136	2.9

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APPENDIX II

COMMANDO SABRE (MISTY) DISUM

ZO 181849Z MAR 68
FM 37TFW PHU CAT AB RVN
TO 7AF TACC (ET AL)

SUBJ: COMMANDO SABRE DISUM/18 MAR 68

PART 1. MISSION STRIKE RESULTS.

A. MISTY 11/121

1. CALCITE 190 (STRIKE FLIGHT CALL-SIGN)
 - (A) 2XF4/4XCBU24 (ACFT/ORDNANCE)
 - (B) 180245Z/0250Z (TIME)
 - (C) WE82.625 (RP-1) (LOCATION)
 - (D) SEVEN 5 TON TRKS ON SPUR ROAD TO EAST OF RTE 15. (TARGET)
 - (E) (1) 25 PER CENT OF ORD WITHIN 150 METERS OF TGT (BDA)
(2) 1 SECONDARY POL FIRE 100 METERS SOUTH OF TGT.
2.
 - (A) 2XF4/8XCBU24
 - (B) 180250Z/0255Z
 - (C) WE828625 (RP-1)
 - (D) SEVEN 5 TON TRKS ON SPUR ROAD TO EAST OF RTE 15.
 - (E) (1) 50 PER CENT OF ORD WITHIN 150 METERS OF TGT
(2) 2 TRKS DAMAGED, SILENCED ZPU POSN WEST OF RTE 15
AT WE827611.
3. GUNFIGHTER 5931
 - (A) 2XF4/4XCBU 24, 3XBLU27, 6XMK82HD, 1000X20MM
 - (B) 180255Z/0310Z
 - (C) WE828625 (RP-1)
 - (D) SEVEN 5 TON TRKS ON SPUR ROAD TO EAST OF RTE 15.
 - (E) (1) 100 PER CENT ORD WITHIN 150 METERS OF TGT
(2) 2 TRKS DEST, 2 TRKS DAMAGED.
4. MISTY 11/121
 - (A) 1X100F/60X20MM
 - (B) 180015Z/0020Z
 - (C) WE862822 (RP-1)
 - (D) 5 TON TRK TO WEST OF RT 15
 - (E) TRUCK DAMAGED

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B. MISTY 31/122

1. RUSTIC 37

- (A) 2XF4, 2000X20MM
- (B) 180807Z/0810Z
- (C) WE826645 (RP-1)
- (D) 2 TRKS IN TRK PARK TO WEST OF RTE 15
- (E) NO TGT COVERAGE

2. LOCUST 1 AND 2/34

- (A) 2XF-105/8XCBU24, 2000X20MM
- (B) 180820Z/0825Z
- (C) WE826645 (RP-1)
- (D) 2 TRKS IN TRK PARK TO WEST OF RTE 15
- (E) NO BDA DUE BINGO FUEL

3. LOCUST 3 AND 4/34

- (A) 2XF-105/8XCBU24, 2000X20MM
- (B) 180820Z/0825Z
- (C) WE823626 (RP-1)
- (D) TWO TRKS ON RTE 15
- (E) NO BDA DUE BINGO FUEL

PART II. VISUAL RECONNAISSANCE.

A. MISTY 11/121

- 1. 0845Z/WE828625/SEVEN 5 TON TRKS SIGHTED ON SPUR ROAD TO EAST OF RTE 15, PARKED IN LINE FACING SOUTH. TRKS STRUCK AS PER PART A1, 2, 3 THIS MSG.
- 2. APPROX 7 TRKS SIGHTED ALONG ROAD ON RTE 15 AND IN TRK PARKS ALONG RTE 15 BETWEEN D17 AND D60.
- 3. WE867821/APPROX 100 POL DRUMS IN REVETMENTS TO WEST OF RTE 15 ON SECONDARY ROAD. NOT STRUCK DUE TO POOR WX.

B. MISTY 31/122

- 1. 0807Z/WE826654/2 UNCAMOUFLAGED TRKS SIGHTED IN TRK PK 20 METERS WEST OF RTE 15. SUSPECT MORE TRKS IN PARK UNDETECTED. TGT STRUCK AS PER PART 1B1, 2 THIS MSG.
- 2. 0015Z/WE823626/TWO LARGE TRUCKS RESEMBLING SMALL MOVING VAN, HEADING NORTH ON RTE 15. TGT STRUCK AS PER PART 1B3, THIS MSG.
- 3. NUMEROUS PILES OF LIGHT COLORED GRAVEL ALONG RTE 101, 15 AND 137, INDICATING EXTENSIVE ALL-WEATHER PREPARATION

PART III: REMARKS

A. GROUND FIRE.

1. MISTY 11/121 REC'D APPROX 400 RDS ZPU-2 FIRE FROM SINGLE POSN ON HILL AT WE 827611 WHILE STRIKING TGT AS PER PART IA1, 2, 3 THIS MSG.

B. MISTY 11/121, MISTY 31/122 AND MISTY 41/301 ALL TOOK PART IN RESCAP (SAR) FOR MISTY 21/401 DOWNED AT APPROX XE2519, 180330Z. AFTER REAR SEAT MAN HAD BEEN PICKED UP BY JOLLY GREENS, AN F-4 PICKED UP A CHUTE BEEPER OF REAR SEAT PILOT AS HE HAD TURNED HIS OFF AND LEFT IT IN THE TREE WITH HIS CHUTE. MISTY 31/122 WAS ABLE TO NARROW SOURCE OF CHUTE BEEPER DOWN TO VIC OF XE2520 BEFORE RTB.

[REDACTED]

C. ON 17 MARCH 68, MISTY 21 REC'D ONE .50 CAL ROUND THROUGH VERTICAL STABILIZER IN VIC OF XE0259. BATTLE DAMAGE WAS MINOR AND DID NOT DISRUPT MISSION.

D. SUPPLEMENTAL REPORT ON SAM SITE DESTRUCTION - 17 MAR 68. TO CLARIFY THE ATTACK ON THE SITE AND THE RESPECTIVE ROLES OF THE VARIOUS FLTS, THE FOLLOWING INFORMATION IS PROVIDED:

AFTER SIGHTING THE SAM TRANSPORTER VANS, MISTY 03 WAS THE FIRST FLT TO EXPEND ORD ON THE TRANSPORTER. ALTHOUGH NO DIRECT BOMB HITS WERE OBSERVED ON THE TRANSPORTER, CBU-2 WAS SPREAD ACROSS THE AREA, SETTING THE VANS OF FIRE, AND NUMBER TWO MAN DROPPED NAPALM ON THE 37MM SITE FIRING ON THE FLT AND DESTROYED IT. 5 MINUTES AFTER THE FLT DEPARTED THE AREA A HUGE ORANGE FIREBALL WITH REDDISH BROWN SMOKE WAS OBSERVED IN THE AREA OF ANOTHER SMALL SECONDARY FIRE SET BY THE CBU-2 FROM MISTY 03 FLT. THREE MINUTES THEREAFTER, A MISSILE WAS LAUNCHED AT MISTY 31. GUNFIGHTER FLT ARRIVED AND PUT NAPALM, ROCKETS, AND HIGH DRAG BOMBS INTO THE AREA OF THE TRANSPORTER, IGNITING 2 LARGE SECONDARY EXPLOSIONS AND 3 SUSTAINED SECONDARY FIRES WHICH WERE PROBABLY SAM SUPPORT TRUCKS AND EQUIPMENT. BASS 32 NOW ARRIVED AND COMPLETELY DESTROYED THE 57MM SITE WHICH WAS 300 METERS SOUTH OF THE SAM TRANSPORTER AND WAS MAKING IMPOSSIBLE THE SATURATION OF THE LAUNCH AREA.

BEAR FLT THEN SATURATED THE LAUNCH AREA WITH CBU-24, IGNITING 5 LARGE SECONDARY EXPLOSIONS AND 3 SECONDARY FIRES WITH REDDISH BROWN FIREBALLS AND SMOKE - PROBABLE REMAINING AND SUPPORT EQUIP.

IN TURN SCUBA, BISON, WOLF, AND WILDCAT FLTS SATURATED THE LAUNCH AREA WITH 750 LB BOMBS. BDA, SECONDARIES, ETC FROM THESE FLTS WERE UNOBSERVED DUE TO NUMBER OF FLTS IN THE AREA AND MISTY FUEL.

IN ALL, AT LEAST 8 FLTS WERE PUT INTO THE AREA OF THE LAUNCH WITH ALL FLTS IGNITING SECONDARIES. THE ACCURATE BOMBING AND COURAGEOUS DELIVERIES BY ALL CREWS COMBINED TO ELIMINATE THE TGT DEFENSES AND MAKE THE SATURATION OF THE LAUNCH AREA AND DESTRUCTION OF THE REMAINING MISSILES AND EQUIPMENT POSSIBLE. ALL FLTS WERE INSTRUMENTAL IN THE COMPLETE DESTRUCTION OF THE SITE AND SHOULD BE INCLUDED IN THE CREDIT GIVEN FOR THE KILL.

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GLOSSARY

AAA	Antiaircraft Artillery
AB	Air Base
ABCCC	Airborne Battlefield Command and Control Center
AW	Automatic Weapons
BDA	Bomb Damage Assessment
CBU	Cluster Bomb Unit
DISUM	Daily Intelligence Summary
DMZ	Demilitarized Zone
DOCB	Directorate of Combat Operations
ECM	Electronic Countermeasures
EW	Electronic Warfare
FAC	Forward Air Controller
IP	Instructor Pilot
IR	Infrared
K	Knot
KIAS	Knots Indicated Air Speed
LLLTV	Low-Light-Level Television
LOC	Line of Communications
MPH	Miles Per Hour
NORS	Not Operational Ready, Supply
NVA	North Vietnamese Army
NVN	North Vietnam; North Vietnamese
OCM	Out-Country Mission
OPlan	Operations Plan
PACAF	Pacific Air Forces
POL	Petroleum, Oil, and Lubricants
RESCAP	Rescue Combat Air Patrol
RHAW	Radar, Homing, and Warning
RLAF	Royal Laotian Air Force
RLG	Royal Laotian Government
RP	Route Package
RTAFB	Royal Thai Air Force Base

UNCLASSIFIED

SAM	Surface-to-Air Missile
SAR	Search and Rescue
SCAR	Strike Control and Reconnaissance
SEA	Southeast Asia
TAC	Tactical Air Command
TACAN	Tactical Air Navigation
TASG	Tactical Air Support Group
TDY	Temporary Duty
TFS	Tactical Fighter Squadron
TFW	Tactical Fighter Wing
TOT	Time Over Target
TWS	Track While Scan
UMD	Unit Manning Document
USAFE	United States Air Forces in Europe
VC	Viet Cong
VR	Visual Reconnaissance