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PROJECT
Contemporary
Historical
Evaluation of
Combat
Operations
REPORT

FAC
OPERATIONS
IN CLOSE AIR SUPPORT
ROLE IN
SVN

31 JANUARY 1969

HQ PACAF
Directorate, Tactical Evaluation
CHECO Division

Prepared by: Major James B. Overton
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 Evaluation of Combat Operations, was established to meet this Air Staff requirement. Managed by Hq PACAF, with elements at Hq 7AF and 7/13AF, Project CHECO provides a scholarly, "on-going" historical evaluation and documentation of USAF policies, concepts, and doctrine in Southeast Asia combat operations. This CHECO report is part of the overall documentation and evaluation 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 SEA.



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

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS PACIFIC AIR FORCES
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FOR THE COMMANDER IN CHIEF

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WARREN H. PETERSON, Colonel, USAF
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AU (ACSC) 1 Cy
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TAC (DO-0) 1 Cy
TAC (DPL) 2 Cys
TAC (DOTS) 1 Cy
TAC (DORQ) 1 Cy
TAC (DI) 1 Cy
MAC (MAFOI) 1 Cy
MAC (MAOID) 1 Cy
MAC (MAOCO) 1 Cy
AFSC (SCL) 8 Cys
AFSC (SCO) 2 Cys
AFLC (MCO) 1 Cy
AFLC (MCF) 1 Cy
ATC (ATXDC) 1 Cy
SAC (DO) 1 Cy
SAC (DPL) 1 Cy
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OTHERS

9AF (DO) 1 Cy
12AF (DI) 1 Cy

19AF (DA-C) 1 Cy
USAFAGOS 1 Cy
USAFSOF (DO) 1 Cy
USAFTAWC (DA) 1 Cy
USAFTARC (DI) 1 Cy
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USAFTFWC (CRCD) .. 1 Cy
FTD (TDPI) 1 Cy
AFAITC 1 Cy
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PACAF

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3TFW 1 Cy
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56SOW 1 Cy
315SOW 1 Cy
355TFW 1 Cy
366TFW 1 Cy
388TFW 1 Cy
432TRW 1 Cy
460TRW (DCO) 1 Cy
483TAW 1 Cy
553RECON WG 1 Cy
6400 TEST SQ 1 Cy
DOTEC 6 Cys

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FOREWORD

This report addresses the role of the Forward Air Controller (FAC) in Southeast Asia. The various categories of FACs are discussed, including the function of the Ground FAC and the duties he performs. With quick reaction and responsiveness to requirements generated by the SEA conflict, the FAC became increasingly important to the effectiveness of airpower in the conflict. This report reviews the ALO/FAC/SCAR system, including organization, manning, and training. It delineates efforts expended in controlling and coordinating airstrikes, as well as other actions during operations. The final chapter outlines new proposals and innovations pertaining to advanced technology and seeks better ways to accomplish the accepted FAC process.

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CHAPTER I
EVOLUTION OF THE FAC

The first individual on record as a Forward Air Controller (FAC) was a Marine utilizing cloth panels to direct Marine aviators in Nicaragua in 1927. The Marines had the same general problems encountered by TAC fighter aircraft in Vietnam: dense jungle canopy and difficult map utilization.^{1/} The next use of the Forward Air Controller was by the Germans in 1939. They placed a Stuka pilot, complete with radios, in the lead tank of an armored column, making effective use of the accompanying airpower as column cover.

In 1943, the U.S. implemented large numbers of Forward Air Controllers, called "Rover Joes", utilizing jeeps (unsatisfactory for frontline control work), with surface and aviation communications. These air controller parties operated in every combat theater prior to the end of World War II. In Korea, the FAC was again used with great success operating from an airborne platform in a T-6 aircraft (Mosquito).

In 1954, the Air Force started a formal Forward Air Controller course at the Air Ground Operations School. From 1954 to 1962, the present Tactical Air Control Party was referred to as the Air Control Team, with the Army supplying everything but the FAC.

In 1962, the Air Force, in an attempt to reduce the reaction time for close air support (CAS) requests, assumed full responsibility for the Air Control Team, changed the name to Tactical Air Control Party (TACP), supplied all necessary equipment and men for normal operation, and made an agreement

[REDACTED]

with the Army that they would supply armored combat and/or special purpose vehicles and their crews.^{2/}

At this time, the Air Force had permanently assigned individuals forming a hard core TACP with every major Army combat unit on a worldwide basis. The assigned personnel became the nucleus to train and orient new personnel.^{3/}

In Southeast Asia, Forward Air Controllers performed in three different categories. First there was the Free-World FAC, assigned to, and supporting the U.S. Army, Korean, Australian, or Thai units which were operating independently of Army of Republic of Vietnam (ARVN). These FACs moved with their units. Next there was the ARVN FAC or Sector FAC. He was also referred to as a FAC "B" type in classification manuals and later as a SCAR.^{4/} These pilots were assigned duty in a geographical area, provincial sector or sub-sector, each working in conjunction with a local Vietnamese official. Another type was the FAC operating out-country. Like the sector FAC, he was classified as a SCAR and assigned to a geographical area. His duties, while similar to those of the other FACs were different in many aspects and are covered in Project CHECO report, "Strike Control and Reconnaissance".

When a FAC was airborne he had two general duties: visual reconnaissance, accomplished on a daily basis, and strike control. As a strike controller, he was involved in: (1) target acquisition; (2) communication with the ground commander; (3) positive identification and knowledge of friendly positions; (4) briefing of the strike aircraft; (5) marking the target; (6) controlling the strike; and (7) assessing and reporting bomb damage.^{5/}

[REDACTED]

When a FAC was on the ground he would: (1) assist in obtaining the required Air Force support, whether it was close air support, reconnaissance, or airlift; (2) coordinate with other airborne FACs through his TACP communications; (3) accomplish the duties of a ground strike controller in a non-permissive air environment or during an emergency, although the records since 1965 indicated little such ground control activity. In short, the FAC was an Air Liaison Officer (ALO) when on the ground.

In the broadest sense, the FAC was an Air Force representative in Army operational units, assisting directly in the integration of surface and air-power. He was part of the Tactical Air Control System (TACS). His tools in trade were not sophisticated radar or automatic data processing, but rather professional know-how, ingenuity, flexibility, and some lower echelon joint planning ability. When a request for close air support was generated, the FAC was a vital man on the scene in fulfilling that request.

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CHAPTER II

FORWARD AIR CONTROLLERS IN-COUNTRY

With airpower in Vietnam escalating dramatically in 1965, the Tactical Air Control System had progressed to a highly workable operation. The introduction of jet aircraft into the conflict, combined with the large influx of U.S. Forces and Free World Military Assistance Forces (FWMAF) into the RVN created a growing need for close air support. In-country strike sorties increased from 2,392 in January 1965 to 7,382 in June, and to 13,274 in December. By 1966, in-country strikes were averaging 15,000 sorties a month.^{1/}

This increase in the tempo of operations created a shortage of ALO/FACs in the theater, with many TDY personnel unable to return to their units. In 1964, the 19th Tactical Air Support Squadron (TASS) at Bien Hoa had only 22 O-1s for FAC operations. Plans were made for the immediate addition of three TASS squadrons to increase the number of FACs and O-1s.^{2/} By January 1966, 121 O-1 aircraft were disbursed over 53 locations, with 172 FACs in position and assigned to the newly created 20th, 21st, and 22d Tactical Air Support Squadrons.^{3/} At one point, the situation was so acute as to require the 2d Air Division to approve the use of Army HU-1B helicopters with a FAC and a Province Chief on board. Then, if attempts were made to hit the chopper, the chief was immediately available to approve a strike. Maj. Gen. Gordon Graham, Vice Commander, Seventh Air Force, remarked that "this tactic will work well unless we run out of Province Chiefs."^{4/}

Quick reaction and responsiveness were the primary concerns of the USAF

[REDACTED]

in RVN in 1966. The procedure for diverting aircraft already airborne to targets of higher priority was coming into use, utilizing a separate Air Force immediate air request net. The FAC played a key part in this procedure. The Air Force/Army Agreement of March - April 1965, with the provision that the Air Force provide vehicles, communications and FACs, while operating the air request net, did much to facilitate the rapid reaction needed in close air support requests.^{5/}

By late 1966, the quantity of O-1 aircraft available was insufficient for the mission requirement. There was also a qualitative problem. Insufficient instrumentation in the O-1 for night and weather operation plagued the pilots. It had no armor, inadequate top speed, with a poor zoom capability, and too few marking rockets. The OV-10 as a replacement "Mil-Spec" aircraft, was programmed for the spring of 1968. The twin-engined Cessna 377 Skymaster (O-2) was approved as the interim replacement for the O-1. It is a matter of record that the O-2 never replaced the O-1, but merely filled in the O-1 shortages resulting from attrition and expansion of the U.S. effort.^{6/}

During 1965 - 1967, one of the most hazardous professions in the Vietnam conflict was that of the Air Force Forward Air Controller. He lived with the ground forces in far from ideal conditions, where he was required to represent the Air Force in a wide variety of situations. Professional competence, flexibility, and clear thinking were necessary talents. He was required to fly an aircraft that was marginal under combat conditions and downright dangerous in weather and night conditions.^{7/}

[REDACTED]

During this period, the FAC in the ARVN system was assigned to the various provinces. He was occupied primarily in conducting Visual Reconnaissance (VR) in his province, becoming intimately knowledgeable of the enemy activity. He generated targets for airstrikes and then advised the Province Chief in requesting air support.^{8/} The FAC with the U.S. Army was concerned more with controlling a strike properly than with target generation, although he also had a VR responsibility for his Tactical Area of Responsibility (TAOR). He was an advisor on the ground, and was considered by the Army to be a member of the ground team.^{9/}

The FAC take off time was determined by the fragged strike T.O.T. After becoming airborne, the FAC would monitor the assigned radio net, utilizing UHF, VHF, and FM frequencies. The fighter pilots were vectored to his area by a Control and Reporting Center (CRC) or Control and Reporting Post (CRP), and then handed off to the FAC or to his TACP. The FAC maintained contact with his TACP, the ground commander, and the fighters. His in flight report to his TACP was sent through the air request net to the Direct Air Support Center (DASC). If he were on a VR mission, he made radio contact every 30 minutes. If he missed a contact, calls to him were initiated from the ground.^{10/}

FACs handled immediate missions by being scrambled or by being called in the air, while on a VR mission or after completing a strike. If the weather deteriorated, the FAC could advise the DASC to cancel the mission.^{11/}

Because there was no Forward Edge of the Battle Area (FEBA), as such in RVN, a very firm system of target identification and strike control was

[REDACTED]

essential. The FAC in an airborne vehicle evolved as the most effective way to achieve this. A FAC on the ground would have been seriously restricted by the triple canopy of foliage prevalent in much of RVN. The procedures for strike control were written into the Rules of Engagement for the strike aircraft in such a way as to recognize the strike problems.^{12/}

In late 1966, FACs became engaged in practically every type of ground operation imaginable in SVN. They operated in the central highlands, Delta lowlands, below the DMZ, in the monsoon rainy season, and in special actions. In Project DELTA, FACs flew over the Special Forces (SF), who were infiltrating into a suspicious area to find and fix enemy units. The FACs in radio contact with SF teams would call for strike aircraft, mark the target when they arrived and then direct the strike. Extremely close coordination was required and received to make the mission a success.^{13/} At a MACV Commander's Conference held in late 1966, every commander who made a presentation praised the effective close air support received by his command.^{14/}

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CHAPTER III

ORGANIZATION AND CONTROL

504th Tactical Air Support Group

The 504th Tactical Air Support Group (TASG) was the parent organization for all FACs assigned to Southeast Asia. It received approximately 80 new FACs per month for briefing and assignment to replace those that rotated. The Group, a large, sprawling, and complex organization, was responsible for ground communication equipment, flying safety, standardization programs, personnel manning, and logistical support for the entire Tactical Air Control System.^{1/}

Manning of TASG

As of October 1968, the 504th TASG was manned as follows:^{2/}

| <u>Staff and Support</u> | <u>Programmed</u> | <u>Authorized</u> | <u>Assigned</u> |
|--------------------------|-------------------|-------------------|-----------------|
| Officers | 165 | 162 | 136 |
| Airmen | 3,076 | 2,441 | 2,116 |
| ALO/FAC-NAVS* | 831/40 | 779/40 | 668/51 |
| Totals | 4,112 | 3,422 | 2,971 |

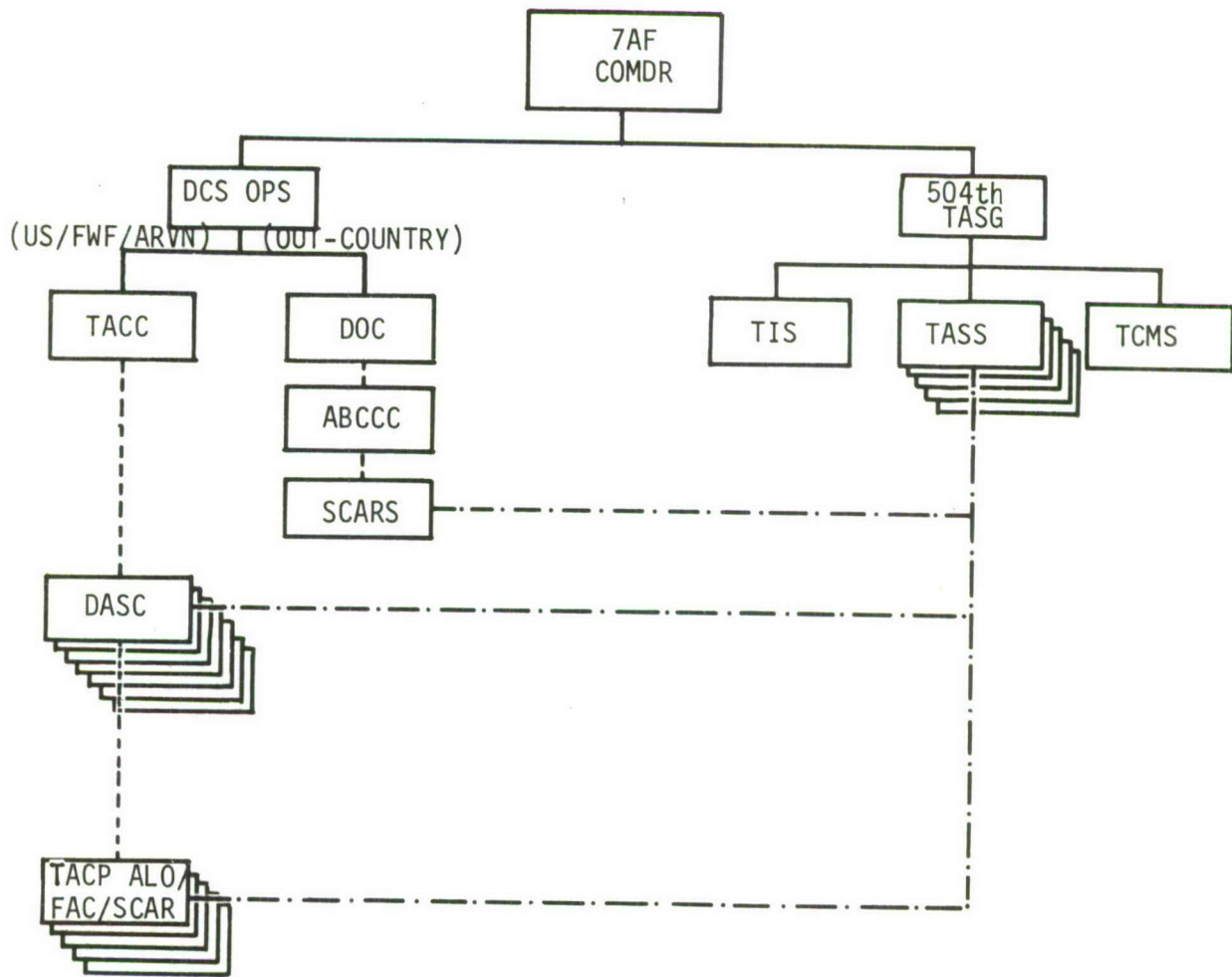
Location of Operational Units

The 504th TASG had operational units situated at approximately 70 locations in Southeast Asia. The Group was involved in-country with seven Direct

* Flew with FACs on night missions using the Starlight Scope.

[REDACTED]

ALO/FAC/SCAR UNITS & RELATED ORGANIZATIONS
IN SOUTHEAST ASIA - AUGUST 1968



LEGEND

- CMD Lines
- OPS Lines
- .-.-.- SUPPORT

FIGURE 1

[REDACTED]

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Air Support Centers. Within the US/Free World Forces, assigned ALO/FACs worked with two Field Force Headquarters, 10 Divisions, 34 Brigades, and 119 Battalions. In supporting the ARVN, ALO/FACs worked with 4 Corps Headquarters, 10 Divisions, 43 Provinces, and 63 Special Forces Camps. Personnel of the 504th TASSG operated out-country in areas and operations such as STEEL TIGER, TIGER HOUND, TALLY HO, DANIEL BOONE, and PRAIRIE FIRE.^{3/}

Tactical Air Support Squadrons

The five Tactical Air Support Squadrons within the 504th TASSG carried the assigned FACs administratively. These squadrons were located as follows:^{4/}

| <u>Tactical Air Support Squadron</u> | <u>Location</u> |
|--------------------------------------|-----------------|
| 19th | Bien Hoa RVN |
| 20th | Da Nang |
| 21st | Nha Trang |
| 22d | Binh Thuy |
| 23d | Nakhon Phanom |

Essentially, the mission of these Tactical Air Support Squadrons in Southeast Asia in August 1968, was to provide the Tactical Air Control Parties with necessary personnel and logistical support.^{5/} (Each TASS was also responsible for maintaining records of assigned ALO/FACs.) Officer Efficiency Ratings (OERs), written by ALOs, were processed by the TASS. Further, the TASS provided Flying Safety information and Standardization/Evaluation items. While administrative duties were assumed by the TASS, the Direct Air Support Center had operational control of the ALO/FACs.^{6/}



Direct Air Support Centers

Direct Air Support Centers through which all FACs worked were located as follows: ^{7/}

- DASC Victor -- Hue
- Horn DASC -- Camp Horn
- I DASC -- Da Nang
- II DASC -- Pleiku
- DASC Alpha -- Nha Trang
- III DASC -- Bien Hoa
- IV DASC -- Can Tho

Aircraft Assigned and Flying Time

October 1968, 504th TASG Aircraft Status: ^{8/}

| | <u>Programmed</u> | <u>Authorized</u> | <u>Assigned</u> |
|--------|-------------------|-------------------|-----------------|
| 0-1 | 40 | 135 | 162 |
| 0-2 | 306 | 147 | 132 |
| OV-10 | <u>96</u> | <u>55</u> | <u>30</u> |
| Totals | 442 | 337 | 324 |

The 504th Tactical Air Support Group accounted for approximately 33 percent of the total combat time flown in Southeast Asia in 1967 and 1968. Averaging approximately 26,000 hours per month, the Group flew 310,698 hours in 1967, and completed a total of 167,000 sorties. Through September 1968, they logged 266,313 hours, averaging approximately 29,000 flying hours per month. ^{9/}

Maintenance Summary

The following maintenance summary is presented to indicate a 1968 six-month average of the Group's flying activity involving the three types of FAC aircraft: ^{10/}



| | <u>0-1</u> | <u>0-2</u> | <u>OV-10*</u> |
|--|------------|------------|---------------|
| Hours Flown Monthly | 16,649 | 13,431 | 572 |
| In-Commission Rate | 92.2 | 85.9 | 77.8 |
| NORS-G (Non Operationally Ready Supply) | .8 | 4.6 | 7.7 |
| Man Hours/Flying Hours | 3 | 5.3 | Unavailable |
| Sortie Rate | 2.0 | 1.1 | 2.0 |
| Sortie Length | 1.8 | 2.8 | 1.8 |
| Utilization (Percent) | 107.3 | 95.7 | 76.1 |

Aircraft and Aircrew Losses

Considering the mammoth operation of the 504th TASG, combat losses of aircrews and aircraft were relatively small. These statistics present a comparison between the years 1967 and 1968: ^{11/}

Aircraft Losses

| | <u>1967</u> | <u>1968</u> |
|--------------|-------------|-------------|
| Combat (Air) | 31 | 35 |
| (Ground) | 3 | 17 |
| Accidents | <u>10</u> | <u>13</u> |
| TOTALS | 44 | 65 |

Aircrew Losses

| | <u>1967</u> | <u>1968</u> |
|--------------|-------------|-------------|
| Combat (Air) | 23 | 28 |
| (Ground) | 0 | 2 |
| Accidents | <u>4</u> | <u>6</u> |
| TOTALS | 27 | 36 |

* New in the Inventory.

[REDACTED]

CHAPTER IV

TRAINING AND PROBLEM AREAS

Before being sent to the Republic of Vietnam, pilots selected as Forward Air Controllers in 1967 completed academic and field training at the USAF Air-Ground Operations School located at Hurlburt Field, Fla. This initial training consisted of five days of academics and one day in the field controlling airstrikes from the ground utilizing AN/MRC-107 radio jeeps. F-4C aircraft from Eglin Air Force Base, Fla., or aircraft from Hurlburt supported the training. After studying additional academics at the Special Operations Force School at Hurlburt, the FAC's training was continued at nearby Holley Field under simulated combat conditions. Here they were taught to fly the O-1, O-2, and OV-10, and received initial training in a wide variety of subjects including airborne strike control.^{1/}

SEA ALO/FAC Training

The Theater Indoctrination School (TIS) was instituted to familiarize Forward Air Controllers with environmental conditions and hazards in Southeast Asia. First established at Binh Thuy, it was relocated at Phan Rang in March 1968, since less enemy action was anticipated there. The curriculum of this school included two types of training: academic and flying. Its scope and quality insured performance as a FAC at the desired level of proficiency.^{2/}

These seven courses were offered at TIS for pilots:^{3/}

| <u>Course</u> | <u>Type</u> | <u>Flying Hours</u> |
|---------------|--|---------------------|
| 0-1L | -- Without 0-1 flying experience | 18 1/2 |
| 0-1S | -- With 0-1 flying experience | 5 1/2 |
| 0-1IP | -- With previous 0-1 experience, being upgraded to Instructor Pilot status | 8 |
| 0-2L | -- Without 0-2 flying experience | 18 |
| 0-2S | -- With 0-2 flying experience | 6 |
| 0-2F | -- Combat ready 0-1 qualified SEA FACs without 0-2 flying experience | 12 1/2 |
| 0-2IP | -- With previous 0-2 experience, being upgraded to Instructor Pilot status | 8 |

In late 1968, OV-10 courses were added to the curriculum of the Theater Indoctrination School. Alert to other improvements, the school also provided an expanded course in Night Tactics, which noticeably increased proficiency of pilots.

The final phase of all courses included a Standardization Evaluation Check, which was a combined instructional and check flight. The student was responsible for all immediate action items on the emergency checklist. If found unsafe or unable to accomplish the required mission, they were graded "unqualified" and received additional concentrated training.^{4/}

FAC/ALO Assignments

On departing the Theater Indoctrination School, the FAC reported to his assigned Tactical Air Support Squadron (TASS) for processing. Lasting for three days, this period was used to obtain essential background data of each FAC. These were sent to the Field Force ALO, who made the end assignment. Of primary consideration were rank and date of rank, as the higher ranked were assigned as ALOs to Field Forces, Divisions, and Brigades. Assistant

[REDACTED]

ALOs were also assigned, so that they might obtain experience before assuming primary ALO positions.^{5/}

Problem Resolving

The 504th Tactical Air Support Group experienced continuing problems in matching pilots with certain backgrounds to specified requirements. To quote Capt. Paul P. Duford, Director of Personnel, 504th TASG:^{6/}

"Incoming FACs never seemed to match up with our specified requirements. Invariably, if we were short of 0-1 FACs, the next group to arrive would be 0-2 pilots. If we needed fighter background types, the next group would be mostly multi-engine background types.

"Things improved, however, as we began to receive class rosters, indicating the students' background from Holley Field as soon as a new class began. We also received a roster from the PACAF Jungle Survival School.

"We furnished FACs to support U.S. Army requirements, ARVN requirements and out-country requirements. We didn't always plan on a pilot acting as a FAC for his entire tour. The various DASCs, Headquarters, and the Tactical Air Control Center (TACC) drained many of them off for duty officers after five or six months experience in the field.

"I referred to the FACs as FAC A or FAC B as designated in the classification manuals. I never used the term SCAR. Actually, it was not too popular a term, at least not with the FAC B. From the 504th they were assigned to the Theater Indoctrination School at Phan Rang in the long or short course of either the 0-1, 0-2, or OV-10 divisions, according to requirements and as related to their background."

Creating many of the problems was the agreement between the USAF and the U.S. Army on the assignment of ordnance delivery-qualified fighter pilots to serve as Forward Air Controllers for U.S. Army units.^{7/} The number of

[REDACTED]

fighter-qualified pilots reporting into the system failed to arrive in the quantities required to replace fighter-qualified FACs rotating to the Continental United States at the completion of their tours. During the first quarter of 1968, there was a marked drop in the number of fighter qualified FACs, who could be assigned to support U.S. Army units under the established criteria.^{8/}

In late 1967, inputs in the system of fighter qualified FACs had been excessive to the requirement, and had resulted in the assignment of some of these to positions which did not require a fighter background. Accordingly, the immediate answer was to reassign these fighter-qualified FACs to the U.S. Army support positions. A further aid in overcoming the problem, the entire ALO/FAC/SCAR system was reviewed and steps were taken to realign the assigned FACs. This realignment, along with an increased input of fighter ordnance delivery qualified pilots,^{9/} reduced the problem.

Intensified interest of PACAF and 7AF in the manning of the ALO/FAC/SCAR system led to a single, comprehensive, and more exact reporting and accounting system as set forth in 504th TASG Regulation 11-3. It did not provide the rapid reaction required, however, so the 19th Tactical Air Support Squadron at Bien Hoa Air Base was selected as a test unit for programming the required information into the computer of the Consolidated Base Personnel Office (CBPO) Data Programming Branch. By January 1969, this new system was to be completely operational.^{10/}

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CHAPTER V
THE FAC PROCESS

The FAC was assigned to facilitate effective close air support for the surface forces. In a real sense, he was an air staff officer for the Field Force, Division, Brigade, or Battalion Commander. Further, he was under the operational direction of a DASC and was controlled administratively by a designated TASS.^{1/}

Close air support missions were those directed against hostile targets in close proximity of friendly forces; visual reconnaissance was an integral part of them. The FAC also participated in many other areas of CAS, such as landing zone (LZ) preparation, road convoy escort, support of troops in contact, and prestrike troop airlift cover.^{2/} The FAC scheduled for a pre-planned mission was briefed by his ALO the evening before on all points of it, including the nature of the target, grid coordinates, scheduled time over target (TOT), rendezvous points, ground commander position, and predicted weather conditions.^{3/}

Acquiring the Target

After take off, the FAC notified the TACP at his location that he was airborne and en route to the target. Planning to arrive 30 minutes before strike time, he obtained the necessary artillery clearances and performed VR en route. Upon arrival in the area, he contacted the ground commander for further target description, scheme of maneuver, specific results which were desired from the strike aircraft, and detailed information on the closest friendlies. The FAC in turn gave him the type of strike aircraft, ordnance,

[REDACTED]

and expected arrival time. He further advised him as to the proper minimum distance his troops should be from the target. (This was determined primarily by the type of ordnance to be expended.) Included in the FAC's briefing were the details of attack and breakaway headings he expected the fighters to use, and a suggestion that the ground commander mark his own position by smoke at a certain time.^{4/}

Acquiring the target from the viewpoint of the strike aircraft involved few problems, since the FAC was there to lead them to it, point it out, and mark it. However, the strike aircraft pilots often found themselves in conditions of poor visibility and low cloud covers. At these times, target acquisition became a major concern. According to Col. Edwin W. Robertson, DCO 31st TFW:^{5/}

"Acquiring the target can be most difficult under a low ceiling or with low visibility. The latter causes more of a problem than the former. Before acquiring the target the flights must first acquire the FAC. Maneuvering in hilly or mountainous terrain seeking out and visually holding the FAC can be hazardous. In addition, in low visibility the FAC's smoke markers tend to be indistinct and can be confused with smoke from previous strikes or from other areas. The colored smoke from the friendlies is more difficult to acquire. The weather in the target area may cause diffusion of the smoke, thereby increasing the difficulty of maintaining contact with the exact aiming point which will degrade delivery accuracy. On the other hand a moderately low ceiling at night can actually improve ease of target acquisition because it tends to reflect the flare light back to the target area. When working in daylight on top of and through a low scattered or broken condition, visual contact with the target is often lost because the white marker can be confused with the low white clouds. Under these conditions FACs should use colored smoke rockets."

Rendezvous

The rendezvous radio frequency for the strike aircraft and the FAC aircraft was included in the mission frag. Prior to the indicated time, the FAC would come up on the frequency. After making radio contact, the FAC brought the fighters out on a Tactical Air Navigation (TACAN) heading to his general area. Usually, the FAC knew his Tactical Area of Responsibility so well that he could give the strike aircraft pilot a prominent land feature to look for without his having to concentrate on it. The FAC would normally merely "eyeball" the direction from which he expected the fighters and pick them up quickly. He then had them set up a pattern similar to the one he intended to use during the strike. There were usually two in a flight and occasionally three or four. The strike aircraft could be of many types. Capt. Arthur Griner, after 10 months' FAC experience in the 1st Brigade, 101st Airborne Division, said, "I have controlled A-1, A-37, F-100, F-4, F-5, Marine F-4, A-4, A-6, and Australian B-57 aircraft. The ordnance carried included 250, 500, 750 and 1,000 pound GP Bombs, Napalm, CBU-24, and Cannon fire."^{6/}

Strike Aircraft Briefing

The briefing given by the FAC to the fighter varied according to the nature of the target, but generally it included these items:^{7/}

- Ascertain Fighter Mission Number, Ordnance, and Maximum Area Time.
- Target
 - Elevation
 - Coordinates
 - Type
 - Surrounding terrain and foliage

[REDACTED]

- Weather

 - Cloud Coverage
 - Expected changes

- Expected ground fire

- Location of Friendlies

 - Smoke identification
 - Distance from target

- How FAC intends to work with friendlies

- Strike Headings

 - Planned to avoid flying into or over friendly troops

- After target breakaway

- Position FAC will hold during strike

- Suggested sequence of ordnance drop

- A specific statement to flight leader "Do not drop without FAC clearance"

- Recovery procedures

 - Nearest airfields
 - Best bail-out areas

- Orbit instructions while FAC is marking target

Marking the Target

Location of friendly forces was the primary consideration of the FAC when marking a target. This location had to be clearly identified just before the target marking began. One 2.75 smoke rocket usually sufficed, but occasionally more than one was required because of duds, heavy jungle foliage or swampy areas. There was also the problem of the wind blowing the smoke away before the first fighter could get on target. Another mark was then required. After the first aircraft was off target, the FAC adjusted subsequent runs by using

[REDACTED]

the fighter ordnance impact point as a reference, giving corrections in meters as long, short, right, or left. The FAC, on his marking pass, attempted to fly a course similar to the path he expected the fighters to take. On rare occasions, the FAC would miss the target on his marking pass, requiring either a re-mark or corrective instructions to the fighters.

The Strike

The fighters usually made from three to five passes, unless there was a fuel limitation. Hard bombs were generally dropped first with CBU and napalm following. On occasion, the FAC would stop the attack, assess the ground situation, then have the attack continued. The FAC chose a holding position that permitted him to observe the entire action during the attack. He cleared in the fighters on each pass, keeping a watchful eye on the friendly positions.

Great stress was placed on elimination of short rounds by Seventh Air Force. Two CHECO reports titled "Short Rounds" became required reading for all pilots, navigators, ALO/FACs, and weapons controllers assigned to 7AF units with ordnance delivery missions, to insure their becoming thoroughly indoctrinated in the need for safety precautions regarding friendly troops.^{8/} Although the FAC was responsible for approving or disapproving the strike, it did not relieve the fighter pilot from the responsibility of terminating the strike, if he saw a potentially dangerous situation developing.^{9/}

Bomb Damage Assessment

After the strike, the fighters held "high and dry" at a safe altitude, while the FAC flew over and around the target to assess the bomb damage and give an abbreviated report to the flight leader.^{10/} There was considerable

[REDACTED]

confusion about the BDA procedures at this time. The problem seemed to be primarily in the BDA percentage that the FAC used in describing strike effectiveness. Some FACs interpreted the "percent ordnance in target area" to be in relation to the effective area of the ordnance being delivered, and others accepted only the amount of ordnance that actually struck the target. No two FACs agreed completely on terms; some even established their own parameters: 50 meters for dive bombing, etc.^{11/}

The confusion was quite understandable when the number of nonstandardized BDA definition sources were considered. The Southeast Asia Forward Air Controller Course at the Air Ground Operations School, Hurlburt Field, Fla., treated BDA as merely the amount of ordnance delivered on target and the extent to which the target was destroyed.^{12/} The PACAF Manual 55-01 listed the BDA sequence as coordinates, time on and off target, strike results, percent ordnance in target area if applicable, percent of target covered, if applicable, and duds.^{13/}

In contrast to this, the Airborne Forward Air Controller Training Manual from the 4410th CCTS, Holley Field, Fla., presented the BDA sequence of events as target coordinates, percent of target coverage, itemized destruction, and time on/off target.^{14/} An Air Strike Report from a TACP supporting the 173d Airborne Brigade in April 1968 referred to BDA in the following long sequence: initial contact; TOT; time off; target coordinates; specific target description; target area terrain and vegetation; fighter accuracy (bombing) (strafing) (rockets); visible damage; ground fire received; and additional strikes required.^{15/} To add to the confusion, an In Flight Data Card of June 1967

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carried by the training FACs at Holley Field, Eglin AFB, listed BDA sequence as: target coordinates, time on and off target, percent of area coverage, results, percent of target coverage, duds, and one not seen in other publications, "percent of ordnance within 50 meters of target".^{16/}

To further complicate the situation, FACs of the 20th TASS carried an information booklet, dated 1 July 1968, that itemized BDA as merely: (1) show-time; (2) coordinates; (3) time on and off target; and (4) damage. It was understandable that they might have added items on their own initiative.^{17/} Even less informative were the "FACT" booklets carried by FACs of the 19th TASS. Here BDA was covered under the strike report section as coordinates, time on and off target, and Bomb Damage Assessment. FAC initiative was necessary while using this guide.^{18/}

From the FAC point of view, BDA was necessarily flexible because of conditions often prevalent in the area. Maj. Joe B. Grace, an ARVN FAC of the 19th TASS, stated:^{19/}

"Problem areas of BDA included heavy foliage cover, and smoke remaining in the area from the strike. Some days even low cloud cover would slip in just at the wrong time."

It was quite evident that the different interpretations of target coverage made some BDA reports less than valid. As a result, Maj. Gen. Gordon F. Blood, Deputy Chief of Staff/Operations, 7AF, requested and received an evaluation in depth of the problem of BDA from all concerned: 7AF staff agencies, and all fighter wings and FAC squadrons in SEA.^{20/}

[REDACTED]

After completing the BDA, the FAC gave his report to the flight leader and relieved the strike aircraft. He then passed his radio BDA report to the TACP supporting the ground unit. That Tactical Air Control Party in turn passed the BDA to the DASC, who sent it to the Tactical Air Control Center at 7AF. ^{21/}

The FAC process during an immediate strike was almost identical, in sequence of events, to that of a preplanned strike, with two primary exceptions. First, when generating or acquiring an immediate target, the urgency of the situation demanded quick and positive identification of friendly and enemy troops. The problem of determining who was where, with intermingling and movement of ground forces, could be very difficult when time was short. As Lt. Col. Henry P. Phillips, ALO of the 101st Airborne Division, said: ^{22/}

"This was, of course, an urgent situation. Everything concerning the strike had to be letter perfect. The strike aircraft were given a more detailed briefing when troops were in contact. We had our minimum safe distances for the ordnance to be used, so we had to stress the importance of the troops being far enough away from the target. We never had any disagreement with the ground commander on this subject. On two occasions I even marked the area of intended drop in advance for the ground commander so that he would be aware of the exact drop position. Ideally we would run a strike on a parallel course to the friendly position."

Secondly, the FAC, during an immediate strike, had to quickly make a judgment as to whether more strikes were needed, so that he could radio the Division or Brigade TACP, which passed the request up to the DASC immediately. ^{23/}

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Visual Reconnaissance

In addition to the responsibility of controlling, the airborne FAC had many missions which entailed only Visual Reconnaissance. This was a vital function for gathering intelligence, and some of the most important targets were generated by VR, particularly after a FAC had acquired several months' experience in a TAOR.^{24/} Since the FAC was the only person who covered his area on a regular basis, no one had a better knowledge of the visual subtleties and daily changes occurring in his area. The VR function enabled the FAC to rapidly correlate other sources of information with his visual observation.^{25/}

An important source of intelligence information, the VR Program outlined in 7AFR 55-33 offered the FAC valid recommendations for conducting Visual Reconnaissance. Some of these were:^{26/}

- Work closely with the intelligence section when possible.
- Establish a system to insure periodic, complete coverage of the TAOR.
- Carry 1:50,000 scale maps on all flights.
- Check roads and trails for amount of usage or any sign of digging.
- Check shorelines for marks in the mud.
- Check for smoke, foliage discoloration, tracks, grave sites, implanted stakes, road cuts and the presence of cattle in unpopulated areas.

It was common practice to keep a FAC over a TAOR during all daylight hours; in I Corps, FACs usually replaced each other in flight within their TAORs. Lt. Col. Henry P. Phillips, 101st Airborne Division ALO, said:^{27/}

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"Weather permitting, we tried to keep a FAC aircraft in the TAOR during all daylight hours, either controlling a strike, accomplishing Visual Reconnaissance or adjusting artillery fire."

Adjusting Artillery Fire

All FACs in SVN were required to be proficient in adjusting artillery fire. On many occasions, artillery fire was deemed more appropriate for certain targets than fighter strikes. When artillery was indicated, the FAC would contact the Fire Direction Center (FDC) and request a Fire Mission.^{28/} Prior to the actual firing, the FAC would give his identification, the warning order, target location, nature of the target, method of engagement, and the method of fire control.^{29/} During the firing, the FAC would give corrections in meters prefaced by the words: Add (increase range); Drop (decreased range); Right (deviation); Left (deviation); Up (height); or Down (height). He would make the statement "Fire for effect" when the target was bracketed within 100 meters. At the conclusion of the Fire Mission, he would report the results.^{29/}

ARVN FAC Procedure

As the name implies, the ARVN FAC supported the Vietnamese ground forces. He was also controlled administratively by the TASS, and operationally by the DASC. For classification purposes he was considered a SCAR or FAC B (not necessarily fighter background qualified).^{30/}

In the ARVN system, the TACP was closely associated with the Military Assistance Command, Vietnam (MACV), which consisted mainly of U.S. Army personnel assigned to ARVN units as advisors. The mission of these TACPs was to support the ARVN operations within an assigned area, usually a specific province

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or sector. Much of the TACP coordination was accomplished through a MACV counterpart at each sector. The FACs in the system generally were billeted with the respective MACV compound and had a fairly fixed base of operation.^{31/}

There was very little difference between the ARVN FAC and the U.S. Army FAC (Free World). BDA, VR, Artillery Adjustment, and strike procedures were the same. The primary differences were those encountered due to the language barrier, the obtaining of Province Chief clearances, and working with the MACV advisors.

There also appeared to be a different night procedure for the ARVN FAC. To quote Maj. Royce U. Jorgenson, Sector ALO/FAC:^{32/}

"Whenever we flew a night mission, we took a VN observer along who spoke English. This solved any language problem, if we encountered any troops in contact, in talking to the VN Army ground Commander. When available, we also took an observer with us on day missions."

Marking of Friendly Positions

A matter of great concern to the FAC was positively locating the friendly forces. The friendlies were often unable to effectively mark their positions, because of the heavy canopy which prevented the smoke from being seen. However, positions marked by the M-79 (Grenade Launcher), Smoketrail Flares, that penetrated the canopy, were easily identified. Troops returning from the fields praised these flares and recommended that the Table of Equipment (T/E) be increased to provide greater quantities. It was also suggested that bright yellow and purple be used rather than the standard white and red. According to Maj. Donald C. Silvera, assigned to the 4th Battalion, 8th Regiment of the

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5th ARVN Division: "Under the heavy canopy there was no updraft so the smoke would just sit there. With the M-79 it shot up through the trees with no problems."^{33/}

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CHAPTER VI

THE GROUND FAC

All FACs in SVN were trained to control close air support strikes from the ground. In their initial field training, they controlled strikes on the Eglin AFB range from ground positions. The Air-Ground Operations School, Hurlburt Field, Fla., required a minimum of five controlled strikes per student before he was certified as qualified. The training was most realistic as the school's aircraft included the F-4C, A-1E, F-100, and F-105.^{1/}

Ground controlling was not feasible in most of SVN because of the prevalent double and triple canopy forest. There were other inherent disadvantages. The ground FAC was unable to observe as much terrain as the airborne FAC, and could not see the reference points as the strike pilot saw them. His maneuverability was limited, whereas the airborne FAC could position himself quickly and easily, irrespective of terrain. Further, he was unable to support multiple operations as could the man in the air. His communication with strike aircraft was less certain, as was his transmittal of strike results. Target marking and BDA proved to be less accurate.^{2/}

The obvious advantage of utilizing the ground controller was that he traveled with the maneuvering battalion, and thus was always available, while the airborne FAC was sometimes not immediately available. Additionally, light aviation was highly vulnerable to enemy ground fire.^{3/}

There were several operations in which FACs were utilized in ground positions. One notable occasion was during the evacuation at Kham Duc in the

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spring of 1968. The ground FAC of the TACP at Kham Duc had departed on a C-130 with the understanding that there was no further requirement for a TACP at the camp. Capt. Phillip B. Smotherman was flying as a FAC during the evacuation, when his aircraft was damaged so severely that he was forced to make an immediate semi-controlled landing on the runway at Kham Duc. Abandoning his aircraft, he located the TACP bunker on the field, found the radios still working, and contactd I DASC. He was then informed that Gen. William W. Momyer, Seventh Air Force Commander, desired him to remain in position to coordinate FAC aircraft activity. He requested and received an FM radio to facilitate the coordination.^{4/}

The unquestionable value of having a Forward Air Controller on the ground during this critical period was clearly shown by Captain Smotherman's statement:^{5/}

"My duties on the ground during the four hours spent at the camp were spent coordinating between the ground and aircraft overhead to designate targets. I received information from Da Nang concerning incoming transport aircraft and relayed questions back from the ground commander regarding where he situated his ground troops and where to locate them for evacuation. I also explained how often and how many they could take on each aircraft. In general, I kept the communications coordinated between the aircraft above, the transport aircraft, the FACs and the ground commander. I felt that I was needed and perhaps it was fortunate I arrived when I did. A short time later, it became unsafe and we started to advise the FACs to strike a little closer...."

The ground FAC in this evacuation coordinated many actions rather than actually controlling the strikes. His work was similar to that of an air coordinator. But, as will be shown, most of the ground FAC actions in RVN were

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of this nature.^{6/}

On 10 May 1967, Tactical Air Command (TAC) published an analysis of the Tactical Air Support Subsystem. It showed that FACs assigned to battalion level moved with them and performed mainly the air liaison function, since earlier experiences indicated that the airstrike control function could not be effectively performed from the ground.^{7/}

With a battalion maneuvering in unusual circumstances, there was, however, a definite need for the ground FAC. Capt. James A. Anderson, a FAC with the 3d Brigade, 9th Infantry Division, was engrossed in a six-week operation in the Delta about 40 miles southeast of Saigon, in which two battalions of the 3d Brigade were maneuvering. Lt. Colonel Hemphill, the Brigade Commander, elected to establish his Tactical Operations Center (TOC) as close to the action as possible. The TOC van and a MRC/107 radio jeep were airlifted and put in place by helicopter. A system of FAC rotation was established by the brigade ALO, which kept a FAC at the forward location for six days at a time. The TOC was resupplied during the six weeks by helicopter.

The ground FAC found himself almost exclusively coordinating strikes in the area with the airborne FAC. They averaged about four productive strikes a day. Captain Anderson stated:^{8/}

"I must say the field TOC-TACP operation worked extremely well. I am doubtful that it would have been quite as successful if we had been in I Corps with the heavy foliage canopy. There was an added advantage. Shortly after being relieved, I was in the air in an O-1 as a FAC. My six day experience on the ground with the "control element" was most

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valuable to me while doing the actual strike controlling. I knew the problems of the battalions intimately and I hope I communicated the urgency of the situation to the strike pilots."

No planned ground control strikes occurred after 1965; however, isolated instances did take place. An example of Lt. Col. H. P. Phillips, ALO, 101st Airborne Division is presented:^{9/}

"The only time in this division that a FAC controlled a strike from the ground was in December of 1967. We had a FAC out with a patrol when they contacted the enemy. He utilized a radio manpack to talk with the airborne FAC and assisted tremendously with the successful strike. There is no formal program for FACs going on patrols but we send a man anytime a brigade commander desires it. Most FACs go on a few patrols during their tours, even when not specifically requested to go, just to get the ground picture."

Here, again, the FAC did not do the actual controlling but contributed to the strike.

An indication of the futility of attempting to control strikes from the ground was seen in Operation HARVEST MOON, a combined U.S. Marine-ARVN action in Song Ly Valley of Quang Tin Province, from 8 through 18 December 1965. During the initial part of the operation, the Marine ground-air-controller unit was missing in action. This four-man forward observation ground team had been unable to contact the Marine DASC to get air support. Along with the team, 100 Rangers and two U.S. advisors were also listed as missing in action. Finally, USAF airborne FACs were called into action, taking over direction of CAS, and reporting the destruction of 15 structures, two bunkers,

[REDACTED]

two weapons positions, and an estimated 194 VC killed by air. ^{10/}

In June 1967, the CSAF was concerned that battalions and higher echelons were not being manned by ALO/FACs, as specified in the 1965 Army/Air Force Concept for Improved Joint Air-Ground Coordination. In a message to CINCPACAF in June 1967, the CSAF requested assurance that USAF TACPs were manned and employed as specified in the agreement. ^{11/}

In reply to this message, in July, CINCPACAF advised a close examination had revealed the TACP employment at that time was not in accordance with the Army/Air Force agreement. He further stated the Commander, 7AF, had been directed to take immediate steps to insure that an ALO/FAC TACP was attached to each Army maneuver battalion and armored cavalry squadron. Furthermore, TACP personnel requisitions had been, and would continue to be made, to ^{12/} provide the capability to satisfy the established employment concept.

In mid-1968, there were generally no TACPs in place at each battalion. TACPs at brigade levels were deployed with maneuvering battalions when required. According to Maj. William L. Walker, ALO of the 3d Brigade, 9th Infantry: ^{13/}

"The lowest level TACPs are located at Brigade, with certain Brigade FACs assigned to the Battalions to carry out the ALO function. The hardware of the TACP however stays with the Brigade except on certain occasions, where MRC/107 radio jeeps are carried by helicopter into a field area to be placed beside a portable TOC Van. The Battalions of the 9th Infantry Division are very flexible and are often "Op-Conned" (put under Operational Control) to different Brigades in changing situations. Its not feasible to have a complete TACP at Battalion level since the Brigade

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TACP can handle the requirement. The Army has decided that this is the way they want it, so we concur."

In the 101st Airborne Division, the brigade TACPs had more than enough personnel and equipment to deploy TACPs with any maneuver battalion. On occasion the brigade ALO would even request that a certain FAC be permitted to accompany a battalion to acquire a better perspective of the ground picture. ^{14/}

According to Col. Basil Pafe, Director of Operations, 504th TASG, there was no degrading of the 1965 Army/Air Force agreement. He said: ^{15/}

"Generally we do not have TACPs assigned to the Battalions in the strictest sense. The FACs are pooled at brigade level and utilized as required to deploy with maneuvering battalions. The MRC/108 jeeps, manpack radios and the required operators are also standing by.

"The idea that a TACP is physically located with each battalion regardless of position is simply not feasible and the Army doesn't request it. The Brigade Commander will direct that a TACP join a battalion when he desires it. There is one detached battalion of the 101st Airborne Division located at Phan Thiet that carries a TACP, including two ALO/FACs, with it at all times. The '65 agreement is being followed, in spirit, since TACPs accompany a maneuver battalion whenever required."

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CHAPTER VII

FAC AIRCRAFT

The FAC also supplied a large percentage of visual intelligence in support of friendly ground force units by obtaining target information through their VR role. As greater demands were made upon the FACs--nearly all in-country fighter strikes were FAC-controlled in 1968--a commensurate need for increased FAC aircraft prevailed.^{1/}

In February 1968, approval was obtained for 320 FAC aircraft to meet in-country requirements. The O-1 aircraft was rapidly becoming obsolete as to performance and communications; it had been programmed to be phased out as more O-2As and OV-10s became available. With approximately 260 FAC aircraft on hand, however, it became obvious that the O-1 would have to remain in-theater, until at least FY 1970 to realize the necessary FAC aircraft buildup.^{2/}

The three FAC aircraft in-theater--the O-1, O-2A, and OV-10--each had distinct advantages and disadvantages as to capabilities and equipment. Because communication and performance problems had harassed the FACs at the most inopportune moments, the O-1 was recognized as an inadequate FAC aircraft. Complicating matters, it carried only four to eight marking rockets, reaction time was greater because of the slower airspeed, and short endurance time on target, due to fuel limitations, created problems in mission accomplishment.^{3/}

On the plus side, the O-1 did possess an essential capability for being deployed to short, unfinished fields with primitive facilities. The

UNCLASSIFIED



O-1 Aircraft

FIGURE 2

UNCLASSIFIED

UNCLASSIFIED



O-2 Aircraft
FIGURE 3

UNCLASSIFIED

[REDACTED]

maintenance requirement was less than the O-2 and OV-10, permitting a reasonable time on station at a forward operating location (FOL). Visibility of the O-1 was better than that of the O-2, though it did not compare with that of the OV-10.^{4/}

The O-2, as an interim FAC aircraft (purchased off the shelf), filled its role admirably. The obvious advantages over the O-1 were its two engines, more sophisticated communication equipment, greater speed, and longer endurance. With its greater zoom capability, so vital in BDA and target marking, more safety was provided the FAC. It carried 14 marking rockets permitting completion of more strikes on a given flight. The stable platform and sight on the O-2 enabled the FAC to mark targets more accurately.^{5/}

There were, however, several drawbacks to the O-2A. Single engine operation was no problem, as long as the good engine was the rear one. When the rear engine failed, safe flight was difficult to maintain, particularly, if the aircraft were mission loaded. Capt. Ronald J. Langlois, 3d Brigade FAC of the 101st Airborne Division had two engine failures. He described them as follows:^{6/}

"On one occasion I lost the front engine and made it back to Da Nang Air Base with no problems. On another mission I lost the rear engine and found myself immediately in a dangerous situation. Airspeed decreased to 80 knots and to maintain control I was losing about 50 feet per minute with max power even after dropping the rocket pod. Luckily there were no hills in the area. I barely made it to Phu Bai, descending all the way. The front engine is simply underpowered for safe single engine operation. With a combat load, rear engine only operation is critical and front engine operation

[REDACTED]

only is downright dangerous."

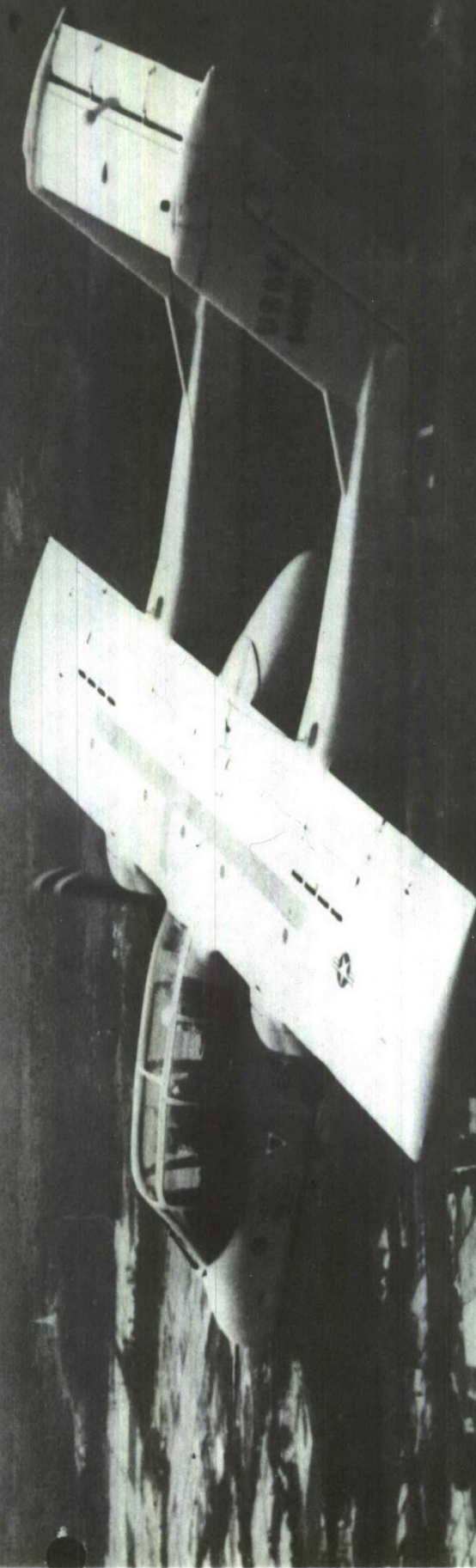
During the VR position of a flight, the FACs were handicapped by poor visibility. The pilot would find himself consistently making left turns, because of the difficulty in seeing across the cockpit and out the window. Little could be seen if the right seat were occupied. The predominately left turn activity by the FAC established a dangerous pattern when enemy ground fire was being considered. ^{7/}

The O-2A was definitely not a forward operating location aircraft, since the front engine would throw rocks, dirt, and other foreign objects into the rear engine, while on unimproved runways and taxiways. Further, the gear itself was not built to operate from forward operating bases. Maj. Royce Jorgenson, who as an ALO/FAC flew more than 200 strike missions and about 450 hours in the O-2A aircraft, said: ^{8/}

"The O-2A was a civilian aircraft, taken off the shelf and fitted to the FAC role. The primary advantage over the O-1 is that it is vastly superior as a night FAC aircraft. The instrumentation and communications equipment alone make it worth the purchase. It is somewhat overweight in the military configuration. However, on one occasion the front engine of an O-2A was shot up; the cowl was hanging loose, acting as a speed brake; there were three people aboard; the pilot flew it over 100 miles back to base and landed safely. True, it doesn't fly too well on one engine but it flies much better than the O-1 with an engine out. It is not the final answer as a FAC aircraft but it has served well the interim purpose."

During Combat Bronco, an evaluation project, the OV-10 aircraft, as the latest FAC vehicle in SVN, received extensive evaluation under combat conditions.

UNCLASSIFIED



OV-10 Aircraft
FIGURE 4

UNCLASSIFIED

[REDACTED]

This was accomplished by having a team composed primarily of experienced SEA FACs assemble in April 1968 at Hurlburt Field, Fla., for staging. After receiving training at this location, consisting of checkouts and Category 3 testing (munitions), the team returned to SVN in July 1968, where they operated from a FOL at Lai Khe. Flying only Visual Reconnaissance missions in three OV-10s, they used their own TACP to support the 1st Division's 3d Brigade for 15 days.^{9/}

The team then became attached to the 19th Tactical Air Support Squadron at Bien Hoa Air Base. Not having a TAOR of their own, they worked with several divisions, encountering some difficulty, since they were unfamiliar with the area. To overcome this situation, two pilots were often used in one aircraft during the combat evaluation, one to fly and observe, the other to observe and record.^{10/} One of these Combat Bronco mission records described the value of an aircraft carrying eight MK-24 flares. Snort 03, an OV-10, had successfully directed a complete airstrike, while providing his own illumination.^{11/}

Summed up, these were advantages accruing from use of the OV-10 as opposed to the O-1 and O-2:

- Two engines (improved single engine capability over the O-2.)
- Better visibility.
- Four LAU-59 (7 rockets each) or four B-37K rockets with 8 MK-24 flares or a combination of each.
- Faster point to point, no time waste, cruise 150-180 knots, dive at 400 knots.

- [REDACTED]
- Greater zoom power after marking.
 - Night and all weather instrumentation.

Additionally, the OV-10 could rendezvous at 10,000 feet with the strike aircraft and lead them to the target with little warning to the enemy; this was an impossibility in the O-1, and difficult to accomplish in the O-2. Communications were also superior as the OV-10 utilized one UHF, one HF, one VHF-AM, and two VHF-FM radios, which allowed direct contact with the DASC. Further, the aircraft had the capability of providing radio relay between two widely separated units.

The value of FM homing was demonstrated in an extract from an OV-10 Mission 759 report of 17 October 1968: ^{12/}

"All the ground units we used FM Homing on were thoroughly impressed with our capability. We even found Dog Face 6 kilo in the dense jungle from about 10 miles out. FM homing works excellent except from a direct trail position to target. The retransmission capability between Dauntless Yankee and Damage Yankee impressed them to no end. They couldn't believe they could talk on their own 'push' to someone else. Upon completion we explained the OV-10s retrans capability and how it works to both parties."

As mentioned in this report, the retransmission capability was significant in bringing widely separated ground units together. ^{13/}

The OV-10 (and O-2) had a smoke-generating capability, unavailable in the O-1, which proved useful on many flights. In this narrative of Combat Mission 753, flown on 15 October 1968, the value was demonstrated when normal

[REDACTED]

14/

communications were becoming confused:

"The strikes on this mission were not preplanned. After T/O and check-in with Sidewinder 30, he informed us that we would have two sets of fighters. Both target areas are suspected supply and VC rocket launch points. RAP 15 flight of two AT-37s checked in at 1531 and were put in at XT 644 454. The strike was normal with nothing unusual.

"The second set of fighters were to show at 1600 hours. Sidewinder control informed us that their call sign was Yellow Jacket, that being the only info they had. At 1610 Snort 11 asked Sidewinder control what the status of the fighters were. At approximately 1630 Sidewinder informed Snort 11 to go to 223.8 and contact the fighters. Contact was attempted with no joy. We informed Sidewinder control, who then informed us that the correct call sign was 'Yellow Flight.' Contact was again attempted and made. Aircraft were two A1 VNAF. Rendezvous was made and the strike put in at XT 635 470. On the eighth, ninth and last pass, secondary explosions were seen. Area of strike was a suspected R7 launch point. The bombing was outstanding; however, they had five duds. Armament carried, 20 MB1 and four M117. Smoke generator was used to effect both rendezvous - this being the first thing the fighters picked up."

As to disadvantages, the Combat Bronco FACs could list few. Though the O-1 could turn a little faster while "jinking", it really was only putting itself in another direction, while in the OV-10, the pilot could "jink" and move smartly along at the same time. ^{15/} Another decided advantage, the TAOR of the OV-10 could be reached quickly and the aircraft could proceed between targets rapidly, so that during heavy ground activity more targets could be covered. ^{16/}

Although the OV-10 had not been fully evaluated under completely austere operations, hard dirt runway landings had been made--a maneuver not recommended

[REDACTED]

in O-2 aircraft. Further, there were four M-60 machine guns available for use should the restriction ever be lifted. 17/

In summary, the three FAC aircraft had certain attributes that each of the others lacked. The OV-10 proved to be the best.

[REDACTED]

CHAPTER VIII
VARIED STRIKE CONTROL FUNCTIONS

As the reliance upon airborne controllers increased, the names identifying each role also increased, such as Airborne VR-FAC, NI/FAC, Misty FAC, VNAF FAC, and ARVN FAC. It became increasingly difficult and confusing to identify the support provided by each. In an attempt to clarify this, the Commander, Tactical Air Command, addressed the problem to all USAF commands. The result was a development of a joint TAC/PACAF/USAF definition and description of related airstrike control functions as separate and distinct from those of the TACP FAC, to be designated as Strike Control and Reconnaissance (SCAR).^{1/}

SCAR was concerned generally with an interdiction role in support of Air Force requirements for surveillance and reconnaissance, i.e., to gather intelligence, acquire targets, and provide airstrike control. The SCAR provided the visual capability to detect and identify fleeting and low-resolution targets within a specified geographical area, and called for and directed strikes against these targets.^{2/} It is implicit that other air support functions may be required of the SCAR as the tactical situation dictates. For this reason, it is desirable, but not required, that the SCAR pilot be a qualified fighter pilot with a tactical air background.^{3/}

In accepting the FAC and SCAR as separate, yet similar functions, these distinctions are presented:

[REDACTED]

FAC

SCAR

- Assigned directly to support USA Forces.
 - Liaison Officer and Advisor.
 - Advises Ground Commander on:
 - Capabilities;
 - Limitations;
 - Employment of Tactical Air.
 - Coordinates and controls air-strikes to support fire and maneuver of ground forces.
 - Work in close proximity to friendlies.
 - Performs VR in TAOR.
 - Tactical Fighter Pilot background required.
- Supports interdiction role.
 - Supports AF requirements for:
 - Reconnaissance;
 - Gathers intelligence;
 - Acquires targets;
 - Provides airstrike control.
 - Tactical Fighter Pilot background desired.

The similarity of the two functions permitted personnel trained for the FAC role to perform the SCAR functions, so long as FAC commitments to the U.S. ground forces were not degraded. Personnel who performed the SCAR function should have had expertise in weapon delivery, characteristics of fighter aircraft performance, reconnaissance and surveillance techniques, and detailed knowledge of the Command/Control system. The major difference between the two was the FAC's dedication to the U.S. Army forces, while the SCAR was assigned to support other forces and missions. However, the SCAR could, if fighter qualified, support the U.S. Army forces when required. To further clarify the FAC and SCAR functions, an interface between the two is presented: ^{4/}

[REDACTED]

INTERFACE BETWEEN FAC AND SCAR FUNCTION
(NR: Not Required D: Desired R: Required)

| <u>FAC</u> | | <u>SCAR</u> |
|------------|---|-------------|
| R | Target Acquisition | R |
| R | Visual Reconnaissance | R |
| R | Control Fighter Strikes | R |
| R | Mark Targets | R |
| R | Bomb Damage Assessment | R |
| R | Report Results to Fighters | R |
| R | Maintain direct liaison with Ground Commander | N/R |
| R | Utilize FOL | D |
| R | Adjust artillery | D |
| R | Night Operation | R |
| R | Column cover | NR |
| NR | Operate out-country | R |
| NR | Control CAS for FW forces | R |
| NR | Train FW forces | R |
| NR | Operate north of DMZ | D-R |
| R | Utilize Army Communications | R |
| R | Utilize AF Communications | R |
| D | Photography | D |

All pilots who performed the SCAR function had not necessarily completed the formal FAC training course. Those who did not included SCARs flying the "fast movers", such as F-100s, F-4Cs, and those supporting the C-130 (Blind Bat) missions and the C-123 (Candlestick) missions. In these cases, a separate training and certification program was established at each wing for the specific aircraft and type missions to be flown.

CHAPTER IX

NEW PROPOSALS, INNOVATIONS, CONCLUSIONS

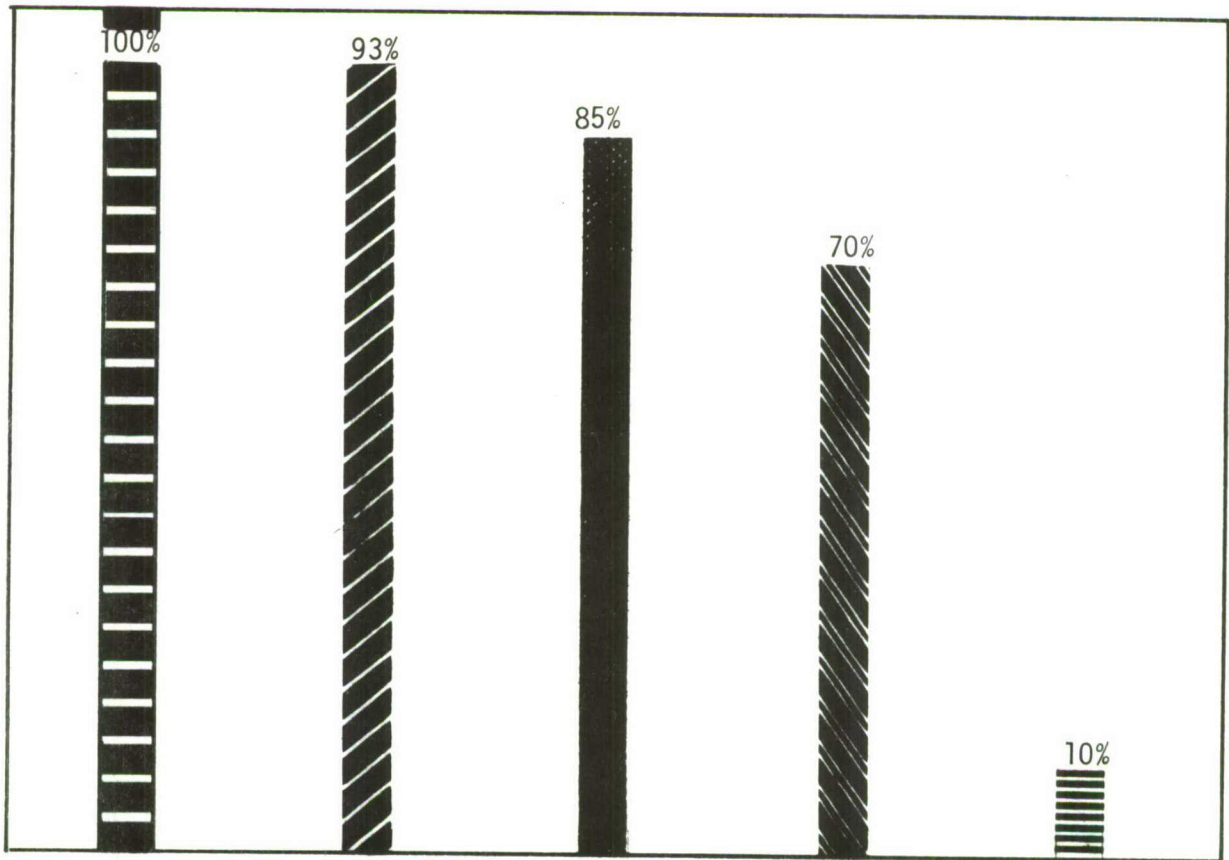
There was constant effort by all concerned to find better ways to acquire and mark targets, control strikes, and assess damage. Much was accomplished by taking actions as a result of lessons learned during the accepted FAC process.^{1/} There was positive thinking, however, concerning the use of more advanced technology in target designators and target seekers.^{2/}

In a suggested input to the FY 71 7AF Force Improvement Plan, a graph was presented showing vehicle target acquisition figures for the month of December 1967 and resulting strike degradation.^{3/} (See Fig. 5.)

According to Col. Benton K. Partin, Director of Tactical Analysis, Seventh Air Force:^{4/}

"The system of FAC target marking, target designation and strike direction is time consuming and imprecise when compared to the possibilities offered by lasers, microwave interferometry and non-visible (to the enemy) vectoring systems. Developments in this area have been too late starting, too slow in progress and handicapped by low priorities. A taped sample of 5 FAC controlled night strikes against truck targets indicated an average of 42 minutes from strike aircraft contact until BDA determination: contact to rendezvous - 9 minutes; FAC mark and clear area - 7.2 minutes; attack phase - 22.8 minutes and BDA determination - 3 minutes. These included A-26s, F-4s and B-57s. It is costing the 7AF a daily toll in lost targets, imprecise weapon placement, excessive time in the target area, excessive radio chatter, aircraft attrition, and hazards in close air support. This is one of several areas which points to the need for more aggressive formulation of requirements documentation and, in turn, advanced technology in munitions development.

DEGRADATION
 OF
 VEHICLE TARGET ACQUISITION
 BY
 FAC AND STRIKE AIRCRAFT
 (1 - 31 Dec 67 Operations)








-  Vehicles sighted.
-  After degradation by weather (7%).
-  After degradation by nonavailability of strike aircraft (8%).
-  Further degrading by evasion--awaiting strike aircraft (15%).
-  % Effectiveness. (Missed due to improper ordnance, evasion, limited number of attacks, or ineffectively delivered ordnance--60%.)

FIGURE 5

[REDACTED]

"The first generation laser target designators for FACs and target seekers for strike aircraft should be put in the field as quickly as practicable (SEAOR 57). More flexible and more advanced follow-on equipment should be pursued with very high priority. Remote strobing of the FAC laser target designator from the attack aircraft is a desired to minimize FAC or ground team exposure and to maximize search effectiveness from the strike aircraft.

"With sufficient power, laser target designators can operate out of high density gun range and mark targets in rapid sequence for strikes by high performance aircraft. All sophisticated sensors for target detection should be paralleled by a laser target marking capability and all strike aircraft should be able to both attack the marked target directly or deliver automatic terminal homing munitions. For example: sophisticated IR devices can detect IR targets below the energy threshold of relatively cheap automatic terminal homing seekers. Gun defenses could be activated, the hot tubes detected by IR, then marked with a paralleled laser target designator and attacked out of gun range."

These needs were presented in the long-range context, even though stressed as being required quickly. There was no question that the FAC responsibility in SVN was being effectively carried out, although not at its maximum potential. An operational requirement (SEAOR 173) had been submitted for a "FAC-X" (later designated "O-X") aircraft, which would have a significant operational capability incorporating the best features of the three FAC aircraft.

Future FAC responsibility was planned for a new concept known as "Duffel Bag", involving the in-country use of IGL00 WHITE type sensors. The FAC here would serve as an airborne platform to relay information.^{5/}

Conclusions

FAC operations had risen to unprecedented levels by mid-1968. Different

[REDACTED]

types of FACs were operating 24 hours a day in a wide range of aircraft, including the O-1, O-2, OV-10, C-130, F-100, and F-4C, ranging from 2,000-foot sod runways to 10,000-foot concrete airstrips. The FAC was considered an integral part of the strike team, and the absence of a FAC was acceptable grounds for an abort. This was due to the emphasis placed by 7AF on the avoidance of "short round" incidents.^{6/}

High level interest in the effectiveness of FAC activity, along with resolution of problems was manifested by the many teams and agencies which were analyzing and evaluating Forward Air Controlling. Varied types of reports were completed or in progress during 1968; among these were studies by teams from Hq USAF, PACAF, and Seventh Air Force.

A study by the team from Hq USAF, Operations Analysis, was entitled "FAC Operations in SVN". This study was limited to ALO/FACs operating with three brigades of the 25th Infantry Division. The team, headed by Lt. Col. George Yale, AFGOA, concentrated their data collection efforts and an analysis in these areas: (1) FAC allocation of effort by task; (2) Limitations of FAC VR capability; (3) Limitations of target acquisition; (4) Limitations of air/ground communications; and (5) Delivery accuracy of in-country strike operations. The team leader was located at III DASC or 25th Division Headquarters, with a team member located at each brigade. The in-country portion of this study was completed in December 1968.^{7/}

The PACAF team mission was to establish the total number of pilots required to support ALO/FAC and SCAR missions of 7AF, including the 504th TASG

[REDACTED]

and subordinate squadrons, supervisory staff, and the Theater Indoctrination School. Additionally, the team was to establish the total number of FAC/SCAR aircraft necessary for the 7AF mission, including staff supervisory and school requirements.^{8/}

The various reports led to other improved procedures and processes, but little was said about future commitments, when permissive environments might change into possibly very difficult air environments, because of the proliferation of air defense technology. When Redeye, and other detection devices, are advanced to the point of feasibility by the enemy, then perhaps all FAC aircraft, tactics, and training will have to change. To articulate this change in requirements for future activity as a result of present Air Force studies, would be most difficult.

What it all finally sifted down to was this: a FAC was a FAC, whether on the ground or in the air. Mostly he was airborne, sometimes he was not. In SVN he had to be airborne to be effective in controlling a strike. When working with fighters he had to be aware of the capabilities and limitations of the aircraft and pilots. When directing ordnance delivery he had to be acutely aware of the effects and delivery parameters of that ordnance. When involved in close air support of friendly troops, he had to know the scheme of maneuver and have complete rapport with the ground commander.

Few USAF personnel had ever acquired as true an involvement with the war as the FAC. He had to be on the ground to do liaison work with the Army, whether advising, enlightening, explaining, coordinating, representing, or making friends for the Air Force. He worked with two vehicles primarily. One

[REDACTED]

was a sophisticated radio-jeep, the other a sometimes-not-so-sophisticated aircraft. He was directly affiliated with the Army. He worked and lived with Army personnel under conditions that were seldom optimum, and was considered a member of their team. End of Tour Reports almost unanimously described these jobs as "rewarding". There was, however, no recorded instance of a FAC requesting a transfer to the Army at the conclusion of his tour.

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12. (C) Interview, Major Sutphen, Doc. 15.
13. Ibid.
14. (C) Rpt, COMBAT BRONCO Intel Officer, Msn Nr 753, Tail Nr 624, Call Sign Snort 11, "Combat BRONCO Mission Record Narrative", 15 Oct 68, Doc. 41.
15. (C) Interview, Major Sutphen, Doc. 15.
16. Ibid.
17. Ibid.

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1. (C) TASS Subsystem Analysis, Doc. 34.
2. See FOOTNOTES, Chap I, Nr 2.
3. Ibid.
4. (S) Extract, CHECO Rpt, "SCAR in SEA", 22 Jan 69.

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1. (S) Extract, Annex I, Hq 7AF, Munitions, 7AF Force Improvement Plan, undated, pp 4, 5, 6, Doc. 43.
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3. Ibid.
4. Ibid.
5. (S) Oral Briefing, 7AF DOCM to DOA, Operation DUFFLE BAG, Dec 68.
6. (U) Ltr, Maj Gen Gordon F. Blood, DOOT to 7AF DO, etc., subj: Short Rounds, 19 Jul 68, Doc. 44.
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(C) Rpt, COMBAT BRONCO Intel Officer Msn Nr 767, Doc. 40.
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GLOSSARY

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| ALO | Air Liaison Officer |
| ARVN | Army of Republic of Vietnam |
| BDA | Bomb Damage Assessment |
| CAS | Close Air Support |
| CBPO | Consolidated Base Personnel Office |
| CBU | Cluster Bomb Unit |
| CCTS | Combat Crew Training School |
| CINCPACAF | Commander in Chief, Pacific Air Forces |
| CRC | Control and Reporting Center |
| CRP | Control and Reporting Post |
| DASC | Direct Air Support Center |
| DMZ | Demilitarized Zone |
| FAC | Forward Air Controller |
| FEBA | Forward Edge of the Battle Area |
| FOL | Forward Operating Location |
| FM | Frequency Modulation |
| FWMAF | Free World Military Assistance Forces |
| LZ | Landing Zone |
| MACV | Military Assistance Command, Vietnam |
| OER | Officer Efficiency Rating |
| PACAF | Pacific Air Forces |
| ROC | Required Operational Capability |
| RVN | Republic of Vietnam |
| SCAR | Strike Control and Reconnaissance |
| SEA | Southeast Asia |
| SEAOR | Southeast Asia Operational Requirement |
| SF | Special Forces |
| SVN | South Vietnam |

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|-------|---|
| TAC | Tactical Air Command |
| TACAN | Tactical Air Navigation |
| TACC | Tactical Air Control Center |
| TACP | Tactical Air Control Party |
| TACS | Tactical Air Control System (Subsystem) |
| TAOR | Tactical Area of Responsibility |
| TASG | Tactical Air Support Group |
| TASS | Tactical Air Support Squadron |
| TFW | Tactical Fighter Wing |
| TIS | Theater Indoctrination School |
| TO | Technical Order |
| TOC | Tactical Operations Center |
| TOE | Table of Equipment |
| TOT | Time over Target |
| UHF | Ultra High Frequency |
| VC | Viet Cong |
| VHF | Very High Frequency |
| VNAF | Vietnamese Air Force |
| VR | Visual Reconnaissance |