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CHAPTER IV
OPERATIONAL ACTIVITY

ROLLING THUNDER

In March 1965, a regular program of strikes was begun against North Vietnam. Apart from the limitations on bombing during 13-18 May 1965, the bombing pause of 24 December 1965 - 30 January 1966, and the bombing restrictions which began on 31 March 1968, this program of strikes has continued under the name ROLLING THUNDER.^{1/}

After its arrival in Southeast Asia, the task force regularly flew missions in support of this program of strikes against North Vietnam. Appendix IV shows the number of combat missions flown by the task force. Most of these combat missions, except for those periods when there was a standdown of air operations against North Vietnam, were flown in direct support of ROLLING THUNDER.

With restrictions on bombing in effect after 31 March 1968, an important activity of the task force was the support of tactical air operations in the BARREL ROLL area (Fig. 10) of Laos. Meanwhile the task force maintained its capability to resume full support of the ROLLING THUNDER program.

The activities of the task force in support of ROLLING THUNDER, and the development of its associated mission responsibilities, were closely related to the three major orbits, or stations, flown at different times during the unit's history. With Ethan as the task force call sign, these stations were manned by flights usually referred to as Ethan Alpha, Ethan

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OUT-COUNTRY OPERATIONS

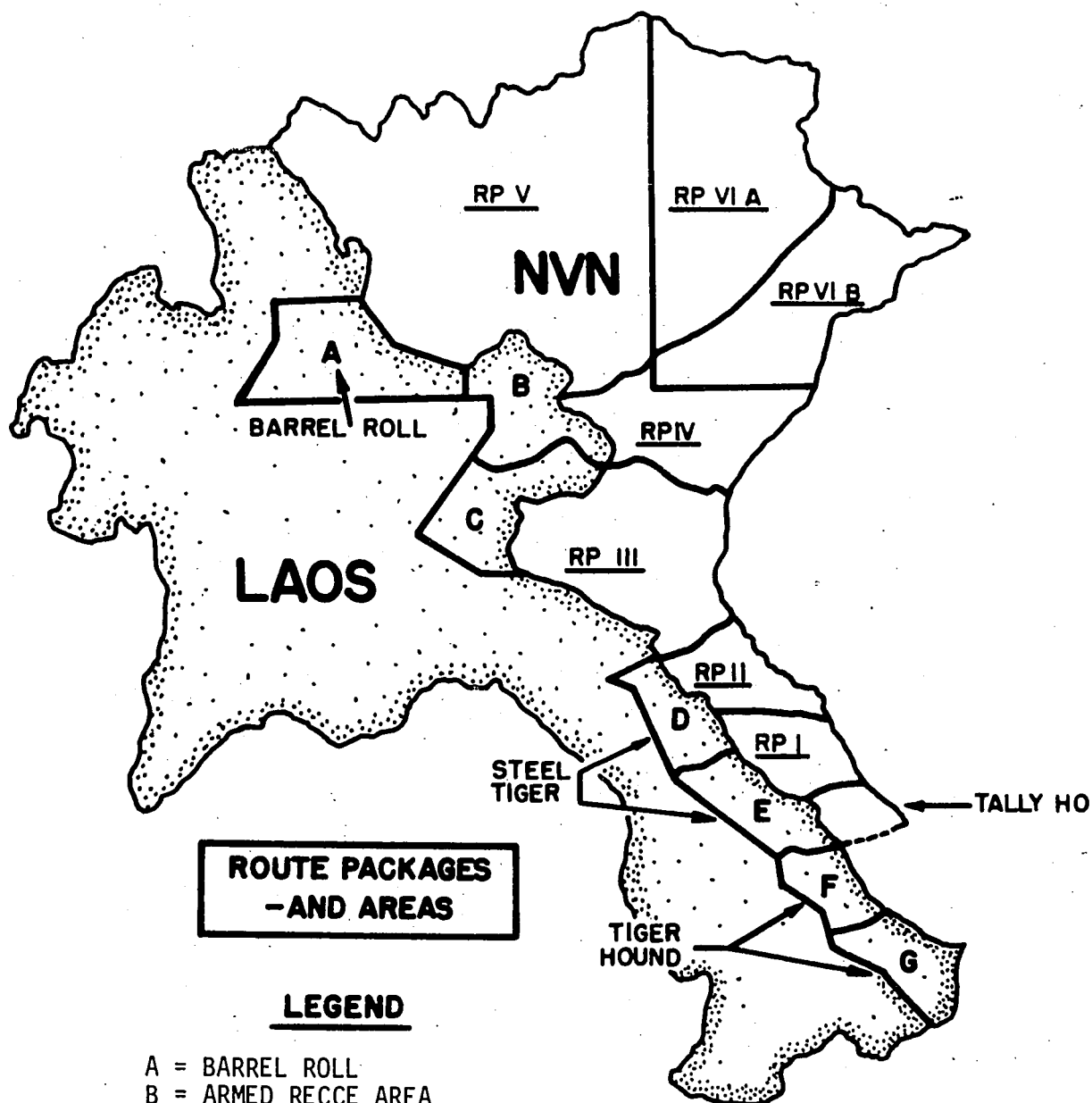


FIGURE 10

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Bravo, and Ethan Charlie. The story of these stations (Alpha, Bravo, and Charlie) in terms of flying time history, is shown in Appendix IV. In the spring of 1968, 7AF requested that the stations be redesignated for compatibility with other units in the theater. The gulf mission became "01", the Laos missions "02" and "03", with special gulf missions redesignated "04". The names Alpha, Bravo, and Charlie are used in this report because for most of the period covered by the report, they were the names used. The Ethan Charlie orbit was flown over Laos on a daily basis after 13 October 1966,^{2/} whereas either the Ethan Alpha, or the Ethan Bravo flight was flown over the Gulf of Tonkin ever since the task force's deployment to Southeast Asia in April 1965.

The flights over the Gulf of Tonkin have been flown on an alternate basis with the RIVET TOP aircraft since 31 March 1968. RIVET TOP is the designation for a single prototype EC-121K with special purpose electronic equipment aboard, giving it an effective anti-MIG and anti-SAM capability. Used to start a test program at Udorn RTAFB on 9 August 1967, it was originally scheduled to continue for 179 days.^{3/} Retention of the aircraft was due, in part, "...to delays in obtaining comparable Security Service positions and secure air-to-air communications aboard COLLEGE EYE."^{4/} However, as of 30 June 1968 it was still in the theater flying missions from Korat RTAFB. Organizationally, RIVET TOP was Detachment 2 of the Tactical Air Warfare Center and was located at Korat after 17 October 1967.

The airplane flown on all of these missions was the EC-121D, a modified version of the venerable old Lockheed Super Constellation. The

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aircraft was easily recognized because of its bulging dorsal and ventral radar domes, which contained antennas for the AN/APS-95 Search Radar and the AN/APS-45 Height Finder. The airframe proved itself reliable during many thousands of hours of operation.

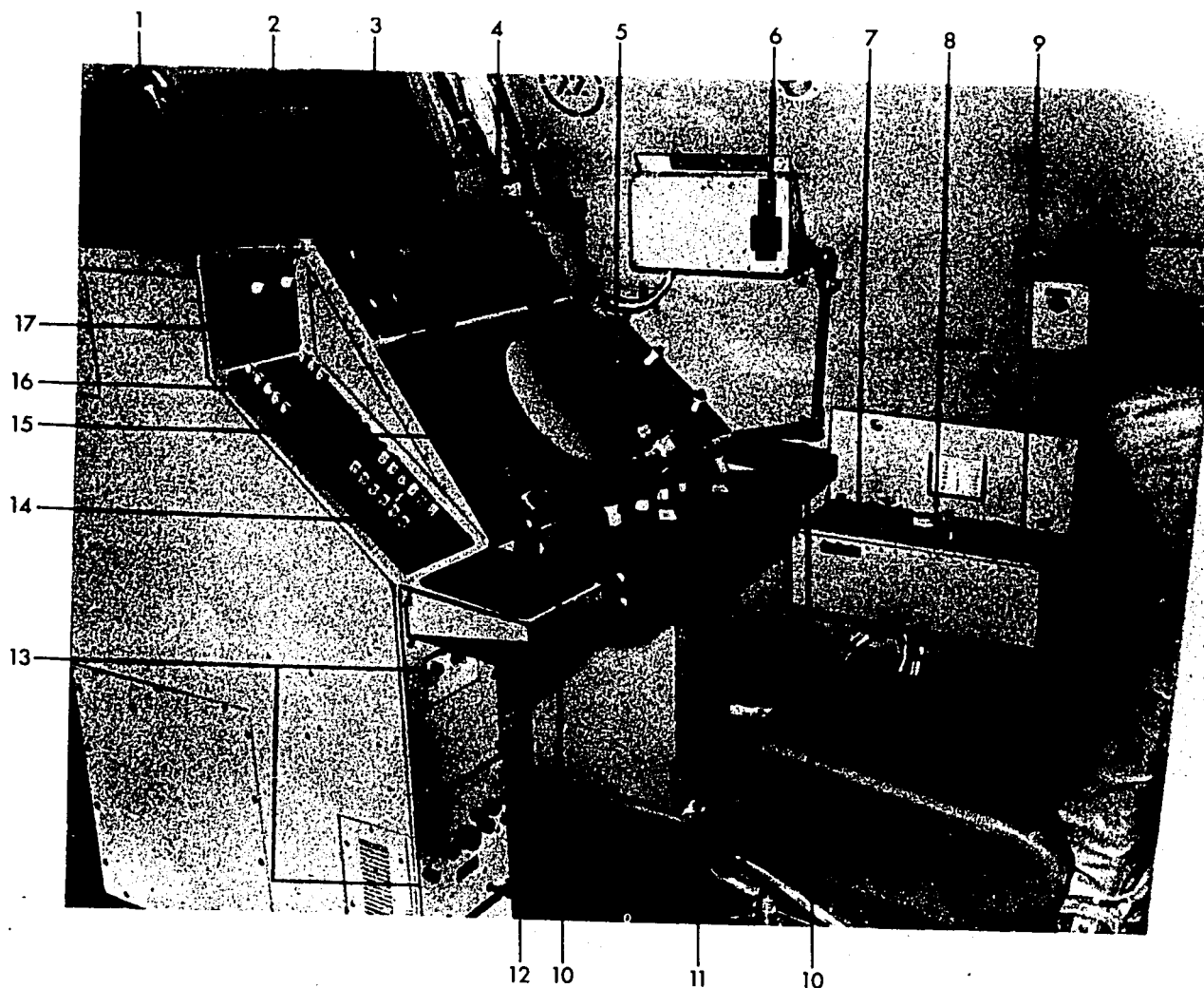
A normal crew on the aircraft, from the very beginning of the task force's deployment to Southeast Asia, consisted of 18 men, 6 officers, and 12 enlisted men. The flight crew consisted of the aircraft commander and copilot, two navigators, two flight engineers, and a radio operator. The radar crew included two weapons controllers (one senior director in charge of the radar compartment and one duty weapons controller), both officers. In addition, on the radar crew there was one crew chief, an assistant crew chief, four search radar operators, one intercept control technician, and two radar technicians, all enlisted personnel. The only important change in the composition of the crews took place on those missions which were flown with a RIVET GYM configuration after 10 May 1968. The RIVET GYM crews consisted of four operators, a supervisor, and a maintenance technician, all from the USAF Security Service.^{5/}

The crews were TDY to Southeast Asia for a period of approximately four and one-half months. During that time, they often accumulated 500 hours of combat flying time, usually on missions providing routine station coverage. The scope of the task force effort, however, included assistance in search and rescue operations, and the radar control of the rendezvous of fighters and tanker aircraft for emergency and scheduled refueling. The range of COLLEGE EYE activities in the employment of their capabilities is indirectly

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EC-121D — TYPICAL SEARCH RADAR OPERATOR'S STATION



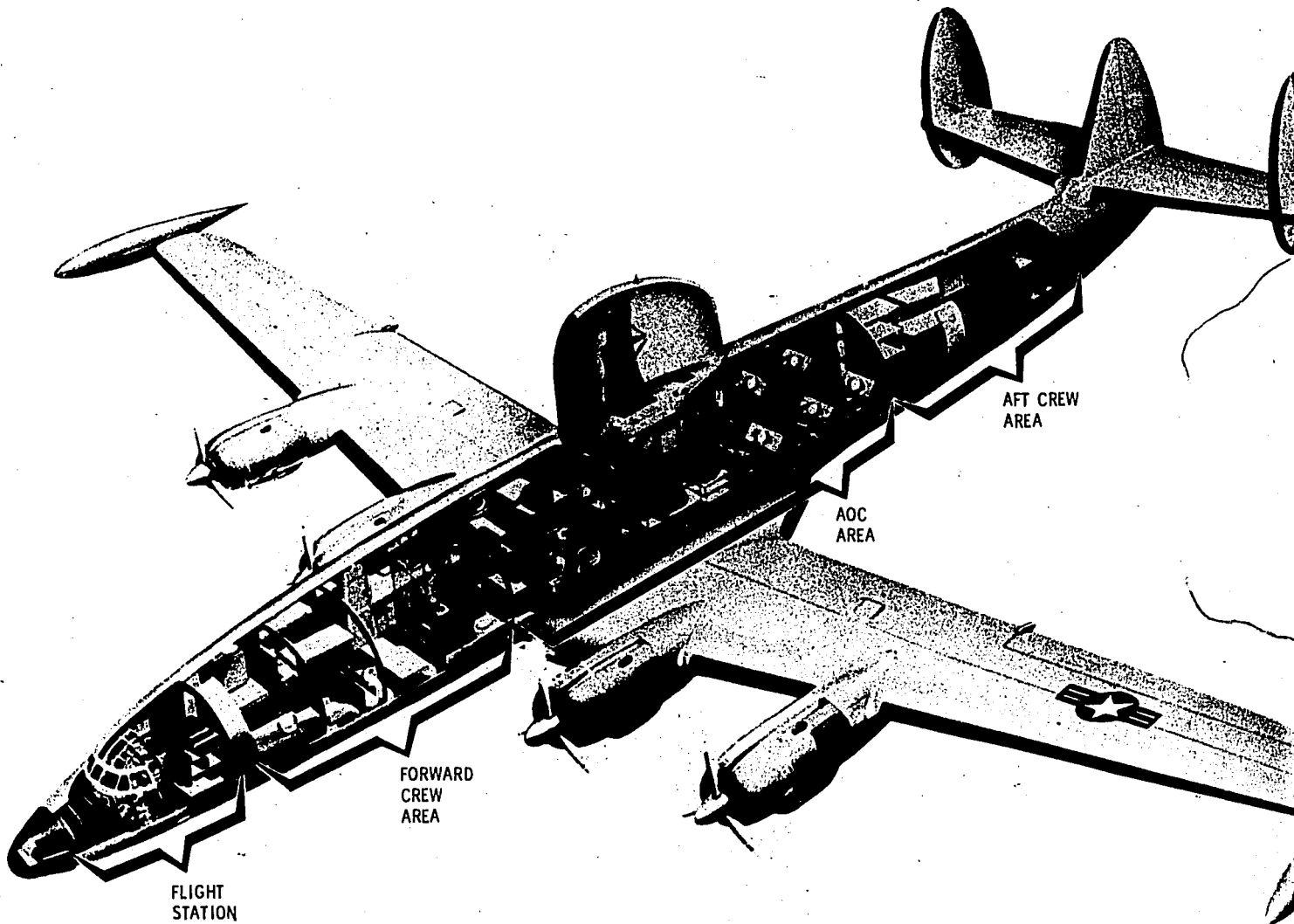
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- | | |
|---|--|
| 1. HAND FIRE EXTINGUISHER | 10. WRITING SURFACES (2) |
| 2. C-4817/APA-159 DESK AND PANEL DIMMER RHEOSTATS | 11. C-4814/APA-159 COMPUTER CONTROL PANEL |
| 3. RHI (RANGE HEIGHT INDICATOR) ASSIGNMENT PANEL | 12. PP-2297/APS-95 POWER SUPPLY |
| 4. C-4815/APA-159 INDICATOR CONTROL PANEL | 13. PP-3820/APA-159 POWER SUPPLY PANEL |
| 5. CP-738/APA-159 TARGET-INTERCEPT COMPUTER PANEL | 14. ICS CONTROL PANEL |
| 6. UHF ANTENNA SELECTOR SWITCH | 15. C-628/ARC-27 UHF RADIO CONTROL PANEL |
| 7. C-2167/APX-49 DECODER CONTROL (MODE 2/3) | 16. 1P-719/APA-159 AZIMUTH-RANGE INDICATOR PANEL |
| 8. AN/ARC-85 UHF TRANSCEIVER CONTROL PANEL | 17. CLOCK (24 HOUR) |
| 9. PANEL LIGHTS RHEOSTAT | |

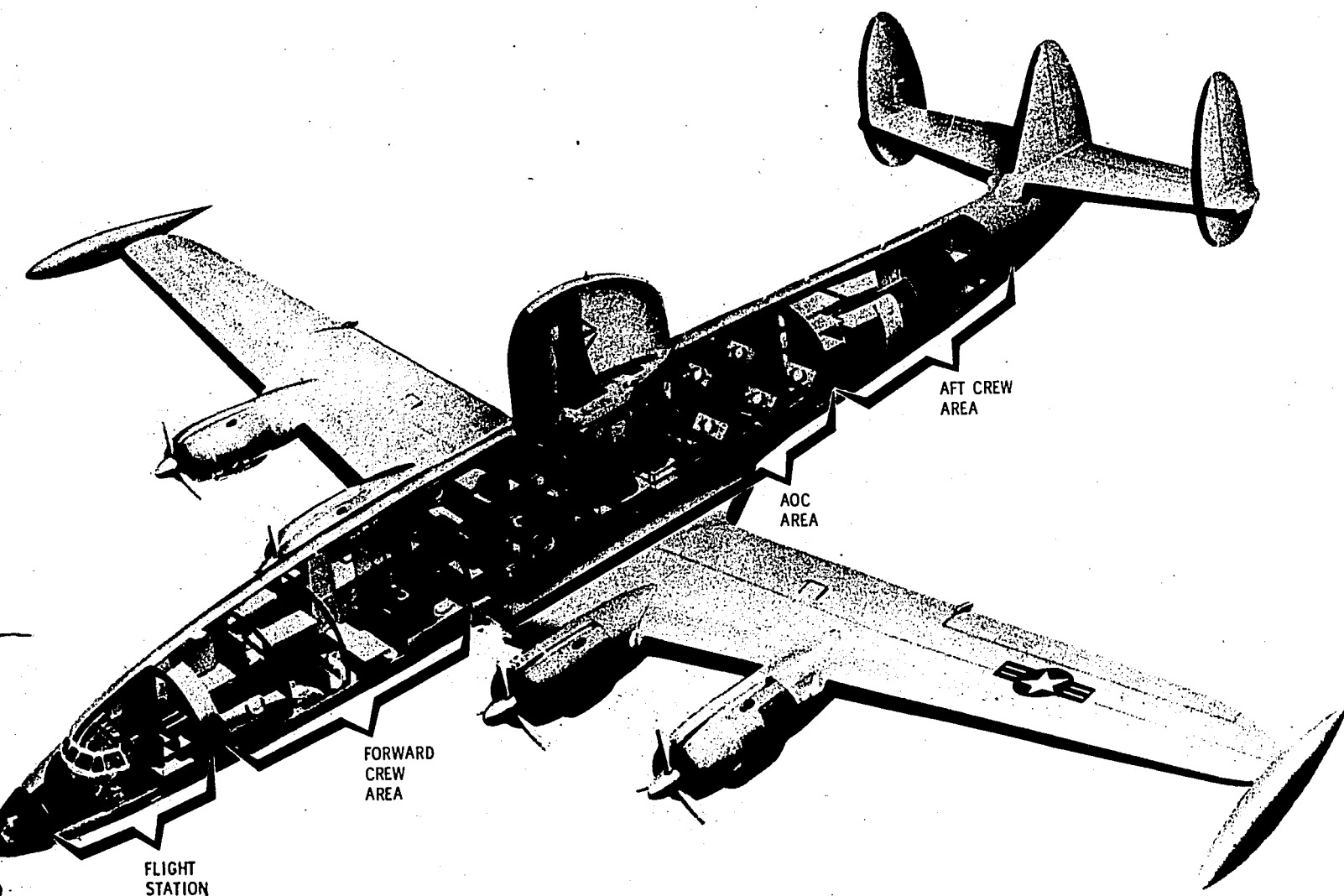
Figure 11
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Figure 12



EC-121D. TYPICAL GENERAL ARRANGEMENT



EC-121D. TYPICAL GENERAL ARRANGEMENT

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shown in Figure 13.

Gulf of Tonkin

The task force regularly flew the Alpha station over the Gulf of Tonkin from 16 April 1965 until 4 December 1967. In general terms, this station was a 50-mile racetrack pattern over the Gulf of Tonkin, about 30 miles from the coast of North Vietnam. Although the exact position of the orbit changed slightly from time to time, the general location of the Alpha station and other stations flown by the task force, is shown in Figure 1.^{6/}

Flown on a daily basis, this orbit was extremely demanding for both men and equipment. To get maximum performance from the search radar, the orbits were flown at altitudes ranging from 50 to 300 feet above the water (the radar system's optimum effectiveness was achieved when its beam was reflected from and supported by the water's surface at a very low altitude). These low altitudes were often flown in conditions of poor visibility, particularly during the monsoon season with its accompanying rain squalls. For the radar crew, the temperatures were particularly high because of the boost given to the already high temperatures by the operating electronic equipment. The air conditioning system was not designed for effectiveness at this low altitude and was of little assistance. Because of these conditions, flight surgeons were often carried on the Ethan Alpha orbit.^{7/}

Initially, the concept of operation for the orbit was the manning of a primary station, plus an airborne spare. The airborne spare provided a rear cover for the primary station and maintained a current picture of the

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operational situation, always prepared to assume the primary station if necessary. The orbits were not flown directly over one another because the radiation patterns of the radio antennas prevented effective communication between the aircraft when they were in this position. When necessary the aircraft would recycle at Da Nang AB for refueling, a continuing practice for flights over the gulf.^{8/} This consistent radar coverage made it possible for task force aircraft to issue the MIG alerts, along with position, range, and bearing which set up the first USAF MIG kills in Southeast Asia on 10 July 1965.^{9/} The mission report for 10 July 1965, citing "highly successful" results, stated:^{10/}

"...two non-squawking unknowns were detected and tracked in the Hanoi area. Based on these detections, two MIG warnings were issued to Strike and CAP aircraft. Mink Flight, F-4Cs performing MIG CAP, reported receipt of these BIG EYE MIG warnings. This flight subsequently destroyed two MIG-17s."

Changes in the location of stations flown by the EC-121Ds over the Gulf of Tonkin, the height of the orbits, and other related adjustments, were attempts by the task force to better fulfill the operational requirements of Hq, 2d Air Division, and more specifically, usually of the ROLLING THUNDER program. An example of how these changes were effected during the task force's deployment to Southeast Asia followed the change in the ROLLING THUNDER Route Package segment system (Fig. 10) on 1 April 1966. As a result of the changes, target planning in Route Packages II, III, and IV was the responsibility of the Navy, and Route Packages I and V, the responsibility of the Air Force. Route Package VI, the Hanoi and Haiphong complex, was divided into segments VIA and VIB, with the Air Force assigned mission and target

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COLLEGE EYE COMMUNICATIONS
(1968)

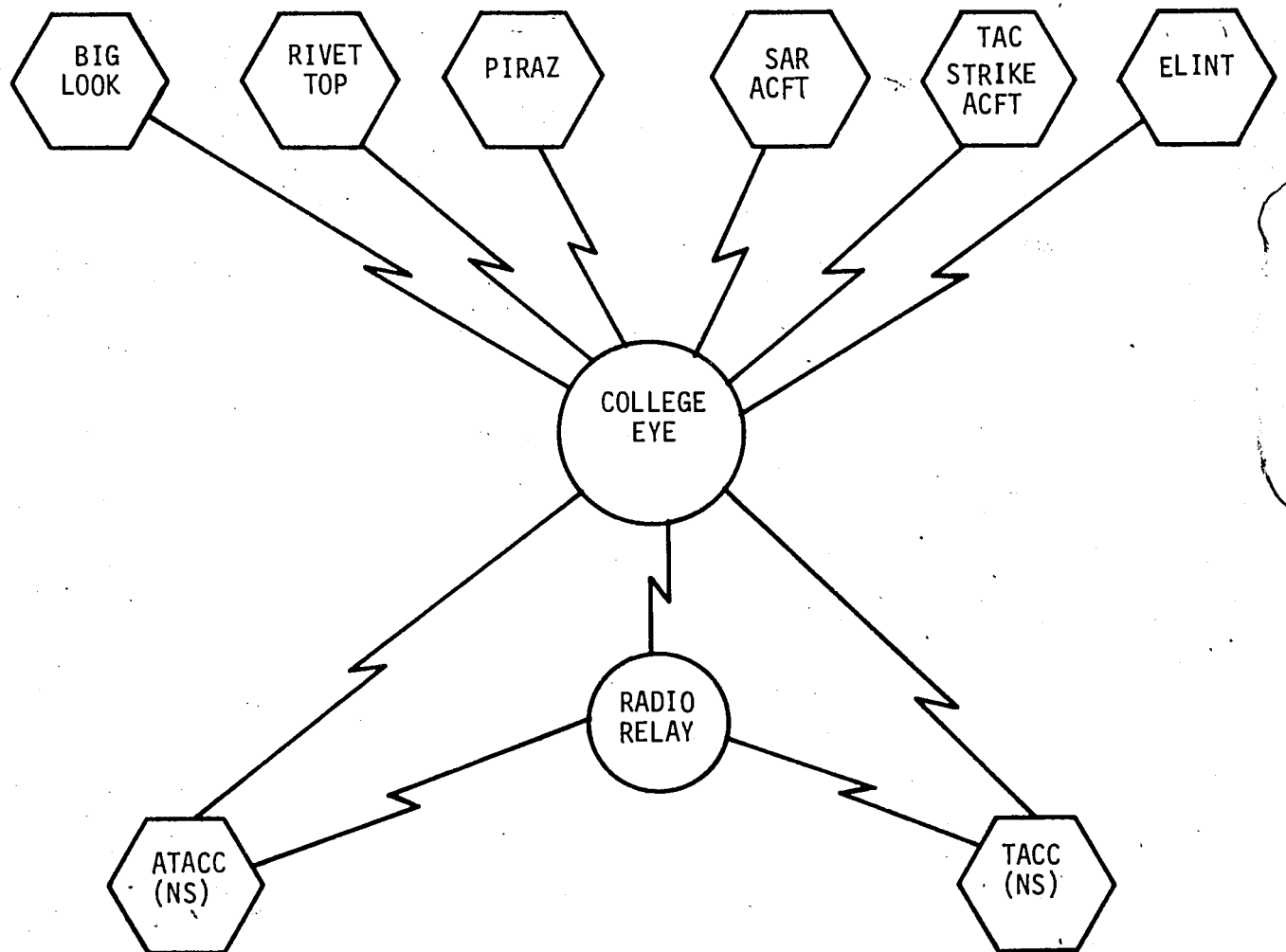
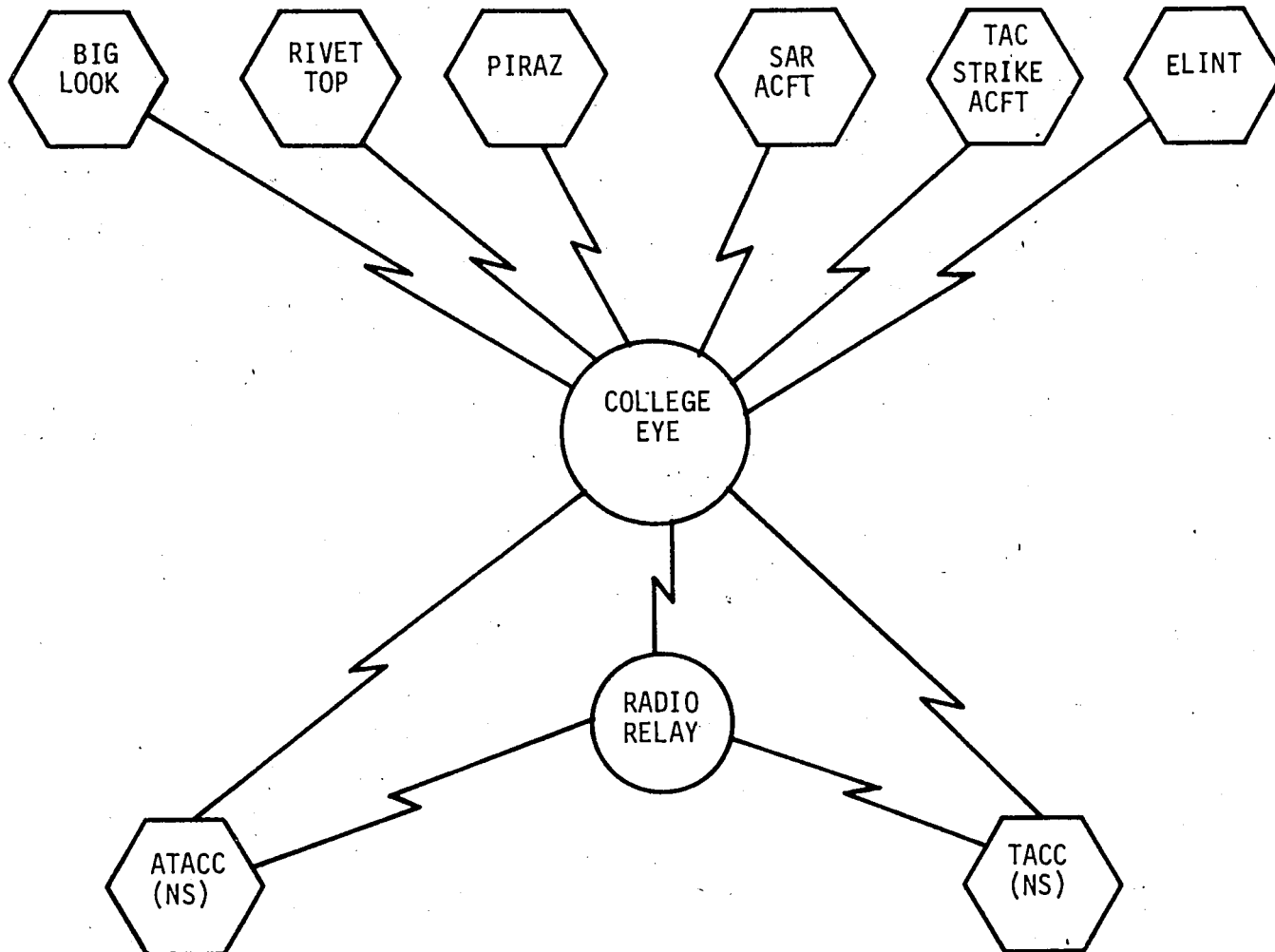


FIGURE 13

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COLLEGE EYE COMMUNICATIONS
(1968)



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planning in VIA, and the Navy in VIB.^{11/}

It soon became clear to the task force staff that a reevaluation of its concept of operations was necessary to maintain mission effectiveness. With no MIG activity in Route Package I, and with the Navy responsible for Route Packages II, III, and IV, the Alpha station flown at that time limited the effectiveness of task force aircraft. After flying several test missions and gathering data to support a move to fly a new station further north, the task force commander, Lt. Col. James Q. McColl, and two staff members briefed Maj. Gen. G. L. Meyers, Vice Commander of 7AF, and Brig. Gen. George B. Simler, Deputy Chief of Staff/Operations, 7AF, on 9 and 10 May 1966.^{12/}

General Meyers decided to move the Alpha station farther north and, on 12 May 1966, task force aircraft began flying a track which had a station center of 20 degrees North and 107 degrees East. Previously, the station center was approximately 19 degrees, 25 minutes North and 107 degrees, 25 minutes East. As a result of the move north, and a slight increase in altitude, task force aircraft now had the ability to look at low altitude targets in the Red River Delta area of North Vietnam. They could also provide range and bearing information on unknown tracks to the defensive MIG CAPs orbiting during the strike periods of ROLLING THUNDER, and although special emphasis was being placed on Route Package VI, the task force still retained the responsibility of covering Hainan Island and the area south toward Route Package I.^{13/}

The airborne spare, described earlier in this chapter, was named the

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Ethan Bravo flight. As indicated, it was originally flown as a low-level orbit for service as an immediate back-up capability for the Ethan Alpha flight. With the development of the border warning mission in late 1966, the Ethan Bravo flight was suspended in favor of the Ethan Charlie station over Laos. Emphasis placed on the border warning responsibility, and coverage of the entire Chinese Communist and North Vietnamese Borders provided by combined manning of the Alpha and Charlie stations, made it necessary to suspend the Ethan Bravo flight, until augmentation of the task force permitted it to assume a three-station posture.^{14/}

During April 1967, the task force was augmented to facilitate the three-track concept. Four additional aircraft, aircrews, and 32 maintenance personnel were sent to Tainan AB, until their in-country clearances for Thailand were received. Two of the aircraft and three additional aircrews arrived at Ubon RTAFB on 29 May 1967. This raised the task force strength at the forward operating base to six aircraft and seven crews, a level which was subsequently maintained until 1 July 1968.^{15/}

After this augmentation, a different mission was developed for the Ethan Bravo flight. This orbit served as the primary station for the QRC-248, and was strategically located to provide the most effective mission results and comprehensive border coverage. The flying of this station also enabled the Ethan Alpha flight to concentrate more fully on the Gulf of Tonkin traffic and on MIG warnings. Before using the QRC-248, the Ethan Alpha flight over the Gulf of Tonkin normally provided more useful information than either the Ethan Bravo flight over the gulf, or the Ethan Charlie flight over Laos.

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With the incorporation of the QRC-248 into COLLEGE EYE operations, Ethan Bravo and Ethan Charlie flights provided significantly more useful information than the Ethan Alpha flight, especially during the Alpha strikes of ROLLING THUNDER operations.^{16/}

An example of success with the radar capability took place on 24 October 1967, however, when an 8th Tactical Fighter Wing F-4 Phantom crew scored a MIG kill over the Gulf of Tonkin, using information provided by a COLLEGE EYE Senior Weapons Controller, Capt. Joseph E. McGrath. "The strike force was coming up overland," said McGrath. He continued, "On our radar we spotted a 'bandit' coming west from Hanoi. The enemy fighter was streaking toward the strike force, so we called vectors on the MIG to the two flights who were flying MIG CAP." Maj. William L. Kirk, the F-4 aircraft commander, received the warning and started a series of offensive maneuvers resulting in the MIG kill. He praised the COLLEGE EYE crew and gave them full credit for initially identifying the enemy, saying that aerial directions were "...right in the bull's eye".^{17/}

After 1 December 1967, the Bravo station was flown at 11,000 feet, with the aircraft on station one hour before the A.M. and P.M. Alpha strikes, and a refueling cycle at Da Nang AB between the two station times. The station center was at 20 degrees North and 107 degrees East as of 6 December 1967. This orbit was to be maintained except when Seventh Air Force would direct the Ethan Bravo flight to descend and to assume the lower altitude Alpha orbit.^{18/}

The Alpha station was flown until 4 December 1967, when the increased

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equipment capability on the part of the task force made it a relatively unprofitable use of resources. As noted previously, this was primarily due to the severe overland limitations of the radar aboard the EC-121D, and to the greatly increased capability afforded by the QRC-248, which had been in operational use by the task force since 21 July 1967. The overland targets that were detected on radar had been non-squawking aircraft in the altitude range of 10,000 feet or above.^{19/} Subsequently, the task force "...recommended to 7th Air Force, and received approval to discontinue the low altitude radar platform in favor of two, and later three, sorties, making almost exclusive use of the Enemy IFF (the QRC-248)...."^{20/} When the Alpha station was eliminated, the Bravo station (at a higher altitude) was moved in closer to the orbit previously flown by the Ethan Alpha flight. This provided better MIG warning, flight following, and border warning coverage.^{21/}

Laos

An orbit over Laos was flown on a daily basis after 13 October 1966. The general locations of the orbits flown since that time are shown in Figure 1. Although the initial motivation for the flying of the orbit was the provision of border warning information to friendly aircraft in danger of straying over the Chinese Communist Border, the orbit also became useful in various other roles. This was particularly true after the bombing restrictions of 31 March 1968, and the subsequent support by the task force of operations in the BARREL ROLL area of Laos.

The history of the orbit began in early 1966. On 21 May 1966, following

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the statement by Communist China that an U.S. Air Force aircraft shot down a MIG-17 over the Chinese mainland on 12 May 1966, the Owens Inquiry Board convened at Tan Son Nhut AB to investigate the Chinese claim. The board was composed of officials from the Department of Defense, and the task force represented at the meetings by Lt. Colonel Mulherron (Radar Officer) and Major Figeroid (Operations Officer).^{22/}

At the time of the alleged incident, the task force was not on station because of an aircraft abort by the Ethan Bravo flight. However, extracts from the logs of Ethan Alpha and Ethan Bravo flights were made an official part of the proceedings. As part of the investigation, special missions were flown by Seventh Air Force to recreate the exact flight path of the Electronic Countermeasures (ECM) aircraft and the fighter escort involved in the incident. The task force flew special missions to flight-follow these aircraft, and to insure that there would be no border violations. Pictures taken by the task force aircraft were used in completing overlays of the entire flight route for the Owens Inquiry Board.^{23/}

Seventh Air Force informed the task force on 18 June 1966 that the Owens Inquiry Board recommended that it fly missions over Laos in addition to operating over the Gulf of Tonkin. The purpose of the proposed Laos missions was to extend the coverage of ground radar sites, and to prevent border violations by ROLLING THUNDER strike forces and Silver Dawn aircraft. The first test of the new station was flown on 24 June 1966. The new station, the Charlie station, had coordinates of 19 degrees 20 minutes North and 102 degrees 20 minutes East. On this test, the EC-121Ds were required to

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recycle twice out of Da Nang AB for refueling and flew six hours on station at altitudes of 12,000 to 14,000 feet.^{24/}

The feasibility of flying the Ethan Charlie track was discussed again by Seventh Air Force and the task force in mid-July 1966. In view of the results of the 24 June 1966 test mission, it was agreed that BIG EYE had the capability of maintaining surveillance over the Chinese Communist Border, and of issuing warnings to friendly aircraft when they approached the buffer zone.^{25/}

A new aspect of the proposed task force mission over Laos was raised when Col. A. M. Hendry, Seventh Air Force Director of Combat Operations, requested that additional test missions be flown over Laos to test the capability to control post-strike tanker hookup, and to aid in the rescue of downed aircrews. These were problem areas in that they were normally out of GCI and UHF range. The BIG EYE Commander, Lt. Col. Waldo W. Peck, complied with the understanding that the mission would be an IFF/SIF beacon mission because of the overland limitations of the radar. In addition, it was agreed that a Seventh Air Force Airborne Battlefield Command and Control Center (ABCCC) controller would fly in a test capacity with the crew on the Laos orbit.^{26/}

On 23 July 1966, about a month after the test flight which followed the initial recommendation of the Owens Inquiry Board, a second test series under the expanded mission concept was flown over Laos. The coordinates were changed slightly with the new coordinates being 20 degrees North and 103 degrees East. The aircraft were scheduled to be on station for approximately four

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hours, recycling once each mission through Udorn RTAFB for refueling, a frequent practice on subsequent Ethan Charlie flights. The missions were flown at altitudes between ten and eighteen thousand feet and stabilization was maintained by use of Tactical Air Control and Navigation (TACAN).^{27/}

The Laos mission tests were concluded on 8 August 1966 and a report on the results was completed by Lt. Col. P. N. Howard, Chief of ABCCC Team Nr. 3, Seventh Air Force. From the task force's point of view, the summarized results of the five test missions were excellent: (1) strike flights were monitored and plotted on the control board from pre-strike refueling, to the target area, and through post-strike refueling; (2) a total of seven strike flights--28 aircraft--were flight-followed at one time; (3) the Chinese Communist Border and buffer zone were under continuous observation at all times; (4) the controllers maintained good surveillance of all RESCAP flight proceedings and relayed Mayday messages to the Seventh Air Force Command Post.^{28/}

As a result of the success of the five test missions on the Laos orbit, 7AF recommended that the Ethan Charlie station be flown on a permanent basis. The Laos mission was flown beginning on 24 August 1966, but limited task force resources restricted the flights on the Ethan Charlie station to every third day. On this day, the Ethan Alpha flight would fly alone over the Gulf of Tonkin, recycling through Da Nang AB for refueling to give the required coverage. Both the Ethan Alpha and the Ethan Bravo flights were scheduled to fly over the gulf on days that the Ethan Charlie flight was not scheduled to fly.^{29/}

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It was clear that the resources of the task force did not permit full operational implementation of the orbit over Laos. Because of the favorable test results, consideration was given to meeting the requirements of flying the orbit on a daily basis. A message sent by the Air Force Chief of Staff on 7 October 1966 to ADC stated, "...PACAF has directed Seventh Air Force to establish concept of operations and FOB location to support this Laos orbit. The BIG EYE Laos orbit, when operationally implemented, would require an increase from current seven to eleven aircraft and aircrews." This augmentation took place in April-May 1967. Until that time, the station requirements over Laos were facilitated by stopping the Ethan Bravo flight over the Gulf of Tonkin.^{30/}

The overall concept under which there would be simultaneous manning of the Alpha, Bravo, and Charlie stations during ROLLING THUNDER strike periods was confirmed by Seventh Air Force on 25 October 1967. Although this was a concept envisioning a maximum of approximately 1,410 hours a month, the task force in practice flew considerably fewer hours. Under the concept, the Ethan Alpha flight would fly the low altitude Gulf of Tonkin orbit for dawn to dusk station coverage. The Ethan Bravo flight would fly a medium altitude orbit above Ethan Alpha to supplement the radar watch and to extend SIF border warning capability to Route Package VIA and VIB. Over Laos, the Ethan Charlie aircraft would provide SIF border warning capability in Route Packages V and VIA.^{31/}

Following the bombing restrictions on 31 March 1968, the intensity of activity for the task force while on station changed considerably, particularly

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for the Bravo station, with fewer strikes north. Although this was also true for the Charlie station over Laos, there was new activity developing in Laos for the task force. Beginning on 19 April 1968, at the direction of Seventh Air Force, COLLEGE EYE began providing positive control for C-130 flare flights and A-26 strikes in conjunction with ground controllers in the BARREL ROLL area of Laos.^{32/}

The important control responsibilities to be exercised by the task force were spelled out in a message from CINCPAC to the JCS on 21 April 1968. The control measures, to prevent the bombing of restricted areas of North Vietnam and Laos, and to control strikes in the BARREL ROLL area of Laos (Alpha, Bravo, and Coco sectors), included:^{33/}

"...A. COLLEGE EYE aircraft will maintain a NW to SE orbit with a stabilization point at 20N/104E to provide positive control of strike aircraft operating in the Alpha, Bravo, and Coco sectors. B. Aircraft entering BARREL ROLL area must have operational IFF/SIF displayed. C. COLLEGE EYE will provide border warning to any aircraft entering an area within 15 km of the NVN border and best egress heading away from border. D. All strikes conducted within 10nm of the NVN border north of 19 degrees will be under positive COLLEGE EYE and Fac control...."

Although this function was performed without any extraordinary incidents or problems, there was an occasional variation in routine station coverage. For example, on 10 May 1968, the task force was directed to extend its normal 19-hour coverage on the Charlie station to 24 hours, a 67-hour commitment from 0600 on 10 May until 0100 on 13 May. This effort was in support of continual strike activity by A-26, A-1E, and F-105 aircraft around Lima

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Site 36 in Laos, which was being attacked by hostile forces. ^{34/}

As of 30 June 1968, the task force was manning the Laotian station and the station over the Gulf of Tonkin. The period of coverage for the Charlie station changed from time to time, but basically it remained two aircraft flying maximum endurance missions on a back-to-back basis. The Gulf station was flown on an every-other-day basis with the prototype aircraft RIVET TOP flying on the alternate days, with the task force assuming responsibility for station coverage whenever the prototype aborted. ^{35/}

Apart from the expanded responsibilities of the task force on the Laotian station, the spring of 1968 was of interest in the task force's history because of efforts to assay the usefulness of the task force's capabilities in another potentially critical area, Korea. The history of these efforts is surveyed in the following paragraphs:

Korea

Early in 1968, consideration was given to the employment of COLLEGE EYE aircraft as an augmentation force to increase command and control capability in Korea. Queries and thinking on the subject dated from at least January 1968. ^{36/} The capture of the Pueblo, and increased guerrilla activity in South Korea, generated greater commitments of forces and material by the United States to South Korea. As a result of the threat from North Korea, all facets of military preparations were carefully analyzed, with air defense, particularly the vulnerability of the land-based radar, being of great concern. ^{37/}

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Fifth Air Force, with headquarters at Fuchu, Japan, and its ADVON (advanced echelon) at Osan, Korea, asked CINCPACAF that COLLEGE EYE develop a contingency plan to augment the South Korean air defense capability. This augmentation was to be accomplished by employment of the EC-121D in the SEA configuration, to be exercised when hostilities were initiated or imminent. Subsequently the 552d AEW&C Wing developed a preliminary operations plan for such a deployment.^{38/}

In this early estimate of the requirements for support of the proposed COLLEGE EYE effort in Korea, it was felt by the task force that there would have to be an augmentation of their resources. The effort to develop an estimate was complicated for the task force by the lack of a clear tasking directive, or statement of requirements. Therefore, an important variable in estimating the necessary augmentation was the on-station time considered necessary. A message sent by CINCPACAF on 3 February 1968 indicated that maximum daily station time with three aircraft would be 12 hours and that 24-hour station coverage would require seven aircraft.^{39/} On 4 February 1968, the task force stated a desire for three EC-121D aircraft and the necessary support personnel from the 552d AEW&C Wing.^{40/} Earlier consideration of this question by the 552d indicated a possible augmentation to COLLEGE EYE resources of five additional EC-121D aircraft. Because the situation did not develop to the point of actual employment of COLLEGE EYE resources, the question is perhaps somewhat academic. However, it indicated the range of estimates in this particular situation.^{41/}

An atmosphere of urgency was lent to the situation in February 1968,

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by the knowledge that the land-based radar coverage in Korea was quite vulnerable. A message from Fifth Air Force spelled it out: ^{42/}

"Situation: North Korea demands continual radar surveillance. Paeng-Yang-Do and Kangnung radar sites are extremely vulnerable. Guns on North Korea island (Wolli-Do) have been trained on Paeng-Yang-Do since the end of the Korean War. Paeng-Yang-Do will probably be rendered inoperational if offensive action is initiated by North Korea, and, if this occurs, vital early warning provided by this site would no longer be available and radar coverage in Korea seriously impaired."

Nevertheless, the situation did not develop to the point of crisis where it was felt justifiable to withdraw task force aircraft out of Southeast Asia on a pre-hostilities basis.

As a result of this sudden and unforeseen demand, however, it gradually became clear during the next several months that COLLEGE EYE was potentially of great use in the Korean situation. This awareness was sharpened by the realization that two previous assumptions concerning capabilities may have been faulty: ^{43/}

"...the assumption that a fully viable and capable air defense environment was available in Korea which subsequent operational evaluations by 5AF ADVON have disproven; and the assumption that the sole source for Korean CETF a/c was withdrawal of those resources from SEA."

The specific exploration of the application of COLLEGE EYE's capabilities in the Korean environment was dependent upon a fuller realization of its potential by Fifth Air Force. Therefore, it was some months, after the initial development of events in Korea, before the testing of these

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capabilities was carried out.

On 23-24 May 1968, a limited test took place with a single aircraft under the following operational concept:^{44/}

"It is envisioned that COLLEGE EYE EC-121D aircraft will be positioned over the Yellow Sea at an altitude that will enable the airborne platform to provide specific offensive or defensive data of enemy intentions and movement over the area of heaviest threat. A requirement exists for on-board weapons controllers to provide augmentation control capability in support of or as replacement for damaged/destroyed sites...."

The results of this test of the task force's capabilities were viewed by Fifth Air Force ADVON as "...very successful and demonstrated the feasibility of its use for the various facets of command, warning, and control for which the vehicle is requested."^{45/} The optimism expressed in this conclusion was qualified by knowledge of the limited testing carried out in this single effort.

Nevertheless, the test provided Fifth Air Force ADVON and the task force the opportunity to assess the limitations and capabilities of COLLEGE EYE aircraft in the Korean environment. The task force recorded its "lessons-to-be-learned"^{46/} for future use with reference to procedures, equipment, etc. A point of interest, in part, a result of this test, were the views expressed by Fifth Air Force, and Fifth Air Force ADVON, on the proposed COLLEGE EYE mission. Early pre-test statements were general in their anticipation of the proposed COLLEGE EYE mission. For example, a message sent on 14 May 1968, before the test, anticipated that in the event of hostilities "...the aircraft

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will be used in both offensive and defensive roles^{47/}. Following the successes of the test on 23 May 1968, Fifth Air Force ADVON stated a more specific and expanded view:^{48/}

*"5AF ADVON requires COLLEGE EYE for use as follows:
Alpha. The primary backup control and reporting center/post in support of the northern sector or agencies (Mangilsan, P-Y-Do, Youngmunsan, Kangnung).
Bravo. To provide offensive surveillance and control for: (1) ingress/egress/navigation/recovery assistance to strike forces, particularly those operating north of the DMZ; (2) MIG warning/intercept control for ECM, tanker, Commando Royal, CAP, and other support aircraft that may be available; (3) routine and emergency tanker/receiver rendezvous; (4) issuance of border warnings; and (5) prestrike orbit for FLUSH plan as well as other contingency plan forces."*

Further possibilities of mission development were also expressed:^{49/}

"...it is our view that, with the new SS positions as well as other updating of the original warning and control gear organic to the COLLEGE EYE aircraft, that unlike SEA where a multitude of airborne platforms are used, Korea, with an enemy defensive environment almost diametrically opposed to that of SEA provides an ideal situation area to not only fully exploit the capabilities of COLLEGE EYE but to continue the development of a true AWACS capability."

As part of an effort to explore in greater depth the capabilities and limitations of COLLEGE EYE in Korea, Fifth Air Force requested permission to conduct more extensive testing.^{50/} This was approved on a limited basis, provided COLLEGE EYE's Southeast Asia capability was not degraded during the testing.^{51/}

An important limitation to the projected development and use of COLLEGE

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EYE capabilities was the limited resources of the 552d AEW&C Wing. Because of other commitments, only an average of nine to ten aircraft were available daily for west coast (CONUS) active air defense and for special mission assignments. As a result of its commitments, including scheduled RIVET GYM and SEAOR-62 modifications, CINCONAD recommended in a message to the JCS that "...no further deployment of AEW&C forces be directed short of actual hostilities in Korea, and then subject to review of total requirements".^{52/} Nevertheless, with these limitations in mind, further efforts were being made as of 30 June 1968 to carry out more extensive testing.

A point of interest with regard to the use of COLLEGE EYE capabilities in Korea, was the recurring proposal to consolidate the forward operating base and the main support base at a single location in Thailand. The potential benefits ascribed to centralization in a study by Thirteenth Air Force centered around the possibly more efficient and economical logistical support to be received after consolidation, as well as an increase in the on-station flying hours without additional aircraft.^{53/} Consideration of this specific proposal by CINCPACAF in early 1968 resulted in a message to Thirteenth Air Force which stated the conclusions:^{54/}

"...field and depot level maintenance support received from Air Asia at Tainan has been outstanding and contributed to current CETF operational success. Aircraft, when periodically rotated to CONUS, are provided installed systems which have been updated with latest TCTOs and all delayed heavy maintenance is accomplished. COLLEGE EYE facility requirements at Tainan require only \$141,400 compared to \$1.7M at Korat and will provide essential facilities to insure mission accomplishment....In view of above, consider it advisable to postpone further consideration of consolidation at this time."

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In view of developing events in Korea, retention of the main support base at Tainan seemed to provide greater flexibility on the part of the task force in meeting potential requirements in the Far East, rather than in Southeast Asia alone. The Tainan AB location also appeared to be a more central location with regard to possible demands on COLLEGE EYE resources.

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CHAPTER V
SUMMARY AND ASSESSMENT

Summary

After deployment of the task force to Southeast Asia under the nickname BIG EYE in April 1965, there were important changes in its mission and equipment capability. Most fundamental perhaps were the equipment modifications which gave it greatly increased flight-following capability: the Enemy IFF Interrogator System (QRC-248) by September 1967 and the IFF/SIF Interrogator (AN/GPA-122) by June 1968. This capability was further enhanced with the installation of the RIVET GYM equipment in June 1968, which particularly improved the capability to monitor MIG aircraft. Subsidiary, but important changes also included the increased range and reliability offered by the ARC-109 radio in UHF communications, and the secure voice capability resulting from the KY-8 modification to the ARC-85 radios (operational on 22 December 1966).^{1/}

These equipment changes and modifications were closely tied to mission requirements. The primary mission of the task force on 30 June 1968 was: "To provide airborne radar and border warning and escort control in the Gulf of Tonkin and Laos".^{2/} Although the radar capability was still limited to the original equipment on board the aircraft when it arrived in 1965, the new equipment described above markedly increased the ability of the task force to fulfill the requirements of its mission dealing with the flight-following of friendly aircraft and the detection and positioning of enemy aircraft.

The autonomous manual capability of the task force, particularly as it

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was used during the period 11 November 1967 - 31 March 1968 with the offensive MIG CAP under COLLEGE EYE control, remained of potentially great usefulness. Furthermore, the history of the task force in this capacity, plus the lessons learned as the result of the various equipment modifications and changes which have taken place since April 1965, may be useful as a precedential experience for future systems such as the Airborne Warning and Control System (AWACS). Until AWACS becomes available, the task force will remain an important resource for support of Air Force command and control systems. ^{3/}

Assessments

There have been no satisfactory, thoroughgoing efforts to measure the mission effectiveness of the task force. In part, this was due to the changing capabilities of the equipment aboard the EC-121D, but also because a comprehensive effort was not undertaken during April 1965 - 30 June 1968. A study published on 1 July 1967 by Maj. Charles H. Carter, 7AF, Tactical Air Analysis Center, was based primarily on personal visits to the unit and on a review of mission reports and other pertinent data. In his discussion on capabilities, he stated: ^{4/}

"Overall Present Performance: Under present limited requirements, performance is generally acceptable. Specifically, the capability to provide border warnings and flight following is excellent depending on the willingness of friendly aircraft to squawk IFF. The capability to provide emergency assistance to distressed aircraft and to coordinate rescue efforts is also excellent. The capability to provide MIG alerts is marginal due to inherent unpredictability of radar, limited capability for identification and communications saturation."

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Earlier in the study, however, he appropriately qualified his effort to appraise mission effectiveness when he said:^{5/}

"...This paper is submitted at this time to provide a basis for later comparison because a milestone has been reached with the recent installation of the QRC-248 EIFF. This equipment should significantly alter capabilities. This evaluation will be resumed after a short 'break in' period for the new equipment."

Unfortunately, an evaluation within the framework of the original study was not "resumed". Instead, an effort was made to compare the effectiveness of COLLEGE EYE with RIVET TOP (the single prototype EC-121K described in Chapter IV) and Big Look (a Navy capability similar to COLLEGE EYE). This analysis was based upon "operational data" for 1 October - 15 December 1967, which was acknowledged as being incomplete. The "findings" of this second effort read:^{6/}

"COLLEGE EYE performance has, for several years, been marginal. During this time period, COLLEGE EYE reported detecting approximately 25% of the MIGs that were flying while these aircraft were 'on station', and from 30% to 60% of those that employed IFF. However, it is known that these missions do not report all MIG sightings."

Apart from the lack of evidence for the initial statement, there were apparently justifiable exceptions to these findings. They included, in part: (1) the failure of the analyst to consider adequately the effect of differences in equipment capabilities when making performance comparisons; (2) the apparent incompleteness of the data used, in that COLLEGE EYE reported only MIG detections on which action was taken, not on all MIGs sighted; (3) the

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effect upon MIG-sighting of exercising disciplined operational restraint within the discrete interrogation criteria approved by the National Security Agency and the JCS.^{7/}

Despite their limitations, these efforts at assessing mission effectiveness should be useful in establishing points of departure and lines of investigation for future assessments. As of 30 June 1968, there were no comprehensive analyses of the task force's mission effectiveness under way.

Observations

A special contribution of the task force to the conflict in Southeast Asia may be its assistance in the development of procedural discipline in the out-country war. The development of this procedural discipline, specifically in the area of radio communications was oriented toward personalized MIG warning service. The lack of this discipline contributed to "...confusion about the meaning of MIG calls and vectors transmitted to ALFA package flights",^{8/} in the ROLLING THUNDER strikes against North Vietnam.^{9/}

Increased equipment capability on board the EC-121D facilitated procedural changes for the task force, although COLLEGE EYE had been involved on a continuing basis with changes and improvements in this area throughout its deployment to Southeast Asia.^{10/} The evolution of procedural changes was described in an interview with a COLLEGE EYE staff officer:^{11/}

"...The formats for MIG warnings evolved from general advisories issued in GEOREF, to the 'Bullseye' reference in eight point compass bearing and range from Hanoi, and

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finally to actual close control procedures, in which specific flights are given azimuth and range to the bandits...."

The eight-point compass (absolute) range format had been in use since 1966. On 11 November 1967, however, a COLLEGE EYE control proposal was adopted by Seventh Air Force, which entailed providing actual headings and range to specific flights. Furthermore, although Hanoi remained "Bullseye" for use of the compass format in giving MIG warnings, a refinement of these procedures took place on 15 February 1968, when Seventh Air Force adopted hostile threat advisory procedures proposed by COLLEGE EYE which established "...a 'Bullseye South', subsequently designated 'Lobster', at 18-00N 106-30E, a southern point from which MIG warnings would be given."^{12/} These measures made it possible to give real-time personalized service with greater accuracy over a wider geographical area.

Other task force efforts in this area included liaison with the Navy,^{13/} and coordination with the radio relay communications link (4258th Strategic Wing).^{14/} In addition, Seventh Air Force tasked COLLEGE EYE to provide, on a continuing basis, familiarization briefings on task force capabilities and procedures to tactical fighter organizations (8th TFW, 355th TFW, 388th TFW, 432d TRW), a practice that had been informally followed for some time.^{15/}

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UNCLASSIFIED

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UNCLASSIFIED

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- (S) Rpt, "Historical Record of the CETF, RCS: AU-D5, 1 Jan - 31 Mar 68.
- 14. (S) Rpt, "Historical Record of the CETF", RCS: AU-D5, 1 Jan - 31 Mar 68.
- 15. (S) Msg, CETF to 552 AEWCONWG (CCR), 170835Z Feb 68;
(S) Rpt, "Historical Record of the BIG EYE Task Force MOB and FOB, RCS: AU-D5, 10 Jul 65, Doc. 15.

APPENDIX I

COLLEGE EYE TASK FORCE PERSONNEL STRENGTH
(10 July 1965 - 30 June 1968)

	1965			1966				1967			1968		
	10 Jul	30 Sep	31 Dec	31 Mar	30 Jun	30 Sep	31 Dec	31 Mar	30 Jun	30 Sep	31 Dec	31 Mar	30 Jun
OFFICERS													
Authorized	*	*	56	56	56	57	56	57	86	86	86	79	79
Assigned	55	55	56	56	56	54	56	54	79	79	79	80	80
AIRMEN													
Authorized	*	*	170	170	170	168	170	168	263	263	263	269	273
Assigned	171	167	170	170	170	179	170	179	269	269	269	270	270
TOTAL													
Authorized	*	*	226	226	226	225	226	225	349	349	349	348	352
Assigned	226	222	226	226	226	233	226	233	348	348	348	350	350

* Information unavailable on this early phase of the task force's deployment.

APPENDIX I

COLLEGE EYE TASK FORCE PERSONNEL STRENGTH
(10 July 1965 - 30 June 1968)

	<u>1965</u>			<u>1966</u>			<u>1967</u>			<u>1968</u>			
	10 Jul	30 Sep	31 Dec	31 Mar	30 Jun	30 Sep	31 Dec	31 Mar	30 Jun	30 Sep	31 Dec	31 Mar	30 Jun
ized	*	*	56	56	56	57	56	57	86	86	86	79	79
ned	55	55	56	56	56	54	56	54	79	79	79	80	80
ized	*	*	170	170	170	168	170	168	263	263	263	269	273
ned	171	167	170	170	170	179	170	179	269	269	269	270	270
ized	*	*	226	226	226	225	226	225	349	349	349	348	352
ned	226	222	226	226	226	233	226	233	348	348	348	350	350

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Information unavailable on this early phase of the task force's deployment.

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APPENDIX II

EC-121D-TABLE OF COMMUNICATIONS AND
ASSOCIATED ELECTRONICS EQUIPMENT*

TYPE	DESIGNATION	FUNCTION	RANGE	LOCATION OF CONTROLS
COMMUNICATIONS				
Flight crew interphone system	AN/AIC-10	Inter-crew communication, audio distribution, microphone function	Crew stations within aircraft and mechanics' stations	Pilot's, copilot's, radio operator's, navigator's, engineer's station. Forward and aft baggage compartment, galley, jumpmaster station, lower center compartment and lower radome, and tail cone bulkhead.
AOC crew interphone system	LOCKHEED	Intercommunication between AOC crew stations separate from flt. crew ICS	AOC crew stations within aircraft	Each AOC station.
Public address system	LAC	All crew stations	Crew stations within the aircraft	SWC and pilot.
VHF Transceiver	VHF-101	Short range two-way voice communication	Line of sight	SRO No. 2
UHF transmitter-receiver	AN/ARC-27	Short-range, two way voice communication	Line of sight	Pilot's, radio operator's, SRO No. 1 thru No. 5 stations
UHF transmitter-receiver	AN/ARC-85	Short-range, two-way voice communication	Line of sight	SRO No. 2 and No. 3
HF liaison receiver	AN/ARR-15A	Reception of voice, CW or MCW communication	1,000 miles	Radio operator's station
HF liaison transmitter/receiver	618 S-1 or 618 T-1	Voice, CW transmission	250 to 2,000 miles	Radio operator's station

* T. O. 1C-121(E)D-1

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EC-121D-TABLE OF COMMUNICATIONS AND
ASSOCIATED ELECTRONICS EQUIPMENT

TYPE	DESIGNATION	FUNCTION	RANGE	LOCATION OF CONTROLS
COMMUNICATIONS (Continued)				
HF command transmitter/receiver	618 S-1 or 618-T	Voice, CW transmission	250 to 2,000 miles	Pilot's station
Emergency trans.	AN/CRT-3	Emerg. CW and MCW transmission on 500 and 8364 kcs.	100-1,500 miles	
Navigation receiver	AN/ARN-14A	Reception of VOR, VAR and localizer signals	Line of sight	Pilot's station
NAVIGATION				
TACAN	AN/ARN-21	Reception of VOR signals, gives bearings and distances information	195 nautical miles	Pilots' station
Loran receiver	AN/APN-70	Reception of long-range radio navigation signals	Day--700 miles Night--1,400 miles	Navigator's station
Radar Altimeter	AN/APN-22	Indicates altitude above terrain	10,000 feet over land 20,000 feet over water	Pilots' and navigator's stations
Radar Altimeter (High Alt)	SCR-718D	Indicates altitude above terrain	40,000 feet	Navigator's station
Marker beacon receiver	AN/ARN-12	Reception of location marker and marker beacon signals		Pilots' station
Radio Compass	AN/ARN-6	Reception of voice or code signals for direction finding and bearings	300 miles	Pilots' and navigator's stations
Glide Slope Receiver	AN/ARN-18	Reception of glide slope signals from ILS stations	Line of sight	Pilots' station

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EC-121D-TABLE OF COMMUNICATIONS AND
ASSOCIATED ELECTRONICS EQUIPMENT

TYPE	DESIGNATION	FUNCTION	RANGE	LOCATION OF CONTROLS
NAVIGATION (Continued)				
UHF Direction Finder	AN/ARA-25	Reception of UHF signals for direction finding and homing	Line of sight	Pilots' station
Navigation Radar	AN/APS-42	Navigation aid, anti-collision warning and search	200 miles	Pilots' station
AOC SPECIALIZED EQUIPMENT				
Identification Set	AN/APX-25	Reception and transmission of identification signals	Line of sight	Radio operator's station
Coder	KY-95 and coder group control C-1128	Provides coded IFF transmissions	Line of sight	Radio operator's station and fwd. radio rack
Recognition Set	AN/APX-7 or AN/APX-49	Transmits interrogations and receives identification signals	Line of sight	SWC station, radar tech, navigator and all SRO and camera PPI stations
Ground Position Indicator	AN/APA-57C	Gives continuous indication of aircraft's ground position		Navigator's station
Search Radar	AN/APS-95	High power, long-range search radar		Radar technician's station
Height Finding Radar	AN/APS-45 or AN/APS-103	Obtains alt. of targets detected		Height finder's station and SRO No. 1--No. 5
Control Indicator	AN/APA-159	PPI, video information		SRO No. 1 thru No. 5 stations
Camera Scope	IP-230	Recording camera indicator		AOC area (aft of nav.)
Recording Camera	0-15	Photograph indicator display		DWC

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APPENDIX III

COMBAT LIGHTNING SYSTEM*

1. Important elements of COMBAT LIGHTNING included:

SEEK DAWN
COLLEGE EYE
RADIO RELAY (RRA)
QRC-248 (Monkey Mountain AN/FPS-20)
IRON HORSE
YOGI BEAR

2. The SEEK DAWN element consisted of two long-range radars which were automated to provide digital radar data to modified BUIC systems (TACC/NS and ATACC/NS) at Da Nang AB, RVN (Monkey Mountain), and Udorn RTAFB, Thailand. In addition a requirement existed for a third automated display of the SEEK DAWN Data at the Seventh Air Force Command Center, Tan Son Nhut AB, RVN. These TACC/NS (SEEK DAWN sites) were automated tactical control centers that were developed in order to provide the Commander, Seventh Air Force with a centralized tactical control and airspace management system. This system was used to monitor and control strike forces conducting tactical operations over Thailand, Laos, North Vietnam and the Gulf of Tonkin. The system utilized radar data from collocated sites and inputs from COLLEGE EYE aircraft transmitted through a Radio Relay aircraft. These data were combined with Security Service contributions and used to develop a computerized air situation. This air situation was presented as geographically oriented displays to air controllers operating BUIC II consoles at each TACC/NS. These centers communicated with air elements by secure UHF voice channels through the Radio Relay aircraft. Communications with other command centers and TUOC's were conducted over dedicated ground lines. Secure voice lines connected the TACC/NS with each other, Seventh Air Force Headquarters and Task Force Alpha.

3. The COLLEGE EYE element consisted of automation of the COLLEGE EYE aircraft to provide Airborne Radar and SIF/IFF digital information to the automated SEEK DAWN facilities.

4. The radio relay element consisted of the increasing of the relay capability of this system in order to permit passage of the secure voice communication and digital data from COLLEGE EYE to the TACC/NS's and other elements of the COMBAT LIGHTNING System. The requirement for increased channels was based on the overall COMBAT LIGHTNING Operations concept developed by Seventh Air Force.

* Excerpt, (S) History, 7AF, Vol. I, 1 Jul - 31 Dec 67, pp. 26-27; (S) Staff Study, "Comparative Effectiveness of ABCCC versus Ground-Based Facility for Control of 7AF Interdiction Campaign", attached to ltr, Gen. W. W. Momyer to Secretary of the AF, Harold Brown, 1 May 68.

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5. The QRC-248 element required the installation of equipment at TACC/NS Da Nang AB (Monkey Mountain) to process and display this information. Ultimately a redundant capability was provided at ATACC/NS Udorn RTAFB. Similar QRC-248 equipment was installed in the COLLEGE EYE aircraft. This information was to be manually forwarded by secure voice from the COLLEGE EYE aircraft to the two SEEK DAWN sites.

6. The IRON HORSE and YOGI BEAR information was to be forwarded from sources to the SEEK DAWN facilities by secure communications links. The overall COMBAT LIGHTNING concept was to interface all of these elements into one command control system. This system, when completed, was to be identified as a centralized tactical control and airspace management system.

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APPENDIX IV

COLLEGE EYE TASK FORCE FLYING TIME HISTORY
(April 1965-December 1966)

YEAR	MO.	DAYS FLOWN	COMBAT MISSIONS	ALPHA STATION	BRAVO STATION	CHARLIE STATION	COMBAT TOTAL	OTHER FLYING	GRAND TOTAL
1965	Apr	17	31	124.3	94.8		219.1	88.0	307.1
	May	21	42	162.4	138.5		300.9	126.1	427.0
	Jun	19	39	140.4	135.3		275.7	148.2	423.9
	Jul	20	35	130.2	122.3		262.5	145.4	397.9
	Aug	10	15	66.7	43.8		110.5	132.5	243.0
	Sep	23	44	225.9	222.4		448.3	154.3	602.6
	Oct	31	61	358.4	300.5		658.9	109.0	767.9
	Nov	30	60	295.5	308.7		604.2	161.6	765.8
	Dec	27	54	307.6	277.6		585.2	291.7	876.9
TO DATE:		198	381	1,811.4	1,643.9		3,455.3	1,356.8	4,812.1
1966	Jan	31	56	350.2	265.7		615.9	266.0	881.9
	Feb	28	56	319.0	304.8		623.8	164.5	788.3
	Mar	31	62	340.4	350.0		690.4	164.4	854.8
	Apr	30	60	321.9	324.9		646.8	174.2	821.0
	May	31	61	331.3	320.1		651.4	268.2	919.6
	Jun	30	60	310.7	310.5	12.1	633.3	225.4	858.7
	Jul	31	61	331.9	252.5	58.5	642.9	221.7	864.6
	Aug	30	55	326.9	264.7	26.0	617.6	212.5	830.1
	Sep	30	57	362.0	292.0	9.5	663.5	307.4	970.9
	Oct	30	51	385.4	210.2	10.4	606.0	211.7	817.7
	Nov	30	55	384.3		329.9	714.2	211.5	925.7
	Dec	31	57	422.0		305.3	727.3	212.6	939.9
TO DATE:		561	1,072	5,997.4	4,539.3	751.7	11,288.4	3,996.9	15,285.3

SOURCE: Statistics compiled from records of CETF: Unpublished Working Paper, CETF C-E Staff Officer, Capt. Richard M. Williams, Undated.

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APPENDIX IV

COLLEGE EYE TASK FORCE FLYING TIME HISTORY
(April 1965-December 1966)

YEAR	MO.	DAYS FLOWN	COMBAT MISSIONS	ALPHA STATION	BRAVO STATION	CHARLIE STATION	COMBAT TOTAL	OTHER FLYING	GRAND TOTAL
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	Jul	20	35	130.2	122.3		262.5	145.4	397.9
	Aug	10	15	66.7	43.8		110.5	132.5	243.0
	Sep	23	44	225.9	222.4		448.3	154.3	602.6
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TO DATE:		198	381	1,811.4	1,643.9		3,455.3	1,356.8	4,812.1
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	Jun	30	60	310.7	310.5	12.1	633.3	225.4	858.7
	Jul	31	61	331.9	252.5	58.5	642.9	221.7	864.6
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	Nov	30	55	384.3		329.9	714.2	211.5	925.7
	Dec	31	57	422.0		305.3	727.3	212.6	939.9
TO DATE:		561	1,072	5,997.4	4,539.3	751.7	11,288.4	3,996.9	15,285.3

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SOURCE: Statistics compiled from records of CETF: Unpublished Working Paper, CETF C-E Staff Officer, Capt. Richard M. Williams, Undated.

COLLEGE EYE TASK FORCE FLYING TIME HISTORY
(January 1967-June 1968)

<u>YEAR</u>	<u>MO.</u>	<u>DAYS FLOWN</u>	<u>COMBAT MISSIONS</u>	<u>ALPHA STATION</u>	<u>BRAVO STATION</u>	<u>CHARLIE STATION</u>	<u>COMBAT TOTAL</u>	<u>OTHER FLYING</u>	<u>GRAND TOTAL</u>
1967	Jan	31	54	437.5		293.4	730.9	206.1	937.0
	Feb	28	53	353.7		218.6	572.3	190.9	763.2
	Mar	31	60	387.6		237.5	625.1	151.5	776.6
	Apr	30	60	408.0		227.5	635.5	198.8	834.3
	May	31	62	409.8		300.9	710.7	258.0	968.7
	Jun	30	90	375.7	344.1	310.0	1,029.8	185.7	1,215.5
	Jul	31	90	408.9	338.3	208.2	955.4	235.4	1,190.8
	Aug	31	88	381.5	396.1	163.3	940.9	245.1	1,186.0
	Sep	30	81	364.3	378.8	110.6	853.7	243.1	1,096.8
	Oct	30	87	353.7	379.5	191.4	924.6	244.8	1,169.4
	Nov	30	87	378.7	385.5	253.8	1,018.0	257.6	1,275.6
	Dec	30	89		384.9	528.3	913.2	219.4	1,132.6
TO DATE:		924	1,973	10,256.8	7,146.5	3,795.2	21,198.5	6,633.3	27,831.8
1968	Jan	30	88		381.4	527.2	908.6	254.3	1,162.9
	Feb	29	96	163.5	394.1	491.3	1,048.9	212.2	1,261.1
	Mar	31	91		412.2	501.4	913.6	236.8	1,150.4
	Apr	30	86		368.3	511.4	879.7	208.6	1,088.3
	May	31	89		346.1	600.9	947.0	274.8	1,221.8
	Jun	30	81		280.8	548.4	829.2	297.9	1,127.1
TO DATE:		1,105	2,504	10,420.3	9,329.4	6,975.8	26,725.5	8,117.9	34,843.4

78

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COLLEGE EYE TASK FORCE FLYING TIME HISTORY
(January 1967-June 1968)

YEAR	MO.	DAYS FLOWN	COMBAT MISSIONS	ALPHA STATION	BRAVO STATION	CHARLIE STATION	COMBAT TOTAL	OTHER FLYING	GRAND TOTAL
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	Feb	28	53	353.7		218.6	572.3	190.9	763.2
	Mar	31	60	387.6		237.5	625.1	151.5	776.6
	Apr	30	60	408.0		227.5	635.5	198.8	834.3
	May	31	62	409.8		300.9	710.7	258.0	968.7
	Jun	30	90	375.7	344.1	310.0	1,029.8	185.7	1,215.5
	Jul	31	90	408.9	338.3	208.2	955.4	235.4	1,190.8
	Aug	31	88	381.5	396.1	163.3	940.9	245.1	1,186.0
	Sep	30	81	364.3	378.8	110.6	853.7	243.1	1,096.8
	Oct	30	87	353.7	379.5	191.4	924.6	244.8	1,169.4
	Nov	30	87	378.7	385.5	253.8	1,018.0	257.6	1,275.6
	Dec	30	89		384.9	528.3	913.2	219.4	1,132.6
TO DATE:		924	1,973	10,256.8	7,146.5	3,795.2	21,198.5	6,633.3	27,831.8
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	Feb	29	96	163.5	394.1	491.3	1,048.9	212.2	1,261.1
	Mar	31	91		412.2	501.4	913.6	236.8	1,150.4
	Apr	30	86		368.3	511.4	879.7	208.6	1,088.3
	May	31	89		346.1	600.9	947.0	274.8	1,221.8
	Jun	30	81		280.8	548.4	829.2	297.9	1,127.1
TO DATE:		1,105	2,504	10,420.3	9,329.4	6,975.8	26,725.5	8,117.9	34,843.4

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COLLEGE EYE TASK FORCE FLYING TIME HISTORY
EXPLANATION OF TERMS

- DAYS FLOWN: All days during which a fraggged mission was launched were counted as days flown.
- COMBAT MISSIONS: All missions fraggged in support of combat operations (logged as 0-1 on the AFTO Form 781). Reference to sorties was purposely avoided, because sortie count was often misleading and not representative of achievement. Many missions recycled at mid-mission for fuel, and at different periods this was recorded as one sortie, and at other times as two sorties. Therefore in these figures, a mission was all the flying that went into meeting the station requirement as fraggged. It sometimes represented two aircraft if a spare was used to replace an abort, or it may represent one aircraft recycling several times. In short, it can be thought of as the number of times a designated station was manned.
- ALPHA STATION: Alpha station time was all flying time expended in supporting a low altitude (1,000 feet or less) radar station over the Gulf of Tonkin.
- BRAVO STATION: Bravo station time was all flying time flown in support of a medium altitude (about 11,000 feet) over the Gulf of Tonkin.
- CHARLIE STATION: All station time flown over Laos. Orbit points changed and station altitude varied between 12,500 and 16,500 feet.
- COMBAT TOTAL: The total O1 time (on the AFTO Form 781) recorded against the three stations above.
- OTHER FLYING: These figures included the rotations between the forward operating base and the main support base, the time for aircraft ferried from McClellan AFB to Tainan AB (552d AEW&C Wing was responsible for accounting of the return trip time), test flights, special missions not reportable under Alpha, Bravo, or Charlie stations, administrative flights to various headquarters, future operating bases, etc.
- GRAND TOTAL: The sum of COMBAT and OTHER FLYING time.

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COLLEGE EYE TASK FORCE FLYING TIME HISTORY
COMMENTS

DAYS FLOWN:

The period of time depicted on the tables was 1,174 days. The task force was executed on 1,105 days (94% overall). No days were lost due to task force inability to support its tactical commitment, but there were cancellations for weather, or standdowns for other reasons. Most of the days not flown occurred during 14 April-31 December 1965, when 64 days were idle. For the 912-day period of 1966, 1967, and January-June 1968, the task force did not fly tactical missions on 5 days (99.4% overall). Of these, three were cancelled for weather and two were standdowns for Christmas and New Year's during the winter of 1967-1968.

In 1965 tactical units were building up, and sorties in the ROLLING THUNDER offensive were not executed unless weather forecasts indicated a high probability of hitting targets. The months of August through October were the heavy weather periods in the target areas, and in August 1965 task force missions were executed on only ten days. As the units reached full strength and could support daily sorties, weather standdowns became less frequent and systems of widely separated alternate targets and radar guided bombing insured ordnance delivery in all but the heaviest weather. It is also of interest that the task force did not lose any mission time during its three unit moves in February, July, and October 1967.

COMBAT MISSIONS:

The missions flown followed a pattern of being slightly less than a multiple of two, and later three, of the days flown. This was true because on many occasions not all stations would be executed if the strike activity was planned at a minimum level.

ALPHA, BRAVO, and CHARLIE STATIONS:

The figures showed the changing emphasis on the three stations, and the narrative of the report contained causal relationships. A capability, rather than a station, was always primary--usually that of MIG detection and warning. When radar was the only enemy detection device available. Alpha station was primary as reflected by the consistently higher time logged against this station until August 1967. By this time the QRC-248 had been operational over a month, and had proved its superior capability as an enemy detection system. While both the Alpha and Bravo stations were flown until December 1967, Bravo time was

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slightly higher because once it became primary, it would be manned rather than Alpha when only one aircraft was operational over the Gulf of Tonkin.

Bravo station was suspended in November 1966 in favor of the new Charlie station, which together with the Alpha station gave coverage of the entire Chinese Communist-North Vietnamese Border, emphasizing the importance of the border warning responsibility. The Charlie station used only IFF/SIF for flight following, which performed equally well over land or water. In addition to extending total coverage, it was in better communications range of the over-land ingress that most of the Air Force strikes used. Bravo station was resumed when the augmentation crews were in Thailand and the task force was able to support three stations a day. The Alpha mission was dropped from the daily schedule in December 1967, being maintained as an immediately available plan, if the enemy should switch to a non-squawking tactic denying exploitation by the QRC-248. The sortie saved was used to extend Charlie station coverage. Following the bombing limitations of 31 March 1968, the Charlie station time reached its highest level, perhaps indicative of its importance in the positive control concept.

COMBAT TOTAL:

The combat time showed a slight average increase and upward steps at the two augmentations (October 1965 and June 1967). The increases were modulated by seasonal climatic conditions and periodic changes in the defensive state of alert. The augmentation to seven aircraft and crews did not increase the daily sortie rate, but made it easier to meet maintenance requirements and resulted in a lowered abort rate. The augmentation to eleven aircraft and crews increased the daily sortie commitment from two to three. The three months of over 1,000 hours of combat time were generated by special requirements.

OTHER FLYING:

This category contained too many diverse flights to permit discernment of a pattern. Throughout the history of the task force it contained the rotation flights required to move aircraft in and out of Tainan AB for their deferred maintenance and phase inspections, and also the movement of crews in and out of Thailand to keep the in-country ceiling at a minimum without overflying crew limitations. This normally generated between 150-180 hours per month. The stateside to task force rotations charged about 35 hours of time to the task force and normally occurred on a 21-day schedule.

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GRAND TOTAL:

The total of approximately 35,000 hours for the period shown was almost equal to the yearly total of the rest of the flying by the 552d AEW&C Wing. Although there were several cases of small arms ground fire hits and two accidents--a collapsed nose gear on landing and an in-flight explosion in a wheel well, the 35,000 hours were flown without loss of life or aircraft.

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GLOSSARY

AB	Air Base
ABCCC	Airborne Battlefield Command and Control Center
ADC	Air Defense Command
ADVON	Advanced Echelon
AEW&C	Airborne Early Warning and Control
AFSC	Air Force Systems Command
AOC	Airborne Operations Center
ARP	Airborne Radar Platform
AS	Air Station
AWACS	Airborne Warning and Control System
BPE	Best Preliminary Estimate
BTE	Best Technical Estimate
CAP	Combat Air Patrol
CETF	COLLEGE EYE Task Force
CINCONAD	Commander in Chief, Continental Air Defense Command
CINCPAC	Commander in Chief, Pacific Command
CINCPACAF	Commander in Chief, Pacific Air Forces
CONUS	Continental United States
CSAF	Chief of Staff, United States Air Force
DOC	Directorate of Combat Operations
DOCC	Command and Control Division
DOE	Special Assistant/Electronic Warfare
DOOG	Group Environment Division
DPLP	Directorate of Plans
ECM	Electronic Countermeasures
FOB	Forward Operating Base
GCI	Ground-Controlled Intercept
IFF/SIF	Identification Friend or Foe/Selective Identification Feature
ILS	Instrument Landing System
JCS	Joint Chiefs of Staff
MEDICARE	Modification of Electronic Devices in Control and Radar Equipment
MOB	Main Operating Base
MSB	Main Support Base
MTBF	Meantime Between Failures

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NORAD	North American Air Defense Command
NS	North Sector
NSA	National Security Agency
PACAF	Pacific Air Forces
PIRAZ	Positive Identification Radar Advisory Zone
QRC	Quick Reaction Capability
RADC	Rome Air Development Center
RTAF	Royal Thai Air Force
RTAFB	Royal Thai Air Force Base
SAM	Surface-to-Air Missile
SEAOR	Southeast Asia Operational Requirement
SMAMA	Sacramento Air Materiel Area
TACC	Tactical Air Control Center
TACAN	Tactical Air Navigation
TCTO	Time Compliance Technical Orders
TFW	Tactical Fighter Wing
TRW	Tactical Reconnaissance Wing
USAFSS	U.S. Air Force Security Service
VHF	Very High Frequency

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