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Roll Call

UMPIRING AND EVALUATING JOINT EXERCISES...LESSONS OF LEBANON...THE JAPAN AIR SELF DEFENSE FORCE

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the cover

A familiar scene at recent joint training exercises such as Gold Fire I and Desert Strike has been the onloading of airborne troops for rapid deployment to the operation zone. Major General John C. Meyer and Brigadier General Andrew S. Low, Jr., discuss umpiring and evaluation of joint exercises in this issue of *Air University Review*.

UMPIRING EXERCISE DESERT STRIKE

MAJOR GENERAL JOHN C. MEYER

IN THE late summer of 1963 when the United States Strike Command (USSTRICOM) began planning for its Exercise Desert Strike, the billing stated that it was to be the largest exercise ever held within the United States. In number of men, the 100,000 Army and Air Force personnel who participated were some 30,000 short of the force that had gathered in 1952 in Texas for Exercise Longhorn. In exercise area and distances involved from one flying unit to another, it was without a doubt the biggest exercise ever staged in these United States.

The Commander, USSTRICOM, wanted an exercise area large enough to give commanders their head. In years gone by, in all too many instances, exercises had been executed by a set script that spoon-fed field commanders in battle situations. USSTRICOM joint training exercises have been characterized by wide-open and freewheeling situations wherein infantry, armored, mechanized, and airborne field commanders could make decisions similar to those required in actual tactical situations. This type of script again was the aim of General Paul D. Adams, Commander in Chief, USSTRICOM, and Director for Exercise Desert Strike.

After establishing the Neutral Forces and

moving them into the field in January 1964, Brigadier General Patrick H. Devine, Chief of Staff of Sixth Army, made his headquarters at Needles, California. In April Brigadier General John M. Finn, Commanding General of Fort Polk, Louisiana, assumed command of the Neutral Forces, which approximated 6000 officers and men. Operating initially in downtown facilities, he began soliciting exercise rights from landowners of the contemplated exercise area. The greatest landowner was the United States Government in the form of Riverside Bureau of Land Management.

The exercise area consisted of approximately 12.5 million acres extending from northwest of Fort Irwin, California, military reservation eastward across the Colorado River to a point 30 miles north of Kingman, Arizona, then southeast following the course of the Big Sandy River to the Harquahala Mountains some 65 miles east of Blythe, California; south and then west to Ripley; northwest along the Bullion Mountain Range to a point 18 miles southeast of Daggett, and north to the Fort Irwin reservation. (See map on page 4.)

Commensurate with other preparatory operations by the Neutral Forces, the Riverview Airport on the outskirts of Needles was leased to provide a tent city for the headquarters of the Director Controller for the exercise. Here was located the office of the Chief Controller (Umpire) in near proximity to the Director and his key staff. As the activity of the umpires requires minute detail and immediate knowledge of the progress of all units to ensure effective exercise play, integration of the umpire forces with the command and operational element of the Director is considered a prerequisite.

As it developed, however, this proximity worked to the disadvantage of the umpires. Space allocations were at a premium, and professional interest by the several staff agencies of the Director's headquarters created a minor traffic problem and militated toward confusion within the umpire offices. Future exercises should isolate the office of the Chief Controller, yet it should be near enough to the Director to maintain close liaison.

Major Army units assigned to the maneuver were the Headquarters of the III Corps and the XVIII Airborne Corps, the 1st and 2d Armored Divisions from Fort Hood, Texas; the 5th Infantry Division (Mechanized) from Fort Carson, Colorado; the 101st Airborne Division from Fort Campbell, Kentucky; the 2d Brigade of the 40th Armored Division of the California National Guard; the 258th Infantry Brigade of the Arizona National Guard; and the 191st Infantry Brigade of the U.S. Army Reserve in the Montana-Utah-Arizona area.

From the Tactical Air Command of the U.S. Air Force came tactical forces from George AFB, California; Seymour Johnson AFB, North Carolina; England AFB, Louisiana; Cannon AFB, New Mexico; Holloman AFB, New Mexico; Shaw AFB, South Carolina; Pope AFB, North Carolina; plus key staff elements from Headquarters TAC, Headquarters Ninth Air Force, and Headquarters Twelfth Air Force.

Aerial tankers from Strategic Air Command and air defense forces from the Air Defense Command also participated in the air operations. SAC and ADC officers held key staff positions within the headquarters of the Air Force forces on either combat side as well as with the Director and Controller structure.

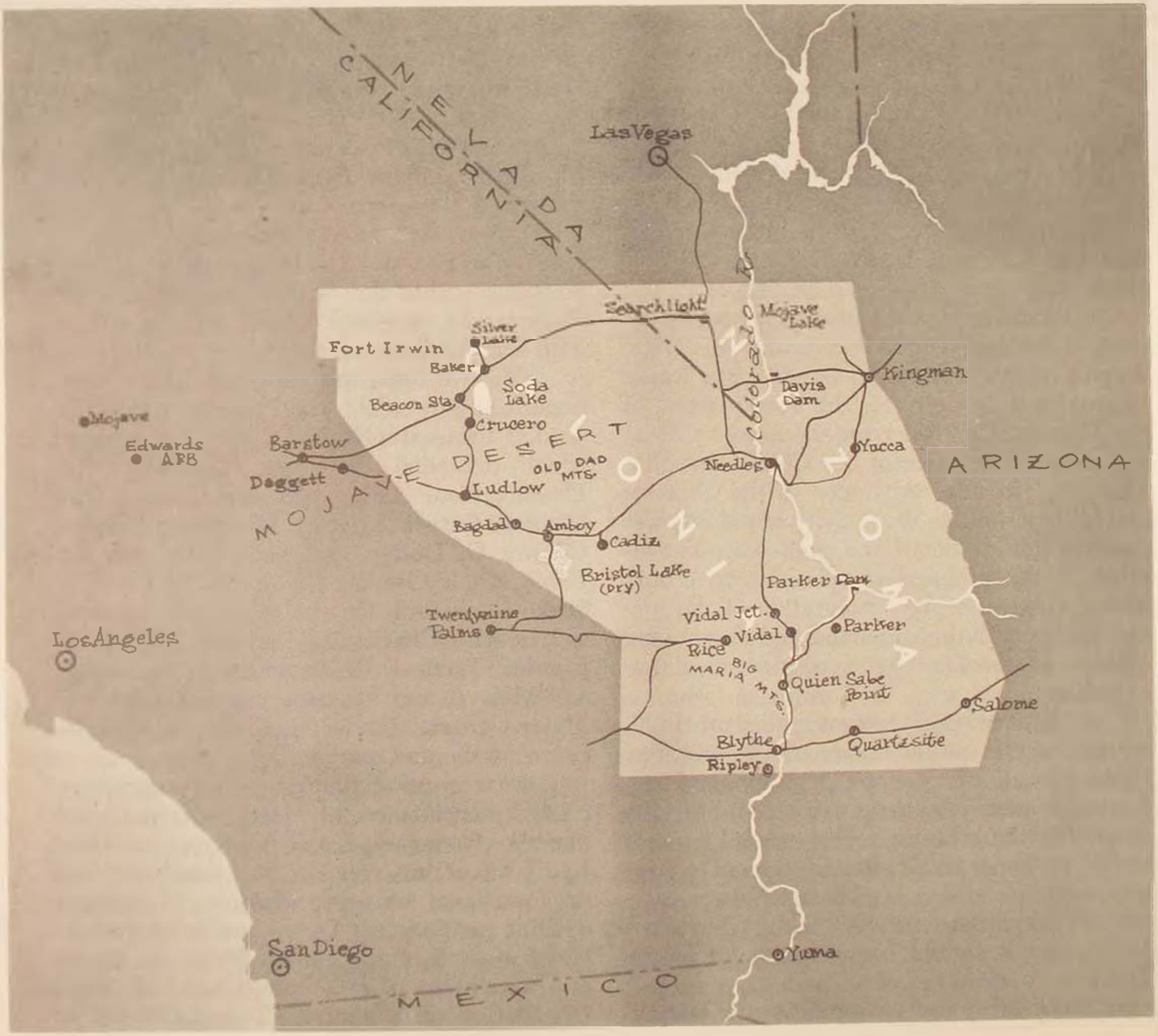
The two opposing joint task forces were organized and called JTF Phoenix, which defended the east (Nezona), and JTF Mojave, which defended the west (Calonia). The Phoenix Commander was the Commanding General, Fifth U.S. Army, Lieutenant General Charles G. Dodge, and his deputy was Air Force Major General Clyde Box of the U.S. Strike Command. On the other side Lieutenant General Charles B. Westover, Vice Commander, Tactical Air Command, commanded JTF Mojave, and his deputy commander was Major General Charles H. Chase, Special Assistant to the CINCUSSTRICOM.

An interesting side play—and a most important one in view of the real-life potential of Strike Command forces deploying in actual battle situations—was the simulated national organizational structure devised to achieve realism for Exercise Desert Strike. A former Chief of Staff of the United States Air Force and Chairman of the Joint Chiefs of Staff, retired General Nathan F. Twining, acted as

the Foreign Minister of Calonia. General Clyde D. Eddleman, USA (Ret), was Calonia's Minister for Defense, and Mr. Henry D. Ramsey, U.S. State Department Political Adviser to General Adams, was the Foreign Minister. Their military forces defending the nation of Calonia were known as Joint Task Force Mojave.

Calonia's mock enemy, the nation of Nezona, had as its Prime Minister General Jacob L. Devers, USA (Ret), former head of the Army Field Forces. The Nezona Minister of Defense was Lieutenant General Ira C. Eaker, USAF (Ret); and Mr. Raymond L. Garthoff, Soviet Analyst, U.S. State Department, was the Foreign Minister.

During May 1964 USSTRICOM forces exercised in the U.S. southwestern desert region.



These two government bodies acted as war cabinets of the two mythical countries and assisted in transforming decisions of the government cabinets into military plans and operations. Thus each cabinet functioned as the final executive authority of its government and as the national security council, determining, developing, and directing integrated domestic, foreign, and military policy in the best interest of its nation.

The use of the political vehicle enabled this field exercise to be executed along lines closer to the situation in which real events lead to war and are influenced by strategy and tactics. The end result was to lend further realism and provide rare training in government crisis management.

With all the detail, effort, and planning for an exercise audited out at approximately 48,000,000 tax dollars, assurance had to be pegged to make the effort worth the cost. The controlling of exercise play over an area slightly smaller than the State of West Virginia posed formidable tasks for the scant 600 personnel wearing the traditional white arm bands of the neutral controller (umpire) force.

The objectives to be accomplished by USSTRICOM during Exercise Desert Strike from 17 through 30 May were:

- to train participants in the conduct of joint operations, simulating the employment of conventional weapons and tactical nuclear weapons
- to train Army and Air Force personnel in active and passive electronic countermeasures and in electronic counter-countermeasures
- to stress the conduct of joint and unilateral intelligence operations for the provision of the combat intelligence essential for joint conventional and tactical nuclear warfare
- to evaluate appropriate concepts, operations, and procedures having joint interest.

Soon after my assignment as Chief Controller of Desert Strike, I had to outline specific training obligations for our umpires to elevate them from line and staff officer assignments into knowledgeable observers who could make concrete input into the overall data collection necessary to evaluate this exercise. Several schools were established: namely, an Air Base/Air Defense Umpire School, a Ground and Forward Air Umpire School, and a Hawk Missile School. These schools were designed to orient controller/umpire personnel as to their tasks in Exercise Desert Strike and, further, to provide adequate instruction and basic ground rules for the future discharge of their duties in accordance with the umpire plan.

The Air Base/Air Defense Umpire School was located at Luke AFB near Phoenix, Arizona. Umpires assigned to the joint task forces, the tactical air control centers, the control and reporting centers, the reporting and controlling posts on air bases involved, and those umpires who would evaluate in-flight activity were scheduled for classes. Each instructor had adequate time for preparation, and the presentations were sound. It is of footnote importance to observe, however, that from the time of their selection as umpires and instructors in the preparatory schools they should be relieved of all routine duties to enable them to concentrate on this work. Further, better pre-exercise training of Army umpires in aircraft attack and delivery techniques would ensure better overall efficiency. Such knowledge would have improved their ability to assess damages from air strikes.

Future air base and air defense umpire schools conducted in pre-exercise periods should include instruction in the area of air-ground attack and damage assessment. We attempted to acquire our ground umpires from specific Army units but, due to other exercise requirements, were not entirely successful. As a result some of our overall efficiency suffered. Such a selection of ground umpires would have resulted in familiarity of personnel and have alleviated the awkward period of their attaining knowledgeability and conversancy with professional capabilities of colleagues.

It was difficult, however, to gather all umpires functioning in similar assessment areas together to ensure that the rules of the control of air-ground action were properly prepared, presented, and *understood*. This problem was overcome, and the results reflected the efforts involved.

The Hawk Missile School was established at Fort Bliss, Texas. The students were both Army and Air Force personnel assigned as umpires to Hawk battalions. Through the cooperation of the United States Army Air Defense School at Fort Bliss, a special course was conducted from 19 to 23 April 1964. This course ran simultaneously with other Hawk training programs being conducted at Fort Bliss. This afforded the Desert Strike student-umpires the opportunity to witness actual firing of the Hawk missiles and thus increased their competence and professional manner and acquainted them with the latest techniques of employing the Hawk weapon.

The Ground and Forward Air Controller Umpire School, primarily designed for umpires assigned to Army ground units, was conducted at Needles, California, 4–8 May 1964. I required the attendance of Hawk battalion umpires and forward air controller umpires at the Needles meeting. The points stressed at this school were the rules for control of ground action and signal communications. To stress the latter, two exercises in the use of proper signal techniques were conducted, and the students also participated in a reduced-scale command post exercise. This exercise was a practical summary of the formal instructional material presented during the school and provided a vehicle for a complete checkout of the communications systems to be used by umpires during Desert Strike.

From December 1963 through March 1964, Strike Command personnel working with AFSTRIKE and ARSTRIKE had developed the Desert Strike controller/umpire handbook. A pocket-sized document of some 100 almanac-like pages, this volume included concise and detailed breakdowns on communications as well as the rules for control of ground and air actions.

Except for an intelligent and penetrating program of umpire selection with sufficient priority to preclude substitution, the conduct of the umpire schools is equally as important as the exercise itself. Without the formative precedent of the school, resultant errors in umpire evaluation must be expected. Future schools should be conducted at one place, should include all umpires selected irrespective of their technical duties, and each class should be limited to 50 students. Adequate instructor-student rapport is impossible with larger groups. In these schools, instruction should be given on weapon systems and delivery procedures and techniques by qualified and experienced pilot personnel. Basic information on low-angle strafing, napalm runs, forward air controller techniques, and the gamut of close air support in air-ground operations should be stressed to all umpires in an exercise. As an example, because of the large land mass involved in Desert Strike as well as the tremendous difficulty of having preselected umpires present at an anticipated scene of action, situations occurred occasionally wherein the sole witness to an air strike was a ground officer not thoroughly versed in close support air tactics.

In air activity, standard types of approaches to denote specific techniques of close air support activity were agreed upon. A normal straight-in run to the target, for instance, was understood to be a normal nonnuclear attack consisting of 2.5 rockets and 800 rounds of 20-mm ammunition. Damages, depending upon terrain, personnel, and equipment involved, were then to be assessed. A major difficulty in this area was the action of field commanders and the Direct Air Support Center (DASC) in rerouting set missions and changing the simulated aircraft ordnance loads, thus changing the point of attack and the technique used. This situation made for erroneous reporting by umpires not clued in to the last-minute change.

In all too many instances an "X" quantity of assessment by ground umpires resulted from inability to recognize and identify the aircraft involved, the maneuver executed, and the technique used by the attacking aircraft, not to mention an inability to properly assess potential damage from the air strike.

nuclear damage assessment

Desert Strike was unique, varying from other STRICOM exercises in that there was a concomitant escalation in the tactical use of

nuclear weapons by both air and ground units. This posed a distinct problem for umpires.

The Army Forces (ARFOR) and Air Force Forces (AFFOR) used most of the complex weapon systems available in the regularly constituted division/air-wing arsenal.

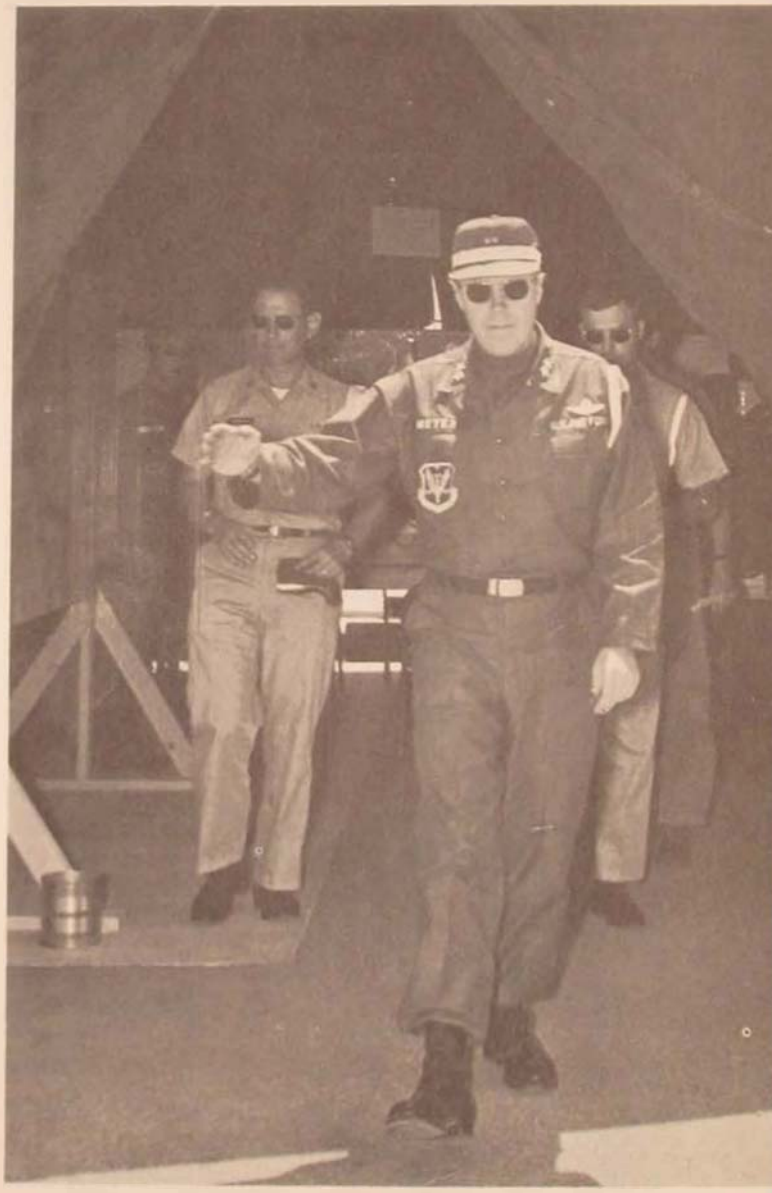
In the case of ARFOR strikes, the umpire with a ground unit had to be the fire marker, prepare a report, umpire the follow-up action, and ensure that all units concerned "played the game." Seldom was there sufficient time to position a marker prior to effective delivery of the nuclear weapon. Communications within an area the size of West Virginia, with the ensuing communications problems in mountainous terrain, plus the simple factor of using 1:250,000-scale maps, often made it nearly impossible to find a ground zero within 100 to 1000 meters in the desert wastelands of the exercise area, let alone report it consistent with a fluid battle situation. The problem was further magnified by requiring the umpire to leave his parent unit and make a professional assessment of the nuclear strike. The activity of his parent unit directly after a nuclear strike was far from static, and the umpire's services were lost during the nuclear strike assessment period.

It is fair to state that, considering the number of nuclear strikes used in Desert Strike, the umpires allocated were able to handle them with sufficient knowledgeability to produce usable, accurate evaluations. The conjecture does exist, however, that had either side, just in the ground battle alone, utilized all nuclear strikes allocated, the force of umpires available would have been hard pressed to assess the effects properly.

Future exercises will have to make full utilization of the Direct Air Support Center's communications system to enable each DASC to contact his opposite number directly and convey umpire information vitally needed in nuclear strike operations. Partially because of the terrain and the wide dispersion of some of the units and their dynamic movements, the umpires expressed grave doubt as to their ability to determine accurately (a) whether the firing unit was indeed able to make good the necessary CEP (circular error probable) and (b) whether the damage factor alleged was, in fact, of value in view of terrain and dispersal. The umpire of the delivering force often did not know the identity of the enemy unit out ahead or of the "on-site" umpire assigned to the strike area.

Consideration had to be given to delivery of ground nuclear weapons on a set scenario so as to preclude the confusion generated by fast-moving troops, problematical CEP's, and

Major General John C. Meyer, Chief Controller (Umpire) of Exercise Desert Strike, leaves the Command Post of 1203d Tactical Fighter Wing (Prov) after checking operations and conferring with umpires.



lack of proper marking and identification of enemy units. A gross table covering all nuclear deliveries had to be developed to apply average factors instantly and enable the umpires to make generalization, which for exercise play was accepted. In nuclear exercise warfare, each piece of equipment cannot be tagged as a casualty. The application of refined computations under field conditions is not practical. Adherence to present policies of evaluation will continue to slow down the overall objectives of a training exercise.

exercise artificialities

In the search for realism, necessary curbs had to be placed on enthusiasm, scenarios, and situations wherein reasonable men could foresee that hazards to life and limb could result in tragedy. The deployment of mechanical armadas into unfamiliar territory leads one to the simple assumption that complex exercises such as Desert Strike are more hazardous than normal existence on an Army post or an Air Force base. The deployment into the vast wasteland wherein Desert Strike was executed, with numerous varieties of vehicles, ordnance, and aircraft, made the observance of safety precautions a prime factor in all planning activity. This precept, coupled with budgetary limitations, necessitated certain artificialities which had to be surmounted to enable this massive exercise to arrive at its successful conclusion.

Several factors had to be ignored which, had the practical requirements thereof been mandatory, would have given a truer picture of our professional worth:

Logistics. Realistically, a critical logistic requirement exists in the supply and dispensation of nuclear weapons. Because of the absence of nuclear logistics, commanders used dispersal bases without due consideration for the prepositioning of ordnance and trained ordnance handling and loading personnel. In a true combat situation the lack of a proper marriage between nuclear ground handling personnel and the stores themselves would eradicate the presumption of successful nuclear strikes. Air Force field commanders had the proclivity during this exercise of overlooking, on occasion, this vital necessity. In an actual nuclear operation the need for supply and resupply, plus minimum loading time, as well as protection to reduce vulnerability, must be considered.

On the flip side of the coin, Army commanders, again because of the artificialities, did not consider, or were not plagued with, the necessity of concern over moving all classes of supplies from a communication zone into the direct combat theater. By this vital lack of practical applications in warfare, the Air Force was prevented from conducting two of its basic and classic missions: viz., interdiction to isolate the battlefield through the disruption of the supply lines and the utilization of assault airlift to resupply tactical ground forces deployed in battle. Umpire observation of the vital logistic function was thus not covered. The vitalness of supply and resupply activity was of course grounded in textbook fundamentals. The only interdiction activity during the exercise was against bridge targets along the Colorado River. The only assault airlift officially known to the umpires was in conjunction with the entry of the 101st Airborne Division into the exercise.

On-Base Aircraft Dispersal. The use of atomic weapons created the mandatory requirement on air base commanders to widely disperse tactical fighters and reconnaissance and assault airlift aircraft. The embarrassing holocaust at Bien Hoa in South Viet Nam, by use of conventional mortar ordnance, creates a current insight into the vitalness of the dispersal requirement. In many instances during Desert Strike professional dispersal plus blast-retarding revetments would have placed an entirely different connotation on umpire evaluations of time periods wherein an air installation was deemed "out of action." Had aircraft been dispersed in small groups at distances up to two miles apart, most units would have continued to have some of their aircraft operational for practically the entire period of the exercise irrespective of nuclear strikes on their installation. This assumption is valid considering only the number of air strikes made on airfields. This assumption would have decreased

in validity had the opposing air commander scheduled a more realistic number of strike aircraft against enemy air bases.

From the practical standpoint, because many air bases used in Exercise Desert Strike belonged to major commands other than TAC, the fundamental mission of those bases necessarily continued through the exercise. As a result of these practical aspects, Desert Strike forces were allocated minute areas of some air installations, and the facts of life of atomic warfare operated in propinquity with day-to-day reality.

Identification of Aircraft. Units of the Air Defense Command participating in the air defense role in Exercise Desert Strike found themselves in the anomalous position of participating in both actual intercepts and in Desert Strike missions with the same personnel and in many instances with the same aircraft. Those air defense aircraft earmarked as exercise aircraft were distinguishable only by their tail number. As a result, the operation of actual mission air defense aircraft and those being utilized in the exercise created a near impossible chore for proper umpire evaluation.

air defense

Proper scoring of air defense activity possibly was the most complicated of all umpire procedures in Exercise Desert Strike. The basic problem in air defense is applicable to all umpire activity. Umpires must obtain advance information from field and air commanders of programed missions. Thus the umpire can ensure adequate assessment coverage in the combat area.

In the area of nuclear strikes on air bases, only by advance information with a precalculated actual ground zero (AGZ) and a preplanned time of the strike was the base umpire able to fire the nuclear simulator at the time of attack, calculate and assess damage, and make the necessary reports in sufficient time to make it a major contribution to exercise play. Swift passage of the vital data through the umpire's Tactical Air Control Center for relay to the opposing TACC rapidly completes the picture. Mandatory reports to the Director Controller were also a factor. As a point of practicability, only those areas on an air base assigned to player personnel were attackable by opposing forces. Since many of the air bases used in Desert Strike continued their normal mission (often other than Tactical Air Command's), such isolation and restriction of areas were necessary.

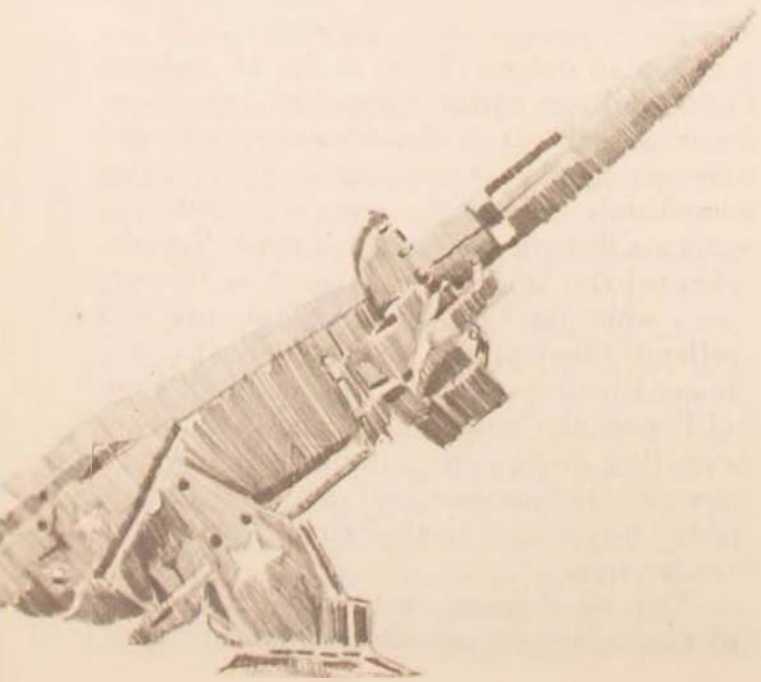
Evaluation of air defense activity posed several major problems which, through the course of Desert Strike, plagued the umpires. By direction of General Adams, safety in all aspects was a major aim in the exercise. In view of this fact many applications of air defense activity had to be curtailed. Runway alert scrambles were not always afforded top priority in the scheduling of take-offs from air bases used by Strike Command. Identification of enemy aircraft and the kill rate were partially accomplished by radar assessment. When possible, aerial umpires observed the activity in two-place jet fighters. Occasionally, erratic communication coupled with tower frequencies being monitored by air defense aircraft unbalanced the normal validity associated with aerial engagements. Each attacking aircraft checked in with the control tower prior to making passes at airfields. The monitoring of tower frequency by ADC defenders often canceled out the surprise factor. This area will receive study directed toward improving future exercises.

Three combat elements were busily engaged in air defense. Units of the Air Defense Command ran radar-controlled intercepts above 24,000 feet in the maneuver area and were engaged in intercepts at all altitudes immediately outside the maneuver area. ADC sectors in Phoenix, Arizona, and Reno, Nevada, defended the land mass assigned to Phoenix forces while the Los Angeles, California, and Portland, Oregon, ADC sectors defended the Mojave land mass. Through the use of the Control Reporting Centers (CRC) and the Control Reporting Posts (CRP), umpires monitored respective radarscopes and assessed damage created by engaged tactical aircraft within the exercise area.

The air defense air-to-air activity used radar in its casualty assessment of engagements.

Identification friend or foe/selective identification features (IFF/SIF) was the primary means of identifying attacking aircraft. As various fixed-place targets, such as Tactical Air Control Centers (TACC), Direct Air Support Centers (DASC), CRC's, and CRP's, were attacked, notification of the incident was forwarded by electronic means, and all available umpires cooperated in assessing damage caused by the air strikes. These evaluations, coupled with flight reports made to umpires at the attacking aircraft's home base, culminated the evaluation. Invaluable assistance provided by the Federal Aviation Agency (FAA) in routing aircraft simplified, to a degree, the work of the umpires in that flight-following became less of a speculation and more of a forewarned actuality.

The system of evaluating air-to-air activity was not without its problems. Timeliness was the keynote, and communication below the TACC and the DASC often was not all that was desired, particularly from an umpire's standpoint. The limitation placed on umpire communications is a problem which should be made an item of priority in future exercises. Limiting factors quickly appeared when air strikes were launched from strip or air alert on an "on-call" type of mission. Such flexibility in the utilization of air power in its tactical role often did not allow sufficient time for aircraft flight plans to flow through the air-ground network and enable available umpires to be present to properly evaluate the results. Often umpires found themselves in the unenviable position of attempting to make possible kill analyses which challenged accuracy. Of the 355 air-to-air sorties flown, only 50 per cent were properly identified and assessed.



In the Army Hawk missile area of ground-to-air defense activity, utilization of operational data such as "lock-on" and "tone burst" formed the basis for umpire assessment. Utilizing kill probability tables, umpires assessed aircraft damage with relative accuracy. One cause of concern, however, was Army claims of destruction of aircraft often not specifically identified which passed through the Hawk battalions area and within their range but without any knowledge that they were being attacked by the Hawk missiles. In this area, communication was another limiting factor. These factors led to repetitive claims and assessment, often giving Hawks "kills" of more aircraft than were in fact in the area. With better indoctrination of Hawk personnel and common communication frequencies between the Hawk units and aircraft operating in the maneuver area, more accurate analyses of the Hawk efficiency would be possible. Conceivably an electronic device could be installed in all aircraft which would increase our Hawk umpire staff's capability to assess kill and damage.

The air-to-air activity of opposing tactical fighters in many instances defied accurate assessment. Strip alert scrambles, airborne loitering and direction to last-minute targets by the DASC, plus aerial combat generated by armed reconnaissance missions, also defied accurate assessment. This statement is particularly valid as to air-to-air activity occurring in lower altitudes where radar detection was obstructed by terrain. Further, the swiftness of engagement and break-off often left only pilot reports for proper evaluation. Instances occurred wherein ground umpires observing such activity were unable to identify the aircraft, the maneuvers involved, and the numbers of aircraft attributed to either Phoenix or Mojave.

retreat from realism

Another major weakness came to light in the river crossings of the Colorado River and the breakouts immediately thereafter. This situation occurred in the opening phases of the exercise. During the psychological buildup between Nezona and Calonia, the latter's Mojave forces laid extensive mine fields, built road blocks, and utilized other methods in creating obstacles to halt, disrupt, and delay Phoenix forces from breaking out after crossing the Colorado River border. Much of this activity was simulated. Where simulation was not properly supervised or observed, it was occasionally ignored in the Phoenix breakthrough. The resultant rapid advance of units of the 2d Armored Division during the opening stages of the exercise play was not realistic, and damage assessment was not commensurate with practical probability.

All obstacles, river crossings, and bridge actions required extremely close umpire control.

Possibly the greatest weakness encountered in the umpire activity was the lack of mobility. A major hurdle was created by the fact that fewer than 600 umpires were charged with the evaluation of the activity of two Air Forces and four Army divisions spread over an area of as uneven terrain and only slightly smaller than West Virginia.

Commanders in some instances failed to provide necessary cooperation and logistic support for the transportation of umpires. This failure is understandable in view of the emphasis placed upon the operational stature and required mobility of these ground units. Tracked vehicles assigned to armored units were particularly adaptable to cross-country mobility in desert terrain. The standard vehicle assigned to the umpires, however, was the quarter-ton truck pulling a heavily loaded trailer. With such equipment the umpire often encountered difficulty in keeping up with cross-country movement of armored division components. The rapid movement of armored combat units at battalion level and below created difficulties in prepositioning and in marking artillery and nuclear fires. Some umpires, through the cooperation of the armored commanders in the field, received armored personnel carriers and thus were able to keep well abreast of the units to which they were assigned. This alleviated a situation which was not germane to all ground umpires, yet it makes the point! Future exercise activity should take into consideration the acute problem of rapid umpire transportation. This problem can best be softened by the assignment of a workable number of helicopters and adequate communication devices.

In view of the limitation imposed on proper evaluation of exercise play by umpires assigned to specific units, coupled with austere umpire manning throughout, four "scene-of-action" teams were organized and based at Controller Headquarters. These teams were under the direct operational control of the senior controller. Each team consisted of an Army officer, an Air Force officer, and an NCO who doubled as the jeep driver and radio operator. The controller dispatched the teams to anticipated points of contact to make rapid evaluation of the exercise play. These scene-of-action teams completed 42 assignments in 14 days. A serious limitation to their utilization, however, was the fact that the teams were based at Controller Headquarters. As the exercise war progressed, travel time from the Controller Headquarters to the scene of action often involved a two-hour drive by jeep or a 40-minute helicopter flight. Future solutions for the proper utilization of these scene-of-action teams would be to locate them strategically within the exercise area and equip them with helicopter transportation. Swift transportation, plus adequate means of communication, would increase their efficiency tenfold. The AN/VRQ-2 radio is sufficient to maintain adequate communications with player units. However, the scene-of-action teams should be assigned to primary frequencies, one within the frequency band overlap between armor and artillery and the other within the frequency overlap between artillery and infantry.

what we learned from Desert Strike

Many of the basic evaluations have been made in previous exercises. In the past two

In preparation for their role, controllers (umpires) identify likely battle area for an expected tactical move by forces taking part in Exercise Desert Strike.

years STRIKE forces have been tested most arduously in the rolling hill country of central Washington during Exercise Coulee Crest, in the heavily foliaged land of the Carolinas in the hot summer, in the bleak vastness of the Alaskan winter during Exercise Polar Siege, and more recently in the desert wastes of Arizona and California. The result is concrete and explicit: it is the amalgamation of joint forces of seasoned and tested military personnel capable of deploying on a moment's notice to any place in the world and, upon debarking, being combat ready. It's just that simple.

The singular importance of all training is for naught unless it is properly evaluated. In all probability only because the umpire area was my primary concern, I feel the essentialness of adequate umpire supervision. The activity of the umpire lends validity and circumspection to any exercise. The degree of professionalism of our soldiers and airmen in the prosecution of the art of war is a national prerequisite. Without it, we collectively place our heritage in jeopardy.

We within the family of USSTRICOM approach all phases of these exercises with an absolute seriousness of purpose. We can appreciate the progress that has been made in Strike Command. We recognize the capabilities of Army and Air Force forces involved. The vital and dynamic leadership of General Paul D. Adams is constantly reflected in the formation, training, and prestige generated by joint STRIKE forces.

By vigorous application of sound organizational procedures, limited umpire personnel can produce excellent results in the tabulation of exercise play. The plaguing negative psy-

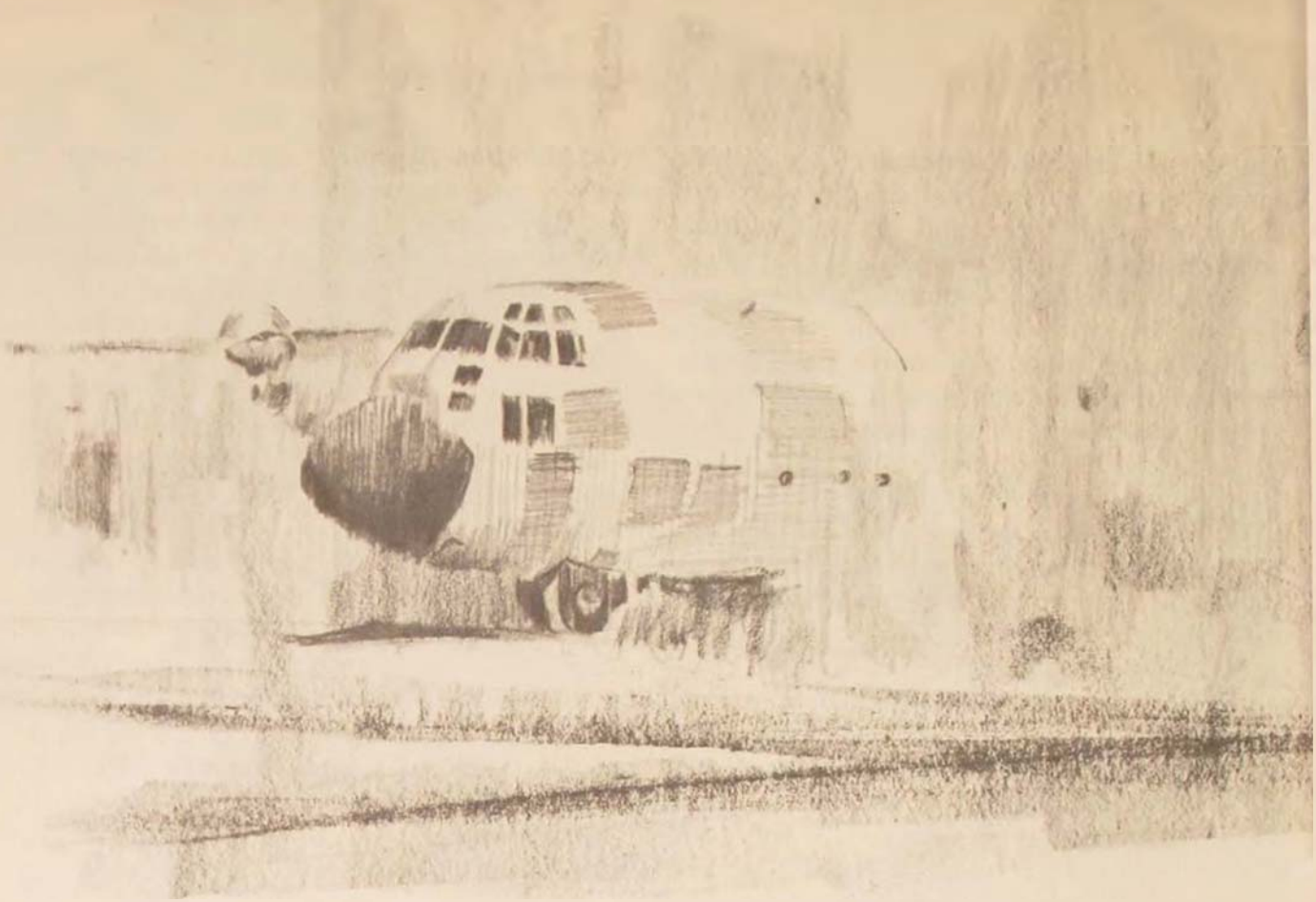
chology of exercise participants regimented against umpire cooperation can be overcome. Unit training, lectures, and internal information activity can acclimate participating troops to the vital necessity of umpire functions and the beneficial end results of their cooperation. With educated and cooperative participants, excellent communications, and accurate preplanned positioning of umpire personnel, better results will be achieved in the future.

We have much education yet ahead of us in joint operations. This avenue is in the direction of intimate familiarity of Air Force forces with Army forces and vice versa. Such familiarity cannot be overdone. Much of this work can be accomplished in the pre-exercise classroom. Split-second decisions and action taken in battle presuppose the necessity of intimacy. Much has been accomplished in this area, but much remains to be done.

Umpires should come from the same unit if possible. Priority of umpire assignment should overshadow any other administrative consideration. A professional approach, singleness of unit purpose, and convenience of nonexercise commitments all contribute to a cohesiveness of effort. Those individuals selected as exercise umpires because of their outstanding qualifications must become a priority item within the organization. Individuals selected must meet all pre-exercise schedules. This alone will guarantee umpire personnel with well-established fundamentals and thus contribute to thorough assessment of future exercises.

In the final analysis, the fundamental and moving instrument in attaining realistic and usable data for future planning of STRICOM forces is to be gained from correct umpire assessments. In peace the umpire is the weapon. When the dust has settled and the crowd dispersed, the significant residue is the experience gained by the commanders, staffs, and participating soldiers and airmen. There is no price that can be set on this attainment.

Hq Twelfth Air Force (TAC)



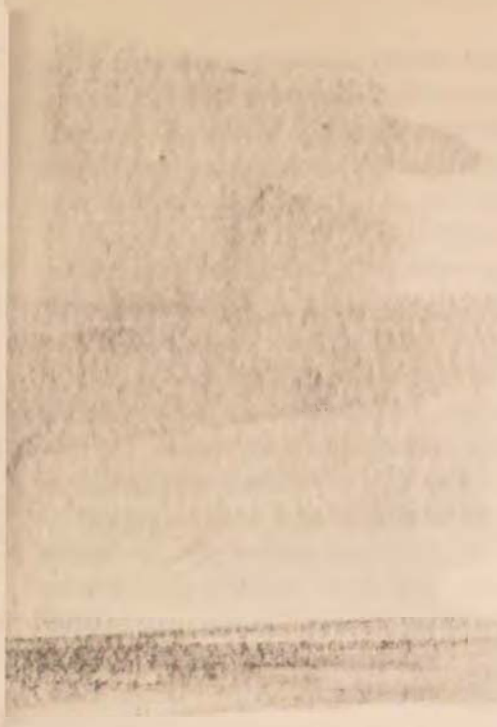
AIR MOBILITY IN THE FIELD TEST LABORATORY

BRIGADIER GENERAL ANDREW S. LOW, JR.

SOME three years ago, when Secretary of Defense Robert S. McNamara asked the Secretary of the Army how aviation could be used more imaginatively to enhance the tactical mobility of ground units, he set in motion Herculean efforts in both the Army and the Air Force to find the not-so-simple answer to what seemed to be a most straightforward question. This initial request was dated 19 April 1962.

The Army reacted to the Defense Secretary's query by creation of the Tactical Mobility Requirements Board, chaired by Lieutenant General Hamilton H. Howze. The board submitted its report some four months later, in August 1962.

The Howze Board foresaw an air assault-type division in which almost two-thirds of the ground vehicular equipment usually found in the infantry division had been supplanted by Army rotary-wing and fixed-wing aircraft. With its organic aircraft, the division would be able to airlift an entire brigade simultaneously, in an air-envelopment operation. Such tactics would provide a new order of battlefield mobil-



ity, both for maneuver and firepower, and an increased capability to operate over distances formerly considered infeasible with ground vehicles. Further, the board foresaw an air transport brigade which would provide a companion logistics system utilizing an air line of communications to match the mobility of the tactical units.

In forwarding the Howze Board report, the Secretary of the Army endorsed the air mobility concept reflected therein but called attention to the need for further refinement, additional elaboration, field experimentation, and finally test and evaluation of the stated concept. The report also indicated that the organizational counterparts engendered by the concept would need similar test and evaluation.

Anticipating a need to comment on the Army's report, the Air Force in July 1962 constituted a Tactical Air Support Requirements Board under the chairmanship of Lieutenant General Gabriel P. Disosway. The latter board submitted its report in September 1962. In forwarding the report of the Disosway Board, the Secretary of the Air Force concluded that because the Howze Board had carried out its deliberative work on a unilateral service basis it failed to accord full consideration to existing or programed Air Force capabilities. The Air Force was convinced by its study of air mobility needs for ground units that its resource capabilities, refined and expanded where necessary, would meet Army tactical mobility requirements more effectively than those proposed in the Howze Board report.

In order to resolve the differing service positions, the Secretary of Defense directed that a program be established to test and evaluate the Army's tactical air mobility concept, and the associated organization, in a joint environment. The Commander in Chief, United States Strike Command (CINCSTRIKE), General Paul D. Adams, was given this task by the Joint Chiefs of Staff in their memorandum dated 17 January 1963. In this basic document the JCS established six basic requirements against which air mobility concepts would be evaluated:

a. Elimination of areas of unnecessary overlap or undesirable duplication of capabilities.

b. Determination of the best methods of exploiting the mutually supporting capabilities of the services involved.

c. Determination of the best methods for coordinating and controlling the operations of air-ground forces involved.

d. Determination of the survivability in, and suitability to, varying combat environments.

e. Determination of the advantages and/or limitations inherent in the Army mobility concept, including deployment, employment, and logistical support of the proposed units.

f. Provision of data for use in determining total force structure, logistical requirements, and support requirements.

The generation of data to respond to these JCS requirements has become the foundation of the entire USSTRICOM test and evaluation effort.

In order to meet his substantial responsibilities for a comprehensive test and evaluation program, CINCSTRIKE established in the summer of 1963 a Joint Test and Evaluation Task Force (JTETF) as a part of his headquarters. As finally approved by the JCS in September 1963, JTETF had a personnel strength of 74 officers,

10 enlisted and 18 civilian personnel. To ensure wider probable acceptance of its technical inputs and results, JTETF was to be supported scientifically by 14 professional personnel, on contract from the Planning Research Corporation. All test and evaluation tasks were to be accomplished by joint military-scientific teams.

The total USSTRICOM test and evaluation program under which JTETF functions includes not only joint field tests but also map exercises and collateral studies. The latter category includes analytical studies and computer simulations which are being conducted, for the most part, by selected industrial contractors to examine those facets of the Air Force concept which cannot be probed realistically, or do not lend themselves to valid evaluation, in peacetime field test exercises. Such subjects as air base vulnerability, aircraft survivability, and the influence of differing geographical environments on the concept are examples of areas requiring such collateral efforts.

In his guidance to JTETF, CINCSTRIKE placed primary emphasis on joint field testing, and therefore the predominant funding support has been directed toward this phase of evaluation.

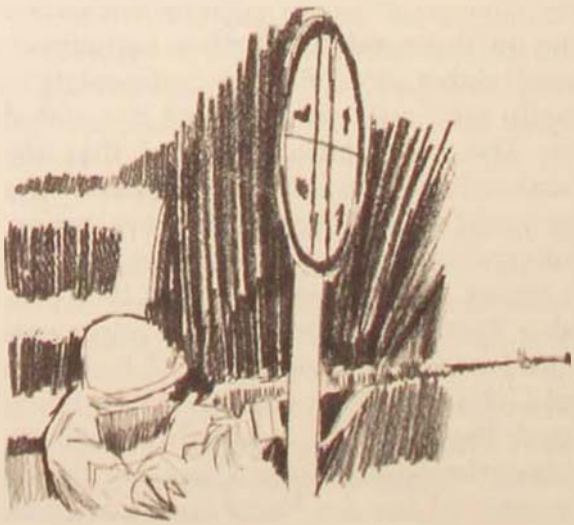
The joint field tests of the Air Force concept, as designed by CINCSTRIKE, were given the titles of Joint Test and Evaluation Exercise (JTEX) Gold Fire I for a brigade-size test and JTEX Gold Fire II for division-size. The purpose of this paper is to discuss how CINCSTRIKE performed his test and evaluation of the Air Force concept of air mobility, with emphasis on the planning and conduct of JTEX Gold Fire I.

In preparing for Gold Fire I,* each of the joint staff agencies of USSTRICOM accomplished those actions normally assigned to it during planning and conduct of typical field exercises. Much of the actual detailed work pertaining to the Army and Air Force participating units was accomplished through the service-designated headquarters responsible for joint Army/Air Force operations, i.e., the Continental Army Command for the Army and the Tactical Air Command for the Air Force. The commanders of these two service organizations also carry the titles and responsibilities of Commander in Chief, U.S. Army Forces, Strike Command (CINCARSTRIKE), and Commander in Chief, U.S. Air Force Forces, Strike Command (CINCAFSTRIKE), respectively.

With respect to JTEX Gold Fire I staff planning, JTETF was responsible for determining what data were needed, in what form they would be collected, what purpose they would serve, how the data-collection organization would function, how the data would be synthesized with other data for final evaluation of the concept, and how all this would be reported.

The JTETF had expended its principal early efforts researching available documentation on the Air Force concept. It had established a liaison team with the Tactical Air Warfare Center (TAWC) at Eglin Air Force Base, Florida. The latter unit had been established by the Air Force principally to develop its concept; refine it by theoretical and practical application of units, procedures, and equipments; and test these developments on a unilateral service basis in the Eglin maneuver area. The liaison team monitored TAWC-conducted testing related to the Air Force concept and reported the results to JTETF for use in the planning of Gold Fire I and in later evaluation of the Air Force concept.

Fundamental to any evaluation must be a concise statement of what is to be evaluated. As required by the JTETF mission, it was to be



*A report entitled "Exercise Gold Fire I" by Major Robert G. Sparkman appeared in *Air University Review*, XVI, 3 (March-April 1965), 22-44.

a concept promulgated by the Air Force which would use units and procedures produced by that service to enhance the mobility and combat effectiveness of Army ground units in joint operations.

In its concept, the Air Force stated that it planned to work with the standard ROAD infantry division (*R*eorganization *O*bjective *A*rmy *D*ivision) to provide a more practical and economical means for attaining tactical mobility than would be the case with the specialized force, the air assault division being evaluated by the Army. The concept went on to profess that "this would provide, by the process of selective tailoring of appropriate resources, combat force capabilities ranging from a relatively light air mobile force to a force capable of sustained combat."

exercise framework

JTEX Gold Fire I was cast in the mold of a typical USSTRICOM contingency operation. The scenario postulated that, at the request of a small nation allied to the United States for military assistance, a reinforced infantry brigade and appropriate tactical air forces were strategically deployed for a simulated overwater distance of 2200 nautical miles, employing MATS and TAC airlift. A few items not so deployed, principally heavy engineer equipment, were transported by a simulated sealift, which required nine days.

The exercise took place in a 2-million-acre tract of leased land in south central Missouri contiguous to Fort Leonard Wood. It commenced on 29 October with a three-day deployment phase and concluded at 1700 hours on 11 November 1964. The employment phase was conducted as a continuous, two-sided, semicontrolled exercise extending over an eleven-day period without interruptions or administrative breaks. The Test Director was CINCSTRIKE.

Joint Task Force Ozark, the force being tested, employed the Air Force air mobility concept with minimal control from the Test Director. JTF Ozark represented the U.S. military force deployed to the mythical friendly country of Oroland in response to a request for military assistance.

JTF Sioux represented the military forces of Argentia, a mythical country unfriendly toward Oroland. JTF Sioux was assigned the task of creating appropriate tactical situations for the test, and JTF Ozark would react, thereby demonstrating the Air Force concept. The Test Director exercised general control over JTF Sioux's operations.

The foregoing concept enabled JTF Ozark to react to or exploit the tactical situation, as appropriate, with considerable freedom of action and opportunity to exercise imaginative tactics. The concept enabled the Test Director to observe JTF Ozark operations under four different conditions:

a. As a counterguerrilla/counterinsurgency force free from involvement in conventional operations.

b. As an inferior force conducting withdrawal and delaying operations.

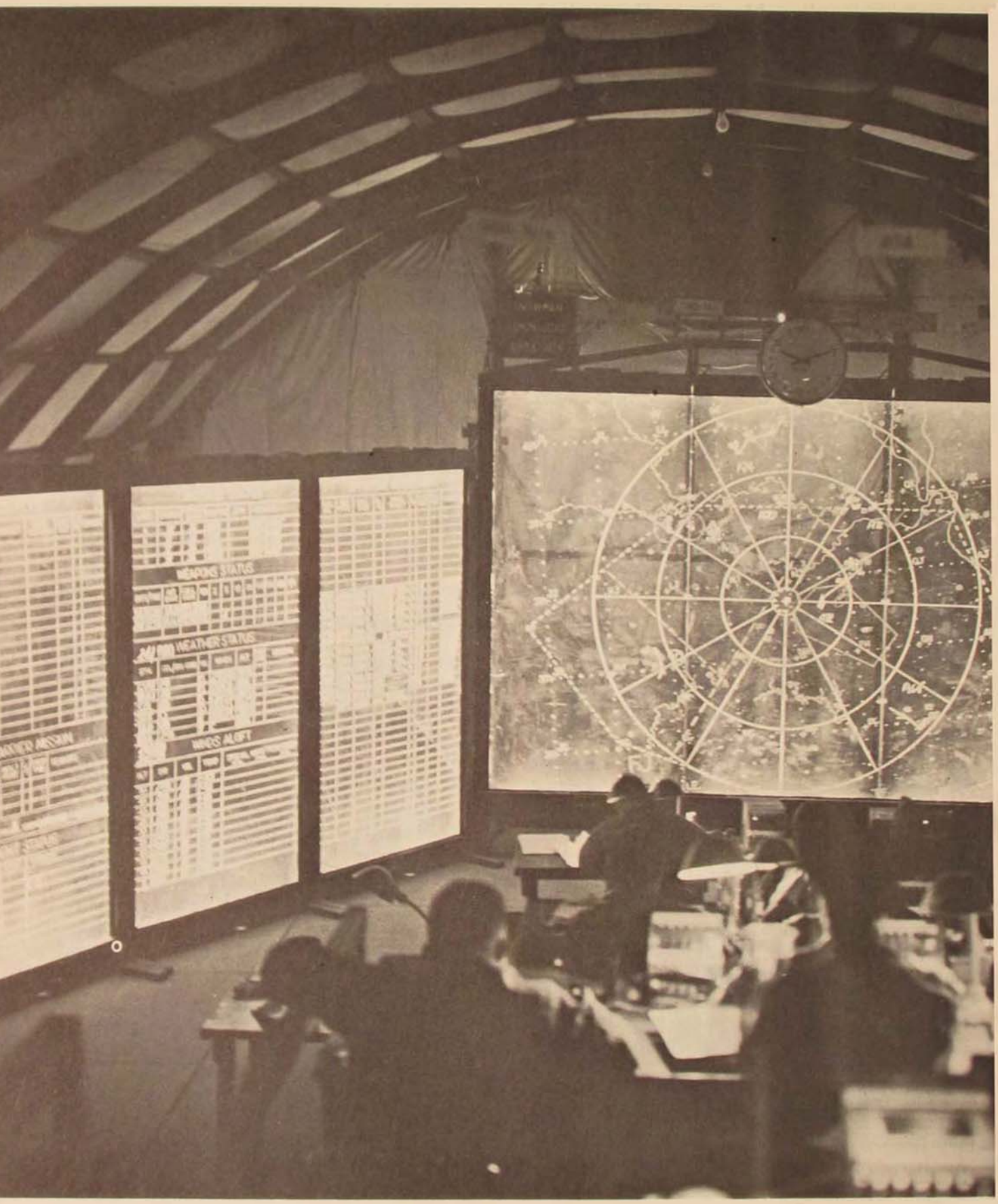
c. As an equal force conducting defensive operations.

d. As a superior force conducting offensive operations.

data collection and evaluation methodology

JTEX Gold Fire I was designed to enable various aspects of the Air Force concept to be seen in action and to permit the gathering of data on performance. Two basic data-collection methods were used. First, subjective questionnaires were filled out by senior members of the data-collection organization based upon personal observation and interpretation of what occurred. Second, data-collection forms designed for electronic data processing were used to collect hard, or measurable, data relating primarily to times, quantities, and locations. The data to be collected by questionnaires and forms were packaged by functional areas of combat. By USSTRICOM definition these are Fire Support, Tactical Air Reconnaissance and Aerial Battlefield Surveillance (TARABS), Tactical Air Movement, Logistics, Strategic Air Movement, and Command and Control.

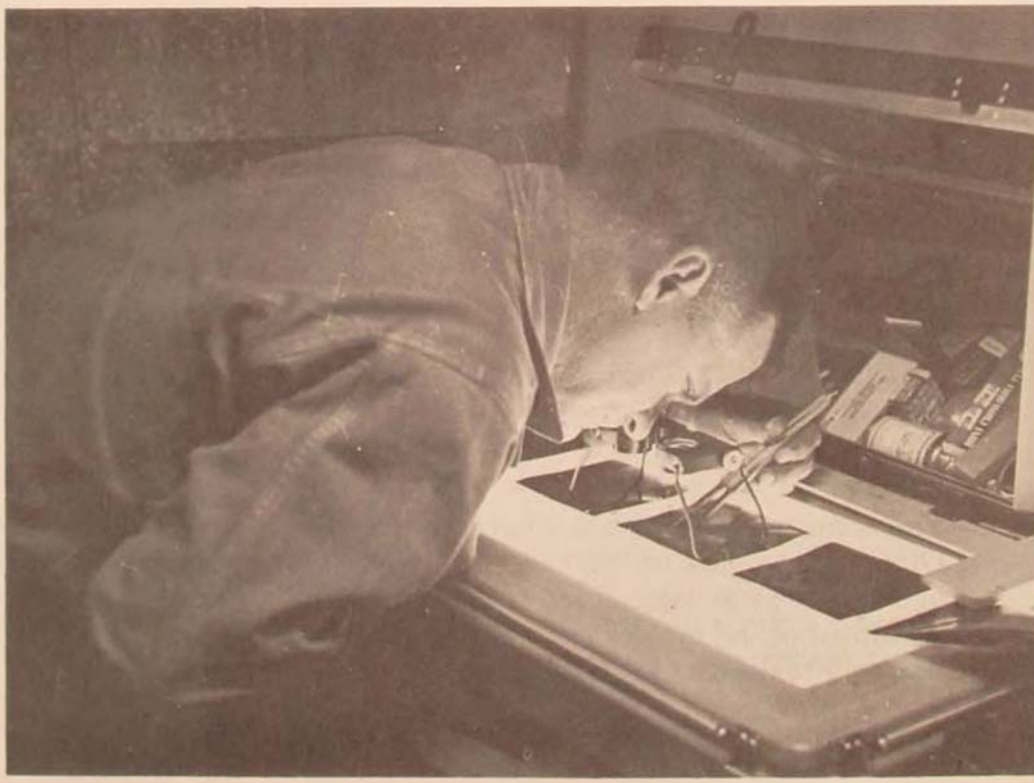
In order to ensure generation of adequate data to provide a valid statistical basis for evaluation of the Air Force concept, a table of minimum events was developed prior to the


WINDS AT 5 KMS
WEATHER AT 5 KMS
WINDS ALOFT

Intelligence Processing and Display

A Combat Reporting Center of Gold Fire I (left) illuminated for night operations . . . A Zuni rocket canister is loaded with reconnaissance photographs for parachute delivery to front-line ground commanders.

An intelligence expert studies an imagery for accurate information.



Joint Test and Evaluation Task Force personnel inspect a Direct Air Support Center.

start of the exercise. For each element of the Air Force concept, the table specified the minimum number of occurrences of the element desired during the exercise. For example, a minimum number of 25 deliveries by the auxiliary low-altitude parachute extraction method from the C-130 was required. CINCSTRIKE's mission letter to the commander of the tested joint task force enclosed the table of minimums and charged the commander with accomplishing the desired number of occurrences or events. The scenario and exercise control by the Test Director manipulated the aggressor, JTF Sioux, in such a way as logically to allow the accomplishment of the prescribed events within each tactical situation by JTF Ozark, the tested force.

Within each functional area of combat, the questionnaires and hard data forms were designed to elicit information and generate data relative to the six JCS requirements and the suitability of the Air Force concept in joint operations. Suitability was considered within the context of evaluation criteria (readiness, flexibility, mobility, command and control, combat service support, and unity of effort) employed by USSTRICOM for assessing the preparedness of assigned forces.

organization

Data requirements stemmed from a detailed study of the JCS requirements placed upon CINCSTRIKE and of the Air Force concept of air mobility. These requirements were examined through the framework of the functional areas of combat. For the purposes of this exercise Strategic Air Movement and Tactical Air Movement were combined into a func-

C-130, CH-3C, and UH-1B aircraft operate from a Gold Fire I assault landing zone.

tional area, Mobility, Tactical and Strategic. The design and formation of the JTEX Gold Fire I data-collection organization, therefore, followed these amended functional lines. It is noted in this regard that the USSTRICOM breakout of functional areas of combat is not identical to that employed in the official statement of the Air Force concept. A correlation can easily be made of the existing functional area relationships as follows:

USSTRICOM	*USAF*
Command and Control	Command and Control
Fire Support	Close Air Support
Tactical Air Reconnaissance and Aerial Battlefield Surveillance (TARABS)	Tactical Air Reconnaissance
Mobility, Tactical and Strategic Logistics	Assault Airlift

The joint data-collection organization was headed by the Director of the USSTRICOM Joint Test and Evaluation Task Force, Major General William B. Rosson, USA, and consisted of 862 personnel, who were distributed to permit manning on a joint basis of:

a. A data-collection headquarters at Fort Leonard Wood, Missouri.

b. A data-collection field team for each of the functional areas.

c. A photo documentation section centered at Fort Leonard Wood, with joint teams at each Air Force base and station and throughout the ground maneuver area.

The data-collection organization provided near

A Tactical Air Command C-130 flies at five feet and 120 miles per hour to unload cargo by the low-altitude parachute extraction system (LAPES). . . . POL in 500-gallon drums requires careful palletizing for safe extraction.

equality in numbers of Air Force and Army evaluation personnel and incorporated civilian scientific and technical representation. Personnel sources are reflected in the table on page 23.

Personnel requirements were filled to the maximum degree possible from resources within Headquarters USSTRICOM and in particular from JTETF. All remaining requirements were placed upon the services through AFSTRIKE and ARSTRIKE. Detailed study of the functional areas of combat and the administrative support field established specific personnel requirements in terms of grade, qualification, security clearance, and service. Nineteen Air Force and Army personnel were placed on temporary duty with JTETF 45 days prior to the exercise in order to develop materials for use in a training program for data collectors. This combined group formed the nucleus of the data-collection organization and reported for duty well in advance of the arrival of the bulk of the data collector personnel to ensure development of proper supervisory and analytical skills and techniques.

training

In August 1964 a map exercise based on the field test scenario was conducted at JTETF

	Air Force	*Army*	*Civil Service*	*Contract Personnel*
Data collectors:				
Field-grade officers	53	60	—	—
Company-grade officers	84	88	—	—
Noncommissioned officers	50	86	—	—
Subtotals	187	234		
Photo operations	142	106	13	—
Supervision & support	19	33	5	—
Planning Research Corp.	—	—	—	8
Drivers	—	115	—	—
	348	488	18	8

headquarters. This exercise was held to enable planners to check provisions being made for data collection and exercise control and to determine the soundness of the scenario. Players were drawn from those personnel designated to participate during the exercise on the Test Director's staff as controllers, as data collectors, or as members of the opposition JTF staff.

Ten days prior to the field test, data collectors were assembled at Fort Leonard Wood for training and equipping. Training consisted of two days of general exercise orientation in the post theater, three days of functional area specialized training in classrooms, and a three-day field command post exercise (CPX) over the actual terrain to be covered later by the player forces. Thorough training in the details of the Air Force air mobility concept was accomplished through the participation of a senior briefing team from the Tactical Air Warfare Center during the general orientation. The effectiveness of this instruction covering test objectives, types of data to be obtained, and the use of special data forms and questionnaires was measured by classroom testing and again during the field-conducted command post exercise.

Tactical vehicles with one or two radio sets provided excellent support for each of the data collector teams in the field. Training in the proper use of this equipment was continuous throughout all three phases of the training program. For field use, a number of aids were provided to each field team, such as a data collector's handbook, maps with overlays, code books for use during radio transmissions, and a photographic key to aircraft recognition.

Data collectors and evaluators reported for the exercise with personal field equipment and were then provided with collective gear for each field team, generally a quarter-ton vehicle with trailer, tentage, a stove, and rations to permit each team to be independent of player support during the exercise. Three base camps were conveniently located in the maneuver area to permit supply replenishment, radio and vehicle maintenance, and general support as needed. Aircraft were centralized at Fort Leonard Wood to support data collection, mobile target teams, and supervisory personnel. Major items of equipment included the following:

Tactical vehicles	186
Rental sedans	47
Radios	145
Aircraft	26

Additional special items of recording equipment such as high-speed cameras on jet aircraft, vibration-dampened cameras mounted in helicopters, trailer-mounted motion picture cameras with telescopic lenses, and electronic data recorders at Hawk missile sites were installed, as necessary, to assist data collectors.

data collection

The basic numerical data collected in each of the functional areas of combat were recorded

in terms of time, quantity, and location. Repetitions of actions were necessary to provide sufficient density of certain types of data. The number of repetitions of events was controlled through manipulation of the aggressor, JTF Sioux, by the Test Director, using as a guide his list of minimum essential events. As forms were completed by various field data-collection teams, they were assembled at collection points throughout the ground maneuver area and at the outlying Air Force bases, for daily pickup through a centrally controlled aerial collection system. Following daily receipt of forms at the data-collection center at Fort Leonard Wood, each was checked by a functional area supervisor for completeness and correctness, then released to the computer analysis section for key-punching and subsequent entry into the electronic data bank, a 1401 IBM computer with four tape drives. Data purification was accomplished as the bank expanded during and after the exercise. This wealth of statistical data, combined with the subjective data from teams of senior personnel examining each functional area in detail, became the basic material from which analysis of JTEX Gold Fire I would be accomplished. The complete data bank provides a reservoir of the latest statistics relating to the Air Force concept and is available for use in accomplishing map analyses, computer simulations, and analytical studies.

Despite well-laid plans, execution of operations often goes awry.

The several functional-area hard data collection systems were similar in concept. Very soon after the exercise began it became apparent that the more flexible a data system was, the more responsive it could be to last-minute change. The Air Force concept, though fundamentally unchanged, was continually being modified with respect to techniques. An example of such modification was the introduction of KC-135 tankers for the air-to-air refueling of fighter and reconnaissance aircraft. Refueling resulted, on occasion, in a single aircraft's flying what was equal to several missions until such time as its ordnance or film load had been expended or until it was necessary to relieve the crew. Gathering data on this type of operation was a somewhat different task than had been anticipated for the type of operation that was considered before the exercise as the planned Air Force *modus operandi.*

Another problem experienced was in the editing of the hard data collection results. It was planned that automatic editing routines which had been prepared for the computer would detect the bulk of errors that would probably occur in the completion of a large volume of forms by data collectors operating under field conditions. It was decided that this would be the quickest way to achieve a gross edit and that such manual editing as was required should follow. However, the volume of forms so far exceeded the number anticipated during the planning phase that the capability for punching the computer cards was not sufficient to remain current. This resulted in a considerable backlog of unedited data forms and a significant slowing of the final data-reduction process. It became quite clear that either a careful manual edit must be accomplished prior to the time data forms are key-punched or that a completely adequate key-punch capability must be provided which is able to stay abreast of the load to ensure that error edits are accomplished on a timely basis.

Much valuable subjective information can be obtained from key commanders and staffs. However, during the conduct of the exercise these individuals are extremely busy and are pressed to make time available for interview by data collectors. To ensure that essential information is gathered, subjective data collectors must be of sufficient rank to gain the audiences required.

In an effort to economize on the number of data collectors required, personnel for exclusive employment during the strategic air movement phase were not requested. Instead data collectors from the other functional areas were used, with the thought that they could continue directly from the terminal end of the strategic deployments to their assigned exercise locations. This arrangement, though reasonably successful, did complicate coverage of the deployment and the initial part of the exercise employment phase. Furthermore these personnel were not available to the strategic deployment functional area chief during the prepara-

Mission completed, an RF-101 pilot of JTF Ozark reports the information he has gained to Army and Air Force interrogators, for evaluation of its accuracy and reliability.

tion of the initial reports and editing of the hard data forms and subjective questionnaires. A lesson learned is that personnel for the exclusive purpose of covering the strategic deployment phase should be requested separately from those assigned to other data-collection duties.

the Army concept

CINCSTRIKE was directed by the Joint Chiefs of Staff on 6 October 1964 to conduct a separate and independent evaluation of the Army's unilaterally conducted test exercise, Air Assault II. This exercise was conducted during the period 14 October to 12 November 1964, concurrently with Gold Fire I, and was comprised of the following operational phases:

Initial contact with the enemy, mobile defense, and conduct of delaying action.
Antiairborne operations, envelopment and seizure of river crossing sites.
Attacks across an obstacle and deep into enemy territory; envelopment.
Exploitation of nuclear weapons effects, protection of the corps flank, and attacks across obstacles.

Capitalizing on the earlier Gold Fire I planning, a USSTRICOM Joint Evaluation Group was formed around a nucleus of 9 officers and 4 Planning Research Corporation (PRC) scientists from JTETF and was augmented by 85 additional personnel from other directorates of Headquarters USSTRICOM and from AFSTRIKE and ARSTRIKE.

The principal operating elements of the Joint Evaluation Group were a Data Collection Center, which was staffed with 2 officers and 4 PRC scientists, and a Joint Field Team Coordinator Section comprised of 5 functional area teams, 4 of which were manned by 8 officers each, and the fifth by 12 officers. The task of the Data Collection Center was to synthesize data collected and made available by the Army

with those data acquired by the Joint Evaluation Group field teams.

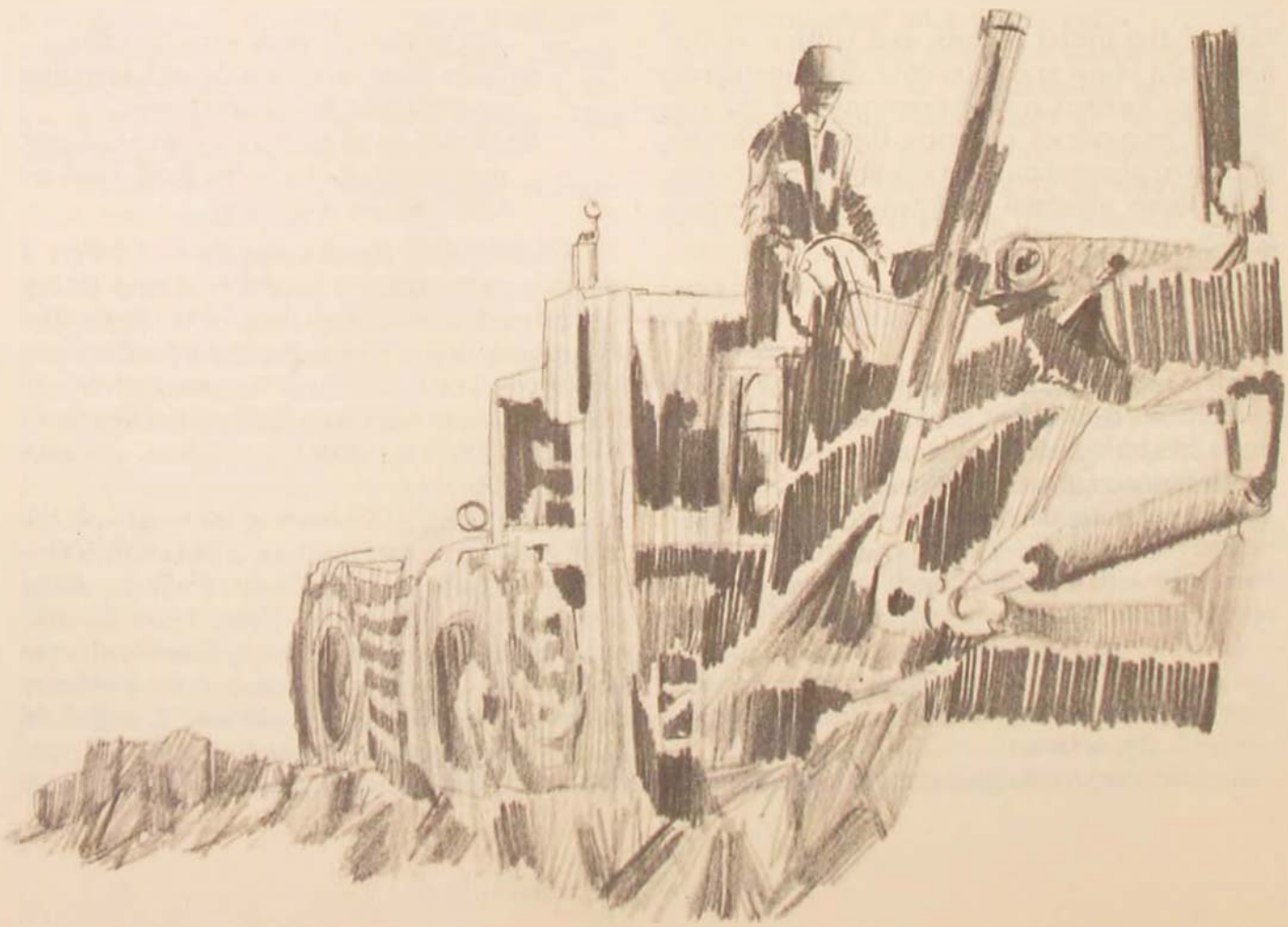
The Joint Field Teams, operating in their respective functional areas of interest, observed key activities throughout the exercise period. Their observations and reports were guided by detailed subjective questionnaires.

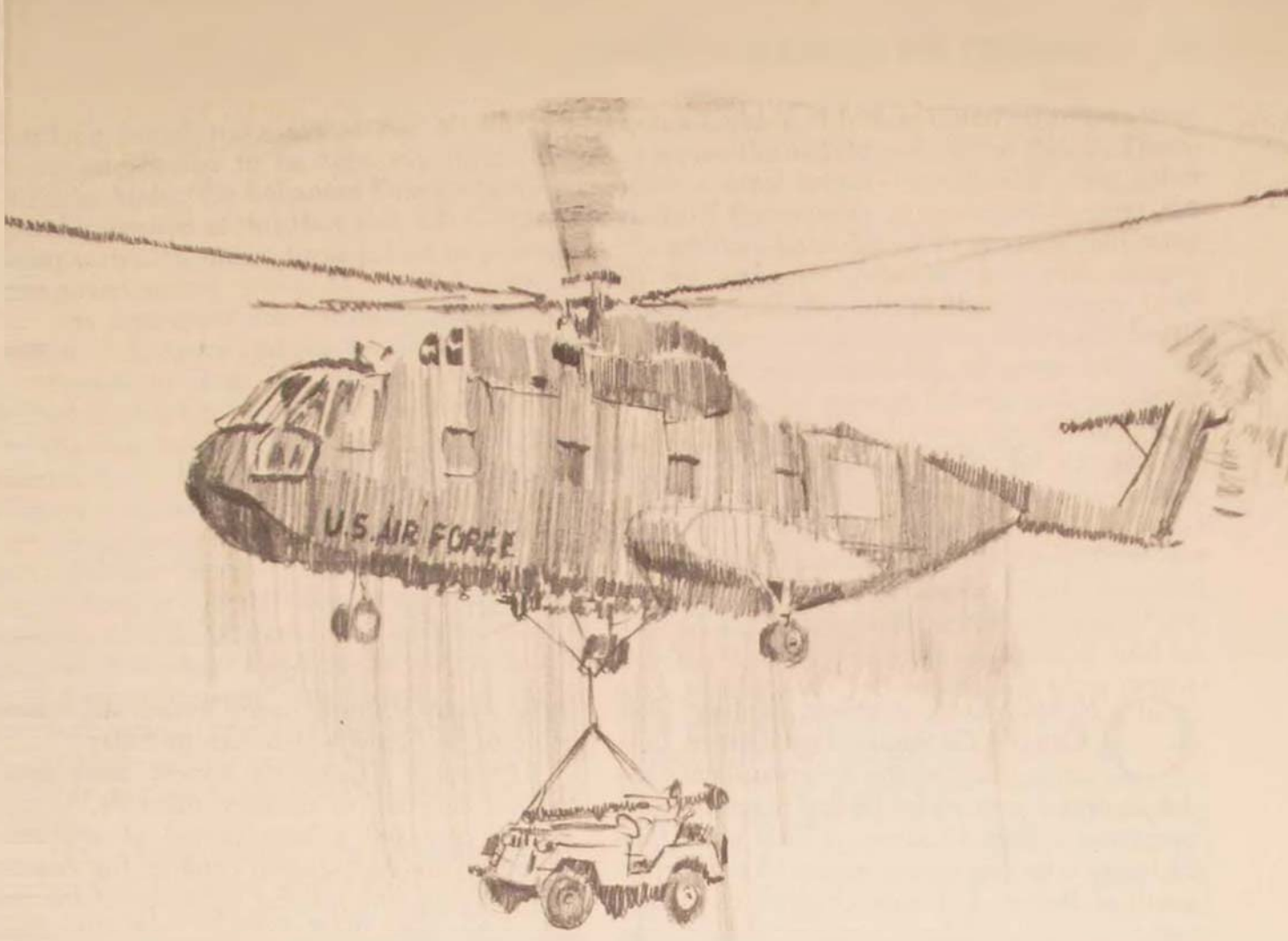
Such matters as selection criteria and training of data collectors, field operations support, and data-collection management techniques were sufficiently similar to those employed in Gold Fire I as not to require separate discussion. It is noteworthy that the data-collection force reported for duty in the maneuver area just one week after USSTRICOM received the JCS message to perform the evaluation. This achievement was possible because of the prior Gold Fire I experience accumulated at JTETF and the splendid support rendered by ARSTRIKE and AFSTRIKE in promptly moving in highly competent personnel to help.

evaluation process

Shortly after 15 November, JTETF personnel had returned to their headquarters in St. Petersburg, Florida. Both evaluation groups faced the task of preparing an exercise report on their particular test. By 10 January 1965 both had completed their reports, which were then sent to the Joint Chiefs of Staff. Although these reports contained many significant findings on each exercise, it must be borne in mind that CINCSTRIKE's test and evaluation plan of the Air Force concept, not unlike a jigsaw puzzle, is comprised of many interrelated parts. The results of Gold Fire I and Air Assault II, as important as they are, will achieve their greatest significance when combined for a total performance evaluation with the results of collateral study efforts, map analyses, computer simulations, and analytical studies. The narrow, direct applicability of field test results occasioned by such inherent limitations as a single environment and absence of live ordnance will be broadened through collateral study analyses and in comprehensive evaluations.

Independently evaluating Air Assault II was an ad hoc task for JTETF, and its contribution to the evaluation of the Air Force concept





is not direct. Certainly there are common operations and procedures in both concepts, and in these areas data from two differing sources provide a most valuable cross check.

It was determined that sufficient data for Joint Chiefs of Staff purposes had been obtained from exercises Air Assault II and Gold Fire I, and therefore Exercise Gold Fire II was canceled.

A BONUS derived from field testing in a joint operation is the realistic training which participating units undergo. The teamwork, cooperation, and understanding achieved among player commanders and their staffs will permeate the services now and in the future as these personnel move on to other key assignments. "This was how we did it in Gold Fire I" will be heard time and again from Korea to Germany. This is how air mobility was looked at in the field test laboratory.

Hq USSTRICOM

LESSONS OF LEBANON

A Study in Air Strategy

COLONEL ALBERT P. SIGHTS, JR.

ON MONDAY morning, 14 July 1958, Camille Chamoun, President of Lebanon, handed the American ambassador an urgent request for United States military assistance within 48 hours. A little more than 24 hours later our troops occupied the airport south of Beirut, Lebanon's capital city. Then came a rapid buildup of powerful land, sea, and air forces in the eastern Mediterranean, an area more than 5000 miles from the United States. This deployment, at that time the largest since the Korean War, gave an impressive demonstration of the readiness of our armed forces to react swiftly and strongly in an emergency. Also it stands today as a classic example of how military and political actions may complement and reinforce one another in resolving an international crisis without war.

Since our forces were not engaged in actual combat, the political aspects of the operation have tended to receive major emphasis. Yet professional airmen will find many points of interest in a re-examination of the purely military aspects. The operation provided an initial try-out of new concepts for worldwide employment of tactical air forces; it demonstrated possibilities and revealed limiting factors in mounting large-scale airborne assaults over great distances; and it highlighted the difficulties of combining land-based air forces with other arms and services to form a single cohesive instrument of military power. The record of events contains useful lessons still applicable to problems which face us today.

President Chamoun's appeal came as a tactical surprise to military planners, but it merely climaxed a long period of strategic warning: the Arab-Israeli conflict, the rise of pan-Arabism, the waning influence of former colonial powers, the Egyptian-Czechoslovakian arms deal, the abortive Anglo-French invasion of Suez, the virulent anti-Western propaganda issuing from Cairo, growing fears of Communist-inspired rebellion against the pro-Western governments of Lebanon and other Middle East countries—a pattern of trends and events that clearly portended more trouble to come.

In March 1957 the U.S. Congress issued a joint resolution, known as the "Eisenhower Doctrine," authorizing the President to employ American armed forces in support of any Middle Eastern nation "requesting assistance against armed aggression from any country controlled by international communism."[1] Still more explicitly, Secretary of State Dulles declared publicly and periodically reaffirmed in the spring and early summer of 1958 that American military assistance would be furnished if requested by Lebanon.

Following an outbreak of armed rebellion in Lebanon on 9 May 1958, heavy fighting developed in various parts of the country. The insurgent forces, apparently receiving arms and assistance from outside sources, achieved such

striking initial success that the lawful government seemed to be seriously threatened. Charles Malik, the Lebanese Foreign Minister, even suggested at this time that a U.S. Marine Corps division might be required to preserve the government.[2]

As a precautionary measure, orders went out to U.S. Army and Air Force commanders in Europe to place one battle group and associated airlift in a state of readiness for immediate deployment to Lebanon. In the United States the Tactical Air Command (TAC) placed fighter units on alert for possible movement to the European area, and the Military Air Transport Service (MATS) dispatched C-124 transports from ZI bases to augment the airlift resources of U.S. Air Forces in Europe (USAFE). Within three days the Army battle group and Air Force transports were standing by at departure airfields ready for any eventuality. The situation in Lebanon eased, and toward the end of May military forces reverted to normal alert status.

For a time relative calm prevailed, raising hopes that Lebanon would find a solution to her internal problems. Then came a severe, wholly unexpected political earthquake in a nearby quarter. In the early hours of 14 July a revolutionary group overthrew the pro-Western government of nearby Iraq in a bloody coup. When word of this reached Beirut, President Chamoun took instant alarm. The violent upheaval might well send a tidal wave of Communist-inspired insurgency throughout the Middle East that would sweep all before it, including his own government. His plea for help was not long in coming. When it reached Washington, military staffs were ready with carefully laid contingency plans for just such an emergency.

Operation Blue Bat

The operation in Lebanon, given the code name Blue Bat, was designed to support and assist the Lebanese government in maintaining or restoring order. U.S. troops would enter the country by airborne or amphibious assaults to establish airheads or beachheads for subsequent buildup of forces. Initial objectives were to secure the airfield and port at Beirut. Thereafter control might be extended into other parts of the country as necessary to carry out the mission. Land-based air forces would bring in the airborne units and join with carrier-based forces to perform the customary tasks of air power: establishing air superiority in the objective area, furnishing air cover and close support to the ground forces, and providing aerial reconnaissance coverage of the entire area of operations to include, of course, surveillance of national frontiers for any indications of outside interference.

Overall command of the operation was vested in the Commander-in-Chief, Specified Command Middle East (CINCSPECOMME).* According to plan this joint commander and his staff would proceed immediately from permanent duty station in London, establish a headquarters in the Middle East, and take over direction of the various task units as they arrived in the area. Responsibility for providing USAF units to CINCSPECOMME devolved primarily upon the major air commands USAFE and TAC, whose supporting plans embodied two separate but related air operations: the airlift of Army forces from Europe and the deployment of combat air power from Europe or the United States.

For the airlift operation, troops were to assemble at designated departure airfields near Munich, Germany. Concurrently USAFE transport aircraft, supplemented by MATS transports from the United States, would also converge on these airfields. After loading out, transports would fly the first battle group via the most direct route over non-Communist territory to the forward staging area at Incirlik Air Base, Adana, Turkey (hereinafter referred to simply as Adana), some 200 miles north of Beirut. The second battle group would follow on the same transport aircraft when they became available after turnaround. Support troops and Army

*Actually in the Commander-in-Chief, Naval Forces Eastern Atlantic and Mediterranean (CINCNELM), who occupied a dual position as the naval component commander in the U.S. European Command and as a JCS specified commander for contingency operations in the Middle East. While functioning in the latter capacity, CINCNELM was to assume the title CINCSPECOMME.

resupply would move by air or sea, depending on the situation in the objective area.

Adana was also to be the main operating base for Air Force combat elements, including tactical fighter, bomber, and reconnaissance aircraft. Two alternative methods were prescribed for constituting this force. If time permitted, TAC units would fly in directly from the United States while USAFE forces remained in place in Europe. On the other hand, if time was critical, USAFE would deploy its own combat units initially and then return them to Europe after TAC units had arrived in the area and been phased in as replacements. The question of whether time was or was not critical could hardly be answered in advance of the crisis itself. Hence the advantage of retaining these options was offset to some degree by the disadvantage of deferring until the eleventh hour a very important decision—one made doubly difficult because it involved the first application of a new Air Force concept.

Composite Air Strike Force

For several years prior to the Lebanon crisis, Air Force planners had been at work on a new scheme for worldwide employment of tactical air forces. As the growing might of strategic air power tended to reduce the likelihood of general war, attention shifted toward the problems of dealing with piecemeal aggression aimed at limited objectives. The need for a rapid military response became apparent, not only to counter threats of a *fait accompli* but also to stabilize quickly any crisis situations which, if unchecked, might mushroom into general war.

By the early Fifties the Strategic Air Command already had attained a quick-reaction capability. Local-war situations, however, would call for tactical fighters primarily and strategic bombers only secondarily if at all. TAC aspired to become USAF's primary local-war force, but skeptics doubted its ability to deploy any substantial tactical air strength from the United States to distant overseas areas in sufficient time to counter a sudden aggression. Many considered the difficulties insuperable, but the year 1952 brought two noteworthy events which clearly lifted TAC's aspiration into the realm of practical possibility.

Early in 1952 the 20th Fighter Bomber Wing deployed overseas with specially modified F-84G's, the first tactical aircraft in operational units able to deliver atomic weapons. Then in July Colonel Dave Schilling, USAF, led 68 F-84's of the 31st Fighter Escort Wing on an 11,000-mile flight from Turner AFB, Georgia, to Yokota, Japan, making seven stops but using aerial refueling over the long stretches of the Pacific. These deployments confirmed that intercontinental range of atomic delivery capabilities would enable tactical aircraft to reach any part of the world quickly, in small numbers but with enormously destructive firepower.

Recognizing these potentialities, USAF directed TAC in early 1953 to organize a mobile atomic force of fighters prepared for worldwide deployment. Three years later USAF expanded the requirement from a single fighter unit to a balanced tactical air task force. This led to the promulgation in 1956 of TAC's now familiar Composite Air Strike Force (CASF) concept. In essence, this was a scheme for rapid assembly and overseas movement of balanced-force packages comprising tactical fighter, bomber, reconnaissance, and support aircraft together with the personnel and equipment needed to sustain them in the field for periods up to 30 days. The size and composition of these preplanned force packages varied according to projected areas of operation and the nature of anticipated threats. CASF Bravo became the basic priority force for the Middle East. Its major elements at the time of the Lebanon crisis were a CASF command element stationed at Hq Nineteenth Air Force, Foster AFB, Texas; two squadrons of 24 F-100's stationed at Cannon AFB, New Mexico; a composite reconnaissance squadron of 6 RF-101's, 6 RB-66's, and 3 WB-66's stationed at Shaw AFB, South Carolina; and a squadron of 12 B-57's stationed at Langley AFB, Virginia. KB-50's at Langley would support Atlantic crossings with refuelings near Nova Scotia, Bermuda, and the Azores. The code name adopted for CASF deployments was Operation Double Trouble, derived from the exhortation, "Where there's trouble, get there on the double."

quick reaction

With the perfection of aerial refueling techniques and the acquisition of improved KB-50 tankers, TAC concentrated on increasing the readiness and reducing the reaction time of its forces. Indeed quick reaction became the central objective in Double Trouble planning. The time element was basic to the idea espoused by General O. P. Weyland, Commander of TAC, that the way to deal with a local war, or the threat of one, was to get forces on the scene quickly. He believed it was more important to get a small force in place rapidly than a large force leisurely.

However, there were limiting factors. One was the shortage of aerial tankers and the need to preposition them at enroute bases before movement of the main force could begin. Another was the substantial tonnage of supporting personnel and equipment which would have to accompany the force and the uncertain availability of MATS airlift; still another, the requirement, only partially satisfied, for air bases in the objective area already manned and equipped and adequately stocked with bulk supplies such as POL, ordnance, food, water, and general stores.

Finding these problems difficult but not insolvable, TAC progressively reduced its planned reaction times. Under the latest schedules, one F-100 squadron of CASF Bravo would arrive in the Middle East 17 hours after an execution order and all combat aircraft within 48 hours. Moreover TAC planners were already considering further refinements to permit a 36-hour deployment of the entire force under conditions of no prior warning. These anticipated capabilities were impressive, but the question whether TAC or USAFE forces would support the Middle East contingency plans remained an open one.

USAFE forces were oriented toward a primary threat. They were already in place, trained, and equipped for this role. To pull out some of these forces and send them into peripheral areas would correspondingly weaken theater defense. Also there were political complications in the use of forces already committed to Allied Command, Europe. Before withdrawing them, the United States was obliged by treaty to notify its NATO allies, some of whom might object to the withdrawal.

On the other hand TAC forces represented an uncommitted U.S. strategic reserve. They could go directly to the trouble spot. The theater defense posture, as well as U.S. relationships with NATO, would remain undisturbed. Surely this was the simple and obvious solution. Yet there was still the nagging question of time.

USAFE units based in Europe could reach the Middle East sooner than TAC units coming from the United States, some from as far away as New Mexico. But how much sooner? Comparative distances can be deceiving because of the high speeds of modern aircraft. Actual enroute time might be relatively short compared to ground preparation time, which remains more or less constant irrespective of distance to be flown. In a real local-war crisis, would the possible saving of a few hours make very much difference? Perhaps not. But could TAC actually meet its programed schedules? They had never been confirmed by test in a real emergency. Such were the problems that occupied Air Force planners as the Lebanon crisis approached.

the situation on 14 July

On 14 July came Lebanon's call for help—expected in a general way yet unexpected in circumstance and timing. Plans for various hypothetical contingencies now had to be transformed quickly into blueprints for action in a specific real-life emergency.

Intelligence information showed considerable ground and air strength in and around the objective area. By Western standards, most of these Middle East forces were poorly trained and equipped. In view of their limited combat potential, the possibility seemed fairly remote that they would offer active opposition. Even so, the military planners knew from long experience never to disregard the fighting capabilities of any potentially hostile forces whatever the apparent intentions of their government.

First was the question of how the Lebanese themselves would react when U.S. forces appeared. True, President Chamoun had in-

Deployment

USAFE 322d Air Division C-130's stand ready to airlift troops of the 24th Infantry Division from Furstenfeldbruck Air Base, Germany, to Lebanon. . .

B-57's on flight line at Adana, Turkey, being checked for flight to Beirut

"Welcome to Lebanon" greets U.S. Army personnel as their jeeps roll from a USAF C-130 at Beirut international airport on 18 July 1958. . . . An Army Task Force with its gear offloads from C-119's after landing at Beirut.

vited them into his country, but one of the problems involved was the extent of the disaffection resulting from insurgent action. Rumors were circulating of a possible coup by the Lebanese army. There were some five to seven thousand armed insurgents in Lebanon. These rebel forces controlled large sections of the country, including part of Beirut itself, and were sustained, according to claims of the Lebanese government, by a steady flow of arms and equipment from neighboring Syria.[3] Rebel leaders had said publicly they would drive back into the sea any U.S. forces that attempted to land.[4]

Whether or not any Lebanese elements resisted, there was the possibility of outside intervention. The United Arab Republic (UAR) had substantial air strength in jet fighter and light bomber aircraft on Syrian and Egyptian bases, some within easy range of the Levant coast. The bulk of Syria's army, adequately equipped with tanks, artillery, and transport, was deployed along the Israeli border not too far from Beirut. Of course intervention by the UAR seemed improbable, but conceivably its forces might undertake a delaying action to buy time, counting on early U.S. submission to neutralist or Communist propaganda or to some other form of Soviet pressure. Only two years before, the U.S.S.R. had received widespread, though misplaced, credit for halting the Anglo-French incursion into Suez.

Beyond these threats of armed opposition lay another potential obstacle to the attainment of Western objectives in the Middle East: specifically, that insurgent elements might oust President Chamoun, install a new government, and withdraw the request for outside assistance before it arrived. An awareness of this possibility doubtless accounts for the inclusion of time limits in Lebanon's request for military aid. Britain and France were asked to bring in forces within 24 hours; the United States within 48 hours. These time limits represented Chamoun's estimate, based on his own intelligence sources, of the soonest that the different national forces could arrive.[5] Believing that most of the U.S. Sixth Fleet units were deployed off the coast of Spain, he estimated that it would take them 48 hours to reach the Levant. This estimate was faulty on two counts: first, U.S. naval forces were much closer than this and, second, had they actually been near Spain, they could not have reached Lebanon in 48 hours.

One thing was clear to high U.S. officials. Chamoun thought his position precarious and wanted help from friendly quarters as soon as he could get it.

the alert

War plans for future contingencies are secure. However, once a military operation begins, hundreds of people at all echelons from highest to lowest must know who, what, when, and where. Moreover the sudden alert of units in a peacetime posture invariably becomes public knowledge, whereupon speculation or rumor may supply the purpose and objective as surely as an official press release.

U.S. forces in support of Operation Blue Bat were scattered throughout western Europe and the Mediterranean. (See Figure 1.) Some were in the United States. The military unit nearest Lebanon was a Navy transport amphibious squadron (TRANSPHIBRON-6) carrying a battalion landing team (BLT 2/2) of some 1800 Marines. TRANSPHIBRON-6, operating in the area south of Cyprus, was only 12 hours from Beirut but lacked any air cover, since USAFE had no combat air power in the eastern Mediterranean and Sixth Fleet carriers were beyond supporting distance. Also TRANSPHIBRON-6 was minus its underwater demolition team, shore party, and beach group as well as some of its tanks and artillery because the *LSD Plymouth Rock*, which carried these important elements, was en route to Malta for repairs.[6]

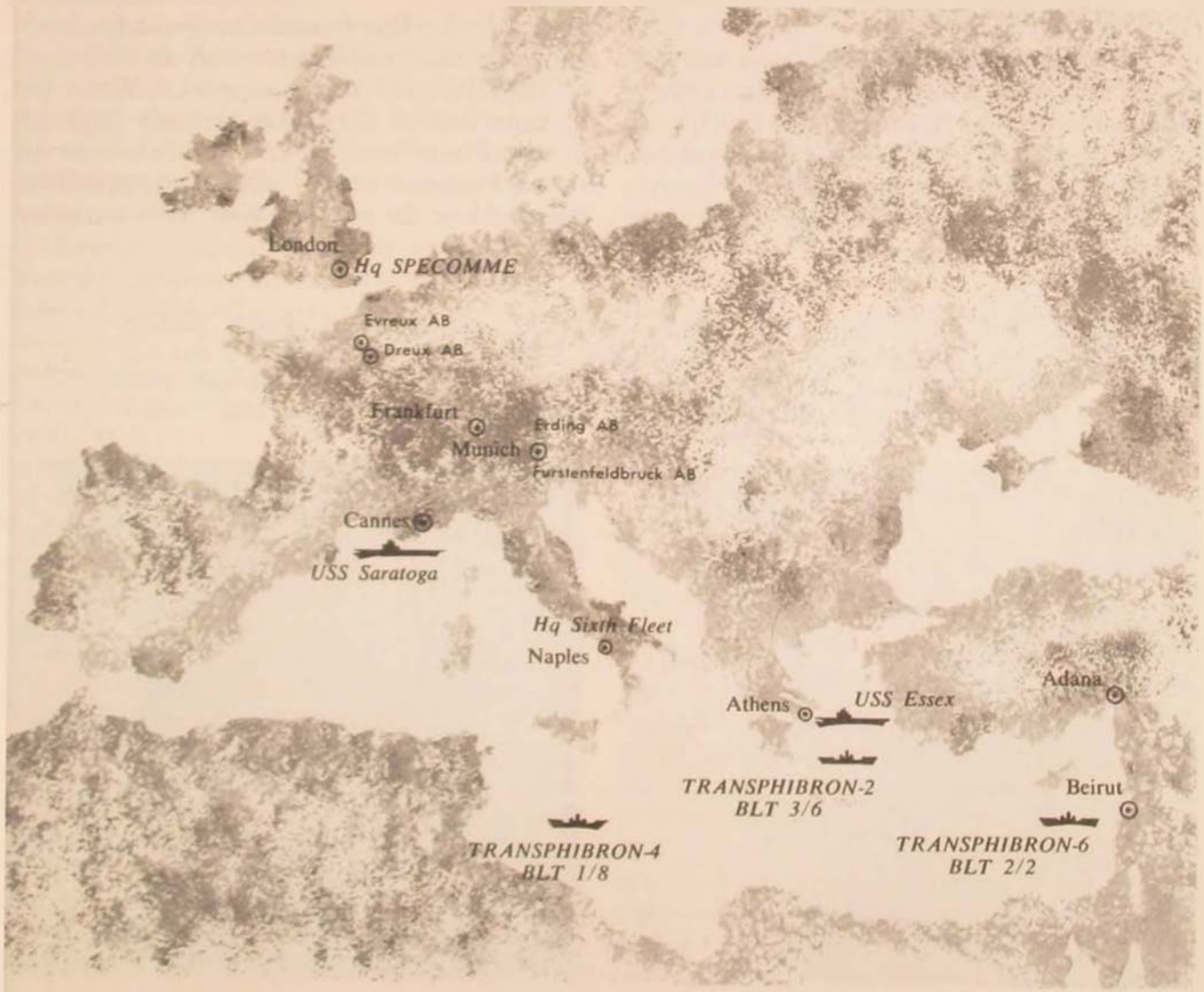
For the airborne operation two Army battle groups of about 1800 men each were at normal duty stations in Germany but prepared to move out on short notice to designated departure airfields. Sufficient air transportation was earmarked to lift one of these battle groups, but the aircraft were widely dispersed, comprising not only USAFE transports at various European bases but also MATS C-124's in the United States. During the May alert, the Army and Air Force had demonstrated an ability to assemble these troops and planes

rapidly. Nevertheless many hours would be needed to load the force in Germany, fly 2000 miles, stage at Adana, and deliver a well-executed air assault in the vicinity of Beirut.

Combat air power to support the entry of ground forces, whether by amphibious or airborne assault, was available from three sources. According to planned schedules, TAC's CASF could be expected to close at Adana within 48 hours after an alert. USAFE estimates were less specific on projected deployment times, but it appears that substantial numbers of aircraft should have been able to reach Adana from European bases in less than 48 hours, since theirs was a shorter flight over familiar routes.

Two attack carriers represented a third source of air support. *Essex*, in port at Athens,[7] and *Saratoga*, at Cannes, were many hours away. Either carrier, after clearing port, could send its air group on ahead to operate temporarily from Adana. In this way air power probably could be brought to bear in the short-

Figure 1. Disposition of U.S. forces for the Lebanon operation. They included TAC CASF Bravo from the U.S. or equivalent combat forces from USAFE, two U.S. Army airborne battle groups in West Germany, USAFE transports at various bases in Europe, and MATS augmentation airlift from the U.S. Transports and forces assembled at Furstenfeldbruck and Erding Air Bases, flew to the staging base at Adana, thence to Lebanon's capital, Beirut.



est possible time. However, there had been no prior arrangements for this particular course of action.

Decisions reached during the evening of 14 July were to send in the Marines embarked on TRANSPHIBRON-6 and, insofar as possible, to limit knowledge of U.S. intentions to those units which would conduct and support the initial amphibious landing. The landing was scheduled for 0900 EDT the next morning to coincide with official U.S. announcement to the Congress, the United Nations, and the public. In general, the major commands participating in Operation Blue Bat were to be informed but cautioned not to take any action prior to the landing that might suggest or reveal U.S. intentions to intervene in the Middle East.

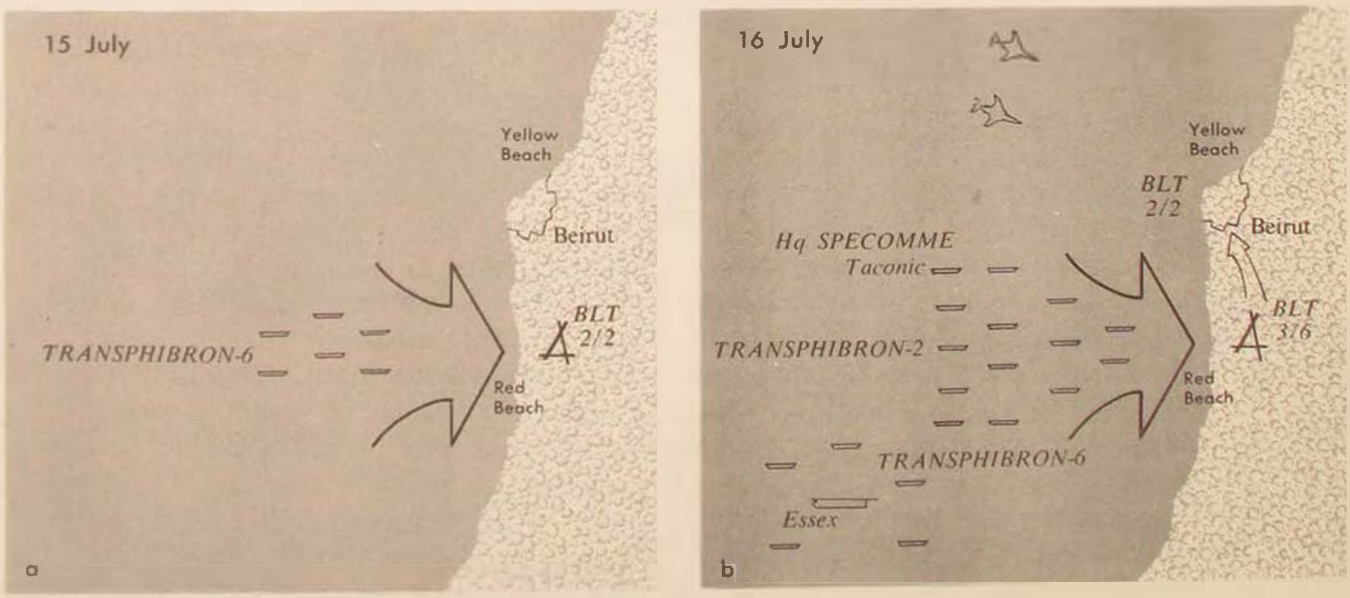
the amphibious landing

The first wave of Marines from BLT 2/2 crossed the line of departure and headed for Red Beach south of Beirut at 1500 (0900 EDT) on 15 July. (See Figure 2.) They encountered no opposition and occupied their first objective, the airport, within an hour. According to an eyewitness news correspondent, "This must have been one of the most easygoing and relaxed landings in the long history of the Corps. . . . Within the first hour after the troops went ashore, a picnic atmosphere developed along the beach. . . . Mothers brought their children down to have a look, and you could see little girls in pink dresses and little boys in short pants scampering around among the troops."[8]

But appearances were deceiving. Lieutenant Colonel Harry A. Hadd, USMC, commanding BLT 2/2, was ordered to use only the minimum force needed but to accomplish his mission whatever might develop. He and his superiors were acutely aware of the limitations of their own small forces ashore, knowing that powerful armored units equipped with modern Russian tanks were less than three hours from Beirut.[9]

In facing this formidable threat the landing force was deficient not only in tanks and artillery but also in air support.[10] When the Marines first hit the beach, the only airplanes in the vicinity were those of the Lebanese Air Force. Fortunately they offered no opposition. About 15 or 20 minutes after H-hour, seven

Figure 2. The amphibious landing. a. *15 July — BLT 2/2 occupies Beirut airport. TRANSPHIBRON-2 with BLT 3/6 is due at 0730 next day.* Essex *en route from Athens is due next morning.* b. *16 July — BLT 2/2 enters Beirut. BLT 3/6 occupies Beirut airport.* Essex *provides air support. Headquarters SPECOMME is established offshore aboard* USS Taconic.



AD-6 propeller-driven attack planes and four FJ-3 jet fighters appeared on the scene. These aircraft from the carrier *Essex* had staged through a British airfield on Cyprus. They represented a welcome addition to the battle force though hardly adequate to ensure air superiority over the beach, much less to fly armed reconnaissance on the borders of Lebanon.

The second Marine battalion, BLT 3/6, began landing at 0730 the next morning with air cover from the *Essex*, which had reached the area during the night. The same morning Admiral James L. Holloway, Jr., CINCSPECOMME, arrived by air from London and in due course established his headquarters aboard the command ship *Taconic* stationed some distance offshore. His arrival was timely because a serious crisis was impending.

According to plan, BLT 2/2 had started toward Beirut to secure the beaches and harbor area. As the Marines reached the outskirts of the city, they encountered Lebanese army forces, including tanks and artillery, drawn up in blocking positions. This dangerous confrontation was resolved by an on-the-spot conference, Admiral Holloway and U.S. Ambassador Robert McClintock meeting with General Fuad Chehab, commander of the Lebanese Army.[11] The latter agreed to rescind his orders, whereupon the three high-level conferees led the Marine column past the roadblock and into the city. Lebanon's internal crisis was far from settled, but the Marines had landed and the immediate situation seemed to be in hand. Meanwhile reinforcements were on the way.

the airlift

At dawn on the 15th, Brigadier General David W. Gray, USA, Airborne Brigade Commander of the 24th Division, held a muster of the 1st Airborne Battle Group, 187th Infantry, at its barracks in Germany. Designated as Task Force Alpha, this unit was the initial airborne assault element in support of Operation Blue Bat. Orders were to place the outfit in readiness for an airdrop, or parachute assault, at some undisclosed time and place.[12] In the meantime at an air base in France, Colonel Clyde Box, USAF, Commander, 322d Air Division (Combat Cargo), was making preparations for rapid assembly of the large transport fleet that would be required for airlift of Task Force Alpha. Shortly before the Marines landed in Lebanon, both commanders received the order to execute their respective plans for the Blue Bat deployment.

Having had a recent rehearsal during the May crisis, these Army and Air Force task organizations were in a position to carry out their plans rapidly and efficiently. By that evening, 1800 men of Task Force Alpha and 59 transport planes of the airlift force had assembled at the two departure airfields, Furstenfeldbruck and Erding, near Munich. Troops and equipment, loaded during the night, began departing early the next morning, and on 17 July, in little more than 24 hours, they closed at Adana after flying 2100 nautical miles largely over water and mountainous terrain.[13]

The enroute movement was hampered by overflight and staging problems. Blue Bat planners had assumed that necessary landing and overflight clearances would be forthcoming, but in the actual deployment two friendly governments felt obliged to restrict flights over their countries because of unanticipated political complications. This meant that transports had to be rerouted by more circuitous flight paths. Some aircraft had to reduce cabin loads and take on additional fuel in order to bypass one of the planned refueling stops.

When Task Force Alpha arrived at Adana, it was held there on alert for two days by direction of Admiral Holloway, presumably to give him an air assault capability in ready reserve should the need for it arise. In the meantime another airborne force, not originally a part of the Blue Bat operation, was en route from the United States.[14] This was Marine Corps Battalion 2/8, airlifted from Cherry Point, North Carolina, in 36 Marine transport aircraft. The battalion commenced landing at Beirut airport on 18 July and moved directly aboard ships to assist in the general unloading.[15] The following day Admiral Holloway brought in Task Force Alpha from Adana.

A second Army airborne battle group,

Task Force Bravo, was originally scheduled to follow Alpha, but as the threat of serious trouble in Lebanon receded, Admiral Holloway asked USCINCEUR to hold Bravo in Germany on 24-hour alert and send instead the support element organized as Task Force Charlie. Airlift of this force, comprising some 1700 men and large quantities of cargo, commenced on 18 July and was completed in seven days. Other ground force units continued to arrive by sea and air, ultimately building up to a peak strength of about 15,000, of which approximately 8000 were Army troops and 6000 were Marines.[16]

the buildup of air power

Near midnight on 14 July, TAC received word that CASF Bravo would deploy to Adana in lieu of USAFE forces. However, the accompanying instructions, to hold this information "closest" until after the Marine landing, upset the planned sequence of operations and led to no little confusion and delay. At Cannon AFB, New Mexico, home of the Bravo F-100 squadrons, the runways were partially obstructed by construction activity so that full-load night take-offs had been prohibited except in emergency. Yet the F-100's would have to leave before daylight for their overseas staging base

F-100 Super Sabres of the 352d Tactical Fighter Squadron, Myrtle Beach AFB, South Carolina, line up to take off on operational deployment to Lebanon.

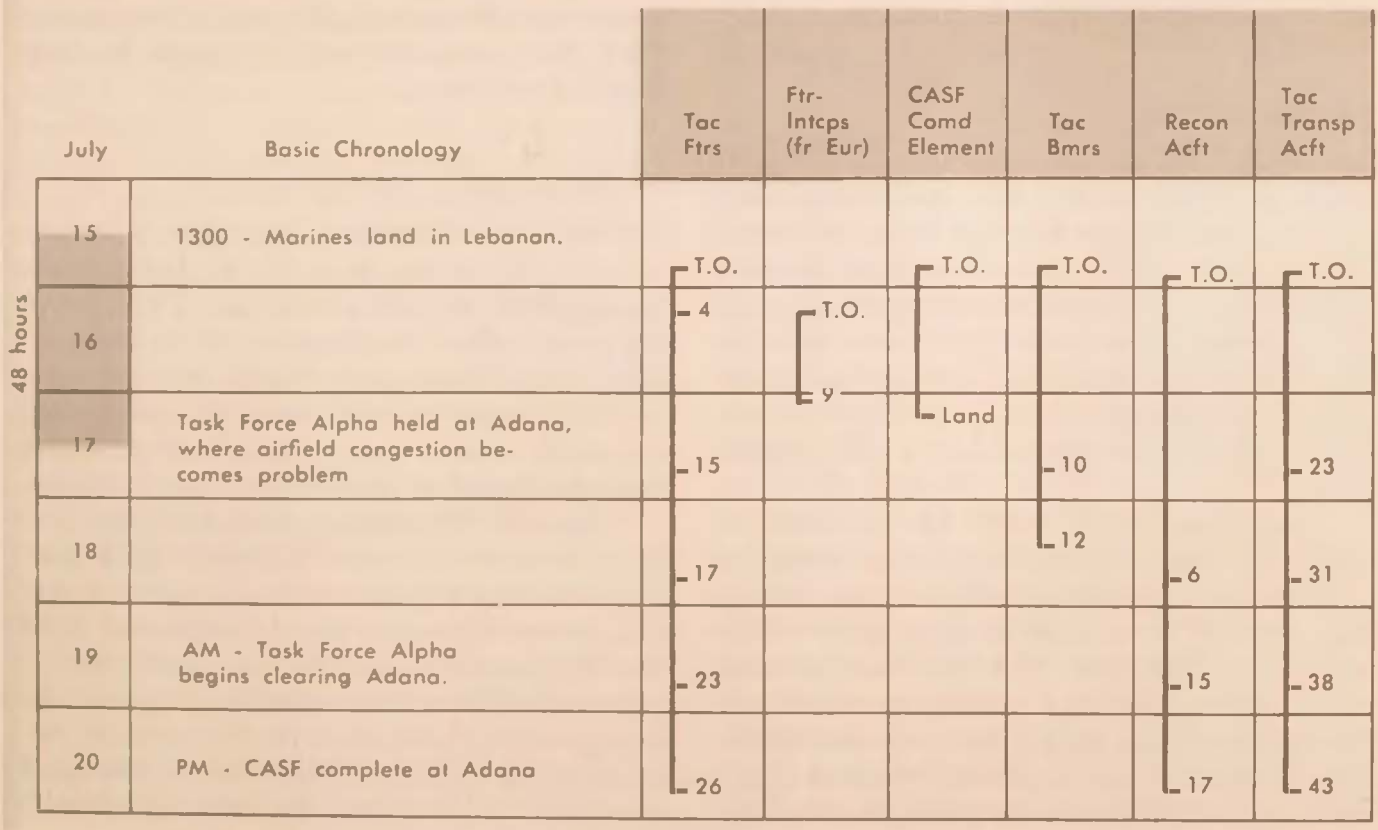
in order to meet programed schedules for the air-refueled flight to Adana. C-130 transports were already en route to pick up their ground echelon when TAC deleted these squadrons from the CASF, either misunderstanding the real situation at Cannon or else believing the alert instructions from Washington precluded a declaration of emergency. Be that as it may, TAC substituted two squadrons of the 354th Tactical Fighter Wing at Myrtle Beach AFB, South Carolina.

At approximately 0900, Colonel Francis S. Gabreski, Commander of the 354th, received orders to launch a flight of 12 F-100's nonstop to Adana within seven hours and to follow with another flight of 12 fighters nine hours later. The substituted squadrons were ill prepared for this mission. They had no previous deployment experience. Aircrews were only partially qualified in aerial refueling. Flyaway kits, received five days earlier, were incomplete. Shortages also developed in maps, radio facility charts, exposure suits, and other important items.

Despite these difficulties, the first flight was airborne within 30 minutes of the appointed time. Of the 12 aircraft launched, one crashed in Nova Scotia (the pilot bailed out and was rescued), seven landed en route, and four made it all the way in 12½ hours' flying time.[17] The 12 fighters of the second flight (as well as three spares) eventually reached Adana, but in three flights instead of two and far behind scheduled arrival times.

Most of the tactical bomber and reconnaissance aircraft also left on the 15th, followed shortly by 43 C-130's carrying essential support equipment and personnel. The CASF command element, Major General Henry Viccellio with a small staff, departed Foster AFB, Texas, at midday on 15 July in a C-130 transport but did not reach Adana until dawn of the 17th.[18] As Figure 3 indicates, the 48-hour estimate for the Double Trouble deployment proved overly optimistic.

Figure 3. Cumulative aircraft arrivals at the Adana staging base show the buildup of air power.



Actually five days were to elapse before the entire CASF reached its destination. Weather, mechanical trouble, training deficiencies, and a variety of other factors contributed to slippage in the deployment schedule. One major cause of delay was early saturation of the base at Adana. By 17 July almost every foot of usable space was taken up by the 147 planes already on the field. Yet many of the CASF Bravo combat aircraft and half their supporting transports were still en route. There was no alternative but to restrict the flow of inbound aircraft even though this meant a delay in the buildup of combat air power.

The greatest source of congestion, of course, was Task Force Alpha with its 50-odd transports waiting at Adana in an alert status. When this force began leaving early on the 19th, the situation eased. Not only was more parking space available but taxiways were cleared so that incoming transports could go directly to their unloading areas for quick turnaround. Traffic began to move again so that by the night of 20 July the full complement of 63 combat aircraft was on hand, including an element of nine USAFE F-86D fighter-interceptors flown in from Germany on the 17th to provide an all-weather air defense capability.

the denouement

There was no actual combat in Lebanon, although a few aircraft sustained minor damage from small-arms fire. Air Force and Navy planes remained on alert throughout the period, flying routine air defense and precautionary air cover missions. Also there were shows of force and leaflet drops, but the principal operational requirement was to provide reconnaissance information requested by the ground force.[19]

American forces went into Lebanon to assist the legal government in maintaining stability at a time when there was upheaval in that country as well as in other parts of the Middle Eastern area. The fear that Lebanon would be engulfed in a violent revolution with Communist participation did not materialize. The arrival of U.S. forces did, however, help encourage all sides to seek a compromise solution for Lebanon's internal problem. As the situation continued to improve, Admiral Holloway received orders early in August to begin planning an orderly withdrawal of his forces.

The main phase of the withdrawal began on 15 September and continued during most of October. The last remaining CASF units departed on 19 October, and USAFE's fighter-interceptor unit returned to Germany on the 21st. On 24 October the ground, naval, and air headquarters were inactivated, and on the following day Operation Blue Bat came to an end.

The Lessons

On the political front the Blue Bat forces were successful in helping to maintain stability. On the military front they were never engaged, so we can only surmise what might have happened. Ultimately they would have won because any likely combination against them would have lacked sustained combat power. However, they would have gone into battle with three major handicaps: first, their forces were committed piecemeal and out of order; second, their organizational structure did not ensure coordinated employment of forces; and third, they were not fully prepared to wage conventional war.

penalties of quick reaction

President Chamoun asked for American military aid within 48 hours. To U.S. officials the problem presented itself as a Communist-supported effort to threaten with force the legally established government, which needed immediate and tangible support. The pressure was on the armed forces to get there as soon as possible. In doing so, they incurred penalties.

Basically the military high command had two alternative courses of action: (1) to start all task units moving toward the objective area and commit them piecemeal in whatever order they happened to arrive or (2) to assemble a balanced military force capable of meeting and overcoming whatever opposition might reasonably be expected. The former combined speed with poor tactics; the latter, delay with

sound tactics. The former would put ashore within 24 hours one battalion, deficient in tanks, artillery, and air cover, its senior commanders and reinforcements far away—a landing force sure to be roughly handled if opposed. The latter, within 48 hours for example, would permit a two-battalion assault with increased fire support, adequate air cover, senior commanders on the scene, and powerful reinforcements one full day nearer—a much stronger force probably able to hold a beachhead against whatever threats might develop.

As we have seen, the former course was followed. No opposition appeared, so who can say it was wrong? Politically it served the purpose. Militarily it was something of a gamble. Essentially the intended course of action was to send an initial force, consisting of one Marine battalion. on ahead into potentially hostile territory and hold other units in place far to the rear, starting them forward only after the advance party had made contact. Wide variations occurred in execution. Whereas the Army and Air Force generally deferred force movements until after the initial landing, the Navy immediately alerted Sixth Fleet combatant ships in Mediterranean ports and set them steaming at best speed toward Lebanon. Whether or not this action compromised U.S. intentions in any way, the fact is that the government of Lebanon was helped to maintain itself. And had the Marines met opposition, the head start of these naval vessels would have been a great help.

When the Marines reported no opposition, here seemingly was important information, not previously available, that might affect deployment plans. However, there is no evidence that it did so, even though most ground and air units had not yet departed from their home stations. One Marine battalion, not even a task unit, showed up at Beirut after a breathless flight from the United States. TAC's F-100 squadrons hurried off on flights made hazardous by inadequate preparation. None of the CASF Bravo units brought their complete equipment. One hastily assembled flyaway kit was later described as "nothing more than 5000 pounds of random items." The arrivals of units at Adana were no more orderly than their departures had been from home stations.

Recalling the original concept of an Army airborne assault supported by land-based air forces, one would have expected, on the basis of tactical doctrine, to see the combatant types of aircraft at the scene of action well in advance of the airborne assault elements. Yet the hasty deployment led to a curious inversion which in effect placed unarmed transport planes in the van of the battle fleet. Specifically, on 17 July all of the airborne assault force was at Adana whereas only 70 per cent of the fighters and bombers and 50 per cent of their support equipment had arrived. None of the reconnaissance aircraft were on hand, yet reconnaissance information was then the most urgent requirement for the airborne assault force.

Presumably the planners had intended that the arrivals of various elements and especially the unloading and departure of transport aircraft would be regulated in such a way as to avoid the saturation of Adana and at the same time ensure that aircraft needed first would arrive first. In the actual deployment, however, the airfield seemingly was just allowed to fill with whatever planes happened to enter the traffic pattern, all units having been directed to get there as soon as possible. This brings us to the problem of control and coordination.

coordination of forces

Consider the situation with the Air Force Composite Air Strike Force and Navy carrier force both on hand, each under its own air commander, preparing to fly hundreds of missions into the small airspace above Lebanon. There was not then, nor is there today, any definitive body of joint doctrine to govern such operations. Difficulties in coordination, stemming primarily from differences in procedure, were compounded by other factors such as lack of common radio frequencies and incompatibility of equipment. After about two weeks Admiral Holloway's staff managed to work out compromise solutions to the most urgent problems. Under the pressures of actual combat, air operations doubtless would have gone ahead on a patchwork basis with the overwhelming superiority of American air power permitting a

satisfactory outcome despite the inefficiencies of divided command. However, in a fight against odds, the handicap of having two independent and uncoordinated air forces would cost us dearly.

The need for a system of centralized control of air operations appeared in World War II, again in the Korean War, and subsequently in crisis situations like that in Lebanon. Yet no such system exists, and field commanders must still resort to ad hoc arrangements worked out on the spot as each new situation arises. The problem, commonly attributed to interservice rivalry, really stems from a basic conflict in traditional principles governing air and naval warfare.

It has long been a basic tenet of Air Force doctrine that air power is an entity. Applied to a situation like Lebanon, this means simply that all participating air forces, whether land- or sea-based, must come under centralized control for coordinated employment in combat. On the other hand, sea power is also an entity in the view of naval strategists. By way of illustration, each carrier, destroyer, submarine, mine sweeper, oiler, and other combatant ship or auxiliary in the Mediterranean is an inseparable part of a single instrument of military power called the Sixth Fleet. Accordingly, every element of this force must remain at all times responsive to naval command. Land-based air force direction of carrier strike operations seems as objectionable to the Navy as does ground force control of tactical air operations to the Air Force—and for much the same reasons. Thus the problem boils down to two concepts of entity, both apparently legitimate yet diametrically opposed to each other. The solution, which perhaps awaits the formulation of some entirely new principle, poses an important challenge to students of strategy and doctrine.

the nuclear-conventional dilemma

"There is considerable doubt," reported a TAC staff officer after visiting Adana, "as to the conventional combat capability of the F-100 units. Only a few of the F-100 pilots had strafed; none had shot rockets or delivered conventional bombs." The B-57 crews were not much better qualified. They also were regarded as "incapable of performing efficient conventional weapon delivery." On the other hand all CASF units were fully qualified in the delivery of nuclear weapons. The reasons are not hard to fathom.

Looking back at the origin of the CASF, it will be recalled that the germinal conception was that of small mobile strike forces. "With nuclear weapons," said General Weyland in 1956, "these forces can be compact and yet be so effective as to provide the decisive balance of power."[30] During the mid-Fifties this was wholly consistent with Air Force views. Public statements of various officials emphasized the advantages of nuclear weapons in limited war. Given the prevailing climate of opinion, it was no wonder that TNT bombs and rockets got little play in tactical exercises.

Paradoxically, these USAF forces, trained almost exclusively for nuclear war, assumed a posture totally unsuited for such a war. Indeed they scarcely could have contrived a more inviting target for enemy nuclear attack than by concentrating all air power resources on the exposed forward base at Adana. The contradictions inherent in this nuclear strike force disposed for conventional conflict well illustrate the ambivalence of strategic planning at that time: On the one hand, preoccupation with the damage our nuclear strikes could inflict on the enemy, and on the other, unwillingness to consider what his strikes might do to us; recognition that our nuclear weapons might not always be usable, but disinterest in the improvement of conventional weapons and tactics; reduction of conventional weapon training, coupled with buildup of conventional weapon stockpiles at forward bases; deployed aircraft neither dispersed for nuclear war nor revetted for conventional war. In the final analysis, it seems an inescapable conclusion that USAF forces came unprepared for either type of war.

The crises in Lebanon and in the Taiwan Strait during the summer and early fall of 1958 marked a turning point in relying on nuclear weapons for limited wars. Thereafter planners were more inclined to accept the premise that

such crises—if they turned into wars—would be conventional, at least at the outset. However, the re-emphasis on conventional capabilities simply deepened the dilemma of how to meet the divergent demands for these two types of conflict: the one requiring large numbers of airplanes, high sortie rates, enormous stockpiles, and a continuing flow of replacements to sustain a long-drawn-out battle of attrition; the other requiring almost the antithesis in every respect.

Ten years ago the original authors of the CASF concept visualized small mobile strike forces of tactical aircraft made formidable by their nuclear firepower. Since then the picture has changed. The fighter plane meant to carry kilotons of TNT equivalent now may be limited to tons. Here surely is a vast difference, one that seems on its face to call into question the pre-Lebanon strategic concepts of omnipotent nuclear strike forces roaming around the world and keeping the peace. Today small mobile forces will still suffice to "show the flag," but they need to grow much bigger to fight and win with iron bombs.

HAVING SINGLED OUT various problems and imperfections for purposes of discussion, let us now reaffirm that on the whole the Lebanon deployment was remarkably successful both politically and militarily. Beyond the immediate effect of helping to ease Lebanon's internal crisis, this intervention had other far-reaching consequences. In the eyes of Middle East nations, it effectively destroyed the myth of Soviet power that grew out of the Suez crisis, and it marred the image of Communism as an irresistible wave of the future. In a purely military sense, the deployment reflected a high order of professional skill in marshaling widely dispersed elements of land, sea, and air power and welding them into a powerful fighting force in a very short time. However, justifiable pride in a job well done should not obscure the important lessons that may be learned from the study of this complex operation.

Aerospace Studies Institute

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AIRCRAFT COMMITMENTS TO RUSSIA

The Moscow Conference, September-October 1941

Dr. Richard C. Lukas

THE MOSCOW Conference which convened at the end of September 1941 was a significant milestone in Russo-American relations. It terminated the procession of events that had propelled American policy since June 1941 toward a program of long-range aid to the Soviet Union and made the United States and Russia quasi allies before Pearl Harbor. Through the protocol which it adopted, the United States and Great Britain agreed to provide large quantities of war materiel to the Soviet Union. This study deals with the problems that confronted the United States in providing the Soviet Union with military aircraft, the most critical item in demand by the Russians during the earlier part of World War II.

The preliminaries of the conference took place in an atmosphere of great concern for the survival of the Soviet Union. The President had proposed that American and British officials meet first in London, where a definite decision regarding Anglo-American aid to the Soviet Union could be reached. This, of course, would enable the Anglo-American mission destined for Moscow to carry definite estimates of aid which Britain and the United States planned to furnish to the Soviet Union. Roosevelt urged that the London talks begin about 15 September in order that the conference in Moscow could convene somewhat earlier than 1 October, the date originally scheduled.[1] The President's desire to get the Anglo-American mission to Moscow sooner than planned was spurred by Prime Minister Churchill's recent revelation of an almost desperate message from Stalin which had been delivered in menacing tones by the Soviet Ambassador to Britain, Ivan Maisky.

This was Stalin's second message to Churchill since the outbreak of Russo-German hostilities. Stalin painted a gloomy picture of the Soviet position and again pressed the Prime Minister for a British front "somewhere in the Balkans or in France." He also requested deliveries of aluminum and "a minimum monthly aid of 400 aeroplanes and 500 tanks." Without the second front and the supplies, he warned that "the Soviet Union will be either defeated or weakened to the extent that it will lose for a long time the ability to help its Allies by active operations at the front against Hitlerism."[2] Ambassador Maisky brought the message in person on the evening of 4 September. He complained "in bitter terms how for the last eleven weeks Russia had been bearing the brunt of the German onslaught virtually alone."[3] Churchill,

by his own account, retorted that Maisky should not reproach Britain, which had fought Hitler for a longer period of time than Russia. "We never thought," he added, "our survival was dependent on your action either way."[4]

Nevertheless the interview raised fears that the Soviet Union might negotiate a separate peace. Commenting on his exchange with Maisky, Churchill told Roosevelt that "although nothing in his language warranted the assumption, we could not exclude the impression that they might be thinking of separate terms."[5] This fear prompted the British Cabinet to approve a friendly reply in which Churchill patiently explained to Stalin the reasons why a second front was not yet possible. The reply also committed Britain to supply one half the monthly amount of planes and tanks that Stalin requested. Churchill also suggested to Stalin the possibility that the United States might inform him before the Moscow Conference of the amount of supplies it would send.[6] Churchill hoped Roosevelt did not object to references to aid from the United States, but, the Prime Minister explained, "the moment may be decisive."[7]

Stalin's reply to Churchill indicated that he was appropriately grateful for the British commitment of supplies. But Stalin still held hopes for direct military assistance also. He suggested that Britain send 25 to 30 divisions to Archangel or to southern Russia in order that "there could be established military collaboration between the Soviet and British troops on the territory of the U.S.S.R."[8] Stalin's appeal for direct military cooperation was taken under study,[9] and somewhat later Lord Beaverbrook, Minister of Supply, conveyed to the Soviet chieftain the suggestion that the British might soon be able to provide direct military assistance: "If we can clear our own western flank in Libya of the enemy we shall have considerable forces, both air and army, to cooperate upon the southern flank of the Russian front."[10] But, meanwhile, Churchill was anxious to assure Stalin of the reality of assistance in the form of materiel. On 17 September he sketched out for the Soviet leader the progress of the Anglo-American conversations on aid, informing him that the British and Americans were setting up a schedule of deliveries through June 1942 but adding that this date was only for planning purposes—"Naturally we shall go on with you till victory."[11]

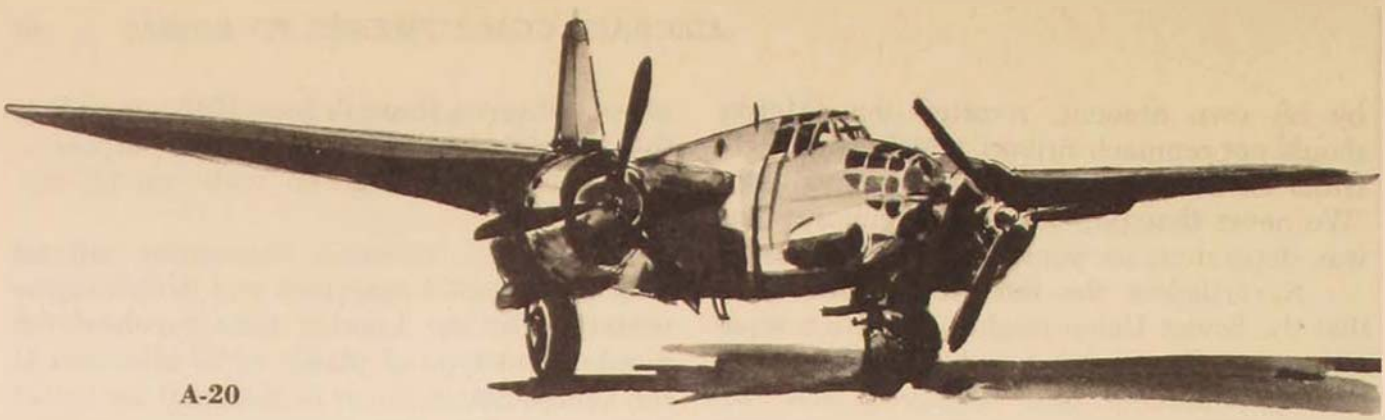
The basic question concerning aircraft which confronted American and British representatives at the London talks involved the number and type of planes to be allocated to the United States, Great Britain, and the Soviet Union from American production through June 1942. As for the British commitment of planes to Russia, this had already been set forth in Churchill's earlier message to Stalin.

Before the London talks began, Roosevelt directed the War Department to prepare a study of suggested distributions of aircraft up to June 1942 between the United States, Great Britain, and the Soviet Union. The President informed the Secretary of War, Henry L. Stimson:

> I deem it to be of paramount importance for the safety and security of America that all reasonable munitions help be provided for Russia, not only immediately but as long as she continues to fight the Axis Powers effectively. I am convinced that substantial and comprehensive commitments of such character must be made to Russia by Great Britain and the United States at the proposed [Moscow] conference.[12]

In response to this directive, the Air War Plans Division prepared a study, known as AWPD/2, which revealed the problems involved in arriving at an equitable allocation of aircraft from American production without injuring the basic defense requirements of the United States. AWPD/2 recommended that out of an estimated production of 14,802 tactical aircraft, the AAF receive 5094. The remaining 9708 aircraft, the study advised, should be assigned to the anti-Axis pool. This meant that the anti-Axis pool would receive all aircraft produced under Defense Aid, all British and other contract production, and 15 per cent of combat types produced for the AAF. The study suggested a distribution of aircraft in the anti-Axis pool along these lines: 7534 to Britain, 1163 to the Soviet Union, and the remainder to other nations.[13]

After the talks in London began, Major



A-20

General James E. Chaney, the ranking AAF member of the American delegation in London, presented figures which indicated a slight revision in Britain's favor and a reduction for the AAF. But this revision was not large, and British allocations were considerably less than expected. The British representatives were frankly shocked. They had expected that Britain would receive all the planes produced under the Defense Aid program and a large allocation of those from AAF orders.[14] The estimates now presented meant that Britain would receive approximately 1800 fewer aircraft than it had expected, 600 of which were in the heavy and medium bomber category. The latter was particularly alarming. In the words of the British official history of the event, "The loss of the heavy and medium bombers was regarded as likely to have a grave effect on the British air offensive against Germany."[15] Lord Beaverbrook remarked dolefully that the American production figures were "much lower than anything we have had before and many of our minimum requirements cannot be met. It is imperative," he added, "that the Americans should organise immediately a rapid increase of their production."[16]

And, indeed, the British had real cause for concern. Their own production of bombers, particularly heavies, was lagging behind schedule, a natural consequence of the emphasis on fighters to defend the Isles during the Battle of Britain.[17] The British were relying upon the United States for help in building a strong force of bombers, which they regarded as a logical counterweight to Nazi land power. As one British historian put it, "The bomber was still the only means of getting to grips with the enemy at home and ranked first among the offensive instruments available to this country."[18] It was natural that when British aircraft production failed to keep pace with planning, a greater premium was placed upon American deliveries.

The British pressed the Americans to reconsider their position, particularly to increase the British share of heavy bombers. They stoutly opposed giving heavies to Russia, 30 of which were allocated under AWPD/2. The British maintained that heavies could be used more effectively against German strategic targets from British bases than from Russian bases. The Russians, they pointed out, could only undertake strategic bombardment of the Romanian oil fields, which, at the rate of the German advance, would probably soon be out of range.[19] On the other hand, the British proposed that the number of American aircraft allocated to Russia be increased from 1163 to 1800. The distribution of planes by type under AWPD/2 and the British proposal was as follows:

	AWPD/2	*British proposal*
Heavy bombers	30	None
Medium bombers	45	180
Light bombers	356	450
Pursuits	620	900
Observation	112	270
Total	1163[20]	1800[21]

The American mission accepted the increased allocation of planes to Russia, which represented a matching with British commitments. But there was a difference of opinion on the advisability of giving heavy bombers to Russia. Although Averell Harriman, head of

the American mission, favored the British view, the ranking military members of the American delegation favored the idea of giving heavy bombers to Russia. Generals James E. Chaney, James H. Burns, and Stanley D. Embick felt that the delivery of heavies would have a significant effect in bolstering Russian morale. General Embick, an experienced Army strategist, suggested that the heavies would have a deterrent effect upon Japanese designs on Siberia.[22] Chaney, therefore, drafted a suggested breakdown of deliveries, which continued to include a token number of heavy bombers. These figures, which Harriman forwarded to Washington, contemplated the following deliveries to Russia through June 1942:

Heavy bombers	27
Medium bombers	45
Light bombers	828
Pursuits	900
Total	1800

Harriman also noted in his message to Washington that the American mission would offer 203 observation planes in the place of an equivalent number of light bombers or pursuits if the Russians could use them effectively.[23]

Roosevelt's reply to Harriman indicated that the problems disturbing the negotiations in London were also a matter of concern in Washington. He indicated that the United States would make every effort to go beyond scheduled production but that no decision had been reached yet in Washington concerning heavy bombers.[24] The question of heavies for Russia formed a part of the continuing problem of the relationships of aircraft exports to the needs of the AAF. The military advisers of the President continued to press the case of the American air force establishment as against foreign aid. The President followed up his message to Harriman with one to the Secretary of War. The President informed Stimson that exports of aircraft, including heavies, should follow a "rule of thumb" of 50 per cent.[25] Stimson replied that American exports of various types of aircraft, excluding heavies, would exceed that figure. However, Stimson said that in view of AAF shortages the 50 per cent figure could not be applied to heavies.[26] The President did not feel that this was making the most effective use of the heavies. He told Stimson that it was far better, for example, to have heavies operating from Britain than Newfoundland. Stimson, on the other hand, continued to press the need to build the AAF. "It is better," he stated, "for her [Britain] to have in the world a potent, well-armed, friendly American air force than a few additional planes." He added: "The moment has now come when we should give our primary attention to the 'prompt' development of a well-armed, well-rounded, and well-trained American air force."[27] These words, of course, applied quite as cogently to aid to the Soviet Union as to Great Britain.

In the case of Russia, the White House inclined to favor at least token deliveries of heavy bombers, a view which the President advanced as early as August.[28] Presidential advisers continued to regard Army opposition to all-out aid coldly. During a conference with a War Department representative, Lieutenant Colonel K. N. Walker, Presidential adviser Harry Hopkins said that he could not understand the opposition of the Secretary of War for Air, Robert A. Lovett, and the chief of the AAF, General Henry H. Arnold, to the allocation of heavies to Russia. Hopkins noted that Generals Chaney, Embick, and Burns approved such allocations, especially from the standpoint of salubrious effects on Soviet morale. Walker, expressing the War Department position, agreed in principle, but he pointed out that as soon as the Soviet Union discovered the small number of heavies scheduled for delivery the effects might be the opposite of those desired. He went on to explain that the character of Soviet air operations did not lend itself to the effective use of heavy bombers, which were sorely needed elsewhere.[29]

Finally, on 25 September, Lovett offered a compromise solution to the problem of allocations to Russia. His proposal increased the number of medium bombers to be delivered by the number of heavies in Chaney's suggested distribution. By taking away the allotment of heavy bombers from Russia, his proposal would pacify to some extent the British, who would receive the heavies scheduled for the Russians. Lovett's formula for delivery under the Moscow Protocol was 72 B-25's, 828 A-20's, and 900

P-40's.[30] Arnold agreed in part with the proposal but offered a different breakdown of planes to Russia. In view of the difficulty in finding the number of A-20's for the Russians in Lovett's proposal, Arnold recommended that the United States allocate to Russia through June 1942: 72 B-25's, 584 A-20's, 144 A-29's, 100 O-52's, and 900 P-40's. Arnold's recommendations were forwarded to Harriman and formed the basis of American discussions with the Russians in Moscow.[31]

With this action the allocation of planes to the Soviet Union had been increased officially from 1163 to 1800. This left unsolved, however, the basic question: Where were the additional planes to be obtained? The British, in offering their proposal, had suggested that they come from AAF allocations rather than from British Lend-Lease, to which the American mission with one exception, General Embick, agreed. Harriman urged Washington for approval of this decision. However, he also wanted a decision on a second vital issue—namely, how were the war munitions to be provided the Russians to be financed? He was, he told the President, "most anxious for clarification" in this regard prior to his arrival in Moscow.[32]

Hopkins, speaking for the President, could do little to ease Harriman's apprehensions. Public opinion was improving in the United States with respect to Russia, he said, but he implied that no decision could be made as yet to include the Soviet Union under Lend-Lease.[33] The White House was waiting for Congressional action on the Second Supplemental National Defense Appropriations Bill, some of the funds of which the President intended to use for aid to Russia. The President had been zealously fostering the creation of a better image of the Soviet Union and did expect this bill to pass. However, there would be opposition, and efforts to create large-scale financial support specifically assigned to the Soviet Union might well have foundered. As a consequence, the bill which would provide support for the initial phases of the Soviet aid program was being debated in Congress as Harriman reached Moscow. Thus, Harriman found himself in the curious position of leading a mission to commit the United States to a substantial program of aid without definite assurances of how it was to be financed.

O-52

After the London meetings the Anglo-American mission, composed of civilian and military officials, prepared for the trek to Moscow. Part of the Anglo-American delegation, including Harriman and Beaverbrook, proceeded to Russia aboard *HMS London*, the remainder went in two B-24's. The flight of the B-24's was a particularly dangerous one, since there was the possibility of attack not only by the enemy but also by the Russians themselves. For some reason the Russians failed to acknowledge the proper radio signals of the American planes, causing many anxious moments for those involved. The group which arrived by ship at Archangel was transferred to a Soviet plane which took it on to Moscow. This group also received a strange but a more dramatic welcome—Russian batteries accidentally fired on the Soviet plane.[34]

Harriman and Beaverbrook met Stalin upon their arrival on 28 September.[35] The other members of the American and British mission began their meetings on the following day. They served on one of several committees established to deal with specific areas of importance, one of which was the Air Supply Committee under the chairmanship of General Chaney. The other ranking members of this committee were the Undersecretary of State for Air, H. H. Balfour, for Britain, and Commissar for Aircraft Industries, Shakurin, for the Soviet Union.[36]

In his meetings with Harriman and Beaverbrook, Stalin stressed his need for aircraft, which constituted a "first priority" in Russian munitions requests.[37] During the meetings of the Air Supply Committee, which dealt with

the details of these requests, the Soviet request for bombers posed the most difficult problem. Shakurin asked for a monthly total of 300 bombers and 100 fighters from the United States and Britain, a reversal of the ratio which Britain and the United States had previously agreed upon in London. The Russian representative stated that the Soviet Union was producing 70 planes per day, including 40 fighters, 20 bombers, and 10 Stormovik bombers. "This was not enough for the Soviet Air Force," Shakurin said, "whose needs were particularly great in the case of bombers." He emphasized that "the front was active and the need was immediate."[38] The Soviets estimated that 1000–1200 bombers were produced monthly in the United States, and they felt that this would allow the delivery to them of the 300 they requested. Shakurin pressed for a medium bomber similar to the Soviet PE-2 with a range of 15,000 km, a bomb load of one ton, and a maximum speed of 540 km.

Chaney promptly tried to correct errors in Soviet estimates of American bomber production. He said that total United States aircraft production for July and August 1941 was 1500 and 1800 respectively, a large percentage of which were trainers. Chaney explained that American light and medium bomber production was small, approximately 300 planes a month.[39] Chaney's estimates of American aircraft production were basically correct. During the third quarter of 1941 factory deliveries of all types of aircraft reached 5156, or an average monthly rate of 1719. During the same period deliveries of light and medium bombers totaled 1029, or an average monthly delivery rate of 343.[40] Shakurin responded that if 300 bombers could not be delivered, the Soviet Union wanted at least 200 a month. The American and British representatives adhered to the "100 monthly" figure and suggested that the Soviet Air Force adapt Kittyhawk and Hurricane fighters for close-support bombardment work.[41] Chaney held out the possibility that a readjustment of the ratio of 300 fighters and 100 bombers per month from the United States and Britain could be considered in the next protocol period.[42]

Strangely, the Soviets now expressed a particular preference for the B-25, of which they had been so critical less than a month before.[43] They urged that the United States send as many of them as possible. When Chaney stated that these were still in the early stages of production and hence limited in availability, Shakurin indicated a choice for Boston 3's [A-20's]. For technical and military reasons, Shakurin argued that the planes should be of one type. The British and American representatives agreed that this was desirable. However, due to existing production and the needs of others, it was doubtful, said Chaney, if more than 600 A-20's could be sent during the protocol period. Therefore the remainder might have to be made up with Lockheed Hudsons [A-29's] or some smaller plane. Once again the Russians requested the allocation of heavy bombers, but Chaney answered that American production of these was negligible and that the Soviet request would have to be held in abeyance for a year.

B-25

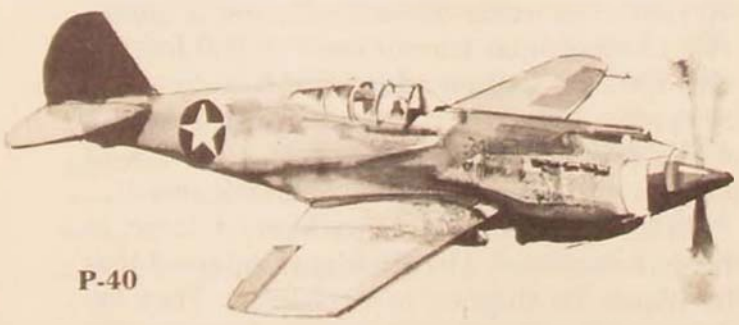
As to fighter types, the Russians preferred Spitfires and Kittyhawks. The British pointed out that production limitations made it impossible to meet their commitment of 200 fighters with Spitfires. Balfour added that Britain would try to send 100 of them a month toward the end of the protocol period; however, the bulk of the planes would have to be Hurricanes.[44]

Delivery problems also loomed large in the conversations. The Russians preferred that the planes be shipped to Archangel. They excluded delivery to Vladivostok as impractical[45] and opposed flight delivery via Alaska and Siberia—the so-called "Alsib" route—which Harriman had proposed in one of his conversations with Stalin. When Harriman suggested that the planes be flight-delivered by AAF pilots over Alaska and Siberia, Stalin labeled the route "too dangerous."[46]

However, Stalin had agreed to provide the Americans with information about Siberian

airports.[47] This soon proved to be an unfulfilled promise. General Chaney had been led to believe that the information about Siberian airdromes would come from a certain General Golitov. However, Chaney's contacts with him were unproductive. Chaney explained that after several meetings, Golitov "indicated each time that the data was not ready and that I would hear from him before my departure." Before he left Moscow, Chaney received a map almost completely devoid of value for planning ferrying operations from Nome to Siberia. No descriptive information was provided about airdromes on the portion of the route from Nome to Vladivostok. The Russians assured Chaney that ample facilities existed from Vladivostok to Moscow, which the AAF already knew. Chaney was told that the route from Nome across Siberia was inadvisable and would be especially difficult during the winter. As a result of the Soviet attitude, Chaney had no alternative but to recommend that if planes were to be ferried to Russia the AAF would have to use the South Atlantic route to the Middle East.[48]

The British did not fare any better than the Americans in prying information from their hosts. Beaverbrook sought in vain for data concerning a Soviet weapon tested before a group of British and American observers some time earlier. Likewise unavailing was his request



P-40

that the Russians send to Britain for examination one of the Stormoviks, which had proved so effective on the Russo-German front.[49] Either to prevent injury to Soviet sensibilities or to avoid arousing Soviet suspicions, these requests were not pressed in Moscow.[50] In other words, the principle of *quid pro quo* was not applied, and the Anglo-American mission left Moscow with such insignificant information as the Soviets chose to provide. Soviet historians have erroneously suggested that Harriman and Beaverbrook made Anglo-American aid contingent upon the receipt of this information but when met by Soviet refusals they gave up their attempts. Soviet historians describe the information requested as allegedly "secret."[51] But the full extent of British-American inquiries concerned a weapon which had been publicly tested and observed by Russia's allies, a plane long in operation on the Soviet front which would have been little in exchange for the various British and American types then in operation in Russia, and a knowledge of Siberian airdromes in order to initiate plans to ferry aircraft more speedily to the Soviet front. It is an ironic commentary upon the extent of mutual trust involved that American military planners knew more at this time about the German Luftwaffe than they did about the Soviet Air Force.[52]

On 1 October 1941 Harriman, Beaverbrook, and Molotov signed the Moscow Protocol. The United States agreed to provide a monthly total of 100 fighters and 100 bombers. Britain agreed to provide 200 fighters per month. The combined commitment for a nine-month period totaled 3600 planes. No statement of specific types and series of aircraft was included other than "fighters" and "bombers," since too many uncertainties existed to warrant such precision. The text of the agreement stated that the supplies

> . . . will be made available at British and U.S.A. centres of production, for the Soviet Union by Great Britain and the United States of America within the period beginning from October 1941, till the end of June 1942.

It went on to say that Great Britain and the United States "will give aid to the transportation of these materials to the Soviet Union and will help with the delivery.[53]

The results of the conference appeared to be as satisfactory to the Russians as to the Anglo-American mission. Harriman wrote to Roosevelt: "We have closed the conference today in an atmosphere of great enthusiasm by all who participated." He added, "Stalin

personally is much gratified and sends you his personal thanks."[54] A few days later Harriman wrote that the results of the conferences "have been accepted with undisguised enthusiasm by Stalin and all others connected with the discussions."[55] Before the departure of the Anglo-American mission, a state dinner was held at the Kremlin. Thirty toasts were proposed, several of them by Stalin himself, who particularly praised American industry. Ambassador Laurence A. Steinhardt, who was present at the occasion, reported Stalin's observation that "the United States is giving more assistance as a non-belligerent than some countries in history had given as allies." He added the hope, soon to be realized, that the United States, Great Britain, and the Soviet Union "would be fighting side by side."[56]

Harriman was most anxious that the United States initiate deliveries under the protocol without delay. On 3 October in a communication to Roosevelt, Harriman urged: "It is of the utmost importance that prompt action confirm the confidence the Russians now have in the sincerity of our aid."[57] In a message to Hopkins on the next day, Harriman declared that "in order to translate the spirit of our conference into actuality [it is] urgently desirable that a maximum amount [of] critically needed material be dispatched earliest possible. First priority is tanks and aircraft. . . ."[58] In a message to Stalin, Roosevelt expressed his "confidence that your armies will ultimately prevail over Hitler" and assured him "of our great determination to be of every possible material assistance."[59] Less than two weeks after the conference, Roosevelt announced that "everything possible is being done to send material to Russia to help the brave defense which continues to be made."[60]

After the departure of the American mission from Moscow, General Chaney submitted a report to Harriman containing the observations and recommendations of the members of the Air Supply Committee. In addition to the formal conferences with the Russians, members of the mission had had an opportunity to observe the work at Russian aircraft factories and to talk informally with other observers in Russia. Chaney's report noted the soundness of Soviet principles of airplane and engine design and the efficiency of factory administration, production methods, and processes of inspection—all of which followed Western patterns. The report commented upon the skill of the workers who labored on production machinery and noted that although women and young boys worked in factories only men occupied key positions.[61]

The favorable commentary of General Chaney was reinforced by the reports of the two AAF officers at Archangel, Lieutenant John R. Alison, who had remained in Russia after the earlier mission to Moscow of Harry Hopkins, and Lieutenant Hubert Zemke, who had arrived in September. They remarked upon the skill and ingenuity of Soviet mechanics and technicians who worked "without shelter in sleet, rain, and wind on an average of 14 hours a day." These officers also commented on the ability of the Russian pilots—120 of whom qualified in non-Soviet types in the period 10–29 September, with the loss of only one plane. The mission was provided an example of the ability of Soviet workers to execute decisions by constructing an airdrome at Archangel for the reception of American and British planes. Construction began on 3 September, and within a month it was completed. During that time 47 planes were assembled and tested.[62]

Such observations naturally inspired the committee to recommend sending only the best planes and equipment to the Russians, who, the committee stated, could use them effectively. As a result of the meetings with the Russians, the committee concluded that O-52's were not suitable for Soviet needs and A-29's were of doubtful value, these types having been considered for delivery to the Russians during the discussions in Moscow.[63] The committee's final recommendations to Harriman, who communicated them to Roosevelt on 9 October, stated that the 1800 planes provided by the United States through June 1942 should include 900 P-40's, 828 A-20's, and 72 B-25's.[64] In other words, the Air Supply Committee recommended the distribution of aircraft proposed earlier by Secretary Lovett.

In view of commitments to the Soviet

A-29

Union and recent production estimates, AWPD/2's recommended allocations were substantially revised. On 29 October 1941 Arnold announced a new schedule of allocations among the claimants on American aircraft production through June 1942:[65]

U.S.A.	Great Britain	U.S.S.R.	China	Others
4189	6634	1835	407	109

The breakdown of planes approved for the Soviet Union included 77 B-25's, 828 A-20's, 900 P-40's, and 30 O-52's.[66] The 35 planes above protocol commitments included 5 B-25's, approved before the Moscow Conference began, and 30 O-52's which were already in the process of shipment.[67] To provide the increased number of planes above the original AWPD/2 allocation was not a simple matter of rearranging figures. Any change inevitably affected other claimants upon American aircraft production. The problem was temporarily resolved when the British agreed to defer 300 A-20's, originally scheduled for them under Lend-Lease and British contracts. This enabled the United States, by drawing 515 planes from Defense Aid contracts and 13 from AAF contracts, to meet its deliveries of light bombers to the Soviet Union within the protocol period. But the British action was a deferment, not a cancellation, which meant that the United States was obliged to make up the amount later. In order to meet the commitment for the delivery of fighters, 343 were transferred from Defense Aid contracts and the remainder from planes in or scheduled for the AAF. Medium bombers and observation planes were to come entirely from those scheduled for the AAF.[68]

Aircraft occupied a critical position in Soviet requests for aid from the West. This was particularly underscored by the priority position which aircraft held in the protocol signed in Moscow. As has been seen, it was not an easy matter to arrive at decisions concerning the number and type of aircraft which the United States approved for Russia, since this involved a reduction of the share which the AAF and Britain received from limited American production. The existence of another claimant upon American aircraft production had added pressing dimensions to the problem of allocation.

The aircraft as well as other supplies which the United States and Britain agreed to provide Russia during the protocol period might not have loomed large when measured in terms of total production. However, when viewed in connection with the effects of these commitments on American and British requirements, the sacrifice was substantial. Churchill aptly summed this up to Hopkins when he said: "There is no disguising the fact however that they make grievous inroads into what is required by you for expanding your forces and by us for intensifying our war effort."[69]

Although the Moscow Protocol expired in June 1942, the rationale behind it was applied to succeeding protocols concluded with the Soviet Union. And the air force aspects of these later protocols continued to play a prominent role in America's wartime relations with the Kremlin.

Cookeville, Tennessee

Notes

1. Msg., Hopkins to Winant, 9 September 1941, in U.S. Department of State, *Foreign Relations of the United States, Diplomatic Papers: 1941*, Vol. I: *General, The Soviet Union* (Washington: United States Government Printing Office, 1958), pp. 829-30. Hereinafter cited as *F.R.U.S.*, 1941, I.

2. Msg., Stalin to Churchill, 3 September 1941, Ministry of Foreign Affairs of the U.S.S.R., *Stalin's Correspondence with Churchill, Attlee, Roosevelt and Truman, 1941-1945* (2 vols. in 1; London: Lawrence and Wishart, 1958), I, 20-21. Also in Winston Churchill, *The Grand Alliance* (Boston: Houghton Mifflin Co., 1950), pp. 455-57. There is a slight difference in the date of the message in Churchill's book where it is listed as 4 September 1941. Such variations in diplomatic correspondence often exist. They can be explained largely in terms of the time difference from initial dispatch to ultimate receipt.

3. Churchill, *The Grand Alliance*, p. 457.

4. *Ibid.*

5. Msg., Churchill to Roosevelt, 5 September 1941, *The Grand Alliance*, p. 460.

6. Msg., Churchill to Stalin, 4 September 1941, *The Grand Alliance*, pp. 458-59.

7. Msg., Churchill to Roosevelt, 5 September 1941, *The Grand Alliance*, p. 460.

8. Msg., Stalin to Churchill, 13 September 1941, Ministry

of Foreign Affairs of the U.S.S.R., *Stalin's Correspondence . . .*, I, 24.

9. Msg., Churchill to Stalin, 17 September 1941, *The Grand Alliance*, pp. 463-64.

10. Ltr., Churchill to Stalin, 21 September 1941, *The Grand Alliance*, pp. 465-67.

11. Msg., Churchill to Stalin, 17 September 1941, *The Grand Alliance*, pp. 463-64.

12. Memo, Roosevelt for Stimson, 30 August 1941, *F.R.U.S.*, 1941, I, 826.

13. AWPD/2, file 145.82-2 in United States Air Force Historical Archives, Maxwell AFB, Alabama (hereinafter cited as USAF/HA).

14. "Report of Special Mission to U.S.S.R. on Allocation of Aircraft from U.K. and U.S. Production, September 16 to October 10, 1941." Tab A and B. This report, drafted by Maj. Gen. James E. Chaney, will be cited hereinafter as "The Chaney Report." (File 178.104 in USAF/HA)

15. H. Duncan Hall, *North American Supply* (London: Her Majesty's Stationery Office, 1955), pp. 332-33.

16. *Ibid.*, p. 333.

17. For a brief summary on the lag in British production of heavy bombers, see M. M. Postan, *British War Production* (London: Her Majesty's Stationery Office, 1952), pp. 124-26, 174.

18. *Ibid.*, p. 303.

19. An excellent summary of British objections to proposed American aircraft allocations can be found in "United States Proposals for Allocation of American Production," n. d., file 4557, WPD, WDGS, in World War II Records Division, National Archives (hereinafter cited as NMW/NA).

20. AWPD/2, Tab 1. Also in AWPD/1 Scrap Book, Tab 79, file 145.82-1, pt. 3, in USAF/HA. The latter source, however, omits the observation planes included in the original AWPD/2 allocation.

21. "The Chaney Report," Tab C.

22. Msg., Harriman to Roosevelt and Hopkins, 18 September 1941 (file Russian Cables, ID, ASF, in NMW/NA).

23. Msg., Harriman to Hopkins, 18 September 1941 [supplement to message cited above] (file 091 Russia, ASWA, in NMW/NA).

24. Msg., Roosevelt to Harriman, 18 September 1941 (file 091, Russia, ASWA, in NMW/NA).

25. Ltr., Roosevelt to Stimson, 18 September 1941 (file 452.1 in NMW/NA).

26. Ltr., Stimson to Roosevelt, 22 September 1941 (file 452.1 in NMW/NA).

27. Ltr., Roosevelt to Stimson, 14 October 1941; ltr., Stimson to Roosevelt, 21 October 1941 (file 452.1 in NMW/NA).

28. "Notes on Remarks of the President at Conference held on August 1, 1941, signed Marshall." The conference was between Roosevelt and Col. Philip Faymonville, former Military Attaché to Russia. (File 19776 to 20150, OCS, in NMW/NA)

29. AWPD/1 Scrap Book, Tab 76.

30. Ltr., Lovett to Hopkins, with suggested message for Harriman, 25 September 1941 (file 091 Russia, ASWA, in NMW/NA).

31. Memo, Arnold for Lovett, 26 September 1941; msg., Hopkins to Harriman, 26 September 1941 (file 091 Russia, ASWA, in NMW/NA).

32. Msg., Harriman to Roosevelt, 19 September 1941 (file 167.6-39, Russia, in USAF/HA).

33. Msg., Hopkins to Harriman, 20 September 1941 (file Russian Cables, ID, ASF, in NMW/NA).

34. Army Air Forces, Air Transport Command, "History of the Air Transport Command: Ferrying Command Operations, May 29–December 7, 1941," I, 63-64 (file 300.01 in USAF/HA); Hastings L. Ismay, *The Memoirs of General Lord Ismay* (New York: The Viking Press, 1960), p. 230.

35. Msg., Steinhardt to Roosevelt and Hull, 29 September 1941, [No. 1726], *F.R.U.S.*, 1941, I, 836.

36. "The Chaney Report," Inclosure 3. A brief summary of the committees and the members who composed them can be found in msg., Steinhardt to Roosevelt and Hull, 29 September 1941, [No. 1732], *F.R.U.S.*, 1941, I, 837-38.

37. Msg., Harriman to Hopkins, 4 October 1941, *F.R.U.S.*, 1941, I, 842.

38. "The Chaney Report," Inclosure 3.

39. *Ibid.*

40. U.S. Air Force, *United States Air Force Statistical Digest: 1947*, p. 121.

41. "The Chaney Report," Inclosure 3.

42. *Ibid.*, Tab G.

43. Richard C. Lukas, "Air Force Aspects of American Aid to the Soviet Union: The Crucial Years, 1941-1942" (unpublished Ph.D. dissertation, Department of History, Florida State University, 1963), pp. 71-76.

44. "The Chaney Report," Inclosure 3.

45. *Ibid.*

46. Robert E. Sherwood, *Roosevelt and Hopkins: An Intimate History* (New York: Harper and Brothers, 1948), p. 388; William H. Standley and Arthur A. Ageton, *Admiral Ambassador to Russia* (Chicago: Henry Regnery Co., 1955), p. 66.

47. *Ibid.*

48. Memo, Chaney for Harriman, 11 October 1941 (file 091 Russia, ASWA, in NMW/NA).

49. Msg., Chaney to AG, 6 December 1941 (file 400.3295, AG, in NMW/NA).

50. Memo, Col. C. W. Bundy for Marshall, 24 October 1941, reveals Harriman's instruction to the American members of the mission not to press the Russians for military information (file 4557 to 49 Russia, WPD, WDGS, in NMW/NA). This is confirmed in a note in reference to msg. from Maj. Yeaton 6 October 1941 (file 913410, G-2, in NMW/NA).

51. V. L. Israelian, *Diplomaticheskaia Istoriia Velikoi Otechestvennoi Voiny, 1941-1945* (Moskva: Izdatelstvo Instituta Mezhdunarodnykh Otnoshenii, 1959), p. 34; G. A. Deborin, *Vtoraia Mirovaia Voina* (Moskva: Voennoe Izdatelstvo Ministerstva Oborony SSSR, 1958), p. 148.

52. See the instructive remarks in memo with report, Col. R. C. Jacobs Jr. for Brig. Gen. A. C. Wedemeyer, 7 May 1943 (file ABC 452.1, WPD, WDGS, in NMW/NA).

53. U.S., Department of State, *Soviet Supply Protocols* (Washington: United States Government Printing Office, n.d.), p. 3.

54. Msg., Harriman to Roosevelt, 1 October 1941, *F.R.U.S.*, 1941, I, 839-40.

55. Msg., Harriman to Roosevelt, 3 October 1941, *F.R.U.S.*, 1941, I, 841-42.

56. Msg., Steinhardt to Hull, 3 October 1941, *F.R.U.S.*, 1941, I, 840-41.

57. Msg., Harriman to Roosevelt, 3 October 1941, *F.R.U.S.*, 1941, I, 841-42.

58. Msg., Harriman to Hopkins, 4 October 1941, *F.R.U.S.*, 1941, I, 842.

59. U.S., Department of State, *The Department of State Bulletin*, 11 October 1941, p. 276.

60. *Ibid.*, 18 October 1941, p. 296.

61. "The Chaney Report," Tab H.

62. *Ibid.*

63. *Ibid.*; also see p. 4 of the text of the report. The A-29, popularly known as the "Hudson," was an observation and patrol bomber. The O-52, also known as the "Owl," was an observation plane. Neither of these met Soviet requirements with respect to speed and armament.

64. *Ibid.*, pp. 4-5 of text. An official copy of the message can be found in file 091 Russia, ASWA, in NMW/NA.

65. Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II*, Vol. I: *Plans and Early Operations* (Chicago: The University of Chicago Press, 1948), p. 134; memo, Arnold for distribution, with Inclosure 1, 29 October 1941, in AWPD/2, gives different figures for the American and British share, listing 4205 and 6590 aircraft respectively.

66. Memo, Arnold for distribution, with Inclosure 1, 29 October 1941.

67. The extra 5 B-25's constituted part of America's first allocation of aircraft to Russia during the summer. Since they were available, 30 O-52's were scheduled for shipment to Russia in October. See msg., Hopkins to Harriman, 3 October 1941; msg., Faymonville to Brig. Gen. S. P. Spalding, 13 October 1941; ltr., Hopkins to Hull, with message to Harriman, 13 October 1941 (file Russian Cables, ID, ASF, in NMW/NA).

68. "Minutes of Conferences, 21-22 October 1941, held by the Chief of the Army Air Forces with following British Representatives: Captain Balfour, Sir Henry Self, Air Marshal A. T. Harris, Air Commodore E. B. C. Batts, Mr. C. R. Fairey, and Mr. T. D. Weldon" (file 452.1, Deliveries of planes to Russia, ID, ASF, in NMW/NA).

69. Churchill, *The Grand Alliance*, p. 469.

THE NEGLECTED TASKS OF OFFICER EDUCATION

LIEUTENANT COLONEL RALPH L. GIDDINGS, JR., USA

A PERCEPTIVE and provocative article by Col. John P. Lisack on the importance of officer education appeared in the *Air University Review* recently.[1] Colonel Lisack referred to a basic conflict between two major categories of officer education, which he identified as specialized education and professional military education, and he discussed the correlation between formal education achievement and promotion to high rank. The article was addressed specifically to the U.S. Air Force, and the charts and statistics reflected Air Force experience. However, increasing emphasis on formal education is also apparent in the other services, and the importance of a college degree or degrees in achieving high rank generally applies to them as well.

While I am in complete agreement with Colonel Lisack in his emphasis on the importance of officer education (I apply this to officers in all our armed forces), I would like to approach his two major categories from a slightly different direction and point out what seems to me to be a serious failure in our system of officer schooling. The two major categories I will examine are education and training. Is the purpose of officer schooling, whether at civilian universities or professional military courses, education or is it training?

the meaning of education

Before this question can be explored, we must agree on what is meant by "education," as without this agreement there is no standard by which accomplishment can be judged. The first essential for any successful education program is that the community as a whole (in this case the armed forces) must have an idea of the true purpose and value of education. In *The Laws*, Plato defined true education as:

> That . . . which makes a man eagerly pursue the ideal perfection of citizenship, and teaches him how rightly to rule and how to obey. This is the only training which, upon our view, would be characterized by education; that other sort of training, which aims at acquisition of wealth or bodily strength, or mere cleverness apart from intelligence and justice, is mean and illiberal, and is not worthy to be called education at all.[2]

In evaluating the senior military colleges, i.e., the National War College, the service war colleges, and the Industrial College of the Armed Forces, John W. Masland and Laurence I. Radway wrote:

> The purpose of the senior colleges, the authorities at these institutions declare, is to stimulate an attitude rather than to load the individual

> with facts on a few problems. It is to show the officer the realities of the policy-making process, to give him an awareness of all relevant factors, a concern for their implications, and an appreciation of the responsibilities of other individuals and agencies. . . . When [the student officer] comes to one of the senior schools he is being prepared for a different set of requirements. Directives tend to become vague. Objectives are sometimes blurred. And there is no immediate and tangible measure of success.[3]

Army Regulation 350-5 sets forth the objectives of the Army school system:

> The primary mission of the Army School System is to prepare selected individuals of all components of the Army to perform those duties which they may be called upon to carry out in war or in peace. The emphasis is on the art of leadership. Its goal is to develop officers and enlisted personnel who will be able to apply a sure knowledge of fundamentals to the complex situations of the future and who will demonstrate intelligence, versatility, imagination, and initiative in their application.[4]

These objectives were supported by the Naval War College, which expressed its philosophy of education in these words:

> The art and science of modern warfare is an extremely complex web of political, economic, social, and military factors. . . . The Naval War College seeks to further an understanding of the fundamentals involved and develop broad vision so that the individual may be better prepared to make proper decisions in similar situations. . . . The primary functions of a high commander are to make sound military decisions and to provide the benefits of military education and experience to the formulation of military and national strategy. His basic requirement in performing these functions is good judgement—the ability to analyze a complex military situation, to weigh factors, and to choose soundly. Education is the cultivation of good judgement; it is preparation for dealing with novel situations in which no precedent exists. . . . It is the educational policy of the Naval War College to devote principal emphasis to the promotion of reasoning powers, good judgement and intellectual leadership expected of a naval officer in high command.[5]

General Muir S. Fairchild, first commander of Air University, speaking in a parallel vein said:

> We know certain characteristics which the responsible air officer of the future must have. His thinking must be clear, vigorous, objective, independent, and on a global scale. He must be flexible in his approach to problems and in his reaction to unusual and unforeseen situations. He must have the courage and intellectual curiosity to try new things and new methods. He must guard vigorously against believing that he has learned all the answers to future war, against building up resistance to change, against taking the easy course of accepting answers from the past instead of the infinitely more difficult course of digging them out of the future.[6]

The similarity of the thought expressed in these five quotations is striking. Note the recurrent emphasis on leadership, imagination, flexibility, understanding of fundamentals, creativity, and original thinking in complex situations. If we are to achieve these objectives, should advanced officer schooling stress education or training?

Training takes a short view and has limited objectives. It concentrates on the skill or knowledge necessary to carry on a particular task or activity. A soldier° is trained to fire a gun, fly an airplane, or sail a ship. Training has specific, limited objectives; is concerned with techniques; can be accomplished relatively rapidly; and is comparatively easy to evaluate. Education, on the other hand, takes a longer view. It is of less immediate utility but of much more enduring and vital significance. Its objectives are broad and unlimited. It is concerned with intangibles such as abstract principles, insights, mental discipline, and the grasp of complex relationships. True education is a continuing process and is difficult to evaluate. Perhaps the difference can be stated cryptically by saying that training prepares a soldier for his next job while education prepares him for a lifetime of dedicated service.

It is of course true that education and training are not entirely separate. They repre-

°Throughout this article the word "soldier" is used to mean anyone engaged in military service.

sent opposite polarities of a single whole rather than two completely dissimilar entities. There is no training that does not contain some element of education, nor is there any education that does not contain an element of training. As Herbert Spencer said, "Giving the best knowledge is also the best mental training." However, the difference is significant, and thus we can contrast them and ask, "Which is, and which should be, the main emphasis in advanced officer schooling: education or training?"

the seven tasks of officer education

It is possible to classify the purposes of advanced officer schooling under seven different goals. While this classification may not be exhaustive and mutually exclusive in detail, it is instructive, and it is complete enough for most purposes.

Professional competence. The officer must first of all be an expert in the military field narrowly defined. Any professional man must know the secrets of his trade, and the soldier is no exception. This expertise is his first requirement. Because of it the soldier is often called upon to act or to assist in the broader field of military and national policy. It is true that much purely military competence is the result of training rather than education, but, as pointed out above, these two are not entirely separate.

Understanding the total environment. In the complex web of modern warfare, the military leader must have an understanding of all significant elements of the environment in which he operates. He must be aware of military, political, economic, sociological, psychological, scientific, and moral factors. His education must make him aware of these factors, alive to their significance, and able to apply their lessons. Here the distinction between "need to know" and "nice to know" breaks down. While this distinction may be perfectly sound in training, it loses its validity in education. Over the long run it is impossible to separate them, and what seemed to be only "nice to know" may, in the end, turn out to be of vital significance. Unfortunately there is an instinctive, almost exclusive concern in the military that schooling must be immediately relevant to vocation. To be sure, background subjects must be kept within proper bounds, but the real danger is not in turning officers into dilettantes; it is in accepting a superficial definition of the practical.

The ability to grasp large and complex situations. In the words of AR 350-5 quoted above, officers must "be able to apply a sure knowledge of fundamentals to the complex situations of the future." Anyone who has attended Congressional hearings when military officers testified may well have been amazed at the breadth of subjects upon which congressmen have sought the opinion of these officers. In addition to purely professional military matters, these subjects have included economics, diplomacy, statesmanship, scientific research and development, administration, and even morals as these things relate to military affairs. The ability to recognize the relevant factors in a large and complex situation and to grasp their significant relationship is colloquially referred to as "getting the big picture." It is an asset highly regarded in the military service and one which is essential for success in high command or staff duty.

The capacity for analytical and creative thinking in a changing environment. As the passage from the Naval War College catalogue expressed it, "Education . . . is preparation for dealing with novel situations in which no precedent exists." To be successful either on the battlefield or in the conference room, an officer's thinking must be, as General Fairchild reminds us, "clear, vigorous, objective, independent, and on a global scale." And this requires intellectual curiosity and open-mindedness. Officers must not hold with the past merely because it is the accepted way; yet they must not assume that the new is better simply because it is new. They must adapt to the changing environment, but they must adapt creatively and with judgment. In the words of Under Secretary of State George W. Ball:

> We shall not find the answer to [today's problems] by nostalgic references to an earlier era. These questions can be answered only in terms

> of the conditions and requirements of today's world. For whatever one may think or say, one fact is clear above all—the world today is wholly different from what it was before the Second World War, and America's role in the world is wholly different. Anyone who fails to realize these facts will be befuddled by the problems we are encountering—and he will reach, not for the complex answer that has a chance to be right, but for the simple answer that is very likely to be wrong.[7]

With this task we have arrived at the crux of education versus training. How do you *train* an officer to be creative? And yet the cultivation of creativity is the ultimate purpose of any educational process.

The ability to communicate. As military life itself becomes more formal and complex, the ability to communicate effectively, both within the military and with civilians, becomes increasingly important. A forceful briefing or an effective, soundly reasoned staff paper are the usual vehicles whereby nascent ideas gain acceptance. Often the first one to get to the "old man" with a well-written paper carries the day. In *The Uncertain Trumpet* General Maxwell Taylor said:

> Each Chief receives a briefing from the members of his staff on items on the [JCS] agenda a few hours before the actual meeting. Called the Indians in contrast to the Chiefs, these service briefers exercise a considerable influence on the ultimate position taken by their superiors. Every Chief has to be alert to the danger of becoming a prisoner of his Indians, who are generally able and enthusiastic young officers trained to defend their views fearlessly before their superiors.[8]

Many would be surprised at the influence a major or lieutenant colonel Indian can exert if he is skilled in communication.

Military officers are also called upon to appear before Congressional committees, meet with the press, make appearances on radio and TV, and act as unofficial ambassadors of the United States in half a hundred nations. In all of these the ability to communicate effectively is required.

Freedom from parochialism. Parochialism means identification with a cause or idea when that identification becomes so strong and so uncritical that any semblance of objectivity becomes impossible. Parochialism means unduly narrow loyalties. In the military it is usually thought of in connection with interservice controversies. However, it is possible to be parochial about one's branch, bureau, or command. Even the Nation can be made the object of parochialism (chauvinism and jingoism). Sincere and patriotic men can have honest differences as to what is the best national policy. No one should expect all Joint Chiefs of Staff decisions to be unanimous any more than he expects all Congressional actions or all Supreme Court decisions to be unanimous. Nevertheless the depth and bitterness of some service disagreements raise the question of parochialism. A broad education rather than narrow specialized training is the best way to overcome this.

Skill in group dynamics. This is a generic term that includes, but is not limited to, old-fashioned military leadership. It is closely related to the ability to communicate but is important enough to merit separate mention. Plato gives knowledge of "how rightly to rule and how to obey" as a true end of education. Today we call "how to rule" leadership, and "how to obey" discipline, but the meaning is still very much the same. We expect military officers to be skilled in leadership and to accept discipline, but this is not enough. The soldier on horseback with "headquarters in the saddle" is no more. Today the successful officer has to accomplish uniservice staff planning with his seniors, peers, and juniors. He has to meet his opposites from the sister services at the joint conference table. He must function effectively with allied officers on combined staffs. He must cooperate harmoniously with civilians both in and out of the Government, and he must work willingly and understandingly under the civilian control prescribed by the American Constitution. In all these areas the officer must be able to meet, favorably influence, and effectively cooperate with others. This ability is the most nebulous and yet the most important objective of the officer education process.

failures of officer education

When measured against these seven goals,

how successful has our officer schooling program been? While the formally stated objectives of this program clearly recognize all seven of these tasks, actual practice has been less satisfactory. There is, in actual practice, a pervasive concern that officer schooling must be directly relevant to vocation. The emphasis is on "practical" utility in the narrowest sense. This concern reflects an admirable appreciation of the importance of the first of the seven tasks of officer education and has resulted in the development of the American military officer as a tactician and staff officer par excellence. He probably has no superior anywhere in the world in these areas. However, the insistence that officer schooling must be job-oriented has become an obsession—almost a fetish. And therein lies the danger. We have emphasized training at the expense of education, and this has resulted in our failure to recognize fully the importance of the other six tasks. We have thus failed to capitalize fully on our investment. That this failure is *de facto* rather than *de jure* only makes it the more dangerous. I will support this contention by offering only two specific examples, although almost any thoughtful officer should be able to provide additional instances.

First, we have failed to develop any first-rate military theorists. In his article, "Recent Writings in Military Politics," Samuel P. Huntington said:

> After World War II no book on strategy produced by an American military officer reached the sophisticated level of analysis of the best books on strategy written by American civilians.[9]

He need not have restricted this criticism to the post-World War II era. In 1948 Edward Mead Earle, in the Introduction to *Makers of Modern Strategy*, had written:

> In the field of military technology, we [Americans] introduced to the world the rifle with interchangeable parts, the machine gun, the balloon, the tractor for tanks, the parachute, the dive bomber, the submarine, and the airplane. Being mechanically minded and possessed of almost religious faith in the machine, we were first to adapt mass production to war. And in a very special sense we are the fathers of military aviation. Not only did the Wright brothers invent the airplane, but another favorite American child, the gasoline engine, has made possible the development of the airplane from a primitive thing to the powerful four-motored bomber. But we have not produced a Clausewitz or a Vauban. Mahan is our only military theorist of comparable reputation.

"This," Earle remarks, "is a small representation for a people which has been preoccupied with war, to a greater or lesser degree, since the first colonists landed on our shores."[10]

Why are there no Clausewitzes or Mahans or Douhets in our armed forces today? Why has "no book on strategy produced by an American military officer reached the sophisticated level of analysis of the best books on strategy written by American civilians"? The reasons for this failure in military theory are no doubt complex, but surely among them must be some failure of our officer education system.

The second illustration may be somewhat more elusive, but it is probably even more significant. It involves the slowness of the professional military establishment, especially in the intermediate echelons, to read the handwriting on the wall relative to the McNamara defense strategy. The broad outlines of this strategy have long been freely available—in books, articles, speeches, and Congressional testimony. While the basic thrust of this new policy has been clearly evident for some time, we have been slow to understand its rationale, adapt to its methods, and communicate effectively with its advocates. This does not mean that we must necessarily agree with the new policy in all respects; but we should understand it and, if we believe criticism is necessary, express that criticism in terms that are responsive to the significant aspects of the policy and relevant to its underlying assumptions. Too many military objections have failed simply because they did not address themselves to the essential elements of this strategy. Once again our educational program must bear coordinate if not sole responsibility.

I do not advocate scrapping vocational training for officers. But I do believe that we must look beyond the narrow limits of job spe-

cialization in evaluating our school system. Specialized professional competence is essential, yes, but it is not enough. The complex problems of the future lie ahead. To develop military and national strategies to deal with them, we will need officers who have a broad educational background—one that includes all seven ends of officer education.

Hq North American Air Defense Command

Notes

1. John P. Lisack, "Air Force Officer Education," *Air University Review*, XVI, 1 (November-December 1964), 84-91.
2. Plato, *The Laws*, Book I, Part 1.
3. John W. Masland and Laurence I. Radway, *Soldiers and Scholars: Military Education and National Policy* (Princeton: The Princeton University Press, 1957), p. 377.
4. Army Regulation 350-5, *Education and Training: Military Education and Service Schools*, 21 November 1963, paragraph 6.
5. *Catalog of Courses, 1960-1962* (Newport, Rhode Island: United States Naval War College), pp. 6-7.
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Military Affairs Abroad

JAPAN'S AIR SELF DEFENSE FORCE

MAJOR GILBERT M. BILLINGS, JR.

BY LATE summer of 1945 a shattered, disillusioned Japan had surrendered unconditionally. Deeply resentful of the military leaders who had led them into war and defeat, the Japanese people renounced nationalism, their flag, their national anthem, and their armed forces. Their postwar constitution, inspired by General MacArthur and accepted by the National Diet in the fall of 1946, aspired to an "international peace based on justice and order" and forever withheld "war as a sovereign right of the nation and the threat or use of force as means of settling international disputes."

As the world calmly relaxed in the postwar aura of worldwide harmony, Japan's new constitution was applauded with unbounded enthusiasm —both by the Free World and by the Communist bloc. By the time the initial tides of the "cold war" had flowed into the more vulnerable areas, Japan's neutralism was well established.

Within a matter of months both legal and psychological barriers to the re-creation of Japan as a military power had solidified in Japan and in the United States. But in 1950 the North Koreans swarmed over the 38th parallel, and the illusion of a neutral Japan—unarmed, assailable, wasted—demanded new attention.

The United States could not defend Japan indefinitely, and circumstances could strip the home islands of the protection of U.S. might. At the urging of MacArthur, but in the face of much opposition, the Diet approved in 1950 a 75,000-man quasi-military National Police Reserve, providing legislative basis for security and law enforcement by the Japanese for the first time since the national police were abolished in 1945.

In September 1951 the peace treaty was signed. With the termination of Allied occupation in April 1952, firm steps had to be taken by the Japanese people—with strong encouragement from the United States—to provide for their own eventual autonomous defense capability.

The first of these steps was taken in August 1952 when the National Police Reserve was reor-

ganized as a National Safety Force (ground) and a Coastal Safety Force (sea). The naval branch had at its disposal some 200,000 tons of combat shipping, primarily patrol craft. The land branch was composed of 135,000 troops and included tanks, artillery, and light aircraft.

The attitude at that time, both on the part of the United States and the U.S. Army (then the prime U.S. policy-making service in Japan), was that any program to expand the Japanese forces would overtax the fragile economy, so no indigenous air force was provided for. Far East Air Forces (FEAF) was then charged with the aerial defense of Japan, a responsibility delegated to the wholly USAF Japan Air Defense Force.*

FEAF fought for its belief that the most immediate threat to the safety of the islands was from Communist air power, not ground or sea forces. World War II, just seven years in the past, had provided a classic example of strategic vulnerability. During less than four months of intense air attack, between April and August 1945, Japan had been defeated without invasion.

Under the 1947 constitution** and the ensuing interpretations of its renouncement of war, threat, or use of force, the Japanese would accept only the minimum forces necessary to provide a defensive capability against aggression. And modern aerial weapons—long-range strategic bombers, nuclear weapons, intercontinental and intermediate-range ballistic missiles—had relegated land forces to a third priority in the defense of the islands, less than an hour by jet from the mainland of Asia.

If the United States was to have Japan as a partner in a bilateral treaty of mutual security to defend democracy in the Pacific, air power had to be provided. FEAF's plan for the establishment of an autonomous Japanese air force, no longer tied to the army or navy as it had been up to 1945, included concepts for a radar network and a system of air bases, in addition to a minimum number of fighter-interceptors.

Already the National Safety Agency had been working on plans for the creation of a "Third Staff," consisting of an independent air force. But violent opposition from leftist and Communist groups, which charged that even NSA itself was a constitutional violation, dictated a governmental "go slow" policy.

It had taken two years to rally apathetic supporters behind the 1952 NSA law, and, very delicately, Prime Minister Shigeru Yoshida began working on a realistic defense force with adequately balanced air, ground, and sea forces. The powerful leftist opposition was vocal at every opportunity: the Japanese people oppose rearmament—the Japanese feel that they will become a tool of U.S. policy—the national economy is strained, and the government is weak and insecure.

Political opposition in the Diet and in the prefectures was too great for Yoshida to bid for an amendment to the 1947 constitution, so he asked the Diet to enact legislation designed to provide Japan with means of self-defense—on the ground, in its coastal waters, and in the air.

Yoshida faced his opposition with a firm determination that the constitution did not intend to leave the islands vulnerable to aggression. One of his most convincing points was that American forces could be withdrawn when Japanese defense was strong enough. After lengthy debate, this self-defense doctrine became law with passage of the Self Defense Law on 2 June 1954.

FEAF had already begun planning for the embryonic air force. An Air Advisory Group was established in FEAF's Tokyo headquarters in July 1953 to initiate general policy and procedures planning. In addition the Japanese created an Air Planning Group composed of former Japanese Army and Navy officers to work with FEAF.

ON 1 JULY 1954 the Japan Air Self Defense Force—even today burdened with its cumbersome title by the constitutional interpretation of its primary mission—was established.* The earliest firm planning foresaw the new JASDF as a projected force of 36 tactical squadrons equipped with 783 aircraft. The force was to have included

*Fifth Air Force headquarters returned to Nagoya, Japan, from Korea on 1 September 1954 and simultaneously assumed the responsibilities of the JADF, which was then deactivated.

**The postwar constitution, which was accepted in 1946 and went into effect in 1947, is referred to as the 1947 constitution.

*The Military Assistance Advisory Group, Japan, was also established on this date under the jurisdiction of the U.S. Ambassador.

9 fighter, 6 fighter-bomber, 6 fighter-interceptor, 3 tactical-reconnaissance, 6 medium-transport, and 6 light-bomber squadrons.

Even with many months of quiet lead-time planning, the handicaps to be overcome were formidable. Japan had been completely without continuity in air operations between the end of the war and 1950. Allied occupation forces had banned both military and civil aviation. The only qualified Japanese military pilots then available were those trained by the U.S. Army to fly the L-21 in support of the National Safety Agency mission.

During this time every aspect of aviation technology and engineering had undergone rapid and radical development. While Japan was preoccupied with sweeping internal problems and survival, the science of aeronautics had moved ahead at supersonic speeds. Even modern concepts of flying proficiency and instrument techniques made Japan's pre-1945 approaches antiquated.

Director General Tokutaro Kimura, civilian head of the Japan Defense Agency created under the newly enacted law, immediately made it clear that the Air Self Defense Force would be the principal weapon for the defense of Japan in the new defense alignment.

The JASDF staff was composed of men who had had professional military experience with the Imperial Japanese armed forces, and most of them had also served with JDA's predecessors. The staff included a general, a lieutenant general, and nine major generals (among them the colorful, stoic Minoru Genda, a World War II fighter ace considered one of the most brilliant naval strategists Japan ever produced, who later became Chief of Staff and is now a member of the House of Councillors).

The JASDF Air Staff Office foresaw the development of the air defense system in three phases:

Phase One	(FY 1954–57)	period of construction of a training foundation
Phase Two	(FY 1958–61)	period of augmentation of operational units
Phase Three	(FY 1962 on)	period of modernization of air defense power

Initial planning also depended on World War II-trained pilots, ground crewmen, and support personnel. Originally, basic manning was to come from this reserve. Subsequent personnel were to be obtained from pipelines to civilian pools established to bring the force up to full strength.

Five training concepts were adopted:

(1) Refresher flying training would give World War II pilots reorientation in the T-6 for eventual conversion to jet, transport, or pilot instructor.

(2) USAF Air Training Command schools in the United States would train JASDF personnel in the more complex skills, including flying training.

(3) USAF training of JASDF personnel in Japan would make use of technical schools within FEAF and Far East Command for certain general areas, such as sheet metal repairman, machinist, and supply.

(4) On-the-job training would give the Japanese craftsman or tradesman appropriate initial or refresher training to modify his civilian skill for military application.

(5) Formal JASDF schools would be established, staffed by Japanese personnel, with advice, guidance, and material assistance from the United States.

JASDF's first base was Matsushima, at the time a satellite of Misawa Air Base (now Fifth Air Force's northernmost base in Japan), to be used for initial single-engine refresher flying training.

The first cadets reporting in to Matsushima were all veteran flyers who had had combat experience during World War II. Most of them had been lieutenant or captain equivalents in the Imperial Army or Navy Air Forces. Their program was to include five months of classroom work and 150 hours of flying time in the T-6 trainer.*

To take a sorely defeated nation and build a technologically modern air force was no small undertaking. Problems, some unforeseen and some predicted, arose at once. The language barrier stood in the way of every movement; recruiters

*The last T-6 group was deactivated on 31 May 1964. The Fuji T-1A, a tandem two-seat jet trainer, replaced the reciprocal-engine trainer in the JASDF inventory.

lacked incentives to offer those qualified; new industry competed for trained personnel, regardless of the level of their skill; facilities were limited, inadequate, and crowded; equipment had to be brought in as soon as a legal basis was established.

The legal structure upon which the Self Defense Forces were built did not evolve overnight. Defeat had stripped Japan of the right to exercise her sovereign powers, and complex national and international negotiation was required to restore them. The U.S. and 48 other non-Communist nations signed a peace treaty with Japan, which was ratified by the U.S. Senate in March 1952.

At the same time a bilateral mutual defense treaty was signed by Japan and the United States. An act passed by the Diet in 1953 restored to Japanese industry the right to make munitions. Japan was elected the 80th member of the United Nations in 1956. A revised "Treaty of Mutual Cooperation and Security" was signed by Japan and the U.S. in 1960. All these measures established the legal and ethical foundation for Japanese defensive forces, which the 1947 constitution—according to some interpretations—had forbidden.

At the same time that cadets were reporting in to Matsushima for T-6 training, a USAF training group was activated at Nagoya, under FEAF's Japan Air Defense Force, culminating months of planning and coordination by USAF, FEAF, the Air Training Command, and the Japanese. Also organized were a USAF technical training squadron at Hamamatsu in central Honshu and USAF flying training squadrons at Tsuiki AB in northern Kyushu and (under 315th Air Division) at Tachikawa AB near Tokyo. This latter squadron was moved several weeks later to Miho AB on the western coast when it was found that Tachikawa was too crowded.

The flying training program was originally built around four bases. Former Japanese pilots were to receive 30 hours in light planes (T-34's) at Hamamatsu and 130 hours in the T-6 at Matsushima. They then were to go to C-46 transport conversion training at Tachikawa (later Miho) or to T-33 jet conversion training at Tsuiki or back to Hamamatsu or Matsushima for T-34 or T-6 pilot instructor training.

Later the T-34 base became the Phase I Primary School, the T-6 base became the Phase II Primary School, the T-33 base the Basic Jet Pilot Training School, and the C-46 (and the F-86 much later) became an Operational Training Unit.

By January 1956—just six months after its establishment—the Japan Air Self Defense Force was equipped with 319 aircraft, 40 per cent of them T-6's, 30 per cent T-34's, 20 per cent T-33's, and the remainder C-46's and F-86's. The first of them arrived in December 1955. All the original aircraft were provided by the U.S.

By mid-1955 plans had to be made to recruit flying training cadets who had no previous flying experience. College graduates with a knowledge of spoken English were selected, and the first class of 24 entered Phase I the following October. Recruiting, however, was no easy task. Prestige, pay, and incentives were low.

Earlier, in January 1955, the first five refresher-trained Japanese pilots began T-33 jet transition training at Tsuiki. The Japanese press hailed the event as a milestone, and in May the first class graduated. It was a significant day for Japan —for the first time, Japan had jet-qualified pilots.

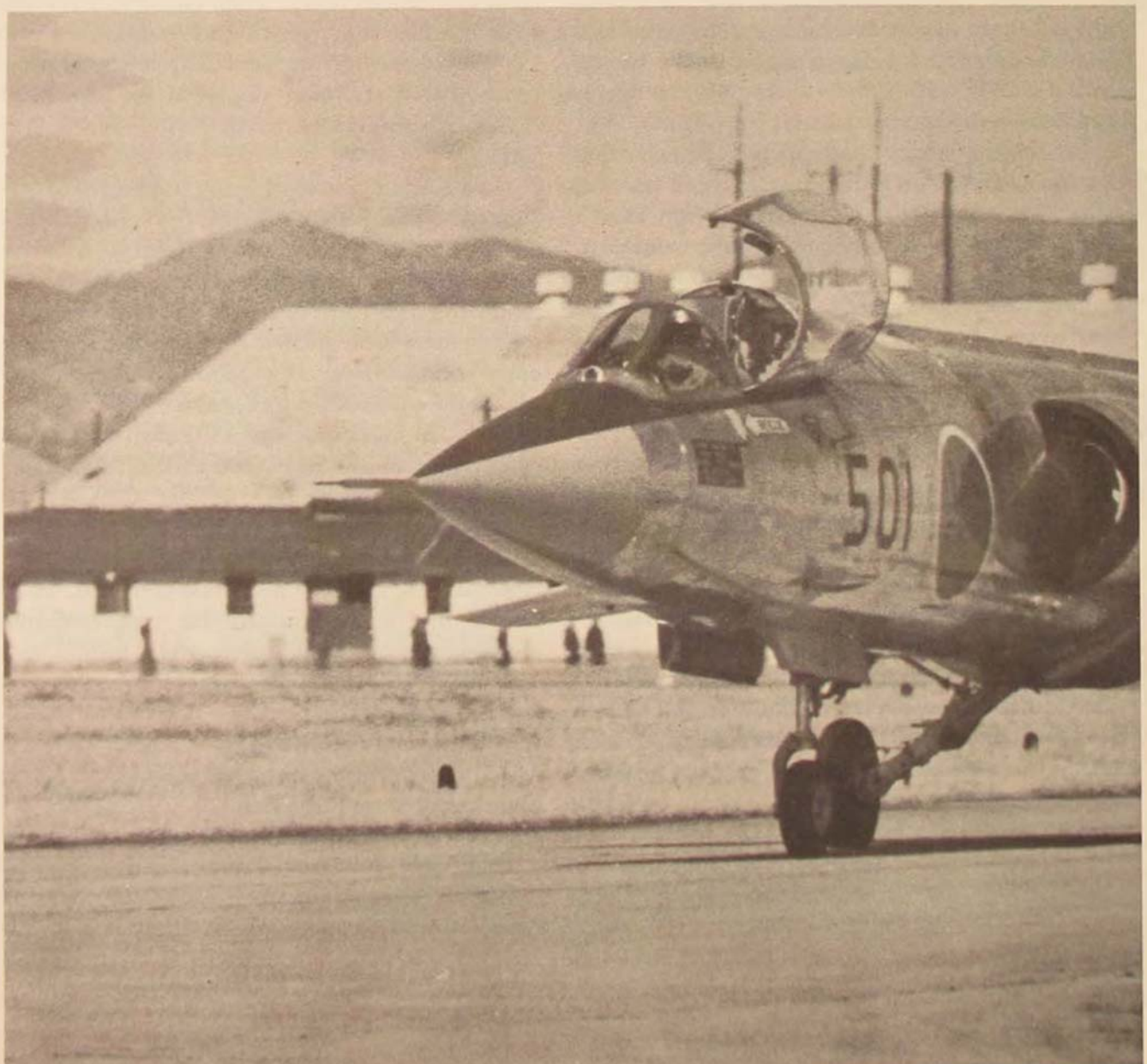
In August the first 5 of 22 pilots who were to receive F-86 training departed for the United States. Four months later the first F-86's for JASDF arrived.

Meantime transport flying training in the C-46 started at Tachikawa. The basic program called for 120 hours in this two-engine aircraft, still the basic troop carrier in JASDF, but experience proved that while the 120-hour course was sufficient to train crew members it did not qualify the pilots as aircraft commanders. This problem was solved by giving the pilots 300 additional hours in the aircraft under USAF-supervised OJT. USAF instrument certificates were issued until JASDF could produce its own.

Technical training began at the same time flying training was initiated. Every skill needed to man the new air force had to be recruited, and the people had to be trained—for communications, maintenance, supply, personnel, radio, radar, weather, hydraulics, airframe, food service, photography, medical.

Weather training began at Yokota AB in 1954 with officer refresher and airman observer courses. Eighteen officers and 82 airmen were sent to Scott and Keesler Air Force Bases for aircraft control and warning schools. Control tower and ground-controlled approach operators were trained in language as well as technique, for they had to know

Japan Air Self Defense Force pilots, looking toward the day when their first F-104J squadron becomes operational, put in Link trainer time at a Japanese training base.



A Japan-built F-104J, dive brakes still extended, taxis off the runway after a training flight. JASDF now has more than 100 pilots qualified in its new aircraft.

enough English to pass the U.S. CAA examinations. OJT in supply and formal training and OJT in FEAF consolidated technical schools were initiated.

In April 1958 the force at Hokkaido, the Northern Air Defense Force of today, scrambled the first aircraft to intercept a suspected violation of territorial air. In 1959 Central Air Defense Force aircraft went on alert, and the following year aircraft of the Western Air Defense Force took their place in the air defense system.

In 1957 FEAF had been redesignated Pacific Air Forces and moved to Hawaii as the air component of the unified Pacific Command. Fifth Air Force was then charged with responsibility for the air defense of Japan, Okinawa, Iwo Jima, and surrounding seas. Gradually JASDF began to fit into the Fifth Air Force air defense pattern.

During mid-1960 the radar installations of the AC&W network were taken over by JASDF. Today the JASDF Airways Air Communications & Weather Service Wing still provides this critical element of the air defense system to both Fifth Air Force and JASDF fighters and fighter-interceptors.

By this time a firm mission statement had evolved. Article 3 of the 1954 Self Defense Law stated: "The mission of the Japan Air Self Defense Force is to conduct itself chiefly in the air." JASDF's peacetime mission is to

—prepare for defensive and guard operations
—employ measures to prevent violation of territorial air
—conduct disaster rescue measures
—maintain air traffic control
—conduct weather observation and forecast
—cooperate with and support the United States Air Force.

DURING its decade of development the Japan Air Self Defense Force grew rapidly in size, stature, and prestige. In 1954 its 6738 men included 1383 officers, 4904 airmen, and 451 civilians. By 1958 its size had multiplied six times and its officer corps of 3400 included 207 jet-qualified F-86D and F-86F fighter-interceptor and fighter pilots. By 1965 the force stood just short of 40,000 men (compared to 20,000 U.S. Air Force personnel stationed in Japan), with 700 pilots qualified in the F-86F and 155 in the F-86D.

JASDF is now equipped with over 1100 air-

High-speed photography shows a Japanese pilot undergoing centrifuge training, his face revealing the pressures building up. In the ten years from the end of World War II to the birth of JASDF, international aviation pushed far ahead while Japan's remained at a standstill. Prior to 1945 Japan had had no need for equipment such as the centrifuge.

Japanese second lieutenant puts on his oxygen mask the back seat of a T-33. JASDF has used U.S.-mated T-33's in pilot training since January 1955.

craft of various types. The backbone of its present fighter strength is a force of nearly 450 F-86's. However, Japan faces an obsolescence problem common to many nations. The D-model of the F-86 was first flown 16 years ago, and the F-model (later versions of which were manufactured in Japan by Mitsubishi) is only three years younger.

Reconnaissance is flown with the RF-86F, while troop-carrier capability is still built around the 25-year-old C-46 Commando, best known for its Air Transport Command "Hump" operations in the China-Burma-India Theater during World War II. The C-46 range of 1400 miles is suitable for transport and airborne operations within the home islands of Japan under the purely defensive concept, but its speed detracts from its usefulness in modern fast-reaction warfare.

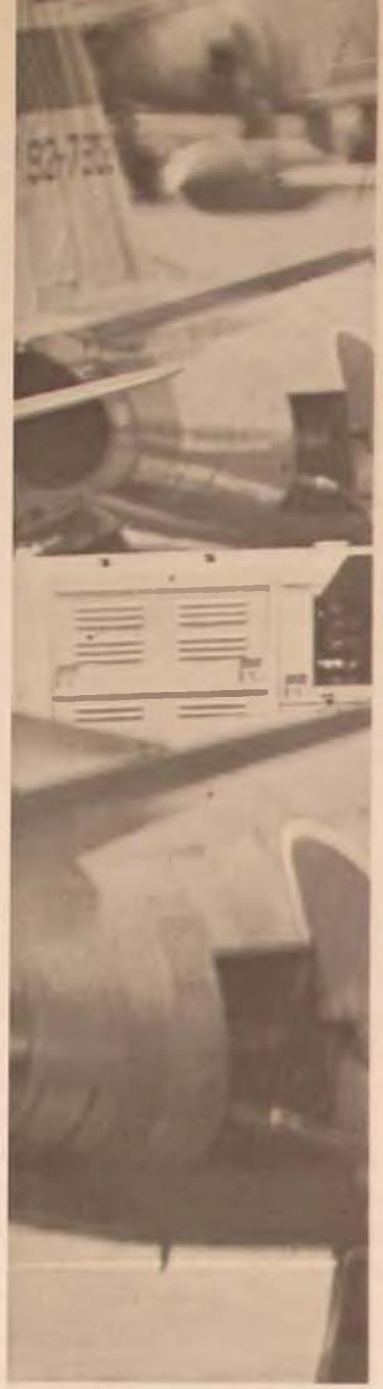
However, Japan's air defense is not yet totally charged to JASDF alone—nor will it be until at least five years from now, when the Mutual Security Treaty is first subject to review. Fifth Air Force maintains two tactical bases in Japan. Three squadrons of its new all-weather F-105D fighters are stationed at Yokota AB near Tokyo in central Honshu. Additional fighters, two Tactical Air Command F-100 rotational squadrons, are stationed at Misawa AB in northern Honshu, with reconnaissance aircraft at both Misawa and Yokota. At Tachikawa AB near Tokyo, PACAF's 315th Air Division (Combat Cargo) has a C-130 troop-transport squadron, while MATS has a C-124 squadron.

The USAF 39th Air Division and JASDF's Northern Air Defense Force cover northern Honshu and Japan's northernmost island, Hokkaido. JASDF's Central Air Defense Force covers central Honshu, while the Western Air Defense Force covers the extreme southern tip of Honshu, Kyushu, and Shikoku. The 41st Air Division provides coverage for all of central and southern Japan. In addition, three squadrons of the F-105, augmented with reconnaissance, fighter-interceptors, and combat cargo airlift, are located in the Ryukyu Islands, 250 miles south of Kyushu.

In November 1959 the National Defense Council (advisory body to the Cabinet, equivalent to the U.S. National Security Council) made the formal decision to adopt the F-104J to replace the F-86. Two hundred F-104's are now in the JASDF inventory, and a projected force of seven F-104 squadrons has been approved.

Mainstay of Japan's present-day fighter strength is the queen of the Korean War, the F-86. In various configurations, it is used as a fighter, as a fighter-interceptor, and as a reconnaissance aircraft.

The control tower of a modern JASDF tactical air base overlooks a flight line filled with F-86's, some of which were built by Mitsubishi, maker of the famous World War II aircraft, the Zero.



Another National Defense Council move that will influence Japanese military thinking in the future is the 1963 decision to place the Nike-Ajax air defense missile systems under the control of JASDF. After construction of missile sites and a ground environment installation, the Nike-Ajax battalions will provide Japan with a surface-to-air missile.

For the next few years Japan is ensured a strong air defense potential, with a balanced mix of weapon systems. Defense is never a static situation, and undoubtedly decisions will be made to modify present forces assigned, but aircraft available as of the tenth anniversary of JASDF include:

	JASDF	*USAF*
Fighters	F-86F	F-100
		F-105
Fighter-interceptors	F-86D	
	F-104J	
Reconnaissance	RF-86F	RF-101
		C-130
Airlift	C-46	C-130
Missiles	Nike-Ajax	
Helicopters	H-19. H-21	H-19
	S-62	HH-43B

Present operational aircraft available in the air defense system number more than 1000, 500 of them belonging to Fifth Air Force squadrons in Japan and Okinawa. The effectiveness of the JASDF squadrons is reflected in their 1964 aircraft major accident rate (for jets) of 5.8 and in their detection and neutralization rate in country-wide air defense exercises that matches U.S. Air Force standards.

At the USAF worldwide fighter-interceptor weapons meet at Tyndall AFB, Florida, "William Tell 1963," the Fifth Air Force team representing Pacific Air Forces was composed of F-102 pilots from Fifth Air Force's 4th Fighter Interceptor Squadron at Misawa AB,* support personnel from the 39th Air Division, and a weapons controller team from the Japan Air Self Defense Force. Competing against USAF weapons controller teams from the Philippines and Okinawa and against other Japanese teams from the 24 radar sites in Japan, the 42d Aircraft Control and Warning Group personnel took top honors in the pre-William Tell exercise "Small Change."

*The last two F-102 squadrons will be withdrawn from Japan by 1 July 1965.

PACAF had the only dual nationality team at Tyndall, and its efficiency was exhibited on opening day when the USAF F-102 pilots were vectored into the target area by the JASDF weapons controller and shot down the first drone to be killed in the competition.

Two "perfect" missions were flown, and the PACAF-JASDF team took third place in the F-102 category—fourth place worldwide for all interceptors. The team's "splash" rate at the end of the competition was 50 per cent, compared to an overall average of about 33 per cent.

The Japan Air Self Defense Force organization is patterned to a great degree after the U.S. Air Force, just as the Japan Defense Agency parallels the structure of the U.S. Department of Defense. The Director General of JDA is a civilian, equivalent to the U.S. Secretary of Defense. The Japanese counterpart of the U.S. Joint Chiefs of Staff is the Joint Staff Council.

Under the Director General is a Chief of Staff for each of the three services. The office of the JASDF Chief of Staff includes a coordinating Air Staff Office similar to Headquarters USAF. The JASDF organizational complex includes four major commands:

- Air Defense Command, with headquarters at Fuchu AS, has three Air Defense Forces, each with one to four wings, one AC&W wing, and support components.
- Flying Training Command includes one F-86F wing and five flight training wings.
- Air Technical Training Command has five technical training schools. (In addition, two basic training groups, an officer candidate school, and an air staff college are assigned to the JASDF Chief of Staff.)
- Air Materiel Command coordinates activities of three air depots (land vehicles and supplies, aircraft, and communications and electronics).

Other support components assigned directly to the Chief of Staff include an air transportation wing, Airways and Air Communications Service, air rescue, air proving group, aeromedical laboratory, air aids, intelligence, and the JASDF hospital at Gifu.

On the Battle Staff in the Combat Operations Center (COC) at Fuchu AS, Lt. Gen. Maurice A. Preston, Commander of Fifth Air Force, and Lt. Gen. Hirokuni Muta, Commander of JASDF's Air Defense Command, occupy side-by-side positions on the control dais. Representatives of both USAF and JASDF are on the joint Battle Staff of each of the three air defense sectors.

To the north, west, and south are Air Direction Control Centers (ADCC), located at Misawa AB, Iruma AB ("Johnson AB" under USAF tenure until returned to the Japanese), and Itazuke AB (now a USAF forward operating base). The 24 AC&W sites detect and follow more than half a million aircraft tracks annually, sifting "friendly" from "unidentified" and relaying the latter information through the ADCC's to COC for joint evaluation by the USAF-JASDF duty officers, who together must make the decision to "destroy" after detection, identification, and interception have been accomplished.

THE TEN YEARS since JASDF's inauguration have been years of struggling to provide the Japanese with their own defense forces. Now JASDF is rapidly maturing into a capable, ready, well-equipped machine and is taking its full share of Japan's air defense responsibilities, commensurate with its operational capability.

It has inherent problems. The Japan Defense Agency is still retained in the government structure as an "agency," and it is considered politically inopportune at the moment to press for its elevation to "Ministry of Defense" parallel with the Ministries of Foreign Affairs, Finance, and Labor. Although the Director General reports directly to the Prime Minister and is addressed as "Minister Junya Koizumi," he is a "state minister" without a "ministry."

Many officers admit readily, too, that they would like to see their cumbersome designation reduced to "Japan Air Defense Force." The pressing problem of the need to enhance public confidence in the defense establishment and to increase the prestige of the man in uniform weighs heavily on their minds.

A follow-on transport to replace the C-46 has been under study for some time, and the Air Staff Office is taking a close look at such aircraft as the General Dynamics-Grumman F-111, the McDonnell F-4, and the Lockheed A-11 for the day when

a new air defense weapon system may be needed.

JASDF has had the leadership of exceptionally capable Chiefs of Staff, including its first, Gen. Kentaro Uemura; Gen. Sadamu Sanagi, a former Imperial Navy staff officer; and Gen. Genda and Gen. Takeshi Matsuda, both of whom had much to do with the adoption of the F-104, reassignment of the Nike-Ajax to JASDF, and selection of the Base Air Defense Ground Environment (BADGE) equipment.

Its present chief is 55-year-old Gen. Shigeru Ura, a tall, personable professional soldier who speaks English fluently. A 1932 graduate of the Imperial Military Academy, General Ura was a staff officer in the Imperial Army headquarters during the war and later was assigned as liaison officer to the Supreme Commander, Allied Powers (SCAP).

Japan's 250,000-man defense forces today include the Ground Self Defense Force of five Armies with 150,000 men, most of them concentrated in the north facing U.S.S.R. and in the west facing Communist China; the Maritime Self Defense Force of 31,000 men with 211 destroyers, destroyer escorts, destroyer frigates, submarines, patrol-craft, and antisubmarine aircraft including helicopters; and the Japan Air Self Defense Force.

On 1 October 1964 the first F-104 fighter-interceptor squadron became operational at Nyutabaru Air Base on Kyushu, Japan's southernmost island. (Five of JASDF's 20 operational squadrons are now F-104 equipped.) By spring 1965 Japan had more than 115 pilots (only 10 of them trained in the U.S.) qualified to fly the F-104J and F-104DJ.

With the high caliber of leadership it has had during its first ten years, with increased public understanding of the need for defense, with culmination of programing for more modern weapon systems, and with the maturity which comes only from tenure and experience, Japan will move back into a position in the world as an aerial power—firmly dedicated to the objectives of the Free World in the Pacific.

Headquarters Fifth Air Force (PACAF)

Acknowledgment

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Air Force Review

AIRCRAFT INTEGRATED DATA SYSTEMS

MAJOR GENERAL EARL C. HEDLUND

A NEW concept in aircraft maintenance operations promises to bring about sweeping changes for the entire aviation industry. The possibilities of the new system, called Aircraft Integrated Data Systems (AIDS), may eventually provide flight crews with continuous information about the "health" of their aircraft, while at the same time data on the cause of incipient failure will be telemetered to the landing terminal during actual flight. At the terminal, automated maintenance and supply procedures will take care of the requirements—the requisition of parts, work orders, resupply, etc. The more practical short-term development of the system lies in crash investigation recording, out-of-limits operation of aircraft recording, and performance trend analysis by existing computers.

The name Aircraft Integrated Data Systems was adopted by a subcommittee of the Airlines Electronic Engineering Committee of the Airlines Communication Administrative Council at a meeting in Kansas City early in 1965. The possibilities for improvement in aircraft maintenance by use of AIDS are so numerous that the concept may be considered a major breakthrough, the first since shortly before World War II, when overhaul depot methods first came into general acceptance. The AIDS breakthrough was possible because of other technological developments:

- The rather recent development of miniaturized electronic circuits, along with the development of slow-speed, high-density, magnetic-tape recording techniques, has made possible a low-weight, highly reliable flight data recording system.
- The development of high-speed data reduction and computing machines has made it feasible to do something useful with the tremendous volume of data gathered by the recording system.

Aircraft flight data recording has been accomplished for many years for purposes of flight-testing and crash analysis. Various systems are used in flight-test work, ranging from crude mechanical-limit recording devices through photographic recording and, more recently, analog traces on a

paper scroll using transducers, electronic signal conditioning circuits, and a rather sophisticated recording machine. Crash recorders have been mandatory equipment on certain types of commercial aircraft for some years. To my knowledge, these have all been of the metal-foil tape type. (See Figure 1.) They have the advantages of a rather easy-to-analyze record, the tape is practically fireproof, and upkeep is simple and not too expensive. The disadvantages of the metal-foil recorder are that the tape cannot be reused, the number of parameters which can be recorded is extremely limited, and the length of record is so short as to necessitate frequent tape changes. All these earlier recording systems have been made obsolete by the newer miniaturized electronic circuitry, slow-speed magnetic-tape recording, and the high-speed computer.

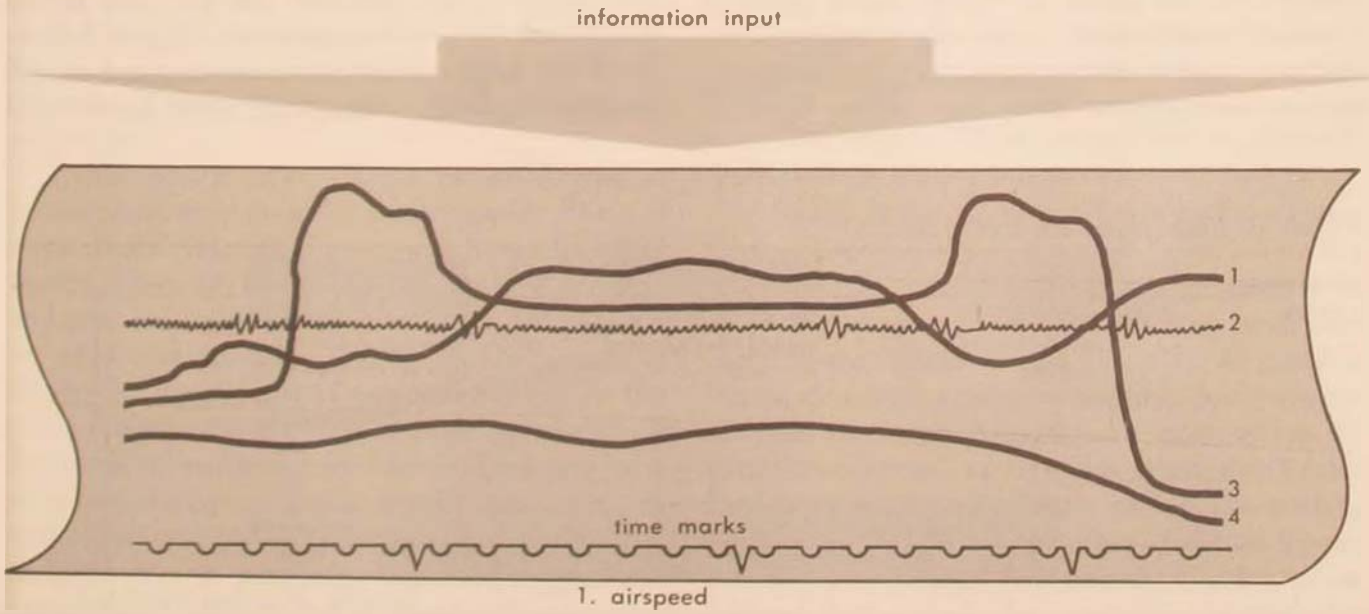
magnetic tape recording

There are two basic types of magnetic-tape record output: analog data and digital data. Analog data must be printed out in a graphic format. Digital data are printed as pure numbers. Analog data may be converted to digital data by a suitable electronic analog-to-digital (A/D) converter; in fact, most of the digital recorder systems available today do this conversion in the aircraft signal-conditioning circuits before recording, since most available sensors that are both practical and economical are of the analog type. Digital sensors are not yet competitive; ultimately, though, reliable, accurate, and economical ones will be developed.

The analog recorder is the more economical to design and install, and it is inherently more accurate because one step in signal conditioning for digital output is unnecessary. However, because of the mechanical features of the analog recorder, this accuracy advantage is subject to argument. The analog data presentation is also easier for maintenance personnel to interpret. A simple line graph represents many numbers, which makes manual (eyeball) study simpler.

With the digital recorder, pure numbers on the data record can be easily interpreted for the true value of the parameter. Often the number printed will be the true number of degrees, psi, etc. Machine analysis of the digital tape on readily available computing machines is possible at most major air bases. This is probably the major factor in deciding which basic type of system to use,

Figure 1. Metal foil tape



1. airspeed
2. acceleration
3. heading
4. altitude

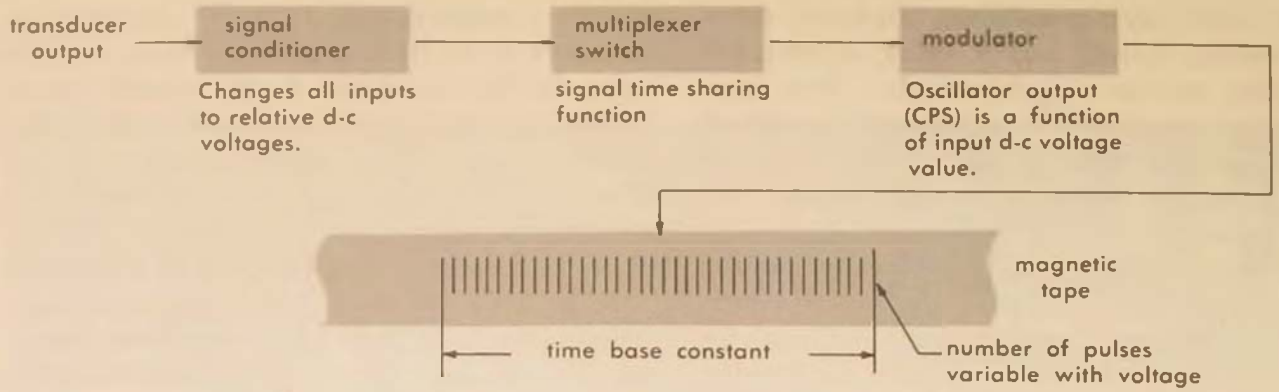


Figure 2. Frequency modulation analog tape

because data reduction and utilization will be the greatest expense as well as the key to maximum utilization of the AIDS.

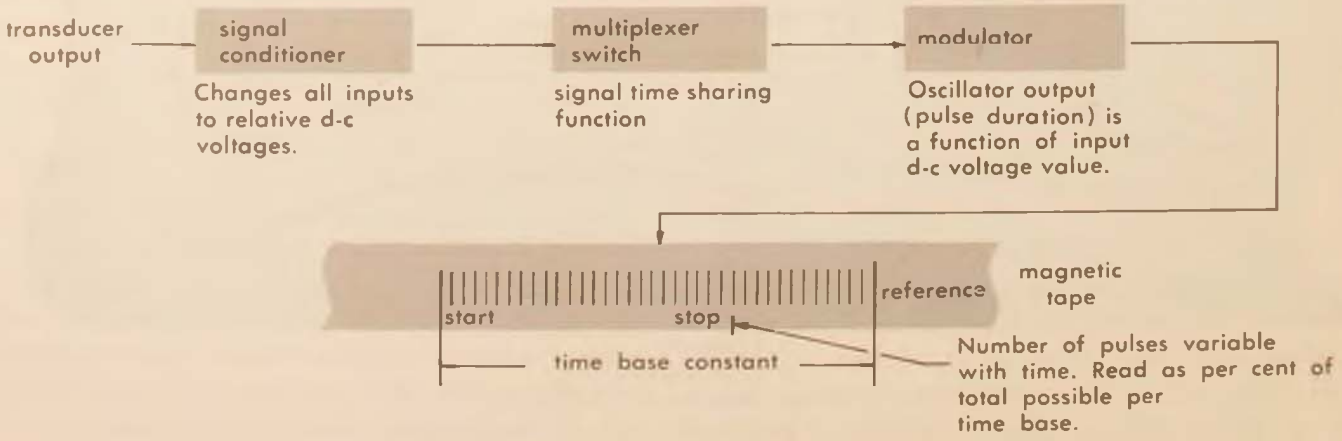
recorder tape format

The actual magnetization of the tape must, of course, follow a definite format. The industry has devised many designs, each of which satisfies a certain purpose within a system and none of which has all the desired features.

One recording system uses frequency modulated (FM) analog recording technique. A basic frequency is modulated up or down as the signal strength of the circuit is varied. Each signal is modified (conditioned) to an output between zero and some upper-limit voltage, then fed to the frequency modulator so that only one FM circuit is needed. Figure 2 illustrates the FM format on the tape. On the actual recorder, eight tracks of impulses are carried on a half-inch-wide tape, seven of them for data and one for cancellation of error caused by variations in tape speed, line voltage, and temperature. The recording of as many as 315 bits of information every three seconds is possible.

An example of a semidigital system is the recording format which is called pulse duration modulation. This system uses a fixed length of tape for each bit recording. The quantity being recorded is a function of the length of magnetization and is expressed as a percentage of the maximum range of the particular parameter. Magnetization of the full length would represent 100 per cent of the maximum value for the parameter. Figure 3 illustrates this format. Four tracks are recorded on half of a half-inch tape. One track is for speech and

Figure 3. Pulse duration digital tape



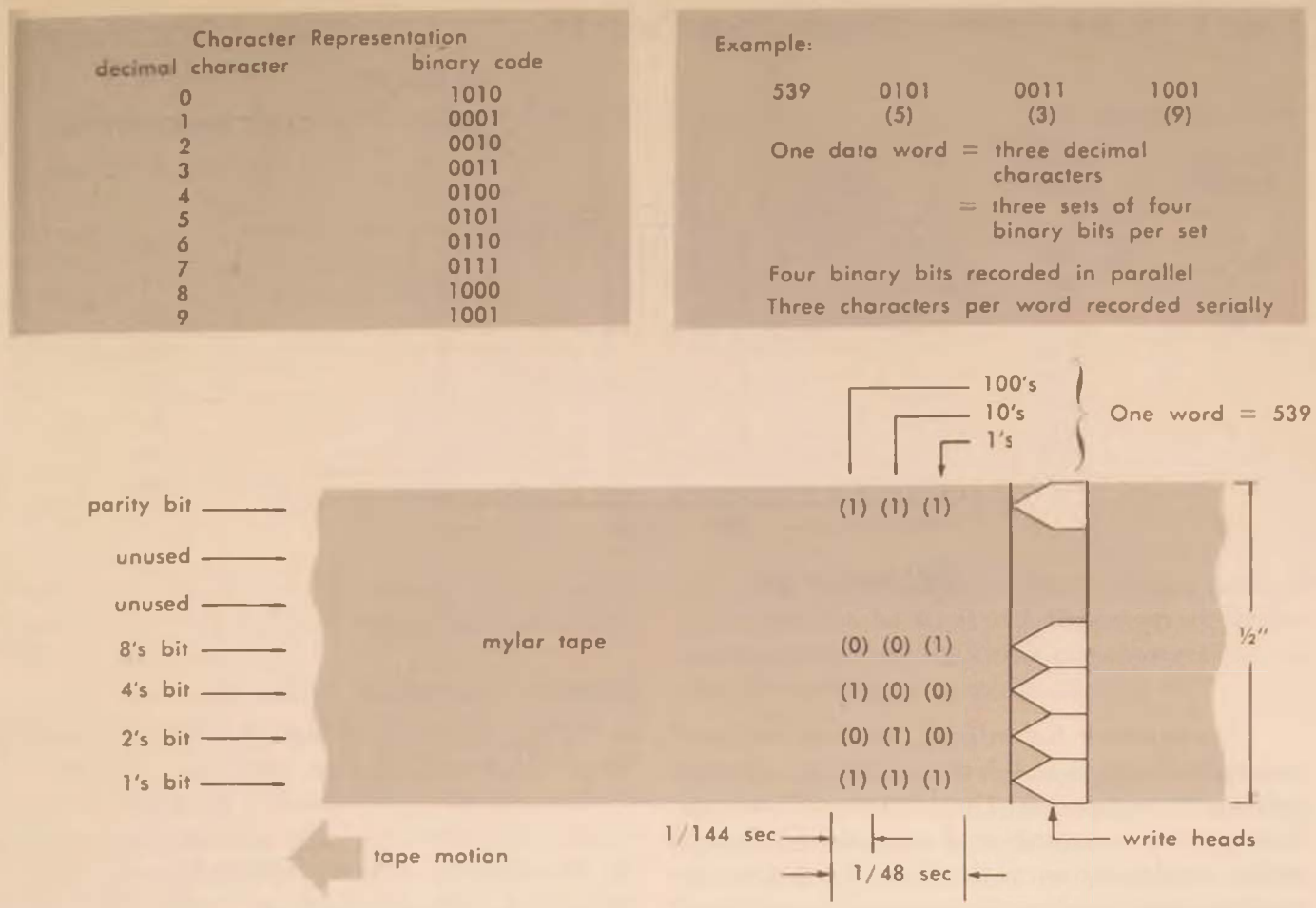


Figure 4. Binary coded decimal recording format "parallel bit"

reference (error cancellation), and three tracks are for data.

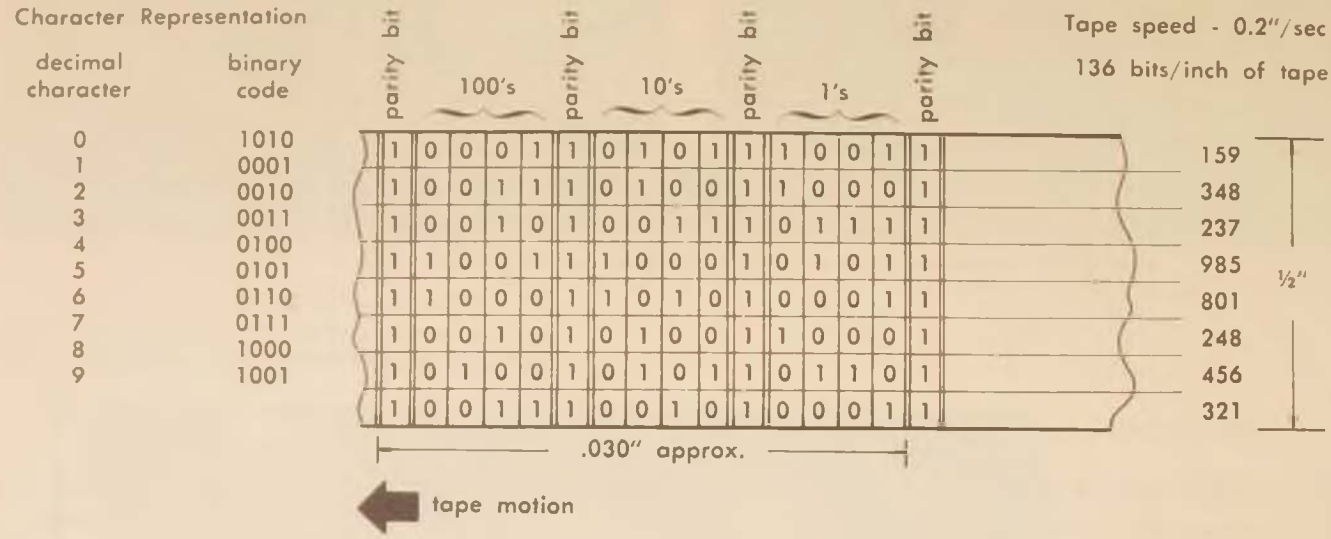
One widely used digital recording system format is referred to as the Binary Coded Decimal Recording Format, the format which IBM machines accept. There are two common ways of doing this, and IBM has machines in use which are suitable for either one or both. The bit parallel format is illustrated by Figure 4. Another way to do the same thing is the bit serial format illustrated by Figure 5. When one understands these two possible formats, he can readily see that the number of variations possible in representing numbers on magnetic tape is quite large. Selection of any data-recording system must include careful consideration of the data format and the ground equipment necessary to reduce and analyze the data.

What can data recording do?

There are two basic areas of use for recorded flight data, in crash analysis and maintenance.

Crash Analysis. This area is quite obvious. Civil airlines have been required to have a limited flight data recorder on all their large aircraft for a number of years. The recorders they have been carrying are "crash-proofed" as much as possible, but on numerous occasions the recorders have not survived the crash. Also in many cases where the data recorder did survive the crash the limited amount of data was of little use in determining the cause of the crash. The Federal Aviation Agency and the civil airlines are currently working to develop a better crash data recording system that will record many more parameters; therefore, it probably will be a magnetic tape recorder.

Figure 5. Binary coded decimal recording format "serial bit"



Maintenance Recording. This area has been championed by several domestic as well as British and Dutch companies. The fundamental concept that wear or deterioration of equipment follows a rather regular pattern is the basis of argument for maintenance recording. The normal wear curve of a mechanical device might be illustrated by Figure 6. During its early life there is a very slow deterioration. With age the slope of the curve becomes more pronounced until, near the failure point, the slope is increasing quite rapidly. The end of the curve should be rather well behaved. If it is possible to evaluate and make a record of a performance factor or group of factors that tells this story of wear, it should be possible to predict failure within some practical limits. This concept is well known and has been used with the means at hand throughout the history of aviation (and before), but the tools to evaluate wear were never as sophisticated or promising as the data recorder.

Another concept to consider is that of the number of failures of a mass-use item plotted against time in use before failure. This graph should be the familiar Gaussian (hat) curve (Figure 7). On critical equipments a time between overhauls is established which, based on experience, ensures that failures will be very rare. This point on the curve in Figure 7 is well to the left. Obviously many equipment items are taken off the aircraft for overhaul when there is much useful life left.

A third concept to consider is the maintenance practice in effect with some secondary equipment on aircraft today. This concept includes engines on multiengine aircraft which are comfortably powered, such as the C-130. The established maximum time between overhauls is such that very rarely is one pulled off at its time limit. In this case it is obvious that many extra parts are necessary in overhaul, and in fact major destruction of components must occur at times, adding greatly to overhaul cost.

These three concepts, together with the need for crash investigation data, lead to a firm requirement for the AIDS. On the curve of Figure 6, for any given equipment, a point can be determined where the slope is at the critical rate of wear. This point is determined by what normal operations require. If an item must operate for 20 hours to serve successfully for the longest normal mission, the point 20 hours in advance of where failure occurs is the rate-of-wear point which should govern replacement of the equipment. By basing replacement of equipment on this argument, which may be called "on condition maintenance," the "early" replacement and resultant loss of useful life illustrated by Figure 7 will be eliminated to an appreciable de-

Figure 6. Normal wear curve

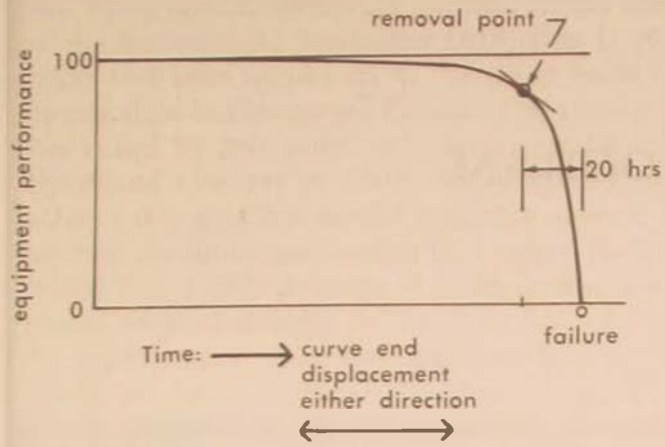
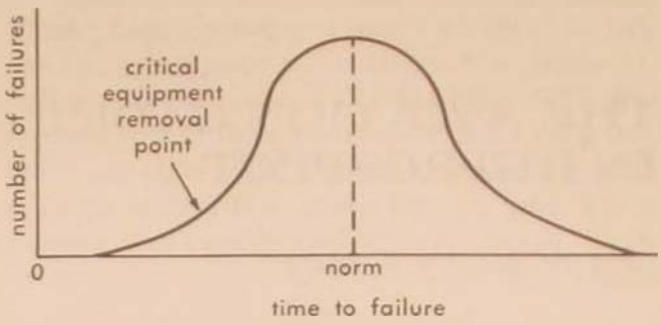


Figure 7. Number of failures vs. time



gree. Also failures on the aircraft of secondary equipment, with resultant high parts destruction, will be reduced.

Another area where maintenance recording will prove useful is in troubleshooting failures of equipment. Predicting failures will certainly not be accomplished 100 per cent by the AIDS, because, even though a large number of parameters can be monitored, not everything that can fail can be monitored. The AIDS can give a much better idea of the way in which failure occurred, and thus diagnosis of the failure may be greatly facilitated.

While the above benefits are being realized, the use of AIDS in the operations end of the business can result in substantial savings by providing the data necessary for more efficient operation of the aircraft (fuel and flight profile) and by detecting such things as overloads, overtemps, hard landings, etc. Also particularly troublesome equipment of an aircraft can be fitted with the necessary sensors and integrated into the AIDS. Corrective actions will then be based on AIDS information.

ONLY A few of the AIDS developments taking place are given here. We will always have sudden failures of equipment on aircraft caused by material or manufacturing deficiencies or equipment abuse, but the AIDS promises greater safety while reducing maintenance and operating costs for normal wear and operation. The capability of the system to make a continuous record of hundreds of parameters, sampled every few seconds, makes it such a powerful crash analysis tool that this alone should make installation of the AIDS mandatory.

Warner Robins Air Materiel Area

THE AVIATION CADET PROGRAM IN RETROSPECT

Captain Maurice G. Stack

ON 3 MARCH 1965 at James Connally Air Force Base in the heart of Texas, the last of a legend passed before us when Aviation Cadet Steven V. Harper received his commission as a second lieutenant in the United States Air Force. It is a legend created in our time, the story of the aviation cadet program.

Started in 1917 when the United States entered World War I, the cadet program ended with the graduation of Navigator Training Class 65-15. This small class of only 22 cadets never had the privilege of being an "upper class." Yet it shares a tradition with and can be equally as proud of its achievements as the largest of the classes during the great buildup of World War II—Class 44-A, which began training with 13,294 cadets.

To commemorate the closing of the aviation cadet program Lieutenant General William W. Momyer, Commander of the Air Training Command, took part in this last graduation. It was only fitting that Air Force Major General Benjamin D. Foulois (Retired) was chosen to be the principal speaker and to present the navigator wings. An aviation pioneer, General Foulois was one of the first military pilots in the old Air Service, his flying experience dating back to 1909.

Being an aviation cadet was not an easy life. As a fourth classman the cadet was held in very low regard; it was a period of hitting a brace, eating square meals, reciting verbatim underclass knowledge, rising for reveille at 0500 hours, then pursuing studies for 17 hours until the cadet could safely say that he had completed another day with lights out at 2200 hours. Third, second, and first class status was only slightly less demanding. The strict discipline and pressure placed on the cadet was designed for a definite purpose. The cadet was preparing to become an officer and leader in the United States Air Force. The Air Force had to determine quickly whether he had the tools to become a leader. Could he accept the responsibilities of command? Was he honorable in his actions? Did he have the emotional stability to withstand the pressure of command? Did he possess the humaneness to help his men? Not only was the cadet preparing to lead, he was also studying to become a skilled technician, a combat flyer. It was not enough merely to learn the theory or discuss objectives. The aviation cadet had to perform and perform well under the watchful eye of an experienced instructor. The cadet could not talk his way through; actual performance was all that counted.

Looking back on the program a former cadet cannot help wondering, "Why must it go?" An institution which made men out of so many boys must be good; and few indeed will argue over the fine job that was done. Yet there is an answer to this question. We are now entering the space age. It's not enough to fly "by the seat of your pants" or have a burning desire to fly. True, this ambition is still wanted; but formal education is also essential. A bachelor degree is now a prerequisite to flying training. My purpose, however, is not to tell where we are going but to reminisce about the aviation cadet program from its inception through the peak years of World War II and on to its final phase-out.

The Beginning-World War I

The aviation cadet program started during World War I in an effort to build up our air arm. Again in World War II, we were caught short by the events in Europe. When we entered the war on 6

April 1917, we had a total of 96 rated pilots and two flying schools within our borders. At the time of the Armistice, 11 November 1918, over 11,000 pilots had been trained on 41 American bases or by our allies in Europe and Canada. Our air objective called for 260 American squadrons to fight in the Allied offensive of 1918. We did not quite achieve this goal, but we did create an interest in aviation for future generations to develop. During World War I only 90 hours of flying time was required to send a cadet to the front for combat. To qualify as a cadet the applicant had to be "under 25, have 2–3 years of college, be athletic, honest, and reliable." This was a far cry from the extensive battery of physical, mental, and psychological tests required in later years. Even though assignment to the air arm of the Signal Corps was still dangerous duty, 37,800 young Americans streamed into training, of which 22,545 actually qualified and entered school. From this number approximately 8700 received their wings. The addition of those graduated by our allies brought the total of American pilots to over 11,000. About 1000 of these pilots saw action against the enemy. Of the 491 confirmed enemy aircraft shot down, 462 were shot down by 63 pilots, each of whom was designated an ace. Most of our air activity was confined to artillery observation of air battles. Very little was done by way of bombing or air-to-ground support.

During the 1920's austerity hit the air arm. From an appropriation of nearly $2 billion in 1918 the annual appropriation dropped to under $13 million in 1923 and to $12,800,000 in 1925. During this period there were never more than 1000 officers or 9000 enlisted men on active duty; cadet strength seldom rose above 200 per year. Flying training was consolidated at San Antonio, Texas, where Kelly and Brooks Fields were used; training at Randolph Field began later. Flying training was divided into two phases: primary training, in which the cadet learned the rudiments of flying, soloed, and gained his confidence as a pilot; and a second phase, advanced training, which included basic flying skills such as instrument flying, auxiliary controls, night flying, cross-country flights, precision and smooth aircraft operation. The cadet also received specialized training in either pursuit, bombing, or reconnaissance aircraft. Class life dominated the primary-basic program. The upperclassmen indoctrinated the new cadets. Customs and discipline were rigidly enforced—life was far from dull. No cadet can ever forget his first experience with "verbatims."

Just as I reached my barracks and felt safe from repeating fourth-class knowledge, an upper-

The famous Jenny (Curtiss JN-4). Introduced in July 1914, the Jenny was the airplane most used for the training of pilots in the U.S. during World War I.

Early Training

Soon after the Wright brothers began training the first Military Aviators at College Park, Maryland, in 1909, Glenn Curtiss started flying operations from a field on North Island in San Diego Bay (views in 1911 and ca 1917, right). Need for better year-round weather led to the transfer of the Army's aviation training activity to the North Island site in 1912. Designated the Signal Corps Aviation School in 1913 and Rockwell Field in 1917, this was truly the "Cradle of Army Aviation," since a great many of the early record-setting flights originated here. . . . The growth of aviation and the events in Europe that foretold its role in warfare resulted in a proliferation of airfields throughout the country. Brooks Field was among the early ones in Texas (views in 1918 below and in 1923 lower right).


tion Field
nd, San Diego 1911

classman appeared as if from nowhere and said, "Mister, what is the definition of military discipline?"

As a fourth-classman I had the answer down cold, but there was always the chance I might slip. I started with a burst of energy in a very military manner: "Sir, military discipline is that mental attitude and state of training which renders obedience and proper conduct under all conditions. It is founded on respect for and loyalty to properly constituted authority. Although it is developed primarily by military drill, every feature of military life has its effect on military discipline." (At about this point I was out of breath, getting nervous, and confused. Only reflex action and thorough repetition carried me on.) Again I continued, "It is generally indicated in an individual or unit by smartness of appearance and action, by cleanliness and neatness of dress, equipment and quarters, by respect for seniors, and by prompt and cheerful execution by subordinates of both the letter and the spirit of the legal orders of their lawful superiors."

I had made it, but I was disappointed with myself. No demerits, but in the eyes of that upperclassman I was not the sharpest cadet in the squadron—in fact, he was probably wondering how I was ever accepted. Remembering that only one in twenty do get accepted, I was thoroughly deflated. "I'm not good enough to be here," I kept thinking to myself. Then I was caught up in activities and didn't have time to worry about whether I was good enough.

After 1926 the Air Corps received larger appropriations and more cadets entered training; however, washout rates, 47 per cent in primary and 12 per cent in advanced, kept down the number of graduates. From 1931 to 1939, of the 4798 who entered, 2295 students completed primary and advanced training. As the European countries prepared for World War II, our pilot production actually decreased from 299 in 1932 to 194 in 1937. Then it slowly rose.

The Buildup

During the 1930's the Air Corps anticipated the need for expansion in the event of war and was well prepared for limited expansion. After the German involvement in the Czechoslovakian Sudeten, the Chief of the Air Corps, Major General Henry H. Arnold, met with civilian flying school owners Oliver L. Parks, C. C. Moseley, and Theophilus Lee to arrange for civilian flying schools to teach Air Corps primary flying. This allowed the Air Corps to get at the large untapped pool of civilian pilots and facilities. Even though civilians were to teach primary, Air Corps officers supervised the training. The Air Corps continued to conduct basic and advanced training. As a result of a 1938 study, 4500 pilots were to be trained over a two-year period, and 666 cadets started training every six weeks. The length of training was reduced from one year to three 12-week phases (primary, basic, and advanced). Total flying time to graduate was reduced from 279 hours to 215. This reduction was anticipatory of the larger expansion needed in the event of total war. During the buildup phase Congressional appropriation for expansion was increased to $300,000,000. The concept of civilian primary flying training was considered a success, not only in the quality of training but also in the percentages successfully completing training (40-A, 60%; 40-B, 61%; 40-C, 65%).

While the Air Corps was expanding, in 1939 the Civil Aeronautics Administration proposed the installation of small training centers at various colleges. This program was to make the youth of America more air-minded and act as an auxiliary to the Air Corps primary flying program. President Roosevelt asked Congress to train 20,000 young men; however, only a 10,000-man program was approved. The program proved highly successful: of 9500 men entered, 88 per cent successfully completed training.

Although the rate of 4500 pilots was not met, 3500 pilots were graduated. Again as in the past, appropriations were cut even though the war in Europe was going badly for the Allies. Class entries proposed for Class 41-E were to be cut to 287 and reduced to 170 in 42-B. Nazi victories against France and Britain changed our thinking, and defense of the Western Hemisphere was thought to require more qualified pilots. Plans were made for 54 combat flying groups; training had to be increased to meet this need. Fortunately the system used in 1938–39 was sound, and an increased output to 7000 pilots per year was authorized by the President. In addition navigator and bombardier cadets were also to be trained. Primary classes increased in size so that by October 1940, 1234 stu-

dents began training every six weeks, divided among 18 civilian contract schools. The training periods were further reduced to three ten-week phases.

To administer this increase the Air Corps Training Center became three divisions: the West Coast with headquarters at Moffett Field, California; the Gulf Coast with headquarters at Randolph Field, Texas; and the Southeast with headquarters at Maxwell Field, Alabama. Procuring instructors offered no difficulty in 1940. Civilian instructors were available, and basic and advanced training produced good pilot instructors from among its graduates. The general inexperience of these new instructors was a bit of a problem and pointed up the military unpreparedness of this country during the 1930's. Actually less than one fourth of the officers on duty in the Air Training Command by late 1940 had more than three years' active duty. Even with these problems the 7000 quota proved highly successful and laid the groundwork for the tremendous expansion that was to come. Before the 7000 program got into full swing, the rate was increased to 12,000 pilots per year.

Due to events in Europe our training situation was under constant change, always upward. Ten primary bases were added, bringing the total to 28; seven basic schools were in existence; and 12 advanced flying schools were required to support the 12,000-pilot commitment. At this time General Arnold, recognizing the need for transport aircraft to support our combat groups, authorized six transport groups.

Our pilot trainees increased rapidly in the 1939–40 period: on 1 July 1939, 643 students were in training; on 1 July 1940 – 1894; by 19 September 1940 – 1943; and on 1 January 1941 – 4926. Although the 12,000-pilot plan was being met, our installations had to be modified and enlarged to meet the demand. The Air Corps also had to find and develop new training sites. Many problems arose in selecting the sites. Political pressure, climate, altitude, and proximity to other airfields and airways had to be considered.

As our aircraft became larger and more complex, the need for nonpilot aircrew members became a major problem. Navigators, bombardiers, observers, aerial gunners, engineers, and radio operators were needed. Fifty student navigators were sent to Coral Gables, Florida, to train at the Pan American Airways school. Later classes increased in size to 100 students. During 1940 and early 1941 this was the only school for Air Corps navigators. In July 1941 three navigation schools were established, one in each of the three training divisions (at Turner Field, Albany, Georgia; Kelly Field, Texas; and Stockton, California). Bombardier training got under way at Barksdale Field, Louisiana, in the spring of 1941. Class duration was ten weeks, a far cry from the extensive 18-month training our SAC bombardiers receive today.

Farsighted planning on the part of General Davenport Johnson guaranteed not only the production of 12,000 pilots but anticipated further buildup. He fought for and achieved a 75 per cent utilization of all civilian contract schools. This meant that if additional pilots were needed, the then existing schools could expand to meet the commitment. Base construction continued to be a problem, but the Army Corps of Engineers worked with dispatch and efficiency to build the bases. Costs of materials skyrocketed. New and faster aircraft were needed. Although the problems seemed insurmountable, they were overcome. Lack of training aircraft at one time did, however, force reduction in number of entering classes. It seems odd, but at the time we were striving for an Air Corps of 150,000 officers and men, Germany had an air force of 1,500,000 men and Britain had 250,000. Requirements to enter pilot training still remained high, a minimum of two years of college being necessary. The educational level was later reduced to a high-school education. Notwithstanding the problems of March 1941, we had 27 civilian primary schools with 4050 students; 10 basic schools with 2717 students; and 11 advanced schools with 918 single-engine students and 1633 multiengine students. Students in replacement centers, forerunner of the preflight program, numbered 2400.

In light of the world situation, the 12,000 figure would not do the job. A second aviation objective was established: 84 combat groups. This increase, plus allowing for attrition of wartime operations, required a new plan for the annual output of pilots. On 25 March 1941 the annual output was raised to 30,000 pilots. This required 102 training bases. Plans were flexible enough to allow for a progressive buildup of aircraft and bases to get maximum efficiency of training. The

30,000 quota incorporated 4000 British pilot trainees, a program paid for with Lend-Lease funds. The British troops, unlike the others, held civilian status and were subject to neither U.S. nor British army disciplinary codes. Later in the war we were to train pilots from many other nations. To meet these new loads additional bases were established, and each base needed barracks, mess halls, classrooms, warehouses, and recreational areas.

Temporary construction was the answer; it was economical, easily built, and would last through the emergency. Many a cadet can recall living at these temporary bases. In a dust or sand storm the walls acted as a sieve, and dust would accumulate in clothes, bed, even in the food. In cold weather the 30 x 80-foot barracks were heated by coal stoves that never seemed to produce enough heat. As unpleasant as they were, they did the job.

The number one problem under the 30,000 quota was the lack of training aircraft. We needed 3340 primary trainers, 3360 basic trainers, 2305 advanced single-engine trainers, and 3200 advanced twin-engine trainers. As of March 1941 we had 951 primary trainers, 591 basic trainers, 421 advanced single-engine trainers, and no advanced twin-engine trainers. To train these 30,000 pilots, the Air Corps estimated that it needed 2000 primary and 1600 basic flying instructors.

World events soon proved that the 30,000-pilot program was inadequate to meet our needs. Class 42-G, which started training on 24 January 1942, and others through Class 43-A came under this program. Its significant features were the beginning of the preflight program and our aid in training British pilots.

The Peak Programs

The 50,000-pilot program got its inception when the Chief of the Air Corps asked for an increase of 100 per cent in the production of combat crews. Plans progressed toward an output of 60,000. After the attack on Pearl Harbor our thinking was changed. Now with a global effort on our hands, the 60,000 figure became the first step toward eventually reaching a quota of 95,000 pilots per year. Tentative plateaus were set at 50,000 by late 1942 and 70,000 by early 1943. It was hoped that the 50,000 program would be a follow-on to the existing 30,000 program. This called for an increase in schools, equipment, and personnel. The existing schools increased their student enrollment —in some cases it was doubled. This put a tremendous strain on equipment, aircraft, and permanent-party personnel. Due to shortages of aircraft and instructors, quotas were temporarily reduced. Elimination rates still ran high: 37 per cent in primary, 6 per cent in basic, and 1 per cent in advanced. After Pearl Harbor we had but one goal in sight, to defeat our enemies. We strove to produce the greatest number of aircrews in the least amount of time. Pilot training was reduced to three nine-week phases. The student pilot still received 200 flying hours, the minimum deemed necessary before exposing a man to combat.

Under the 50,000-pilot program, preflight training came into its own. The Air Corps needed a system in which new cadets could be equipped and processed and be given initial military training and medical and psychological tests. While at the replacement center the cadet also underwent rigorous physical training to prepare him for the hardships of flying training. At Maxwell Field the daily four-mile hike became affectionately known as the "Burma Road," while the exercise area and the obstacle course were known as "Hell's Half Acre" and "Mayhem Meadow" respectively.

I can recall my own experience with physical training; within one week of entering flying training I was administered a PFT (Physical Fitness Test), in 94-degree Texas heat. The PFT then consisted of five exercises, all timed: push-ups, sit-ups, 300-yard run, pull-ups, and squat jumps. Each exercise was designed to test different muscles. My flight was no different from any other so we tried our best. . . . Over half of our flight was unable to march back to the barracks. I made it back but collapsed on my bunk determined to get out of this chicken outfit. But after a good "chewing out" by an upperclassman for lying on my bunk at an inappropriate time, I made it to the evening meal formation—but what luck, I thought, steak for dinner and I couldn't eat a mouthful.

I would be remiss if I did not mention the dread of every cadet, namely, the "Ramp." If during the week a cadet accumulated six demerits for violating cadet regulations, he

marched one hour on the Ramp. For each additional demerit, one more hour on the Ramp. This hour or more of soul searching on the Ramp, of course, came during the cadet's weekend free time when other more fortunate cadets were heading for the beach, out on open post, or dating.

The 75,000-pilot training program was the second step toward the ultimate goal of 90,000. It began with Class 43-J, which was to graduate from advanced training in December 1943. This quota was closely related to the 50,000 quota, but it had an innovation: the first base to train women pilots was opened at Sweetwater, Texas. To better illustrate what was required under the 75,000 program, each of the three training centers graduated the following every 4½ weeks:

480 four-engine crews (pilot and copilot)
1000 single-engine pilots
1400 twin-engine pilots

A total breakdown ran as follows:

17,900 four-engine pilots
27,300 twin-engine pilots
24,800 single-engine pilots
13,500 navigators
14,000 bombardiers.

The success of the German Luftwaffe against

Pilot Training
World War II...

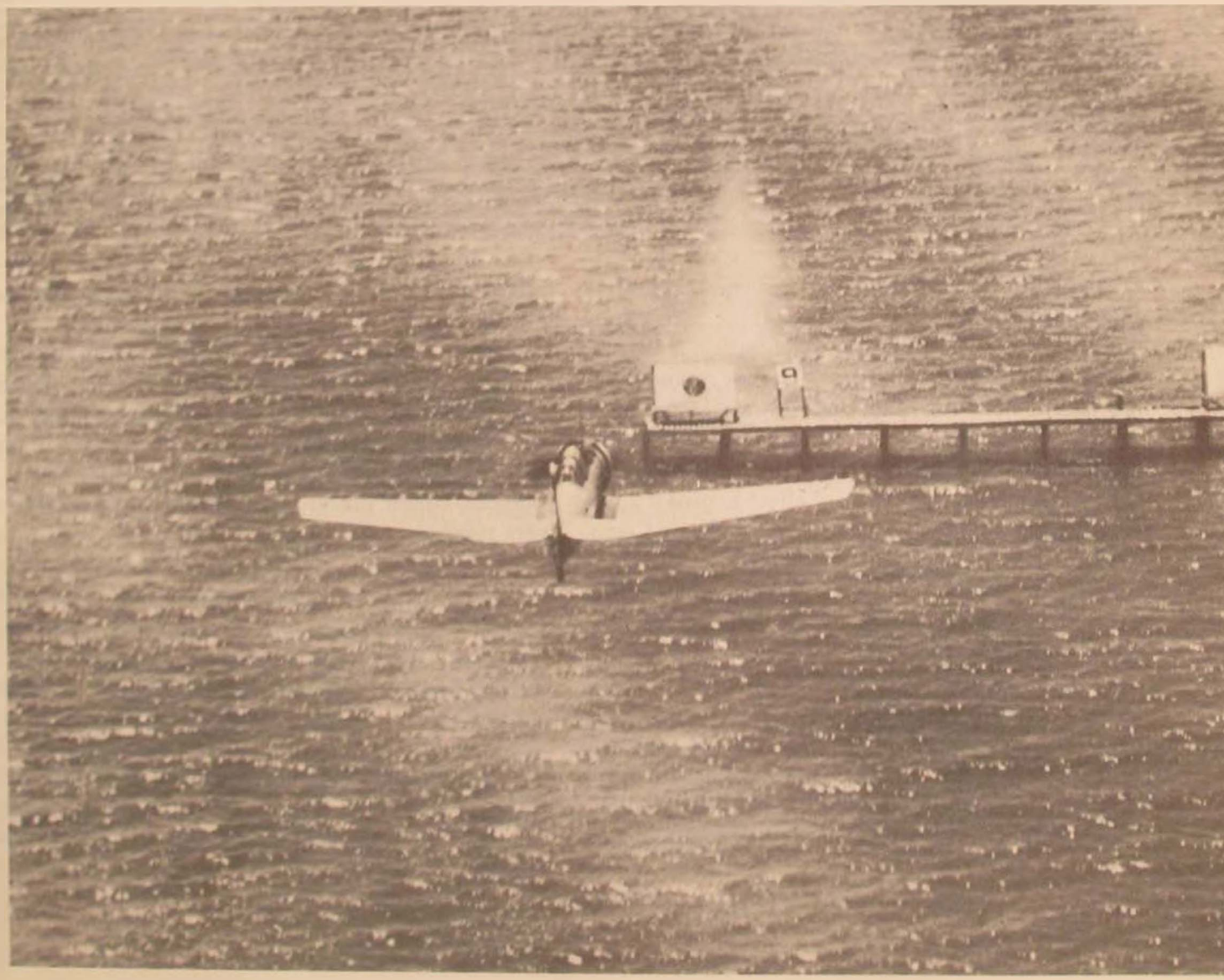
The World War II influx of aviation cadets strained permanent facilities, including the mess facilities.

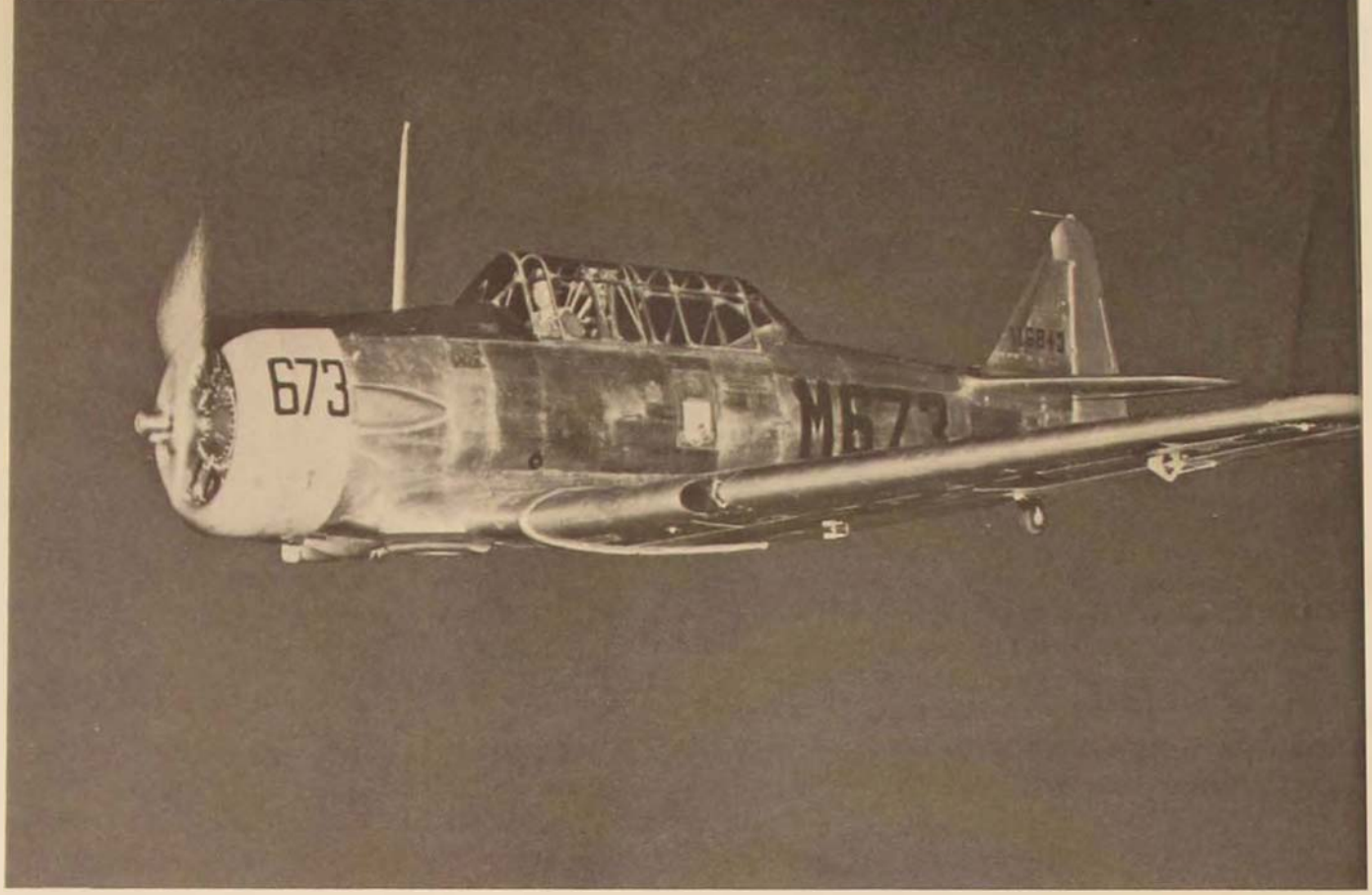
An instructor at a contract primary flying school introduces new cadets to the PT-17's they will fly.

Cadets of the Royal Air Force—like many other Allied nationals—graduated from U.S. flying schools.

Rigorous physical conditioning prepared cadets for flying training.

A cadet in an AT-6 bores in on a practice pier target over the Gulf of Mexico as part of his advanced single-engine training.





A cadet flies a night solo mission in the AT-6 advanced trainer, which later became a primary trainer.

Target range at Avon Park, Florida, provided practice bombi as final step in fusing B-17 trainees into a combat-ready cre

Poland, France, and the Low Countries suggested that air power was the most important arm of any military force. This fact, coupled with our unpreparedness at the time of Pearl Harbor, pointed up the urgent need to build United States air power. All-out effort was necessary. There were many limiting factors, but we had the money, manpower, natural resources, and unity of effort to give it a go. No one knew what we could do, though Air Corps leaders felt that a 100,000 output could be reached. During this peak phase, output fluctuated between a low of 75,000 and a high of 102,000, the 102,000 peak beginning with Class 44-A. Maximum effort was directed for all stations. Tent cities, field kitchens, and ditch latrines were ordered and utilized. The peak of the cadet program was reached in the fall of 1943. The 102,000 quota had to be scrapped in late 1943, for the classification centers could neither house nor mess the large numbers of cadets. However, a figure of 93,600 was maintained. Further broken down, there were over 11,000 four-engine pilots, 50,000 twin-engine pilots, and approximately 32,000 single-engine pilots, the remainder being divided between glider pilots and Allied students in training.

Availability of training aircraft was also a problem. Under this program the following aircraft were needed:

	Basic Trainers	Adv'd Single-Engine	Twin-Engine	Four-Engine
West Coast	1786	556	1312	160
Gulf Coast	3226	930	2019	53
Southeast	1580	817	1632	159

This output was designed to produce a 273-group Air Corps.

We were able to reduce our pilot training

rates by late 1943, confident of the eventual defeat of Germany and Japan. This was due to reduced combat attrition rates and the quantities being produced by our training program. The downward swing started with Class 44-G (85,000 output), and by Class 44-I output was down to 60,000.

At the close of hostilities, in September 1945, cadet training came to a standstill; many primary and basic flying bases were shut down. It was not until 1948 that aviation cadet training again began in earnest but at the modest rate of 5000 pilots per year. We were then in the jet age. The cadet received his primary training in aircraft which his older brother of World War II had used as advanced trainers. He rapidly progressed into a jet training version of the P-80 Lockheed Shooting Star if he was lucky enough to enter advanced single-engine training. Eventually all pilot training was conducted in jet aircraft.

With the start of the war in Korea our flying training quotas again began to rise but with a difference: instead of aviation cadets, more and more commissioned officers entered training. Although the flying training was similar, these men were not cadets; they had received their Air Force commissions through the AFROTC program. Since the Korean War the percentage of ROTC graduates entering pilot and navigator training increased until in 1961 aviation cadet pilot training was discontinued. Now with the graduation of UNT Class 65-15, all aviation cadet training has ended.

WHAT DID it mean to be an aviation cadet? First and foremost it was a challenge, but more than that it was a way of life and a pattern to follow in later life; it developed self-confidence, a confidence which came through achievement.

Very few people ever come face to face with such a clear-cut challenge. For each cadet the goal was there, as were the obstacles. For the most part it was our first time away from home. We had to rely on our own ability; there were no doting parents or influential friends to help us over the rough spots. Many of my classmates, myself included, had never been inside an aircraft before becoming a cadet, but courage doesn't come from merely enlisting. As we progressed in our training, now and again a cadet would drop out—his records would read: "Fear of flying." We all had our bad days, and the "burp bag" was never far away on those early flights. But being cadets and imbued with the spirit of cadet life, we proved it took more than a bumpy ride to discourage us. Perhaps it was our youth, but now the challenges in our life are not so clear-cut: We may procrastinate, rationalize, and solve problems through "group effort." In those days we were on our own.

Cadet life was strenuous, a life which few relish as a cadet. We lived by an Honor Code, and lest anyone forget, the Code does work. The vast majority of the cadets who lived by the Code are better men as the result of withstanding the temptations. I can recall early in my cadet days telling the other members of my flight exactly where I stood: I don't intend to cheat, and I would not hesitate to turn in any cadet who did cheat. Saying this might have set me up as an oddball in some places, but not in a group where all lived by the Code and were responsible for administering it.

If there was one thing I could willingly forget about cadet life, it would be daily inspection. Andy Griffith exaggerated very little when he had the toilet seats snapping to attention in "No Time for Sergeants." Few housewives could meet the rigid standards imposed on cadets in their personal dress and the neatness of their room. All buttons had to be buttoned, beds made with such precision and tightness that a quarter would bounce back if dropped on it, floors waxed until they were spotless; and in the bathroom (latrine), woe to the man who allowed a drop of water to remain in the sink or shower. To this day garters are as much a part of my dress as socks or shoes (a carry-over from cadet days). Life was military to the extreme but, as many have found, an excellent foundation for later life.

Cadet life bred confidence, not the cocky confidence of a show-off but the self-assurance of a man who knows his job, has faced and overcome dangers, and has gained the poise which comes from achievement. We first started to show the confidence in our flying, but all of cadet life was designed to make us "tigers." Soon this confidence seeped into other areas of our life. I can recall vividly diving from a 30-foot-high tower into the local swimming pool. Not being a diving enthusiast or a particularly good swimmer, I felt the moment I dived off that tower there was nothing I couldn't do. We all felt we were a little better than the average man. In cadet training we started early gaining confidence. "Verbatims" kept us alert. As fourthclassmen we had to march ourselves about the cadet area with loud, clear oral commands, and many was the time a cadet marched himself into a blank wall by his failure to execute the proper command. Serving as a cadet student officer further developed our confidence.

Cadet life was certainly rewarding. I often feel I received much more from it than I gave to it. Most graduates hate to see the aviation cadet program go because of the heroic position it holds in American history. But go it must. As one cadet said, "I wouldn't take anything for my cadet training, but by the same token you could never get me to go through it again."

Headquarters Air University

Books and Ideas

ARON ON NUCLEAR STRATEGY

HERMAN S. WOLK

PHILOSOPHER, historian, and sociologist, Raymond Aron has long been one of Europe's most perceptive observers of international affairs. But even more so, this witty and discerning Frenchman has been an apt student of the human condition. Indeed it is the wide range of his intellect and his gifted pen that make *The Great Debate* of more than ordinary interest.*

Unlike so many recent tracts on nuclear strategy and disarmament, Aron's book is well written and replete with sharp insights and the traditional trademark of the historian-philosopher: irony. The author observes that whereas once military strategy was almost totally the province of the soldier, today it is no less the forum of both physical and social scientists. And, in sum (with perhaps some notable exceptions), this development has been a beneficent one. *The Great Debate* stands as but one excellent example of the rewards that may be gained from having a philosopher-historian put his mind to the problems of war and peace in the thermonuclear age.

While this is clearly a general book for the layman and nonspecialist, one must hasten to add that those conversant with military-political affairs would also do well to become acquainted with it. Lucid and cogent, *The Great Debate* is a major contribution to the massive literature of the great deterrent dialogue.

There are several major theses running concurrently through Aron's book. None, however, is more important or timely than his admonition—which he expresses in one way or another throughout the work—that it is high time that we came to grips with the nuclear era instead of running away from it. Nuclear weapons, he says, are still the object of mystery and horror. Their destructive power is awesome and, indeed, unimaginable.

Yet, barring a miraculous transformation in world affairs, we must learn to live with them. In fact, according to Aron, one of the salient paradoxes of the age we live in is that the nonuse of thermonuclear weapons militarily is inseparable from their constant diplomatic use. Thus, "for a nation to be able to avoid using them, it must make other nations believe that it will do so in certain circumstances." (pp. vi-vii)

As a European and one who has enjoyed the blessings of Western democracy and the free world, Aron is naturally preoccupied with the future of

*Raymond Aron, *The Great Debate: Theories of Nuclear Strategy*. Translated by Ernst Pawel. (Garden City, New York: Doubleday, 1965, $4.95), 265 pp.

the Atlantic Alliance. His analysis of the wracking political-military problems besetting the alliance is distinguished by a rare objectivity. Although he takes dead aim at the oversimplifications and contradictions inherent in General Gallois's defense of the De Gaulle nuclear policy, he is quick to point out that De Gaulle's policy is primarily political and psychological rather than overtly military.

General de Gaulle has already clearly demonstrated the essential political leverage to be gained from the possession of a nuclear capability. Significantly, he has shown that because of his stubbornness in driving ahead along the nuclear road France has been able to exert political pressure far out of proportion to her presently small nuclear ability.

Aron does not place a great deal of weight on the *military* credibility of the *force de frappe*—either now or in the future. But he does respect its psychological impact. And as far as France's failure to sign the limited nuclear test ban treaty is concerned, he notes that the United States was not overly concerned about contamination of the atmosphere during the days when the U.S. was testing and developing its nuclear arsenal:

> I am not in favor of the dissemination of atomic weapons as such; but I am struck by the fact that Americans, even the least given to hypocrisy, do not feel bothered by the interpretation to which their attitude lends itself in the eyes of everyone else. (p. 237)

On the other hand, the author finds the so-called McNamara doctrine "moderate and comprehensive." It possesses many of the concepts held by leading American defense planners and theoreticians including nonproliferation, graduated or flexible response, and the abhorrence of escalation. As Aron puts it: "Thus far the dominant influence in Secretary McNamara's circle has been exerted by the scientists, eager above all to slow the arms race and to prevent the spread of nuclear weapons." (p. 65)

Aron sees little to commend the multilateral nuclear force (MLF) either militarily or politically. He feels that the mixed-manned force is a military monstrosity (primarily a countercity force) and at the same time does little to assuage deep political problems. The MLF fails to counter the European strategic and political objections.

But where, then, does the solution to the deterioration of the Atlantic Alliance lie? A viable joint strategy between the U.S. and Europe, according to the author, will not evolve until two basic conditions are met. First, the American strategic doctrine of flexible response must be accepted by the Europeans. Second, the United States must forego its obsession with escalation and "eventually make concessions to their allies' frame of mind" while attempting to see the European point of view. Needless to say, neither of these conditions has as yet been met.

What of the future? Nations cannot do without alliances, and neither can they rely completely on them. Thus, although the Atlantic community cannot agree on a joint strategy, this does not necessarily mean the dissolution of the alliance. In the absence of agreement, a less cohesive alliance may result—indeed is now evolving—or a European deterrent may eventually somehow mesh with the overwhelming American nuclear power.

Strategy, of course, is inseparable from the means available to carry it out. With the phasing out of the B-47, the onrushing obsolescence of the B-52, and the phasing out of the first-generation Atlas and Titan I missiles, Aron concludes that the U.S. will in the future count primarily on the Minuteman-Polaris combination. Thus he sees a trend away from counterforce strategy toward a doctrine emphasizing minimum deterrence.

Because the technological revolution cannot be stopped, Aron predicts that the arms race will continue, although at a slower pace. He is not greatly alarmed over the so-called "Nth country" problem except perhaps in the Middle East, where Arab-Israeli enmity is a fact of life. While many nations possess the resources to develop a nuclear capability, they must also have the *will* to embark upon the very expensive business of building some kind of deterrent. And this presupposes the desire to commit a vast outlay for a strategic delivery force. Red China, despite her explosion of an atomic device, faces tremendous domestic difficulties and has a long way to go before she has a credible delivery ability.*

As far as the foreseeable future is concerned,

*Aron comments: "... I am rather inclined to believe that the countries of Latin America, Africa and Asia will find it in their hearts to forgive China what they cannot forgive France and that Peking will be hailed for the same technical feat that makes France a criminal." (p. 241)

the United States and the Soviet Union will remain as the two nuclear giants. And while the search for newer, more improved arms will continue, arms-control measures will be pursued concomitantly. Too, despite the Soviet-American *rapprochement*, the aims and philosophies of the Big Two will remain divergent. Wisely, Aron declares that "the men in the Kremlin cannot forswear their faith in world revolution without revealing themselves as revisionists, thus proving Mao's point." (p. 252)

Aron's philosophical and historical roots are too deep for him to be persuaded that today's détente amounts to a prelude of the millenium. He is well aware that free men everywhere will answer grave challenges in the future. The West must of necessity remain technologically dynamic. But technology and hardware will remain only one side of the coin. Strategic nuclear deterrence is only partly a matter of weapon systems; it also has its psychological and political framework. Deterrence, Aron reminds us, "is essentially a test of will power, an exchange of alternate threats and messages, or rather of threats bearing messages and messages pregnant with threats." (p. 223)

Obviously, Raymond Aron sees no immediate end to global tension. The history of the post-World War II period remains highly relevant to the present situation. The danger is that we may be mesmerized by one twist or turn of the Soviet tactics machine and thereby lose sight of the essential continuity of Soviet ideology and objectives. Today's world forces upon us the necessity of patience—but not a self-enforced patience which will free us from our global responsibilities; not patience to forget our allies and friends; not the kind of creeping inaction that freezes our technological and international political arteries; not the kind of patience which will somehow not demand of us future risks; and not the sort of patience that merely enables us to sit back and relax, awaiting, as it were, the utopian paradise.

The enemies of freedom are betting that the United States—which bars their road to empire—will simply lose interest in the long run. They are counting on our being afflicted with hardening of the arteries. They see us tiring of the cold war, of the "long twilight struggle." It may be helpful, now and then, to be reminded that life does not solely revolve around cold war and ideology; but ignorance, disinterest, and wishful thinking have never served the interests of free men. I am suggesting that, even more than scientific know-how and streamlined, efficient production lines, the cause of democratic society will today and tomorrow best be served by dedication blended with that most elusive and difficult quality of perseverance.

One does not read Aron's book without coming away with the impression that, happily, he realizes that often when things seem darkest, the light is just around the corner; and conversely, sometimes when we are rolling blithely along, the wolves wait in ambush. The lesson has always been clear. Confidence and a sure, steady hand at the helm remain prime requisites if there is to be a future worth waiting for.

It follows, then, that complete understanding between the cold war combatants is "neither possible nor, perhaps, even desirable." Why?

> Because beyond a certain point the use of thermonuclear arms can never seem wholly rational if both sides are vulnerable, even if not equally so. It is almost impossible to imagine what a war fought with all available weapons would be like without coming to the conclusion that only a madman could possibly unleash it. Therefore it has sometimes been considered preferable to act the madman in order to be taken seriously rather than pretend wisdom in a madman's game—a depressing thought, even if it does contain a grain of truth, and deadly in its implications for mankind as a whole. The Big Two have succeeded in minimizing the dangers of the thermonuclear age precisely because they have never abused this logic of insanity. (pp. 224-225)

Thus the world remains in the grip of paradox. One inevitably finds it preferable to struggle with the imperfections, complexities, and ironies of human affairs than to surrender to some all-inclusive tyranny of so-called perfection or utopia.

It would seem that today the beginning of wisdom becomes the acceptance of thermonuclear weapons as, regrettably, an inherent part of the world landscape. Perhaps the ultimate paradox is that the coming to grips with these weapons psychologically, politically, and militarily forms an essential precondition for successfully relegating them to the graveyard of history.

Omaha, Nebraska

The Contributors

MAJOR GENERAL JOHN C. MEYER (B.A., Dartmouth College) is Commander, Twelfth Air Force (TAC), Waco, Texas. After two years at Dartmouth he enlisted in the aviation cadet program and was commissioned in July 1940. He served as a flying instructor at Randolph and Gunter Fields and as a fighter pilot at Mitchel Field and in Iceland until January 1943, when he organized and activated the 487th Fighter Squadron at Westover Field, Massachusetts. The following July he took his squadron to Europe as part of the 352d Fighter Group, Eighth Air Force. In November 1944 he became Deputy Commander, 352d Fighter Group, and also flew under command of the Ninth Tactical Air Force. He returned to the United States in February 1945 as the top-ranking ace of the Eighth Air Force with 37½ enemy aircraft destroyed, including 24 air kills. From 1945 until 1948 he held various staff and command assignments and completed his degree at Dartmouth. Subsequent assignments have been in the Office of the Secretary of the Air Force as Liaison Officer with the U.S. House of Representatives, 1949-50; Commander, 4th Fighter Wing, Newcastle, Delaware, 1950, Deputy Commander, 4th Fighter Wing, Korea, 1950-51 (where he destroyed two more enemy aircraft); Deputy Commander, 101st Fighter Interceptor Wing, Larson AFB, Washington, 1951-53; Director of Operations and Training, Headquarters Continental Air Command, Ent AFB, Colorado, to 1955; student, Air War College, 1956, then as a member of the faculty and later Director of Studies in Future Military Strategy, to 1959; Commander, 57th Air Division, Westover AFB, to 1961; Commander, 45th Air Division, Loring AFB, Maine, to 1962; and Deputy Director of Plans for the Strategic Air Command and CINCSAC Representative to the Joint Strategic Target Planning Staff, to November 1963, when he assumed his present command.

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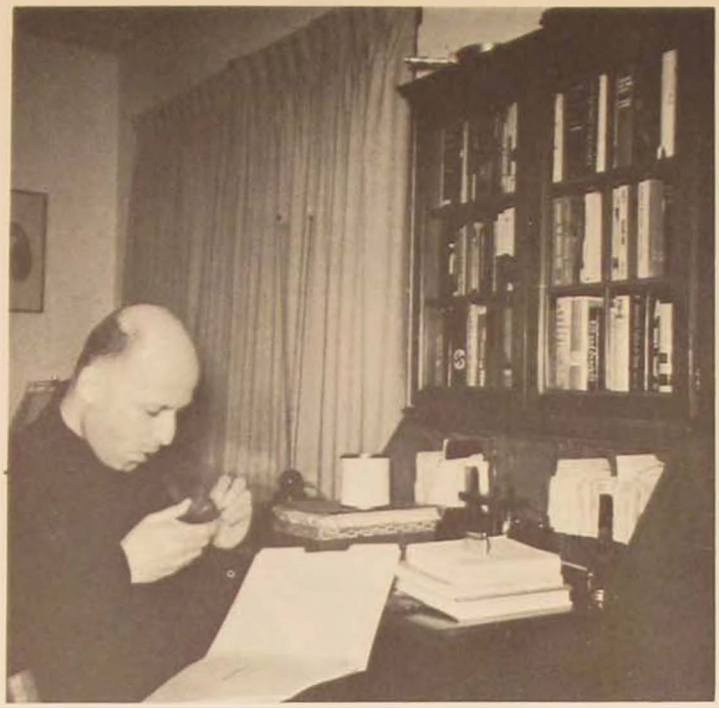
MAJOR GILBERT M. BILLINGS, JR. (B.S., Wake Forest College) is Chief, Public Information Division, Office of Information, Hq Fifth Air Force, PACAF, Japan. During World War II he was a pilot with the 1st Troop Carrier Command. He was assigned as Public Relations Officer, Laurinburg-Maxton AAB, North Carolina, in 1945 and served in the same capacity with USAAF-RCAF Exercise Musk-Ox in Northwest Territories and Arctic during the winter of 1946. After attending the U.S. Army Information School, he was PRO with the Air Exhibition Team, Langley Field, 1947. He has served in information assignments with the 137th Fighter Bomber Wing, Alexandria, Louisiana; with the Northern Air Materiel Area, Burtonwood, England; with Task Group 7.1, Joint Task Force SEVEN, Los Alamos Scientific Laboratory, New Mexico; with nuclear tests REDWING '56 and HARDTACK '58 and at the Nevada Test Site; with the 6594th Test Wing (Satellite), Sunnyvale, California; and in his present assignment since 1961. Major Billings is a 1961 graduate of the Air Command and Staff College and author of numerous articles on USAF subjects.



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ATTENTION

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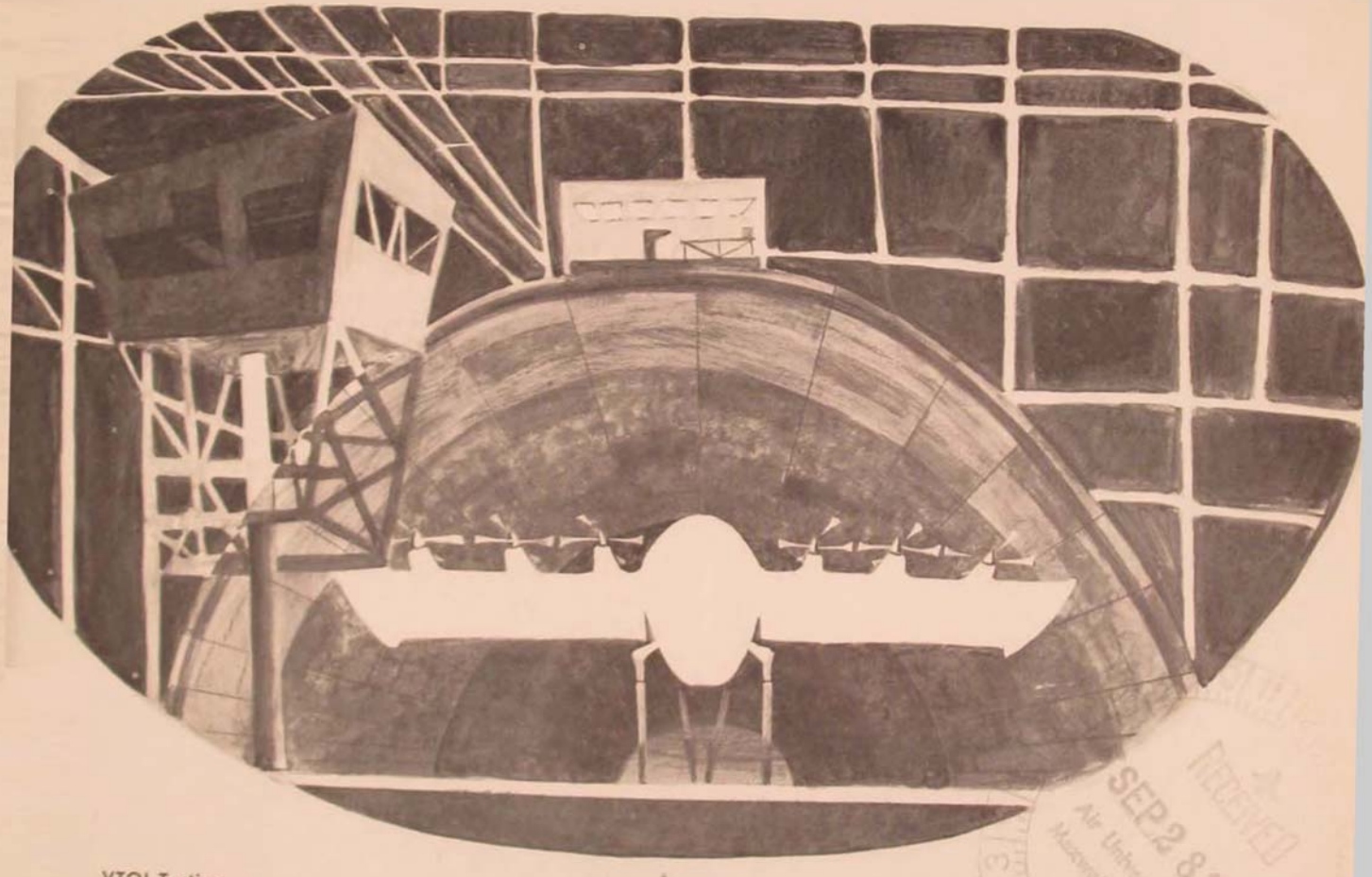

VTOL Testing

THE MILITARY PROFESSION, A COMPETITIVE ENVIRONMENT...
VTOL FLIGHT-TEST CHALLENGE...COMMUNICATIONS SATELLITES

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