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THE IDENTIFICATION PROBLEM IN THE AIR DEFENSE OF THE UNITED STATES 1946 - 1954

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DIRECTORATE OF HISTORICAL SERVICES
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FOREWORD

No subject in the vast and varied effort of air defense reveals better the truly national character of that effort than does identification. It is the purpose of the present study to depict the magnitude of the task of identifying air traffic in peace and in war by tracing the evolution of the problem in its historical manifestations. No attempt has been made to present value judgments on the merits of any proposal or to draw conclusions which have not been supported by official documentation. The objective has been to gather the record together into an historical narrative.

Though an attempt has been made to cover the salient points in the story of the identification effort, the author realizes full well the shortcomings of the present study in the coverage of that story. Especially in the vital area of the continuous efforts which have been made to extend the system and improve its operation is this study deficient. It is hoped that this deficiency will be remedied in future historical studies of this directorate.

The author owes a great debt to many persons in the Headquarters of the Air Defense Command for their unstinting help in answering questions and in providing documentation. In this respect, special acknowledgment is made of the aid of Dr. Richard H. Jordan of the Office of Operations Analysis, Mr. Jack V. Tighe, CAA Liaison Officer at the Air Defense Command, and Captain Louis W. La Salle of the

Directorate of Operations and Training. Perhaps the greatest debt of all, however, is due to the historians of the ADC Air Defense Forces. Their penetrating analyses of the problems encountered by their commands in the identification effort, have provided the author with splendid guides with which to chart a path through the complexities of the subject. In spite of the many sources of information which have been made available to him by others, the author takes full responsibility for any errors in conception or in fact.

DENYS VOLAN
Directorate of Historical Services

Hq Air Defense Command
Colorado Springs
30 June 1954

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CHAPTER ONE

IDENTIFICATION IN WORLD WAR II

The Second World War was a proving ground for many of the methods which were to be used in the post-war years for the identification of aircraft.[1] Immediately after the Japanese attack on Pearl Harbor, two Air Defense Zones were established along the Atlantic and Pacific seaboards, extending 150 miles inland and 200 miles out to sea. Within these regions, where the active air defense efforts during the war years were concentrated, restrictions were imposed on both civilian and military air traffic. All unnecessary air traffic within the zones was prohibited. No civilian or military pilot was to fly farther than ten miles from his starting point without filing a flight plan at the nearest Information Center where such information was coordinated for air defense use. More restrictive conditions were imposed in the New York - Washington area, which was designated as the "Vital Air Defense Area," even though it was part of the Eastern Defense Zone. In this "Vital Defense Area," all civil flying training and all basic military flying training were absolutely prohibited. No non-essential civil or military traffic was allowed, and all essential traffic was required to file flight plans at the Information Centers. During alerts or air raid warnings, all flying other than that of air defense interceptors was prohibited.

From early 1942 to the fall of 1943, the active period in

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continental air defense, identification of aircraft was achieved in four ways: 1) by the correlation of flight plans with "blips" observed on the radar scopes; 2) by the use of electronic identification devices such as the Mark II and Mark III IFF (Identification Friend or Foe) equipment; 3) through visual identification of aircraft by interceptor pilots; and 4) by visual recognition of aircraft by ground observers.

The most important single method used during the war years to identify air traffic was the correlation of flight plans. In the Information Centers, which served as the central plotting agencies for the radar stations of the Aircraft Warning Service and for the Ground Observer Corps, liaison officials were stationed, representing such agencies as the Navy and the Civil Aeronautics Administration (CAA). These officials were provided with advanced information on the flight plans of aircraft belonging to their agencies or coordinated by them, and it was their duty to identify these flights from among the aircraft plots displayed on the plotting boards. This technique was quite inadequate, however. Not only were there numerous errors in the transmission of flight information before the plots reached the Information Centers, but the liaison agencies themselves frequently were misinformed or withheld information as to their own flight activities. The Navy, for example, refused to

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* Beginning in the fall of 1943, the air defenses of the United States underwent progressive demobilization. The reason for this was the remote threat of an enemy air attack at this time. After the fall of 1943, regulations restricting air traffic were almost entirely withdrawn.

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transmit information on secret flights over the coastal waters, while pilots of civil traffic often veered from their prescribed courses without informing the CAA.

Congestion of air traffic was another serious problem. For example, the New York Information Center, in June 1943, received eleven thousand calls reporting aircraft in flight, of which only sixty-five per cent could be identified by liaison officials. The problem presented in the Los Angeles area, where during the following month more than 114,000 training flights were reported, was even more serious.

Another technique used in the war years was identification by electronic means. The British Mark II IFF device was adopted by the United States Army Signal Corps in August 1941, and remained in use until 1943, when it was supplanted by the American Mark III IFF. Most military aircraft performing their functions in the two coastal zones were equipped with either of these devices. Aircraft which were not equipped with IFF were required to perform a prescribed maneuver when entering the land areas of the United States from seawards. However, IFF proved to be no great boon to identification. The equipment indicated only that the aircraft flashing the signal was friendly. It did not identify the agency to which the aircraft belonged, thus making it difficult to separate its plot from the dense neighboring traffic. Furthermore, pilots were often careless about the use of the equipment. A test performed in the Western Defense Zone in April 1944 revealed that eighty per cent of the pilots failed to use their IFF at all.

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Where neither IFF nor flight plan correlation was sufficient to identify an aircraft in flight, it lay within the GCI controller's discretion to dispatch an interceptor to make visual identification by interception. The number of "unknown" aircraft, however, was so great that it was virtually impossible to intercept them all. Furthermore, interception at night and during inclement weather was rendered doubly difficult by the absence of radar-equipped all-weather interceptors. As for the Ground Observers, their value was unpredictable in that considerable skill was required for them to identify accurately the many types of aircraft in flight. Some of these volunteer civilians performed yeoman work in this respect, but others were sadly deficient in the required knowledge.

The experiences of World War II were to be repeated in great part in the years immediately following the end of the war. The lack of any important alternatives to the wartime techniques of flight-plan correlation, interception, IFF and the GOC forced post-war agencies concerned with identification to continue their use.

The importance of World War II to post-war identification methods was very real, however. The inadequacy of the techniques employed during the war years conditioned many post-war officials to the need for better procedures. Also, many, if not all, of the obstacles to inter-service and inter-agency coordination had been overcome, and there was a noticeable growth of confidence in the ability of the nation to exercise a concerted effort in the vitally important function of identification.

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CHAPTER TWO

THE REVIVAL OF THE PROBLEM

I

With the end of the war, the air defenses of the country passed almost entirely out of existence. Although an Air Defense Command was created by the War Department in the spring of 1946, it was not until 1948 that a tangible measure of capability was provided to this organization.* In this interim period only token resources were set aside specifically for air defense, and the nation was forced to rely upon a latent potential in the form of augmentation forces which were to come to the rescue after an initial enemy attack.[1] Although ADC planned busily during this interim period to provide an air defense for the future, the problem of identification was not a pressing one compared to the critical need for more adequate radar and fighter resources. Furthermore, the "state of the art" so far as identification was concerned, offered ADC little to plan with, except by the revival of those

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* There have been three Air Defense Commands. The first lasted from February 1940 to July 1941, and was primarily a study group assigned to the First Army. Its most important contribution to air defense was to study the Battle of Britain, and to prepare the first formulation of air defense doctrine. The second ADC was created in March 1946 and was abolished in July 1950. For some time before its abolition, however, this second ADC served as an operational headquarters under the Continental Air Command, from December 1948 to July 1950. The third ADC was created in January 1951 and is still in existence. In air defense planning three organizations, charged with the air defense mission, present un unbroken continuity in carrying out that function. They are: ADC (1946-48); Continental Air Command (ConAC) (1948-50); and ADC (1951--). This paper attempts to present the story of the development of a function performed under each of these commands in sequence. The reader is cautioned to bear the command sequence in mind.

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techniques used so recently in World War II. Practically no measures were immediately contemplated which went beyond those employed in the late war.

During 1948, the attitude of lethargy which had characterized air defense activities in the preceding two years changed to one of feverish haste. In the spring of 1948 national anxiety over the worsening relations with the USSR reached the point where it was decided by Headquarters USAF to begin a piecemeal implementation of an active air defense once again. Radar equipment was removed from storage and deployed in the Pacific Northwest area near Seattle and Hanford.[2] A fighter group of day-type interceptors belonging to the Strategic Air Command was dispatched there to help the token AC&W system. The sudden decision to implement a local air defense system in the Northwest, however, caught both USAF and ADC unprepared in the matter of identification. No arrangements had been made with flight agencies such as the CAA and the Navy in that area to provide the air defense system with flight-plan information. Thus, there were no means whereby friendly aircraft could be distinguished from hostiles.[3] The inevitable result was that, from the standpoint of operational effectiveness, the emergency measures were an unmitigated fiasco, though valuable lessons were gained.

The time was now obviously at hand for constructive thinking on the subject of reinstalling an identification procedure, without which other air defense measures would be ineffective. Consequently, ADC embarked on planning for air traffic control measures for both peacetime and for wartime conditions.

Peacetime control of air traffic had to be reconstructed from scratch. The Information Centers of World War II were gone, as was

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the GOC. The radar net which was called into existence during the Northwest maneuver of the spring of 1948 and retained there after the exercise was over, was a pitifully small undertaking in relation to the job that had to be done there, and in consequence, planning for identification had to be adjusted to this small military potential.

Soon after the Northwest maneuver, a similar radar network was established in the New York - Washington area. To provide these air defense systems with an identification capability, arrangements were made with the CAA to provide both token radar nets with pre-plot data on aircraft approaching the United States from over-water areas. Initial attempts were also made to establish standard operating procedures for the use of this information. On 30 June 1948, ADC published its first SOP on the subject of identification.[4] The dilemma of the Command was expressed in this document as follows:

> The only known immediately available solution to the identification problem lies in the cumbersome but workable system wherein position and course information on all friendly aircraft in flight is pre-plotted and compared visually with radar plots that appear on the operations boards in the air defense control centers and air direction centers.... Reliance cannot be placed on electronic means of identification, such as Mark III equipment, as present equipment has been compromised and no intelligent enemy would overlook use of this equipment in executing an attack. Interim military use of Mark III IFF equipment will be continued as an aid in identification only until other practical means of electronic identification become available.

Though "cumbersome", the pre-plot method was "workable". In any event there was no alternative. Procedures were spelled out for the operating units in the SOP, but ADC was not optimistic about the immediate implementation of the new system of identification. For

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one thing, the surveillance capability of the radar net was not great enough to allow the pre-plotting of all traffic in the highly-congested areas of the New York - Washington and Seattle - Hanford districts. First Air Force, for example, operating the radar net in the New York area, was advised to plot only information relating to over-water flights heading inland, up to two hundred miles to seaward, "until such time as you achieve reasonably effective surveillance [over land areas]."[5]

On 2 September 1948, ADC directed its operating units to set in motion the procedures described in the above-mentioned SOP. At this time, two "active" air defense areas were designated by ADC: the Seattle - Hanford area, and the New York - Washington area. In these areas, only flights which were detected over the ocean were to be identified, if the flights came within the airspace covered by the existing radars.[6] Identification in other areas was not to be undertaken until further specific instructions from ADC were forthcoming. Under existing procedures, all over-water flights, military and civil alike, were to be plotted by the CAA in accordance with its regulations governing Instrument Flight Rules (IFR) for such flights. This information was to be passed to the air defense system. The First and Fourth Air Forces, which were to be responsible for implementing the identification plan, were authorized informal and direct liaison with the regional CAA authorities, but ADC indicated that it would not be necessary "at this time" to require a CAA liaison representative to be assigned for duty at the Air Defense Control

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Centers (ADCC). Planning on a higher level with the CAA was to be accomplished by ADC Headquarters itself.

Lest the Air Forces misinterpret the extent of their authority, however, ADC made it plain that,[7]

> It must be understood that this command has no authority at this time to regulate or otherwise control air traffic (other than aircraft under our command jurisdiction). It is intended, however, to undertake a reasonable identification of aircraft in limited areas only as this time so as to gain valuable operating experience in this direction.

As a result of these directives of September 1948, therefore, the first active identification measures in the post-war period were taken.* In effect, though not legally, two identification zones extending as far as radar coverage to seaward and along the shores had been created in the Pacific Northwest, and in the New York - Washington area. These identification barriers, however, were limited in that they served only to identify air traffic approaching the United States from the ocean.

The subsequent experience of the Fourth Air Force in the Seattle region, in implementing ADC's directives during the last three months of 1948, was not encouraging. Identification over the Washington surveillance area was reported as only 11.1 per cent effective.[8] It was apparent that a new page in the history of identification was not to be written so easily.

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* On 30 January 1948, Presidential Executive Order No. 9925 had established prohibited areas over Hanford and Los Alamos, and was later amended to include Oak Ridge. The air defense system was not operationally concerned with these prohibitions during 1948 and most of 1949 because the resources to effect interception of violators were lacking.

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II

While ADC Headquarters was making arrangements for the installation of air traffic control measures in the two areas mentioned, it was also engaged in planning for controls to be enforced when the enemy actually threatened or struck. In April 1948, Lieutenant General George E. Stratemeyer, ADC's commander, suggested to Headquarters USAF that the latter "make arrangements with the CAA whereby ADC can, in conjunction with appropriate local CAA representatives, prepare workable plans for the control of civil air traffic in the event of emergency."[9] USAF's reaction was favorable.[10]

ADC cautioned Headquarters USAF that the undertaking would be a difficult one, and that it would require the most meticulous coordination between the Air Force and the CAA, and recommended that the CAA, the Federal Communications Commission (FCC), the Chief of Naval Operations (CNO), the Chief of Staff of the Army, and the Commandant of the Coast Guard designate representatives to work "jointly and continuously with representatives of USAF" in the planning.[11]

ADC was duly appointed the pertinent USAF agency to participate in the negotiations. However, USAF noted that at this stage it would be wiser to restrict preliminary negotiations to ADC and the CAA before calling in the other agencies. Technical coodination, defined as "surveys of facilities, operating plans in the event of an emergency, and subordination and integration of plans and facilities to air defense requirements," was to be the special province of the two agencies in

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their discussions.[12] In the more sensitive areas of the assumption of authority by the Air Force in an emergency, and the status of CAA personnel under such authority, Headquarters USAF chose to retain control directly over the course of the negotiations with the Administrator of Civil Aeronautics.*

By July 1948 negotiations between the CAA and ADC had resulted in a "Plan for the Control of Civil Air Traffic in an Emergency."[13] The plan was to become effective automatically upon the declaration of a state of emergency by "competent" governmental authority, or by the commission of an overt act against the security of the United States by a foreign power. As to the actual controlling agency which would put the emergency measures into effect, the plan stated that,[14]

> Sound principles of organization for emergency operations indicate the need for vesting responsibility for the direction of the control of air traffic in that agency having primary interest. Under the current organizational structure of the armed forces and in consideration of assigned missions, the indicated agency is the Air Defense Command.

However, emergency actions were not to be unilateral. The actual orders to control air traffic under these conditions were to be given by the CAA. "This procedure best assures full utilization of the existing manpower, facilities and experience level of the CAA in support of the air defense program of ADC."[15] Thus, the basis was laid for a partnership between the Air Force and the CAA in emergency control measures.

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* In initial talks, the CAA had expressed willingness to agree to the USAF proposal that the latter assume control over the CAA in an emergency arising before the legal aspects of the matter could be settled.

The problem of the areas in which emergency controls were to be established was approached cautiously.[16] The plan went on to state that,

> Since the forces of ADC are not yet completely organized for air defense activities, the establishment of liaison channels and procedures prescribed herein must be undertaken progressively. As ADC control areas and centers are organized, appropriate action will be taken by ADC to so inform the CAA and request establishment of the necessary liaison and control activities.

Further, ADC was not to exclude within its control areas all non-essential air traffic in its entirety.[17]

> ADC control areas, or defined segments of these control areas may, when military necessity so dictates, be classified as "Prohibited", "Restricted", or "Danger" areas by responsible ADC commanders.

In the "Prohibited" areas all categories of civil air traffic were to be prohibited. In the "Restricted" areas, civil traffic was to be limited to certain categories of aircraft. The "Danger" areas were envisioned as scenes of extensive air defense activities which flights of civil aircraft were to avoid whenever possible.

Under normal circumstances, directions for the control of civil air traffic were to originate with the Commanding General of ADC, or at a higher echelon of command. Instructions to accomplish the desired controls would be passed by the ADC commander to the ADC controllers. The controllers would then issue the necessary instructions to CAA liaison officers stationed at ADC control centers, who in turn would inform the CAA Air Route Traffic Control Centers (ARTCC's).[18]

The joint draft plan was submitted to Headquarters USAF in October 1948 and signed by the Chief of Staff in December.[19] It

was officially published on 1 April 1949.[20] During the discussions leading up to the formulation of the plan, the question of the control of navigational aids had come up, but it had been decided that a subsequent and parallel plan would deal with this question. For the time being it was assumed that in areas where civil air flights were permitted, or were in progress, suitable navigational aids would remain operative.[21] This question of navigational aids was to remain a prime problem area in subsequent discussions on emergency controls. The reason for the importance of the question, of course, was that if navigational aids were permitted to reamin operational in an emergency, they would provide enemy aircraft with an excellent means of "homing" to their targets.

Simultaneously with the ADC-CAA plan for the control of civil air traffic in an emergency, ADC embarked upon a plan for the control of military air traffic under the same conditions. On 20 October 1948, a plan to this end was submitted to Headquarters USAF for approval.[22]

ADC recognized full well that in developing such a plan, and in requesting the authority to control flights of its sister commands and other services, it was in a delicate situation. Foreseeing the problems involved, ADC asked Headquarters USAF to see to it that the Joint Chiefs of Staff issued a directive to all departments of the Armed Forces and the Coast Guard to permit ADC to exercise the required control.[23] While awaiting an answer from USAF, ADC recognized that the necessary high level authority was contained in a document recently drafted with the aid of ADC representatives. This document was a proposed "Joint Doctrines and Procedures for the Air

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Defense of the United States" designed to be issued by the Joint Chiefs. This draft supplied the statements which ADC deemed necessary to the requirement to control military air traffic.[24]

> Special provisions for wartime control of non-combatant civil and military air traffic, in and approaching the United States, are required for the successful functioning of the aircraft warning and control system.

The document went on to state that the Commanding General of the Air Defense Command was responsible for the formulation of the "Plan for the Air Defense of the United States", which in turn was to contain therein "plans and procedures for the control of non-combatant military air traffic in wartime in the interests of air defense."[25] The plan which was mentioned herein was to involve the participation of all three services for the "effective integration of all available means into a common unified system for the air defense of the United States."[26]

Inasmuch as the joint doctrine, when issued by the JCS, would contain the necessary authority, ADC withdrew its request for a separate policy directive on the subject of emergency controls. Instead, ADC sent along with its proposal, a copy of the joint doctrine to be included as an integral part of the plan. The effect was not as ADC anticipated, however. The doctrinal statement upon which ADC depended was not approved by the JCS, although it remained a statement of the position of the Air Force on the subject of air defense doctrine.

Headquarters USAF could not approve of ADC's plan other than in principle.[27] The plan required the coordination and concurrence of the CNO, the Army Chief of Staff, the Commandant of the Coast Guard,

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the Commander of the Military Air Transport Service (MATS), and the Commander of the Strategic Air Command (SAC).* To smooth the path for such concurrence, USAF believed that it would be advisable to obtain the benefit of a field test of the plan. Air defense exercises which were scheduled to be held in the fall of 1949 would provide such a test and probably lead to revisions of the plan. However, "in the event of an emergency prior to resubmission," USAF noted, "this Headquarters will take action to secure the necessary concurrence in immediate implementation of the present plan."[28] For the time being, therefore, ADC had to resign itself to the fact that more time would elapse before positive action could be taken on its proposal to control military air traffic in an emergency.

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* Tactical Air Command (TAC), whose concurrence would normally have been sought also, was not included among these agencies because it had been placed under ConAC in December 1948.

CHAPTER THREE

THE BEGINNING OF ACTIVE AIR DEFENSE OPERATIONS

I

The period between the fall of 1948 and the outbreak of the Korean War in June 1950 witnessed an acceleration of tempo in all matters pertaining to the air defense of the United States. In the late months of 1948, USAF, anxious over the delay of Congress in approving plans for the construction of an elaborate and widespread AC&W network, determined to move forward on its own. Radar equipment which had been placed in storage after the war ended was now to be removed and deployed in important defensive positions in selected areas of the country.[1] This temporary radar program, known as "Lashup", was to be supplemented by whatever meager fighter resources ConAC possessed, in order to create an active air defense capability.

The areas selected to receive the World War II-type radars included the Seattle-Hanford area; the New York-Washington area; the San Francisco-Los Angeles area; and the Los Alamos area. Two of these areas, it will be recalled, were already provided with a token air defense system; in the latter two areas air defense systems would be established for the first time in the post-war era.

The deployment of the Lashup radars, forty-four in all, which included those erected during the "maneuver" in the Northwest and in the New York-Washington exercises which took place shortly thereafter, began early in 1949 and continued through the first half of

1950. By mid-1949 the Lashup defenses in the Northeast had progressed to the point where it was considered feasible to test the system in a large-scale exercise. In this test, known as Operation BLACKJACK, the ties between the CAA and EADF were tested.[2] Flight plan data was provided for IFR overwater flights in or near the defended area. Two systems of transmitting flight plan data were employed: in the area covered by the Boston ARTCC, data was passed directly to the radars selected to receive them; in the area covered by the New York ARTCC, plans were passed to the ADCC only. In the latter CAA installation, the data was plotted by ADC personnel and passed at the proper time to the radar stations concerned. It was determined that the Boston plan was the more satisfactory because it permitted direct communications between the ARTCC and the ADC radars. It was also discovered during the exercise that a more simplified set of procedures was needed for the smooth flow of information between the CAA and the air defense system.

Another large-scale test was held in the EADF area between 10 and 16 September 1949, called Operation LOOKOUT.[3] The test differed from the previous one in that all IFR flights and military VFR flights emanating from any direction rather than only from seaward were reported. This had the effect of overloading the communications circuits and overworking the personnel, but the system of sending flight plan data directly to the GCI stations which were selected to receive the data proved to be sound. Again, it was noted that training in communications procedures was needed.

In November, the Northwestern air defense network received its first large-scale test, dubbed Operation DRUMMERBOY.[4] Like the

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two previous EADF tests, DRUMMERBOY revealed the fact that the flight plan correlation method, though workable, was cumbersome. In the words of the commander of the 25th Air Division, "In my opinion the single item requiring attention and emphasis at this time is the strengthening of the processes for control and identification of aircraft."[5]

All three exercises held in 1949, in spite of the shortcomings revealed in the handling of CAA flight plan information, proved the practicability of the procedures in force for disseminating such information. What was now called for was a firm set of procedural rules, and a concerted effort to reduce the delays and errors in the handling of the data. By the end of 1949, also, the deployment of radars in the Los Alamos and California areas had progressed to the point where the introduction of CAA data service was feasible in those localities as well. To the major task of establishing a firm procedural policy and extending active identification operations into the new areas, ConAC and CAA set themselves.

II

In view of the fact that the major problem which immediately presented itself was to introduce identification procedures for the two new air defense areas, a conference was held between CAA and WADF representatives at Kirtland AFB in New Mexico in January 1950.[6] As a result of this meeting, a timetable was drawn up for the phasing-in of flight plan service to the WADF units. For the Los Angeles and San Francisco areas, it was decided to provide information only on inland-bound oceanic traffic. As to the Los Alamos area, a circle was set up of 125-miles radius centering on Albuquerque, and data was to be

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supplied by the CAA on air traffic entering the zone from any direction. In the case of the 25th Air Division area, which had hitherto been receiving data on inbound oceanic flights only, arrangements were made to provide service on flights entering the zone of radar coverage in the area from any direction. Operations in all cases were to begin immediately on a part-time basis and grow to 24-hour operations by August 1950, depending on the readiness of the divisions concerned. Actually, however, because of personnel difficulties experienced by the CAA, operations did not begin until late in March 1950.

In the northeastern area of the United States, which had received a considerable increase of Lashup facilities, the radar coverage was extended greatly. Although it was considered at an early stage of ConAC's thinking on the subject to establish a self-sufficient identification zone encompassing the entire area of radar coverage, this plan was soon abandoned in view of the tremendous difficulties presented by the congestion of air traffic in the vast area. Rather, ConAC settled on the idea that it would be more feasible to extend the coastal barrier from Bangor, Maine, to Norfolk, Virginia, and to identify all air flights heading inland from the sea, leaving the vast interior of the EADF area a "free flight" zone.[7] Arrangements were made to obtain flight plan data from the Oceanic ARTCC's in New York, Washington and Boston for the extended coastal zone, and to build operations up to a twenty-four hour peak by July 1950.[8]

The failure of negotiations by WADF to get the CAA to provide flight plan data on air traffic approaching San Francisco and Los

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Angeles from all directions, caused grave misgivings to ConAC. Protection from the sea in these areas was deemed to be less important than protection from the northern and eastern approaches. It was believed that an enemy attack would be more likely from across the Canadian border than from the Pacific area, and the open "back door" to California was observed with anxiety. A vigorous protest to USAF by Lieutenant General Ennis C. Whitehead, ConAC's commander, brought the reply that the CAA contemplated closing the "back door" eventually to airlines-type aircraft, leaving only smaller aircraft free to enter.[9] Actually, identification over the land area in the two California districts did not take place until legal regulations created identification zones there late in 1950. It is interesting to note that, although a similar "back door" was ajar in the EADF area, ConAC did not insist that it be closed immediately. Indeed, such a course of action was not practicable at that time. To limit the danger from the western and northern approaches to the EADF area, ConAC was obliged to concentrate eventually upon a northern boundary perimeter zone.*

III

The question of the most effective method of transmitting and utilizing flight plan information also came up for intensive consideration during the period of expanding identification operations in 1949 and 1950. It will be recalled that during the maneuvers of 1949, certain experiments were tried in the Northeast, featuring transmission

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* The EADF problem will be discussed in the chapter on Air Defense Identification Zones.

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of flight plan data from the ARTCC's to the GCI stations and to the ADCC's. It was the opinion of EADF that the transmission of data directly to the GCI stations from the ARTCC's was the most efficient method.

The question came up again early in 1950. In the 25th Air Division area during 1949 the air defense system had been receiving information from the ARTCC in its control center by phone. During rush periods, this procedure bogged down. Colonel Clinton D. Vincent, the 25th's commander, proposed that the CAA personnel who handled flight data be required to sit as liaison officials in the control center of the division on a full-time basis. Colonel Vincent realized, however, that this would not be the complete solution to the problem. "The agencies themsleves must cooperate to the extent that someone takes the time and effort to relay the required information to their liaison personnel here."[10]

At the Kirtland Air Force Base conference in January 1950, the matter of the most efficient method to channel information into the air defense system was discussed at length. The conclusion reached was that the CAA would provide a number of "security controllers" at its ARTCC's whose sole function would be to handle air defense flight plan data.[11] This information was to be transmitted to the "various ADCC's and GCI's". Though the 25th's commander was still of the opinion that the CAA personnel would be more useful at the control centers, the CAA viewpoint prevailed, and it was decided to test the new procedure for a period of months.

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By mid-1950 the defense forces and the CAA had established detailed procedures for the transmission and utilization of flight plan data from the "security controllers" at the ARTCC's to the air defense system. These procedures, though workable, were somewhat at variance between the two defense force regions.[12] For example, within the EADF system, the ARTCC's passed information via telephones to the GCI's only, while within the WADF system, the ARTCC's passed information to the GCI's and to the ADCC's. The media of transmission differed also. In the EADF area, the Military Flight Service Centers (MFSC) passed information via teletype to the ADCC's, while in WADF, the MFSC's used interphones to the control centers.*

These variances in procedure were not conducive to most efficient operations, and tended to confuse persons who were transferred from one defense region to another. Not only standardization, but simplification was urgently needed. To this end, ConAC suggested that some type of movement information section might profitably be established within the ARTCC's which would screen all sources of information and pass only the desired information into the AC&W system.[13] An alternate method would be to establish a movement section within the AC&W system

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* The role of the Military Flight Service (MFS) in providing flight plan information to the air defense system was extremely important. This USAF organization, which was commanded by the Military Air Transport Service (MATS), had a network of flight service centers throughout the country to monitor the flights of military aircraft. At an early date in identification operations, the MFS was prevailed upon to supply the air defense control centers with military flight plan data in regions where identification zones had been established.

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to perform the necessary screening. ConAC noted that under the existing system, information on civil air traffic movements was being passed to the AC&W system by the various CAA facilities as soon as the information was received by the CAA. Oftentimes this information was available as much as four or five hours in advance of the arrival of the aircraft at the point where it could be picked up on the radar scope. Some GCI stations preferred to have this information made available to them only a short period of time ahead of the arrival of the aircraft within the radar range.[14]

The Air Defense Forces were queried as to their opinions on these subjects and their recommendations were called to the attention of the Joint CAA-USAF Air Defense Planning Board, which met at Hamilton Air Force Base on 31 October 1950.* One of the conclusions reached by the Joint Board was that it would advantageous to establish and test two Air Movements Identification Sections (AMIS), one at Seattle and the other at Boston.[15] These sections, located in the ARTCC's, would assemble, screen, and disseminate pertinent data to the GCI stations. All flight plan information, civil and military, VFR and IFR, was to be filtered through these sections. Data in useable form and at a specified number of minutes prior to the estimated time of penetration of the aircraft would be transmitted from the AMIS's to the appropriate GCI stations. CAA agreed to this proposal, and suggested a trial

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* Because of the increasing complexity and frequency of USAF-CAA discussions on air defense matters, a Joint Board was created and chartered early in 1950 to sit permanently as the primary arbiter of matters affecting the two agencies.

period of six months. CAA noted, however, that though its personnel had the training and ability to perform the work required, nevertheless it could not completely finance the experiments. USAF undertood to provide the needed funds.[16]

IV

The progress made in extending identification facilities to the defense areas and in laying the groundwork for improved procedures was encouraging. Nevertheless, one all-important ingredient still lagged behind the progress of the others -- interception of aircraft which had been labeled "unknown." Now that the air defense system was rapidly taking shape both in the deployment of radars and in the acquisition of new fighters, ConAC took steps to insure that it got the authority to begin active interceptions.

It has been mentioned that in January 1948, an Executive Order had established prohibited areas over the atomic energy plants at Los Alamos, Hanford, and Oak Ridge.[17] The prohibition forbade all aircraft from flying over the airspace reservations except in the interests of national defense. In spite of this restriction, violations of the executive order were numerous. "Aircraft of all armed services, civilian air carriers, and private aircraft have flown over the airspace reservations in violation of the order," ConAC informed USAF.

Though ConAC had been given no specific authority to intercept aircraft over the atomic energy plants, the Command felt its responsibility keenly for taking such measures. On 29 November 1949, ConAC proposed to USAF that all aircraft flying over the prohibited airspaces be intercepted by ConAC fighters -- with their guns charged and loaded.[19]

USAF's answer expressed reservations at the drastic step advocated by ConAC. "This action is, in fact, a new step in our concept of the air defense of the United States during peacetime, and its acceptance by the public and its success will depend to a large degree upon the proper briefing of the individual pilot and upon the judgment he shows in carrying out his orders."[20] USAF also noted that ConAC's air defense resources in the areas mentioned were by no means impressive, and that such action at that time might be premature.[21]

> .....it is believed that the plan should not be implemented for an area until the forces and facilities available are adequate to provide an effective intercept team. Any system which does not meet minimum requirements will only result in loss of confidence by other agencies and probable embarrassment to the Air Force.

In spite of USAF's fears that ConAC's proposed commencement of active operations to identify aircraft by armed interceptors was premature, the logic of the proposal was insurmountable. The presidential prohibition was meaningless unless enforced. USAF agreed that positive action had to be taken, but informed ConAC that specific plans and procedures for the operation had to be submitted for USAF's close scrutiny before the proposal was implemented.[22]

ConAC's desire to begin active intercept operations to identify unknown aircraft was not limited to the prohibited airspaces. General Whitehead, the ConAC commander, well-realized the meagerness of the air defense resources at his disposal, but he made it clear to USAF that "we must establish an active defense system now, in being, regardless of the limitations of personnel and equipment."[23] It was proposed to USAF that immediate action be taken to begin active interceptions of

unidentified aircraft, in the Northeast and in the Northwest, which approached the continent by sea. It was estimated that in the northeastern sector, the number of interceptions per week would be between twelve and thirty. This "high" number was due primarily to "nonconformance to altitudes and reporting schedules, communications failures, and overdue ETS's."[24] The estimate of unidentified penetrating traffic in the coastal areas was by no means too high as ConAC was to discover shortly.

USAF's reaction to this ambitious proposal was similar to its opinion expressed previously in the matter of the prohibited areas. It agreed generally that full-scale defense measures were needed, but reiterated that such measures required careful study, and that positive action be withheld by ConAC until the public was warned of the impending steps to be taken by the Air Force.[25] Thus, to ConAC's two kindred proposals to begin interceptions in the prohibited areas (Hanford and Los Alamos) and in the coastal zones in the Northwest and Northeast, no action was taken positively by USAF except to impress upon ConAC the need for specific regulations and an educational campaign on the subject, before steps were taken.

V

Though definite permission had not been given to ConAC to begin armed interception of unidentified aircraft, nevertheless ConAC believed that only a short time would elapse before such permission were given. Until such a time, ConAC took action to prepare its operating units for the eventuality. On 29 March 1950, ConAC Regulation 55-9 was published as a general policy guide.[26] Identification zones

were to be established jointly by the CAA and USAF, with the zones corresponding to the defense areas. In peacetime, the filing of flight plans was to be on a voluntary basis because of the lack of legal authority. The Air Defense Force commanders were to be responsible for the development of procedures with the CAA in their respective areas. Only traffic passing through established recognition zones was to be controlled. Data from the CAA or MFS was to be passed to "the appropriate radar stations and control centers". The proper communications links were to be determined by the defense force commanders. One minute only was allowed for correlation of flight plans by the GCI stations. Failure to correlate in that time warranted interception.

A companion regulation issued on 2 May 1950 provided instructions on interception procedures.[27] The regulation was cautious in tone. Intercept methods were not to infringe on the freedom of civil aviation. Hours of operation were to be dependent on the weather, capability and manning. No night interceptions were to be attempted. An important feature of the regulation was the instruction that all interceptor pilots be tested on the contents of the regulation in writing before interceptions were to be attempted. Criteria of hostility were also introduced in the regulation as a guide to the interceptor pilot in a situation where he might be called upon to exercise his judgement to fire upon the unidentified aircraft. These criteria included, besides visual recognition of the distinctive marking and type of the aircraft, the behavior of the aircraft when intercepted; the position of the aircraft with respect to a possible

bombing target; and such observations by the interceptor pilot as to whether the bomb-bay doors were open, and whether bombs or paratroopers were actually falling. Machine gun or rocket fire emanating from the bomber towards the ground or towards the target was to be additional proof of hostility.

The drafts of these regulations and other measures taken by ConAC to convince higher authority of the state of preparedness of the Command in the education of its pilots and the concurrence of other commands and services were dispatched to USAF on 27 March 1950, with the request that "the Air Defense Forces be allowed to carry out recognition measures vital to the accomplishment of their mission..."[28]

The aircraft recognition rules forwarded by ConAC were, in USAF's opinion "considered appropriate."[29] On 8 April 1950 ConAC was informed that interceptions could begin in the Los Alamos area and along the East Coast.[30] Approval was also granted for the interception of aircraft entering the Richland, Washington AEC reservation and the Oak Ridge reservation. Approval for interception throughout the entire Northwestern area was withheld by USAF, however, pending completion of negotiations between CAA and Canada regarding the filing of flight plans for flights originating in Canada. Implementation of interception plans for the Oak Ridge area had to await the completion of the CAA communications net, as well as the ConAC radar and fighter deployment in that area.

It will be noted that WADF's new defense areas in San Francisco and Los Angeles were not included in USAF's permission. This was soon rectified, however, when the CAA completed its arrangements for

provision of flight data in those areas.[31] By 23 June 1950 permission had been received also for the two zones in California.[32]

Thus, by the latter part of June 1950, ConAC had at long last obtained the authority to commence active interceptions of unidentified aircraft in all the air defense areas except in the hinterland of the Northeast. Even this area was in a limited fashion also protected, when permission was received in July to commence interceptions along the newly established Canadian Boundary Identification Zone.[33] The go-ahead signal to ConAC was granted in all of the above mentioned areas with the most appropriate timing. On 25 June 1950, the Communist armies invaded South Korea.

The involvement of the United States in a "shooting war" overseas was the most effective educational device for convincing the public that ConAC's active air defense policy was warranted. Two months after the Korean hostilities broke out, the President of the United States approved a USAF policy statement to the effect that,[34]

> The Commanding General, Continental Air Command, is hereby authorized to destroy aircraft in flight within the sovereign boundaries of the United States which commit hostile acts, which are manifestly hostile in intent, or which bear the military insignia of the USSR, unless properly cleared or obviously in distress. This amplifies previously approved Air Defense procedures and instructions which have restricted intercept operations to specific identification zones.

Here, manifestly, was the logical conclusion to the policy which ConAC had been advocating for almost a year - the right to utilize its weapons actively for air defense anywhere within the sovereign boundaries of the United States. The corollary to this authority was the right to introduce the methods of identification in all sectors of the country where it was deemed feasible to do so.

CHAPTER FOUR

THE ESTABLISHMENT OF LEGAL CONTROLS

I

During the latter part of 1949 and early in 1950, when ConAC engaged in making plans for extending CAA flight data service and was striving to obtain the authority to begin active interceptions of unidentified aircraft, it was also renewing efforts to obtain the legal authority to impose restrictions on air traffic. Hitherto, the only legal restrictions upon flights made within the United States were those safety measures imposed by the CAA upon civil traffic, and the equivalent military rules embodied in AFR 60-16 which governed traffic and clearance procedures.[1] The provision of flight plans to the CAA by civil aircraft was mandatory in many cases where IFR procedures were followed, but there was no obligation on the part of civilian pilots to file VFR data with the CAA. AFR 60-16 provided for substantially the same requirements for military pilots, except that in this case the flight data was furnished to the Military Flight Service.

The contemplated establishment of identification areas over land in early 1950 revealed the deficiency in the existing regulations where the filing of VFR flight data was concerned. Furthermore, even in the case of IFR procedures, the existing regulations did not contain penalties sufficiently severe to call to the attention of the flyers the urgency of accurate and timely flight plan data.

Though ADC had expressed the need for legal controls to

Headquarters USAF as early as the spring of 1948,[2] the deficiency did not become intolerable until early in 1950 when measures were taken to erect identification zones over land. At that time, ConAC again pressed for speedy passage of legislation designed to make mandatory the filing of flight plans by civilian pilots in accordance with regulations to be prepared by the CAA and ConAC.

Headquarters USAF had been well-aware of the necessity of legal authority. As early as May 1948, USAF had begun conferences with the CAA with this aim in mind.[3] However, the discussions were long and arduous because of the delicate problem of balancing the needs of identification with the needs of civil aviation for a minimum of controls. By the end of 1949, however, USAF-CAA negotiations with each other and with civil aviation groups had reached the point where legislation to establish controls over civil air traffic via an increase in presidential authority had been drawn up by the CAA and agreed to by USAF.[4] Nevertheless, agreement between the two agencies did not guarantee the speedy passage of the necessary legislation through Congress. In view of the anticipated delay at a time when the air defense system was girding itself for the commencement of twenty-four hour operations, it was necessary to resort to extra-legal means to obtain the required controls. These means lay through the good will and voluntary cooperation of the civilian aircraft operators.

The task of obtaining the support of civil aviation was given to the CAA. It was pointed out by General Vandenberg, USAF's Chief of Staff, that it would be less disconcerting to the general public

if the initial publicity came from a civil agency.[5] In January 1950, the CAA was successful in obtaining an agreement with a number of important civil flying agencies to conduct all of their flying in certain areas, only above two thousand feet, and under IFR.[6] On the whole, the agreement was enforced, but there were exceptions to this rule which proved exasperating. Nevertheless, in spite of these troublesome exceptions, even a modicum of self-imposed controls on civilian air traffic was better than none at all.

This gentlemen's agreement of January 1950 did not prevent ConAC and the CAA from continuing to press for legal controls and severe penalties. Though legislation had been drawn up between the CAA and USAF, civil aviation continued to exercise powerful pressure to prevent what it thought was an attempt to "rob them of their civil aviation rights."[7] Reassurances had to be given continually by the CAA and USAF that no crippling curbs on aviation were contemplated. In general the atmosphere surrounding the proposed legislation was charged with tension.

The outbreak of the war in Korea helped considerably to speed up the necessary Congressional action. On 9 September 1950, Public Law 778 was passed, empowering the President to establish security provisions "which will encourage and permit the maximum use of civil aircraft consistent with the national security."[8] The peculiar wording of the law in this respect is testimony to the fact that the shadow of civil aviation pressure groups hovered over the law-makers down to the final phraseology of the law.

Under the terms of the law, whenever the President determined that "such action" was required, he was authorized to direct the Secretary

of Commerce and the Civil Aeronautics Board to exercise his powers. Section 1203, in turn empowered the Secretary of Commerce, on the direction of the President, to

> establish such zones or areas in the airspace above the United States...as he may find necessary in the interests of national security; and may after consultation with the Department of Defense and the Board, by rule, regulation, or order within such zones or areas, prohibit or restrict flights of aircraft which he cannot effectively identify, locate, and control with available facilities...

In addition, the law carried the necessary penalties for violators of the yet-to-be-formulated rules. Section 1204 provided that

> any person who knowingly or willfully violates any provision of this title, or any rule, regulation or order issued thereunder, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be subject to a fine of not exceeding $10,000 or to imprisonment not exceeding one year, or to both such fine and imprisonment.

The authority given to the President by Public Law 778 was exercised in Executive Order No. 10197, of 20 December 1950.[9] The Secretary of Commerce was directed by the President to establish security control measures over aircraft in flight. This task was in turn delegated by the Secretary to the Administrator of Civil Aeronautics.

During the interim, between the passage of Public Law 778 and the Executive Order of December 1950, the CAA had been busily at work on the necessary regulations. These were duly published on 27 December 1950, as the "Regulations of the Administrator, Part 620".[10] The regulation provided for the establishment of Air Defense Identification Zones (ADIZ's) identical with those which had been established in a

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military regulation, in the preceding July.* Any pilot, prior to penetrating an ADIZ or taking off from a point within an ADIZ, was required to file a flight plan with the CAA. VFR flights which took place within an ADIZ were given the prefix "Defense" (DVFR), to distinguish them from VFR flights operating outside of ADIZ's. In addition, position reports were required for DVFR as well as for IFR flights when penetrating an ADIZ.

Certain exemptions to these requirements were authorized by Section 620-13. The CAA was permitted, at its discretion, to exempt from the flight plan requirement those flights taking place wholly within the confines of an ADIZ, or which started from within an ADIZ and terminated outside of an ADIZ. An additional exemption was that which waived the flight plan requirement for all aircraft operating within or entering any "Domestic" ADIZ, (Knoxville, Albuquerque, Los Angeles, San Francisco, or Northwestern), at altitudes less than four thousand feet above the immediate terrain.

The institution of legal controls over civil air traffic was generally greeted with enthusiasm by ConAC. However, the waiver of flight plans for aircraft flying through ADIZ's below four thousand feet evoked at once a storm of protests from the Air Defense Forces. As Major General Frederic H. Smith Jr, the EADF commander, phrased his objections:[11]

> it is not understood why aircraft are permitted to enter and operate within the Domestic Air Defense Identification Zones at altitudes less than four thousand feet above the

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* A more detailed discussion of the provisions of the regulations cited in this chapter, where they apply to ADIZ's, may be found in the next chapter.

[redacted]

> immediate terrain.... Unless flight plan correlation is accomplished, it is absolutely necessary to intercept and recognize aircraft approaching the prohibited areas contained in these Zones. Further, regardless of flight plan correlation, all aircraft approaching the prohibited areas are intercepted. Therefore, I feel it incumbent upon us to present our case so strongly to CAA, that they will require all aircraft to file flight plans when operating into or within a Domestic ADIZ, especially if the path of the aircraft expects to approach any of the prohibited areas, regardless of the altitude at which the aircraft intends to fly.

In answering General Smith's objections, Brigadier General Herbert B. Thatcher, then ADC's Deputy for Operations, explained ADC's policy in this matter.[12]

> The altitude exception to paragraph 620.13 (CAA Part 620) was a necessary concession to obtain the many other benefits resulting from a publication of this document. The adoption of a perimeter type air defense, the inability of our radar to see at low altitudes and the existence of the Interim Plan for the Emergency Control of Air Traffic, tends to nullify the handicap this altitude exception imposes on the difficulty problem of aircraft indentification.

In spite of ADC's explanation of the reason for its concession in the waiver of flight plans below four thousand feet, the Command believed, as did EADF, that the exemption was a detriment to effective controls for identification. Action was undertaken during 1951 and 1952 by ADC to request revision of the CAA Regulation in this respect, though without any great deal of optimism as to the outcome.

ADC's fears were justified. The only concession to ADC's wishes in the matter in the revised regulation, which was subsequently published on 15 January 1953, was a statement to the effect that "pilots of aircraft equipped with functioning two-way radio are urged to comply with the flight plan and reporting requirements of this particular part regardless of altitude."[13]

II

ConAC's plans to establish identification zones in the interior of the United States late in 1949 prompted a reappraisal of the state of the Command's jurisdiction over military air traffic as well as civilian air traffic. The aircraft belonging to the Air Force had been required for some time to file IFR flight plans with the Military Flight Service. Such information was, of course, available to ConAC, but data on the extensive VFR flights was not. If zoned identification areas were to be created in which all aircraft were to be identified, then VFR flight data was indispensable to the air defense system. If it were only a matter of obtaining such information from USAF aircraft, the problem would not have been an especially challenging one. However, it was necessary to obtain such information from all aircraft which were not under the jurisdiction of CAA flight regulations, and this constituted practically all federally-owned aircraft: Naval, Coast Guard, Army and those belonging to civil agencies of the government. Not even aircraft belonging to the Canadians were excepted from the requirement.

In December 1949, ConAC called to USAF's attention the lack of controls over federally-owned aircraft.[14] It was pointed out that the imposition of VFR flight plan requirements would create a great burden upon the Military Flight Service, but ConAC noted that the CAA had expressed willingness to contribute personnel and facilities to this end. ConAC, however, expressed the opinion that if facilities and authority were given to the experienced CAA organization to handle flight data for both military

and civilian aircraft, such a procedure would result in more efficient contributions to the air defense system.

On 24 February 1950, ConAC again brought up the question of military controls.[15] This time ConAC put immediate emphasis on the need for control over those aircraft in the jurisdiction of the Air Force. To this end, USAF was supplied with a draft of a regulation which ConAC proposed be issued. The regulation directed that all USAF aircraft file both IFR and VFR plans when flying within certain designated identification zones.[16]

USAF's answer to ConAC's proposal was most encouraging. On 4 April 1950, USAF not only expressed approval of the plan to regulate military traffic, but proposed in its turn that a joint Army-Navy-Air Force regulation be published which would direct military pilots to file either VFR or IFR plans when flying at any altitude anywhere in the continental United States or its approaches, except for certain local flights.[17] Position reports would be required at thirty-minute intervals. The rationale behind the plan to make flight plans mandatory anywhere in the United States was that the pilots would not, thereby, have to remember the boundaries of the zones.

ConAC's reaction to the proposed joint plan was, naturally, favorable.[18] However, USAF's plan was apparently more enthusiastic than practical. A conference between USAF and ConAC representatives made extensive changes to the proposed plan, reverting to the original ADC proposal to file flight plans only when flying within an ADIZ.[19] In this form the proposed regulation was approved and the arduous process

of coordination with the Army and the Navy began. The catalyst of war apparently did much to speed up the process of coordination between the three services, for on 15 July 1950,the joint regulation was published under the signatures of the Chiefs of the three services.

The joint regulation, issued by USAF as AFR 60-22, made the filing of flight plans mandatory when penetrating or flying within an identification zone, regardless of altitude.[20] Local flying which took place entirely within the zones was exempted from the filing of flight plans, "when performed in a manner conducive to ready recognition." Procedural arrangements for such flights were to be coordinated between local military commanders and air defense commanders. Being a direct order to military personnel, the regulation did not specify penalties for violation, as did the CAA's civilian regulation.

III

Thus, by the end of 1950, regulations which were backed by legal authority had come into being for both civilian and military air traffic. But the existence of the rules themselves were no guarantee that either civilian or military pilots would adhere to them. The flight plan and position reporting information which was required of pilots under CAA Part 620 and AFR 60-22 was not simple, and violations, both unintentional and deliberate, were to be expected. It was of prime importance, therefore, that the enforcement of the regulations be monitored closely if the identification system was to function effectively.

Violations by civilians, whether they were by individuals or by corporate concerns, were to be handled by the CAA. To this effect, rules

were enunciated by CAA in February 1951 in the form of a legal policy directive to CAA regional administrators.[21] The CAA asked the Air Divisions to notify their GCI stations to inform the appropriate ARTCC at the time an interception was made, so that the center could establish the fact of a violation while the incident was still fresh. This evidence was then to be held at the center until written notification of the violation was received from the air divisions, after which the case was to be turned over to the appropriate agency, depending upon whether a civil, military or foreign aircraft was at fault. In the case of military violators, the appropriate agency was the Military Flight Service.

Where no flight plans had been filed and a civilian aircraft was caught in a manifest violation, prosecution was, of course, unavoidable, although the penalties were seldom severe. However, the most exasperating problem was created by civilian pilots who had filed plans, but who did not conform to their estimated time of arrival. CAA believed that in most instances these violations were unintentional and that they were caused usually by poor navigational aids. It was not believed that prosecution of such cases was worthwhile. It was CAA's suggestion that the air divisions should continue to file out violation reports in these cases, but that only those violations should be passed on to the CAA which the division commanders considered worthy of further investigation.[22]

The problem of securing the enforcement of the control regulations by military pilots caused ADC more difficulties than those

which were caused by civilian pilots. The question eventually arose of the legal status of an Air Force pilot who violated one of the provisions of CAA Part 620 which was not covered also by AFR 60-22. Early in 1951, such violations had been turned over by the ARTCC's to the appropriate Military Flight Service centers for action. To ADC's concern, however, it was soon discovered that the MFS had no authority to cite the military violator.[23]

Part of this discrepancy was resolved in time by revisions of AFR 60-22 to bring its requirements more in line with CAA Part 620.[24] However, the conformation of the two regulations did not prevent violations from taking place, although it did remove the objections of civilian pilots that the military airmen did not have to conform to the same requirements as they did.

In July 1951, ADC broached the matter of violations of AFR 60-22 to Headquarters USAF, noting that "it has become increasingly evident... that military pilots...are not familiar with the provisions of AFR 60-22," and that the lack of familiarity had thereby been "very costly to the air defense system by increasing the number of unidentified radar tracks which require interception."[25] ADC proposed that all military pilots, including Naval and Marine flyers, take written examinations on the provisions of AFR 60-22. The proposal was hospitably received in Headquarters USAF, and in time the necessary directives were issued. The examination of military pilots of all three services on the provisions of the joint regulation went a long way in reducing the number of violations.

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CHAPTER FIVE

AIR DEFENSE IDENTIFICATION ZONES

I

Thus far in this history of identification, it has been recounted that, in the two years since 1948, an air defense system had taken shape in certain locations in the continental United States; that effective cooperation between the Air Force and the CAA had resulted in the introduction of flight plan correlation procedures in the areas where air defense weapons had been deployed; and that legal controls had been created for the regulation of civil and military aircraft flying in those areas.

During the latter part of 1949 and early in 1950, while ConAC was striving for the introduction of an identification capability in the new areas where the Lashup radar system was being deployed, much thought was given to the eventual configuration of identification zones in the United States. It has been told in the preceding chapter that ConAC proposed to USAF, in February 1950, that military controls be imposed in certain areas of the country. These zones were eventually incorporated into the joint regulation of military traffic issued by the three services, and known to the Air Force as AFR 60-22,[1] dated 19 July 1950.

The establishment of a number of Air Defense Identification Zones (ADIZ's) in AFR 60-22 was followed by the establishment of identical zones for the regulation of civilian air traffic in CAA Regulation

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Part 620.[2] In the opinion of ConAC, such zones as were established in these two regulations of 1950, were but the first step in an evolving process.[3] "As the air defense system is extended it will be necessary to designate identification zones. This process will continue until the system is complete."

In other words, identification zones were to be established whenever air defense capability was introduced into new areas of the country. Unfortunately, however, in 1950 ConAC was incapable of forecasting the exact configuration of the future air defense system. The Lashup radar network, which was located in the Northeast, the Pacific Northwest, California, New Mexico and Oak Ridge areas, was to be extended slightly when it gave way to the Permanent radar system which was scheduled to become operational sometime in 1952. There were, however, vague plans relating to a "gap-filler" program during 1950 which promised to extend the surveillance network greatly into new areas of the United States. In addition, plans were being formed for the protection of SAC air bases, whether they were located in potential target areas or not. Thus, during 1950, the precise pattern of the air defense system to come, and consequently, the eventual identification zone coverage, were not entirely clear. At this stage in the development of air defense weapons deployment strategy, ConAC was forced to take the inevitable view that, conceivably, the entire nation might eventually be turned into an identification zone.[4]

The two regulations of 1950 created ADIZ's which conformed roughly to the coverage provided by the Lashup radar network. Along the Atlantic and Pacific coasts, two "Coastal" ADIZ's were created,

each of which extended approximately 250 miles out to sea. Five "Domestic" ADIZ's were created in the interior of the United States: in the Northwest; in the San Francisco area; around Los Alamos; and in the Oak Ridge area. No Domestic ADIZ was established in the highly important Northeastern area, although plans which were drawn up during 1950 called for the conversion of the Northeast into an ADIZ during emergency conditions.[5] In addition to the Domestic and Coastal ADIZ's, a third category of zones, to be known as the International Boundary ADIZ's, was established. Though it was undoubtedly contemplated that, in time, such boundary zones would be created for both the Mexican and Canadian borders, only the latter border was zoned during 1950.* The Canadian boundary zone, which had no depth at all, and thus logically did not warrant being called a "zone," was broken into two sections. The western section followed the northern border of the Northwest ADIZ, and the eastern section began near the Keewenaw Peninsula in Michigan and followed the boundary to the Atlantic Ocean.

The regulations establishing legal controls were received with general enthusiasm by ConAC, although the four thousand feet waiver in CAA 620 evoked almost unanimous misgivings on the part of the Air Defense Forces.[6] An item in the joint military regulation which caused some objection was the delineation for military traffic of Coastal ADIZ's flush with the coastline of the United States. Anticipating an eventual revision of the regulation, ConAC proposed that the Coastal ADIZ's begin twenty-five miles out to sea. This was recommended

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* The Mexico-California border was declared an International Boundary ADIZ in the revised CAA Regulation Part 620 of 15 January 1953.

in order to give the Defense Forces sufficient time for effective interception and also to eliminate the need for identification of naval aircraft on training flights close to the shore.[7] The revision was eventually brought about in the new edition of the joint military regulation which appeared in January, 1951.

II

During 1951 the Headquarters and the operating echelons of the Air Defense Command had an opportunity to acquire experience in the theory and practice of identification, and to apply that experience to the question of the merits of ADIZ's. In the discussions which took place during 1951 on the subject of the role of ADIZ's in air defense, two conflicting viewpoints on the subject emerged: that of EADF, and that of ADC Headquarters.

The EADF theory evolved gradually during the latter half of 1950 and in 1951 as a result of discussions concerning the nature of the International Boundary ADIZ along the eastern portion of the Canadian border. Soon after the publication of AFR 60-22, EADF complained to ADC that the tortuous path of the international border in the Great Lakes area made it possible for United States and Canadian aircraft to begin and finish a flight in their own sovereign territory while crossing the border en route.[8] EADF noted that the situation was causing an administrative burden on the CAA, the MFS, and the GCI stations. A proposed boundary line designed to minimize the confusion was submitted by EADF, but was turned down by USAF because it violated the principle of national territorial sovereignties.[9] However, USAF was not opposed in principle to EADF's proposal, and

suggested that ConAC undertake to work out a "mutually agreeable plan" with the RCAF for submission to USAF.[10]

Subsequent negotiations with Canada resulted in the discovery that the Canadian Department of Transport (DOT), had no authority to require flight plans from Canadian aircraft.[11] ConAC's hands were also tied by the lack of authority to overfly Canadian territory en route to intercept aircraft which were actually over American territory at the time.[12] ConAC confessed that the negotiations with Canada were useless under the circumstances and advocated that USAF itself take action to resolve the matter on an inter-governmental level.[13] USAF Headquarters, in turn, agreed to reopen the question, but only when overfly rights were secured, and when Canada enacted legislation similar to Public Law 778.[14]

In January 1951, EADF reopened the question of the border zone on a slightly different tack:[15]

> To use the International Boundary, especially around the Detroit, Buffalo and Great Lakes area in general, presents a problem in that aircraft are allowed to approach too close to these important cities without being required to identify themselves by flight plan provisions. The radar coverage of our northern stations is such that aircraft which are not going to cross the border come under surveillance, and no means exist to determine if the aircraft is friendly and not intending to cross the border or is potentially hostile. A case in point is the air defense readiness alert of 6 December 1950 caused by Canadian aircraft observed by the radar station at Limestone.

To remedy the existing incongruity along the border, Major General Frederic H. Smith Jr., EADF's commander, proposed the establishment of a Canadian border zone, 150 miles deep, entirely within Canadian territory.[16] Similar overtures were made to Canadian officials by EADF, but these officials, though receptive to the plan,

indicated that it would take Canadian governmental action to establish the zone.[17] ADC thought so too, but left the door open to further discussion of the subject, informing EADF that:[18]

> Your recommendation will be used as a basis of establishing an ADIZ over Canadian territory as soon as fundamental International Agreements have been reached.

EADF's proposal to the Canadians resulted in exceptionally speedy action by the latter. In March, Canada announced that it was going to implement an identification zone of its own, one to two hundred miles deep inside Canadian territory along the border from Sault Ste Marie to the Atlantic.[19] In short order the zone was created, effective on 15 May 1951.

The Canadian Air Defense Identification Zone (CADIZ) did not fulfill EADF's needs, however. Although the American International Boundary ADIZ was erected "from the ground up," the new CADIZ exempted aircraft which flew below four thousand feet from filing flight plans. Such a waiver, in EADF's view, did not remedy the deficiency which had existed prior to the creation of the CADIZ in the vulnerable Detroit-Cleveland area. EADF recommended action which would either lower the CADIZ to the ground, or widen the American International Boundary Zone and extend it substantially into Canadian territory.[20] ADC, in answer, again pointed out that there existed no authority for the establishment of an American ADIZ over Canadian territory.[21]

In mid-1951, ADC, having decided that radar and fighter coverage along the central portion of the Canadian border warranted the establishment of new ADIZ's there, proposed to USAF that the new zones be created as Domestic ADIZ's, i.e., ones which contained the

four thousand feet waiver.[22] This proposal elicited another vigorous protest from EADF.[23] If ADC's plan was carried out, EADF recommended that the International Boundary ADIZ be widened to a distance of twenty-five miles. Though ADC had already rejected EADF's repeated overtures to widen the International Border Zone, nevertheless EADF's tenacity in the matter caused ADC to ask for a detailed reappraisal of the subject by each of the affected air divisions in the EADF territory.[24]

After a restudy of the problem, as directed, EADF resubmitted to ADC a proposal for a rectification and widening of the International Boundary Zone.[25] The proposed EADF zone followed a straight line connecting the existing and programmed radar stations along the northern perimeter of the EADF area, and was as wide as the actual radar coverage of the stations along that line. Inevitably the zone straddled the frontier into Canadian territory. According to EADF, the proposed zone rendered both the existing CADIZ and the International ADIZ in southern Ontario superfluous. Suffice it to say that the EADF proposal was not adopted for the same reasons given by ADC in EADF's previous proposals to widen the border zone and extend it into Canadian territory. There remained, along the border on each side, a wide band of Domestic-type ADIZ's, sandwiching between them the paper-thin International Boundary ADIZ which was erected from the ground up. An aircraft could fly below four thousand feet on the Canadian side, come up to the International Boundary "zone" without crossing it, be picked up by the EADF radars as "unknown," and fly back without violating any flight regulation, though causing much grief to the EADF identification system.

It is interesting to note that the 25th Air Division, which

occupied a somewhat analogous position along the Canadian border to that of the EADF border divisions, expressed contentment with the western section of the CADIZ.[26] The 29th Air Division, which also patrolled the border, however, felt the need for extending the CADIZ to include its segment of the border area, and made continuous recommendations to have that accomplished.[27] The CADIZ was duly extended the entire length of the border early in 1952.

By mid-1951, as has been mentioned, it had become apparent that the radar coverage was rapidly outstripping the existing ADIZ's. On 15 June, therefore, ADC proposed to Headquarters USAF that additional ADIZ's be established along the northern border of the United States. In addition, revisions in the northern and western boundaries of the Knoxville ADIZ were requested by EADF in order to eliminate traffic lanes from the perimeter of the ADIZ.[28]

The new ADIZ's, which were approved by USAF and officially promulgated by the CAA in an amendment to its Regulations Part 620, on 30 September 1951, established the following additional ADIZ'S: Great Falls; Minneapolis; Traverse City; and Bangor.[29] These Domestic ADIZ's extended along the border, joining the Northwest ADIZ and forming a solid belt along the border to the Atlantic Ocean.

The establishment of the additional Domestic ADIZ's was the inevitable development of ADC's theory that the identification zones had to keep pace with the growth of the air defense system. However, in this theory there had always been one exception: the congested EADF area. In the plans for the establishment of ADIZ's, the huge Eastern sector had been omitted because of the difficulty of implementing

identification procedures there, and the consequent burden upon the air defense system to identify all traffic labelled as "unknown." The peculiar problems of the EADF area conditioned EADF to view the role of ADIZ's somewhat differently than either ADC, WADF, or CADF did. As EADF phrased its view in formulating objections to the creation of the new northern ADIZ's:[30]

> In order to properly defend any given area from air attack, the defense commander should be able to identify every established track....In areas of high density air traffic this is not possible without unduly restricting the traffic flow. Therefore, the identification function, for the present and during white alert conditions, must be limited to penetration tracks which originate within or enter a perimeter zone established around the defended area.

Such a perimeter identification zone as EADF envisaged, was to be placed not less than 150 miles away from the nearest critical target in its area. The new ADIZ's created by ADC began at the national border and extended inwards, embracing much of the densely populated areas of the Great Lakes region -- thus negating, in EADF's view, the advantages of early warning through timely identification.

Following suit with this line of thought, EADF, in mid-1951, created on its own a Perimeter Identification Zone (PIZ).[31] This zone, though unofficial in that it had neither ADC nor CAA sanction, was to be used as an operational guide to EADF air divisions in the matter of identification policy. But, without the necessary teeth in the form of mandatory restrictions of air traffic which penetrated the Zone, the PIZ could only be ineffectual.

ADC was not unaware of the urgent considerations presented in EADF's arguments in behalf of a more realistic identification zone policy for the eastern area. On 19 March 1952, ADC removed one of the

most serious causes of concern to EADF when it asked other USAF commands which operated aircraft in the ZI to file flight plans on all B-29, B-36 and B-50 aircraft which flew north of the 37th parallel.[32] SAC, the principal operator of bomber-type aircraft in the ZI, readily agreed, except for certain local flights.

EADF tried again to give its ideas on a perimeter identification zone reality in April 1952. This time, EADF concentrated on the establishment of an identification zone around the New York-Washington-Philadelphia region.[33] The Bangor ADIZ and the Atlantic ADIZ were to provide the necessary protection to the north and east. As to the open "back door" to the area, EADF proposed a zone varying in width from fifty to one hundred miles in a semi-circle enclosing the defended area, at the minimum distance of 150 miles from the vital targets. However, the EADF proposal for a Domestic "strip" ADIZ happened to coincide with a major change in ADC defense strategy, and the proposal was lost in the drastic revision of identification plans attendant on the new policy.

III

The approaching maturity of the continental air defenses during 1951 prompted many evaluations of the air defense program for the future, not only within ADC Headquarters but also among other agencies, such as the Rand Corporation, and the Weapons System Evaluation Group (WSEG). The total effect of these examinations of the air defense system was to cause major readjustments in ADC's thinking about the strategy of air defense weapons deployment. In particular, a study by the Weapons System Evaluation Group had an important influence.[34] It was proposed by the WSEG that air defense resources be concentrated in the most vital areas of the country and that such resources be distributed around the

perimeter of the defended area rather than evenly throughout the area.

Early in 1952, ADC informed Headquarters USAF that it subscribed to the principle advocated by the WSEG, with some modifications.[35] There were to be three major target complexes in the nation which were to receive priority in the deployment of weapons: the Northeast, the Northwest, and the Los Angeles-San Francisco areas. In addition, two "island"-type defense areas outside of the priority areas were also to be defended: the Albuquerque and Oak Ridge districts.

The defense of the above-mentioned areas was to be accomplished by the formation of a double perimeter around each of the areas in which air defense weapons were to be primarily concentrated.[36] This principle had an inevitable effect upon identification planning. By the spring of 1953, a new identification plan based on the double perimeter theory had been developed.

In the new plan, the defense areas encircled by the double perimeters were to be closed to all penetrating air traffic except through designated corridors, along which were to be located compulsory reporting points. AC&W stations with radar coverage over these corridors were to be assigned the function of identification. Coastal stations were also to perform identification functions until such time as adequate facilities were made available to extend the functions of detection and identification further out to sea. In addition to stations within the double perimeter lines, single lines of radars called "alerting lines" were to be established in other key areas, i.e., along the northern border, through which were to be designated corridors and compulsory reporting points for aircraft penetrating the

border into the United States. In all of the double perimeters there was to be "down to the ground" coverage and all aircraft which penetrated the zones were to file mandatory flight plans. In view of the fact that the coverage of the existing and programmed radars would not provide the necessary coverage at low altitudes, small radars with automatic reporting facilities were to be employed for that purpose. It was estimated, however, that pending the implementation of the small radar program, the Permanent and Mobile programs would provide a detection capability along the outer perimeters at approximately one thousand feet above the terrain, a capability which would be sufficient to place the identification system in operation.[37]

By the end of 1953, however, the ADC proposal to reorient its identification zones to the double perimeter concept had not been approved by Headquarters USAF. In any event, USAF's failure to approve the plan up to this date did not seriously jeopardize ADC's new prospects, because the new identification policy depended upon the actual implementation of the double perimeter defenses which were still in the planning stage. It was hoped by ADC that the Mobile radar stations would become a reality during 1955, at which time the perimeters would be formed, and the new identification policy could begin to operate.

Pending the implementation of the new double perimeter identification plan, however, certain modifications in the existing ADIZ's were deemed necessary. On 16 September 1953, ADC proposed that changes be made to the boundaries of the existing ADIZ's.[38]

The most significant feature of the proposed changes was that which concerned the long-standing difficulty over the tortuous International Boundary ADIZ in the Great Lakes area. It will be recalled

that EADF's previous efforts to straighten the identification zone in this region had met with failure because of the violation of Canadian sovereignty implicit in the proposal. ADC's request of September 1953 brought up the question once more. This time the outcome was happier. Between Sault Ste Marie and a point on the Maine border, a Security Identification Zone (SIZ) was established by the Canadians, twenty miles wide and from the ground up. In the same area, the International Boundary Zone, which now served no purpose, was eliminated. The effect of the new SIZ was to give the EADF defenses a much-needed additional period of early warning in that area on flights headed towards the United States from Canada.[39]

In addition to the significant change noted above, other modifications were made in existing ADIZ boundaries.[40] Between the Northwest ADIZ (now renamed the Seattle ADIZ), and the San Francisco ADIZ, on the Pacific Coast, a large gap in the ADIZ coverage had existed. This gap was now eliminated by extending both of the neighboring ADIZ's. Another notable change was made in the Minneapolis area. The very large ADIZ there was trimmed to eliminate the coverage in Minnesota, Iowa, South Dakota, and Nebraska. At the same time, the Great Falls ADIZ was extended westward to embrace a small bit of territory previously contained in the Seattle ADIZ. The Knoxville ADIZ also underwent some modifications in the Northern and southeastern peripheries of the boundary. Simultaneously with the changes made in the American ADIZ's, revisions were made by the Canadians in the Canadian ADIZ boundaries.[41] However, no significant changes in identification procedures was

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implied by all of these changes.

Thus, by the spring of 1954, at which time ADC's recommendations were carried into effect, the penultimate revisions were made in the ADIZ configuration. It was expected by ADC that the final step in the development of the identification zone process would take place in the near future by the scrapping of all of the existing ADIZ's, and the substitution in their place of the double perimeter identification system.

IV

The establishment of ADIZ's over areas of high traffic density caused hardship to the Air Defense Forces almost from their inception. The problem of identifying friends from foes in congested areas was especially critical in the WADF areas in Seattle, San Francisco, and Los Angeles, as well as in the EADF region.

Early in 1951, WADF took the unusual step of establishing certain free areas within its ADIZ's on an experimental basis.[42] The result of this step was apparent almost at once in a noticeable decline in the number of unidentified tracks.

The "free area" principle within ADIZ's was not one which ADC felt was consistent with its plan to cover all of the critical areas with a secure identification system. Nevertheless, in view of the unrealistic practice of recognizing as inevitable large numbers of unknowns within the system, and not being able to do anything about it, ADC decided, reluctantly, to sanction the WADF experiment. On 13 April 1951, ADC decided to grasp control of the free area policy by defining the policy as follows:[43]

> A "free area" is the air space over a limited geographic area in which all initial plot pickups and/or outgoing tracks are

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> considered "friendly," thus eliminating the requirement for correlation of large numbers of tracks with flight plans in areas of high traffic density. Additionally, it eliminated the requirement for segregating, for identification purposes, local traffic, point to point traffic and traffic below 4,000 feet not requiring flight plans, in these areas of high traffic density. Attempt is made to correlate with flight plans all tracks in the ADIZ inbound to the "free area" for identification. The establishment of a "free area" requires surrounding radar and/or GOC coverage to enable identification of all aircraft bound to the "free area."

The free areas were to apply only to peacetime operations and, depending on the imminence of hostile air attack, they were to be eliminated and strict control of local air traffic imposed. In all cases, where the Air Defense Forces desired to establish such areas, ADC insisted upon complete justification. WADF, believing that a "realistic approach is to accept the calculated risk," then proceeded to recommend free areas for the 25th, 27th, and 28th Air Division areas.[44] ADC consented, reiterating that:

> It is desired to emphasize, however, that the "Free Areas" are to be considered in the nature of a temporary expedient, which this Command is prepared to accept as an interim measure in the interests of overall efficiency. It is a system which must be restricted to a minimum consistent with operational requirements and which must be abolished as soon as operationally practicable.

WADF Headquarters, which favored the establishment of free areas as a calculated risk, foresaw the extension of the practice as the radar coverage expanded into new areas. Blanket permission to extend the practice was bluntly denied by ADC however. Each situation was to be determined on its merits, and every effort was to be taken to eliminate free areas where they had been already established.[45]

In EADF's opinion, the entire matter of "free areas" was an academic one, in view of the fact that the most congested areas within

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EADF were already unrestricted flight zones -- there being no ADIZ covering them, and consequently no requirement to identify traffic other than the self-imposed requirement of EADF's making.[46] CADF, however, had occasion to ask for a free area in the Minneapolis ADIZ, and in September 1952, it was established.[47]

In spite of the three free areas established in the WADF area, that command was still hard put to distinguish friend from foe in the non-free areas of its three ADIZ's. In February 1952, WADF proposed that aircraft which were detected proceding towards the target areas in the San Francisco and Los Angeles districts from the northwest, north, or northeast, be identified regardless of whether they were detected in a free area or not. All other aircraft which proceeded on a course other than the above were not to be identified and flight plans on them were to be retained by the ARTCC until needed.[48] Also, all aircraft proceding at a speed slower than 150 miles per hour were to be ignored, "thus eliminating the need for identifying most private civilian aircraft." Needless to say, WADF did not recommend such procedures for the Pacific Coastal ADIZ. Approval by ADC was granted to WADF's recommendations, and the additional exemptions were put into force in the 27th and 28th Air Division areas in March 1952.[49] Again, in the latter part of 1953, the 28th Air Division was forced to make an additional compromise. Tracks which penetrated the Division's zone from the 27th Air Division sector to the sough and which had been carried as unknown in the southern sector, were to be continued as unknown in the northern area. In effect, this put a lower priority on such tracks, affording an opportunity to concentrate the little

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interceptor strength in the division against those tracks whose progress were completely unknown.[50]

Like the ADIZ's, the free areas were also doomed by the decision to create a double perimeter identification system, and ADC was prepared to breath a sigh of relief when they were abandoned. The very existence of the areas implied defeat in ADC's program to identify all traffic above a critical target. So far as EADF was concerned, both the decision to scrap the ADIZ's in favor of the double perimeter concept and ADC's concession of the free areas, was in its opinion, justification of its stand that only a perimeter-type identification policy was practicable.

CHAPTER SIX

AIR MOVEMENTS INFORMATION SECTIONS

At the Joint CAA-WADF conference held at Kirtland Air Force Base, it was decided that flight plan data could be more effectively disseminated to the air defense system by the ARTCC's if a number of CAA controllers were positioned at the latter installation to devote their entire attention to this purpose.[1] The CAA was to appoint a number of these "security controllers" at the Seattle ARTCC for a trial period. The test was to determine whether the ARTCC was the proper location for these persons, or if it was more desirable to have them stationed in the air defense control center itself, as was suggested by the commander of the 25th Air Division.[2]

The Seattle "security controller" experiment was indicated an improvement over the old method, but there was still room for a better system.[3] On 31 October 1950, the Joint CAA-USAF planning board convened at Hamilton AFB, and one of its recommendations was that Aircraft Movements Identification Sections be established at Seattle and Boston for a trial period of six months.[4] These sections were to be located in the ARTCC's, and their purpose would be to supply the air defense direction centers with screened flight plan data, disseminated no earlier than fifteen minutes before the aircraft in question was expected to penetrate an air defense identification zone. The cost of the experimental unit was to be borne during the trial period by the Air Force. The official request to the CAA was made by Headquarters USAF on 1 February 1951, with a requirement that both of the AMIS's be

operational by 1 March 1951.[5]

After some delay, during which both of the Air Defense Forces expressed considerable impatience, the two AMIS's were placed in operation late in May and early in June 1951.[6] Standard operating procedures for the Seattle AMIS were prepared by the 25th Air Division, and similar instructions were issued for the Boston AMIS by EADF.[7] ADC was requested by USAF to monitor the experiments, to draw up firm requirements for additional AMIS's, and to prepare detailed cost studies for expansion of the sections in other locations.[8]

It became quite apparent almost as soon as the Seattle AMIS began operations that its value to identification would be quite great. As early as 12 June 1951, less than a month after the unit had commenced operations, WADF recommended to ADC that it be retained on a permanent basis, and proposed that similar units be created in all the air division areas of WADF.[9] CADF entered the lists on 19 June 1951 with a recommendation that an AMIS be created to service the Minneapolis ADIZ.[10] ADC was obliged, however, to refrain from acting on the CADF suggestion until the two experimental units had been properly evaluated.[11]

By 4 August 1951, Western Air Defense Force Headquarters was satisfied that the AMIS experiment was a success and again repeated its requirements for additional AMIS's.[12] It was recommended that AMIS's be set up permanently at Seattle, Los Angeles, Oakland, Great Falls, and Albuquerque.

A preliminary evaluation of the experiment at both ARTCC's was prepared by ADC and submitted to USAF on 15 August 1951, indicating the "undoubted desirability of establishing these and similar units as integral parts of the air defense system."[13] Although the trial period

was not yet over, in view of the anticipated establishment of additional ADIZ's in September, ADC felt obliged to ask for an expansion of the AMIS's to the new ADIZ areas.[14]

The question arose at this time as to whether it would be proper for ADC to designate the location of the new AMIS's, or whether it was better that ADC make its demands for flight plan information in certain areas known to the CAA which would then take action to establish the units in the most appropriate locations. In a conference in August it was decided to follow the latter course.[15] Studies were conducted by all the air divisions to determine their specific needs.[16] By 26 September 1951, ADC was prepared to give Headquarters USAF a detailed requirement on the subject.[17] WADF was to get AMIS's in the Seattle, San Francisco, Los Angeles, Albuquerque, and Great Falls zones, as well as a "clearing house" to service the Pacific Coastal zone and the International Boundary ADIZ to the north. Central Air Defense Force was to get an AMIS for the Minneapolis, Knoxville, and International Boundary ADIZ's. EADF was to get an AMIS for the Bangor and Traverse City area, and one each for the Atlantic and International Boundary Zones. In all instances, the specific direction centers requiring flight plan data from the AMIS's were indicated. ADC noted that requirements would be susceptible to change as the AC&W program expanded and new radar stations were interspersed with the old, thus altering station functions. It also pointed out that there were differences in policy between the defense forces. EADF, for example, was interested only in those flights which indicated movement toward its region of air defense responsibility, whereas CADF was seriously

considering the possibility of identifying only air traffic southbound across the northern border into the Great Falls and Minneapolis ADIZ's.[18] A priority listing was as follows:

First Priority (ADIZ's): 1) Seattle; 2) Bangor; 3) San Francisco; 4) Los Angeles; 5) Albuquerque; 6) Minneapolis; 7) Atlantic; 8) Pacific

Second Priority: 1) Great Falls; 2) Traverse City; 3) Knoxville.

On 21 September 1951, the CAA published its formal evaluation of the AMIS experiments at Boston and Seattle.[19] Conclusions reached were that centralized AMIS's were highly desirable, and that the sections should be independent facilities with characteristics which would allow establishment at any desirable location, regardless of the number or location of ARTCC's. Before any long range and permanent commitments were made, it was recommended that further experimentation be made.

On 19 October, ADC forwarded to the Defense Forces a suggested procedure for AMIS's.[20] A feature of this procedure was the creation of a ring of three concentric circles around the core of the identification zone. These mythical lines, called "X-Ray" lines, were not coincidental with the outer boundary of the ADIZ but were drawn to provide the air defense system with sufficient advance notice of the approach of aircraft in the direction of the target area. It was to be the function of the AMIS's to preplot flight movements in relation to these lines. Thus, for instance, an aircraft inbound to the ADIZ would be preplotted to the outer ring of the X-Ray lines, if it were

flying at an altitude of fifteen thousand feet or higher; to the middle line, if at an altitude of five thousand to fifteen thousand feet; and to the inner line, if at an altitude of five thousand feet or less. Flight information indicating a penetration of the international boundary was to be preplotted to the outer line regardless of altitude. Data was to be transmitted to reach the appropriate ADDC no sooner than fifteen minutes and no later than five minutes prior to the arrival of a flight over established X-Ray lines.

ADC's enthusiasm with the success of the Boston and Seattle experiments bore fruit at USAF Headquarters. On 2 October, USAF asked the CAA to retain the two experimental AMIS's on a permanent basis.[21] Until the end of Fiscal Year 1952 (30 June 1952), USAF was to provide the necessary funds to CAA to permit continued operation of the two units. After that time, USAF was to submit cost estimates to enable CAA to budget for an expansion of the AMIS program on its own account.

Having won the tacit approval of Headquarters USAF for the project of extending AMIS's to other identification areas, ADC began to organize its effort to make plans for the expansion. The question of the actual location of the AMIS's, i.e., whether they were to remain at the control centers of CAA or be moved to the air defense control centers was settled in short order. The advantages presented by location of AMIS's at the ARTCC's were great. The personnel of the CAA were skilled in their work, the information was easily available to them, and there was no dearth of manpower or talent in the ARTCC's in the event of a military emergency.[22] It was decided to retain the AMIS's in the ARTCC's.

The question of financial obligations was a time-consuming one and held up the implementation of the AMIS extension program for what seemed to ADC an excessively long time.[23] Although ADC had prepared its cost estimates in short order, with the speedy cooperation of the CAA regional offices, on a higher level the decision as to an equitable financial arrangement bogged down. Fearful of the delay in establishing AMIS's, ADC determined to institute "security control" services in the pertinent ARTCC's similar to those which had existed in the Seattle ARTCC before the AMIS program was embarked upon.[24] Such security control detachments were needed urgently in the Minneapolis, Detroit, and Great Falls ARTCC's. None was needed in the new Bangor ADIZ area in view of the fact that the existing Boston AMIS was capable of servicing the ADIZ to the north.

Efforts to obtain speedy action were continuous during the winter of 1951-52, but to little avail. In the spring of 1952, ADC renewed its campaign at USAF Headquarters to get either security control detachments or AMIS's established, pointing out that the period from April to October was an especially favorable one to the potential enemy for launching a long-range attack against the United States.[25] At least, ADC pleaded, a security control detachment in the Great Falls area would be an immediate relief. ADC offered to reimburse the CAA for this service with its own funds.[26]

In March 1952, Eastern Air Defense Force informed ADC that it had requirements for AMIS's in Washington, New York, Boston, Toronto, Detroit, and Montreal.[27] Of these, only the Boston and Detroit AMIS's were to service flight plan data concerning existing ADIZ's (i.e., the

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Bangor and Traverse City ADIZ's.); the others were to provide EADF with flight information which that command felt it needed for the fulfillment of its identification requirements outside of ADIZ boundaries. It will be recalled that, even though no ADIZ had been established for the EADF area as a whole, that command had established, entirely on its own, a Perimeter Identification Zone around its area which served as a guide to its own units in the matter of identification. EADF consequently felt the need for flight plan information throughout its area.

Again, late in March, ADC asked USAF to set up security controllers in Great Falls, this time adding the Chicago and Minneapolis ARTCC's as sites for security control detachments.[28] It was ADC's proposal to remove the security controllers at the Cleveland ARTCC and transfer them to Minneapolis, and to transfer some airmen to Chicago for a period of at least sixty days to perform security control functions. ADC indicated that the detachments must be in functioning order no later than the 15th of April in view of the seriousness of the air defense situation.

Much to ADC's gratification, it learned that CAA had already taken steps to get security controllers at Chicago, Minneapolis and Great Falls. This was to be done at no expense to the Air Force, provided that the Air Force supplied funds at the beginning of the following fiscal year for continued operations.[29] On learning from USAF of this splendid piece of cooperation by the CAA, ADC took care to point out to USAF that there was danger of killing the goose which laid the golden egg unless USAF was prepared by 1 July 1952 to transfer the necessary funds to the CAA for implementation of the AMIS program.[30]

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The recommendation which was made by EADF for security control service in areas outside of ADIZ areas, touched off a new line of departure in the entire matter of AMIS-type units. CAA noted that there would be no financial difficulties attendant on the continuation of security control type detachments in New York, Washington, and Cleveland, but that the provision of such units in other non-ADIZ ARTCC's was a large financial question.[31] ADC pointed out to CAA informally that it was becoming apparent that such detachments might be required in all other ARTCC's under the control of the CAA throughout the nation, both for training purposes, and for use in an emergency.[32] The CAA informed ADC that there would be no objection if the ADC radars in areas outside of ADIZ's connected their land lines to ARTCC's, but noted that there would be no guarantee of regular CAA service to GCI stations as a result, but only to the extent of the workload of the ARTCC's at the time of the requests for information.[33]

It turned out that ADC had been too optimistic about the extent of security control service outside of ADIZ's. EADF indicated that its requirements were limited to those ARTCC's already mentioned in its previous recommendation. WADF had no additional demands. CADF, however, felt the need for security controllers in Kansas City, St. Louis, Fort Worth and San Antonio ARTCC's. So it turned out that the only outside-of-ADIZ detachments which would be required in addition to those already operating the EADF area, were those just mentioned. The go-ahead signal was given to CAA by ADC for full-time service at the above-mentioned ARTCC's on 9 July 1952, with a tender of $137,000 for the service during Fiscal Year 1953.[34]

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At long last, on 10 July 1952, Headquarters USAF informed ADC that the financial problem had finally been resolved with the CAA for the provision of AMIS service at the remaining ADIZ areas, and authorized ADC to proceed with implementation of the program.[35] In due time the additional personnel were acquired by the CAA and the necessary communications links installed. The new program promised many advantages in the way of more effective identification of air traffic. Certain advances were already visible in the noticeable improvement of identification in the Boston area where the operation of the AMIS at that location was responsible in great part for increasing the number of identified aircraft from an average of sixty percent to an average of more than ninety percent of the total detected traffic.[36] Provisions were also made for creation of security control units at the ARTCC's outside of the established ADIZ's.

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CHAPTER SEVEN

THE IDENTIFICATION OF COASTAL AIR TRAFFIC

The seaward approaches to the continental United States were long recognized as critical areas for identification. The earliest attempts to identify air traffic in the post-war era were made on inbound traffic from the oceanic approaches to the Northwest and Northeast regions. During 1950, the meager identification barriers along the coasts were extended to include the shoreline off San Francisco and Los Angeles. In the east, the coastal identification line was drawn from Maine to Virginia.[1]

The requirement for identification of air traffic in the coastal areas was given official recognition in both AFR 60-22 and in the CAA Regulation Part 620 which were published in the latter half of 1950.[2] Two Coastal ADIZ's were created, extending from the shoreline to a distance of approximately 250 miles to seaward.

During 1950 and 1951, identification of inbound oceanic traffic continued to be a problem to both EADF and WADF. In the Pacific zone area, particular concern was caused by the fact that airline flights from Hawaii to the mainland frequently deviated substantially in their estimated time of arrival and their landfall points. Such deviations made it impossible to correlate flight plans within the allowable deviation limits of twenty miles and five minutes, requiring costly interception of the aircraft for identification.[3]

To the commander of the 28th Air Division, in November 1950, the deviations were not entirely due to the indifference of the airline pilots, but rather to the fact that "air navigation, while entirely adequate for getting an airplane from Hawaii to the mainland, is not reliable enough to place an airplane within five minutes and twenty miles of a given identification point much more than fifty per cent of the time." A typical instance of the problem of identification along the coast was cited by the same officer:[4]

> A WADF radar station in the San Francisco area has identified a flight "X" by virtue of its being within ConAC prescribed limitations for "on time" and "on course". At the same time intercept action has been taken to identify an unknown flight as much as fifty miles off course. The intercepted flight has turned out to be the actual flight "X" and before the erroneously identified target could be checked it has reached the theoretical bomb release line. These false identifications have occurred entirely too frequently to be disregarded.

The general problem was presented to Headquarters ConAC by WADF in November 1950.[5] WADF laid primary emphasis in its analysis of the situation upon the need for high-powered directional radio homers (six hundred miles range) to assist pilots in making landfall in the Seattle, San Francisco, and Los Angeles areas. WADF's request was supported by airline companies which flew the Pacific route and by the CAA.[6]

WADF's predicament was well-illustrated in March 1951 by an incident concerning a Belgian airliner. Failure to correlate flight plans on this inbound aircraft made interception necessary. When the WADF fighter pilot successfully made interception, the airliner took violent evasive action of a type to be expected of a "hostile" aircraft. No positive action was taken by the fighter pilot, of course, but the

incident strengthened WADF's position in its request for more realistic identification aids along the coast.[7]

Eastern Air Defense Force was also plagued with difficulties in identifying coastal traffic. Naval carriers were wont to conduct exercises along the Atlantic seaboard, and Navy aircraft frequently left their carriers many miles offshore and proceeded towards naval air stations on the shore, coming within air defense radar surveillance and causing EADF units to scramble aircraft against them for identification. These incidents occurred with such regularity that the repetition of false alarms, in EADF's opinion, had the effect of reducing the alertness of the air defense system.[8]

It has been mentioned in the previous chapter that one of the grievances expressed against the first version of AFR 60-22 by EADF was the fact that the Atlantic Coastal ADIZ began flush with the shoreline.[9] In view of the congestion of naval aircraft offshore, EADF believed that the situation would be partially eased if the coastal ADIZ would begin about twenty-five miles out from the shore, thus making it unnecessary to identify naval aircraft maneuvering up to twenty-five miles offshore. The necessary revisions to the regulation was made early in 1951. But the revision did not prove to be a panacea. The 26th Air Division, chief sufferer from these naval exercises, pointed out to higher headquarters that its records showed that the peak numbers of unknowns in its area coincided with periods when the Navy was conducting maneuvers in adjacent ocean areas.[10]

The Navy was not ignorant of the major operational problem it was causing EADF. Joint conferences between EADF and the Eastern

Sea Frontier resulted in agreements as to identification procedures to be followed by the Navy. These procedures were tested during a Navy exercise in May 1951. Although the Navy established in airborne relay station off the coast near Atlantic City to make sure that flight plan information reached MFS facilities on the shore, the number of unknowns remained very high during the exercise. In an analysis of the problem it was the opinion of the 26th Air Division that the Naval pilots were not adhering to the procedures agreed upon.[11]

EADF was not unique in its difficulties with military pilots. WADF experienced trouble with MATS aircraft flying through the coastal zone:[12]

> Records in this Headquarters reveal that of 760 overwater flights entering the Pacific Coastal ADIZ in January 1951, 242 flights were unknown. Of these 242 flights, 41% were later identified as MATS aircraft.

In calling the matter to the attention of Headquarters USAF, ADC recommended that AFR 60-22 be made mandatory reading for MATS pilots.[13] On being informed of ADC's complaint, however, MATS vigorously denied delinquency.[14] Whatever the actual merits of the matter, the controversy served to highlight the predicament in which WADF found itself in not being capable, for whatever reason, of coping with the problem of identification of inbound aircraft.

EADF's and WADF's difficulty in identifying oceanic flights did not fall on deaf ears at ADC Headquarters. In October 1951, ADC informed both subordinate commands that it had a plan which it believed would go a long way in reducing the number of unknowns.[15]

ADC recommended that certain ports of clearing authority should be designated for aircraft departing for the United States. These ports were to have security personnel to inspect the aircraft and hold briefings for pilots on identification procedures. In addition, corridors into the boundaries of the United States were to be prescribed. The corridors were to be located in areas where there was maximum detection probability. The termination point of the corridors was to be so located that interception and engagement could be made before the theoretical bomb release line was reached. The flow of traffic through these corridors was to be limited to the capability of the air defense system to monitor and identify this traffic.[16]

The ADC plan also provided for authentication procedures to be used by the aircraft pilots. In the event authentication was not possible, pilots were to be obliged to land at an alternate airport within radar coverage, away from a possible target. The corridors were to be demarcated to incoming aircraft by navigational aids which were to extend beyond the maximum detection capability of the continental radar system. Comments were called for from the Defense Forces to the proposal as well as concrete suggestions for its implementation. ADC's suggestions were not limited to inbound traffic from the ocean only, but also included aircraft crossing the Canadian and Mexican boundaries.

The reaction of the Defense Forces and their Air Divisions to the ADC proposal was uniformly favorable. EADF, in submitting its implementation plan, pointed out the advantage of having radar-equipped picket stations in the Atlantic as corridor designators. EADF also

favored a check point over the ground where low-altitude identification could be made of the aircraft being identified. In subscribing to the plan, EADF expressed eagerness to put it into operation without delay:[17]

> This headquarters firmly believes that unless the identification requirements on our perimeter are made more stringent, there is little likelihood that we will be able to detect the initial sneak attack.

WADF's attitude was also very favorable to the plan.[18] The way was thus cleared for a trial of the plan, and the 28th Air Division was chosen for the test. The code name "Porpoise" was assigned to the operation.

For the purpose of the test in the San Francisco area, eleven corridors were established, centering on the home beacon at Pescadero, California.[19] The signal from this homing station was audible several hundred miles at sea. The plan required that pilots be briefed before taking off from Hawaii for the coast and that each be provided with a sealed envelope containing his approach heading, the maneuver to be performed and the code word for his flight. The flight plan on each flight was filed in the usual manner except for the secret information given the pilot which was passed in code to the ADDC where one officer only was authorized to decode it.

Pilots were required to proceed to the point-of-no-return before opening their secret instructions. When within two hundred miles of the coast, the limit of the radar range of the direction center used in the test, the pilot had to enter his assigned corridor and follow it directly toward the beacon. If the pilot failed to stay within his corridor or to maintain his time requirement, the radar station could challenge him to

perform his manuever and to give his code word. If correctly done, he would be permitted to proceed without further interruption, but if he failed to answer the challenge correctly, he would be subject to intercept action.[20]

"Operation Porpoise" was conducted from 10-31 March 1952, with satisfying results. In fact, navigation improved as pilots became familiar with the procedure. Pilots took more Loran fixes as they approached radar cover, thus reducing the number of deviations from assigned corridors. With a plus or minus ten minute tolerance permitted, one hundred per cent of the pilots were able to meet the time requirement by the close of the test.[21]

During the test, the number of unknowns caused by deviation from flight plans was reduced from forty per cent to five per cent. An equally important reduction of from sixteen per cent to three per cent in the probability of a hostile aircraft being mistaken for a friendly aircraft occurred during the test.

As a result of the success of the test, the multiple corridor system was adopted as a permanent operation for the 28th Air Division, with some slight modifications. The success of "Porpoise" warranted, in the opinion of ADC a similar test on the East Coast, and EADF was ordered to conduct such a test using the radio beacon at Nantucket Island, with the radar at Camp Hero monitoring the approach of the penetrating aircraft.[22]

Before the test got under way, however, ADC was sufficiently convinced of the value of the new system to present Headquarters USAF

with a formal requirement for corridors along specific locations of the East and West Coasts and across the Canadian boundary.[23] Pending the concurrence of the many interested agencies to the new system, however, Headquarters USAF gave ADC permission to begin implementing its multiple corridors along the seaboard on a "test" basis.[24]

The widespread use of the multiple corridor system was not as simple a matter as it may have sounded, as EADF soon found out in an attempt to implement the system. For one thing, the system could be implemented only if certain conditions existed in the area of the multiple corridor "fan," i.e., if the corridors were free and uncluttered from any extraneous air traffic. For another thing, the system required long range navigational homers which were not present on the East Coast, in the locations in which EADF would have preferred them. Some of the planned corridors in the EADF area ran through airspace reservations set aside for Navy flying needs.

Attempts to set up a corridor off Atlantic City failed because of the lack of a radio beacon with sufficient power to mark the corridors in that area. A more basic cause for failure, however, was the reluctance of the Navy to relinquish the warning areas under its jurisdiction in that vicinity. This was a setback to EADF in view of the fact that Naval carrier aircraft represented one of the major motivations for the need for a corridor system. An analysis of active air defense missions off the coast in the 26th Air Division area over a four and one-half month period indicated at 64.9 per cent of the unknowns successfully intercepted in that area turned out to be naval aircraft. Although the Navy was willing to yield a point if certain modifications were made in the proposed operation, the issue

remained deadlocked so far as the Atlantic City multiple corridors were concerned.[25]

EADF was finally successful in establishing a system in the Nantucket area off Boston. Even here, however, the system was limited to a thirty-day test period because of the diplomatic problems attendant upon coordinating with a large number of civilian and military aviation agencies. The test, rather belatedly, got under way at Nantucket on 20 March 1953 though it was necessary to eliminate one of the corridors extending from Boston towards Yarmouth in Nova Scotia because of interference with Navy exercise areas.

The conclusions derived from the Nantucket test were vitiated to a large extent by the unfavorable conditions under which the experiment was conducted. In the first twenty-two days of the test, only twenty-eight per cent of the aircraft operating in the Nantucket area participated in the operation.[26] This low percentage was attributed directly to the absence or lack of qualified personnel at foreign ports to brief the pilots on their role. Much of the briefing for civil airlines pilots had been left in the hands of dispatchers, weather officers, and other personnel without operational experience. In many instances there were no personnel at all on hand to conduct a briefing, and at places like Shannon, Ireland, Prestwick, Scotland and Keflavik, Iceland, pilots were handed the envelope containing instructions on the multiple corridor plan without further explanation as to its use. Because of the resulting confusion it was agreed between EADF and ADC to send officers or trusted airmen to be stationed at specified foreign airports

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to brief all outgoing pilots. Eventually, eleven officers were sent on temporary duty for this purpose.[27]

Those pilots participating in the Test of the Multiple Corridor Identification System (TOMCIS) at Nantucket were of the opinion that more navigational aids would be needed to guide them to the proper corridor and to keep them within the confines. The deficiency was no news to either ADC or EADF, and it had been a long-standing complaint to WADF. However, pending development of better equipment by the Air Research and Development Command there was little that could be done.

A statistical analysis of the TOMCIS operation at EADF revealed that the communication methods being used to challenge incoming aircraft were cumbersome and resulted in excessive delays between detection and identification. It took an average of eight minutes to identify an aircraft after a challenge had been issued. The original plan called for direct communications between the radar stations and inbound aircraft, but with no equipment available it had been agreed that the CAA would make all challenges instead, thus introducting an extra link in the chain of communications. This delay was largely responsible for the excessive times recorded for identification. EADF even made the suggestion that the Nantucket radio beacon be equipped to allow voice modulation so that the direction center at North Truro might transmit challenges directly to the aircraft. ADC recognized the need for streamlining the procedure but noted that modulation would create other technical difficulties, and countered with the suggestion that EADF in conjunction with the CAA investigate the possibility of installing VHF transmitters to perform the same function.[28]

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In February 1953, ADC authorized WADF to establish a multiple corridor system on a test basis for the 27th Air Division in the Los Angeles area.[29] Air traffic, inbound to the Los Angeles area, entering on a flight path over Santa Barbara, was to be controlled by the multiple corridor procedure. Participation was to be voluntary, as with the 28th Air Division TOMCIS. Here again there was beacon trouble. Only a VHF omni-range facility was available at Santa Barbara, having a range of only 150 nautical miles, but in spite of this, the test began in May, using four corridors.[30]

A short time after the Los Angeles Multiple Corridor System (LAMCIS) became operational, the 27th Air Division requested an additional "fan" to provide corridors for aircraft flying into the San Diego-Long Beach area. When the request reached WADF, that command was obliged to coordinate the plan with the Navy, whose heavy traffic in the area was the chief cause for the request. The Navy, however, refused to modify its training schedule to conform to the requirements of the multiple corridor system. The plan was stalemated. The installation of beacon facilities at San Diego for emergency use only could not be justified in view of the considerable expense involved, and immediate use of the facilities depended upon the value to be gained in eliminating the confusion caused by the heavy naval air traffic in the vicinity.[31]

Thus, by the end of 1953, multiple corridor identification systems had been established on a trial-voluntary basis in the Boston, San Francisco and Los Angeles areas. Plans to establish systems in the Atlantic City and San Diego areas had failed because of the hesitancy

of the Navy to modify its naval flying training activities in those areas. Plans to extend the system to other areas were nipped in the bud because of the non-existence of adequate beacon facilities.

The matter of adequate beacon facilities had been broached by ADC to Headquarters USAF in mid-1952, with a request for the development of a beacon capable of providing effective communications and homing coverage to a distance of five hundred miles to sea. The eventual development by ARDC of the Consolan beacon prompted ADC in October 1953 to reiterate its request, emphasizing the need for that equipment. ADC noted that the installation of the new beacons would improve navigational accuracy to the point[32]

> where no more than estimated two per cent of the pilots should miss their assigned corridors against the fifteen per cent missing today. Thus, only two per cent will be subject to radio challenge and performance of the maneuver (virtually none miss the time tolerance at present at San Francisco) and the resulting unknowns should be one per cent or possibly less.

The request for Consolan beacons were approved in principle by Headquarters USAF, but it was called to ADC's attention that the installation of the beacons required expensive real estate acquisitions because the two antennas would have to be erected about 2.5 miles apart. After an exchange of views in which ADC remained adamant about the need for the new-type homers, USAF agreed to approve a plan for the installation of the multiple corridor system in two phases.[33] Phase I was to be limited to the standard type beacons as soon as frequencies for them were made available. These beacons were to be located in the Point Conception and Atlantic City areas. Phase II was to be concerned with the conversion

of the beacons to Consolan facilities "after the Multiple Corridor system has been successfully established at all four locations." The four locations were in the Boston, San Francisco, Los Angeles and Atlantic City areas.

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CHAPTER EIGHT

AIR TRAFFIC CONTROL IN AN EMERGENCY

I

The need for plans to provide for the control of civil and military air traffic in an emergency had been realized as soon as the decision had been made to establish an air defense in being in the spring of 1948. At that time, ADC's commander, General Stratemeyer, had called the serious deficiency in emergency control plans to the attention of Headquarters USAF, advocating that USAF and the CAA begin negotiations immediately towards the provision of such a plan. It has been recounted how ADC and the CAA, working together for "technical coordination" of the plans for emergency controls, finally came up with such a guide plan in the fall of 1948, and how Headquarters USAF and the CAA issued it as a joint plan in April 1949.[1]

The April plan, however, remained an academic matter in view of the non-existence of legal controls. Furthermore, the air defense system itself, during 1949, was in no condition to execute the important responsibilities which the plan imposed upon ADC. No steps were taken either by ADC or by CAA to plan on a more detailed basis on the local level.

In the fall of 1948, ADC submitted a plan for the control of military air traffic in an emergency. Because of the prematurity of the plan submitted by ADC, in view of the many problems of coordination with numerous military agencies, the ADC plan was approved only in principle.[2]

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As a result of the abortive nature of both of the emergency control plans of late 1948, therefore, there were no concrete plans in force during 1949 and the first half of 1950 for the control of either military or civil aircraft during an emergency.

The outbreak of the Korean War in June 1950 revived activity in this respect. On 10 August 1950, Headquarters ConAC directed its Air Defense Forces to make detailed plans with the CAA Regional Administrators to control civil and military aircraft moving within the continental United States under emergency conditions.[3] In this directive, no reference was made to the existence of the plan of April 1949. Rather, a new set of guiding principles of a very general nature was laid down by ADC. Planning details were to be based on three conditions of alert: RED, YELLOW, and WHITE. In a RED alert (actual identification of a hostile aircraft within an air defense sector) division commanders were directed to ground, disperse, or divert, at their discretion, all civil aircraft by the issuance of the necessary orders to the appropriate ARTCC's. In a YELLOW alert condition (attack likely) the CAA authorities within a sector were to take actions previously agreed upon between the CAA and the Air Division commander. During a WHITE alert (all clear) flying would be unrestricted, but in accordance with appropriate military and civilian air regulations.

The failure of ADC to provide more specific instructions than these to the Defense Forces, was explained to them in part by the information that the CAA was planning to publish a civil air regulation which would set forth the procedures to be followed by civil aircraft

in the event of an emergency. However, "in order to cover the interim period prior to this regulation being finalized, plans must be made to control aircraft upon declaration of an emergency by the Air Defense Commander."[4] This generally worded statement had the effect of making the divisional commander the arbiter of air traffic movements in the event of an emergency.

This hasty directive was by no means a satisfactory one. For one thing, and very important indeed, no legal authority had been allocated to either ADC nor to CAA to restrict air traffic in peace or war. Also, the principles set down in the directive were so generally worded that little action could be taken of a practical nature by the air divisions based on its wording.

ConAC was well aware of the shortcomings of its instructions to its operating units. Nevertheless, in its opinion, time was of the essence in the hectic circumstances of the opening months of the Korean crisis. On its own level, Headquarters ConAC began negotiations in earnest with CAA to provide the Defense Forces with a more concrete guide for emergency control procedures.

Fortunately, before the divisions had an opportunity to get well under way with their planning, Public Law 778 provided the machinery for legal directives to control air traffic during an emergency. The Secretary of Commerce was to direct the preparation of the necessary regulations. Before the Executive Order was issued, so empowering the Secretary of Commerce, however, the CAA took it upon itself to order its regional administrators to begin planning with the ConAC's division commanders for emer-

gency controls on a local basis.[5] In December 1950, CAA Regulation Part 620 was issued,[6] in general terms notifying civil airmen that:

> under emergency defense conditions which involved the national security . . . aircraft shall be operated into or within an ADIZ in accordance with such additional special security instructions issued by the Administrator as may be deemed necessary for the identification and location and control of a particular flight.

The precise nature of the "additional special security instructions" could only be determined, of course, after the question of emergency control procedures had been carefully studied. The local plans then underway would reveal the requirements of the air defense system.

During the latter part of 1950, planning on a local level proceeded on a feverish pace. Other agencies also entered the scene in plans for control of aircraft in an emergency. The Emergency Aviation Council, representing thirteen national aviation organizations and the National Association of State Aviation officials, was also vitally concerned with emergency procedures. In December 1950, this group drew up a general mobilization plan and forwarded it to the CAA for distribution.[7] The plan was a guide to mobilization plans on a state level. The effect of it was to put the whole state aviation effort under the state director of civil defense, who was to work in coordination with the air defense commander concerned. The Defense Forces welcomed these plans and looked upon them as appendices to the divisional plans which they were busily drawing up at the time with the CAA.

By the end of 1950, discussions between ConAC and CAA on a more elaborate guide for emergency measures reached fruition in an

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Interim proposal. The proposal was developed primarily by ConAC and submitted to the Joint CAA-USAF Air Defense Planning Board and to the National Security Resources Board. In both of these latter agencies many discussions were held and recommendations made. These suggestions were submitted to USAF and many of them were incorporated into the document. The plan was then issued by USAF, and distributed to the Navy, the USAF commands, and to the CAA.[8]

The title of the plan indicated that it was a "joint plan." In reality, however, it was drawn up entirely by ConAC, based upon discussions with the CAA and upon the experience of the preceding six months of local planning on a division level. The CAA was not asked to express approval of the plan, and when the plan was submitted to the CAA, the latter was informed that the plan was an approved Air Force document. Somewhat taken aback at this unilateral proceeding on the part of USAF, CAA nevertheless quickly gave its support to the plan as an immediate operational necessity, even though it had some reservations about it. In the opinion of the CAA the "interim" proposal was just that, and the objective of the ensuing months would be to bring it into line with the realities of the situation as the CAA saw them.[9]

Simultaneously with the appearance of the draft interim proposal in December 1950, the CAA, at the request of ADC, issued an interim plan of its own, governing "Operational Procedures for the Control of Electromagnetic Radiations".[10] The plan was approved by the Chief of Staff, USAF in January. This latter plan, however, in view of the fact that no executive order had been issued allocating responsibility for the issuance of

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control measures for electronic emmissions, was ineffectual, though as a basic planning guide it proved invaluable during the period.

In submitting the emergency security control plan for approval to Headquarters USAF, ADC was not too sanguine about its effectiveness so far as the control of military air traffic was concerned. Though provisions were made in the plan for the emergency control of all air traffic, ADC pointed out to USAF that it was doubtful whether the other USAF commands and other services would cooperate fully without express instructions to do so from a higher level than ADC's. The cooperation of the Canadians was also a vital matter in ADC's opinion if the plan was to succeed, and USAF was importuned to obtain the coordination of the Canadians in the plan.[11]

The Interim Joint Plan For the Movement Control of Civil and Military Aircraft was published by USAF on 1 March 1951.[12] The plan was to become effective under a military emergency.

The question of what constituted a military emergency was specifically stated as 1) a presidential proclamation to that effect, 2) a congressional declaration of war, 3) a "tense military situation" in which the Commanding General of ADC would declare a state of military emergency, or 4) an actual attack on targets by the enemy within the continental United States. In defining the conditions of a military emergency, ADC was treading upon virgin territory so far as legal interpretation of the phrase was concerned. Especially was ADC upon rather shaky ground when it stated categorically that the Commanding General of its own command had the authority to announce that a con-

dition existed which would affect all air traffic throughout the land. In answering a query on this point, the ADC commander, General Whitehead stated that:[13]

> the tense military situation referred to in par. 4a of the interim plan will be based largely on intelligence available to me indicating the extreme likelihood of imminent hostile attack upon the continental United States. This intelligence in all likelihood would not be available to the general public. When in my judgment, conditions dictate the establishment of extraordinary precautionary measures such as the strict control over air traffic outlined in the interim plan, I intend to do so.

In the Interim Plan, the Domestic and Coastal ADIZ's previously established in AFR 60-22 and in CAA Regulation Part 620, were to comprise the areas in which emergency controls were to be exercised. However, in addition to these ADIZ's there was also to be created during an emergency, a new Domestic ADIZ which was to include the entire area under the jurisdiction of EADF, embracing the northeastern part of the United States. In other words, the emergency controls in the Interim Plan were predicated upon the control of air traffic within Air Defense Identification Zones.[14] No mention was made of controls outside of these areas.

Within these control areas the air division commanders were to direct the type of security control measures to be effected on both civil and military aircraft, based upon the requirements of the existing military situation. The specific operations involved were to be accomplished through the CAA regional administrators and their facilities. The National Security Resources Board was to develop a priority listing of air traffic considered essential to the public interest in emergency conditions. This priority list was to be used by the CAA in adjusting the quantity of the air traffic to the capability of the air defense

system to identify and control. Pending such a definitive listing, however, an interim priority list was to be prepared immediately by the Joint CAA-USAF Air Defense Planning Board.

The plan did not attempt to control military aircraft involved in tactical operations. These operations, however, were to be coordinated with the divisional commander concerned. Non-tactical military flights were to be conducted in accordance with AFR 60-22. It was also noted in the plan that the division commander had the prerogative to exempt certain categories of aircraft from compliance with emergency measures. Specific restrictions under each of the conditions of alert (RED, YELLOW, WHITE) and were to be put into effect upon notification by the division commander to the CAA. Within each of the ADIZ's there were to be designated corridors and reporting points, and these were itemized in detail in the plan.

The significant feature of the Interim Plan as compared with the Security Control of Air Traffic Plan (SCAT) which was to follow a year later, was the determination to control air traffic within legally demarcated ADIZ's. Realizing that the ADIZ configuration in existence at the time of the publication of the Interim Plan would be changed in relatively short time by the expansion of the air defense system, ADC proposed to build up the ADIZ pattern in two additional phases until most of the country would be covered with these zones. This premise in the Interim Plan was immediately challenged by the Eastern Air Defense Force, which rejected the proposal for an eventual nation-wide ADIZ, which was to be applicable both to emergency as well

as peacetime conditions, in favor of a latent national ADIZ which would be realized piecemeal where needed during emergency conditions. It was EADF's belief that a nation-wide ADIZ coverage during peacetime would create an intolerable burden on the air defense system, especially in congested areas such as the Northeast. Though EADF did not discount the value of designating such extensive ADIZs during peacetime in advance of an emergency, it preferred to make control measures within those ADIZ's contingent upon the military requirements of an actual emergency.[15] Eventually, neither the ADC nor the EADF viewpoint prevailed, as will be indicated shortly. In the meantime, however, EADF pointed out that if the EADF domestic ADIZ was to be created during an emergency, public knowledge of this fact was required, and it recommended that notice of the proposed emergency ADIZ be incorporated in CAA Part 620 immediately. However, before action was taken on EADF's request, the idea of an emergency ADIZ in the EADF area was discarded as will be revealed shortly.

So far as the control of electromagnetic radiations was concerned, the Interim Plan was silent, except to state that radiations under the control of the Federal Communications Commission would be controlled by the latter agency. Such facilities included radio and television transmitters, but not navigational aids such as beacons, which were controlled by the CAA.

The Interim Plan was forwarded to the Defense Forces, and once more they were instructed to provide detailed plans on a division level in conjunction with the CAA regional administrators. Certain items in the Interim Plan were immediately questioned by the Defense Forces. For example, EADF noted that in the conditions making for a military emergency,

no mention was made of the possibility of an aircraft bearing the markings of the USSR appearing within the limits of the United States without filing a flight plan.[16] This deficiency was immediately remedied by ADC in the plan. WADF, in its turn, expressed concern that the plan did not provide authority for the division commander to initiate emergency controls short of an actual military emergency condition. WADF pointed out that an aircraft might be identified as hostile without having made an overt attack, a situation warranting the enforcement of controls by the division commander. ADC made it quite clear that the division commander had such a prerogative under the plan, but in order to avoid confusion on the subject, the wording of the plan was remedied to make it quite clear in this respect.[17]

It will be recalled that the Interim Plan was somewhat of a surprise to the CAA. In April 1951, a meeting of CAA Liaison Officers on duty with the Air Defense Command met in Chicago to discuss the plan. Though it was understood that ADC possessed no legal authority to order the CAA to take the protective measures indicated in the plan, the CAA officials agreed to follow any such orders that became necessary, once more revealing the excellent spirit of cooperation that characterized the relations between the two agencies.[18] A significant feature of this conference was the attempt of the CAA to combine the Interim Plan and the CAA plan for the control of electromagnetic radiations (navigational aids) into one effort in the plans being drawn up by the divisions and the CAA regional administrators. ADC was amenable to this suggestion and the divisions were so directed.[19]

Shortly after the Interim Plan was published by USAF it was noted that the listing of corridors and reporting points in the plan was not definitive, and that a more accurate listing would undoubtedly result from the divisional-CAA planning. Consequently USAF directed ADC to ignore the corridors mentioned in the plan and to cooperate with the CAA in drawing up a more realistic list.[20]

During the balance of 1951, planning was conducted on emergency controls at all levels within ADC. The divisions worked closely with the CAA regional administrators on security controls and the control of navigational aids, while ADC and the CAA, on their level, reexamined the premises contained in the Interim plan. During the latter half of 1951 another agency entered the picture in the form of the Civil Air Patrol (CAP), which was endowed with certain important responsibilities for rescue and relief operations in an emergency. The CAP presented ADC with its own emergency plan, and in a test known as Operation TRI-STATE, in the EADF area, the feasibility of the plan was revealed.[21] However, the emergency operations of state-controlled aircraft and the CAP moved EADF to ask the important question as to what would happen if such an aircraft was suspected of being a hostile by an ADC fighter pilot. EADF proposed that procedures be established in such a case to divert the aircraft, force it to land, impound it and investigate crew and passengers. In November 1951, ADC presented its own plan to Headquarters USAF for such a contingency, but the suggestion was pigeon-holed by higher headquarters pending more information on emergency measures agreed upon by the divisions and the CAA.

By the fall of 1951, many of the divisional plans had been completed, and ADC was quite impatient to test their practicability. It was proposed to the CAA that an extensive test of the plans be conducted during the ADC November air defense exercise. CAA, however, was loathe to do so in view of the fact that insufficient time had elapsed in order to receive and correlate the many plans written on the local level. The test of the plans was postponed, consequently, until the spring of 1952.[23]

II

During the latter half of 1951, ADC Headquarters, the Office of the Administrator of the CAA, and the Joint USAF-CAA Air Defense Planning Board, were busy in an attempt to replace the Interim plan with a final plan for emergency controls. The year 1951 was an especially significant one in identification controversies both on a high level and on the unit level. It will be recalled from the chapter on ADIZ's that during 1951 a full scale debate took place on the subject of proper role of the ADIZ's between EADF and ADC Headquarters. Also, during the latter part of 1951, ADC became convinced that the existing strategy of air defense weapons deployment was ineffective, and opinions within the Headquarters began to lean towards the double perimeter concept proposed by the Weapons Systems Evaluation Group. The penetrating arguments of EADF in regard to the ineffectiveness of a blanket coverage of the nation with ADIZ's, and the thesis of the WSEG that defense must be concentrated in manageable areas, was responsible during this period for an alteration of ADC's views towards emergency control prin-

ciples. This change of view was reflected in the planning for a definitive security control plan for emergencies.

The efforts which took place to draft the new plan were concentrated in the Joint Board. By the 27th of September 1951, a draft was accomplished and approved after considerable coordinating activity by other interested agencies.[24] However, subsequent to the approval of the final draft by the Joint Board, the CAA took exception to one portion of the plan which granted the Air Defense Commanders authority to impose air traffic control anywhere within the continental United States, if necessary, during an emergency, regardless of the existence in those areas of ADIZ's. The CAA objections prompted that agency to draft an alternate plan in which the continental United States was divided into three basic types of areas for air traffic control purposes, i.e., ADIZ's, Military Emergency Security Areas (MESA's) and Other Areas, with varying degrees of restrictions in each.[25]

The difference of opinion between the CAA and USAF was a significant one. Whether the nation was to be blanketed with ADIZ's, no matter what particular name they were to be known by, was immaterial. What the Air Force desired was the right to control air traffic wherever it was required. The objection of the CAA was that such ubiquitous authority, if exercised arbitrarily, would tend to cripple air traffic during emergency conditions and it proposed to limit military authority to specific areas of the country. The ADC view of the matter was predicated upon the principle of decentralization of authority from the Headquarters to the divisional level. Emergency air defense measures based on the principle that the air division commander was to be the arbiter of emergency measures within his

sector. Any compromise with this principle made necessary by the restriction of emergency controls to only designated areas, was unpalatable to ADC.

The dilemma was resolved eventually by tailoring the emergency measures to the particular situation as it developed in individual air defense sectors. It was this principle which emerged as the key feature of a new Security Control of Air Traffic (SCAT) plan which was published in July 1952.[26]

The fundamental difference between the Interim Plan and the SCAT plan was in the areas in which emergency controls were to be exercised. In the words of the standard briefing on the SCAT plan published by ADC:[27]

> Since we had gained a great deal of experience from our operations with the ADIZ's which were designated about a year before, we believed that the original concept to cover the major portion of the United States with ADIZ's should be carefully analyzed and, if necessary, discarded, and that a new approach to the problem of identification and security control of air traffic should be adopted. Therefore, after considerable study we adopted a new concept which was based on providing positive identification of aircraft approaching the perimeters of the Continental United States with a secondary identification capability around critical target areas within the United States. Realizing that under this concept a great portion of the United States would not be covered with ADIZ's we believe that aircraft, operating outside ADIZ's during Warning RED or YELLOW conditions, should also be subjected to certain restrictions if we were to employ our available defenses to the best advantage.

The SCAT plan made no mention of a future extension of ADIZ's beyond those already established in the two regulations of 1950. Even the emergency ADIZ in the EADF area which had been created by the Interim Joint Plan was dropped.

The conditions making for a "military emergency" in the SCAT plan were similar to those in the Interim plan, with the exception that an additional condition was interjected. A directive to be issued by the JCS, based on top level intelligence indicating that a hostile air attack had been launched and was enroute to the United States was included as a condition. The "tense military situation" criterion in the Interim plan was reworded to remove any semblance of unfounded cause in the ADC's commander's declaration of a military emergency condition. Instead, there was substituted the clause that the ADC commander must be satisfied "beyond a reasonable doubt" that a hostile air attack on the continental United States was imminent.[28]

The restrictions to be imposed on air traffic under each of the alert conditions (Red, Yellow, White) were enumerated in detail in the SCAT plan, whereas they had not been mentioned in the Interim Plan. Only in the case of a Warning WHITE condition was any differentiation made between aircraft which flew within and those which flew outside of ADIZ's. In a White condition, if aircraft were present within an ADIZ, they were required to be on IFR or DVFR operation, and had to be equipped with a two-way radio tuned to a continuous watch on the appropriate frequencies. Traffic within the ADIZ was to be adjusted to the capacity of the air defense system by the CAA, which was to employ as its guide priority listings provided to it. Flights were to be confined to corridors designated by division plans, and position reports would be made as specific in those plans. Local flights were to be restricted, with provisions made for their ready recall. Flights entering the

United States were to be cleared first at designated departure points outside of the United States. Aircraft operating outside of ADIZ's had to be equipped with a radio receiver tuned to a continuous watch on the appropriate frequency, or, if no radio was available in the aircraft, the flights were to be confined to prescribed altitudes and time limits. Recall by visual means was mandatory if neither of the two preceding conditions were possible.

During a RED alert, all flights were to be grounded everywhere unless previously approved by the air division commanders. All airborne traffic during this alert conditions was to be directed to land or diverted away from the point under attack. Plans for the control of electromagnetic radiations were to be put into force immediately. In a Warning YELLOW condition, any or all of the restrictions listed for condition RED were to be applicable.

The plan, signed by the Secretary of Defense and the Secretary of Commerce was officially issued on 15 July 1952. The Air Force adopted it as AFR 60-24 dated 10 September 1952, thus insuring that military aircraft came under its provisions as well. The Air Defense Command was explicitly made responsible in the latter regulation for the "further development and accomplishment" of SCAT, as the plan was generally known.

The plan subscribed to the premise of decentralized air defense operations held by ADC. The division commander was explicitly made the aribter as to how extensive emergency controls of civil and military aircraft were to be -- except those engaged in tactical operations. As

to the latter category of aircraft:

> This plan is not applicable to military aircraft engaged in tactical operations. These operations will be coordinated by prior planning with the Air Division Commander concerned so as not to delay combat operations.

An innovation in the SCAT plan was the stipulation that under certain conditions of alert, in specific areas, the Air Division Commander could require a "security clearance" for civil and non-tactical military aircraft prior to take off. Such security clearance was "different from and not to be confused with an operational or air traffic clearance."[30]

> /The security clearance/ will serve normally to insure that the pilot is informed of the current condition of alert and that his operation is of sufficient priority if any capacity restrictions are in effect.

The SCAT plan was primarily designed as a guide for the division commanders and the CAA regional administrators who were to prepare the detailed plans for emergency controls. Also, the function of the SCAT plan was to inform both civil and military organizations of the extent of the controls which were likely to be put into effect during emergency conditions.[31] Specifically,

> To supplement this plan, detailed plans for the exercise of security control of air traffic within his sector of responsibility will be formulated by the Air Division Commander who will coordinate planning with appropriate agencies including those of the Armed Forces and local CAA Regional Administrators.
>
> In developing the detailed plans, the Air Division Commanders will take into consideration, in addition to the requirements of military non-tactical operations, the peculiar requirements of organized civil defense and disaster relief flights, agricultural and forest-fire patrol flight operations and other essential civil air operations to the end that maximum utilization of these aircraft consistent with air defense requirements, will be made.

IV

During the latter half of 1952 the CAA and the air divisions continued their work to develop detailed emergency plans on their level. The way the plans developed caused some misgivings on the part of ADC because of the divergencies in their form and content. Also, it was soon apparent that the division plans contained classified information which it would be hazardous to release indiscriminately to the general public. Early in 1953, ADC presented to the divisions a standard format for the local plans which bore the title SCATER, i.e., "Security Control of Air Traffic and Electromagnetic Radiations."[32] The divisions were to recast their plans according to the prescribed format.

It soon became apparent, however, that the standard format itself was not the answer to the troublesome question of standardization and security. A conference at ADC Headquarters in April 1953 concluded that "a majority of the plans reviewed contain policy inconsistencies and wide divergencies of procedure and operating detail." It was observed that:[38]

> If they were released in unclassified form for the benefit of the general public, this command as a whole would be open to much adverse criticism from civil agencies whose cooperation is essential to the effective continuation of this program.

Once more, ADC decided to attempt to solve the problem of standardization and security -- this time by providing the divisions with a new format which would be a completely unclassified basic outline plan. ADC realized, however, that it would probably be necessary to provide supplemental information and instructions to the basic plan

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in separate form to those agencies and facilities which would play an active part in the implementation of the division plans. In September a standard classified plan was also amended by ADC.

The subject matter of the division plans which caused most concern from a security point of view was that which dealt with the emergency of tactical air traffic. Under the provisions of military regulations governing the dissemination of classified information of this nature, the CAA authorities were denied such information. However, it would be the CAA which would require this information in an emergency to implement the traffic control plans. To this end, ADC informed its Defense Forces, that if there were no other way out, ADC would request an amendment of the security regulations to permit the CAA to obtain the indispensable information.[34]

Another troublesome problem encountered by the divisions and the CAA in formulating their detailed plans, was that of non-scheduled flying. Military and air carrier traffic presented few problems because of the ease with which their operations offices would be contacted at any time to advise them of changing security restrictions. On the other hand, the nonscheduled civil operator was often out of touch with any CAA radio facility except when he was actually flying. It was this problem which had originally prompted the authors of the SCAT plan to include the somewhat vague provision about "security clearances" in the plan. When the plan was written, however, "it was thought that such a clearance might not be required anywhere at all times and that it would seldom, if ever, be required outside of ADIZ's." After more thought to the question was given, however, "it now appears that the security clear-

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ance requirement will apply everywhere for the duration of the emergency."[35]

Plans for implementing the security clearance requirement were difficult to develop in detail because of the realization that non-scheduled civil operations during an actual emergency would be greatly different from those being conducted during peacetime. Certain types of activity might be reduced during an emergency, while new activities might be required to support the national defense effort. The key to the control of this type of flying activity quite obviously lay in the hands of state flying organizations, and local airport managers. Realizing this fact, a meeting of CAA Liaison Officers and members of the National Association of State Aviation Officials met at Tinker Air Force Base early in June 1953 to stress the importance of integrating state emergency plans with those of the CAA and ADC. Procedures were established at the meeting for making possible a closer understanding between the state officials and the CAA. One point which was observed at the conference was that the state officials were especially cheered at the realization that the actual restrictions would stem from the civil CAA organization rather than the military. This seemed to alleviate their fears that civil aviation would be placed in the control of military authorities, who might not be cognizant of the special needs of the civilian population.[36]

V

Perhaps the most difficult topic the divisions and the CAA regional administrators had to deal with in their local SCATER plans was that of electromagnetic radiations. The problem lay not so much

in turning key navigational aids off in an emergency as it did in trying to decide which aids were to be turned off. The problem was an exceedingly complicated one. At the root of the difficulty lay the emergency requirements of SAC, MATS, TAC, and the Navy. These agencies had far flung commitments to carry out during an emergency. Great readjustments would take place in their operations, aimed at reprisal or support of the war effort. In their greatly accelerated operations during an emergency, these agencies would have need for continued use of key navigational aids, and consequently, in order to determine which of these aids were to be retained in use, the CAA needed detailed blueprints of the precise nature of their flying activities. This information, however, was not as firm in the minds of the agencies themselves as either ADC or CAA would have liked. To extract such information on the movements of tactical aircraft in an emergency occasioned many negotiations between the USAF commands, the Navy, and ADC, and resulted in continuous revisions of the SCATER plans.[37]

To render the problem even more complicated, ADC, too, developed elaborate plans for the employment of fighter forces belonging to its sister USAF commands in an emergency. These augmentation forces were to be redeployed from their home bases in the area they were to defend. These augmentation plans of ADC called for aircraft to be in the air enroute to their operational bases at the moment an emergency was recognized. To distinguish such augmentation flights, CAA was notified that such flights would bear the prefix "DAU" when their plans were reported to CAA facilities at the time of an emergency.[38]

In August 1951 MATS, SAC, TAC and ADC met in conference to discuss the need of precise plans.[39] SAC, being obliged to keep such emergency plans continuously up-to-date, had no difficulty in providing ADC with precise information. Such was not the case with MATS and TAC however. These latter two commands were forced to prepare such plans for the specific purpose. By the end of 1952, such emergency data had been provided by these commands and passed by ADC to the air divisions.[40]

In the Interim Joint Plan of 1951, as well as in the subsequent SCAT plan, the movement of tactical aircraft had been specifically excluded from the imposition of flight restrictions. Though ADC had no grievance on this score, it did believe, that unless "tactical operations" were defined specifically, the tendency would exist for ADC's sister commands to enlarge the category of tactical operations to include many non-tactical military flights, thus defeating the purpose of emergency controls. Repeated briefings to the other USAF commands by ADC underlined the danger of unrestricted military operations in an emergency, and USAF was asked to see to it that it was understood that only essential military traffic would be immune from flight restrictions.[41]

The problem of tactical military flights touched off a concerted objection from the Defense Forces. ADC, recognizing the indispensable services to the war effort of unimpeded tactical flights during an emergency favored the view that such flights should be aided by allowing all the navigational aids necessary to help them remain on the air. In other words, though recognizing that the operating navigational aids might very well aid the enemy, ADC put a greater priority on the service of the electronic homers to friendly traffic. The Defense

Forces, though recognizing the value to the war effort of unimpeded military traffic, nevertheless objected to the unqualified policy that navigational aids would remain operating regardless of the nature of the tactical situation within a sector.[42] At the root of the Defense Forces objection was the fact that there was so much of this kind of traffic to provide for in an emergency. WADF commented that the pre-plotted courses of emergency tactical traffic looked like a "tangle of jack straws". WADF also expressed that the accelerated emergency tactical traffic would have the effect of crippling the identification system, and negating the entire purpose of the SCATER plans. This was truly a dilemma for the division commanders, who sought to keep control of the flow of traffic in their own sectors during an emergency. ADC, however, was adamant. The policy of giving priority to friendly traffic in every instance was reiterated without qualification.[43]

In 1953, ADC had to face a new problem associated with the control of military air traffic in an emergency. A survey of the division plans revealed that in some serious instances conflicts would arise when TAC, SAC, ADC augmentation, or MATS aircraft converged in specific areas en route to their emergency destinations. The allocation of priorities to the movement of such traffic would have been too presumptuous for ADC to handle by itself, and Headquarters USAF was called upon to resolve the problem.[44] In mid-1954 the question was still being considered at higher levels. All such instances as they developed had the effect of causing the divisions to rewrite their SCATER plans -- a process which was continuous during the period since the divisions were first directed

to prepare local plans.

The first major test of the division SCATER plans occurred during ADC's nation-wide test of the air defense system in Operation TAIL WIND in July 1953, although local tests had been conducted in most divisions during 1952.[45] In these "dry-runs" certain unpalatable observations were made. It was discovered that the turning off of navigational aids took an excessive amount of time. This had been anticipated by CAA and ADC as early as 1951 when a project to develop a remote control device which would enable officials at the ARTCC to turn off navigational aids almost instantly was undertaken. By mid-1954 installation of a new device was progressing rapidly under the efficient aegis of the CAA.

Another observation gleaned from the tests of the division plans was that the time it would take to clear the air of civilian and non-tactical military traffic would probably be excessive. Where such measures were undertaken within ADIZ's, where all aircraft above 4,000' were obliged to file flight plans, the problem was not of great magnitude, the flights being plotted in advance. But in non-ADIZ areas where only IFR traffic was charted by the CAA, the problem was a serious one. The VFR traffic therein had to be cleared from the sky. In the exercise, the time it would take to clear the skies of such traffic could not be determined because no means existed whereby such traffic could be discovered or contacted in the air. Lacking a means whereby the efficacy of emergency procedures could be tested under realistic conditions, ADC had to rest content in the fond hope that all of the agencies partici-

pating in the SCATER plans would carry out their obligations to the letter in an actual emergency under peacetime conditions, a full-dress rehearsal of the SCATER plans with consequent enforcement of the drastic control provisions of the plans, appeared to be intolerable to civilian aviation.

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CHAPTER NINE

IDENTIFICATION BY ELECTRONICS

In spite of the poor showing made by IFF (Identification Friend or Foe) devices during World War II, the use of an electronic means of identification remained, in the opinion of the Air Force, a prime requirement. At war's end, however, new lines of investigation had to be undertaken in electronic research for identification in view of the compromise of the Mark III IFF equipment during the late war by the loan of some five hundred sets to the Russians.

In October 1948, the Joint Chiefs of Staff determined to replace the Mark III equipment at the earliest practicable date with a new device to be known as the Mark X.[1] However, in view of the fact that the new equipment would take several years in development and production, it was decided to retain the Mark III set in use for training purposes.[2]

The Mark X equipment was to have certain advantages which were not present in the older equipment. In addition to the primary function of electronic identification, the Mark X was also to provide a "beacon assist" in the tracking and control of high speed aircraft.[3] It would be capable of emitting a beacon from the aircraft using the equipment which would register on the ground radar's PPI scope to distances up to two hundred miles. This particular feature of the Mark X rendered it especially valuable to the air defense system which had been plagued with the difficulty of "seeing" its own fighter aircraft by means of ground radar. Having little precedent to expect miracles of IFF equip-

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ment for positive identification of aircraft in flight, the air defense units of ADC can be excused in eagerly anticipating that the advantage of the new IFF device would lie in the field of a radar "assist" for fighter aircraft, rather than in identification.

It was recognized that the widespread use of the Mark X system by all USAF aircraft and many civilian aircraft would make the equipment vulnerable to compromise in case an aircraft so-equipped fell into the hands of a potential enemy. As a result, efforts were taken by USAF to make the Mark X more secure by the addition to the basic set of a modification which would provide the system with the required security. The modification, developed by the Air Research and Development Command, and known as the Selective Identification Feature (SIF) was put into production, and by the fall of 1953, was ready for testing.[4] In September 1953, EADF was chosen to test the equipment in two hundred fighter aircraft, and in twenty-eight ground radar stations. By mid-1954 the process of fitting the EADF fighters with the SIF device in preparation for the test was still underway. The test itself was expected to last for approximately one year.[5]

Prior to the retrofit of the EADF test-aircraft with the SIF device, most, if not all of the fighters in the ADC air defense system had been provided with the basic components of the new IFF.[6] This basic Mark X equipment, which was operational and readily available for use by the Defense Forces, caused a certain amount of impatience in the latter. In view of the difficulties experienced in identification, the Defense Forces were restive at the fact that the equipment could not be

employed for identification -- even in a limited capacity.[7] ADC's answer to requests to place the Mark X in operation for identification purposes emphasized the lack of security in the basic device:[8]

> This headquarters does not concur with the use of IFF in its present state as a means of identification. The present Mark X is limited to beacon assist only. It has been directed by USAF that the Mark X will only be used for identification when the SIF portion is available.

The extent to which IFF was to be used in the nation's aircraft presented USAF with many problems. USAF policy stated that the Mark X was to be used in all USAF-controlled aircraft with the exception of light-training aircraft and helicopters.[9] Also, all aircraft of the Civil Reserve Air Fleet (CRAF), which were to be used in an emergency were to be equipped with basic portion of the Mark X (Group A parts). When danger was imminent, these aircraft were to receive their Group B parts, giving them a full IFF capability. All other civil aircraft were not to receive any IFF equipment. This decision was in line with the security control provisions of the SCATER plans which limited air traffic in an emergency to tactical traffic and to essential logistic flights only. So far as USAF tactical aircraft were concerned, the installation of an additional piece of equipment in the pilot's cockpit, such as the SIF device, caused much discussion. In aircraft already saturated with electronic equipment, such as the F-94C, the decision to include the SIF made it necessary to remove other equipment hitherto considered necessary.[10]

The extent to which IFF was to influence identification in air defense, therefore, was still an unknown factor in mid-1954. Although

the positive advantages of IFF as a beacon assist to jet fighters was already proven, much to the gratification of radar operators, the role of IFF in identification still awaited an appraisal of the large-scale EADF experiment. In any event, any stone which promised to reveal benefits to identification was worth turning.

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REFERENCE NOTES

Documents cited in this study are available in the Headquarters ADC Historical Directorate, the Headquarters USAF Historical Division, or in the files of ADC lower-echelon units. The document location is shown by the following abbreviations:

DOC____. indicates that the document is a supporting document to this study only and is located at the Headquarters ADC Historical Directorate and the Headquarters USAF Historical Division.

ADCHR #____, Doc____. (#1 covers period to June 1951, #2 to December 1951, etc.). indicates that the document has been used as a supporting document to a previous Headquarters ADC Historical Report, as shown, and is located at the Headquarters ADC Historical Directorate and the Headquarters USAF Historical Division.

ADC Unit, Semi-annual Period, Doc____, e.g., WADF, 1951A, Doc 235. ("A" refers to the period 1 January to 30 June, "B" to 1 July to 31 December.). indicates that the document has been used as a supporting document in an ADC lower-echelon unit and is located in the particular unit's files, at the Headquarters ADC Historical Directorate, and at the Headquarters USAF Historical Division.

HRF____. indicates that document has not been used in a previous history and is located only in the Headquarters ADC Historical Directorate's Historical Reference Files.

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by allan R. Bliss

CHAPTER ONE

1. The most useful and accessible information on identification procedures and problems in World War II known to the author is to be found in an anonymous USAF Historical Division Study entitled, "The Air Defense of the Continental United States, 1935-1945," Volume II. Additional information can be found in W. F. Craven and J. L. Cate, eds., The Army Air Forces in World War II, Vol. I, Chicago, 1948, ch. 8. Most of the material used in the first chapter of the present study has been obtained from the first-mentioned source.

CHAPTER TWO

1. For a detailed discussion of the planned use of augmentation forces in an emergency during 1946-1948, see ADC Historical Study No. 5, Emergency Air Defense Forces, 1946-1954, 1954, ch. 1.

2. For a discussion of the Northwest maneuver of 1948, see ADCHR #1, ch. 3.

3. ADC Historical Study No. 1, The Air Defense of Atomic Energy Installations, 1953, p 3.

4. ADC Reg. 100-5, "Identification of Aircraft for Air Defense," 30 Jun 1948 (DOC 1).

5. Memo, Lt Col W. W. Bailey to Lt Col O. G. Quanrud, 10 Jun 1948 (DOC 2).

6. ADC to CH's, 1st, 4th, 10th and 11th Air Forces, "Identification of Aircraft for Air Defense," 2 Sep 1948 (ADCHR #1, Doc. 261).

7. As in n 6.

8. Fourth AF to ConAC, "Progress Report on Identification of Aircraft for Air Defense," 20 Jan 1949 (ADCHR #1, Doc. 262).

9. ADC to USAF, "Air Traffic and Air Communications Control," 3 May 1948 (ADCHR #1, 263).

10. As in n 9, 1st Ind, USAF to ADC, 21 May 1948.

11. As in n 9.

12. As in n 10; also ADC to Mr. J. D. Blatt, 25 Jun 1948 (DOC 3).

13. Draft, "A Plan for the Control of Civil Air Traffic in an Emergency," 26 Jul 1948 (DOC 4).

14. As in n 13.

[redacted]

15. As in n 13.

16. As in n 13.

17. As in n 13.

18. As in n 13.

19. ADC to USAF, "Security Control of Civil Air Traffic," 21 Oct 1948 (DOC 5).

20. ADC, "Standard Briefing on Plan for Security Control of Air Traffic During a Military Emergency," Jan 1953, p 16. The test of the plan as published on 1 April 1949 was not available to the historian.

21. As in n 13.

22. ADC to USAF, "Control of Military Air Traffic in Emergencies," 20 Oct 1948 (DOC 6).

23. As in n 22.

24. USAF, USAF Policy on Doctrine and Procedures for the Air Defense of the United States, 10 Jun 1949 (HRF).

25. As in n 24.

26. As in n 24.

27. ConAC to USAF, "Air Defense Command Plan, Control of Military Air Traffic in Emergencies," 15 Apr 1949, 1st Ind, 24 May 1948 (DOC 7).

28. As in n 27.

CHAPTER THREE

1. The elaborate radar program known as Plan SUPREMACY failed to obtain Congressional approval. An interim plan for the establishment of 75 radar stations and 10 control centers was approved in 1949, and its implementation was begun at the same time that the LASHUP deployment was carried out. ADCHR #1, chs. 3-4.

2. Report of Air Defense Exercise BLACKJACK, 1-30 June 1949, p 6 (ADCHR #1, Doc 52).

3. Report of Air Defense Exercise LOOKOUT, 10-16 September 1949, pp 3-4 (ADCHR #1, Doc 53).

4. CAA, Seattle ARTCC Operations Ltr No. 8, 4 Nov 1949 (DOC 8).

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5. 1st Ind, 25th AD to WADF, 2 Dec 1949, to IG 2d Region to IG USAF, "Special Report on Observation of Exercise DRUMMERBOY," 2 Dec 1949 (ADCHR #1, Doc 55).

6. Report of WADF-CAA Conference, Kirtland AFB, 11 Jan 1950 (ADCHR #1, Doc 266).

7. EADF to ConAC, "Initiation of Active Air Defense for Vital Coastal Zone," 16 Nov 1949, and 1st Ind (ADCHR #1, Doc 310).

8. As in n 7.

9. Whitehead to Anderson, 19 Apr 1950 (ADCHR #1, Doc 270); Anderson to Whitehead, 11 May 1950 (ADCHR #1, Doc 271).

10. 25th AD to WADF, "CAA and MFS Participation in Northwest Air Defense System," 4 Jan 1950 (DOC 9).

11. As in n 6.

12. ConAC to EADF, "Routing of Air Traffic Information into the AC&W System," 11 Aug 1950 (DOC 10).

13. As in n 12.

14. As in n 12.

15. Summary of the Minutes of the 3d Meeting of the Joint CAA-USAF Air Defense Planning Board, 31 Oct-1 Nov 1950, p 6 (WADF 1951A, Doc 8, App II).

16. Landon to Nyrop, 1 Feb 1951 (DOC 11).

17. See Narrative, p.9

18. ConAC to USAF, "Police of Airspace Reservations Surrounding Atomic Energy Installations," 29 Nov 1949 (DOC 12).

19. As in n 18.

20. As in n 18, 1st Ind, 14 Feb 1950.

21. As in n 20.

22. As in n 20.

23. Whitehead to Fairchild, 11 Jan 1950 (DOC 13).

24. As in n 23.

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25. Msg, USAF to ConAC, 27 Feb 1950 (DOC 14).

26. ConAC Reg. 55-8, "Aircraft Recognition in Air Defense," 29 Mar 1950 (DOC 15).

27. ConAC Reg. 55-6 (Tentative), "Interception Procedures and Fighter Rules of Engagement in Air Defense," 2 May 1950, and Incl, "Interceptor Pilot's Q uestionnaire," (DOC 16).

28. ConAC to USAF, "Initiation of Active Recognition and Fighter Interceptor Operations in Air Defense of the United States," 27 Mar 1950 (ADCHR #1, Doc 318).

29. As in n 28, 1st Ind, 5 May 1950.

30. Msg, USAF to ConAC, 8 Apr 1950 (DOC 17).

31. R&R, O&T to DO, "Intercept Operations in Oak Ridge Area," 8 Jun 1950 (DOC 18).

32. Msg, WADF to 25th AD, 23 Jun 1950 (DOC 19).

33. ConAC to EADF, "Interception of Unidentified Aircraft," 29 Jul 1950 (DOC 20).

34. USAF to ConAC, "Air Force Policy Concerning Rules for Interception and Engagement of Identified Hostile Aircraft," 13 Sep 1950, and Incl, Vandenberg to Sec. of Defense, 24 Aug 1950 (DOC 21).

CHAPTER FOUR

1. AFR 60-16, "Air Traffic, Clearance, and General Flight Regulations," 11 Jul 1949 (HRF).

2. ADC to USAF, "Air Defense of the United States," 24 Apr 1948 (ADCHR #1, Doc 30); ADC to USAF, "Air Traffic and Communications Control," 3 May 1948 (ADCHR #1, Doc 263).

3. 1st Ind, 21 May 1948 to ADC to USAF, "Air Traffic and Air Communications Control," 3 May 1948 (ADCHR #1, Doc 263).

4. ConAC to USAF, "Control of Air Traffic," 15 Dec 1949 (DOC 22).

5. Report of WADF-CAA Conference, Kirtland AFB, 11 Jan 1950 (ADCHR #1, Doc 266).

6. ConAC to USAF, "Identification of Federally Owned Aircraft by Air Defense System," 24 Feb 1950 (DOC 23).

7. Israel to Whitehead, 6 Apr 1950 (DOC 24).

8. Chapter 938, Public Law 778, 9 Sep 1950 (ADCHR #1, Doc 276).

9. CAA News Release, 21 Dec 1950 (ADCHR #1, Doc 273).

10. CAA Regulations of the Administrator, Part 620, 27 Dec 1950 (DOC 25).

11. Smith to Thatcher, 11 Jan 1951 (EADF 1951A, Doc 756).

12. Thatcher to Smith, 1 Feb 1951 (EADF 1951A, Doc 757).

13. CAA Regulations of the Administrator, Part 620, 15 Jan 1953 (DOC 26).

14. As in n 4.

15. As in n 6.

16. As in n 6.

17. As in n 6, 1st Ind, 4 Apr 1950.

18. As in n 6, 2d Ind.

19. As in n 6, 3d Ind, 1 May 1950.

20. Joint Regulation, AR 95-210, CNO Ltr 767P53, and AFR 60-22, "Recognition of Military Aircraft in Certain Areas," 19 Jul 1950 (DOC 27).

21. CAA Legal Policy Directive No. 29, 19 Feb 1951 (ADCHR #2, Doc 110).

22. As in n 21; also History of EADF, 1951A, pp 216-220.

23. Ltr, Hq Hamilton FSC to CO, FS, "Clarification of Civil Air Regulations 620," 4 May 1951 (EADF 1951A, Doc 746).

24. AFR 60-22, 26 Jan 1953 (DOC 28).

25. ADC to USAF, "Lack of Comprehension of Air Force Regulation 60-22," 24 Jul 1951 (DOC 29); WADF to ADC, "Air Force Wide Pilot Comprehension of AFR 60-22," 28 Jun 1951 (DOC 30).

CHAPTER FIVE

1. Joint Reg. AR 95-210, CNO Ltr 767P53, and AFR 60-22, "Recognition of Military Aircraft in Certain Areas," 19 Jul 1950 (DOC 27).

2. CAA Regulations of the Administrator, Part 620, 15 Jan 1953 (DOC 26).

3. ConAC to USAF, "Identification of Federally Owned Aircraft by Air Defense System," 24 Feb 1950, and Incl, "Tentative Regulation," (DOC 23).

4. ADC to EADF, "Proposed Changes in ADIZ Boundaries," 5 Apr 1951, and 1st Ind, 26 Apr 1951 (EADF 1951A, Doc 771).

5. ConAC to USAF, "Control of Air Traffic for Identification," 6 Oct 1950 and Incl (DOC 31).

6. EADF to ADC, "The Identification Capability of EADF," 12 May 1952 (DOC 32).

7. ConAC to USAF, "Recognition of Military Aircraft in Certain Areas," 22 Nov 1950 (ADCHR #1, Doc 278).

8. EADF to ConAC, "Canadian-Boundary Identification Zone," 13 Jul 1950 and Inds (DOC 33).

9. As in n 8.

10. As in n 8.

11. As in n 8.

12. As in n 8.

13. As in n 8, 3d Ind, 14 Sep 1950.

14. ConAC to USAF, "Canadian Boundary Identification Zone," and 1st Ind, 5 Oct 1950 (DOC 34).

15. Smith to Thatcher, 11 Jan 1951 (EADF 1951A, Doc 756).

16. As in n 16.

17. L. G. Young to EADF, "Report of Staff Visit to Discuss Combined Canadian-USAF Air Defense Operations," 26 Jan 1951 (EADF 1951A, Doc 768).

18. Thatcher to Smith, 1 Feb 1951 (EADF 1951A, Doc. 757).

19. Wg Comdr P. O'Brief to EADF, "Joint USAF-RCAF Meeting," 25 Apr 1951 (EADF 1951A, Doc 772); DOT Information Circular No. 0/19/51, 12 May 1951 (DOC 35).

20. Msg, EADF to ADC, 18 May 1951 (EADF 1951A, Doc 774); EADF to ADC, "Proposed Air Defense Identification Zone in the Eastern Air Defense Force Area of Responsibility," 6 Jun 1951 (EADF 1951A, Doc 781).

21. ADC to EADF, "Proposed Air Defense Identification Zones," 27 Jun 1950 (EADF 1951A, Doc 784).

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8. History of EADF, 1951A, pp 234-8.

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10. As in n 8, p 236.

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