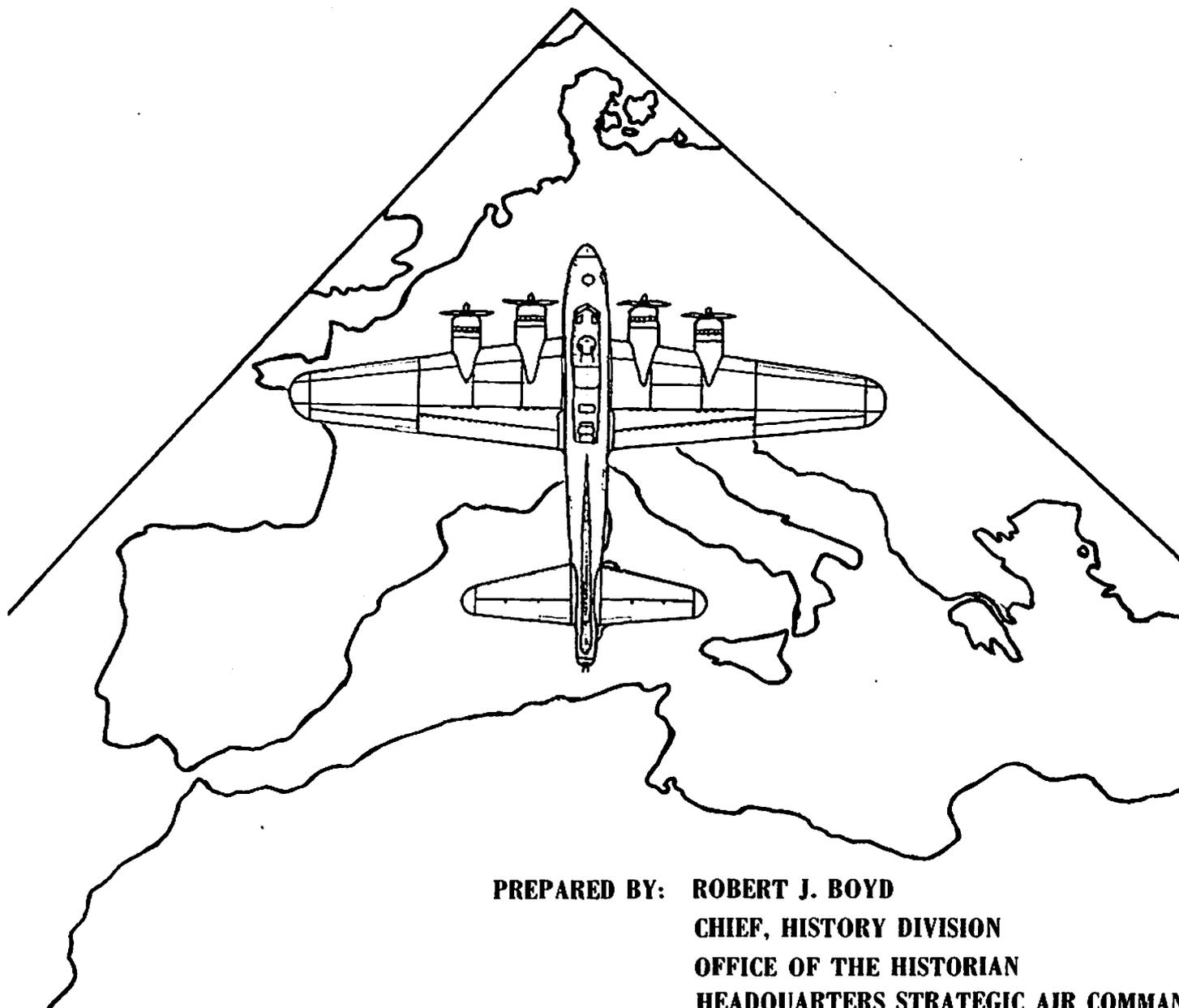


PROJECT

“CASEY JONES”

1945 - 1946

POST-HOSTILITIES AERIAL MAPPING; ICELAND, EUROPE, NORTH AFRICA
JUNE 1945 - DECEMBER 1946

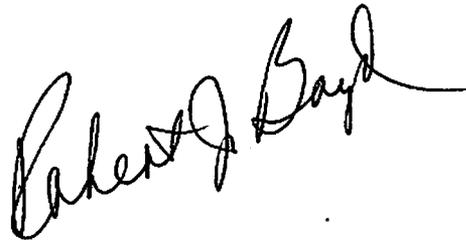


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PROJECT 'CASEY JONES'

**Post-Hostilities Aerial Mapping:
Iceland, Europe, and North Africa**

June 1945 to December 1946

A handwritten signature in cursive script, reading "Robert J. Boyd". The signature is written in black ink and is positioned above the typed name and title.

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PROJECT 'CASEY JONES'

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Foreword

Post-World War II Army Air Forces organization was chaotic because dismantling the United States military forces occurred with undue haste. National policy wanted to return the soldiers and sailors to civilian life as rapidly as possible, regardless of the impact on the military forces. The Chief of Army Air Forces Personnel Services Division, Brigadier General Leon W. Johnson, stated in late 1945:

"We didn't demobilize; we merely fell apart. . .we lost many records of all the groups and units that operated during the war because there was no one to take care of them. So, it was not an orderly demobilization at all. It was just a riot, really."

As a consequence of this "riot," source materials for this monograph were limited. The Office of the Historian, Headquarters Strategic Air Command, possessed microfilm copies of many unit histories, but several volumes are missing. The USAF Historical Research Center contributed some documentation. The National Archives provided additional source materials. Furthermore, the 306th Bomb Group Association provided contacts with participants who were generous with assistance, photographs, and documents for the history of Project Casey Jones.

Documentation is scarce. For example, the top secret initiating directive is missing. The Defense Mapping Agency, successor to the Army Map Service, searched for materials with little success. Toward the end of this project in late 1946, documentation almost disappeared with no reference for termination. Yet personal copies of orders indicate continuation of the project into 1947.

Most obvious is the lack of identification of several mapping areas. Locations of these areas remain unknown. Appendix I lists 20 areas with assigned numerical designators, but their locations remain a mystery. Evidence suggests photographic coverage of other areas, but no designator is assigned.

A curious anomaly existed around Project Casey Jones. This was a classified effort, initially Top Secret. By March 1946, overall classification had dropped to Confidential. The difficulty was that only in certain areas was the classified nature of the operation observed. It was observed in Europe, particularly on those stations where the Casey Jones crews and aircraft operated. In the United States, the lid was off. One of the participants had written home in July 1945 that his next chore in the 'Army Air Forces was to engage in mapping from the air all of Europe. In the 3 July 1945 issue of Stars and Stripes, there was an extensive article on the project in the section called "Grab Bag."

I received valuable help from many people. They include Russell A. Strong, Joseph M. Jaeger, Duane C. Gray, Sidney F. Johnston, Jr., P. A. "Doc" Schelter, Olin M. Stansbury, Jr., Albert J. Bowley, Millard S. Oscherwitz, Herbert B. Cohn, John R. "Cactus Jack" Powell, Lloyd B. McCracken, Gerald T. Garrison, Harold Hoots, John D. MacPherson, and many others.

PROJECT 'CASEY JONES'

Post-Hostilities Aerial Mapping:

Iceland, Europe, and North Africa

Introduction

The United States Army Air Forces (USAAF) 306 Bombardment Group, Heavy, flew its last combat sortie against Germany on 19 April 1945. The 305th Bombardment Group, Heavy, flew its last combat sortie six days later. Both were component unit groups of the Eighth Air Force and both were among the first heavy bomb units to arrive in England in 1942. Germany surrendered on 8 May 1945; the war in Europe was over. The war in the Pacific was still active and Headquarters USAAF directed the Eighth Air Force to relocate to the Pacific Ocean areas to assist in the reduction and subjugation of Japan. Some of the Eight's subordinate units remained in Europe in a dual role: (1) Air Army of Occupation, and (2) photographic mapping of the continent.

Lack of adequate maps and charts had caused serious difficulties for the American ground forces during the European campaign. A requirement thus existed for accurate maps for fire control, fire direction, and terrain feature profiles. The scope of the mapping project--more than two million square miles--was probably the largest single aerial mapping project to that time. It demanded a large number of aircraft, but the critical wartime mission assigned to the heavy bomber force precluded their use in mapping operations until hostilities ended. Bombers could not be spared from the primary mission while the war was still active.

Immediately after V-E Day, a new mission was assigned to the 305th and 306th Bombardment Groups, Heavy, to take high-altitude photographs of designated areas in such a manner that detailed maps of a scale of 1:25,000 could be drawn from the overlaid mosaics of the picture prints. Photomapping was a novel mission for these bomber units, but the objective was to produce accurate maps ideally suited to the needs of the ground forces. Initial estimates predicted that it would take years of preparation to complete the mapping project. The flying portion was virtually completed in less than 18 months. Records are incomplete, but the two groups flew thousands of sorties using up tens of thousands of flying hours on this effort.

Planning Background

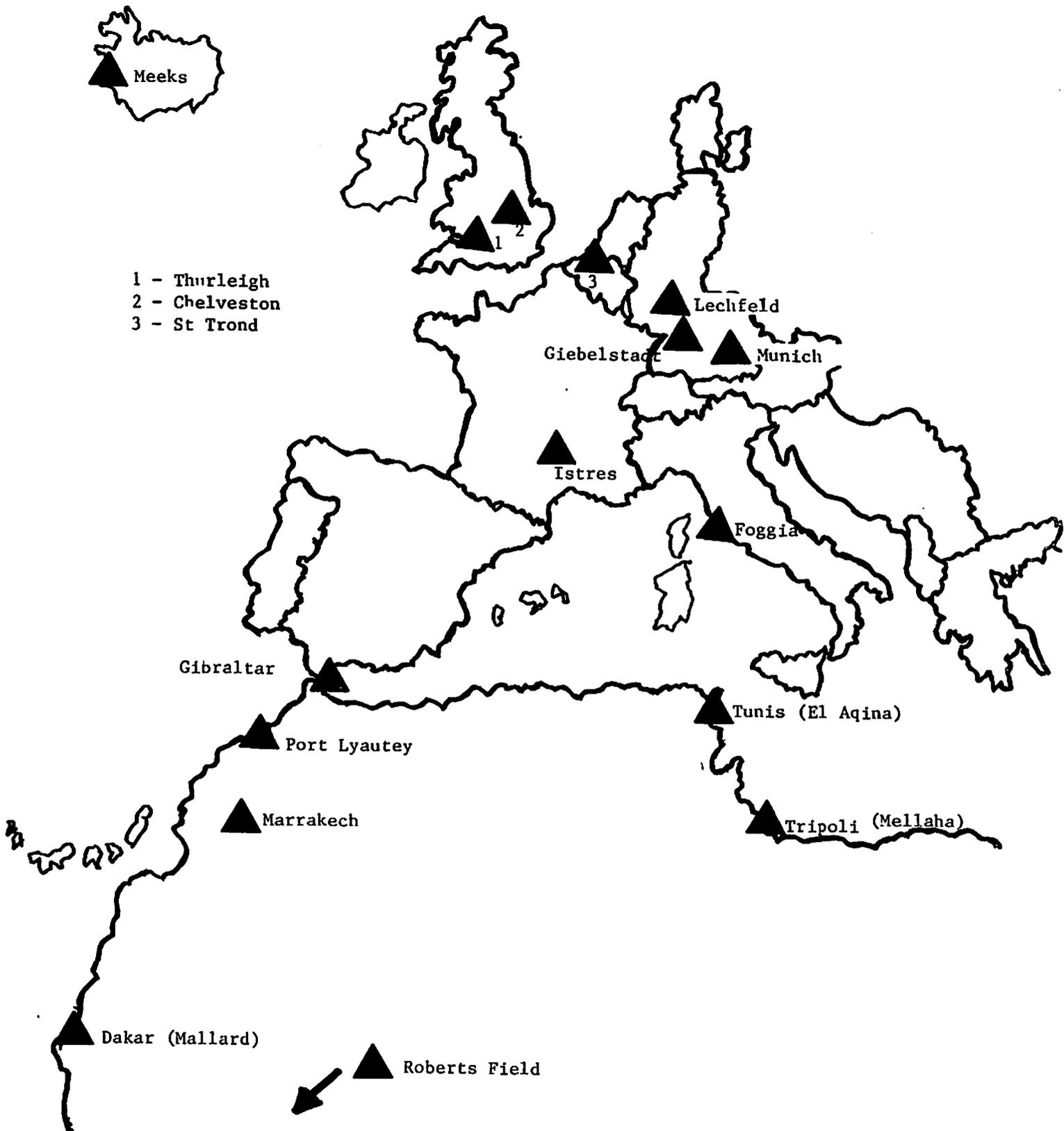
Origin of this effort dates back into mid-1944. Some pin-point tactical aerial photo-mapping had been part of the war effort. Headquarters United States Strategic Air Forces in Europe (USSTAF), the Intelligence Section of the European Theater of Operations (ETO), and the Army Corps of Engineers had all recognized the necessity for better maps and charts. The primary question was "When?" While the war effort continued, bombers could not be diverted from bombing sorties. All expected political difficulties in securing permission for overflight should the operation be delayed too long after cessation of hostilities.

Full discussion in October 1944 produced a common accord that spelled out the requirement to undertake the mapping mission after V-E Day. At first, dissimilarities between the United States and British mapping systems seemed to preclude joint efforts.³ Later, it was decided that this mission was to be accomplished by the joint efforts of the United States Army Air Force (USAAF) and the Royal Air Force (RAF). The portion of Europe north of 50° 20' North was assigned to the RAF and south of the line to the USAAF.⁴ This too, was again modified to assign all of Europe south of the Skaggerak and the Kattegatt to the USAAF and north to the RAF.⁵ Later, the US aircraft were equipped with two cameras: one for the US and the second camera for the British. Both were installed in a well in the floor of the radio room and were synchronized to one intervalometer. Thus, the cameras operated in tandem and exposed simultaneously so as to obtain two identical and original rolls of film for each sortie. One roll was destined for the US and the other was to be offered to the British.⁶ Should the camera assigned to the British mission malfunction and become inoperative, the Casey Jones crews would have to refly the mission flight line to obtain an 'original set' for the British.⁷

Initial planning and scheduling for photomapping started with a series of exchanges between General Carl A. Spaatz, Commanding General, USSTAF, and General of the Army Henry H. Arnold, Commanding General, USAAF. In early October 1944, General Spatz proposed to General Arnold that some heavy bombardment groups be converted for photomapping reconnaissance operations. His suggestion remained dormant until March 1945, by which time the obvious destruction of Nazi Germany was a foregone conclusion. This condition implied that the bomber units were no longer as essential as they had been six months earlier. Under these circumstances, General Arnold finally replied to General Spaatz and asked if the conversion could begin immediately. He was concerned because the prevailing political atmosphere appeared more favorable than it might be after the defeat of Germany. He added a caveat for the conversion, ". . . provided it did not interfere with current operations."⁸

Opinions voiced by operational commanders on the scene in Europe disagreed with speedy conversion. Major General Frederick L. Anderson, Deputy Commander for Operations under General Spaatz, reviewed the photomapping requirements and the scale of operations in late March 1945. He concluded that the forces could not be spared then, but complete plans were ready for operations as soon as the ". . . course of the war allows us to make photographic units available."⁹

General Spaatz cited the pressure of the war effort when he declined the offer to begin conversion, but he offered to start as soon as possible after V-E Day. He proposed to use photographic squadrons, nearly all equipped with the F-5, a reconnaissance version of the P-38. General Arnold's response was that the F-5 would be inadequate given the scale of operations and the stringent requirements established by the Corps of Engineers. He concluded that only the F-9s (B-17s) could provide the stable platforms necessary. He was also concerned that certain areas which could be covered in late March 1945 might not allow overflight at a later date,¹⁰ and he offered use of a F-9 photomapping squadron, then in Africa. General Spaatz replied that he was prepared to begin conversion of B-17 units, but would also be glad to use the F-9



LOCATIONS OF THE MAJOR AIRFIELDS USED BY THE 308TH AND 306TH BOMB GROUP'S B-17Gs IN THE CASEY JONES PROJECT FOR AERIAL MAPPING.

squadron. Pressure of events meant that operations would have to start no later than 1 June 1945.¹¹ Final decision to use B-17 bombers converted to the photomapping mission rested on the ground that they would be a more suitable aircraft from the standpoints of long range, stability in flight, and the capacity to attain high altitude.¹²

V-E Day came on 8 May 1945. The Eighth Air Force would relocate to the Pacific. Priority for Project Casey Jones was such that the two groups with the longest record of service in the ETO were assigned to the mission instead of being sent to the Pacific for the war against Japan. The Ninth Air Force would become the Air Army of Occupation for Germany. Headquarters USSTAF assigned the photomapping project--now named Project Casey Jones--to the Ninth Air Force with top priority. Headquarters Ninth Air Force set up a project office, established precedents, and assigned the Project Commanding Officer.¹³ Consequently, organizational changes, assignments, and mission responsibilities were altered to meet the new task.

Project Organization and Relocations

During World War II, the Eighth Air Force, 1st Air Division, 40th Combat Bombardment Wing, Heavy,¹⁴* had commanded the 305th and 306th Bombardment Groups, among others. After V-E Day, events pertaining to Project Casey Jones moved rapidly. On 16 May 1945, Headquarters USAAF relieved the 40th Bomb Wing and the 305th and 306th Bomb Groups from assignment to the Eighth Air Force and assigned them to the Ninth Air Force.¹⁵ On 1 June¹⁶ the two groups were relieved from assignment to the 40th Bomb Wing.

The 305th and 306th Bomb Groups were further assigned to the 98th Combat Bomb Wing, whose first mission after V-E Day was to serve as the administrative wing for the occupation. Its second mission was to supervise the two groups in Project Casey Jones aerial mapping of the continent west of the Russian zone border, North Africa, and Iceland.¹⁷ 29 June 1945, the Ninth Air Force attached the 19th Photographic Mapping Squadron to the 305th Bomb Group. This B-17 (F-9) squadron brought the benefit of its¹⁸ experience in photomapping African bases to the Casey Jones Project.

On 15 November 1945, the 40th Bomb Wing reassumed command of the two bomb groups and Project Casey Jones, supplanting the 98th Bomb Wing. The 98th was inactivated two days later.¹⁹ This November reorganizational shifting was part of an overall realignment of the Air Army of Occupation.

*The 40th Bomb Wing and its two remaining groups--92d and 384th--were assigned to the 'Green Project' mission. From 1 June to 10 September 1945, the two groups' stripped-down B-17s transported 40,000 high point soldiers from Istres-le-Tube (Marseilles) France to Casablanca on the first leg of the trip back to the US. The 40th would later reassume command of the 305th and 306th Bomb Groups and Casey Jones.

Headquarters USSAFE directed inactivation of the Ninth Air Force, effective 1 December 1945. All remaining activities of the Ninth were transferred to other commands. The 40th Bomb Wing was ordered to direct activities of all bomber units in Europe and all were placed under its command 15 November. The 40th Bomb Wing assumed full responsibility for Project Casey Jones and Casey Little.*²⁰ The 305th and 306th remained assigned to the 40th Bomb Wing until the virtual end of Project Casey Jones. Support from the 19th Photographic Mapping Squadron ended well before its inactivation on 15 December 1945.²¹

Progression toward completion of Project Casey Jones resulted in internal adjustments. By July 1946, the greater portion of the project was completed. The 306th terminated its Casey Jones flying, entered into a partial phasedown, and transferred men and equipment in expectation of inactivation. In July 1946, the 423d Bomb Squadron was transferred from the 306th to the 305th to continue Casey Jones flights, although the squadron did not move from its operating location at Gibraltar.²² Other squadrons were gradually disbanded and personnel reassigned.

Progress in Casey Jones operations through 1946 caused further reorganizations. The 40th Bomb Wing reported in September 1946 that the project was just about completed. Only a few small areas remained, at that time, to be completely photographed. Because of the national demobilization program, the report noted that there seemed to be no further mission to be assigned the 40th. The conclusion predicted the . . . beginning of the end for the 40th Bomb Wing.²³ The following month, the wing reported the practical completion of Casey Jones and that the wing had accomplished its mission in Europe. Therefore, there was no need for such an organization in occupied Germany. There were, it was reported, some small areas left to be photographed as part of the project, but they hardly justified continuing the large overhead of personnel as carried in the wing headquarters.²⁴

Gaps remained in project coverage. These unfinished portions were transferred to the XIIth Tactical Air Command (TAC) for its responsibility. Its headquarters remained in Bad Kissingen, Germany, and one squadron of the 305th--the 365th--along with 13 of its B-17 aircraft was relieved from assignment to the 305th and assigned to the XIIth TAC. The order directing the inactivation of the 40th Combat Bombardment Wing was dated 13 November 1946,²⁵ but stated that it would be done at the earliest practical date.

Official notification of the Project Casey Jones transfer to the XIIth TAC was effective 1 November 1946. The 365th with sufficient personnel and equipment, including the 13 B-17s, was assigned. The squadron would continue to be based at Lechfeld, Germany. In addition, permission was received to continue use of the U. S. Naval Air Station at Port

* Project Casey Little was similar to Casey Jones, but limited to obtaining aerial photographs of all European airfields, installations, harbors, communications, critical terrain and similar major objects. (See Appendix III, this monograph.)



423d BOMB SQUADRON B-17S PARKED AT ISTRE-LE TUBE, FRANCE. THE 'H' IN THE TRIANGLE INDICATES THE 306TH BOMB GROUP.

Lyautey, French Morocco, for operations.²⁶ Although control passed to the XIIth TAC, the 365th Bomb Squadron was inactivated along with the 305th Bomb Group, 25 December 1946.²⁷ The Headquarters USAAF directed termination of all work on the Casey Jones effort, effective 31 December 1946. All remaining data was to be sent under escort to Headquarters USAAF.²⁸ This was altered before the effective date and the aircraft and crews remaining in the operation of Project Casey Jones were given a 'home of convenience' in the 2010th Labor Supervision Company until February 1947. Then, they were assigned to the 10th Reconnaissance Group, headquartered at Bad Kissingen, Germany.²⁹ In March 1947, the Casey Jones aircraft and crews were assigned to Detachment 'B' in the group,³⁰ and relocated to Port Lyautey. There they remained until August 1947.³¹ The following month, some members of the detachment were reassigned to the 2014th Labor Supervision Company and ended Casey Jones flights.³² One participant in the last stages of Project Casey Jones noted that '. . . we had different squadron identifications to confuse or pacify some countries.'³³ Perhaps, these organizations were not 'homes of convenience' after all. At the final end of the project, the remaining B-17s located at Lechfeld, Germany, were destroyed by using charges to blow off the tails. They were converted to junk.³⁴

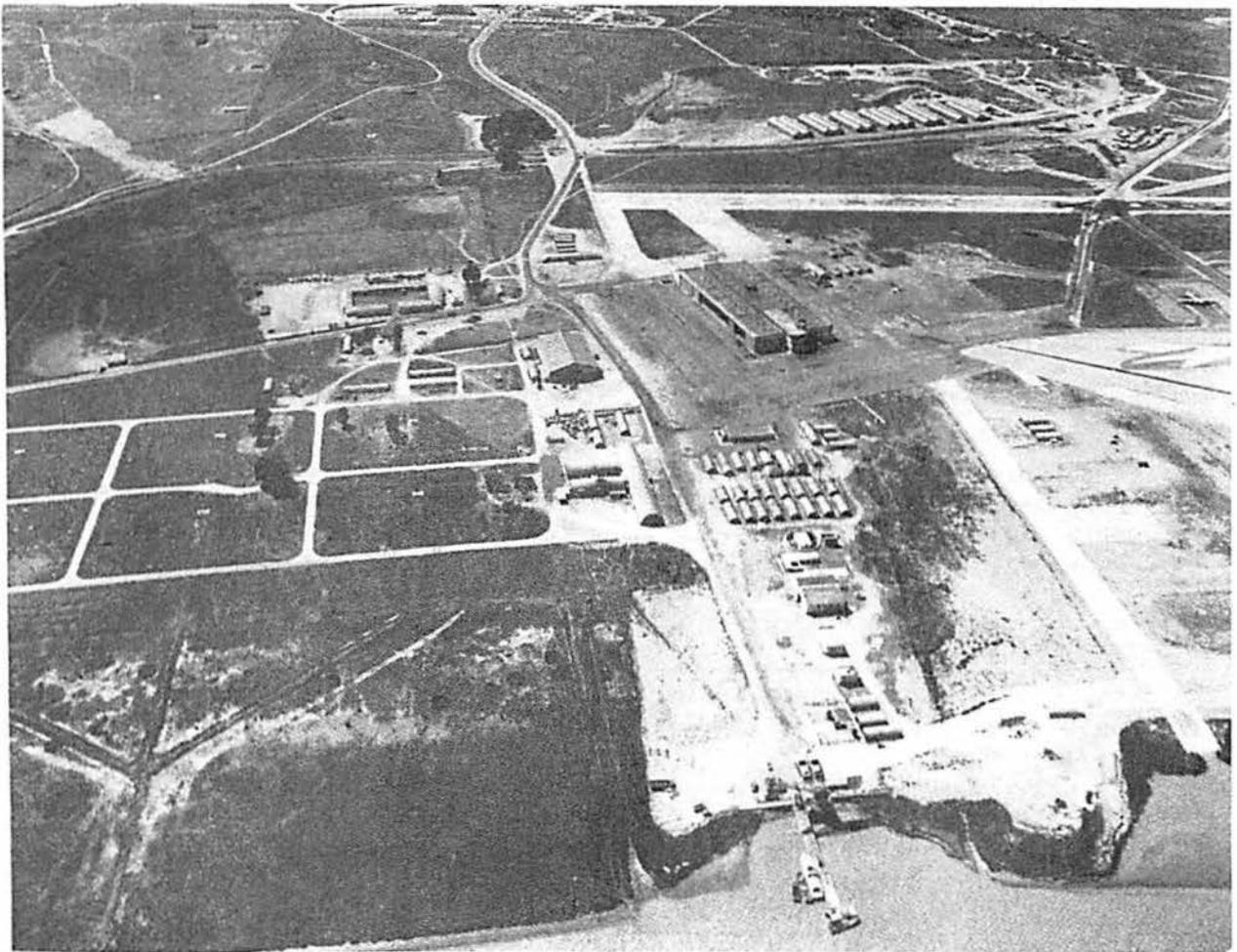
Bombardment Group Relocations

When World War II ended in Europe, the 305th and 306th Bombardment Groups, Heavy, were stationed in England, but they would be relocated for operations in Project Casey Jones. The 305th had been stationed at Chelveston, near Northampton, since October 1942. The 306th was at Thurleigh, near Bedford, since September 1942. Project Casey Jones and duties with the Air Army of Occupation caused a series of moves. Photographic mapping of two million square miles was

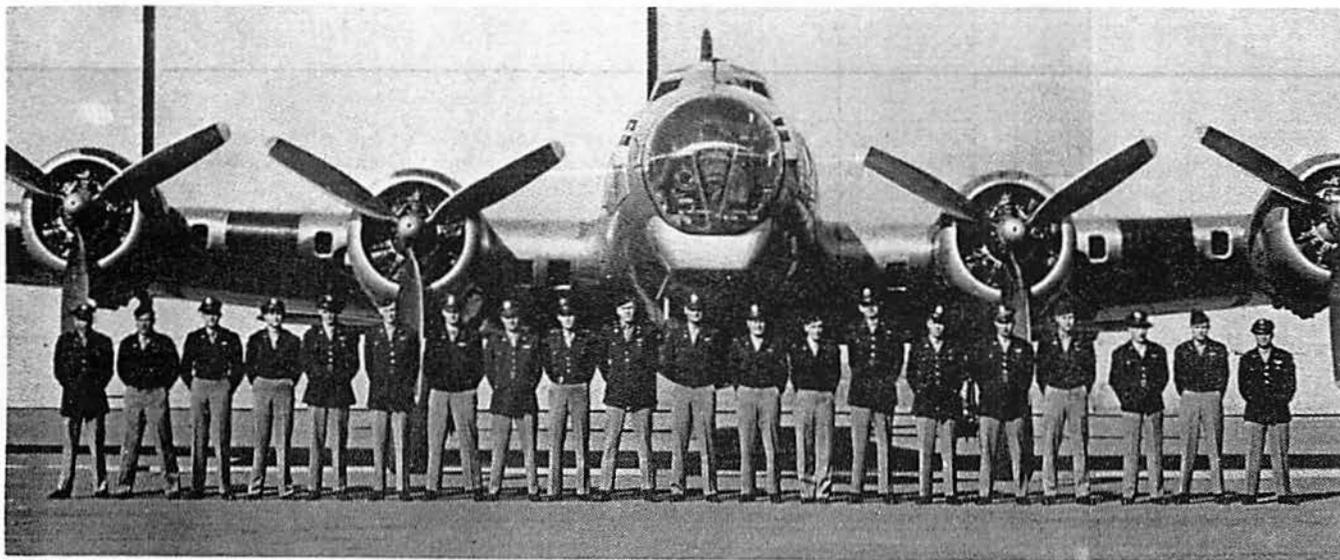
an enormous task. To save air time and reduce costs, both groups and their squadrons moved to several different locations as dictated by area coverage requirements and available airfields. Not only was there less flying time involved, but closer basing to the photo target area also gave crews better weather information, an essential for photomapping. By the end of 1946, the crews from the two groups had flown operational sorties all over the continent of Europe, the island of Iceland, plus several stations in North and West Africa.

305th Bombardment Group, Heavy

The 305th stayed at Chelveston until July 1945, when it relocated to Army Air Field A-92, St. Trond, Belgium. The group remained there until December 1945, when it moved to Lechfeld, Germany, its last move until it was inactivated in December 1946. All four squadrons relocated at the same time but the squadrons and detachments scattered. From mid-August to mid-October 1945, the 364th Bomb Squadron was stationed at Meeks Field, Iceland, to map that island, designated Area No. 20. Another squadron, the 365th, remained on station with the group throughout 1945. Exactly the reverse occurred the following year; it



PORT LYAUTEY NAS, 1946. ATLANTIC OCEAN AT TOP.



ARMY AIR FORCES DETACHMENT, NAS PORT LYAUTEY, FRENCH MOROCCO.

was relocated from Lechfeld, Germany to Tripoli in January 1946 and stayed there through October. Then it moved to the U. S. Naval Air Station at Port Lyautey, French Morocco, where it stayed until it was inactivated in December 1946. The third squadron, the 366th, relocated to Foggia Airfield, Italy and El Aqina Army Airfield, Tunis, for October and November 1945. After the group moved to Lechfeld, the 366th relocated to Roberts Field, 50 miles outside of Monrovia, Liberia, for the January-April 1946 period, after which it returned to Lechfeld. It moved again in September and October 1946 and operated from North Field, Gibraltar, and also from Port Lyautey. The fourth squadron, the 422d, never relocated at stations other than those occupied by the 305th Bomb Group.

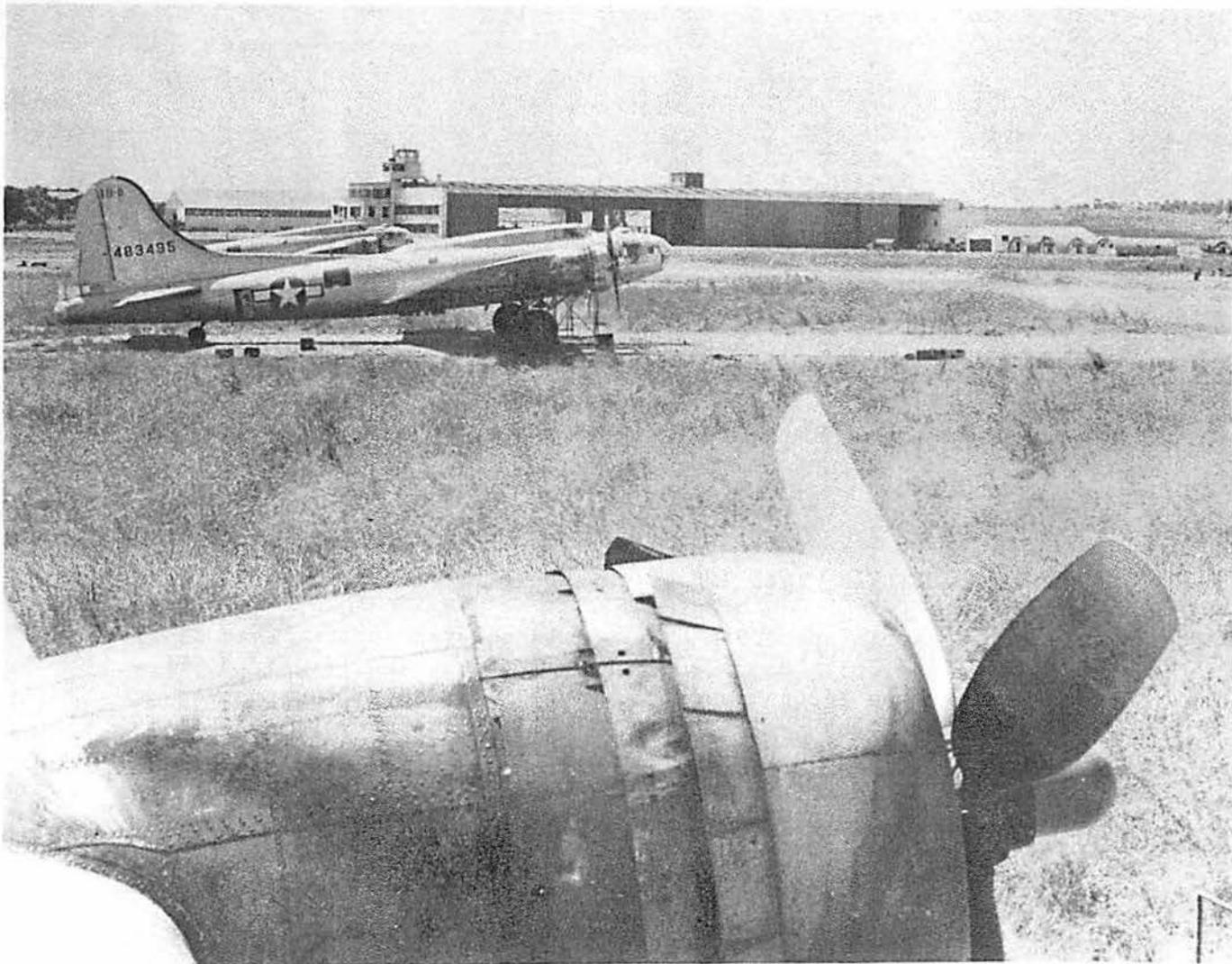
From mid-July 1946 until the group was inactivated on 25 December 1946, a fifth squadron, the 423d, was relieved from assignment to the 306th Bomb Group and attached to the 305th. The 423d was already operating from North Field, Gibraltar at that time, but it moved to Port Lyautey in September 1946. It too, was inactivated on 25 December 1946.

306th Bombardment Group, Heavy

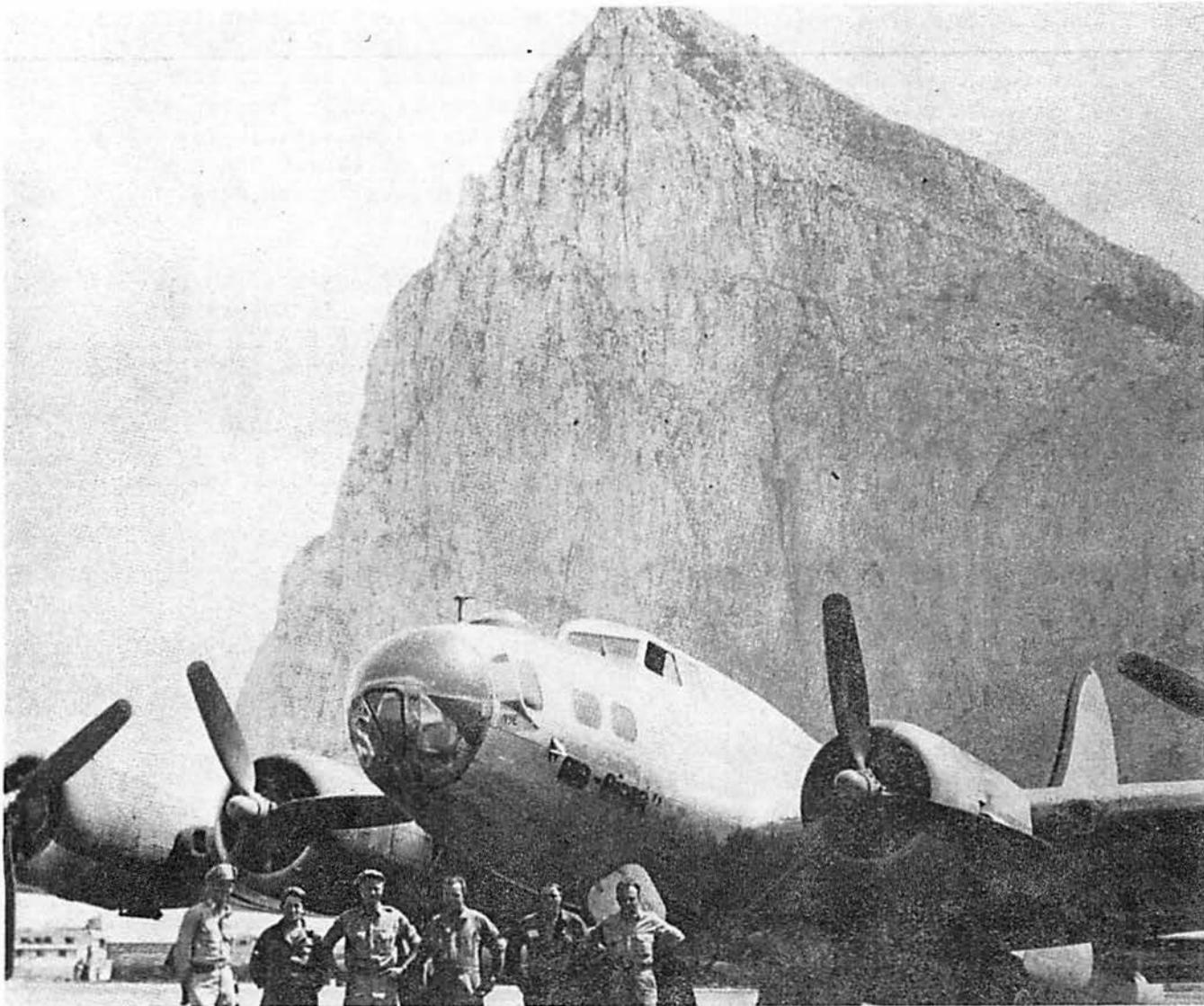
The 306th Bomb Group followed a similar pattern, although scheduled differently. It remained at its wartime base of Thurleigh until December 1945 when it moved to Giebelstadt, Germany. Its 423d Bomb Squadron had moved to Istres-le-Tube, Near Marseilles, France, from Thurleigh early in July 1945. In December 1945, when the group moved from Thurleigh to Giebelstadt, the number of men left in the group was very small because of the point system for separation and demobilization. Most in the group had accumulated sufficient points toward separation and replacements had not arrived in any great number. The result was that the group's three squadrons were consolidated into one squadron for the move with the group. Only a detachment from the

367th Bomb Squadron remained in England on 'Gapfiller' missions (see below). Weather conditions had prevented many flights in the 1945-1946 winter months because of the severity of the season. Then, in February 1946, the group moved from Giebelstadt to Istres-le-Tube, France, and two of the three squadrons were made fully active once again. The 369th Bomb Squadron remained dormant at this time. The 367th and 368th had absorbed personnel from the 92d and 384th Bomb Groups, which were inactivated in December 1945.

Even though the 306th was mostly out of the photomapping mission by July 1946, the group remained at Istres until August. In August and September 1946, its base of operations was the Army Air Field, Furstenfeldbruck, near Munich, Germany. Its location there was followed by a fourth move in September to Lechfeld, Germany where it was based with the 305th. They were both inactivated on 25 December 1946.

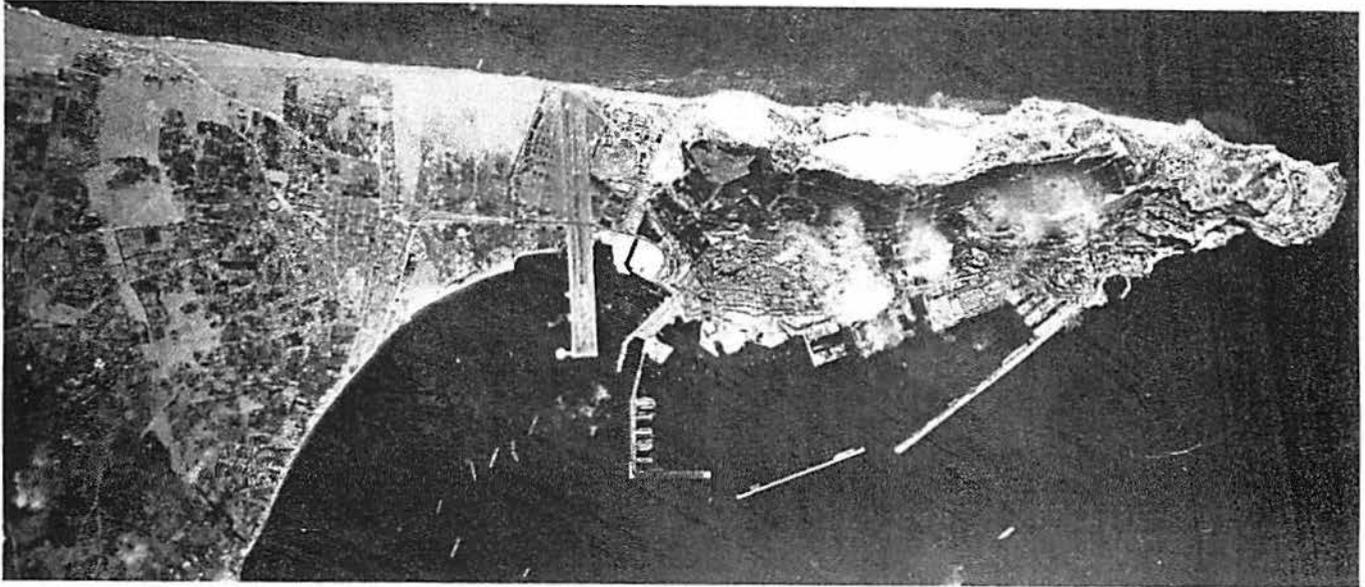


PORT LYAUTEY NAS FLIGHT LINE, 1946. (PHOTO: LT COL P. A. SCHELTER)



GIBRALTAR, 1945 (PHOTO: LT COL P. A. SCHELTER)

Squadrons assigned to the 306th were scattered even further than those of the 305th. The 367th Bomb Squadron remained at Thurleigh, but it was left there after the group moved to Germany. Its specific task was to fill the gaps and holes remaining in the flight lines over the assigned areas. When the 367th completed its part of Casey Jones in December 1945, the squadron became the courier squadron, flying supplies and mail from depots to the other detachments and squadrons. The 367th's detachments had three operating locations during 1945. From Thurleigh, one detachment moved to the Azores (see below) and remained there from August through October 1945. Another detachment was relocated from Thurleigh to Mallard Field, Dakar, Senegal, West Africa in September and another detachment moved to Dakar for coverage from January through March 1946. Winter weather conditions in Europe were unusually harsh and precluded aerial mapping operations, but the weather over Africa was more accommodating. An additional detachment was located at the U. S. Naval Air Station, Port Lyautey, French Morocco, from February to mid-July 1946.



1946 VIEW OF GIBRALTAR FROM 20,000 FEET

The second squadron--the 368th--was relocated from Thurleigh to North Field, Gibraltar from August 1945 to January 1946. One of its detachments was moved to Dakar for coverage from January through March 1946. A second detachment was at Port Lyautey from February to mid-July 1946.

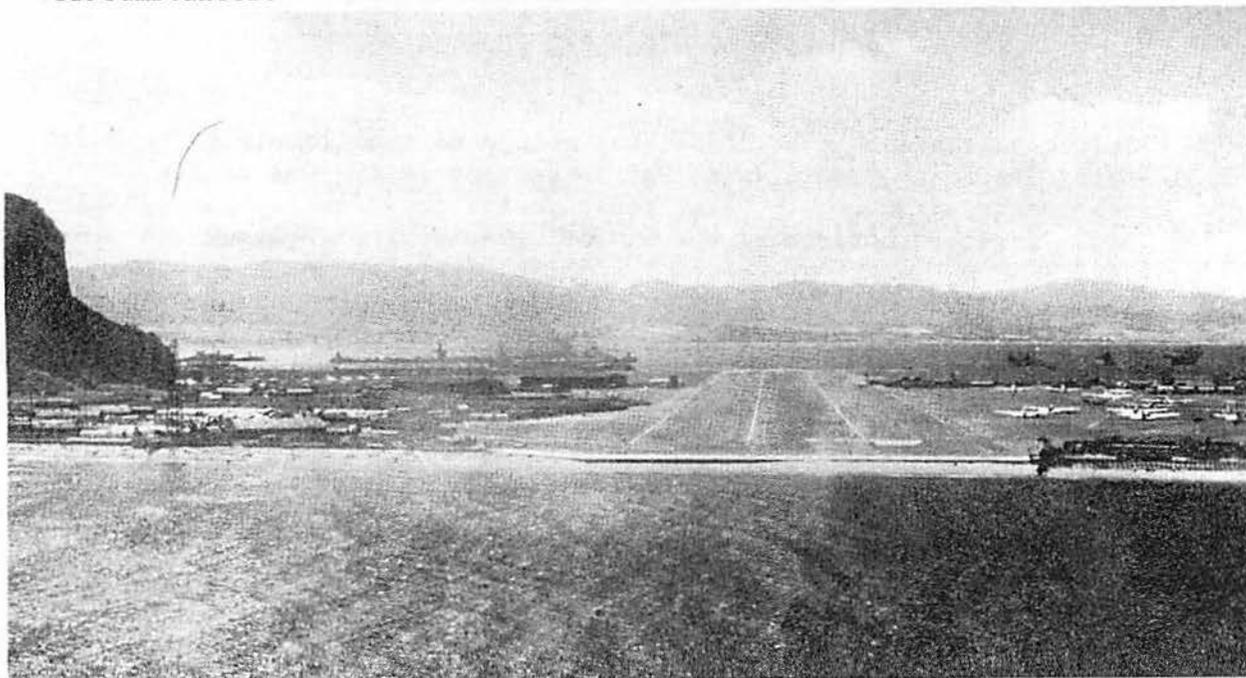
The 369th Bomb Squadron was relocated from Thurleigh to Istres-le-Tube, France from July through September 1945 and then was moved as a squadron to Marrakech, French Morocco, where it stayed on station until January 1946. The fourth squadron--the 423d--was also at Istres from August 1945 until May 1946 when it was sent to Dakar and then in the next month, moved again to Gibraltar. On 16 July 1946, it was attached to the 305th Bomb Group for Casey Jones operations. The squadron alternated between Gibraltar and Port Lyautey during June through September 1946 when it was inactivated. Casey Jones was the primary mission of the group, but the 369th changed its primary mission in June 1946 to a tactical bombing squadron. Once the 423d moved over to the 305th Bomb Group, the 306th Bomb Group had actually ceased all flying in Casey Jones operations, in fact, all flying except administrative flights.³⁶

General Spaatz had made the 19th Photographic Mapping Squadron available for Casey Jones. The squadron went first to Thurleigh in July 1945 and was attached to the 306th Bomb Group. After initial orientation training of the bomber crews, the 19th moved to Tortorella Air Field, Italy in August 1945. From September through the end of December 1945, it operated out of Foggia Italy. Its Casey Jones flights were flown in August, September, and October 1945. On 26 December 1945, the 19th was inactivated.

Aircraft from the two groups assigned to Project Casey Jones also used other airfields and air bases on an intermittent basis, depending upon the necessity. During the 18 months of active operations on the project, they also flew sorties from Cairo's Payne Field; Orly Airport in Paris, El Aqina Airfield, Tangier Airport, Rabat Sale, as well as many others on an emergency basis.

Project 'Casey Jones'

Project Casey Jones was a unitary mission. The two bomb groups were to provide photographic coverage that would be used in the revision of existing charts or in preparation of maps for areas not previously covered by adequate maps. The coverage areas included continental Europe west of the Russian zone, Iceland, North Africa to about 50 miles inland from the coasts, the Azores, and the Canary Islands. Crews flew modified and converted B-17Gs at high altitude--20,000 and more feet above the terrain. The mission was simple, though vast in scope. It became complicated because of several factors, especially postwar circumstances.



FINAL APPROACH TO GIBRALTAR'S 5,000-FOOT RUNWAY IN 1946. CASEY JONES AIRCREWS ASSIGNED TO NORTH FIELD, GIBRALTAR USED THE CONCRETE RUNWAY BUILT OUT INTO THE WATER ON BOTH SIDES OF THE ISTHMUS. UPON THEIR RETURN TO THE "ROCK," THEY FACED THE TERRIFIC TURBULENCE AT EACH END OF THE RUNWAY THAT BROUGHT DOWN MANY PLANES BEFORE REACHING THE RUNWAY. IT WAS SAID THAT THE RUNWAY AT NORTH FIELD WAS THE ONLY ONE IN THE WORLD WHERE THE WIND SOCKS AT EACH END OF THE RUNWAY COULD POINT IN OPPOSITE DIRECTIONS. PILOTS REFERRED TO THIS RUNWAY AS THE "ONE-PASS" LANDING. LT COL P. A. SCHELTER PROVIDED THIS PHOTO AND THE COMMENT, "YOU MADE THIS LANDING OR YOU WERE SUNK."

Personnel Problems

One factor was the turnover in personnel. By mid-August 1945, Japan had surrendered. The U. S. national military policy then turned to rapid demobilization and the return of military personnel to civilian life. Fairness was the criteria for establishment of a 'point system' based on length of service, length of overseas time, number of combat engagements, medals awarded, and family responsibilities. The accumulation would determine how soon separation would occur for each individual. Most Casey Jones personnel were high-point men. As their time toward separation approached, they were assigned to redeploy to the U. S. and released from active duty. For Casey Jones operations, the system produced a high ratio of personnel turnovers.

One Army Corps of Engineers liaison office reported his problems with personnel and the point system. He noted that a man would be trained for a certain task and gradually he acquired more experience until he could perform the job alone and well. While training, he continued to accumulate points toward separation until he had sufficient points for a discharge and then he left.³⁷ Because of the nature of the separation program for the Army, the problem would be a constant one throughout the duration of Project Casey Jones. In December 1945, the 305th Bomb Group moved to Lechfeld, Germany. One of the priority jobs upon relocation was to set up a staff of plotters and draftsmen to continue the work for Casey Jones. Concurrent with the relocation, the 305th was directed to send a detachment to Africa and a small photo lab was to accompany it. The requirement stated that personnel for the lab could have no more than 50 points toward separation (a total of 85 was needed). The group reported that there was not one man in the Intelligence³⁸ Section who was capable of doing the work who had less than 50 points.

The other side of the coin was the quality and numbers of replacements. The 306th Bomb Group had reported as early as September 1945 that losses of many high-point personnel were keenly felt in every department of the group. Replacements assigned to the group were slow to arrive; most sections were chronically undermanned and understaffed. The competence of those experienced personnel who remained helped to maintain the high degree of efficiency. Evidence³⁹ cited was the quality of acceptance from the operations for the month.

High-point soldiers had an indirect impact on Casey Jones operations, too. In September 1945, Detachment 'B' of the 367th Bomb Squadron was deployed to Dakar for operations. On 18 October, the detachment was directed to relocate to Marrakech. The reason was that Dakar was becoming overcrowded. Facilities used by the crews were needed for the high-point men being brought through the base on their way to the States by the Air Transport Command. The move was made on 19 October, regardless of the high priority assigned to Project Casey Jones.⁴⁰ The return of high-point veterans from the ETO had a higher priority.

Army Corps of Engineers Specifications

Another factor complicating the project was the Army Corps of Engineers specifications. The Corps had established cartographic specifications and standards. Thousands of charts had to be prepared and the primary source for the work was the number of aerial photographs taken by the B-17 crews. The Corps maintained rigid specifications for flight accuracy, cloud coverage, and processing. All crews had to be retrained to handle the specifications. Requirements were strictly limited as pertained to the overlap of photographs along the line of flight, sidelap of the photographs was equally important. Thus, the altitude of the flight had to be precise. There was no allowance for any tip, tilt, or crab on the part of the airframe. These rigid criteria proved to be a headache for the ex-combat crews; almost ⁴¹none of whom had had any experience with such precision requirements.

Photomapping operations were entirely different from flying a bombing mission. A new set of standard operating procedures had to be worked out. The skill of the crews was apparent from the beginning. For example, the 368th Bomb Squadron flew its initial 34 sorties in June 1945. Only six were considered effective, but of the 28 non-effective, four were caused by faulty navigation or flying and two were due to improper overlap. All the rest, 22, were the result of ⁴²weather conditions, camera malfunctions, and underexposed film.

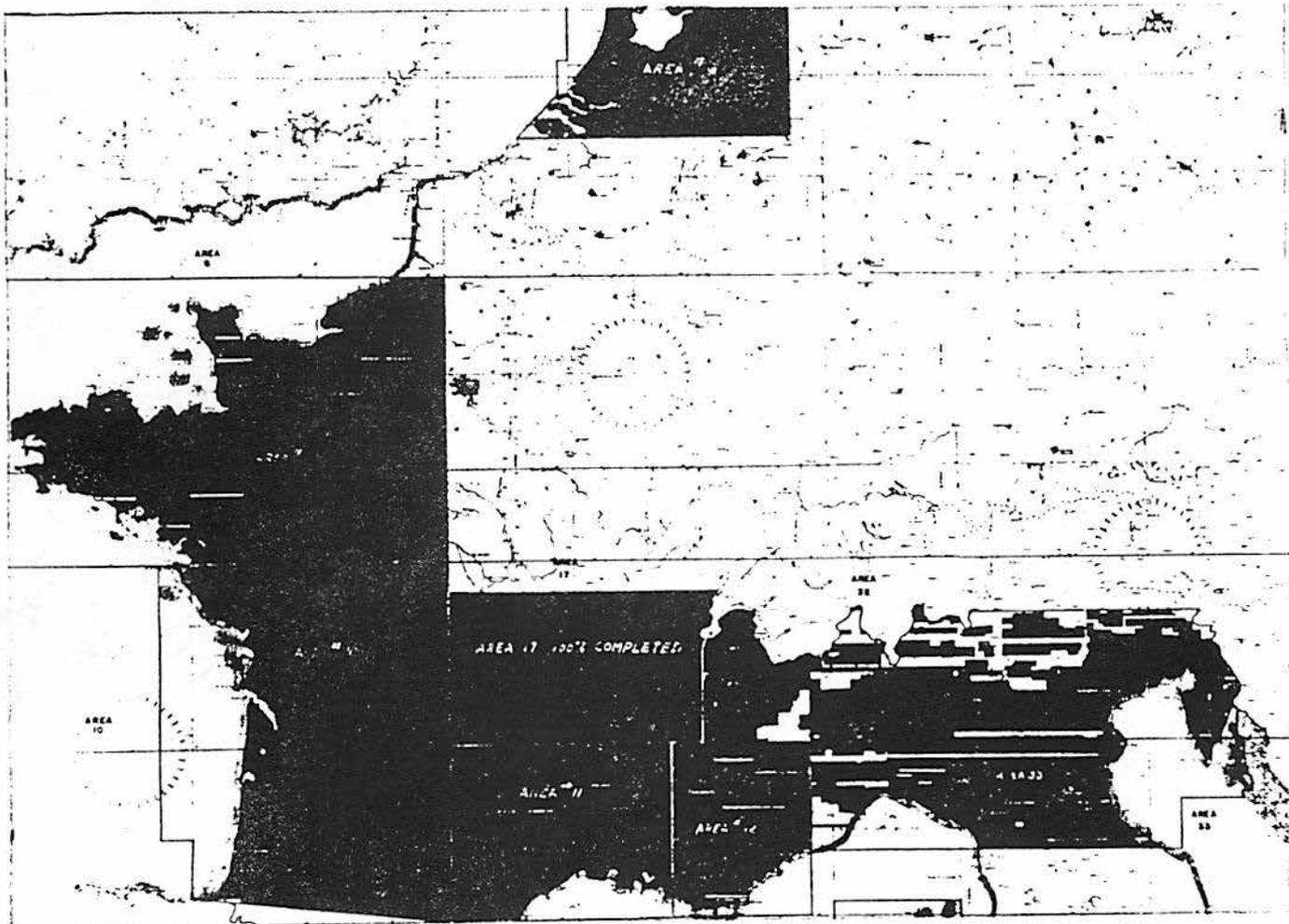
Almost immediately, the Corps sent a monitor team of two photo officers to each group to review the photos taken each day. This served as an instant checkup to make clear to the crews what was acceptable in the film they brought back and what would cause rejection. The on-the-scene analysis ⁴³made it possible to schedule quick and economic reflights when necessary. The things the engineers sought in the quality were the character of photography which included the density and contrast of the film. Two-tenths cloud cover and mist or more were weather phenomena that made photos useless for mapping. Forward overlap of films was controlled by the intervalometer, but the instrument had to be monitored constantly. The flight lines had to be absolutely straight. Terrain features sometimes caused difficulties for the plotters in locating the frames on the map. Under such conditions, the plot made the lines look unacceptable. Careful examination of the film and identification of check points showed some portions could be saved and the flight was not as bad as it seemed at first glance. ⁴⁴

Division of Target Areas

Project Casey Jones was vast. Systematic coverage caused division of the project into manageable segments for photographic mapping. Incorporation of the Corps' criteria and political reality helped determine the areas. Timeliness was given the top priority from the conception of the project. Certain areas of Europe then occupied by the Allied forces were planned to be occupied by other nations. Therefore, speed was essential to obtain complete coverage of those areas in the shortest possible time. Otherwise, overflight clearance could be denied.

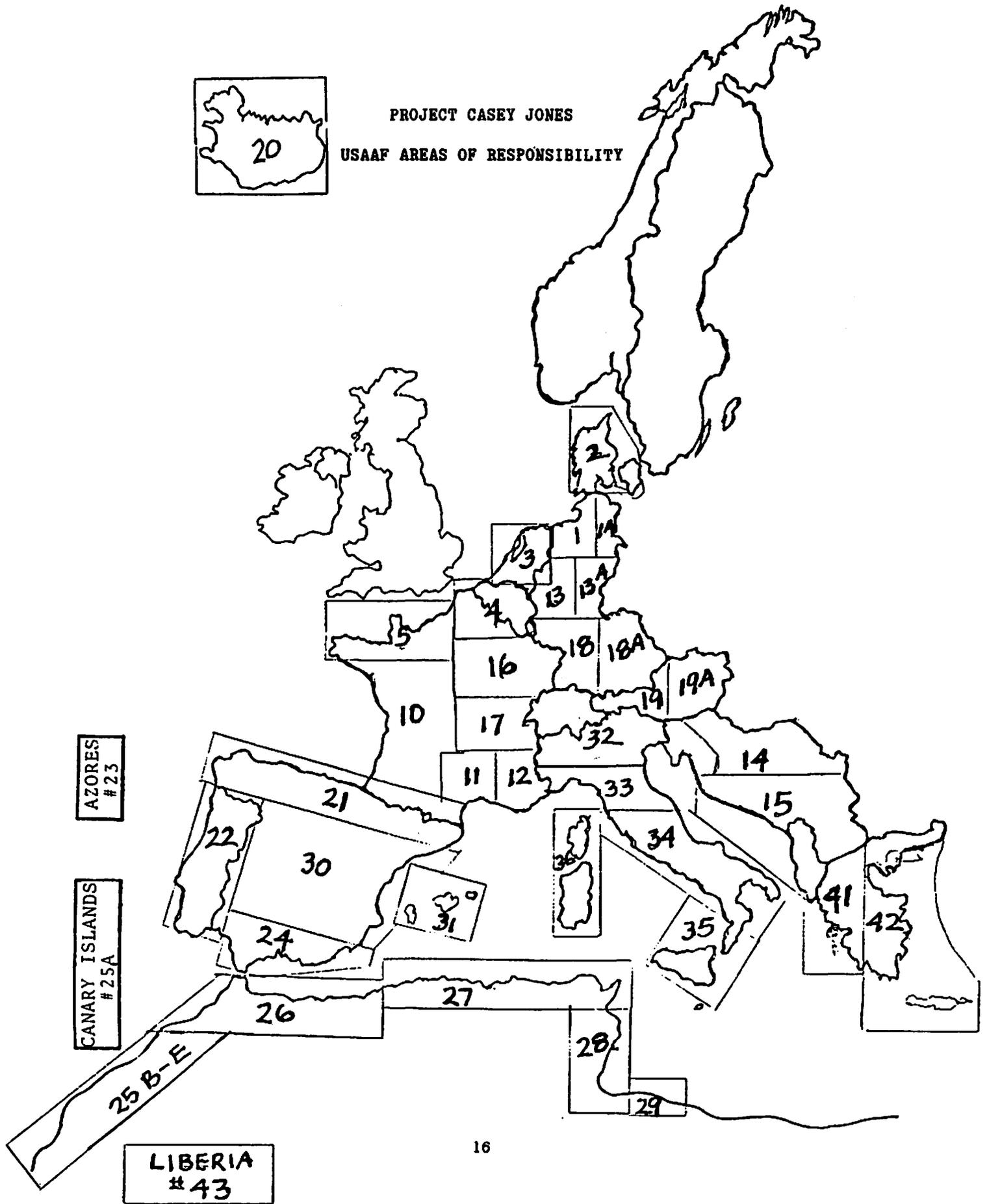
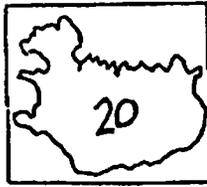
A second consideration was weather (more later) and the groups had had experience with European weather for more than three years. The northern tier of targets--Iceland, Denmark, Norway, Sweden, and northern Germany as well as the mountainous regions of the Alps--had to be overflowed for coverage during limited times. Inclement weather accompanied by snow, ice, fog, and cloud coverage would come with fall and winter months, thereby preventing acceptable photography of the terrain. In addition, the sun angle would allow acceptable coverage only during those limited times. Weather in other areas was also a point concerning coverage. Areas that possessed similar weather patterns were arranged according to the similarities.

An additional consideration was geography. The Corps of Engineers criteria demanded accurate photomapping and the capabilities of the K-17 camera required the aircraft to maintain an altitude of 20,000 feet above the terrain. Only in this manner could complete coverage be insured, complete coverage without distortion. The geography of Europe from the Low Countries to the Alps necessitated the division of the areas by means of a command average terrain elevation.⁴⁵



306TH BOMB GROUP PROGRESS REPORT AS OF 22 SEPTEMBER 1945

PROJECT CASEY JONES
USAAF AREAS OF RESPONSIBILITY



Coverage for the target areas caused a division into established areas for mapping. They were divided and assigned as follows:

<u>Area</u>	<u>Location</u>	<u>Unit</u>
1	Northwest Germany	305th
1A	North Germany	305th
4	Low Countries and France	305th
13	Western Germany	305th
13A	Western Germany	305th
14	Yugoslavia	305th
15	Yugoslavia	305th
16	France	305th
18	South Germany/Austria	305th
18A	South Germany/Austria	305th
19	Austria	305th
19A	Austria	305th
20	Iceland	305th
22	Portugal	305th
25D/E	West Africa	305th
28	Tunisia	305th
29	Tripolitania	305th
34	Central Italy	305th
35	Italy and Sicily	305th
41	Western Greece	305th
42	Greece	305th
43	Liberia	305th
3	Netherlands	306th
5	Western France	306th
10	Southwest France	306th
11	South France	306th
12	Southeast France	306th
17	France	306th
21A-D	North Spain	306th
24A-C	South Spain	306th
25A-C	West Africa	306th
26	Morocco	306th
27A-C	Algeria	306th
30A-E	Spain	306th
31	Balearic Islands	306th
32	North Italy	306th
33	North Yugoslavia/Italy	306th
36	Sardinia & Corsica	306th

In addition to these, there were other numbered areas assigned for which there is no identification or indication of the location of the areas for which the numbers were assigned. They are as follows:

Unknown Locations:

<u>Area</u>	<u>Area</u>	<u>Area</u>	<u>Area</u>
6	37	44	48A/B
7	38	45	56
8	39	46	57
9	40	47A-D	58

One other area covered by U. S. aerial photography was Switzerland, although it remained unnumbered. The 305th was assigned this mission, but the photography had to wait for overflight clearances, snowmelt, and Swiss Army observers in a monitor capacity.⁴⁸

Procedures

Once the areas were determined and rank-ordered for priority, flying schedules began. Planning the flight lines relied generally on a standard east-west oriented course.* Each flight line in each area was plotted on this axis, separated by four statute miles. The length of lines varied, depending on the size of the area assigned and its internal geography. On the average, each flight line so plotted was about 200 miles. On a single sortie, each aircraft would try to fly two lines, one east and one west. Thus, every sortie had the potential to produce about 400 miles of accurate photomapping film. Weather conditions, air navigation accuracy, and camera reliability were factors that had to be considered for photo rejection or acceptance. Initial estimates predicted a 30 percent rejection. Eventual overall averages were closer to 40 percent. Should a portion of a line's photographs be rejected, only that portion would have to be reflown until acceptable photographs could be produced.⁴⁷ All aircrews later stated⁴⁸ that these 'Gap Filler' or 'Pick Up' missions were the most difficult.

Flight procedures were varied in the early stages as a learning process. The first reaction by navigators was that it was impossible to fly a course accurate to within one mile at an altitude of 20,000 feet or more for miles. As a corrective, only former lead aircraft were to be used because they were equipped with radar instruments. Pilots tried to fly the narrow flight lines using the bombsight, but this produced erratic results. In some areas, three-plane cell formations, relying on radar to determine correct separation, were used. This technique did not work well in all areas or under all conditions. The final procedure was to have an experienced bombardier fly the plane with his bombsight. Use of the Norden Bombsight could keep the aircraft smoothly on course by killing the drift simultaneously. This necessitated plotting the flight line on navigation charts and picking out landmarks approximately ten

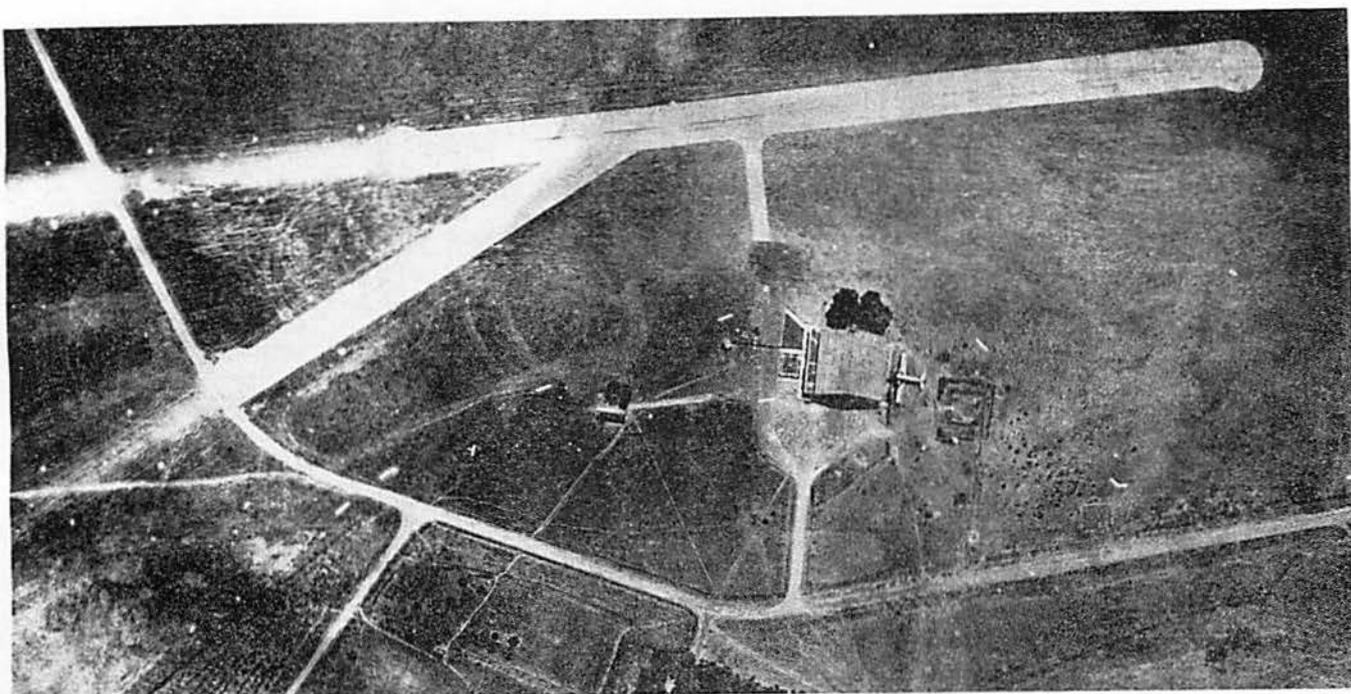
*Some routings in West Africa were on a north-south orientation (see weekly progress report maps).



OFFICERS QUARTERS AT PORT LYAUTEY NAS, FRENCH MOROCCO IN JULY 1946

miles apart before the flight. When the aircraft approached the photographic flight line, the bombardier would pick the first chosen landmark and keep it under his vertical sight crosshair until almost over the point. Then he would shift to the next landmark and repeat the procedure over and over until the flight line was completed.⁴⁹ Cruising speed of the B-17 on this type of sortie was about 180 knots which meant that the bombardier had to shift his aimpoint every three and one-half minutes.

Once the aircraft landed at its base, the first task was to unload the cameras and get the film magazines to the processing station. This was a task assigned to the cameramen. After each film was developed, a plot was made of every other negative on each roll. This made a virtually continuous coverage because of the 55-60 percent overlap required on each frame. Presence of the Corps of Engineers officers and their post-flight check determined the quality of coverage quickly. Results from the preliminary charting were posted on master charts in the group plotting office and the group navigation office. These controls established the percentage of completion of any particular area and also determined which flight lines or gap fillers would have to be reflown on future missions.



TANGIER AIRPORT WITH ITS 1200-FOOT CEMENT RUNWAY TAKEN AT APPROXIMATELY 10,000-FEET UTILIZING THE K-17 CAMERA. TANGIER WAS USED AS A REST AND RELAXATION CITY BY CASEY JONES AIRCREWS. LANDING AT TANGIER WAS FAIRLY EASY, JUST TOUCH DOWN AT THE END OF THE RUNWAY AND BRAKE TO A HALT. TAKEOFF WAS DIFFERENT--YOU WENT OFF THE PAVEMENT ABOUT 100-FEET ON THE GRASS AND GRAVEL, PUT IT ON FULL POWER, RELEASED THE BRAKES AND AS SOON AS YOU HIT THE CONCRETE RUNWAY, YOU WOULD DROP ONE-HALF FLAPS. IF ALL WENT WELL, YOU WERE AIRBORNE BY 1200-FEET OR LESS.

Unit photographic laboratories had the responsibility to develop the film. Plotting was first accomplished from negatives for a dual purpose. The first was to subject the film to a certain amount of heat for technical reasons. The second was to save time. Plotting from the negatives by-passed the printing process and served the same essential urgency envisioned in the program from the start. One point stressed was that there would be a possibility that a year later that diplomatic permission for overflight might not be available, as indeed it was for some nations.

Plotting from negatives was not difficult, but experience was necessary to adapt to the 'negative' appearance. Plotting was done on a 1:250,000 chart. A photograph taken from 20,000 feet by a K-17 camera produced a nine-inch by nine-inch photograph which would cover a square plot of one and one-half miles on a side. Once plotted, the accuracy of the flight line would be readily detectable. Any overlap less or more than stipulated, any deviation from the flight line, any tip, tilt, or crab was detectable by examination of the plot. Progress of the flights and plotting were placed on a master chart.

A later improvement expedited the plotting. Rather than wait for the plotting to be completed, Corps of Engineers officers screened the negatives and films for obvious faults such as excessive cloud cover, processing errors, camera malfunctions, and incorrect overlap. These preplotting procedures culled out obvious rejects and saved unnecessary plotting. It also assisted the group operations officer to reschedule a flight almost immediately while the sortie was still fresh in the minds of the crews and while the aircraft was operating in the same area. One additional point was that even the rejected film was retained on file, just in case another better could not be obtained. Then, the initially rejected frames were available for use.

B-17G Modifications

Both of these bombardment groups were equipped with B-17G aircraft. Each group consisted of four squadrons and each squadron possessed an authorization for 12 aircraft. All of these assigned aircraft were altered from heavy bombardment to aerial photographic mapping during June 1945. The 19th Photographic Mapping Squadron was already equipped with 12 F-9 (B-17 reconnaissance) aircraft.

Stripping Armaments. Since Project Casey Jones was a peacetime mission, armor plating that had been installed to protect the crews from enemy attacks was removed.* The turret and armament sections of the ground maintenance units removed all the guns and turrets, including the distinctive B-17G 'chin turret.' All this removed equipment was packaged, protected with preservatives, and shipped to a storage facility. The 305th Bomb Group ground crews, for example, accomplished this task in less than two weeks, although a month had been allocated. Since no further armament work was necessary for this peacetime operation, personnel who normally accomplished maintenance on aircraft armament were transferred to the engineering sections.

Maintenance personnel responsible for operational readiness of the aircraft bombsights had plenty of work. The Norden bombsight was a critical element for the mapping project because proper functioning of the bombsight was essential for the mission and for each sortie. The bombsight determined the drift and data for correction, it determined ground speed calculations, and it provided a check device for course accuracy mandated for the sorties and missions. In this use of the Norden, the bombardier controlled the flight control system while on a 'bomb-photo' run. His controls were limited to holding a straight and level flight line. The pilots' positions still controlled the throttle and the altitude. In many ways, the pilots served as a liaison between the navigators, bombardiers, and the cameramen.

* Interviews with ground maintenance crews revealed that armor plating other than that protecting the pilot and co-pilot positions had been removed during the war. The reason was to reduce weight for increased range, speed, and altitude. The reduced weight increased the probabilities that a damaged aircraft would be able to reach safe territory after a bombing mission. Interview, R. J. Boyd, Historian, with Mr. Harry Doles, 306th Bomb Group Association Reunion, Colorado Springs, Colorado, 4-8 Sep 85.

An additional alteration to the airframe was the installation of standard aerial photographic cameras, the K-17,* in the well in the radio room. There was no formal standard for installation. Photo specialists from the 19th Photo Mapping Squadron dropped in at Thurleigh and Chelveston, but the crew chiefs on the bomb group B-17s were told what was needed in the way of equipment in the aircraft. They were left on their own to devise their own parts and arrange the installation as they saw fit.⁵⁵ In the first days of the project, only one camera was to be procured and installed on each aircraft.⁵⁶ Before the first month of flying photo missions was over, the number of cameras was doubled and two K-17s were installed on each B-17 to meet the standards established by the British who received the rolls from the second camera.⁵⁷ In October 1945, a new camera was received and installed on a limited number of aircraft. The new camera, the K-18, had a 24-inch focal length and produced a nine inch by eighteen inch (9" x 18") as opposed to the K-17 product of nine inches square. Specified areas⁵⁸ in Spain were designated to be covered by photography from the K-18.

Operating the camera was a difficult task. Cameramen, retrained aerial gunners, complained of the 'pain-in-the-neck' realized from cramped and crowded positions that they had to hold⁵⁹ bending over the camera for the duration of the run on the flight line. Furthermore, tending the camera and the intervalometer was a job demanding intense concentration. Attention could not deviate while the aircraft was on the prescribed flight line. Some of the flight lines were over 200 miles long and demanded at least an hour's rigid position and concentration. In addition, on a sortie at the required altitude, all the crew had to be on oxygen. The cameramen were in a cramped and crowded position and could use only slight shifts to ease the discomfort and stiffness. The rest of the crew could drain some of the usual condensed moisture from their masks, but the cameramen could not. They could not let their attention slip from the cameras for an instant. Any area which was not photographed correctly or that was missed meant another mission and no man on the crew cared to repeat the same mission because of his mistake, error, or carelessness. At the end of the flight line, the cameramen could straighten up and attempt to get the kinks out of their backs and necks.⁶⁰ After the aircraft moved from England, the Casey Jones crews had to walk out to their aircraft and the cameramen lug their heavy cameras, each valued at thousands of dollars. Transportation had been provided for crews during the war and in the first few months of the peacetime Casey Jones operations.⁶¹ Regardless, the crews made rapid progress in accomplishing the mission from the very beginning. They flew a⁶² combination of initial sorties and training missions concurrently.

For a description and technical explanation of the capabilities of the K-17 and the K-18 cameras, see Stanley, R. M., II, World War II Photographic Intelligence, Chas Scribner's Sons, New York, 1981, pp. 146-152.

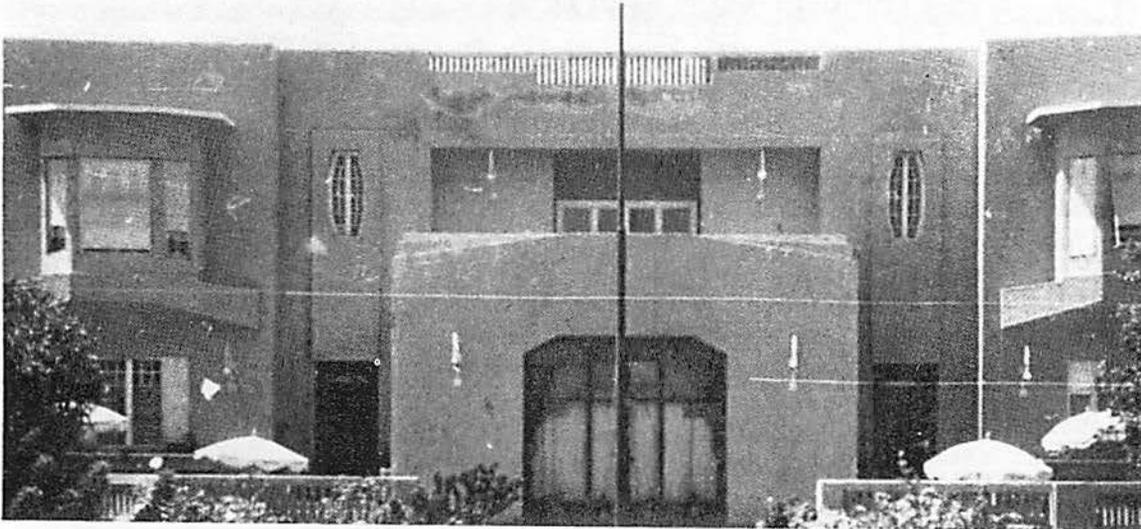


THE CITY OF RABAT-SALE, MOROCCO, USED BY CASEY JONES AIRCREWS ON OCCASION.

Equipment Shortages. The first difficulty that cropped up in Project Casey Jones was equipment shortages. In the initial training period, equipment shortages restricted the number of aircraft sent out on training missions. There were not enough cameras in the European theater to meet flight requirements. Armament had been stripped from the aircraft rapidly which allowed the modifications to be completed ahead of time. Camera shortages negated any advantages accruing from this speed of modification. Supply of cameras received top priority in conjunction with the priority assigned to the project. The numbers of cameras steadily increased. By the end of June 1945, the 305th's aircraft were available on a daily basis. This was a substantial change from the first sorties during the first week in June when only eight aircraft could be launched.⁶³

Similar conditions prevailed in the 306th Bomb Group. It was able to launch its first Casey Jones sortie on 8 June 1945. This served strictly as a practice flight. A little usable coverage was obtained, a bonus because none was intended. By 10 June, the conversion program had progressed enough to permit five sorties to be dispatched. On 12 June, four B-17Gs were sent to provide actual photo coverage of a target area in Europe, and on 13 June, 13 sorties were launched. By 19 June, a total group effort⁶⁴ attained a maximum of 66 aircraft launched over Europe in relays. One of the squadrons, the 368th, flew its first two sorties on 13 June and built up to nine sorties by the 18th as more aircraft were modified for the Casey Jones mission.⁶⁵

These were not the only equipment problems. Later, further demobilization programs along with relocations of the bomb groups compounded supply and equipment problems. Supply bases were closed in England in October and November 1945. The problem of obtaining supplies and equipment was magnified in difficulty. In many cases and instances, the group reported, these had to be obtained from units which were in the process of closing down as part of the post-war reduction and contraction. Spare parts for vehicles of all sorts, land and air, were always a concern and crew chiefs regularly resorted to "cannibalization" from other vehicles to keep operating, especially to keep flights in the air. In the early part of the project, a shuttle aircraft would fly between the operating locations and the main base, e.g., Thurleigh, to turn in exposed film and collect new film. While there, the crew would collect spare parts necessary for the continuation of the mission, collect personal mail, and whatever else the crew thought would be of use to the Casey Jones crews flying sorties from the remote operating locations. When the units would be scheduled to move to a main operating base, some equipment would not be available, having been already transferred to the new main base in expectation of the group move at a later date.



OFFICERS CLUB AT MARRAKECH, MOROCCO, A POPULAR OFF-DUTY ESTABLISHMENT FOR CASEY JONES AIRCREWS

Aircrew Training

Previous experience for the new mission was completely lacking in the bomb groups. None of the aircrews in the bomb squadrons had ever had any experience in flying sorties where the objective was not dropping bombs on enemy targets, but in obtaining aerial photographs. All crews had to be retrained for the successful accomplishment of the new duties. Every crew member was involved.

The most drastic change was the new duty for the aerial gunners. Peacetime conditions and gun removal from the aircraft had left them without a job. The new mission demanded proficient camera operators--aerial photographers. The key role of the cameramen on such sorties was obvious. In both groups, the gunners got new jobs: they became cameramen. Conversion to the new skill meant that all had to go through an intensive retraining course to acquire the skills necessary for the operation of the cameras. The first step in training was a ground school for familiarization and proficiency in camera functioning.⁶⁸ This part of the training program was assisted by specialist personnel from the 19th Photographic Mapping Squadron, backed by lectures, demonstrations, and training films. Training materials emphasized the importance of the camera to each mission. Training was organized in a manner permitting the new cameramen to have 'hands-on' experience to achieve familiarity with the new equipment. Training also provided skills for correction and repair of minor faults occurring in the camera equipment in flight. In the early stages of the mission, the camera, its mount, viewfinder, and intervalometer were installed by trained repair men as primary duties. The airborne cameraman was responsible for checking all equipment prior to flight.⁶⁹ Further assistance of a professional nature came from the photographic specialist personnel from the 19th, before the squadron moved to Italy in August 1945. The gunners, converted to cameramen, received irreplaceable help from these specialists.⁷⁰

Other crewmembers received instructions and training applicable to each crew position,⁷¹ training which would result in more efficient services to Casey Jones. Operation of the Norden Bombsight, for example, had formerly been the exclusive province of the bombardier. To meet the stringent specifications for Casey Jones, the groups' navigators had to go through a training program for proper use of the Norden to buttress the bombardier. Crews were increased in numbers by the addition of a second navigator whose task was to institute double-checks on determining precision flight lines.⁷² Pilots and co-pilots held the same jobs as before, but now there were tighter requirements. The type of work for Project Casey Jones presented new problems for them. It required pin-point flying to follow the precise photographic lines as laid out in the planning sessions. Navigation and pilotage had to be exact.

Any variation from the prescribed flight line made the film useless and was a waste of a sortie.⁷³ The first reaction of the navigators when apprised of the nature of the project was that it was impossible to fly a course accurate to within one mile at an altitude of 20,000 feet and more.⁷⁴ In spite of this initial reaction, they went out and did it.

Practice Missions

Once the ground training and familiarization were complete, aircrew training moved to flying practice missions. Selection of flying missions and areas of target coverage was carefully controlled. The first practice missions were flown along arbitrary flight lines over England for two reasons. The first was the crew familiarity with the flight line region. The second was that local use offered an opportunity for cross checks on navigation and flying accuracy as well as precision with existing terrain topographical features. Those practice flights were opportunities for the aircrews to test their new skills acquired in ground training on an actual sortie. Aircrews could become acquainted with potential problems that could develop because of the uniqueness of individual assignments. Once basic proficiency was fully documented while flying over areas of England, training sorties were continued, though expanded, to include nearby target areas on the European continent. As in the selection of areas in England, initial areas chosen for European sorties were those which⁷⁵ could be assured of one clear day available for each training flight.

Remarkable progress was evident almost immediately in Project Casey Jones. The bomb groups received the assignment on 1 June 1945. On 6 June, the 305th flew its first test and practice sortie and on 8 June, the 306th flew its first. Since these were primarily⁷⁶ practice missions, little usable coverage was expected or obtained.

Regardless of the skills learned, the two practice areas--No. 4, the Low Countries and France for the 305th and No. 3, the Netherlands for the 306th--had to be reflown. In late June 1945, new specifications altered the configuration of the aircraft to a double camera installation. The groups used the good weather⁷⁷ in late June to re-fly the areas using the double camera configuration. By the end of July, 88 percent of Area No. 4 had been⁷⁸ covered satisfactorily and No. 3 attained completion in August 1945. Gradually, teamwork and proficiency increased as the crews from the two groups became adjusted to the new mission.

Area No. 3, the Netherlands, was the training area for the 306th and all its four squadrons flew sorties on flight lines there to obtain photographic coverage and increased experience. By the end of August, only a few small gaps* and holes remained along the flight lines there to be reflown in this area. Completion of the gaps was a difficult task and Area No. 3 served as an example of the "gap filler" or "pick up" type of operational flying. Remaining coverage in this area was assigned to the 367th Bomb Squadron, flying from Thurleigh. Actual mileage flown was low on this type of sortie because it demanded extreme accuracy in flying, navigation, and camera work. Perfect camera

* These gaps in the flight lines were caused by many things such as cloud cover, deviation from the prescribed flight line, camera malfunction, film defects, etc. that caused a small portion of the film exposed on the flight line to be rejected. This meant that section of the line had to be reflown.

coordination and operation was critical. Crews overflowed these flight lines precisely, knew where the gaps were located, and then started the cameras operating at the precise point. Skill of the crews assigned to 'gap filler' duty was exceptionally high. Very little difficulty was encountered with improper overlap and rejections. Those few rejections were almost all caused by circumstances beyond the control of the crews. This portion of the completion phase was highly effective and Area No. 3 attained 100 percent coverage on the last sortie flown by the 367th Squadron in the area on 5 October 1945. In November 1945, the 305th had to send one sortie to Area No. 3 for one gap for the 306th (caused by poor film processing) and it was a successful mission.

Operational Environment

U. S. Army Corps of Engineers specifications, aircraft modifications, crew training, and practice missions prepared the two bomb groups for the Casey Jones Project. Operations actually began at the same time as the practice missions. Aircrew proficiency increased with experience. Aircrews flew sorties along flight lines and collected ever-higher levels of acceptable photographic maps of the terrain. Relocations to new bases placed the units closer to the target areas. Some of the squadrons relocated to bases other than those of the groups' home bases. In effect, they operated as independent squadrons. Plans had proven to be inadequate. For example, the 305th Bomb Group had originally been scheduled for release from Project Casey Jones by 15 December 1945. Plans had to be changed because of the percentage of those areas covered. Initial estimates had predicted only a 30 percent rejection rate, but the average hovered around 40 percent. By the end of 1946, virtually all the requirements had been met with only a small number of gaps along the individual flight lines remaining. The duration of Project Casey Jones was extended by the stringent requirements, made worse by the weather conditions over the target areas, particularly in the winter months of 1945 and 1946.

Weather-Weather-Weather

The primary determining factor for successful accomplishment of the Project Casey Jones mission was the weather condition over each target area. A flight could be flown perfectly, the navigation could be precise, and the cameraman could assure that the camera functioned exactly, but cloud cover, mist, or haze could negate all these perfect efforts and reduce the sortie to a non-effective rating. Minimum acceptable standards for the Corps of Engineers for proper coverage required less than two tenths (20 percent) cloud cover without too much haze or mist. Finding these conditions in Europe was difficult, especially in 1945 and 1946. The 306th Bomb Group reported in its first month's operations--June 1945--that of the 63 sorties flown, 28 were declared non-effective because of weather conditions. Reports of this nature were constant throughout the extent of Casey Jones from both groups involved. Both reported that there were many days when no attempts were made to obtain photographs of the terrain because of adverse weather conditions. Clear days were ideal for this mission. When they did occur, the groups' aircrews flew to the maximum to take full advantage of the rare appearance.

The winter of 1945 and 1946 over Europe was harsh and brought adverse weather hampering the completion of Casey Jones. Both groups reported that European operations for November 1945 were at a standstill because of cloud coverage. In the case of the 306th Bomb Group, its aircraft flew only two sorties, both on 29 November, on 'gap filler' or 'pick up' sorties over Areas No. 5 and No. 10.⁸⁸ The 305th Bomb Group reported that none of its assigned areas were clear enough for photographic work. It launched a total of 26 aircraft for the month, but nearly⁸⁷ all of its targets were in Africa, and then they only covered 43 miles. Progress toward completion of Project Casey Jones in December 1945 was a disaster for both groups. The 306th was in the process of moving from Thurleigh in England to Giebelstadt in Germany and the 305th was moving from St Trond in Belgium to Lechfeld in Germany. The moves made little difference because the weather was not suitable for aerial photography. The 305th Bomb Group launched only three sorties during the month because operations⁸⁸ were restricted by weather and snow coverage in the assigned areas. Operations for the 306th Bomb Group were even worse. The group sent only one sortie from the 367th Bomb Squadron on a 'gap filler' mission on 6 December, but weather conditions prevented filling any of the holes. Photo coverage by detachments of the 423d and 369th Bomb Squadrons in North Africa managed to⁸⁹ collect exposed film for some coverage of their areas on that continent. January 1946 provided no respite from the adverse weather conditions prevailing in the previous two months. The director of the project reported that as much work was done in⁹⁰ the first 10 days of February 1946 as was accomplished in all of January. The only progress made in European coverage in February was in Italy and Spain, where the 423d Bomb Squadron had the mission to fly from Istres-le-Tube, France, to fill in some of the⁹¹ holes not covered in those regions by previous flights for Casey Jones.

Winter cloud coverage of Europe stalled the project. Snow and ice on the ground prevented accurate terrain photography. Regardless, the groups took advantage of every moment of clear weather to try to fly sorties over those areas and sections of flight lines that were not complete. The areas not covered by November 1945 were numerous and stretched from Denmark to North Africa. Many hours of flight times were planned for these missions. The 305th Bomb Group reported that⁹² .we cannot hope for a clear day all over Europe to complete our job. In the progress statistics for the project, there⁹³ was little or no change in the percentage of coverage for any area.

Provisions had been made in the planning stages that allowed for the inclement weather expected over the northern reaches of Europe. To prevent the project from coming to a complete halt because of the well-known conditions of winter weather in Europe, plans for the project called for the deployment of the photographic units North Africa, well⁹⁴ away from the winter weather conditions.

North Africa in general was inadequately mapped. Details were incomplete or missing on the area maps available to the military. This was a difficult problem, but searches of sources showed that no better existed. The two bomb groups' plotting and planning sections could not perform their functions with what was available and on hand. There were no means by which these sections could lay out the flight lines. It, therefore, became necessary for a detachment of the 306th Bomb Group operating in the area to make a photographic map of the African coastline of the entire region to be covered by Project Casey Jones. In this manner, the group would have a base line, a realistic chart from which⁹⁵ to plan the flight lines and one which the plots could be laid out.

North Africa was not as clear as expected because of other weather phenomena confronting the crews. Other problems included the facts that there were few distinctive checkpoints, the difficulty of desert navigation, and the existence of storms. These were first met, but the most serious for Project Casey Jones was the high altitude turbulence over West Africa. Turbulence occurred frequently and caused sandstorms whose debris reached up to 20,000 feet. Photographs taken through this maze of swirling dust and sand proved to be dull and hazy with little detail showing through.

In some cases, the haze was so severe that it hid the surface features of the desert, transparent though they may have seemed. This was further complicated by the fact that it was almost impossible to determine from the aircraft at altitude whether it was actually haze or merely the sandy surface of the desert. Hazy photographs over the desert caused by these conditions had very few ground detail points even under the best of conditions. This made the task of plotting the photographs extremely difficult for the cartographers, except for those areas in which the actual coastline could be determined by checkpoints such as a river mouth on an identifiable point of land. The first unit into that area, Detachment "B" of the 367th Bomb Squadron, reported that not one frame of the film taken during the first 20 days of operations in West Africa was rated as acceptable by the engineering standards for mapmaking. Most of the material represented the best possible photographic work by experienced crews in the conditions found over the Sahara Desert.⁹⁶ Prevalence of the sand haze caused a search for the remedy. The project office in the 40th Bomb Wing sought to equip cameras with red filters that had the potential to cut through the haze.⁹⁷ In early 1946, such filters were not available. The search continued.

Another problem was associated with the relocation to the North African bases, particularly in Liberia. The radar--'Mickey*'--had an unusual high rate of failures. The cause for this was the absence of tropicalization of the instruments. The breakdown failures came from the heat encountered on the ground which often reached 120°F. Because the radar was essential for the Casey Jones operations. A search was made by the Headquarters 40th Bomb Wing to locate any tropicalized signal equipment. None was available in the theater. Therefore, new sets would have to be conditioned for the tropics and installed in the B-17Gs at the Army Air Forces Depot at Oberpfaffenhofen, Germany. 98

European winter conditions in 1946-1946 were bad enough for aerial photographic coverage. Spring 1946 was not much better. Rainstorms arriving in the spring made it difficult to gain further progress. The 306th Bomb Group reported that its April 1946 results were pitifully small because of the continuing bad weather and cloud coverage. The total camera time over the continent for the month was one hour 25 minutes. On 23 April, an additional schedule was begun with the squadron dispatching a weather scout aircraft ahead of the Casey Jones aircraft each day from the airfield at Istres-le-Tube. Even with the extraordinary measure, the weather conditions caused the results to be nil. 99 The only area on the continent to log any significant progress was in Area No. 2, Denmark. The 40th Bomb Wing had directed the 305th Bomb Group to proceed with the mission there since the area was clear. 100

Regardless of the hampering effect of cloud cover and adverse weather, the crews frequently tried. Even on sorties when the cloud coverage was in excess of the allowable maximum for mapping photography, crews sometimes did make the attempt. On a sortie confronted with these conditions, they tried to make exposures whenever and wherever a slight break could be found along the prescribed flight lines. On some occasions, these processed exposures turned out less than acceptable for the purposes of the project. 101 On other occasions, these exposures could be salvaged for minimally-acceptable coverage.

* The name 'Mickey' was assigned to the airborne radar which was used in the war to 'Bomb-Through-Overcast (BTO).' Heavy bomber units had Lead Crews which were trained for operation of the AN/APQ-15 radar sets installed on B-17G 'Lead Aircraft' for bombing missions. Every Lead Crew included a BTO operator in addition to this normal crew complement. The radar was installed in lieu of the lower power-driven gun turret. Hence the profile of the radar-equipped bombers remained similar with those not equipped. (Craven and Cate, Army Air Forces in World War II, Vol VI, pp 597-598, 615, and 639-641; Interview, R. J. Boyd, Historian, with Lt Col Sidney F. Johnston, USAF(Ret), Feb 85.

Another weather condition affected the aircraft on the ground. At Istres-le-Tube, France, the winter months had repeated occasions when the 'mistral winds'* would swoop down the Rhone Valley and storm across the airfield. These winds were cold, dry, from the north, and attained speeds on land ranging from 35 to 80 miles per hour. Under these gale proportions and with the generated turbulence, aircraft operations were halted. No B-17 could take off or land while mistral wind velocities prevailed.¹⁰² Blowing dust compounded the problem. Winds of this velocity across the relatively dry land conditions at Istres-le-Tube blew dust clouds that inundated aircraft. Dust at Istres had long been an enemy of the photographers. Prior to take off from this base, the cameramen had to get under the aircraft to loosen the screws which opened and closed the camera well doors because the accumulated dust would make them stick. On occasion, even after this preparatory work, dust would jam the camera well doors while in the take off roll. This caused an aborted sortie because the doors could not be opened from the inside once jammed while in the air. The doors were crude, but simple, fixtures because they had to be designed by the ground engineering department and installed by the squadron crews.¹⁰³

Increased Experience and Proficiency

No alternative to bad weather existed except to wait it out until conditions became more conducive and suitable for aerial photographic mapping. Improved proficiency was a result of a learning process as the experience accumulated with the crew members. The first sorties, other than the practice sorties, led to more experience with the procedures and equipment. The intervalometer, for example, had caused repeated problems. Late in June 1945 only after a short experience with the cameras, the units held a critique to try to reduce camera malfunctions directly caused by the intervalometer. The 306th Bomb Group did set up experiments to take pictures without it. They instituted a manual override capacity¹⁰⁴ on the camera that could counter intervalometer errors while airborne.

Since this was a unique project for the bomb groups, a predicted number of technical problems were encountered. Within the first two months, the 305th Bomb Group reported that a lot of the snags had been worked out by various techniques and innovations. Results showed¹⁰⁵ in the increasing rates of monthly acceptance of photographs.

Experience increased the quality of the acceptance rates of the photographs. The June 1945 sorties in both groups reported a low rate of acceptance. The 306th reported only 7.93 percent of its June photographs acceptable by the standards.¹⁰⁶ The 305th reported a similar condition, although slightly higher. The returns were noted as a ' . . . a high rate of rejection. . . . ' but the June acceptance rate was placed at 18.7 percent.¹⁰⁷ Progression in the quality of

* See Appendix IV

photography reflected in the acceptance rate moved higher rapidly. By August, the 368th Bomb Squadron of the 306th Bomb Group reported a 59.3 percent acceptance rate.¹⁰⁸ The 367th, also of the 306th, reported at the end of October 1945, that its cumulative acceptance rate had risen to 58.2 percent.¹⁰⁹

Once the aircrews attained proficiency, the quality of collected film increased; the number of rejections decreased. Army demobilization continued and many of those with high proficiency acquired through experience had achieved the requisite number of points and were sent back to the United States for discharge. Replacements trickled in, but few of them were qualified in the B-17 and none in aerial photography. Transition training became a necessity. By April 1946, replacement pilots assigned to the Casey Jones units were not considered qualified. The 369th Bomb Squadron had been practically inactivated, placed in a dormant status in January 1946. By April¹¹⁰ it was reestablished with the idea of training crews on the aircraft. In May 1946, the 368th Bomb Squadron began running a transition school to check out new pilots, most of whom were not B-17 pilots.¹¹¹

Alterations to Procedures

During the 19 months of Project Casey Jones operations, the two bomb groups had encountered many difficulties. They made attempts to correct these deficiencies by altering and adjusting procedures. One of these alterations occurred in early June 1945, almost as soon as the project had begun.

The 305th Bomb Group reported at the end of June 1945, that two officers from the Army Corps of Engineers had established a review procedure for the pictures taken each day. This review checked the quality of coverage almost immediately and was briefed to the crews. This check was a considerable help in making clear to the aircrews what was good or bad in the photographs they had taken on that particular sortie. Such a quality check aided the crews in studying procedures when the event was still fresh in their minds. It also aided in rescheduling sorties. The work of the engineers made it possible to reschedule quick and economical flights to cover the flight lines that had not been photographed precisely the first time over the area.¹¹²

A traditional procedure for bombing missions during the war had been to send a weather scout aircraft to the target area prior to a scheduled strike. This procedure was also adapted to the Project Casey Jones. Poor weather conditions for photography appeared in late July 1945. After repeated sorties without exposures, the 306th Bomb Group used a weather scout. Five aircraft had been put on schedule for 28 July and they made their launch. Before they burned too much fuel, they were recalled when the weather scout aircraft, dispatched earlier, reported back on the unfavorable weather conditions over the target area.¹¹³

Another alteration of procedures embarked on a new path rather than rely on traditional procedures. Application of this new path produced the remarkable successes of the 366th Bomb Squadron operations in Italy and Tunisia. In two days, this squadron mapped 95 percent of Area No. 34, Central and Southern Italy. In less than 10 days, this squadron moved to Tunisia and mapped 94 percent of Area No. 28. This superb exhibition and exceptional level of coverage performance was partially caused by an innovation developed by the crews of the squadron. The unusual method involved a variation on procedures for following a photographic flight line. Instead of one aircraft flying along a flight line, several aircraft would fly parallel flight lines in an abreast formation. They maintained a three-mile separation by use of the radar. This innovation to procedure reduced the number of frames rejected because of navigational error. This multiple check for precision navigation as a revised procedure produced the superior performance. It also brought a Letter of Commendation* from Major General W. E. Kepner, Ninth Air Force Commanding General.¹¹⁴ This technique did not work everywhere.

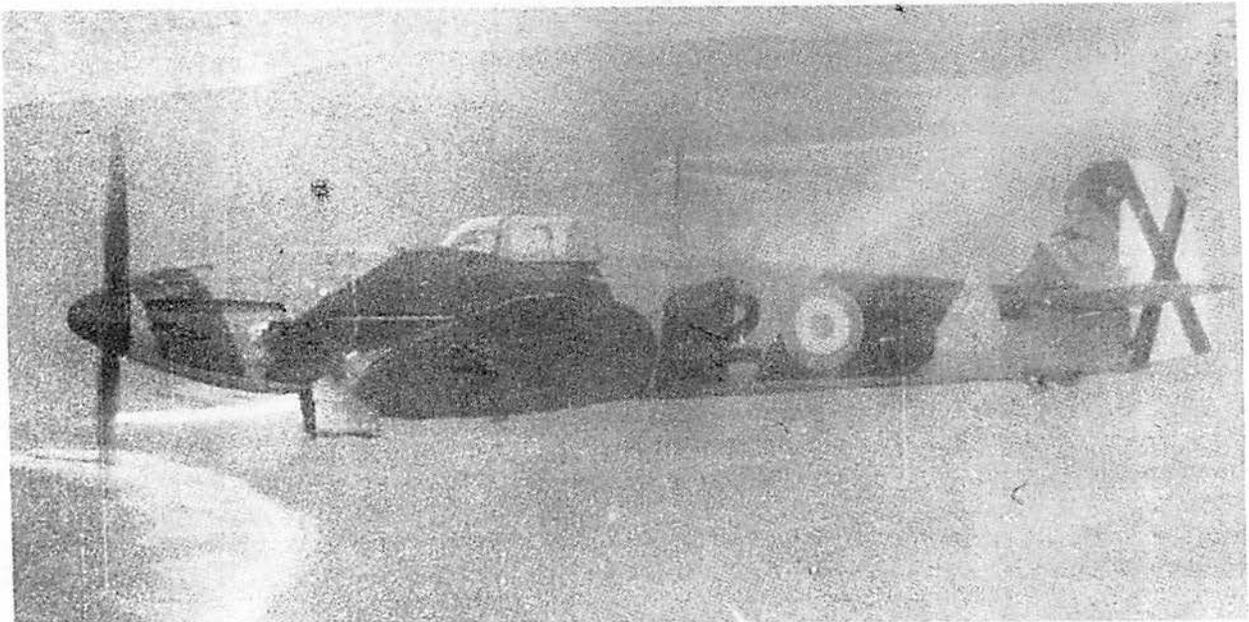
Another alteration arose out of necessity. Photographic mapping North and West Africa presented new types of difficulties not associated with the weather. Reference points were scarce and far between. Navigators had to have checkpoints and coverage was less than precise without them. The 306th Bomb Group developed an innovative method that eased the difficulty and provided a rational solution. The engineering section and the plotting section recognized the impossibility of having the required precision and gave up plotting photographs taken inland beyond the coastline. Instead, the navigators would use the closest checkpoint and then navigate as precisely as they could by relying on their instruments. The engineers and plotting sections would then accept the navigator's word for the area covered by pictures taken over these areas. If the navigators were unable to find checkpoints along the coastline, operations in the interior were virtually impossible because few, if any, reliable checkpoints existed in the interior land areas.¹¹⁵

One of the problems faced by the bomb groups was the question of what to do with the gaps that remained in area coverage because of weather, malfunctions of the equipment, and errors on the part of the crews. Rather than have the entire squadron held up on the project efforts, small cadres were detailed as 'gap fillers' to fly 'pick up missions.' After the 306th Bomb Group moved to Giebelstadt, Germany in December 1945, some aircraft and crews of the 367th Bomb Squadron remained at Thurleigh, England. Their special mission was to operate in Area Nos 3, 5, 11, and 17. All of these areas were near completion by September 1945, except for gaps left uncovered from previously flown flight lines. These gaps were caused by cloud cover along the flight line, or insufficient overlap, sidelap, or holes along the line for several other reasons. Weather was always a factor, more so as winter approached, and prevented sorties being flown on many days during that month.¹¹⁶

* See below

Area no. 3, Netherlands, was completed before the end of November 1945. Area No. 5, Western France, was pushed to 99 percent completion by December 1945. Area No. 11, South France, attained a 99 percent level coverage in the same month as did Area No. 17, East Central France.¹¹⁷ As predicted by the September reports, a very few more days of suitable flying weather would be enough to finish the areas.¹¹⁸

Since weather conditions were so stringent, there was a scarcity of conditions suitable for aerial photography. On this basis, it was essential for the groups' operations officers to know which flights were successful as soon as possible after a day's operations. The preference was for a report within 24 hours. Under the system used at the initial stages of the project, the operations sections could not find the results on which flight lines had to be reflown for three days. In July 1945, the 305th Bomb Group Operations Officers studied the delay and concluded that much time was wasted in plotting film of lower quality than the specifications required. In mid-July, four new photographic intelligence officers were assigned and they were detailed to screen the incoming exposed film. By such screening, the film which was not obviously not acceptable--clouds or overlap errors, erratic flight lines, processing mistakes--would be rejected prior to plotting on the master chart. Because of the inherent slowness of the inspection by the engineers after plotting, there was no way this phase of the work could be accelerated. By having the engineer inspect the film before the draftsmen made additional copies of the plot,¹¹⁹ a great deal of time was saved. Copying the plot was a slow process. By revision and streamlining procedures, a control could be used not only to check on progress, but it also resulted in saved time and a smoother flow of film. The operations officers had a faster response on those flight lines that would have to be reflown.¹²⁰



HEINKEL 112D OF THE SPANISH AIR FORCE INTERCEPTS A CASEY JONES B-17 OVER SPANISH MOROCCO IN 1946. SEVENTEEN OF THESE AIRCRAFT WERE SOLD TO SPAIN BY GERMANY IN 1939.

International Difficulties

Diplomatic negotiations had to be arranged for permission to overfly international borders and national domains not controlled by an army of occupation forces as liberated or conquered territory. In most instances, permission was granted freely, based on the assumption that the permission was granted since the areas were covered. Some areas were categorized as liberated or conquered regions by the military might of the United States. The State Department made it clear that it would be unnecessary to negotiate. Instead, the officer-in-charge of the American missions were authorized to take up in advance with the appropriate military authorities of the European Theater of Operations the issue of photomapping. The State Department was as deeply interested in the rapid completion of the project as was the War Department.¹²¹

One of the diplomatic levers employed to coerce or obtain overflight clearances was the promise to provide duplicate copies of negatives which covered that country. The technology of modern photogrammetric surveys was a quantum jump over previously existing methods. Its vast superiority was used as goal to stimulate permission to conduct such a survey. This level was incorporated as a fundamental tenet of Project Casey Jones from the beginning.¹²²

Those nations that had remained neutral during World War II had to be given an opportunity to permit overflight through negotiations. Some of the negotiations were undertaken by the several embassies and others were the responsibility of the Project Casey Jones monitor. There were delays and indecisions. For example, an exchange of notes between the United States and the Government of Switzerland authorized the photographic mapping survey of Switzerland. The two agreed that a certain number of maps and a negative of the films resulting from the survey would be placed at the disposal of the Swiss authorities.¹²³ The delay was evident in that the clearance did not come through until 24 April 1946, although snow cover in the Alps would have stopped any flights prior to that time period. The photographic mission operations began almost immediately after the approval. In accord with the agreement, Swiss officers participated in the aerial mapping operations by acting as observers. The project officer gave voice to his pleasure in hearing about the approval clearance because it would allow him to fill in the blank spots in the middle of the continent.¹²⁴

Spain was another of the neutrals during World War II, but as a part of Europe, the Casey Jones flights were concerned with overflight permission. At the first reaction, Generalissimo Franco had refused officially to allow the mapping of his nation, regardless of how badly it was needed. Since the Iberian Peninsula represented such an important part of the continent, diplomatic negotiations hoped to smooth the way for the necessary overflight.¹²⁵ In the meantime, the B-17s stationed at Istres-le-Tube and Gibraltar used subterfuge to collect initial data. A daily flight was sent round-robin to Thurleigh for several reasons. Exposed film was sent and exchanged for new. Spare parts, supplies, mail, and whatever delights the crews could accumulate

were carried on the return flights. This shuttle flight had received overflight permission between the two airfields. On occasion, it would be accompanied by Spanish fighter aircraft. As one participant stated, 'I am sure they could not tell that our camera was working and that we were on a slightly different course than the previous flight. I never did learn if the procedure was successful or not, but we had to come up with something worthwhile. 126

State Department diplomatic negotiations achieved success because overflight clearance for Project Casey Jones photography was received on 11 September 1945. By May 1946, coverage of Spain was proceeding steadily, but the country needed mapping badly, especially in the northern mountainous regions. Quality of the currently-existing charts was one of the items causing difficulty in navigation and plotting while on the Casey Jones operational flights. 127

Spanish intercepts by fighters continued. On 4 and 6 September 1946, two Casey Jones B-17 flights over Spain were intercepted north of Barcelona by two Spanish Air Force fighters--ME-109 and FW-190. Tactics used by the two were deemed threatening and since the B-17s had neither armor nor guns and the fighters' intent was unknown, the B-17s climbed beyond the service ceilings of the interceptors. 128 The double threat was sufficient to halt all operations over Spain pending an answer to a query sent from USSAFE to the Spanish Government. The Spanish Army was on a maneuver and the matter was satisfactory settled. The standdown lasted only about 10 days. A 10 day delay at this stage of Project Casey Jones was not overly serious. 129

In August 1945, permission was requested for overflight of Albania. Procedures for clearance requests for Area 15, Albania, were spelled out by the Commanding General, Army Air Forces, Mediterranean. There were no United States diplomatic representatives in the nation. One man was the head of the United States mission there, but he recommended obtaining help from the United States State Department. Furthermore, clearance for special flights into Albanian territory had to be obtained through the British Military Mission in Albania. 130 The assumption was that permission was not obtained because no record of coverage was logged. Other areas also fall under the identical assumption. 131

Headquarters USAFE had ascertained that any United States approach to Portugal requesting overflight clearance would be rejected and clearance would be refused. Therefore, Headquarters USAFE asked the British to negotiate instead of the U. S. because of a long-standing military alliance between Portugal and the United Kingdom. That alliance could be invoked, if the British so chose. The British reported to Headquarters USAFE in early 1946 that the Portuguese had denied permission for the U. S. and the British as well. This setback caused Headquarters USAFE to refer the matter to the Commanding General, Army Air Forces, and pointing out the meager amount of results the British had provided compared to what the U. S. had given them. The matter should be elevated to the Combined Chiefs of Staff level. Headquarters USAFE was clearly determined that the successful negotiation of Portuguese overflight by the RAF (USAFE would have preferred to do the flying) should be the minimum return expected from the British. It should be exacted solely on the merits of a cooperative program. 132

A unique problem pertained to the coverage of the Azores, Area No. 23, which belonged to Portugal. At the initiation of this part of Project Casey Jones, Area No. 23 was a highly-classified (Top Secret) operation.¹³³ Four aircraft and crews from the 367th Bomb Squadron, 306th Bomb Group, were organized into Detachment 'A' and sent to Area No. 23 on 4 September 1945. Three of the aircraft and crews returned to Thurleigh, England on 6 October 1945.¹³⁴ The fourth aircraft was damaged in a ground accident causing a delay in the return of the aircraft and crew until 16 November 1945.¹³⁵ Photographic coverage was limited, but not excluded, in the Azores. The agreement between England and Portugal guaranteed Portuguese sovereignty. This created a difficulty because many times a B-17G would launch for a photographic mission and a British fighter would intercept the B-17 and direct it to return to base, but not before some coverage had been obtained. Thus, many flights only lasted an hour or more and photographic coverage was slight. The extent of coverage totaled only 23 percent by September 1946, but a lot of the area included the ocean.¹³⁶

Photographic coverage of Liberia, Area No. 43, presented a slightly different problem. Aircraft and crews from the 366th Bomb Squadron operated out of Roberts Field, 50 miles from Monrovia from December 1945 to mid-April 1946.¹³⁷ After 15 April 1946 when the Liberian detachment closed down, the aircraft flew only as far south in Africa as Dakar.¹³⁸ Film disposition caused the difficulty in Liberia. Liberian Government pressure was exerted on the squadron commander to relinquish the film. He referred the question to Headquarters, 40th Bomb Wing. Its decision was clear: "No film has been disposed of nor will any film be disposed of except through the channels provided."¹³⁹ Liberia had requested copies, but the instructions directed that two sets of prints and plots would only be delivered to the United States Minister to the Liberian Government.¹⁴⁰

Aerial Mapping Progression

In spite of all the personnel, weather, and diplomatic problems and difficulties, the project moved toward completion rapidly. The skill of the bomber crews and the improvements and innovations incorporated to enhance the operations sped progress toward the termination of Project Casey Jones. Initial inexperience had led to a high rejection rate of films, but this was soon overcome. By the end of the fifth month of operations--October 1945--most of the areas on the continent of Europe were covered at least to the 90 percent level.¹⁴¹ By the end of December 1946, Project Casey Jones was virtually complete.

General Coverage

First areas assigned to the two bomb groups for coverage were close to their home bases in England. These first areas also served as a training ground for the groups by which the crews could increase proficiency. Then, as improved skills were demonstrated, the number of areas assigned were gradually expanded over all of Europe. Weather

conditions were known to deteriorate over the continent during the fall and winter months to a point where photographic-mapping coverage would be impossible. Not only were the days without cloud cover more limited, but snowfall, wind-driven drifts, and ice distorted the terrain features. Furthermore, the angle of the sun's rays between the autumnal and vernal equinoxes would also distort photographic images. Thus, plans were made to shift operations away from the northern countries and into the Mediterranean Sea regions for those months. The tropical conditions in the south of Europe were well documented. They were expected to be more more favorable to aerial photography.

By the end of August 1945, the 305th reported that with only the last week in June and the two months of July and August, the operational activities of the group on Project Casey Jones had attained an average completion of 66.2 percent for the eleven areas assigned to it.¹⁴² The eleven areas did not include Iceland, Area No. 20, with its difficulties (see below). By the end of September 1945, the completion of coverage in those same areas had risen to 88.5 percent.¹⁴³ Completion levels of those same eleven areas by the end of October had risen to 95.9 percent, excluding Iceland, Italy, and Tunisia, all of which were outside of the initial eleven.¹⁴⁴ Weather conditions in November 1945 and the succeeding months almost brought the Project Casey Jones operations in Europe to a standstill until weather conditions improved in April 1946. In those five months, no significant changes were made in the individual coverage of the areas, except outside of Europe.¹⁴⁵

A very nearly identical situation prevailed with the areas in the 306th Bomb Group's responsibilities. By the end of October 1945, Area No. 3, Netherlands, was completed, one of the first three areas to attain that status in October 1945. Actually, by the end of the preceding month--September, six areas assigned to the 306th had been covered to the point where 'gap filler' operations were all that remained. Once authority was received to photograph Spain on 11 September 1945, a substantial portion of the group's efforts were devoted to Spain, North Africa, and the Mediterranean.¹⁴⁶

The 369th Bomb Squadron, for example, made giant strides in September 1945. On 1 September, the squadron moved from Thurleigh, England to Istres-le-Tube, France which was 20 miles from Marseilles. The squadron's first assignment from this base was Area No 36, Corsica and Sardinia. Weather conditions were near perfect and on 2 September ten aircraft flew over the area and averaged more than 200 miles of coverage per aircraft. The next day, two aircraft flew over Area No 33, North Yugoslavia and Italy, to take advantage of the good weather in that region. Only a few photographs were rejected because of scattered clouds and nearly all sorties were on continuous long flight lines. The lowest mileage coverage was reported to be 190 miles while one aircraft reported the highest, 370 miles of flight line. On the third day of operations from Istres, three aircraft flew to Area No. 21, Northern Spain, but weather conditions prevented photographic operations. Three other aircraft continued operations in Area No. 33 and produced good results from the coverage. On the fourth day, the

squadron relocated to Marrakech, French Morocco, for its new base of operations. September 6, 1945 was day of rest and settling into the new surroundings. On 7 September, six B-17s flew to Area No. 5A, Canary Islands, but cloud coverage over the islands stopped any effective aerial photography. ¹⁴⁷

Another area of responsibility for the 369th Bomb Squadron was West Africa, Area No 25B through 25D. In the several sub-areas there, the squadron had a lower rate of success. Sandstorms, clouds, and lack of navigational checkpoints harried the crews and due to these delays there were many days when they did not even try to fly, or, if they did, ended up with rejections of the film coverage. The continuation of these conditions through the rest of the month of September led to an expression of frustration in the squadron history--the strongest expression in all the 19 months of Project Casey Jones. ¹⁴⁸

'Never since the Project Casey Jones has been started has this squadron flown as much and accomplished as little. The fault lies not with the crews for the crews have done an excellent job and done much to overcome difficulties in their way. Weather, including clouds, sandstorms, and haze has made photography difficult and many times impossible. The terrain over which the crews fly is in many places totally lacking in checkpoints; that, combined with the long distances to be flown before the areas are reached and poor maps of small scale, has increased fatigue, but helped none to complete the project.'

It was not all bad because the men stationed at Marrakech were enjoying plenty of sunshine and fresh air and getting a healthy tan. Those members still in England met the traditional October English weather. ¹⁴⁹

Additional complications compounded the problem in October 1945. Part of the justification of moving units and detachments to North and West Africa was the probability of better photographic weather conditions than was expected in Europe. While the 369th flew its sorties in September, its sister squadron of the 306th Bomb Group, the 367th Bomb Squadron formed Detachment 'B' to operate out of Dakar for coverage of West Africa, Area No 25E. The detachment began operations on 9 September and met the normal desert weather conditions. ¹⁵⁰ Then, on 18 October, the detachment was ejected from its Dakar location and moved to Marrakech because the Dakar facilities used by the crews were needed for the high point veterans returning to the United States. The move was inauspicious because the 369th had located there earlier and the maintenance facilities there were already insufficient for their needs, much less for additional units. Aircraft from both units were in dire need of inspection and maintenance. The 369th had no experienced crew chiefs left and only a few experienced mechanics for its own work with no spare ability to assist the newly assigned detachment. Therefore, necessity forced the detachment to return to Thurleigh on 22 October for the required maintenance prior to resuming Casey Jones operations. It was just as well. Bad weather conditions had allowed Project Casey Jones sorties to be flown only on three of the 21 days elapsed in the

month of October.¹⁵¹ From Thurleigh, the 367th Bomb Squadron flew 'gap filler' flights. Even augmented by the return of Detachment 'B' to Thurleigh, not much could be accomplished. From 10 to 31 October 1945, no sorties were flown for two reasons. First the weather in Areas No 3, 5, and 10 was extremely bad and photographic attempts were useless.

Second, the loss of personnel to redeployment and release was severe enough to cause a cutback in the number of crews available to fly as well as hampering all departments and sections of the ground crews to operate.¹⁵²

Other than the coverage in the Mediterranean Sea regions, there was no change in any of the European coverage percentages during the winter of 1945-1946. Limitations on aerial photography imposed by the early spring rains prevented any changes in the progress chart until in late April 1946.¹⁵³

Exceptional Area Coverages

There were occasions when the Casey Jones mission to a specific area went exactly as planned or even better than planned. These exceptional coverage occasions showed the level of proficiency attained by the crews in a short period of time. One example--Area No 35, Central and Southern Italy--was assigned to the 305th Bomb Group, 366th Bomb Squadron. Six B-17s and crews moved in September 1945 from St Trond, Belgium to Foggia Army Air Field, Rome, Italy to be closer to the target zone. In two days of flying, the six crews accomplished 95 percent coverage of the area.¹⁵⁴ Major General William E. Kepner, Commanding General Ninth Air Force sent a Letter of Commendation in which he noted that the group record was made possible by intense training, close cooperation, and the will to get the job done on the part of the crews. Since the motto of the 305th was 'Can Do,' he commented that the crews had fulfilled it.¹⁵⁵ By the end of October 1945, the remaining five percent of Area No 34 had been completed.¹⁵⁶

Following that successful operation, the squadron relocated to Tunisia and operated from Mellaha Army Air Field, near Tunis. Before the end of October 1945, the squadron had covered area No 28, Tunisia, to a 94 percent level.¹⁵⁷ Area No 28, too, was 100 percent covered by the end of the following month.¹⁵⁸

About the same time, another unit of the 305th also attained the first complete coverage of any of the areas. In the case of Area No 18A, South Germany and Area No 19, Austria, both of these areas were 100 percent covered by the end of October. The weather in the two areas had cooperated for them to attain these levels.¹⁵⁹

Problem Areas

The vastness of the operational scope of Project Casey Jones over the many differing terrain profiles of Europe and North Africa meant that there would be inequalities of difficulty. Attempts were made in the planning stages to divide the area coverage on the basis of similiarity

of terrain features. One reason for this was that the aircraft had to be flown at 20,000 feet above the average elevation of the terrain. Mountainous regions of central and southern Europe hampered simplicity of operations. Another reason was that snow cover distorted terrain features and precision photographic mapping had to fly over those areas before the snow season started or wait until the snow melted.

Areas No 12, 18, and 19A encompassed the highest reaches of altitudes in the Alps Mountains with all the irregular terrain features associated with Alpine geography. The 306th Bomb Group tackled Area No 12, Southeast France, in July 1945, but only after the crews had acquired experience flying over more horizontal terrain and having their initial efforts evaluated by the Corps of Engineers officers. Area No 12 was one of the more difficult areas to cover in all Europe because it included the highest peaks of the Alps as well as extensive cloud cover. The nature of the terrain presented problems for all the crews--pilots, navigators, and cameramen. First, there was very little detail by which the navigators could check the precision of the flight lines. Second, the great variations in the altitudes of the terrain caused a constant variation in the intervalometer settings. Variations made it difficult to obtain an acceptable overlap. For example, on 19 July 1945, nine aircraft flew to the area. Four of the B-17s were unable to take pictures because of the cloud cover on the assigned flight lines. The other five aircraft were able to take a total of only 250 miles of photos, significantly less than an ideal situation.¹⁶⁰ Regardless¹⁶¹ by the end of September 1945, 99 percent coverage had been attained. Concurrently, the 305th Bomb Group was tackling similar conditions in South Germany and Austria--Areas No 18, 18A, 19, and 19A. These areas, too, encompassed part of the Alps and identical problems occurred. The irregular terrain interfered with procedures to obtain the correct percentage of overlap in the photographs. The 305th Bomb Group's navigation section worked¹⁶² out a new set of interval tables which provided a solution. The solution was a practical one because two of those areas--No 18A and 19--were the first areas to reach 100 percent coverage in the entire Project Casey Jones. That level was attained in October 1945¹⁶³, followed shortly by the 100 percent level attained in Area No 3.

One of the more frustrating areas to photograph was Area No 25A, the Canary Islands, located off the west coast of Africa at 28° North. Photographic coverage of this cluster of islands proved more difficult than had been envisioned by the planners at the beginning of the project. The task was labeled as a hard one by the crews on the early sorties in the fall of 1945. The difficulties centered on the cloud coverage at different times of the day, not with any problems of navigation because there were many reference points on which the navigator could rely. Instead the cloud coverage usually interfered with photographic coverage of the islands even when clear and visibility unlimited (CAVU) conditions existed in the region. In the morning hours, stratus clouds hovered over the islands. In the afternoon, cumulus clouds replaced the morning cloud conditions, even though the surrounding regions of open ocean would be clear. To collect acceptable

photographic mapping exposures of the islands, the aircraft had to be at the right place at exactly the right time of the day, and have all the equipment operate properly. Even then, it was not guaranteed. A further complicating factor was the distance from the operating base. The B-17 fuel capacity prevented much waiting around (loitering) for the cloud coverage to shift for the best possible conditions for photo mapping.¹⁶⁴

Photographic mapping coverage of the island of Iceland was one of the requirements of Project Casey Jones. This portion represented a departure from normal routine operations. Its location necessitated relocating a squadron from St. Trond, Belgium to Meeks Field (south of Reykjavik) in Iceland. On 13 August 1945, the 364th Bomb Squadron with 60 officers, 137 enlisted men, and 12 B-17s flew to Iceland for a 30 day period of detached duty. By the end of the month, the 305th Bomb Group was not able to report on the progress of Project Casey Jones coverage of Iceland.¹⁶⁵ The 30 day period was not enough. The squadron's stay on the island was extended, first for an additional 30 days, and then indefinitely. By the end of September 1945, the group's report noted that only 40 percent of the mapping was completed because of cloud cover.¹⁶⁶ Even then, seven of the B-17s and crews stayed on until the middle of October by which time 75 percent of the island had been given photographic mapping coverage. The 364th was able to accomplish that much before winter moved in and the squadron was recalled to St. Trond. The angle of the sun over Iceland in the winter months would cause distortion of photographic mapping, hence there was no utility in leaving the squadron there.¹⁶⁷

In its May 1946 report, Headquarters USAFE had noted that the time was propitious for the aircraft to get back into Iceland to complete Area No 20. By the end of 1945, estimates predicted that only a couple of good days of cloudless operations would pull Iceland's Area No 20 into the completed category.¹⁶⁸ The Casey Jones force stood ready to undertake the completion effort. In late March 1946, Headquarters 40th Bomb Wing reported that six aircraft were included in the deployment plan to operate from Iceland for 90 days beginning on 15 May 1946.¹⁶⁹ The State Department had recommended caution and delay, but Headquarters USAFE had felt that the caution hinted at a probability of losing overflight rights. Consequently, the War Department was all the more concerned to get in there and get the job done quickly. A flight echelon of six aircraft was on standby in May 1946, ready to proceed to Meeks Field.¹⁷⁰ Regardless of the expressed sense of urgency, the next reported flight over Iceland did not occur until 27 November 1946. This additional mission (No 10027) was flown over the target area by the 369th Bomb Squadron and films on this special mission consisted of exposures No 1 through No 192.¹⁷¹ The extent of coverage¹⁷² for Iceland remained at 75 percent through the end of the project.

African Coverage

Photographic mapping coverage of the numerous areas in North and West Africa was a difficult task for everyone concerned. Combatting the problems led to many more alterations to procedures than did the

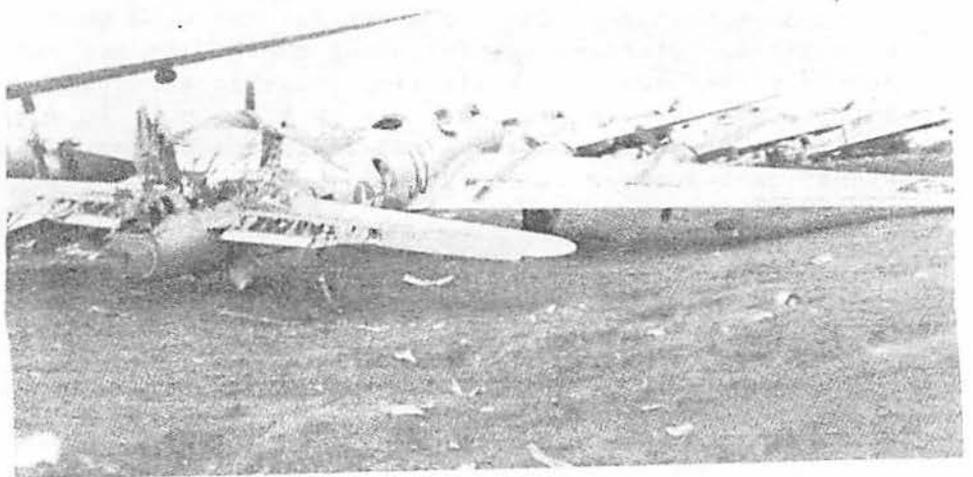
comparable period in Europe. To start there were the temperatures. There were occasions when the take off would be delayed because of ground haze or sand storms, either locally or in the target area. Take off would be delayed until the conditions were more conducive to aerial photographic mapping. In the meantime, the B-17 sat in the sun on the edge of the runway. Metal surfaces and controls of the aircraft would become so hot that the crews had to don gloves and jackets for protection until they were airborne and at a couple thousand feet of altitude. ¹⁷³

In addition, procedures used in Europe had to be changed for North African operations. Procedures there almost fell into a standardized pattern. The existing maps and charts of the areas were poor to nonexistent. The first task for the crews was to fly sorties along the coast because the resultant photographic-mosaic charts so produced would establish accurate navigational reference points. ¹⁷⁴ Once established, these reference points determined the pattern. The aircraft would fly out over the Atlantic Ocean or Mediterranean Sea beyond the coastline. Then the flight turned toward land and proceeded inland on a preset distance, usually 50 or more miles on a compass line heading: East-west or north-south. (See illustrations denoting progress on the 369th Bomb Group, 22 September 1945). The inland runs were precisely navigated at the coastline because of the reliable precision reference checkpoints established by the initial sorties. The return run of the aircraft from the inland position seldom offered any reference points, although the line-of-sight from 20,000 feet was well over 150 nautical miles. Thus, the crew had a sight on the coastline for the entirety of the flight away from the interior location. With this visual anchor, the crews would make flat turn adjustments along the flight line to reposition the aircraft. This would place the aircraft in the correct position in relation to the previous land checkpoint from the inland run. Furthermore, there were other means of ascertaining the correct position. The desert areas from 20,000 feet showed subterranean waterway networks that could be matched by the crew, the photo processors, and those plotting the film. This matching had the potential ¹⁷⁵ to provide reasonably accurate flights while inland from the ocean. This combination of factors, plus the assurance of the navigators that each had navigated as precisely as he could by reliance on his instruments, increased the probability of accurate coverage along a flight line. The project decision to place two navigators on each crew also increased the probability of reliable tracks. ¹⁷⁶

Project Casey Jones operations in Africa did not even start until after nearly all the areas in Europe were well in hand. The first sorties started in September 1945 in a general way with only one area No 25E, West Africa, starting the following month. It was not until January and February 1946 that the units flying the sorties began reporting sufficient progress that they had switched over to flying "gap-filler" sorties. Regardless, it was not until the summer of 1946 that significant numbers of areas achieved completion status. ¹⁷⁷



PROJECT CASEY JONES WAS
NEARING COMPLETION BY NOVEMBER
1946 AND TO MARK THE END, THE
USAAF BLEW THE TAILS OFF
APPROXIMATELY 40 OF THE B-17S
USED IN THE PROJECT AT
LECHFELD AIR FIELD, GERMANY.



Transmittal of Finished Products

Shipment of Project Casey Jones Film was spread out rather than wait until the project was completed. Headquarters European Theater of Operations directed that all shipments were to be given extremely careful attention and an officer courier escort to insure positive control. These instructions included not only those films sent to the United States but also those sent to the United Kingdom repository at Benson, England. Since these films represented such a valuable, irreplaceable resource, masters would be retained at Project Casey Jones Headquarters in the remote possibility that the shipment might be lost or destroyed. ¹⁷⁸

The first two lots of film were shipped in November and December 1945. By August 1956, very nearly all the areas had been accorded photographic coverage and most were fully completed. ¹⁷⁹ The outstanding part of this project was the speed with which it was completed. ¹⁸⁰

Final Stages

By June and July 1946, the 306th Bomb Group was separated from the project. Its 423d Bomb Squadron had been reassigned to the 305th Bomb Group to carry on the photographic operation. At the end of July, three areas in France were at 99 percent. Iceland remained at 75 percent, several subareas in Spain required gap filler flights which were also needed in one or two other areas. The only area that was substantially less was No 23, the Azores, which was at 20 percent. ¹⁸¹ By the end of September 1946, Iceland remained at 75 percent, the Azores had risen slightly to 23 percent, and virtually all the rest were completed. Both the bomb groups were inactivated on 25 December 1946. Project Casey Jones continued with only a small unit whose mission was to fill in the last remaining gaps and to refly those flight lines needing better photographs. The men who flew these sorties remained with the program until late 1947 (see above). ¹⁸²

Conclusion

Germany's surrender meant that World War II was over in Europe and no further bombing missions would be flown there. Rumors were rife and one started floating that the 305th and 306th Bombardment Groups, Heavy, would not accompany the Eighth Air Force to the war in the Pacific. Instead, these two units, with the greatest amount of service in the European theater, would be detailed to a new mission--photographic mapping of the continent of Europe, North Africa, and Iceland. This rumor was confirmed on a morning early in June 1945. The group commanders briefed their men on the new mission, nicknamed Project Casey Jones. Training of personnel and modification of the aircraft were the first order of the day.

The initial reaction of the crews that were to fly the new mission was that the stringency of the task made its successful completion nearly impossible. This response was taken by those who had flown hundreds of hours on bombing sorties over the continent. Their experiences and their knowledge of what was involved with a broad-gauged operation such as Casey Jones told them how difficult and complicated this precision mission actually was. The Army Air Forces personnel of the two bomb groups surprised themselves and others by completing the project in slightly over 18 months. Everyone had to adapt, but the former gunners who were converted into cameramen had to face the greatest amount of change.

Once into the operations, the squadrons and detachments scattered to the winds. The crews flew the aircraft from a varied assortment of bases and airfields stretching from Liberia to Iceland, from the United Kingdom to Germany and Cairo. They had to fly the B-17s on a rigid tightrope only in relatively clear weather to meet the standards mandated to them. They were intercepted by fighter aircraft over Spain and, being unarmed and unarmored, discretion dictated evasion. They were constantly warned by superiors and commanders to scrupulously avoid the airspace over the Russian zones of occupied Europe.

There was a great turnover in the personnel assigned because of national policies. Regardless, Project Casey Jones continued, interrupted only by conditions in the target areas. The people involved had a sense of accomplishment and a feeling of a job successfully completed in spite of the obstacles encountered.

Project Casey Jones was a vast undertaking completed in a very short period of time. It was probably the largest single photographic mapping project ever accomplished so quickly. Remarkably, none of the people involved had any of the necessary skills, but training filled the gaps. Then, these men simply went out and did the fantastic job. The people of the two bomb groups deserve all the credit for the precision with which the mission was executed as well as for the speed of completion.

AREA	LOCATION	1945						1946											
		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1.	Northwest Germany	18	70	85	95	95	95		95	95	95	100	Completed	-----					
1A.	North Germany	45	75	95	95	95	95		95	95	99	100	Completed	-----					
2.	Denmark	10	40	80	80	80	80		80	80	85	93	93	100	Completed	-----			
3.	Netherlands	#		@	100	Completed													
4.	Low Countries & France	88	92	93	97	97	97		97	97	97	98	98	98	99	99	99	99	99
5.	Western France	#	99	@	99	99	99		99	99	99	99	99	99	99	99	99	99	99
6.																			
7.																			
8.																			
9.																			
10.	Southwest France ³	#		@	99	99	99		99	99	99	99	99	100	Completed	-----			
11.	South France ³	#		@	99	99	99		99	99	99	100	Completed	-----					
12.	Southeast France ³	#		@	99	99	99		99	99	99	100	Completed	-----					
13.	Western Germany	60	85	90	98	98	98		98	98	100	Completed	-----						
13A.	Western Germany	85	93	93	97	97	97		97	97	100	Completed	-----						
14.	Yugoslavia																		
15.	Yugoslavia & Albania																		
16.	Eastern France	80	80	95	99	99	99		99	95	98	98	99	99	99	99	99	99	99
17.	Eastern France	#		@	99	99	99		99	99	99	99	99	100	Completed	-----			
18.	South Germany & Austria ⁴	95	98	98	99	99	99		99	99	97	97	97	98	99	99	99	99	99
18A.	South Germany & Austria ⁴	80	95	95	100	Completed													
19.	Austria	23	50	85	100	Completed													
19A.	Austria	02	50	80	95	95			95	98	98	99	100	Completed	-----				
20.	Iceland			40	75	75	75		75	75	75	75	75	75	75	75	75	93	93
21A.	North Spain			#		@							88	100	Completed	-----			
21B.	North Spain			#		@					57	57	57	100	Completed	-----			
21C.	North Spain			#		@								100	Completed	-----			
21D.	North Spain			#		@								99	99	99	99	99	
22.	Protugal																		
23.	Azores			#							20	20	20	23	23	23	23	23	
24A.	South Spain					@							96	100	Completed	-----			
24B.	South Spain					@					90	90	90	100	Completed	-----			
24C.	South Spain					@								100	Completed	-----			
25A.	Canary Islands			#							90	95	99	99	99	99	99	99	
25B.	West Africa			#							97	97	100	Completed	-----				
25C.	West Africa			#							97	97	97	100	Completed	-----			
25D.	West Africa			#							65			100	Completed	-----			

PROJECT "CASEY JONES," End of month coverages, in percent.

AREA	LOCATION	1945					1946																
		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
25E	West Africa				#									62					100	Completed	-----		
26.	Morocco (French)			#										97	97	100			Completed	-----			
27A	Algeria			#						90				95	95	100			Completed	-----			
27B	Algeria			#						85	90	90		90	93	93			93	99	99	99	99
27C	Algeria			#						75	80	80		90	93	93			93	99	99	99	99
28.	Tunisia ⁴				94	100	Completed	-----															
29.	Tripolitania ⁴									100	Completed	-----											
30A	Spain ²			#						@						92	99	99	Completed	--			
30B	Spain ²			#						@								95	100	Completed	--		
30C	Spain ²			#						@								90	99	100	Completed		
30D	Spain ²			#						@									100	Completed	-----		
30E	Spain ²			#						@									100	Completed	-----		
30F	Spain ²			#						@									100	Completed	-----		
31.	Balearic Islands			#						@			95	98	98			99	100	Completed	--		
32.	North Italy			#						@			95	98	99			99	100	Completed	--		
33.	Yugoslavia & Italy			#						@		98	100	Completed	-----								
34.	Central Italy ¹				95	100	Completed	-----															
35.	Sicily & Italy		#				100	Completed	-----														
36.	Sardinia & Corsica ⁴			#						@						100	Completed	-----					
37.																77	60	98	100	Completed	--		
38.																45	99	100	Completed	-----			
39.																							
40.																							
41.	Western Greece ³																						
42.	Greece ³																						
43.	Liberia ³									#		65	65	65									
44.																							
45.																							
46.																							
47A.											05	35	35	45	45	87	98	99	99	99	99	99	
47B.																	98	99	99	99	99	99	
47C.																	98	99	99	99	99	99	
47D.																	98	98	98	98	98	98	
48A.																40	70	98	98	98	98	98	
48B.															15		70	98	98	98	98	98	
56.																							
57.																							
58.																							

 Time of first sorties, other than in June 1945. #
 Beginning of "Gap Filler" sorties. @

Legend, Progress Chart.

1. Film sent to Washington, D. C. on 14 December 1945.
2. Film sent to Washington, D. C. on 29 December 1945.
3. Film sent to Washington, D. C. on 14 January 1946.
4. Film sent to Washington, D. C. on 20 February 1946.

This Project Casey Jones progress chart is incomplete because of the limitations of the sources. The histories of the 305th Bombardment Group, Heavy, stressed the percentage of coverage at the end of the month. Those from the 306th Bombardment Group, Heavy, emphasized sorties flown by individual crews, mileage attained, and acceptable film collected. The histories of the 306th report the dates and number of sorties over a certain area, e.g., Sardinia and Corsica, but neither the percentage nor the completion dates are included. These histories report when the squadrons started 'gap filler' operations and are so noted on the chart by symbols. Other sources record the dates that shipments of completed films were sent to Washington. This allowed an assumption of near or total completion prior to dispatch.

Location of some designated areas remains an unknown since sources failed to record them. Evidence indicates that coverage included Norway, Sweden, and Switzerland, but the area number assigned to those locations is not possible to determine from the sources. Shipping documents note the transmittal of some areas, but no reference exists about the unit or the coverage. Some numbered areas, some identified, some not, showed no coverage through the end of the project. One assumption is that the government of the area did not provide approval for overflight.

Symbols

* References note overflight coverage, first, other than June 1945.

⊙ References report 'gap filler' operations started.

Appendix II'Casey Little' Project

The 'Casey Little' Project was a spinoff from Casey Jones. The mission of Casey Little was aerial photography, but limited to coverage of their airfields of Europe. Such limitation permitted the mission to be flown by two F-9/B-17G aircraft, one piloted by 1st Lieutenant Orville A. Voeks and the other by 1st Lieutenant Busch, both from the 305th Bomb Group. There is incomplete reference to this mission, but the personnel were scheduled to fly to Madrid, Spain in July and August 1946. They had to make a preliminary trip to Paris on 13 June for the purposes of obtaining passports, visas, and civilian clothing. In addition, the Air Attache at the American Embassy at Paris briefed them on intelligence and security matters in regard to the project. Another delicate portion of this project was the coverage of Ireland. In June 1946, two airfields in Ireland were cleared for photographic coverage in the Casey Little Project. The 40th Bomb Wing reported that foreign clearances for Ireland would be required after the photographic coverage was completed in Spain.¹ The photographic overflights in Spain were completed in the first week in September 1946. The aircraft and crews left Madrid and returned to Lechfeld, Germany. Almost immediately, one crew moved to Wiesbaden to complete the Casey Little Project mission of photographic mapping of the airfields in Northern Germany. In the middle of September, the Casey Little crews and aircraft flew to England to complete the work in the British Isles.²

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1. History of 40th Bomb Wing, June 46, p. 6.
 2. Ibid., Sep 46, pp 1 and 4.

Appendix IIIMistral Winds Weather Conditions.*

One of the most important meteorological phenomena of France is the mistral which occurs in the Mediterranean Sea Coast Region. The mistrals are strong northerly winds that are felt particularly in the Rhone River Valley, but may at times affect all of the French Mediterranean Sea coast. Occasionally, they reach gale proportions and are nearly always turbulent and dry. Many airplane accidents in this region have been caused by these winds.

In the region of greatest development, the normal characteristics of the mistrals are its strength, its frequency, its dry coldness, and its power of raising an abnormally heavy sea in a very short time. A special meteorological characteristic is its great local departures in speed and direction from the values corresponding to the pressure gradient indicated by the sunoptic maps.

The region of its greatest intensity is the coast of the Golfe de Lion from the neighborhood of Marseilles to that of Pergignon. Here the speed is often far in excess of the gradient wind speed, and the direction often locally at right angles to the isotherm instead of parallel to them. There is a definite intensification of the mistral in and off the Rhone delta, where the local mistral of the Rhone Valley is superimposed on general mistral conditions. The distance seawards to which the mistral may blow is highly variable. When the local Rhone mistral alone is blowing, it may stop short of the coast or extend seawards only as far as the diurnal land breeze. Widespread mistral winds, however, may extend even to the African coast and Malta. The speeds experienced on shore are about 45 mph, with gusts over 80 mph. Locally in the Rhone Valley a speed of over 85 mph has been reached, not merely in gusts, but over a period of about 10 minutes. At sea, squalls of 85 to 100 mph have been reported.

There is a decided diurnal variation in the speed of the mistral at coastal stations, the maximum speed during the day being about double the minimum during the night. In summer, the maximum occurs at about 10:00 AM, at which time, the sea breeze begins to counteract the offshore wind. In winter, the maximum occurs at about noon. There is no evidence at present that a land breeze of a katabatis wind from the mountains intensifies the mistral at night. The duration of spells of mistral is commonly three to six days, but it may vary from a few hours to 12 days or more. In long spells, the NW wind often backs toward the west and falls off somewhat, then veers again with renewal of mistral conditions. The strong mistral lasts for three or more days in about one out of four cases.

When the mistral is general and strong, the wind over the Mediterranean Coast of France is northwest or north up to at least 10,000 feet. Deviations of direction due to topography are usually limited to a layer below 1,500 feet.

Seasonally, mistrals occur most frequently in winter, with the maximum number recorded in December. They are less frequent in summer, July showing the fewest cases. The following table gives the average number of occurrences of strong mistrals in the French Mediterranean Region.

AVERAGE NUMBER OF OCCURRENCES OF STRONG MISTRALS:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3.0	2.8	2.9	2.4	2.2	1.8	1.6	1.8	2.1	1.9	3.2	3.4

The following is taken from 'The Climates of the Continents' by Kendrew. The 'Mistral--the 'masterful' north winds--often sweep down in winter in violent gusts over the usually warm littoral between the mouth of the Ebro and Genoa, and is an especially unwelcome visitor in the lower course of the Rhone below Donzere. Such is the force of the mistral that trains have been overturned by it on the Rhone delta.'

During a mistral, the sky is often cloudless, but the wind is very cold and dry, often considerably below the freezing point. The mistral blows when there is a depression over the Gulf of Genoa and an anticyclone over the west of Europe. On the north and west sides of the depression the wind sweeps down from the Cental Plateau of France, the Cavernes, and the Alps, all very cold and often snowcovered in winter, and the Rhone Valley sits as a funnel for the cold flood.

Footnotes-Project Casey Jones

1. Wolk, H. S. Planning and Organizing the Postwar Air Force, 1943-1947, USGPO, 1985, p 117.
2. Memo, Maj Gen F. L. Anderson, USSAFE DC/OPS to Lt Gen I. C. Eaker, "Postwar Mapping of Europe," 25 Mar 45
3. Msg, USSAFE 57887, Spaatz signed Eisenhower to AFWAR for Marshall for Arnold, "Postwar Mapping of Europe," 27 Oct 44.
4. Ltr, Capt R. H. Sneed, CE Engrg Liaison Mission, 40th Bomb Wing to Chief, Military Intelligence Division, Office of the Chief of Engineers, WD, "Letter of Transmittal," 22 Jun 46, w/atchs.
5. See Chart, "Project Casey Jones, Areas of Responsibility," this monograph.
6. Ltr, Capt R. H. Sneed, CE, Engrg Liaison Office, 40th Bomb Wing, to Chief, Military Intelligence Division, Office of the Chief of Engineers, WD, "Letter of Transmittal," 22 Jun 46, W/Atch, "Factual History of Project Casey Jones," 21 Jun 46.
7. Ltr, Maj J. M. Jaeger, USAF(Ret) to R. J. Boyd, Historian, "Casey Jones," 2 Jan 86.
8. Rpt, USSAFE, "Status of Project for Postwar Mapping of Europe," 31 Mar 45.
9. Memo, Maj Gen F. L. Anderson, USSAFE, DC/OPS to Lt Gen I. C. Eaker, "Postwar Mapping of Europe," 25 Mar 45.
10. Rpt, USSAFE, "Status of Project for Postwar Mapping of Europe," 31 Mar 45.
11. Ibid
12. Rpt, Capt R. H. Sneed, CE, Engrg Liaison Mission, 40th Bomb Wing to Chief, Military Intelligence Division, Office of the Chief of Engineers, WD, "Letter of Transmittal," 22 Jun 46, W/Atchs.
13. Msg, 9th AF Adv to USSTAF, (No subject), 22 May 45.
14. Maurer, M. "Air Force Combat Units of World War II," p. 390.
15. History of 305th Bomb Group, June 45, p. 1.
16. History of 40th Bomb Wing, June 45, p. 4.
17. History of 98th Bomb Wing, Aug 45 to 27 Nov 45, pp. 1-3.
18. Maurer, M. "Air Force Combat Units of World War II," pp. 390, 413-414.
19. Ibid; History of 305BG, June 1945.

20. Hist of 40BMW, Nov 45, pp 2-7, citing Msg, USSAFE 8351 to AAF, (No Subject), 7 Nov 45.
21. Ibid., Sep 46.
22. Ibid., Nov 46.
23. Ibid., Sep 46.
24. Ibid., Oct 46.
25. Ibid.
26. Ibid., Nov 46.
27. Ibid.; Maurer, M. Combat Squadrons of the Air Force, World War II, GPO, Washington, D. C., 1969, pp 451-542.
28. Ltr, HQ AAF (ASF) to Commanding General, USAFE, 'Request for Coverage Maps and Technical Data, Casey Jones, Project,' 25 Nov 46, cited in 1st Ind., HQ XII TAC to CG USAFE, 'Photo Indexes,' 19 May 47 to Ltr, USAF (ASF to CG USAFE, 'Photo Indexes,' 15 Apr 47.
29. Special Orders No. 39, HQ 64th Air Fighter Wing, 27 Feb 47.
30. Special Orders No. 62, HQ Furth Air Base, Germany, 15 Mar 47, citing Msg, XII TAC E-2776 [No Subject], 13 mar 47.
31. Ltr, Lt Col P. A. Schelter, USAF (Ret) to R. J. Boyd, Historian, 7 Oct 85.
32. Special Order No. 204, HQ Furstenfeldburck AB, GE., 18 Sep 47; Special Order No. 211, HQ Furstenfeldbruck, GE., 27 Sep 47.
33. Ltr, Lt Col P. A. Schelter, USAF (Ret) to R. J. Boyd, Historian, 7 Oct 85.
34. Ltr, Maj Gen A. / J. Bowley, USAF (Ret) to R. J. Boyd, Historian, (No Subject), 17 Oct 85; Intvw, R. J. Boyd, Historian, with Lt Col S. F. Johnston USAF (Ret), 20 Oct 85.
35. Hist of 305th BG, months indicated; Hist of 306th BG, months indicated; Maurer, M., Air Force Combat Units of World War II, pp 390, 413-414.
36. Hist of 306th BG, Aug 46, pp 1-2.
37. Rpt. Capt R. H. Sneed, CE, Engrg Liaison Officer, 'Casey Jones Project,' 17 Sep 45, in Hist of 305th BG, Sep 45.
38. Hist of 305th BG, Dec 45, 'S-2 Intelligence.'

39. Hist of 306th BG, Sep 45, '367th BS, War Diary.'
40. Ibid., Oct 45.
41. Ibid., Jun 45.
42. Ibid.
43. Hist of 305th BG, Jun 45, 'S-3 Operations,' p. 4.
44. Rpt, Capt R. H. Sneed, CE, Engrg Liaison Off, 'Casey Jones Project,' 17 Sep 45, in Hist of 305th BG, Sep 45.
45. Hist of 305th BG, Jun 45, 'S-3 Operations,' P. 5.
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