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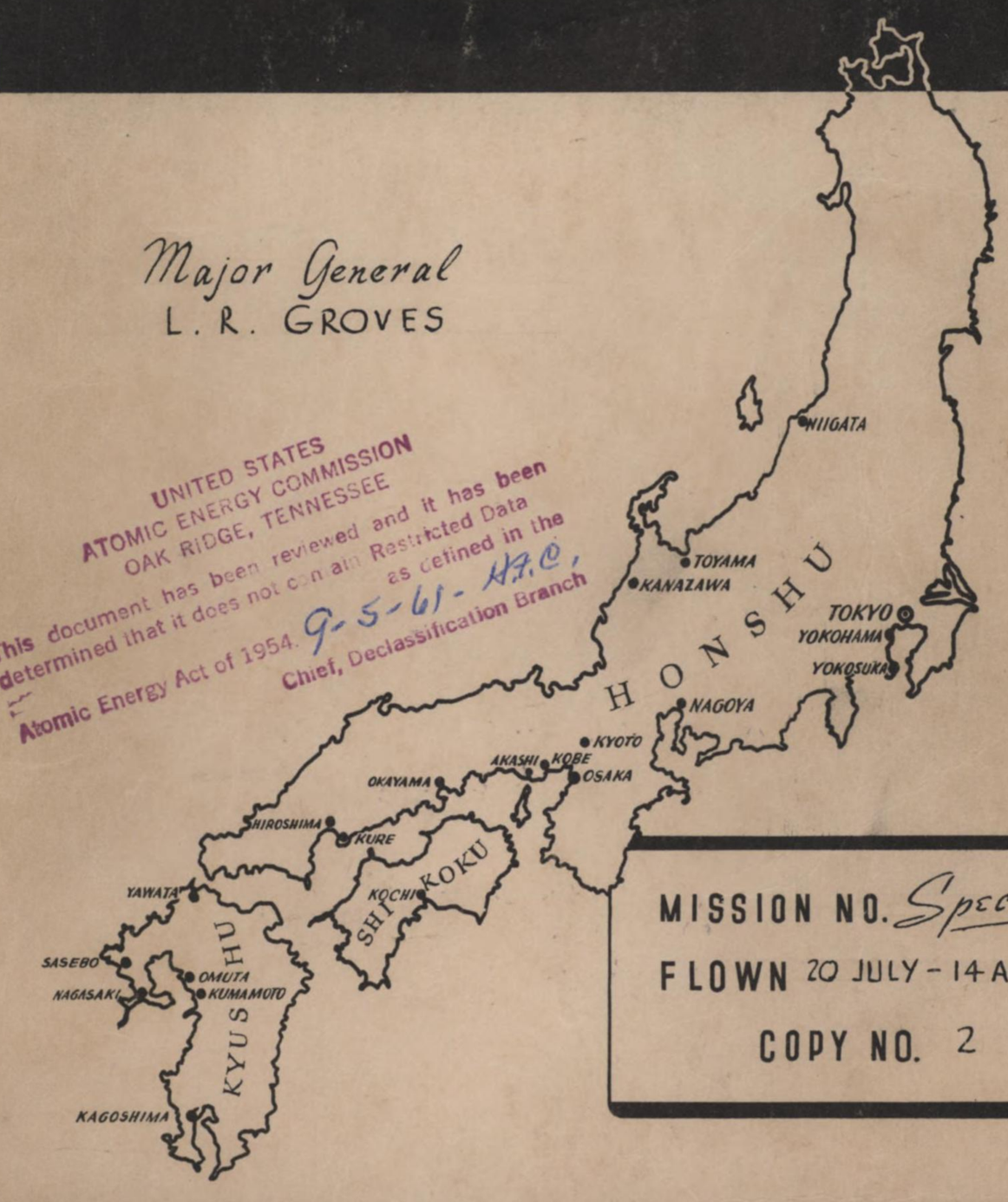
Tactical Mission REPORT



Major General
L. R. GROVES

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE, TENNESSEE
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HEADQUARTERS
TWENTIETH AIR FORCE
APO 234

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HEADQUARTERS
TWENTIETH AIR FORCE
APO 234

TACTICAL MISSION REPORT

Field Orders No. 3, 6, 8, 11, 13, 16 17 and 20.

Special Bombing Missions No. 1 through 18.

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Prepared By:

A-2 Section
Twentieth Air Force

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Foreword

This Tactical Mission Report includes all 18 missions flown by the 509th Composite Group of the Twentieth Air Force. This report has a limited distribution, as specified by Headquarters Army Air Forces.

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HEADQUARTERS
TWENTIETH AIR FORCE
APO 234

SUBJECT: Report of Activities of 509th Composite Group During July and August 1945.

TO : Commanding General, United States Strategic Air Force, APO 234, San Francisco, California.

1. IDENTIFICATION OF MISSIONS:

a. On basis of Twentieth Air Force Field Orders, the 509th Composite Group of the 313th Bombardment Wing executed a series of special bombing missions against the Japanese homeland.

b. The mission assignments were as follows:

Special Bombing Mission Number	Field Order Number	Date of Field Order	Date of Mission
1	3	19 July	20 July
2	3	19 July	20 July
3	3	19 July	20 July
4	3	19 July	20 July
5	6	23 July	24 July
6	6	23 July	24 July
7	6	23 July	24 July
8	8	25 July	26 July
9	8	25 July	26 July
10	11	28 July	29 July
11	11	28 July	29 July
12	11	28 July	29 July
13	13	2 August	6 August
14	16	7 August	7 August
15	16	7 August	7 August
16	17	8 August	9 August
17	20	13 August	14 August
18	20	13 August	14 August

2. PRE-MISSION PLANNING:

a. Introduction:

(1) In 1944 the Atomic Bomb program was coming to fruition, with an expected target date of approximately during the middle of 1945. The airplane most adapted for carrying this bomb, together with the necessary special equipment and personnel, was the B-29 because of its size, high-altitude and long range capabilities.

(2) In 1944 the B-29 program was as follows: The 58th Wing had been committed to combat operations against Japan from the China-Burma-India theatre; the 73rd Wing was scheduled for deployment

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to the Pacific Ocean area to begin operations prior to the end of the year, and the 313th, 314th, 315th and 316th Wings were to follow in one or two month intervals.

(3) With the 58th and 73rd Wings already committed and the 314th, 315th and 316th Wings not yet at a stage of sufficient coalescence, the 313th Wing was the choice to supply a flying squadron for training in the Atomic Bomb program. The flying echelon of the 393rd Squadron (of the 504th Group) was chosen for this purpose and was detached from its parent group and wing and given separate training. The 393rd Squadron was made part of a composite group (the 509th) in order that the supply and servicing of this squadron, as far as the technical details of the secret atomic project were concerned, would be independent of normal channels.

(4) In the middle of 1945, when the 509th and the Atomic Bomb were ready for employment against the enemy, the 509th Group was dispatched to the Pacific Ocean Areas and reassigned to the 313th Bomb Wing.

b. Tactical Application of the Atomic Bomb:

(1) Because of the almost inconceivable expense of each individual Atomic Bomb, it is obvious that no live, i.e. "atom-smashing", munitions could be used for practice or training. However, a very close simulation of the employment of the Atomic Bomb could be had by using dummy munitions with ballistic qualties similar to those of the combat munitions, using the same techniques that would be necessary when dropping the combat munition. These dummy munitions orginally had an inert filler for use in the Zone of the Interior. However, it was believed advisable, in giving the 393rd Squadron combat crews training in the theatre of operations, to use a practice bomb with a high explosive filler in order to cause destruction to practice (enemy) targets and to give the crews experience in dropping demolition bombs. During these training missions in the theatre of operations, as close a similarity as possible to the projected operation was established. In studying the opeartion of the 509th Group during these training missions, it is most important to keep this fact in mind because many of the techniques were at variance with normal combat procedure.

(2) One of the intial problems of the tactical application of the Atomic Bomb was the necessity for using an air burst to derive the most advantage from the terrific blast effect of the bomb. This necessity for an air burst meant that no delay fuzing could be used, which would have enabled the dropping aircraft to fly to a safe distance from the target before the explosion regardless of altitude. It was necessary for the aircraft to fly at altitudes of approximately 30,000 feet and to use special breakaway procedure in order to avoid the explosion. This permitted the removal of fuselage turrets, which would have interfered with the special equipment and personnel necessary for the Atomic Bomb Missions.

(3) In addition, it would be necessary for the aircraft, immediately after bombs away to make a turn of at least 150 degrees in order to increase its distance from the point of detonation of the bomb. This distance was to be further increased by making an upwind bombing run so that the turn after bombs away would be down wind. Although no Atomic Bomb had previously been dropped (one had been statically detonated in a steel tower), scientists had been able to compute that an aircraft at a distance of approximately ten miles from the point of explosion would be subject to a 2G acceleration. A B-29, releasing from 30,000

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feet, would have a slant range of six and one half miles from the target. By making an immediate turn, it was estimated that the B-29 would be at least ten miles from the explosion. Since the B-29 had been designed with a safety factor of 4G, it seemed that a sufficient margin of safety had been provided.

(4) To get the greatest possible accuracy (using visual instead of radar bombing) with such an expensive weapon it would be necessary to accomplish daylight visual attacks.

(5) Because of the wide destructive area of the bomb it would be necessary for only a single bomb to be dropped during any one attack on any one target. This would eliminate the necessity for formation flying and all attacks would be by individual aircraft.

c. Target Selection:

(1) Important cities which had not been previously damaged by demolition or incendiary raids were desirable as initial targets for the Atomic Bomb for two reasons:

(a) The assessment of the Atomic Bomb damage would not be confused by having to eliminate previous incendiary or high explosive damage.

(b) The Atomic Bomb could be used most economically, i.e., it would destroy all targets within such a large area that it would be more worthwhile to employ it against new areas.

(2) The four cities of Kyoto, Kokura, Hiroshima, and Niigata fulfilled these requirements and were orginally assigned to the Atomic Bomb project.

(3) While it was inadvisable to "practice bomb" targets within these cities with "pumpkins" (the practice 10,000-pound explosive munitions), it was necessary to familiarize the 509th combat crews with the areas in which these cities lay so that, on an Atomic Bomb mission, pilotage navigation and target recognition would be facilitated. Consequently, the precision targets selected for attack with the pumpkin bombs were in the vicinity of the urban atomic targets, while not in the cities themselves. These targets could not be those already allocated to the main force of this Command or considered for future assignment to other units of the Command because it was felt that the problem of post-strike photography, to determine whether future attacks by the main force were necessary, would become more difficult.

(4) This greatly limited the target selection for the 509th Group because of the increasing scarcity of individually important targets in the Empire. By mid-July when the 509th was ready to start pumpkin bombing, the 58th, 73rd, 313th, 314th and 315th Bombardment Wings had inflicted widespread damage throughout Japan. The more lucrative targets from the city of Sendai in northern Honshu down to Chirau in southern Kyushu had been struck.

(5) Another limiting factor was that other combat forces had moved within range of the Japanese homeland - i.e., naval aircraft carrier task forces, the Far Eastern Air Force - and the resulting allocation of targets cut appreciably the Twentieth Air Force's formerly almost unrestricted choice.

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(6) Of the targets remaining to the Twentieth Air Force, a further elimination was made of those targets with good radar bombing possibilities, because the 509th Group was scheduled primarily for daylight, high-altitude, visual bombing. (The good precision radar targets were assigned mostly to the 315th Wing, which had APQ-7 "Eagle" - radar bombing equipment.)

(7) Thus, as a result of the above elimination of various groups of targets, the majority of the targets remaining, from which the 509th Group targets were chosen, were of secondary industrial importance or were priority targets which had been damaged by previous B-29 strikes. These targets varied from converted textile mills to marshalling yards, and included almost every type of industry, including aircraft, oil, ordnance, chemical, steel and shipbuilding, as well as airfields and harbors. Because of the extensive damage previously inflicted on all types of Japanese industry, it was not possible to limit the selection to any one field, and the choice included the "odds and ends" of all types of industries. The aircraft industry, for example, had received considerable attention from the Twentieth Air Force. That industry once ranked as the number one strategic target, but attacks against plants during late 1944 and the first five months of 1945 had seriously hampered production. Thus, targets remaining for the 509th Group included fewer aircraft engine and airframe plants, but more aircraft components parts targets. By the same token, the 509th Group could pick over only the "leftovers" of the oil refinery and chemical targets, both of which had been earlier assigned to the 315th Wing.

(8) After a block of targets had been selected, the choice of the particular targets to be attacked on any one day was to be determined by weather conditions and the availability of previous damage assessment.

(9) The block of targets chosen in the light of the above considerations was as follows:

(a) Koukra Area:

1. 90.34-772 Shimonoseki Marshalling Yards.
2. 90.34 - 1674 Moji Marshalling Yards
3. 90.35 - 662 Watanabe Aircraft Plant
4. 90.35 - 2079 (1237) Fukuoka Seaplane Works

(b) Hiroshima Area:

1. 90.32 - 818 Ube Nitrogen Fertilizer Company
2. 90.32 - 1844 Ube Soda Company
3. 90.32 - 1880 Nippon Motor Oil Company
4. 90.29 - 923 Sumitomo Chemical Company
5. 90.29 - 924 Sumitomo Aluminum Company
6. 90.30 - 6570 Torpedo Boat Base and Mine Depot, Kure
7. 90.30 - 658 Kure Submarine Base
8. 90.30 - 794 Hiro Arsenal
9. 90.32 - 675 Tokuyama Soda Company (Chemicals)
10. 90.32 - Unnumbered Tokuyama Marshalling Yards

(c) Kyoto Area:

1. 90.25 - 538 I.G.R. Shops, Kobe

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2. 90.25 - 11 Kawasaki Locomotive and Car Company, Kobe
3. 90.25 - 169 Mitsubishi Heavy Industry
4. 90.25 - 1768 Kobe Steel Works
5. 90.25 - Unnumbered Shinko Woolen Mill
6. 90.25 - 1739 Furukawa Electrical Company
7. 90.20 - 1737 Heavy Industry in Yokkaichi Harbor Area
8. 90.20 - Unnumbered Converted Textile Mill
9. 90.20 - 1684 Utsube River Oil Refinery

(d) Niigata Area:

1. 90.10 - 1088 Japan Refinery Company (Phosphorous Co.)
2. 90.10 - Unnumbered Marshalling Yards, Koriyama
3. 90.10 - Unnumbered Light Industry, Koriyama
4. 90.10 - XXI 6216 Light Industry, Fukashima
5. 90.10 - 1665 Shinagawa Manufacturing Plant
6. 90.9 - XXI 6271 Light Industry, Nagaoka
7. 90.9 - 1656 Tsugami-Atagi Manufacturing Company
8. 90.11 - 1943 Fujikashi Steel Products, Higashi Iwase Plants, Toyama
9. 90.11 - 861 Nichiman Aluminum Company, Toyama.
10. 90.11 - XXI 6253 Nippon Soda Company, Toyama Steel Plant

(10) Of the four initial cities selected for Atomic attack, it was necessary to remove Kyoto due to instructions from higher authority. Nagasaki was selected as a substitute for Kyoto. Thus the list was to include Nagasaki, Kokura, Niigata and Hiroshima.

d. Operational Procedure:

(1) Navigator's Plan: Routes in all cases were to be planned to pass by Iwo Jima on the way to the target. Landfall and land's end were to be selected on basis of location, radar and visual check points, and flak. All aircraft were to be instructed to return to base via Iwo Jima. Altitudes to and from the target area were to be dependent upon engineering and weather factors. En route to the target the altitude was to be 10,000 feet or less. The return altitude to be specified was to be at 18,000 feet when passing Iwo Jima in order to prevent unnecessary alerting of defenses.

(2) Bombardier's Plan: The bombing altitude was to be 28,000 to 30,000 feet. This figure was primarily selected to prevent self-destruction. The initial points to be selected were to be chosen because of radar and visual reference features. The axis of attack was to be such as to (1) entail no more than 5 degrees drift on the bomb run, (2) permit at least eight minutes for synchronization, and (3) to be up-wind if at all possible. The break away turn was to be down wind to enable the aircraft to get out of the area as soon as possible, here again to avoid self-destruction. Little consideration was given to flak on the run because of the bombing altitude and the relatively undefended type of target. Bombing air speed was established at 200 miles per hour, calibrated air speed, which was 5 miles per hour faster than S.O.P. This was to be due to the higher cruising speed of the particular aircraft employed, its lack of turrets and its individual operation.

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(3) Radar Plan: Radar planning for these missions was to be arranged by the 509th Group. The center of any suitable urban could be selected as a radar target of opportunity except Nagasaki, Niigata, Kokura, and Hiroshima, because these 4 cities had been selected for attack with the Atomic Bomb.

(4) Flight Engineer's Plan: This was to be left to the discretion of the 509th Group. Since the bomb load was not excessive, gasoline loading was no problem, i.e., each plane could carry a maximum fuel load.

(5) Intelligence: In addition to available intelligence information, the Twentieth Air Force provided a liaison officer for the 509th Group who secured additional intelligence aids for the briefing of the crews.

3. PLANNING FOR MISSIONS NUMBER 1, 2, 3, and 4:

a. Primary Targets Selected for Attack:

(1) Mission Number 1: Japan Refinery Company (90.10 - 1088), Marshalling Yards, Koriyama (90.10 - Unnumbered), Light Industry, Koriyama (90.10 - Unnumbered).

(2) Mission Number 2: Light Industry, Fukushima (90.10 - XXI 6216), Shinagawa Manufacturing Plant (90.10 - 1665)

(3) Mission Number 3: Light Industry, Nagaoka (90.9- XXI 6271), Tsugami - Atagi Manufacturing Company (90.9 - 1656).

(4) Mission Number 4: Fujikashi Steel Products, Higashi Iwase Plants, Toyama (90.11 - 1943), Nichiman Aluminum Company, Toyama (90.11 - 861), and Nippon Soda Company, Toyama Steel Plant (90.11 - XXI 6253.

b. Reason for Selection of Targets: These targets were selected for this attack because the predicted weather in the Niigata area was favorable for visual bombing.

c. Importance of Targets:

(1) Japan Refinery Company, Koriyama (90.10 - 1088): The Japan Refinery Company at Koriyama ranks high on the list of chemical industry priority targets. The concern is believed to be the largest phosphorous plant in Japan. Restriction of the plant for some time makes it impossible to give details on type and volume of war materials produced.

(2) Marshalling Yards, Koriyama (90.10 - Unnumbered): With almost all naval and merchant shipping driven from the high seas and effective mining bottling inland water transportation, the Japanese have had to rely almost entirely on railroads for transportation. Marshalling yards have therefore come into recent greater prominence as targets. One of the most important marshalling yards is located at Koriyama in northern Honshu. These yards control traffic between the northern regions of Honshu and the Tokyo area to the south. The Koriyama Marshalling Yrads run along the eastern outskirts of the city, measuring almost 6000 feet from north to south. The yards measure 300 feet in width at the broadest point.

(3) Light Industry, Koriyama (90.10 - Unnumbered): This plant located one mile west of the center of the city is unidentified. Nevertheless its potentialities are probably vital to the Japanese war

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effort. The compound is made of one large building measuring 400 feet from east to west and 300 feet from north to south. Several small rectangular buildings with an east-west axis are located to the south.

(4) Unidentified Industry, Fukushima (90.10 - XXI 6216): Photo reconnaissance indicates that this plant undoubtedly is important in the Japanese war industrial system. It is loacted on the northwest corner of Fukushima, bordering the marshalling yards to the north. The plant is built along a northwest-southeast axis, measuring approximately 2000 feet, and measures 1000 feet from northeast to southwest. All together the rectangular shaped industry covers 1,500,000 square feet and embraces a total of ten major buildings which make up 1/3 of the entire area.

(5) Shinagawa Manufacturing Plant (90.10 - 1665): The Japanese aircraft industry, including engine plants, airframe assemble plants and component parts plants, ranked as the Number 1 strategic target. With considerable damage already inflicted on the engine and airframe assembly plants, attention has been turned on the component parts. This plant was converted from the Kanegafuchi Textile Factory in 1943 and produces aircraft components, including gauges and altimeter.

(6) Unidentified Light Industry, Nagaoka (90.9 - XXI 6271 A light industry in Nagaoka, though not definitely identified in nature, has been selected as a target because of its potentialities as well as prominent association with other plants in the immediate target area. The plant is 6000 feet north of Nagaoka on flat land 2000 feet east of the Shinano River. The axis of the plant runs north-south measuring approximately 2000 feet, and is 1000 feet from east to west. The industry is located in the center of a highly industrialized area, including the Tsugami-Atagi Manufacturing Company on the east, the Hokuetu Paper and Pulp Mills, the Hokuetu Chemical Plant and the Niigata Iron Works.

(7) Tsugami-Atagi Manufacturing Company (90.9 - 1656): This target ranked high on the priority list of the essential Japanese machinery and machine tool industry. The plant was established in 1937 for the manufacture of machine tools, gauges, and precision gauge blocks. In 1939, by order of the government, the plant transfered its production to specialize on lathes, grinders, and borers. The compound includes a gauge block, tool, machine tool, heat-treating, casting, training school, assembly and office, forging plants and auxiliary buildings of steel and concrete.

(8) Fujikashi Steel Products, Higashi-Iwase Plants, Toyama (90.11)- 1943: These plants were selected as targets because of their high industrial importance. The plants are adjacent and rank as the fourth most important Japanese ball and roller bearing company. It is also reported as one of the foremost machine, precision tool, and special steel producers. Plant Number 1 produces electric steel with an estimated annual capacity of 8000 metric tons of high-carbon, high-speed nickel chrome and tungsten alloys. The 1939 rolling capacity was estimated at 4000 metric tons. Plant Number 2 was established in 1941 for the production of ball and roller bearings. The plant covers 20 acres.

(9) Nichiman Aluminum Company (90.11 - 861): This ranks as one of the most important industrial targets in the Toyama area. The estimated 1943 capacity was 30,000 tons of alumina which accounted for eight per cent of the Japanese inner zone capacity. The alumina unit was recently converted to process Manchurian aluminous shale. The plant is complete, including electrode and cryolite manufacturing units and a small electrolytic caustic soda plant. Destruction of this plant would impair the Japanese war effort.

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(10) Nippon Soda Company, Toyama Steel Plant (90.11 - XXI 6253): Due to the many attacks in recent months on Japanese steel producing targets, this target was selected to continue the attacks against the steel industry. With a definite lack of abundant resources in this field, damage to Japanese steel plants would bring havoc to the entire war industry. The Nippon Soda Company is believed to be a new concern which is contributing to the steel production program. Although little is known concerning the plant, the purpose of the attack is to destroy it in its early stage. The plant is located 6000 feet north of Toyama on the east bank of the Jintsu River. It measures approximately 2000 feet on an east-west axis and 1500 feet from north to south. The Nisson Rayon Pulp Mills are located on the northern edge of the target.

d. Munitions: Pumpkin bombs (or 10,000-pound block busters) were to be used on these missions. They were to have instantaneous fuzing and their ballistic qualties are similar to the Atomic Bomb.

e. Navigation: For details of the navigation planning of routes, see general section on pre-mission planning, as well as Navigation Track Charts in Annex A, and Field Order Number 3 in Annex F.

f. Bombardier's Plan: For details, see general section on pre-mission planning, as well as Field Order Number 3 in Annex F.

g. Radar Plan: For details, see general section on pre-mission planning, as well as Field Order Number 3 in Annex F.

h. Flight Engineer's Plan: For details, see general section on pre-mission planning.

i. RCM: No radar counter measures were planned on these missions because bombing was to be by individual aircraft.

j. Fighter Escort: No fighter escort was planned on these missions because bombing was by individual aircraft.

k. Air-Sea Rescue: No special air-sea rescue facilities were planned for the missions. However, the missions of the 509th Group were generally flown at a time when such facilities were available for other strikes that were being executed by other units of the Twentieth Air Force.

4. PLANNING FOR MISSIONS NUMBER 5, 6, 7, and 8:

a. Primary Targets Selected for Attack:

(1) Mission Number 5: Sumitomo Copper Refining Company (90.29 - 923), and Sumitomo Aluminum Company (90.29 - 924).

(2) Mission Number 6: Kawasaki Locomotive and Car Company, Kobe (90.25 - 11), Mitsubishi Heavy Industires (90.25 - 169), Kobe Steel Works (90.25 - 1768), and I.G.R. Shops (90.25 - 538).

(3) Mission Number 7: Shinko Woolen Mill (90.25 - Unnumbered), and Furukawa Electrical Company (90.25 - 1739).

(4) Mission Number 8: Heavy Industry in Yokkaichi Harbor area (90.20 - 1737). Converted Textile Mill, Yokkaichi Area (90.20 - Unnumbered), and Utsube River Oil Refinery (90.20 - 1684)

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b. Reason for Selection of Targets: These targets were selected for attack because the predicted weather in the Kyoto Area was favorable for visual bombing.

c. Importance of Targets:

(1) Sumitomo Copper Refining Company (90.29 - 923) and Sumitomo Aluminum Company (90.29 - 924): These Niihama plants of Sumitomo Chemical Industries comprise one of Japan's primary concentrations of chemical and non-ferrous metals production. The chemical facilities include large scale production of nitrogen, nitric acid, methanol, super-phosphate fertilizers, sulphuric acid, coke by-products, alumina and aluminum plants.

(2) Kawasaki Locomotive and Car Company (90.25- 11): This target includes the Kawasaki Locomotive and Car Company and the two adjacent plants of the Kawasaki Aircraft Industry. The main plant now doing military work has open hearth furnaces. Finished products include electric and diesel locomotives, railway cars, trucks and autos.

(3) Mitsubishi Heavy Industries (90.25 - 169): This target is a very important naval and merchant repair and ship building yard. It is located on the southwest end of the Kobe Harbor waterfront. The equipment includes one drydock, three floating docks and five building ways. The plant site includes the important Mitsubishi Electric Factory with foundries, engine and boiler works, and heavy machine shops. There are also important rail centers within the area.

(4) Kobe Steel Works (90.25 - 1768): The target is one of three plants of the Kobe Steel Works, all situated within a radius of 2000 yards in the eastern section of the city. The total company capacity is estimated at 750,000 metric tons of pig iron, 320,000 tons of carbon steel, and 20,000 tons of steel alloys. The company also has a large rolling and wire rod capacity.

(5) I.G.R. Shops (90.25 - 538): This ta get is one of Japan's more important railroad yards. It ranks as one of the five most important repair and maintenance shops within Japan. Buildings have steel frames and are one and two story brick structures, with asbestos and tiled roofs. The plant covers approximately 234,477 square yards. The Takatori railroad station lies immediately southwest of the I.G.R. Shops.

(6) Shinko Woolen Mill (90.25 - Unnumbered): This mill has been converted to the manufacture of aircraft parts and possibly some other component system. It is located on the Tokkaido main line railroad and to the north of another railway network which merges with the Tokkaido line just west of the target.

(7) Furukawa Electrical Plant (90.25 - 1739): This target is an important fabrications plant, with copper, aluminum, brass bars, rods, pipes, tubes, sheets, plates, wire, batteries, and other equipment as the chief products. The plant was recently expanded, with emphasis being placed on light alloy production. The estimated annual production is 5000 tons of copper, 2000 tons of lead, and 10,000 ounces of silver.

(8) Heavy Industry in the Yokkaichi Harbor Area (90.20 - 1737): In an effort to eliminate completely the city of Yokkaichi as an industrial target, the harbor was placed on the priority list for a B-29 assault. The interior of the city was levelled by incendiary bombs on 18 June 1945, with 1.23 square miles destroyed. The Yokkaichi Harbor, although not considered an important Japanese port in peace time, has

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undergone steady improvement with the expansion of industry in the Yokkaichi-Kuwana area. The port is marked by a breakwater leading from the southern end of the bay, extending northeast then west. An entrance channel 2147 feet long and 447 feet wide, has a depth of about 30 feet. The anchorage area covers about 230 acres. The facilities include three landing stages with lengths of 4395 feet, 4959 feet, and 364 feet; a quay wall measuring 2154 feet with a depth alongside of 27-30 feet; five mooring buoys capable of taking vessels up to 10,000 tons and three form vessels up to 3000 tons. Warehouses ranging from ferro-concrete to wood are spaced along the quay.

(9) Converted Textile Mill, Yokkaichi Area (90.20 Unnumbered): Reconnaissance photos taken of this textile mill indicate considerable activity and reconversion during recent months. The mill, because of its location and characteristics, may now be turning out component parts for the aircraft industry or some other vital war concern. The industry is located approximately two miles southwest of Yokkaichi and one mile inland west of Ise Bay. The compound measures 1300 feet by 1200 feet.

(10) Utsube River Oil Refinery (90.20 - 1684): In an attempt to reduce Japan's dwindling oil supplies, the Ustube River Oil Refinery was placed high in the list of priority targets. Destruction of the plant would seriously impair the Japanese war effort. The refinery is located approximately one and one half miles south of Yokkaichi on the western shore of Ise Bay. The target is irregular in shape, with 31 large refineries being in the northern section of the compound.

d. Munitions: Pumpkin bombs (or 10,000-pound block busters) were to be used on these missions. They were to have instantaneous fuzings and their ballistic qualties are similar to the Atomic Bomb.

e. Navigation: For details of the navigation planning of routes, see general section on pre-mission planning, as well as Navigation Track Charts in Annex A, and Field Order Number 6 in Annex F.

f. Bombardier's Plan: For details, see general section of pre-mission planning, as well as Field Order Number 6 in Annex F.

g. Radar Plan: For details, see general section on pre-mission planning, as well as Field Order Number 6 in Annex F.

h. Flight Engineer's Plan: For details, see general section on pre-mission planning.

i. RCM: No radar counter measures were planned on these missions because bombing was to be by individual aircraft.

j. Fighter Escort: No fighter escort was planned for these missions.

k. Air-Sea Rescue: No special air-sea rescue facilities were planned for these missions. However, the missions of the 509th Group were generally flown at a time when such facilities were available for other strikes that were being executed by other units of the Twentieth Air Force.

5. PLANNING FOR MISSIONS NUMBER 8 and 9:

a. Primary Targets Selected for Attack:

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(1) Mission Number 8: Light Industry, Nagaoka (90.9 - XXI 6271), and Tsugami-Atagi Manufacturing Company (90.9 - 1656).

(2) Mission Number 9: Fujikashi Steel Products, Higashi Iwase Plants, Toyama (90.11 - 1943), Nichiman Aluminum Company, Toyama (90.11 - 861), Nippon Soda Company, Toyama Steel Plant (90.11 - XXI 6253).

b. Reason for Selection of Targets: These targets were selected for this attack because the predicted weather in the Niigata Area was favorable for visual bombing. Although some of the targets were originally assigned for attack on 20 July 1945, they were reassigned because conditions led to the belief they were not successfully bombed on the previous date.

c. Importance of Targets:

(1) Fujikashi Steel Products, Higashi Iwase Plants, Toyama (90.11 - 1943): For details, refer to previous description under Missions 1, 2, 3, and 4.

(2) Nichiman Aluminum Company Toyama (90.11 - 861): For details, refer to previous description under Missions 1, 2, 3, and 4.

(3) Nippon Soda Company, Toyama Steel Plant (90.11 - XXI 6253): For details, refer to previous description under Missions 1, 2, 3, and 4.

(4) Light Industry, Nagaoka (90.9 - XXI 6271): For details, refer to previous description under Missions 1, 2, 3, and 4.

(5) Tsugami-Atagi Manufacturing Company (90.9 - 1656): For details, refer to previous description under Mission 1, 2, 3, and 4.

d. Munitions: Pumpkin bombs (or 10,000-pound block busters) were to be used on these missions. They were to have instantaneous fuzings.

e. Navigation: For details of the navigation planning of routes, see general section on pre-mission planning as well as Navigation Track Chart in Annex A, and Field Order Number 8 in Annex F.

f. Bombardier's Plan: For details, see general section on pre-mission planning, as well as Field Order Number 8 in Annex F. Two aircraft were assigned to each mean point of impact.

g. Radar Plan: For details, see general section on pre-mission planning.

h. Flight Engineer's Plan: For details see general section on pre-mission planning.

i. RCM: No radar counter measures were planned on these missions because bombing was to be by individual aircraft.

j. Fighter Escort: No fighter escort was planned for these missions.

k. Air-Sea Rescue: No special air-sea rescue facilities were planned for these missions. However, the missions of the 509th Group were flown at a time when such facilities were available for other strikes that were being executed by other units of the Twentieth Air Force.

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6. PLANNING FOR MISSIONS NUMBER 10, 11, and 12:

a. Primary Targets Selected for Attack:

(1) Mission Number 10: Ube Nitrogen Fertilizer Company (90.32 - 818), Ube Soda Company (90.32 - 1844), and Nippon Motor Oil Company (90.32 - 1880).

(2) Mission Number 11: Heavy Industry in Yokkaichi Harbor Area (90.20 - 1737), Converted Textile Mill (90.20 - Unnumbered), and Utsube River Oil Refinery (90.20 - 1684).

(3) Mission Number 12: Japan Refinery Company (90.10 - 1088), Marshalling Yards, Koriyama (90.10 - Unnumbered), and Light Industry, Koriyama (90.10 - Unnumbered).

b. Reason for Selection of Targets: These targets were selected for attack because the predicted weather in the Hiroshima, Kyoto, and Niigata area was favorable for bombing.

c. Importance of Targets:

(1) Ube Nitrogen Fertilizer Company (90.32 - 818): The proposed plan to neutralize all of Japan's important chemical plants placed the Ube Nitrogen Fertilizer Company on a list of targets scheduled to be attacked. This company is the third largest nitrogen fixation plant in Japan proper. It has a capacity of 45,000 tons. The plant also produced 24,000 tons of tar in 1939 for synthetic oil production. The plant, in the process of expansion, is a large producer of sulphuric acid, both chamber and contact, nitric acid and explosives, and creosol. There is a 13,000 kilowatt steam power plant in the compound.

(2) Ube Soda Company (90.32 - 1844): This plant works in close conjunction with the Ube Nitrogen Fertilizer Company, listed above, and is one of the largest producers of chemical products in the Empire. The axis of the plant, which is 2400 feet long, runs north and south. It is 800 feet wide, having a large compound, and approximately seven warehouses in addition to the actual factory area.

(3) Nippon Motor Oil Company (90.32 - 1880): The necessity of destroying Japan's oil products in order to hamper the aircraft industry and other associated war plants placed the Nippon Motor Oil Co. on the priority list. The plant produces special oils for airplanes, auto and diesel engines and particularly cold weather oils for the air forces.

(4) Heavy Industry in Yokkaichi Harbor Area (90.20 - 1737), Converted Textile Mill (90.20 - Unnumbered), and Utsube River Oil Refinery (90.20 - 1684): For details, see Missions Number 5, 6, 7 and 8.

(5) Japan Refinery Company (90.10 - 1088), Marshalling Yards, Koriyama (90.10 - Unnumbered), and Light Industry, Koriyama (90.10 - Unnumbered): For details, see Missions Number 1, 2, 3, and 4.

d. Munitions: Pumpkin bombs (or 10,000-pound block busters) were to be used on these missions. They were to have instantaneous fuzings.

e. Navigation: For details of the navigation planning of routes, see general section on pre-mission planning as well as Navigation Track Charts in Annex A, and Field Order Number 11 in Annex F.

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f. Bombardier's Plan: For details, see general section on pre-missions planning, as well as Field Order Number 11 in Annex F.

g. Radar Plan: For details, see general section on pre-mission planning.

h. Flight Engineer's Plan: For details see general section on pre-mission planning.

i. RCM: No radar counter measures were planned on these missions because bombing was to be by individual aircraft.

j. Fighter Escort: No fighter escort was planned for these missions.

k. Air-Sea Rescue: No special air-sea rescue facilities were planned for these missions. However, the missions of the 509th Group were generally flown at a time when such facilities were available for other strikes that were being executed by other units of the Twentieth Air Force.

7. EXECUTION OF MISSIONS NUMBER 1 THROUGH 12: (For details of these missions, see Annexs that follow this narrative.)

a. Take-Off: Take-offs were accomplished as follows:

Missions Number	Aircraft Airborne	First Take-Off	Last Take-Off
1, 2, 3, 4	10	191600Z	191645Z
5, 6, 7	10	231601Z	231618Z
8,9	10	251629Z	251724Z
10,11, 12	8	281700Z	281714Z
Total	38		

b. Route Out: Long range navigation was accomplished by individual aircraft on all 12 missions. No errors beyond the limits of navigational accuracy were reported and no aircraft failed to bomb primary targets due to navigational error.

c. Targets:

(1) Primary Targets: A total of 16 B-29's dropped 80 tons of 10,000-pound pumpkin bombs (block busters) on all primary targets as follows:

Missions No.	A/C Bombing	First Bombing	Last Bombing	Altitude of Release
1 through 4	5	192255Z	192355Z	28,000 - 31,200
5 through 7	7	232240Z	232328Z	28,000 - 28,700
10 through 12	4	282341Z	290026Z	26,500 - 28,900

(2) Secondary Targets: A total of 13 B-29's (including all airborne on Missions Number 8 and 9) dropped 65 tons of 10,000 pound pumpkin bombs (block busters) on various targets.

(3) Targets of Opportunity: A total of 8 B-29's dropped 40 tons of 10,000-pound pumpkin bombs on various targets of opportunity.

(4) One aircraft was non-effective on these missions.

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d. Route Back: Return to base was as briefed.

e. Landing: Aircraft landed at their home base as follows:

Mission Number	First Landing	Last Landing
1 through 4	200445Z	200600Z
5 through 7	240351Z	240513Z
8 and 9	260512Z	260621Z
10 through 12	290511Z	290639Z

f. Losses and Damage: No aircraft were lost on any of these missions. One aircraft was damaged by enemy antiaircraft over the Osaka area.

8. RESULTS OF MISSIONS: No damage assessment is available for the above targets.

9. MISSIONS NUMBER 13 and 16:

a. Targets Selected for Attack:

(1) Mission Number 13:

(a) Primary Target: Hiroshima Urban Industrial Area.

(b) Secondary Target: Kokura Arsenal and City.

(c) Tertiary Target: Nagasaki Urban Area.

(2) Mission Number 16:

(a) Primary Target: Kokura Arsenal and City.

(b) Secondary Target: Nagasaki Urban Area.

b. Introduction: Early in June, 1945, this headquarters was informed that one Atomic Bomb would be available for use against the enemy by 6 August 1945. By 5 August the bomb was ready, weather was satisfactory, and the carefully selected crew was well trained to drop the first Atomic Bomb. Weather aircraft were dispatched to all targets to relay strike-time weather forecasts back to the strike force. However, since it was so desirable that the primary be hit if possible, rather than the other targets, instructions were given to the strike aircraft to pass close enough to the primary targets, regardless of the weather aircraft's broadcasts, to insure that a visual bombing opportunity on the primaries was not missed. However, after that check, the strike aircraft were to proceed to either the secondary or tertiary, depending on the weather aircraft. It was essential that visual bombing be accomplished to make the attacks effective. Radar was to be used as an aid, but if a visual check on the target-sighting operation could not be made with the Norden bombsight, the crews were to bring the bomb back to base.

c. Reason for Selection of Targets:

(1) Mission Number 13:

(a) Hiroshima is highly important as an industrial target. Prior to this attack, Hiroshimaranked as the largest city in the Japanese homeland (except Kyoto) which remained undamaged by the B-29 incendiary strikes. The city had a population of 344,000 in 1940.

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Hiroshima is an army city - headquarters of the 5th Division and a primary port of embarkation. The entire northeastern and eastern sides of the city are military zones. Prominent in the north central part of the city are the Army Division Headquarters marked by the Hiroshima Castle, numerous barracks, administration buildings and ordnance storage houses. In addition, there are the following military targets: Army Reception Center, large Military Airport, Army Ordnance Depot, Army Clothing Depot, Army Food Depot, large port and dock area, several ship-yards and ship building companies, the Japan Steel Company, railroad marshalling yards, and numerous aircraft component parts factories. The fact that Hiroshima was undamaged made it an ideal target. This was deemed necessary to assess correctly the damage which could be inflicted by the Atomic Bomb. The size of the city was another important factor in the selection. According to preliminary data, it was believed that the radius of damage which could be inflicted by the Atomic Bomb was 7500 feet. By placing the aiming point in the center of the city, the circle of prospective damage covered almost the entire area of Hiroshima with the exception of the dock area to the south.

(b) Kokura and Nagasaki contained essentially the same characteristics for a good target as Hiroshima, with the exception that they both had prisoner of war camps nearby. Nagasaki was the poorest of the three targets as to situation and overall construction and for these reasons was made the tertiary target.

(2) Mission Number 16:

(a) Kokura, a city of 168,000 inhabitants according to the 1940 census, is situated on northern Kyushu near the industrial center of Yawata. This target is 3 miles by 2 miles in area and has many valuable industrial targets. The Kokura Arsenal which is one of the largest Japanese arsenals and probably the most important in Japan for the manufacture of light automatic weapons and the smaller type antiaircraft and anti-tank guns also manufactures combat vehicles. Production rates are unknown at this arsenal because of such a diversity of activities, but probably is several thousand machine guns of all types per month. The arsenal is known to produce 6.5 mm and 7.7 mm light machine guns, 7.7 mm heavy machine guns, 20 mm antiaircraft, anti-tank guns and ammunition. It was reported to be equipped to mix poison gas, to load gas shells, and to store these shells underground. The most essential processes of this plant arethe making and assembly of ordnance. Forging and pressing arealso essential.

(b) Nagasaki, one of Japan's leading shipbuilding and repair centers, is also important for its production of naval ordnance and its function as a major military port. Outstanding among the city's objectives are the concentration of Mitsubishi Heavy Industries shipbuilding and repair facilities, comprising a shipyard, dockyard, and marine engine works located on the western side of the harbor within an area measuring approximately 6500 feet by 2000 feet. The Mitsubishi Steel and Arm Works and its new rolling mill located along the Urakami River in northern Nagasaki is integrated with the shipyards that produce ship plate, castings, forgings, etc., as well as naval ordnance, the majority of which is torpedoes. A wood-working plant, with extensive timber and lumber storages, is located just to the south of the rolling mill and supplies lumber and wooden fittings to the shipyards. The Kawanami Industry Company Shipyard located on Koyagi Island to the south of the harbor entrance is believed to be an important producer of medium-sized vessels in addition to its production of marine engines and boilers. The eastern side of Nagasaki Harbor contains all the important

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loading and storage facilities. Nagasaki's southwest location made this city a primary embarkation and supply port for operations on the mainland, and the docks and freight yards are believed to be congested with military supplies. Numerous reports refer to large-scale expansion of dock and storage facilities, and the entire waterfront is lined with small shipyards, equipped with shops, foundries, slipways and a patent slip. These yards build small wooden cargo vessels, shipping vessels, lifeboats, etc. Three unidentified factories are located along the railway to the north of the Mitsubishi Steel and Arms Works. Of these, the northernmost appears especially significant, comprising of some eight to ten shop-type buildings, the largest measuring approximately 900 feet by 400 feet, a power plant and several storage buildings. The total area occupied by these buildings measures 2000 feet by 1500 feet. The plant's general arrangement and appearance suggests either a very large textile mill or a major assembly plant. Intelligence reports mention new munition plants in this area and an aircraft engine factory at Nagasaki also has been reported. It is possible that this plant might be an engine works supplying the Omura Naval Aircraft Factory, located approximately 15 miles to the northeast. Nagasaki occupies a very limited, amphiteater like site, extending from reclaimed land along the waterfront to the lower slopes of the surrounding hills. Small strips of built-up districts extend along the valleys to the east and along both sides of the Urakami River to the north. In Nagasaki proper, commercial and public buildings are concentrated along the eastern and central parts of the city. Densely-grouped houses crowd these buildings and extend in an almost solid mass to the hills. Four rivers and canals and a few wide streets constitute the only substantial firebreaks. It should be noted that all important industrial installations are located outside the city proper. Another factor which entered into the selection of Nagasaki as a target was the fact that it was virtually untouched by previous bombings, thus enabling an accurate damage assessment. The size of the city made it ideal for an Atomic Bomb Attack. The city is the third largest on the island of Kyushu, with a population of 253,000 persons. The city measures approximately 5 miles from north to south and 5 miles from east to west and it was believed that an accurate drop would destroy the bulk of the city east of the harbor and possibly carry across to the western shore.

d. Munitions: One Atomic Bomb for each mission.

e. Navigation: For details of navigation planning see section on pre-mission planning as well as Navigation Track Charts in Annex A, and Field Orders Number 13 and 17.

f. Bombardiers' Plan: For details, see general section on pre-mission planning as well as Field Orders Number 13 and 16.

g. Radar Plan: For details, see general section on pre-mission planning.

h. Flight Engineer's Plan: For details see general section on pre-mission planning.

i. RCM: No RCM was planned on these missions because of the electronic aspects of the bomb fuzing.

j. Fighter Escort: No fighter escort was planned on these missions.

k. Air-Sea Rescue: Normally this function is arranged by the Wing Headquarters, but due to the importance of these operations, Twentieth Air Force Headquarters made arrangements for this mission. Every precaution was taken to provide complete air-sea rescue facilities

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By IBM NARS Date 7/24/73

so that any untoward incident would not jeopardize the safe return of all witnesses. For additional information see Annex A for Air-Sea Rescue Charts.

1. Psychological Warfare: (For sample of leaflets and translations thereof, see Annex D, Part I.)

(1) Introduction:

(a) On 7 August the Cincpac Advance Psychological Warfare Section was asked to institute a psychological warfare campaign with the Atomic Bomb as its focal point. Final arrangements for the program were made at the Saipan headquarters of the Cincpac Psychological Warfare Section, when the Office of War Information agreed to make available its facilities to the project.

(b) The text of the leaflet was drawn up by one of the Cincpac officers. The plan was drawn up to drop 3,600,000 leaflets daily for 9 days on Japanese cities having a population of more than 100,000 persons.

(c) The text was taken to headquarters of the Twentieth Air Force and United States Army Strategic Air Force in Guam for approval. Additional approval was obtained from Cincpac. As soon as this clearance was obtained, a Japanese language officer, with the help of Japanese officers assigned to Psychological Warfare, made the translation. After this was completed the text was made calligraphic and was taken to Saipan where it was made into plates and where the leaflets were printed.

(d) A recording of the leaflet text in Japanese was made by a prisoner of war and broadcast on Office of War Information radio station to Japan startingat 1830K on 8 August. These broadcasts continued half hourly until the evening of 10 August. Printing of the leaflets continued until the evening of 10 August.

(e) The first delivery of leaflet bombs was to be made on 9 August to the 73rd Bombardment Wing, which was to drop the leaflets. The plan called for the daily delivery for 9 days of 75 M-16 bomb cases, each containing 32,000 leaflets.

(f) The plan was interrupted by the Russian declaration of war on 9 August and a change in the wording of the leaflet had to be made. The revised text was translated into Japanese by a Japanese language officer working with a priosner of war and a Nisei and was broadcast on the Office of War Information radio on the evening of 9 August. The text was then made calligraphic by the Japanese prisoner. The new leaflets were designated AB-12, whereas the first was known as AB-11. The transition from AB-11 to AB-12 was completed on the morning of 10 August.

m. Special Planning Operations:

(1) In order to protect friendly aircraft from the infinite amount of radio activity in the immediate area above the explosion, friendly aircraft were restricted from entering the 50-mile area for 6 hours after the attack. The post-strike photo aircraft were to be permitted in the area 4 hours after the attack. These post-strike photo aircraft had received special briefing prior to their take-off.

(2) In order to insure the attack would be effective on

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the day planned, a spare aircraft was stationed at Iwo Jima, where there was also a pit for unloading and reloading the Atomic Bomb.

(3) Three weather aircraft were dispatched, one to each target, at such a time as to be able to relay the target weather forecast for the estimated strike time. This was to enable the strike force to select either the secondary or tertiary target in the event the primary was found to be covered by clouds.

(4) In order to insure that the post-strike photo aircraft would not enter the target area until 4 hours after bombs away it was deemed necessary that these aircraft be required to check in with the ground stations at both Tinian and Iwo Jima to obtain clearance to proceed past Iwo Jima. If these photo aircraft did not receive notification of which target had been bombed, they were to photograph all three targets.

10. EXECUTION OF MISSIONS NUMBER 13 and 16: (For details of these missions, see Annexes that follow this narrative.)

a. Take-Offs: Take-offs were accomplished as follows:

Mission Number	Aircraft Airborne	First Take-Off	Last Take-Off
13	6	051645Z	051647Z
16	5	081749Z	081751Z
Total	11*		

*Includes 2 observing aircraft and 3 weather aircraft for Mission Number 13 and 2 observing aircraft and 2 weather aircraft for Mission Number 16.

b. Route Out: Routes were flown as briefed.

c. Targets:

(1) Primary Target: The aircraft on Mission Number 13 dropped one Atomic Bomb on the primary target as follows:

Time of Release	Altitude of Release
052315Z	31,600 feet

(2) Secondary Target: The aircraft on Mission Number 16 dropped one Atomic Bomb on the secondary target as follows:

Time of Release	Altitude of Release
090158Z	31,600 feet

d. Route Back: Return to base was by individual aircraft.

e. Landing: Aircraft landed at their home base as follows:

Mission Number	First Landing	Last Landing
13	060458Z	060507Z
16	090919Z	091339Z

f. Losses and Damage: No aircraft were lost or damaged on these missions.

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g. Psychological Warfare: On 9 August 50 M-16 bombs, containing 1,600,000 copies of AB-11 leaflet were dropped on Osaka, Nagasaki and Fukuoka. On the morning of 10 August 24 M-16 bombs, containing 768,000 AB-11 leaflets, were dropped on Tokyo. On 10 August 50 M-15 bombs containing 1,600,000 copies of the new AB-12 leaflet were dropped on Kumamoto, Yawata, Omuta and Yokohama. On the night of 10 August the Japanese government first expressed its willingness to discuss peace negotiations and the Atomic Bomb leaflet program was discontinued.

11. RESULTS OF MISSIONS:

a. Mission Number 13: It was estimated that 4.1 square miles or 60 per cent of the built-up area of Hiroshima was destroyed.

b. Mission Number 16: Photo coverage showed that 1.46 square miles or 42.4 per cent of the built-up area of Nagasaki was destroyed.

c. For further information and details of damage see Annex D, Part IV.

12. MISSIONS NUMBER 14, 15, 17, and 18:

a. Primary Targets Selected for Attack:

(1) Mission Number 14: Osaka Metal Industry Company (90.25 - 1782)

(2) Mission Number 15: Converted Textile Mill (90.20 - Unnumbered), Yokkaichi Heavy Industry (90.20 - 1737) and Utsube River Oil Refinery (90.20 - 1684).

(3) Mission Number 17: Nagoya Arsenal, Toriimatsu Factory (90.20 - 200).

(4) Mission Number 18: Toyodo Automobile Works, Koromo Plant (90.20 - 1139).

b. Reason for Selection of Targets: These targets were selected for attack because the predicted weather in the Kyoto Area was favorable for visual bombing and also because emphasis was being placed on destroying Japanese ordnance and ammunition facilities.

c. Importance of Targets:

(1) Osaka Metal Industry Company (90.25 - 1782): This plant manufactures internal combustion engines, machinery, and component parts for automobiles and airplanes. The company, located in southern Sakai, is the largest in the city. Extensive expansion has been completed recently and efforts to protect the plant from B-29 attacks have been made by camouflaging with a disruptive roof painting.

(2) Converted Textile Mill (90.20 - Unnumbered): For details, refer to previous description of this target under Missions Number 5, 6, 7, and 8.

(3) Utsube River Oil Refinery (90.20 - 1684): For details see Missions Number 5, 6, 7, and 8.

(4) Nagoya Arsenal, Toriimatsu Factory (90.20 - 200): Of the five plants of the Nagoya Arsenal, this plant is believed to be the third most important Japanese army arsenal center and second only to the Osaka Arsenal as a producer of heavy ordnance. The exact products

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of the Toriimatsu Factory are not definitely known, but the production of medium tanks and heavy field artillery has been reported. Output of these items for the Japanese army has recently been cut back. The plant is now probably a heavy ordnance repair and modification center in addition to producing lighter weapons. The targets has an area of 9,250,000 square feet and contains 108 buildings of varying size within the compound.

(5) Toyodo Automobile Works, Koromo Plant (90.20 - 1139): With production impeded in a majority of the more important plants, Japan was forced to shift the manufacture of aircraft engines to a series of small, new, undamaged plants throughout the Empire. One of these plants in the Toyodo Automobile Works, Koromo Plant, more commonly known as the Toyodo Aircraft Machinery Maufacturing Company. The extensive compound ranks as the most important producer of trucks and automobiles in Japan with an estimated output of 30,000 units per year. The plant has been engaged in aircraft production since 1942, with aero-engine manufacture the chief product. The floor space of the plant covers over 2,000,000 square feet with recent expansion to the east and south. The plant is modern, built of light steel frames and asbestos composition walls and roof.

d. Munitions: Pumpkin bombs (or 10,000-pound block busters) were to be used on these missions. They were to be instantaneous fuzed.

e. Navigation: For details of the navigation planning of routes, see general section on pre-mission planning as well as Navigation Track Charts in Annex A, and Field Orders Number 16 and 20.

f. Bombardiers' Plan: For details, see general section of pre-mission planning as well as Field Orders Number 16 and 20.

g. Radar Plan: For details, see general section on pre-mission planning and Field Orders Number 16 and 20.

h. RCM: No radar counter measures were planned on these missions.

i. Fighter Escort: Fighter escort was not planned for these missions.

j. Air-Sea Rescue: No special air-sea rescue facilities were planned for these missions. However, the missions of the 509th Group were generally flown at a time when such facilities were available for other strikes that were being executed by other units of the Twentieth Air Force.

13. EXECUTION OF MISSIONS 14, 15, 17, and 18: (For details of these missions, see Annexes that follow this narrative.)

a. Take-Off: Take-offs were accomplished as follows:

Mission Number	Aircraft Airborne	First Take-Off	Last Take-Off
14 and 15	6	071729Z	071747Z
17 and 18	7	132325Z	140007Z
Total	13		

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b. Route Out: Long range navigation was accomplished by individual aircraft on these missions. No errors beyond the limits of navigational accuracy were reported and no aircraft failed to bomb primary targets due to navigational error.

c. Targets:

(1) Primary Targets: A total of 8 B-29's dropped 40 tons of pumpkin bombs (block busters) on primary targets as follows:

Mission Number	Number of A/C Bombing	First Bombing	Last Bombing	Altitude of Attack
14 and 15	2	072340Z	072350Z	30,500 - 31,000
17 and 18	6	140550Z	140624Z	29,000 - 30,900
Total	8			

(2) Secondary Targets: A total of 3 B-29's dropped 15 tons of pumpkin bombs on secondary targets as follows:

Mission Number	Number of A/C Bombing	First Bombing	Last Bombing	Altitude of Attack
14	3	070010Z	072357Z	31,000 - 32,000

(3) Target of Opportunity: One B-29 dropped 1 pumpkin bomb on a target of opportunity.

(4) One aircraft was non-effective on these missions.

d. Route Back: Return to base was as briefed.

e. Landing: Aircraft landed at their home base as follows:

Missions Number	First Landing	Last Landing
14 and 15	080500Z	080620Z
17 and 18	141120Z	141220Z

f. Loss and Damage: No aircraft were lost or damaged on any of these missions.

14. RESULTS OF MISSIONS: Damage assessment for these missions is not available.

N. F. TWINING
Lieutenant General, U.S.A.,
Commanding

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ANNEX

A

OPERATIONS

Part I - Navigation Track Charts

Part II - Bombing

Part III - Flight Engineering

Part IV - Radar

Part V - Gunnery

Part VI - Air-Sea Rescue Charts

Part VII - Target Charts

Special Bombing Missions No. 1 through 18

20 July to 14 August 1945

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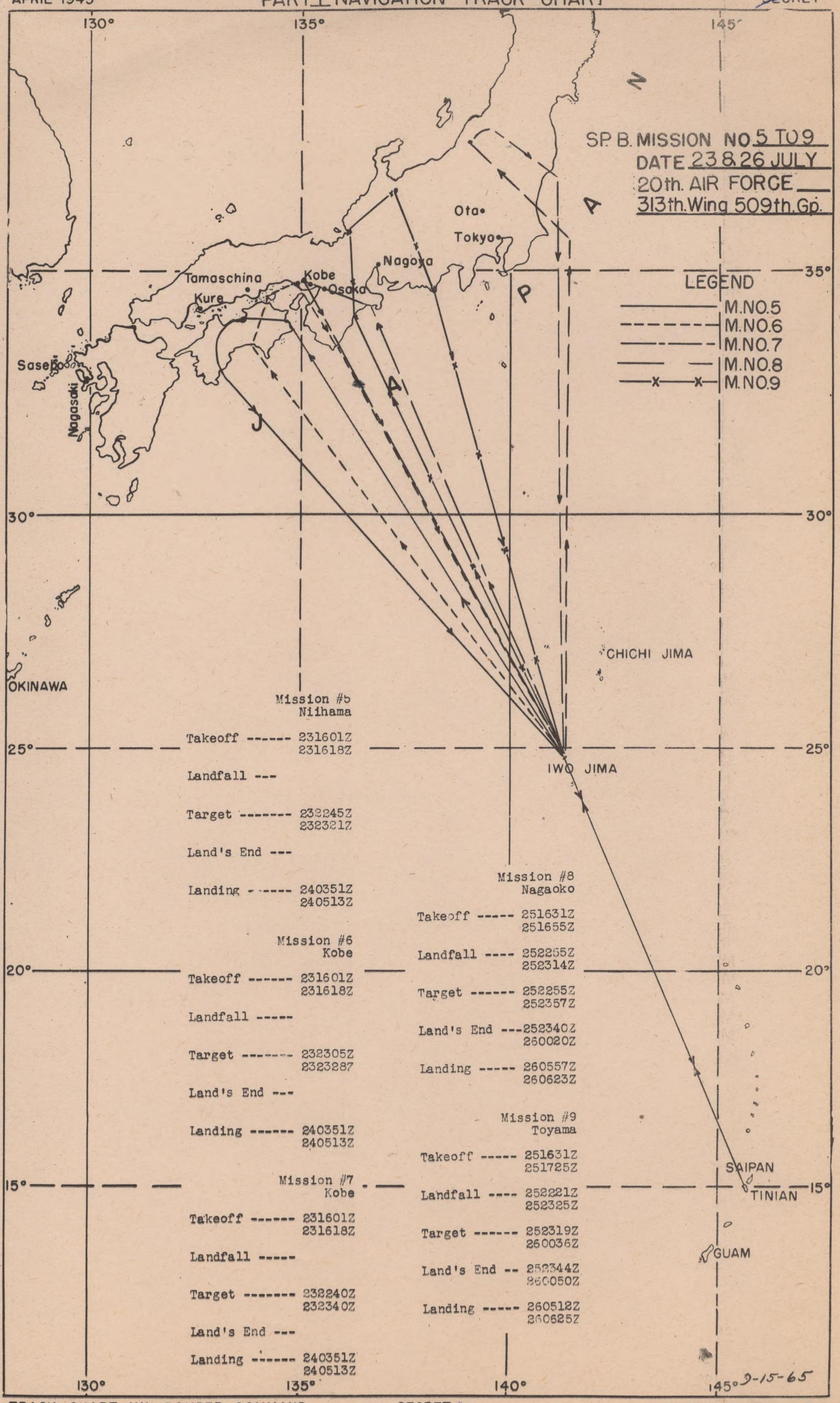
APRIL 1945

PART I NAVIGATION TRACK CHART

~~SECRET~~

SP. B. MISSION NO. 5 TO 9
DATE 23 & 26 JULY
20th. AIR FORCE
313th. Wing 509th. Gp.



Mission #5
Niihama

Takeoff ------ 231601Z
231618Z

Landfall ---

Target ------- 232245Z
232321Z

Land's End ---

Landing ------ 240351Z
240513Z

Mission #6
Kobe

Takeoff ------ 231601Z
231618Z

Landfall -----

Target ------- 232305Z
232328Z

Land's End ---

Landing ------ 240351Z
240513Z

Mission #7
Kobe

Takeoff ------ 231601Z
231618Z

Landfall -----

Target ------- 232240Z
232340Z

Land's End ---

Landing ------ 240351Z
240513Z

Mission #8
Nagaoko

Takeoff ----- 251631Z
251655Z

Landfall ---- 252255Z
252314Z

Target ------ 252255Z
252357Z

Land's End ---252340Z
260020Z

Landing ----- 260557Z
260623Z

Mission #9
Toyama

Takeoff ----- 251631Z
251725Z

Landfall ---- 252221Z
252325Z

Target ------ 252319Z
260036Z

Land's End -- 252344Z
260050Z

Landing ----- 260518Z
260625Z

TRACK CHART XXI BOMBER COMMAND ~~SECRET~~ REPRODUCED 35th. P.T.U.

9-15-65

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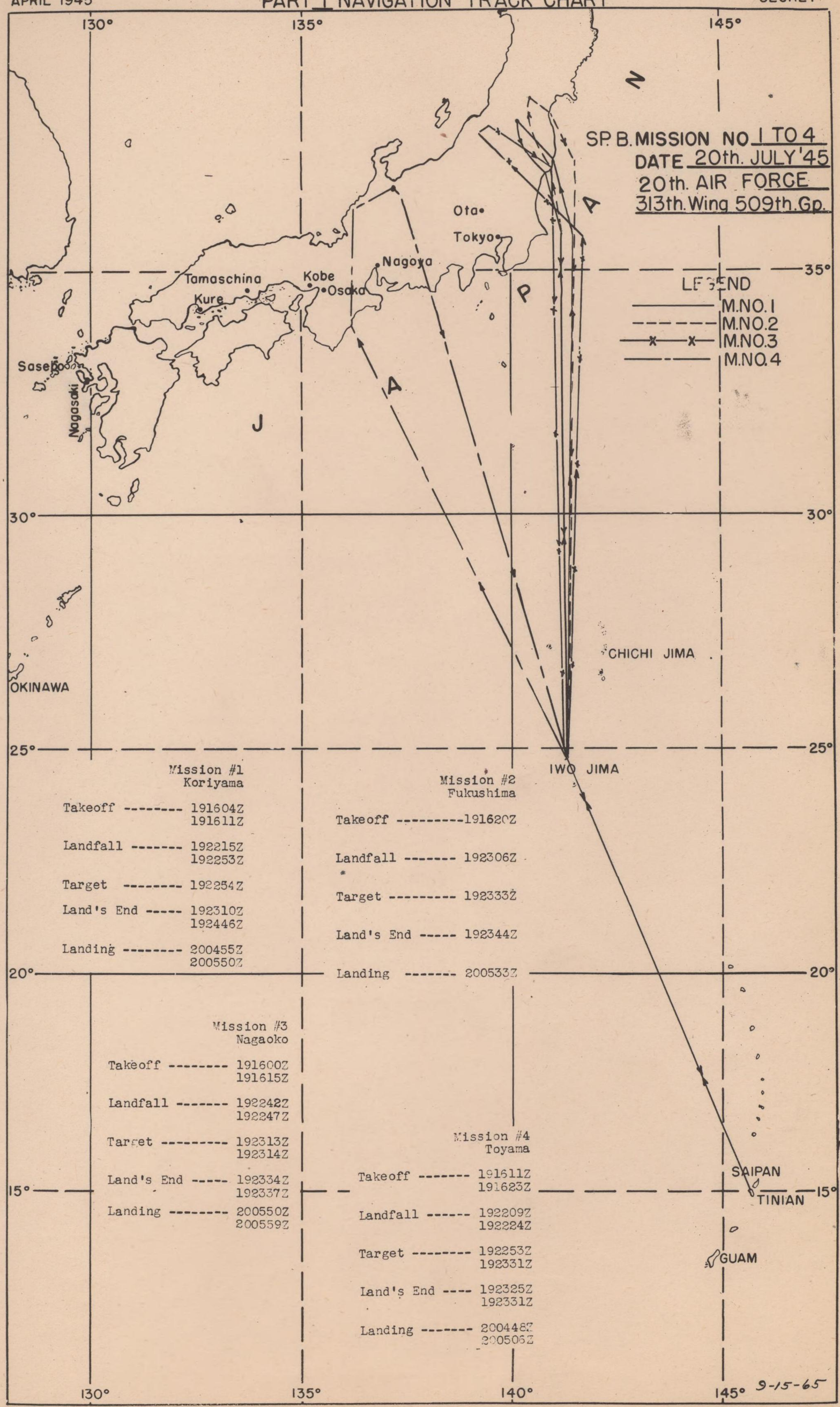
Authority NND 760063
By RT NARA Date 9-27-05

APRIL 1945

PART I NAVIGATION TRACK CHART

SECRET



9-15-65

TRACK CHART XXI BOMBER COMMAND SECRET REPRODUCED 35th. P.T.U.

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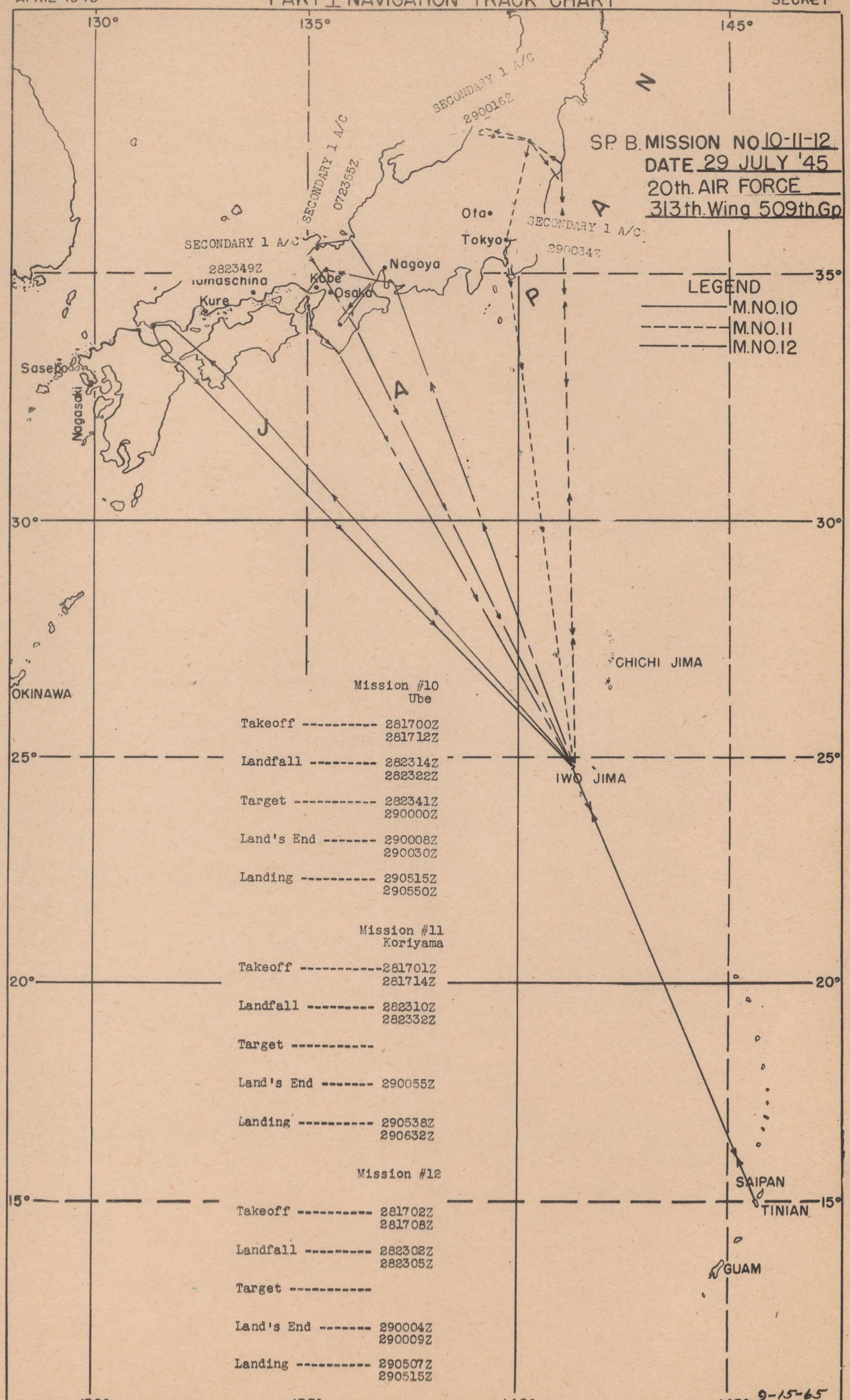
By RT NARA Date 9-27-05

APRIL 1945

PART I NAVIGATION TRACK CHART

SECRET



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9-15-65

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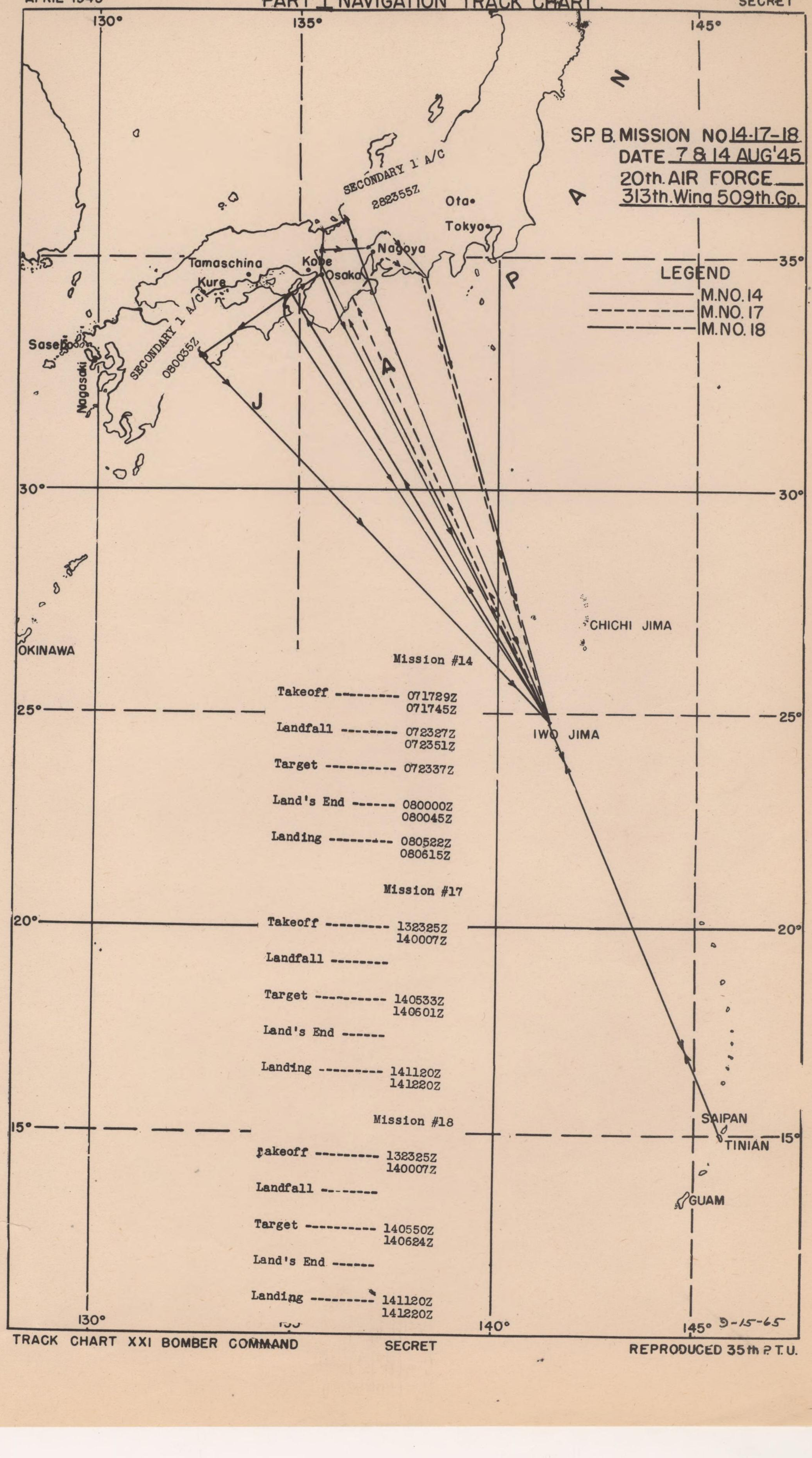
PART I NAVIGATION TRACK CHART

SECRET

SP. B. MISSION NO 14-17-18
DATE 7 & 14 AUG '45
20th. AIR FORCE
313th. Wing 509th. Gp.



Mission #14

Takeoff --------- 071729Z
071745Z

Landfall -------- 072327Z
072351Z

Target ---------- 072337Z

Land's End ------ 080000Z
080045Z

Landing --------- 080522Z
080615Z

Mission #17

Takeoff --------- 132325Z
140007Z

Landfall --------

Target ---------- 140533Z
140601Z

Land's End ------

Landing --------- 141120Z
141220Z

Mission #18

Takeoff --------- 132325Z
140007Z

Landfall --------

Target ---------- 140550Z
140624Z

Land's End ------

Landing --------- 141120Z
141220Z

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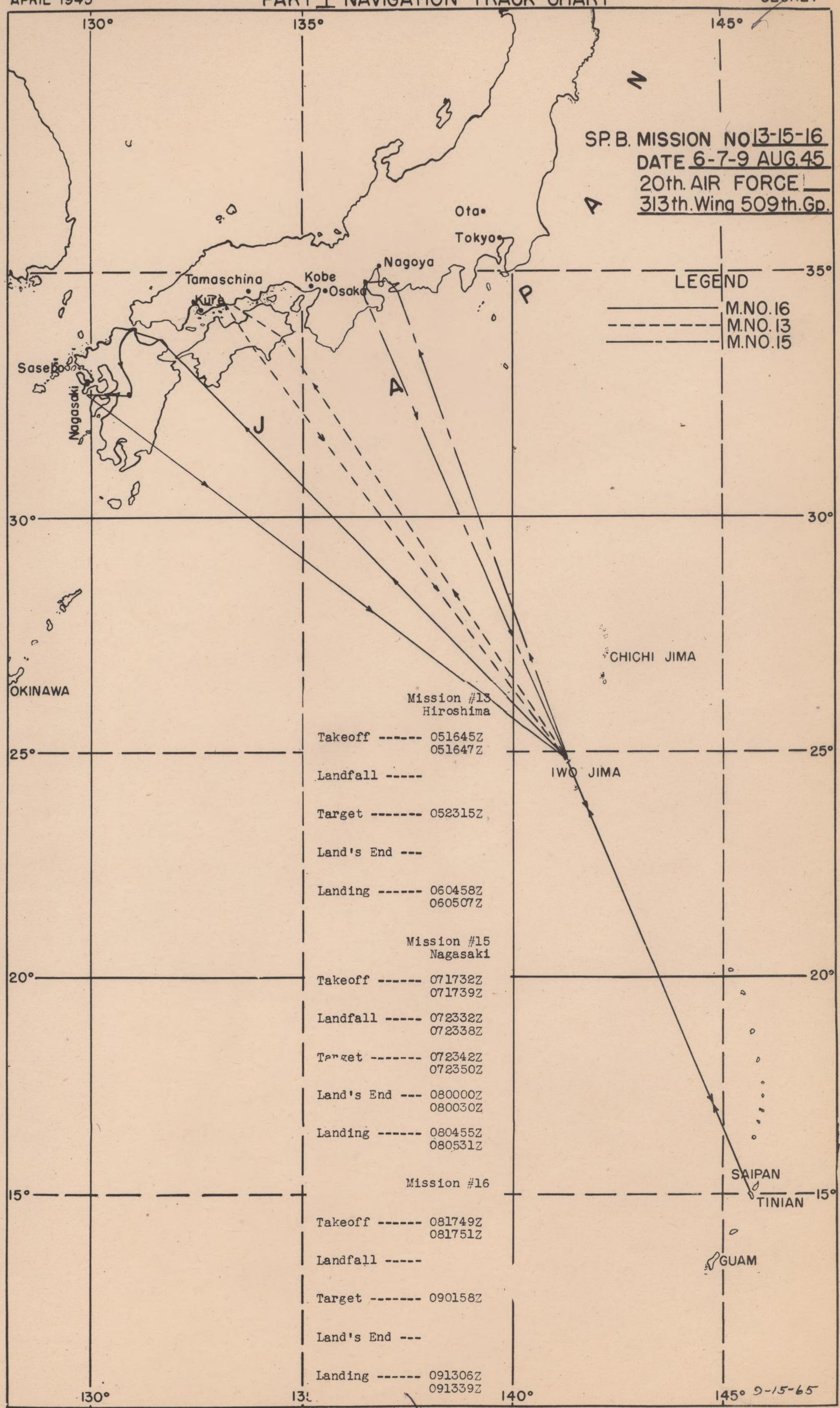
PART I NAVIGATION TRACK CHART

SECRET



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9-15-65

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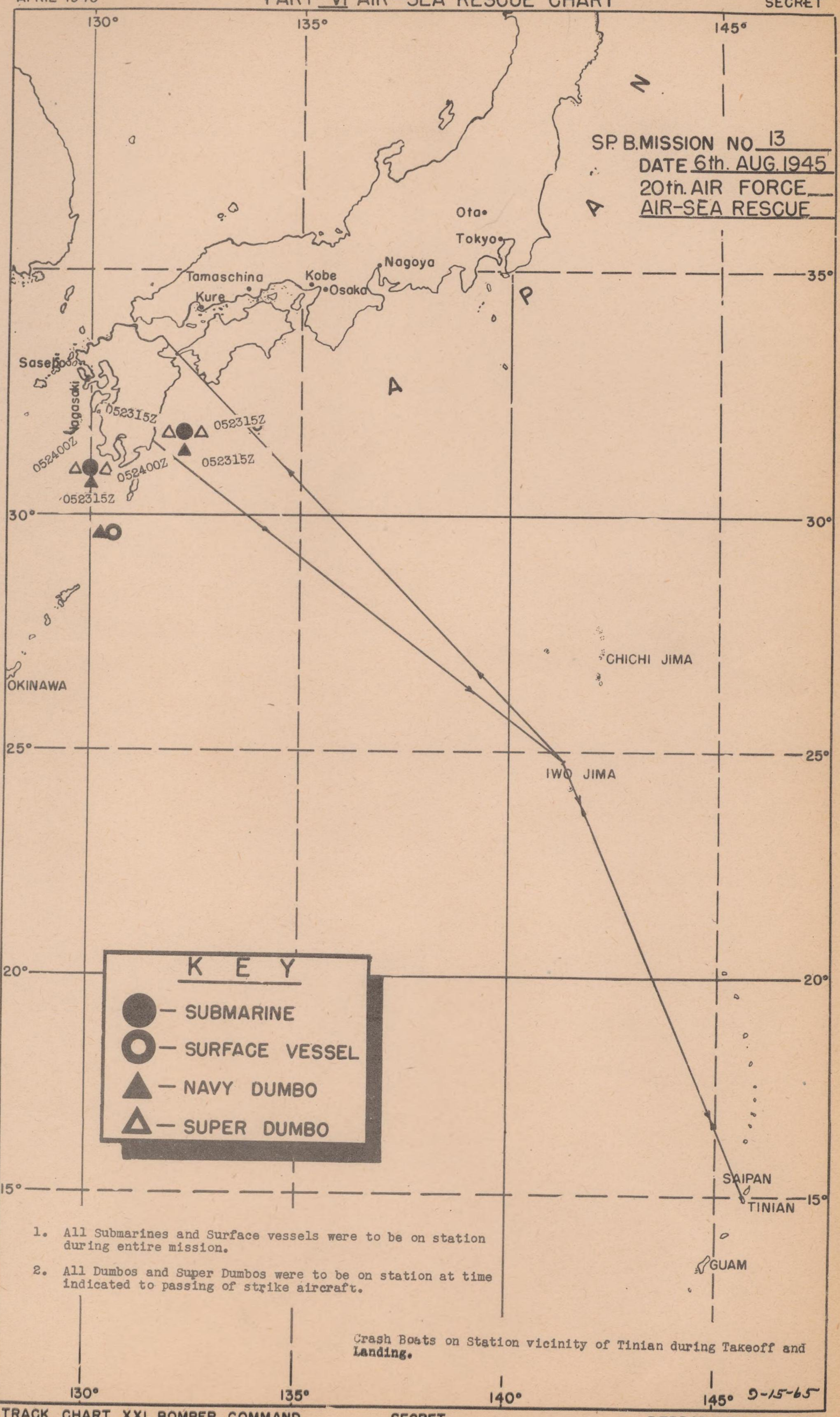
Authority NND 760063
By JT NARA Date 9-27-05

APRIL 1945

PART VI AIR-SEA RESCUE CHART

SECRET



1. All Submarines and Surface vessels were to be on station during entire mission.
2. All Dumbos and Super Dumbos were to be on station at time indicated to passing of strike aircraft.

Crash Boats on Station vicinity of Tinian during Takeoff and Landing.

130° 135° 140° 145°

9-15-65

TRACK CHART XXI BOMBER COMMAND SECRET REPRODUCED 35th. P. T. U.

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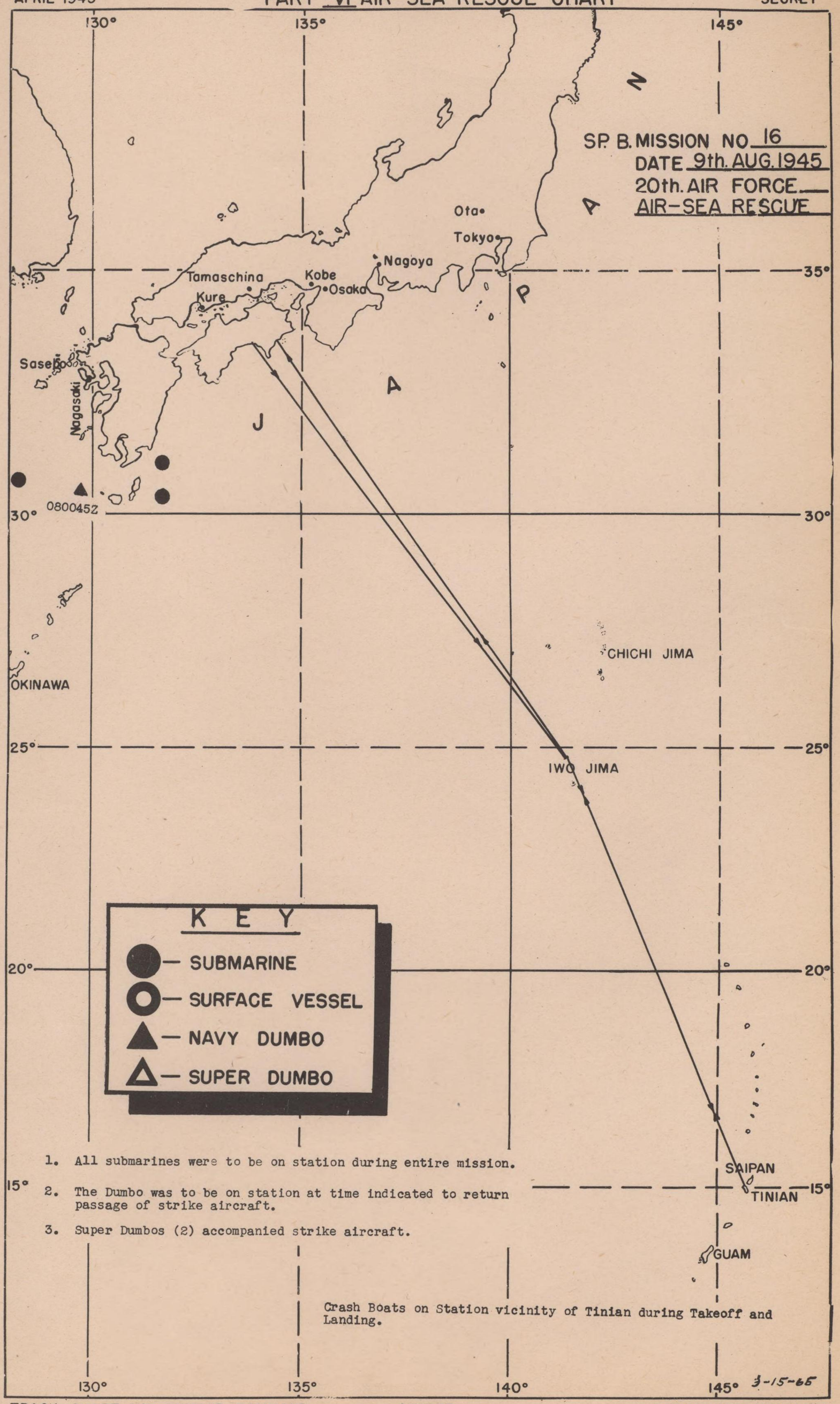
APRIL 1945

PART VI AIR-SEA RESCUE CHART

SECRET



SP. B. MISSION NO 16
DATE 9th. AUG. 1945
20th. AIR FORCE
AIR-SEA RESCUE

1. All submarines were to be on station during entire mission.
2. The Dumbo was to be on station at time indicated to return passage of strike aircraft.
3. Super Dumbos (2) accompanied strike aircraft.

Crash Boats on Station vicinity of Tinian during Takeoff and Landing.

3-15-65

TRACK CHART XXI BOMBER COMMAND SECRET REPRODUCED 35th. P.T.U.

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PART II - BOMBING

SECTION A

SUBJECT: Analysis of Attack
Reference F.O. No. 3 Special Bombing Missions No. 1, 2, 3, and 4.

1. Mission No. 1 - 3 A/C were dispatched to the Koriyama Area 90.10.

a. A/C 7302 was assigned to strike the Japan Refinery Co., 90.10 - 1088 MPI 069069. Result: Primary obscured by clouds, a radar run was made on the town of Otsu (3650N - 14047E), results unobserved and no photos taken.

b. A/C 7301 was directed to attack the Marshalling Yards, 90.10 - 1088 MPI 086085. Result: Primary was obscured, radar attack was made on the city of Tokyo, results unobserved, no photos taken.

c. A/C 7304 was directed to attack Light Industry, 90.10 - 1088 MPI 058123. Result: Primary obscured, radar attack was made on the city of Taira (3704N - 14054E), results unobserved, no photos taken.

2. Mission No. 2 - 2 A/C were dispatched to the Fukushima Area, 90.10.

a. A/C 7300 was directed to attack Light Industry, 90.10 - 6216 MPI 044112. Result: A/C made radar attack on primary target. Results unobserved, no photos taken.

b. A/C 7353 was directed to attack the Shinaguawa Mfg. Plant, 90.10 - 1665 MPI 060113. Result: A/C aborted, jettisoned bomb at 2952N - 14136E.

3. Mission No. 3 - 2 A/C dispatched to the Nagaoka Area 90.9.

a. A/C 7303 was directed to attack Light Industry, 90.9 - 6271 MPI 129098. Result: Primary was obscured, a radar attack was made on the city of Taira (3703N - 14050E). Results unobserved, no photos.

b. A/C 7354 was directed to attack the Tsugami Atagi Mfg. Co., 90.9 - 1656 MPI 120098. Result: A/C made radar attack on above target, results unobserved, no photos.

4. Mission No. 4 - 3 A/C were dispatched to the Toyama Area, 90.11.

a. A/C 7296 was directed to attack the Fujikashi Steel Products, Higashi Iwase 90.11 - 1943 MPI 139070. Results: Radar attack was made on above target, results unobserved, photos of impact, obscured by clouds.

b. A/C 7298 was directed to attack the Nichiman Aluminum Co. 90.11 - 861 MPI 099081. Results: Visual attack was made on above target, results poor, bomb reportedly hit 4,000 feet over. Malfunction of equipment was claimed. No photos, camera malfunction also.

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c. A/C 7299 was directed to attack the Nippon Soda Co. 90.11 - 6253 MPI 093011. Results: Primary bombed, radar approach, visual release. Photos obtained show impact, on the bank of a canal, 1070 @ 4 o'clock. Very poor results.

SECTION B

SUBJECT: Analysis of Attack
Reference F.O. No. 6 Special Bombing Missions No. 5, 6 and 7.

1. Mission No. 5 - 3 A/C were dispatched to the Niihama Area 90.29.

a. A/C 7298 was directed to attack the Sumitomo Copper Ref. Co. 90.29 - 923 MPI 051126. Result: Primary was attacked visually, bomb hit 310 feet at 2 o'clock.

b. A/C 7299 was directed to attack the Sumitomo Copper Ref. Co. 90.29 - 923 MPI 048117. Result: Primary was obscured, A/C reported making a visual attack on the Sumitomo Aluminum Co. MPI 078128. Excellent results were also reported, but photos indicated that the above attack was made on the Sumitomo Rayon Plant, Target XXI 6154, (no mosaic printed). Bomb hit in a clearing surrounded by buildings. Fair Results.

c. A/C 7297 was directed to attack the Sumitomo Aluminum Co. 90.29 - 924 MPI 078128. Result: Visual attack was made on primary, impact was 490 feet at 4 o'clock.

2. Mission No. 6 - 4 A/C were dispatched to the Kobe Area 90.25.

a. A/C 7353 was directed to attack the I.G.R. Shops, 90.25 - 538 MPI 007131. Result: Primary was attacked visually, excellent results reported. Photos obtained, but impact was obscured by clouds.

b. A/C 7291 was directed to attack the Kawasaki Locomotive and Car Co. 90.25 - 11 MPI 041117. Result: Primary attacked visually impact was 240 feet at 12 o'clock.

c. A/C 7300 was directed to attack the Mitsubishi Heavy Industries 90.25 - 169 MPI 058095. Result: Primary attacked visually, excellent results reported, photos acquired, but prints were no good.

d. A/C 7292 was directed to attack the Kobe Steel Works 90.25 - 1768 MPI 146125. Result: Primary was attacked visually, target was obscured after bomb release. Results unobserved, photos acquired, but prints were no good.

3. Mission No. 7 - 3 A/C were dispatched to the Osaka Area 90.25.

a. A/C 7301 was directed to attack the Shinko Woolen Mills 90.25 MPI 039092. Result: Primary obscured, the Tokyo Rayon Plant at 3458N - 13554E was attacked visually. Excellent results reported, photos were obtained, but camera turned off before bomb impact.

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b. A/C 7296 was directed to attack the Furukawa Elect Co. 90.25 - 1739 MPI 074109. Result: Radar attack was made with unobserved results, photos were no good.

c. A/C 7302 visually attacked a secondary target, Ogaki City (3522N - 13637E), excellent results were reported, but no photos were acquired, because of an undercast condition.

SECTION C

SUBJECT: Analysis of Attack
Reference F.O. No. 8 Special Bombing Missions No. 8 and 9.

1. Mission No. 8 - 4 A/C were dispatched to the Nagaoka Area 90.9.

a. A/C 7291 was directed to attack Light Industry 90.9 - 6271 MPI 129098. Result: Primary obscured. A radar attack was made on the city of Kasawazaki (3721N - 13834E), results were unobserved and no photos taken, because of an undercast condition.

b. A/C 7301 made a visual attack on unidentified target at 3743N - 13931E, good results were reported. Photos were acquired, showing impact on the bank of a river, about 3,000 ft at 5 o'clock, very poor bombing and results.

c. A/C 7354 was directed to attack the Tsugami-Atagi Mfg. Co., 90.9 - 1656 MPI 120098. Result: Primary obscured, A/C made a visual attack on the Hitachi Copper Ref. Co. (3636N - 14039E). Bomb impact was 415 ft at 4 o'clock. Good results.

d. A/C 7302 made a visual attack on the Taira Industrial Area (3704N - 14052E). Good results were reported, photos were acquired but camera tilt was insufficient to get impact. Pre-impact photos indicate very poor results.

2. Mission No. 9 - 4 A/C were dispatched to the Toyama Area 90.11.

a. A/C 7296 was directed to attack the Tiyikashi Steel Products - Higashi Iwase Plant 90.11 - 1943. Result: Primary was obscured, A/C made a visual attack on the city of Shimoda (3450N - 13811E). No results reported and photos acquired show bomb impact on the edge of the town, very poor results.

b. A/C 7292 was also directed to hit the above target which was obscured. A/C made a radar attack on the city of Nagoya (3508N - 13655E), no results reported, photos were acquired, but impact obscured by clouds.

c. A/C 7304 and 7297 were directed to attack the Nujiman Aluminum Co., 90.11 - 861 MPI 099081. Result: A/C 7304 made a radar attack on the city of Hamamatsu (3443N - 13743E). No results observed, photos were taken, but impact obscured by clouds. A/C 7297 made a radar attack on the city of Toyama (3640N - 13712E) results were unobserved, photos acquired, but are no good because of 10/10 undercast.

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d. A/C 7303 and 7298 were directed to attack the Nippon Soda Co., 90.11 - 6253 MPI 093011. Result: A/C 7303 made a visual attack on the city of Osaka (3440N - 13530E), no results were reported, but photos show bomb hitting the approximate center of town. Impact is unplottable because A.P. is unknown. Results were good. A/C 7298 made a radar attack on the city of Yaizu (3450N - 13818E) no results observed, photos were acquired showing impact about 5,000 ft at 8 o'clock, bomb hit on the bank of a river, completely out of the urban area. Poor results.

SECTION D

SUBJECT: Analysis of Attack
Reference F.O. No. 11 Special Bombing Missions No. 10, 11 and 12

1. Mission No. 10 - 4 A/C were dispatched to the Ube Area 90.32.

a. A/C 7298 and another A/C which aborted, were directed to attack the Ube Nitrogen Fertilizer Co., 90.32 - 18 MPI 105099. Result: A/C 7298 made a visual attack on the primary. Bomb impact was 1800 ft at 7 o'clock. Poor results.

b. A/C 7302 was directed to attack the Ube Soda Co., 90.32 - 1844 MPI 120064. Result: Visual attack was made, with impact 450 ft at 2 o'clock.

c. A/C 7303 was directed to attack the Nippon Motor Oil Co., 90.32 - 1880 MPI 117079. Result: Primary was attacked visually. Impact 1150 ft at 3 o'clock. Poor results.

2. Mission No. 11 - 3 A/C were dispatched to the Koriyama Area 90.10.

a. A/C 7297 was directed to attack the Japam Refinery Co., 90.10 - 1088 MPI 069069. Result: Primary obscured. A visual attack was made on the Shoda A/C Plant at 3541N - 13935E. Impact plotted 2900 ft at 4 o'clock. Poor results.

b. A/C 7353 was directed to attack the Marshalling Yards 90.10 MPI 086085. Results: A/C bombed visually through 5/10 undercast, impact was plotted 465 ft at 3 o'clock.

c. A/C 7291 was directed to attack Light Industry 90.10 MPI 058123. Result: A/C attacked primary visually, impact was plotted 2100 ft at 11 o'clock. Poor results.

3. Mission No. 12 - 3 A/C were dispatched to the Yokkaichi Area 90.20.

a. A/C 7304 was directed to hit the Yokkaichi Harbor Area 90.20 MPI 072067. Result: A/C made a visual attack on the Yokayama Oil Refinery (3707N - 13507E), results unobserved. Photos were acquired, but impact was obscured by clouds.

b. A/C 7301 was directed to attack the Converted Textile Mill 90.20 MPI 019041. Result: A/C made visual attack on the Mizuru Naval Base (3528N - 13524E). Impact was plotted at 230 ft at 3 o'clock.

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c. The A/C directed to attack the Utsube Oil Refinery 90.20 - 1684 MPI 066009 aborted.

SECTION E

SUBJECT: Analysis of Attack
Reference F.O. No. 13 Special Bombing Mission No. 13.

1. A/C 6292 was directed to attack the Hiroshima Urban Industrial area 90.30 AP - 063096. A/C was to carry a special (Atomic) bomb load. Result: A/C 6292 made a visual attack on the above primary target, with excellent results. Weather over the target area was good. Strike and Post Strike Photos were obtained. (See damage assessment reports).

SECTION F

SUBJECT: Analysis of Attack
Reference F.O. No. 16 Special Bombing Missions No. 14 and 15.

1. Mission No. 14 - 3 A/C were dispatched to the Osaka Urban Area 90.25.

a. Three A/C 7303, 7300 and 7304 were directed to attack the Osaka Metal Ind. Co., 90.25 - 1782 MPI 077038 and 081045.

(1) Result: A/C 7303 encountered cloud coverage over primary, made a visual run on the assembly plant No. 6278 Uwajima (3415N - 13235E) a secondary target, bomb impact was 380 ft at 5 o'clock, good results.

(2) A/C 7300 encountered cloud cover over primary, made a visual attack on the Tsuruga Chemical Plant No. 6126. Excellent results reported but no photos acquired.

(3) A/C 7304 encountered cloud cover over both the primary and secondary, made a visual attack on a target of opportunity, an unidentified target in the Tokushima Area, results were very poor, photos were acquired, showing bomb impact completely out of Tokushima Area.

2. Mission No. 15 - 2 A/C were dispatched to the Yokkaichi Area 90.20.

a. A/C 7296 was directed to attack the Converted Textile Mill 90.20 MPI 019041. Result: A/C made a visual attack on the primary target, poor results were reported. Bomb impact was plotted 940 ft at 7 o'clock.

b. A/C 7302 was directed to attack the Yokkaichi Heavy Ind. 90.20 - 1737 MPI 072067. Result: A/C made visual attack on primary target, bomb was reported hitting on edge of target doing some damage. Actual bomb impact was plotted 1060 ft at 2 o'clock.

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SECTION G

SUBJECT: Analysis of Attack
Reference F.O. No. 17 Special Bombing Mission No. 16.

1. A/C No. 7297 was directed to attack the Kokura Arsenal and City 90.34, AP 104082. Special (Atomic) bomb load to be carried. Result: The above primary target was obscured by 10/10 cloud cover, necessitating the above A/C to attack the Secondary Target, Nagasaki Urban Area 90.36, AP 114061. This area had a 7/10 overcast, making it necessary for the crew to make several approaches, before being able to get a 30 second visual run after a radar approach. The briefed AP was not picked up by the bombardier and the bomb was released against the Industrial Area of Nagasaki, with good results, strike and post-strike photos were obtained, (See damage assessment reports).

SECTION H

SUBJECT: Analysis of Attack
Reference F.O. No. 20 Special Bombing Missions No. 17 and 18.

1. Mission No. 17 - Four A/C, 7296, 7304, 7299 and 7300, were dispatched to the Nagoya Area 90.20. Target Nagoya Arsenal 90.20 - 200, each having different MPI's.

a. A/C 7296 was directed to hit AP - 124084. Result: A/C made a visual attack on primary target. Bomb impact was 1300 ft at 3 o'clock.

b. A/C 7304 was directed to hit AP - 120068. Result: A/C made a visual attack on primary target, bomb impact was 1760 ft at 8 o'clock, poor results.

c. A/C 7299 was directed to hit AP - 119080. Result: A/C made a visual attack on primary target, bomb impact was 1280 ft at 4 o'clock. Poor results.

d. A/C 7300 was directed to hit AP - 123077. Result: A/C made a visual attack through a heavy haze and bombed target 1691 MPI 058136 (Same Area) in error. Bomb impact was 170 ft at 6 o'clock from this targets AP.

2. Mission No. 18 - 3 A/C, 7301, 7298 and 7302, were dispatched to the Koroma Area 90.20, target No. 1139, Toyodo Auto Works, each plane bombing a different MPI.

a. A/C 7301 was directed to hit AP - 109007. Result: A/C made a radar approach and a short visual release, because of clouds and haze over target area. Results poor, bomb reported to have hit out of target area. Actual bomb impact was 2300 ft at 3 o'clock.

b. A/C 7298 was directed to hit AP - 105014. Result: A/C made a visual attack on primary. Good results reported, bomb impact was 265 ft at 7 o'clock.

c. A/C 7302 was directed to hit AP - 106010. Result: A/C made a radar approach and a short visual release, because of clouds and haze over target area. Results were poor, bomb reported to have hit out of target area. Photo shows impact about 9000 ft at 3 o'clock.

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PART III - FLIGHT ENGINEERING

SECTION A

Special Missions No. 1 through 12
TO: Koriyama, Fukushima, Nagaoka, Toyama, Niihama, Yokkaichi, Koriyama and Kobe.

1. Narration of Missions as Flown:

a. Cruise to the Mainland: Individual climbs were made immediately after take-off to altitudes between 8,000 to 10,000 feet where the initial cruise was flown. No assemblies were made.

b. Bomb Run: Bombing was conducted by individual aircraft at average altitudes of 28,000 feet.

c. Return to Base: Bombing was conducted by individual aircraft without difficulty. Return speeds consisted of cruising at 200 CAS and descending at 210 CAS.

2. Comments: All aircraft loaded a bomb bay tank, but filled it only one third full. Because of the configuration of the A/C of the 509th Group, speeds higher than those recommended for a normal combat aircraft were used. Speeds on the route out averaged 15 mph higher and on the return, 30 mph higher. It was impossible to raise the bomb carrying capacity by better cruise control procedures because of the special type bomb carried. During the descent from high altitude, higher power than was necessary to maintain maximum range speeds was used to hold cabin pressurization. In spite of the high speeds, used fuel reserves at base averaged 300 to 350 gallons more than what was desired by other combat B-29's of this Command.

3. Exhibits: For further information see Consolidated Statistical Summary.

SECTION B

Special Missions No. 13 & 16
TO: Hiroshima and Nagasaki

1. Narration of Missions as Flown:

a. Cruise to the Mainland: Individual climbs were made immediately after take-off to altitudes between 8,000 to 10,000 feet where the initial cruise was flown. No assemblies were made.

b. Bomb Run: Bombing was conducted by individual aircraft at average altitudes of 30,000 feet.

c. Return to Base: Return to the base was conducted by individual aircraft without difficulty. Return speeds consisted of cruising at 200 CAS and descending at 210 CAS.

2. Comments: All aircraft loaded a bomb bay tank. Because of the configuration of the A/C of the 509th Group, speeds higher than those recommended for a normal combatt aircraft were used. Speeds on

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By RT NARA Date 9-27-05

the route out averaged 15 mph higher and on return, 30 mph higher. It was impossible to raise the bomb carrying capacity by better cruise control procedures because of the special type bomb carried. During the descent from high altitude, higher power than was necessary to maintain maximum range speeds was used to hold cabin pressurization.

3. Exhibits: For further information see Consolidated Statistical Summary.

SECTION C

Special Missions 14, 15, 17 and 18.
TO: Sakai, Yokkaichi, Nagoya, and Kokomo.

1. Narration of Missions as Flown:

a. Cruise to the Mainland: Individual climbs were made immediately after take-off to altitudes between 8,000 to 10,000 feet where the initial cruise was flown. No assemblies were made.

b. Bomb Run: Bombing was conducted by individual aircraft at average altitudes of 29,000 feet.

c. Return to Base: Return to base was conducted by individual aircraft without difficulty. Return speeds consisted of cruising at 200 CAS and descending at 210 CAS.

2. Comments: All aircraft loaded a bomb bay tank. Because of the configuration of the A/C of the 509th Group, speeds higher than those recommended for a normal combat aircraft were used. Speeds on the route out averaged 15 mph higher and on the return, 30 mph higher. It was impossible to raise the bomb carrying capacity by better cruise control procedures because of the special type bomb carried. During the descent from high altitude, higher power than was necessary to maintain maximum range speeds was used to hold cabin pressurization. Fuel reserves averaged 550 gallons more than what was desired by other Wings of this Command.

3. Exhibits: For further information see Consolidated Statistical Summary.

PART IV - RADAR

SECTION A

Missions 1 through 12

1. Radar Equipment Performance AN/APQ-13:

a. Number sets operative on take-off: 37

b. Number of sets operative over target: 37

c. Number of sets operative on landing: 37

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d. Number of set failures: None

e. Number of radar releases: 11

f. No interference was reported.

2. Radar Bombing AN/APQ-13:

a. Aiming Points were reported as excellent.

b. Identification of landfall and IP was reported as difficult on missions 1 to 3 inclusive, otherwise it was reported as excellent.

3. IFF SCR-695: No reports were submitted on IFF.

4. No reports were submitted on Radar Altimeter (SCR-718).

SECTION B

Missions 13 and 16

1. Equipment Performance of AN/APQ-13:

a. Number of sets operative on take-off: 6

b. Number of sets operative over target: 6

c. Number of sets operative on landing: 5

d. Number of set failures: 1

e. Number of aircraft using azimuth stabilization: 6

f. Number of radar releases: None

g. Average maximum range in nautical miles of targets:

73 at 25,000 to 30,000 feet

h. Average maximum range in nautical miles of beacons:

156 at 15,000 to 20,000 feet

i. Average range of Japanese coast: 76 nautical miles.

2. Radar Bombing AN/APQ-13:

a. Aiming points were reported as excellent.

b. Landfall and IP were easily identified.

3. Comments: No reports were submitted on IFF SCR-695 and absolute altimeter and SCR-718.

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SECTION C

Missions 14, 15, 17 and 18

1. Equipment Performance AN/APQ-13:

a. Number of sets operative on take-off: 13

b. Number of sets operative over target: 12

c. Number of sets operative on landing: 13

d. Number of planes using azimuth stabilization: 12

e. Number of set failures: 1

f. Average range in nautical miles of targets:

50 at 29,000 feet

g. Average range in nautical miles of beacons:

160 at 7,000 feet

h. Interference was reported as spoking from nearby planes.

i. Recurring troubles were reported as AFC unstable, and fading targets at high altitudes.

j Average maximum range of landfall was reported at 50 NM.

2. Radar Bombing AN/APQ-13:

a. Briefing material was reported as satisfactory.

b. Aiming points were reported as very good.

c. Landfall and IP were easily identified.

3. IFF - SCR-695:

a. Turned on and off per SOP.

b. Average number of times checked: 38

c. No malfunctions reported.

4. Radar Altimeter SCR-718:

a. Number of sets operative: 14

b. Number of sets inoperative: None

PART V - GUNNERY

1. Number of A/C firing in combat: None

2. Average ammunition load: (Tail mount was only turret)

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a. Missions 1 through 9, 13 and 15 - 1000 rounds/tail mount.

b. Missions 10 through 12, 14, 16 through 18 - 2000 rounds/tail mount.

4. Test Firing:

Mission No.	Rounds Fired
1	40
2	150
3	40
4	40
5	40
6	40
7	40
8	40
9	360
10	600
11	40
12	60
13	120
14	60
15	40
16	120
17	80
18	60

5. Guns were loaded hot on all missions.

6. No malfunctions of any kind on any mission.

7. Equipment Operation: 100% at all times.

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By RT NARA Date 9-27-05

GENERAL SERVICES ADMINISTRATION
NATIONAL ARCHIVES AND RECORD SERVICE

STACK SERVICE SLIP

12-270

DATE: 12/17/62

INFORMATION OR RECORDS REQUESTED BY (NAME): Col. Rbt. F. Prentiss/Mr. Wager

DEPARTMENT OR AGENCY: CINFO DOA

FORM OF SERVICE (CHECK)

	LETTER		NATIONAL ARCHIVES ADMINISTRATIVE USE
	SEARCH ROOM		TELEPHONE
	REPRODUCTION USE		CONFERENCE

SOURCE OF REQUEST (CHECK)

	AGENCY OF ORIGIN
X	OTHER GOVERNMENT
	NON-GOVERNMENT

RECORD GROUP NO.	UNITS OF SERVICE	REQUEST HANDLED BY
	1 doc	J.Avery

DESCRIPTION — LOCATION NO. — OUT-CARD NO.

Target Chart-Hiroshima area

RECEIVED BY	DATE	RETURNED TO	DATE
R Prentiss, Lt Col	17 Dec 62		

NAR-1
SEPTEMBER 1959

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Authority NND 760063
By RT NARA Date 9-27-05

A-2 Section

XXI Bomber Cmd.

Target Chart

No. 23A

Korean Area

C/o Lt Col. Robt Prentiss

CINFO

12/12/62

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By RT NARA Date 9-27-05

GENERAL SERVICES ADMINISTRATION
NATIONAL ARCHIVES AND RECORD SERVICE

STACK SERVICE SLIP

55156

12-270

DATE: 12-17/62

INFORMATION OR RECORDS REQUESTED BY (NAME): Col. Rbt. F. Prentiss/Mr. Wager

DEPARTMENT OR AGENCY: CINFO-DOA Rm 2E645A

FORM OF SERVICE (CHECK)

	LETTER		NATIONAL ARCHIVES ADMINISTRATIVE USE
	SEARCH ROOM		TELEPHONE
	REPRODUCTION USE		CONFERENCE

SOURCE OF REQUEST (CHECK)

	AGENCY OF ORIGIN
X	OTHER GOVERNMENT
	NON-GOVERNMENT

RECORD GROUP NO.	UNITS OF SERVICE	REQUEST HANDLED BY
	1 doc	J. Avery

DESCRIPTION	LOCATION NO.	OUT-CARD NO.
Target Chart-Nagasaki Area		

RECEIVED BY	DATE	RETURNED TO	DATE
R Prentiss Lt Col	17 Dec 62		

NAR-1
SEPTEMBER 1959

DECLASSIFIED
Authority NND 760063
By RT NARA Date 9-27-05

A2 Sec — Dossier Cart

No. 71 A

XX A+

Nagasaki Area

C/O 4th Cal. Operations

Retired

12/14/62

No trace

maj Smith

C/Inf

8-23-67

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Authority NND 760063
By RT NARA Date 9-27-05

ANNEX

B

WEATHER

Part I - Weather Summary, Missions No. 1, 2, 3, and 4

Part II - Weather Summary, Missions No. 5, 6, and 7

Part III - Weather Summary, Missions No. 8 and 9

Part IV - Weather Summary, Missions No. 10, 11 and 12

Part V - Weather and Charts for Mission No. 13

Part VI - Weather Summary, Missions 14 and 15

Part VII - Weather and Charts for Mission No. 16

Part VIII - Weather Summary, Missions No. 17 and 18

Special Bombing Missions No. 1 through 18

20 July to 14 August 1945

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By JT NARA Date 9-27-05

PART - 1

FINAL WEATHER SUMMARY

Special Bombing Missions 1, 2, 3, and 4. 20 July 1945

Base at Take-Off:
Scattered low clouds.

Route:
There were broken low with scattered cumulonimbus to 25,000 feet and scattered middle and high clouds to 24°N. From 24°N to 30°N there were scattered low clouds. From 30°N to 32°N there were broken low and scattered middle clouds. From 32°N to the targets there were scattered low clouds and few patches of high clouds.

Targets:
Fukushima, Nagoaka and Koriyama area: Low clouds unobserved; 10/10 altostratus, top 19,000 feet; 3/10 cirrus between 22,000 feet and 30,000 feet. There were non-persistent contrails.
Toyama: 8/10 altostratus, tops 22,000 feet; 2/10 cirrus at 30,000 feet; non-persistent contrails. Winds at 28,000 feet were 256° at 50 knots.

Base on Return:
Broken low and high clouds.

PART - II

FINAL WEATHER SUMMARY

Special Bombing Missions 5, 6, and 7. 24 July 1945

Base at Take-Off:
Scattered low clouds.

Route:
There were broken low clouds with few towering cumulus and scattered middle clouds to 26°N. From 26°N to 29°N there were overcast low, middle and high clouds with scattered cumulo-nimbus to 30,000 feet. From 29°N to target areas there were scattered low and high clouds.

Targets:

Kobe: 6/10 stratocumulus, tops 6000 ft; 3/10 cirrus at 32,000 ft. Winds at 28,000 ft were 338° at 48 knots.

Yokkaichi: 10/10 stratocumulus, tops 6000 ft.

Niihama: 6/10 stratocumulus, tops 8000 ft. Winds at 28,000 ft were 335° at 38 knots.

Otsu: 8/10 stratocumulus, top 10,000 ft.

Ogaki: 9/10 stratocumulus, tops 6000 ft.

Base on Return:
Broken low clouds.

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By RT NARA Date 9-2705

PART - III

FINAL WEATHER SUMMARY

Special Bombing Missions 8 and 9 — 26 July 1945

Base at Take-Off:
Scattered low clouds.

Route:
There were scattered low, middle and high clouds becoming broken with scattered thunderstorms to 23°N. From 23°N to 24°N there were overcast low clouds with cumulonimbus to 30,000 feet, overcast middle and high clouds, with scattered thunderstorms. From 24°N to 30°N there were scattered low and broken high clouds.

Targets:
Toyama and Nagaoka: 10/10 stratocumulus; 8/10 altostratus, tops 14,000 feet; 10/10 cirrus at 30,000 feet. There was light rime ice in cirrus. Bombed Nagoya by radar. Winds at 29,000 feet were 300° at 26 knots.

Base on Return:
Scattered low clouds.

Remarks:
Poor target forecast.

*****

PART -IV

FINAL WEATHER SUMMARY

Special Bombing Missions 10, 11, and 12 — 29 July 1945

Base at Take-Off:
Scattered low clouds.

Route:
There were broken low clouds and scattered middle and high clouds to 18°N. There were thunderstorms observed in the route area. From 18°N to 30°N there were scattered low and high clouds. From 30°N to target area there were scattered low and broken middle and high clouds.

Targets:

Tokyo: Clear. Winds at 28,000 ft were 125° at 35 knots.

Ube: 3/10 stratocumulus, tops 4000 ft; 9/10 cirrostratus at 25,000 ft. Winds at 26,000 ft were 250° at 28 knots.

Koriyama: 6/10 stratocumulus, top 2000 ft; 0-8/10 altostratus between 10-12,200 ft; 9/10 cirrus at 32,000 ft. Winds at 28,000 ft were 325° at 33 knots.

Osaka: 5/10 stratocumulus, top 4000 ft; 3/10 altostratus at 11,000 ft; 5/10 cirrostratus at 26,000 ft. Winds at 28,000 ft were 135° at 20 knots.

Maizuru: 4/10 stratocumulus, top 4000 ft; 2/10 altostratus at 14,000 ft; 10/10 cirrostratus at 25,000 ft. Winds at 25,000 ft were 260° at 26 knots.

Base on Return:
Scattered low clouds.

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Authority NND 760063
By RT NARA Date 9-27-05

PART - V

WEATHER SUMMARY

PLANNING FORECAST

Special Bombing Mission 13 — 6 August 1945

Base: 3-5/10 low cloud base 2000 ft, tops 6000 ft; scattered middle and high clouds.

Route: To 18°N: Same as bases.
To 22°N: 6/10 low cloud base 2000 ft, tops 8-12,000 ft with occasional showers; layered middle and high clouds in thin and broken layers.
To coast: 4-5/10 low cloud base 1800 ft, top 5000 ft, scattered thin middle cloud.

Targets: Tokyo and Nagoya: 6-8/10 low cloud base 2000 ft, tops 6000 ft with large clear areas near north and east facing slopes.
Rest: 3-5/10 low clouds base 2000 ft tops 6000 ft with large areas of 6-8/10 coverage on south and west facing slopes.

OPERATIONAL FORECAST

Base at Take-Off:
Broken low and scattered middle and high clouds with light showers.

Route: There will be scattered low and high clouds with occasional light showers to 21°N. From 21°N to 24°N there will be broken low, middle and high clouds with moderate showers. From 24°N to 32°N there will be scattered low, middle and high clouds. From 32°N to target there will be broken low and scattered middle and high clouds.

Target: Hiroshima: 6/10 stratocumulus, base 2000 ft, top 5000 ft; 3/10 altostratus, base 18,000 ft, top 20,000 ft. Winds at 28,000 ft will be 270°N at 30 knots.

Base on Return:
Scattered low and middle and broken high clouds with light showers.

OBSERVED WEATHER

Base at Take-Off:
Scattered low clouds with light showers.

Route: There were scattered middle and high clouds and scattered low clouds becoming broken to 25°N. From 25°N to 29°N there were overcast low becoming broken and broken high clouds. From 29°N to 33°N there were scattered low becoming broken and overcast high clouds.

Target: Hiroshima: 3/10 stratocumulus, base 2000 ft, top 3000 ft; 1-3/10 altostratus, tops 14-16,000 ft; 1-3/10 cirrus at 34,000 ft (1/10 clouds obscured target). Winds at 28,000 ft were 165° at 15 knots.

Base on Return:

Broken low clouds.

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By RT NARA Date 9-27-05

CONFIDENTIAL

DAMAGE TO HIROSHIMA
90.30-URBAN
20A.F.-SBM13 6 AUG. 1945
DAMAGE ASSESSMENT REPORT 192
CIU. 20A.F.

3012 C 35 PTU

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Authority NND 760063
By RT NARA Date 9-27-05

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DAMAGE TO HIROSHIMA
90.30-URBAN
20A.F.-SBM13 6 AUG. 1945
DAMAGE ASSESSMENT REPORT 192
CIU. 20A.F.

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90.30-URBAN
20A.F.-SBM13 6 AUG. 1945
DAMAGE ASSESSMENT REPORT 192
CIU. 20A.F.

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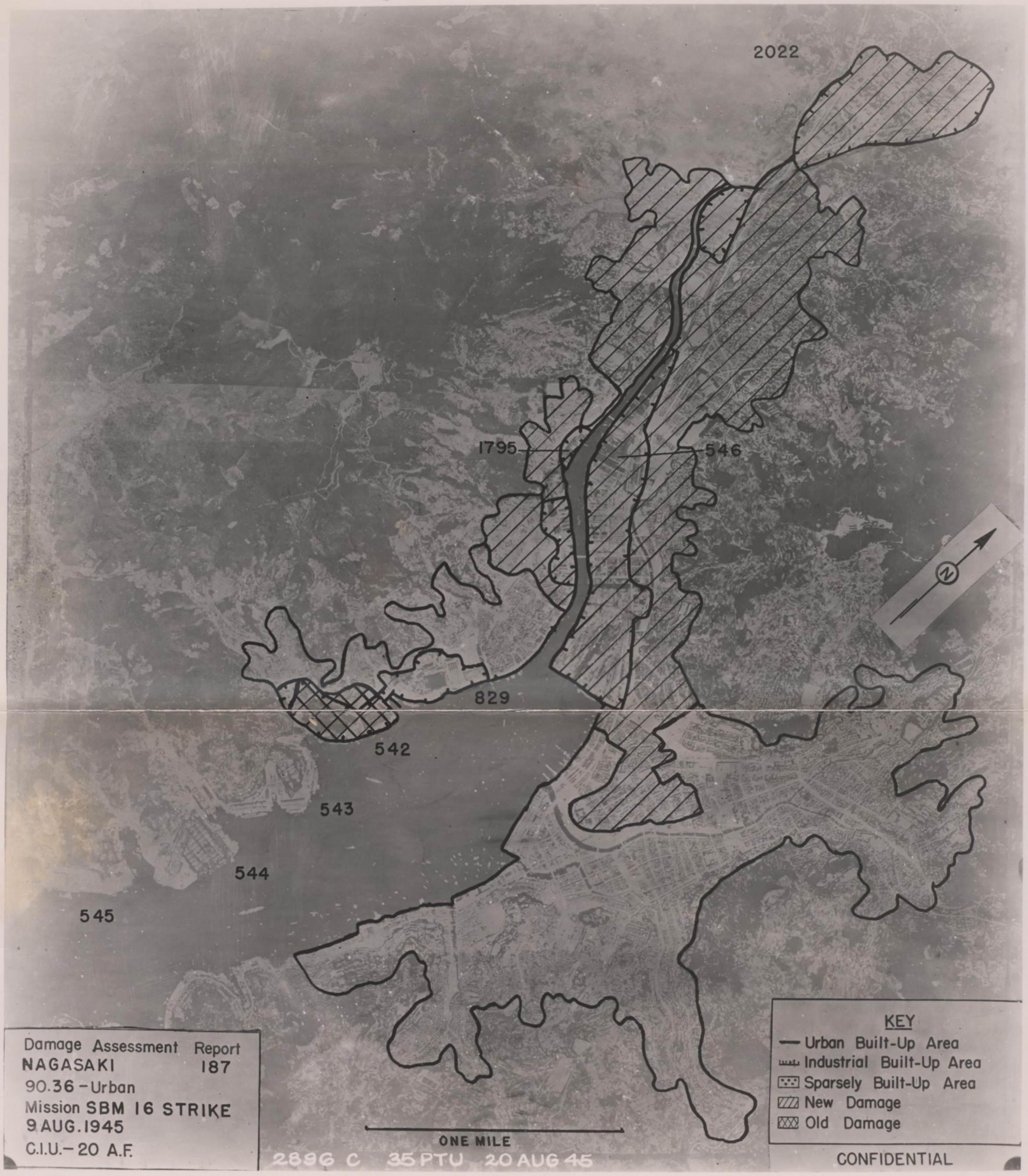

Damage Assessment Report
NAGASAKI 187
90.36 – Urban
Mission SBM 16 STRIKE
9 AUG. 1945
C.I.U. – 20 A.F.

KEY
— Urban Built-Up Area
Industrial Built-Up Area
Sparsely Built-Up Area
New Damage
Old Damage

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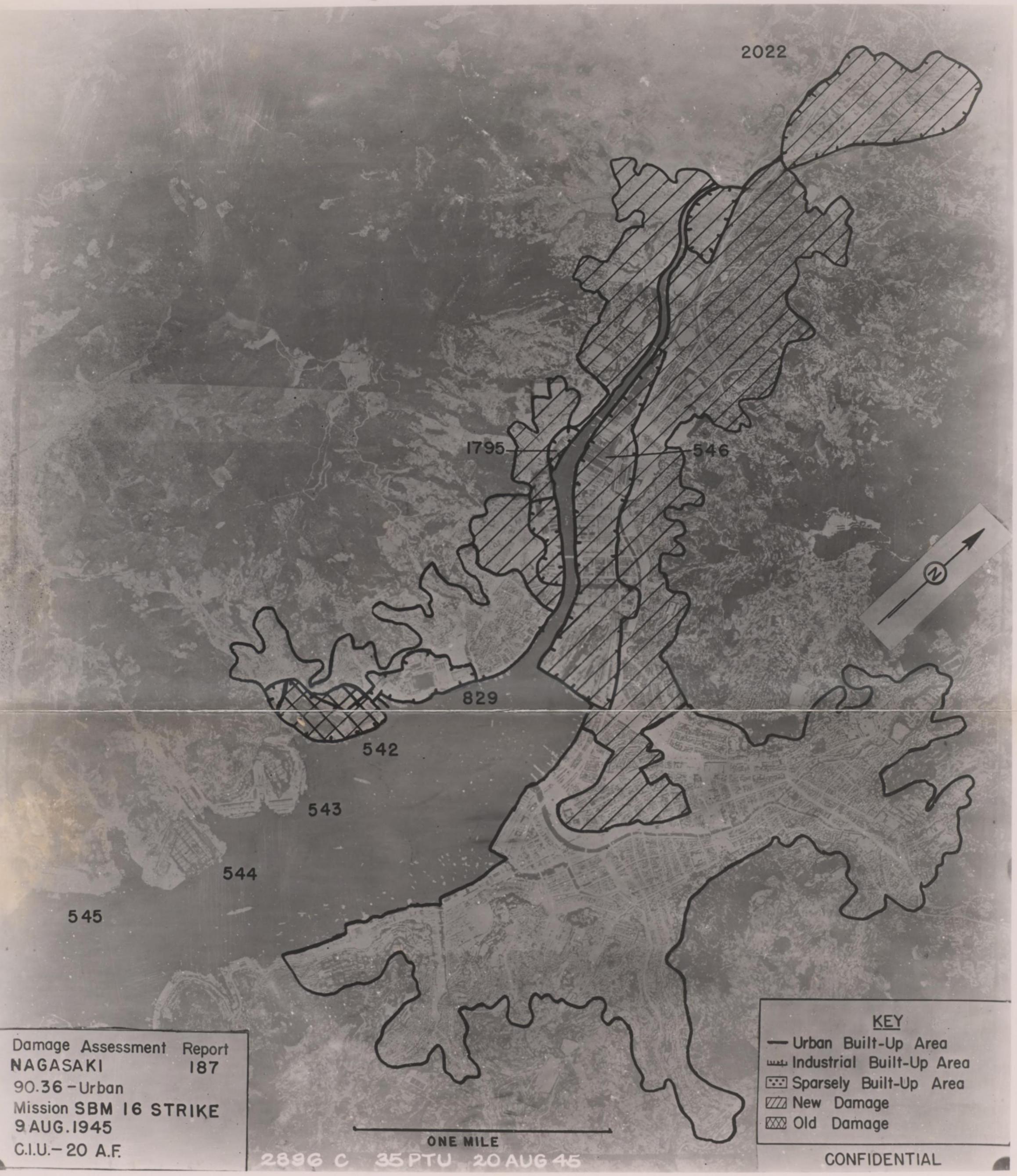
DECLASSIFIED
Authority NND 760063
By RT NARA Date 9-27-05



Damage Assessment Report
NAGASAKI 187
90.36 - Urban
Mission SBM 16 STRIKE
9 AUG. 1945
C.I.U. - 20 A.F.

KEY
- Urban Built-Up Area
- Industrial Built-Up Area
- Sparsely Built-Up Area
- New Damage
- Old Damage

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TARGET UNIT, INTELL. SEC.
XX BOMBER COMMAND

FUKUOKA AREA

NOVEMBER 1944

CHART NO. 39 [redacted]

128°51'E 129°00' 15' 30' 45' 130°00' 15' 30' 45' 130°55'E
34° 23' N 15' 34° 00' 45' 30'

OKI I
KURO I
KECHI
SASU R
IZUHARA
SE R
NAIIN I
OKINO I
FUTAOA I
5° 30' W (1945)
SEA OF JAPAN
GENKAI SEA
HIBIKI SEA
KAZAMOTO
IKI I
ORONO I
GREAT I
JINO I
WAKAMATSU
HIKO I
YAWATA
KOKURA
AKAMA
ONGA R
IIZUKA
GOTOJI
IDA
NOKONO I
MADARA I
HIME I
FUKUOKA
YAMADA
OKUMA
1400'
X 3100'
YOBUKO
KASHU I
AZUCHI I
TAKU I
TAKA I
KARATSU
HAMASAKI
3000'
X 3500'

ANNUAL MAGNETIC CHANGE
1' INCREASE
0 30 60 90 120 150 180 210 240 270 300 330

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SEA OF AMAKUSA

GENKAI SEA

ARIAKE SEA

HIRADO STRAIT

OMURA BAY

ISAHAYA BAY

SHIMABARA SOUND

TACHIBANA BAY

ANNUAL MAGNETIC CHANGE
I' INCREASE

5°00' W (1945)

KAZAMOTO
IKI I
ORONO I
YAWATA
KOKURA
AKAMA
ONGA R
IIZUKA
GOTOJI
IDA
NOKONO I
FUKUOKA
YAMADA
OKUMA
MADARA I
HIME I
YOBUKO
KASHU I
AZUCHI I
TAKU I
TAKA I
IKITSUKI I
KARATSU
HAMASAKI
GAMAKI
HIRADO
SHISA
OCHI
OGI
KANZAKI
KURUME
UKU I
IMARI
SASA
NAMISE
ARITA
TAKEO
SAGA
CHIKUGO R
FUKUSHIMA
KURA I
AKA I
BIRO I
OJIKA I
NOSAKI I
MAE I
HIRA I
TAKA I
KURO I
SASEBO
URESHINO
KASHIMA
HAMA
OMUTA
ENO I
HIRA I
ARIKAWA
KUSHI I
NAKADORI I
HINO I
ARIFUKU I
AINO I
YURUGI
YUKINOURA R
YUKINOURA
MATSU I
MATSUBARA
MINO I
OMURA
OISHI
MIE
TOKITSU
ISAHAYA
YAGAMI
SHIMABARA
KUMAMOTO
SHIRA R
WAKAMATSU I
NATOME I
HISAKA I
KABA I
SAZAE I
NAGASAKI
MOGI
MAKI I
KOYAGI I

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A-2 SECTION

XXI BOMBER COMMAND

HIROSHIMA AREA

JULY 1945

TARGET CHART NO. [redacted]

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By NARA Date 9-27-05

5° 45' W (1945)

5° 30' W (1945)

SETO-NAI (INLAND SEA)

HUICHI-NADA (BUNGO-NADA)

SUO-NADA

IYO-NADA

HOHYO-KAIKYO

BUNGO-SUIDO

UWANO-UMI

BEPPU-WAN

NORTH PACIFIC OCEAN

YAMAGUCHI

HIROSE

KANO

KUBA

ITSUKU-SHIMA

OTAKE

IMAZU

WAKUNI

AIRFIELD

SEAPLANE STATION

OGAKI

TAKAMORI

KUGA

FUKUGAWA

BOFU

TONOMI

TOKUYAMA

KUDAMATSU

ICHIMACHI

MUROZUMI

YANAI

HUBURI-SHIMA

NAGO-SHIMA

HEIGUN-SHIMA

HIME-JIMA

O-SHIMA

NISHI-NOMA-SHIMA

KURE

MITSUKUGHI

KAWAIIRI

OSAKI-KAMI-SHIMA

KAMI-KANAGARI-SHIMA

KURAHASH-SHIMA

NAKA-SHIMA

HAIZO-SHIMA

OMI-SHIMA

KUCHI-JIMA

INNO-SHIMA

HAKATA-SHIMA

O-SHIMA

IMABARI

SAKURI

HOJO

NIIHAMA

SAIJO

MITSUGAHAMA

DOGOYU

MATSUYAMA

MASAKI

GUNCHU

NAKAYAMA

NAGAHAMA

KUMA

IKEGAWA

UCHINOKO

OZU

KAWANOISHI

YAWATAHAMA

UNOMACHI

YOSHIDA

MATSUMARU

UWAJIMA

KUBOKAWA

OCHI

SAKAWA

TAKAOKA

INO

USA

SUSAKI

KURE

KAMINOKAE

TOMIKU-URA

TSURUKAWA

SHIMOBARU

KITSUKI

HIGI

KAMEKAWA

BEPPU

OITA

TSURUSAKI

SAKANOICHI

SAGANOSEKI

NAKA-TOTSUGI

ANNUAL MAGNETIC CHANGE

1' INCREASE

131° 28' E

132°00'

133°00'

133°30' E

34° 00' N

33° 09' N

5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 NAUTICAL MILES

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By JT NARA Date 9-27-05

PART - VI

FINAL WEATHER SUMMARY

Special Bombing Missions 14 and 15 — 7 August 1945

Base at Take-Off:
Scattered low clouds.

Route:
There were scattered low, middle and high clouds to 21°N. From 21°N to 23°N there were broken low and scattered high clouds. From 23°N to 30°N there were broken low clouds. From 30°N to target there were scattered low and scattered high clouds.

Targets:

Tsuruga: 2/10 low clouds, tops 6000 ft. Winds at 29,000 ft were 280° at 14 knots.

Sakai: 8-10/10 low clouds, tops 6000 ft; 2/10 cirrus at 32,000 ft. Winds at 28,000 ft were 105° at 17 knots.

Yokkaichi: 4/10 stratocumulus, tops 5000 ft; 1-2/10 altostratus at 15,000 ft; 1/10 cirrus at 32,000 ft. Winds at 29,000 ft were 295° at 30 knots.

Tokushima: 6-8/10 stratocumulus, top 6000 ft. Winds at 28,000 ft were 105° at 17 knots.

Base on Return:
Broken low clouds.

*****

PART - VII

WEATHER SUMMARY

Special Bombing Mission Number 16 — 9 August 1945

PLANNING FORECAST

Bases: 4-6/10 low cloud base 2000 ft, tops 6000 ft with scattered low cloud and scattered light showers.

Routes: Note: Tropical depression forming near Maug and expected to lie just east of course bases to Iwo Jima during day of 9 Aug.

To 18°N: Same as bases.

To 24°N: 7-10/10 low cloud base 2000 ft, tops 7000 ft with 2/3 of coverage having base 1000 ft, tops to 30,000 ft and multi-layered middle and high cloud 10,000 to 25,000 ft.

To coast: 3-5/10 low cloud base 2000 ft, tops 5000 ft with scattered high clouds.

Targets: All: Light southwesterly flow with weak high east of Tokyo giving patches of 5-7/10 low cloud concentrated near hill masses leaving coastal areas with 2-4/10 low cloud base 2000 ft, tops 6000 ft.

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By RT NARA Date 9-27-05

OPERATIONAL FORECAST

Base at Take-Off:

Scattered low and broken middle and high clouds.

Route:

There will be scattered low and middle clouds and broken high clouds with scattered light showers to 18°N. From 18°N to 21°N there will be broken low and built-up cumulus, overcast middle and high clouds with light rime ice and moderate rain. From 21°N to 25°N there will be broken low and middle clouds and overcast high clouds. From 25°N to 30°N there will be broken low and scattered middle and high clouds. From 30°N to target there will be scattered low, middle and high clouds.

Target:

Kokura-Nagasaki: 4/10 stratocumulus, base 2500 ft, top 5000 ft; 3/10 altostratus, base 15,000 ft, top 17,000 ft; 3/10 cirrus at 30,000 ft. Winds at 30,000 ft will be 200° at 20 knots.

Base on Return:

Broken low and middle and overcast high clouds with light showers.

OBSERVED WEATHER

Target:

Kokura: 0-1/10 stratocumulus with thick industrial smoke associated with haze obscuring the target completely.

Nagasaki: 4/10 stratocumulus;;4/10 altocumulus at 14,000 (total of 7/10 coverage). Approach was made on radar and break permitted visual bombing.

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By RT NARA Date 9-27-05

PART - VIII

FINAL WEATHER SUMMARY

Special Bombing Missions 17 and 18 — 14 August 1945

Base at Take-Off:

Scattered low clouds.

Route:

There were broken low and high clouds and scattered middle clouds becoming broken and scattered light to 20°N to 24°N there were broken low and high clouds and broken to overcast middle clouds with heavy rain. From 24°N to targets there were scattered low, middle and high clouds.

Targets:

Nagoya: 2/10 cumulus, top 5000 feet with 1/10 to 35,000 feet. Winds at 29,000 feet were 45° at 34 knots.

Toyoda: 3-4/10 cumulus, tops 5000 feet with 1/10 to 35,000 feet; 1/10 cirrus at 33,000 feet (3/10 clouds obscured target). Winds at 29,000 feet were 41° at 40 knots.

Base on Return:

Scattered low clouds.

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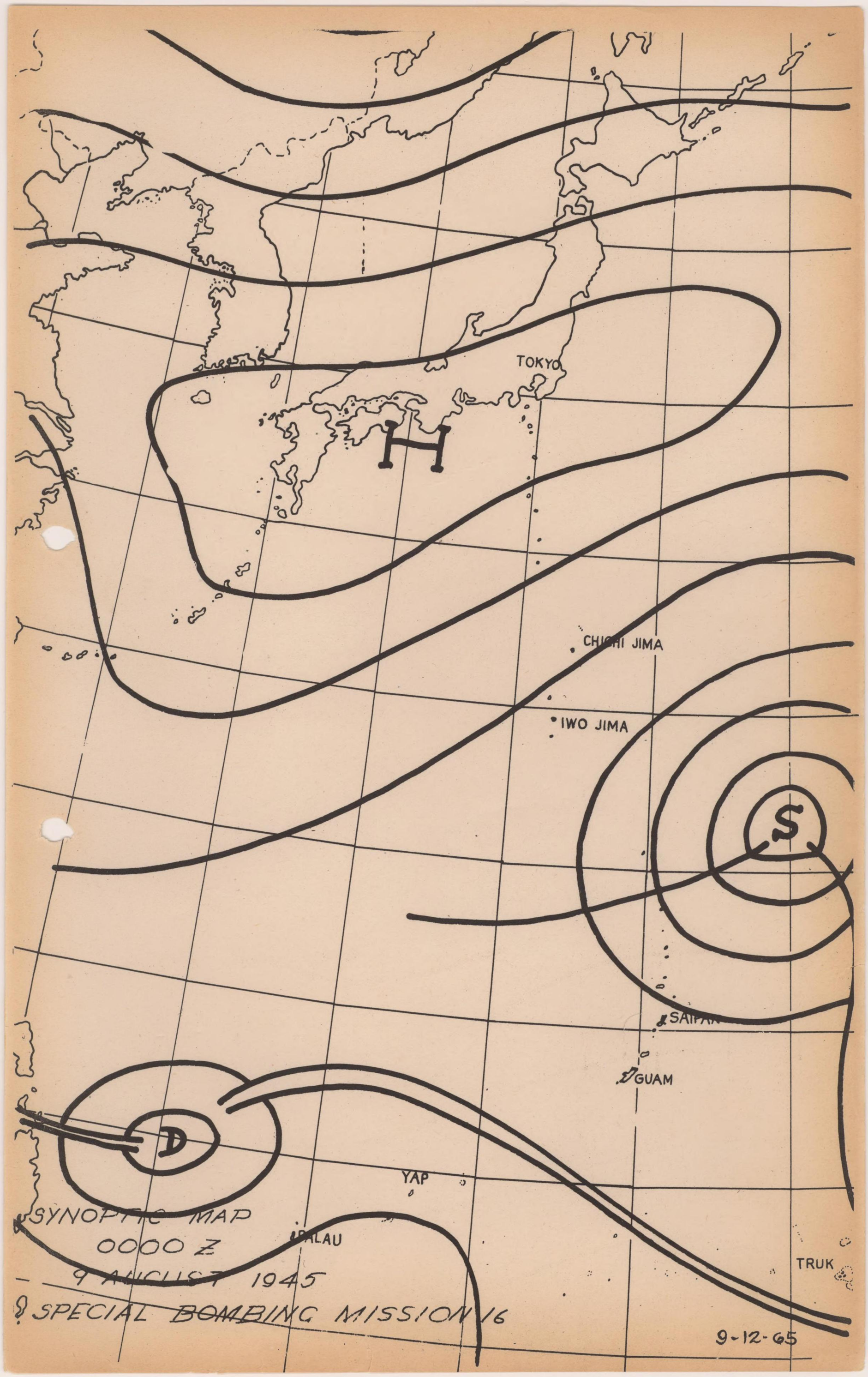
Authority NND 760063
By RT NARA Date 9-27-05



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Authority NND 760063
By 25 NARA Date 9-27-05

ANNEX

C

COMMUNICATIONS

Part I - Radar Counter Measures

Part II - Radio

Special Bombing Missions No. 1 through 18

20 July to 14 August 1945

DECLASSIFIED
Authority NND 760063
By RT NARA Date 9-27-05

Part I - RCM

Section A - Special Bombing Missions 1 through 12 on 20, 24, 26, 29 July (Phase I)

1. Purpose:

a. To determine whether the frequency band used in Atomic Bomb operations was free from enemy interference.

2. Method:

a. One observer participated on three of the four missions of Phase I and used an APR-4, APR-5, APA-11, APA-10 to search for and analyze signals heard in the 82-145 mc. and 300-800 mc. bands.

3. Results:

a. The following intercepts were recorded:

Frequency	PRF	P.W.	Sweep Rate	Time	Date	Remarks
127.8	--	--	---	0645	24 July	Friendly voice
685	--	3.5	---	0815	24 July	
515	--	3	25	0935	24 July	
700	500	43	4	0748		
610	--	--	---	0825	29 July	Signal weak
715	1500	3	2/3	0835	29 July	

4. Conclusion: As a result of the observations made, together with data obtained from the file of intercepts received on normal strike missions, it was concluded that the frequency selected for the Atomic Bomb operation was sufficiently clear of enemy activity and could be used with little prospect of enemy interference.

Section B - Special Bombing Missions 13 and 16, on 6 and 9 August (Phase II)

1. Purpose:

a. To determine whether the frequency band to be used in Atomic Bomb operations was free from enemy interference.

2. Method:

a. One observer participted in each of the bombing missions of Phase II and used an APR-4, APA-11, and APA-10 to search for and analyze signals appearing in the 350-450 mc. frequency band.

3. Results:

a. No signals in the 350-450 mc. band were received.

Section C - Special Bombing Missions 14, 15, 17 and 18 on 7 and 14 August

(Phase III)

No search was conducted on the missions in Phase III.

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E.O. 11652, Sec. 3(E) and 5(D) or (E)
NND 760120
By CCO/dj NARS, Date Oct. 20/1976

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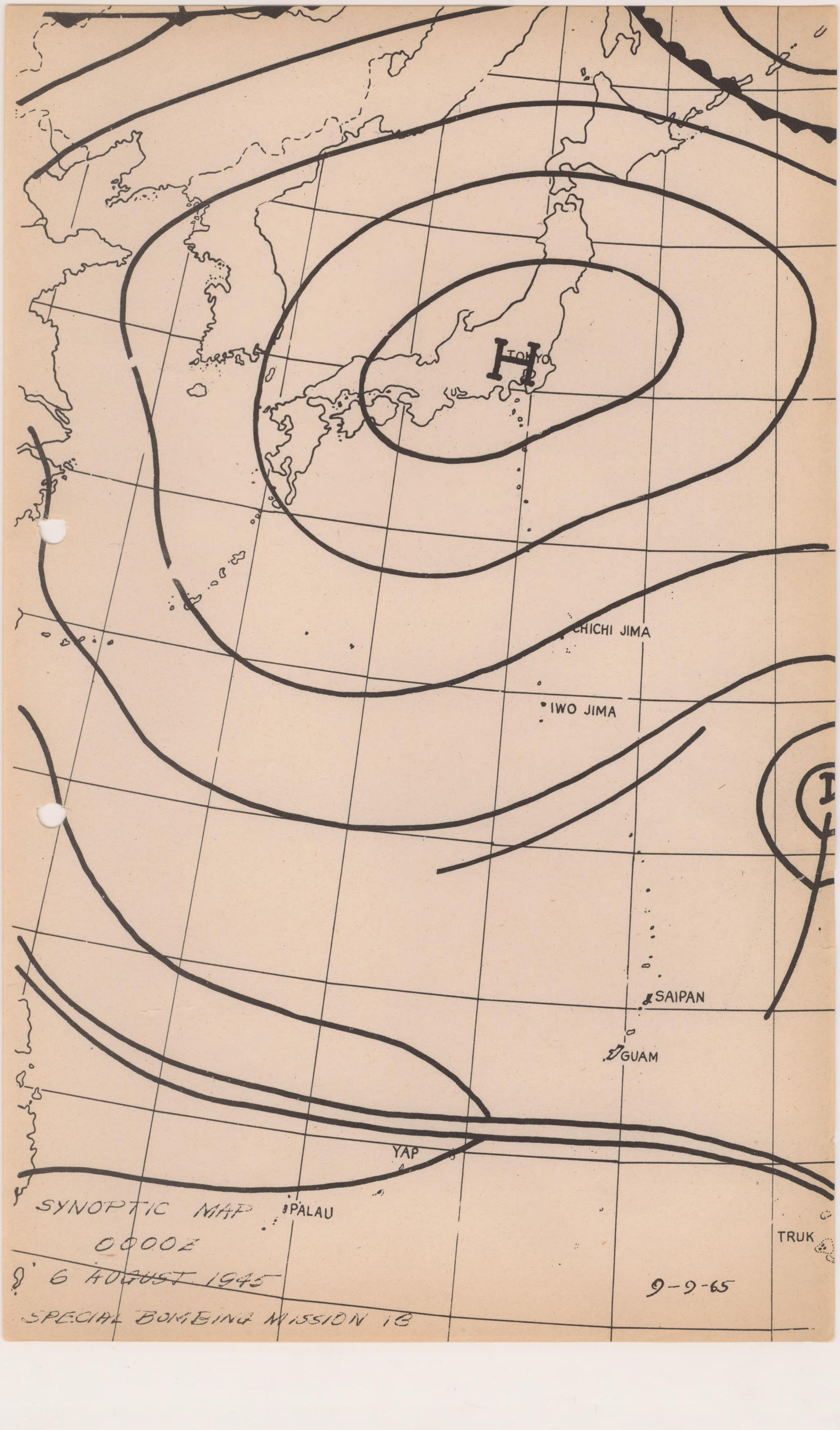
Authority NND 760063
By JT NARA Date 9-27-05



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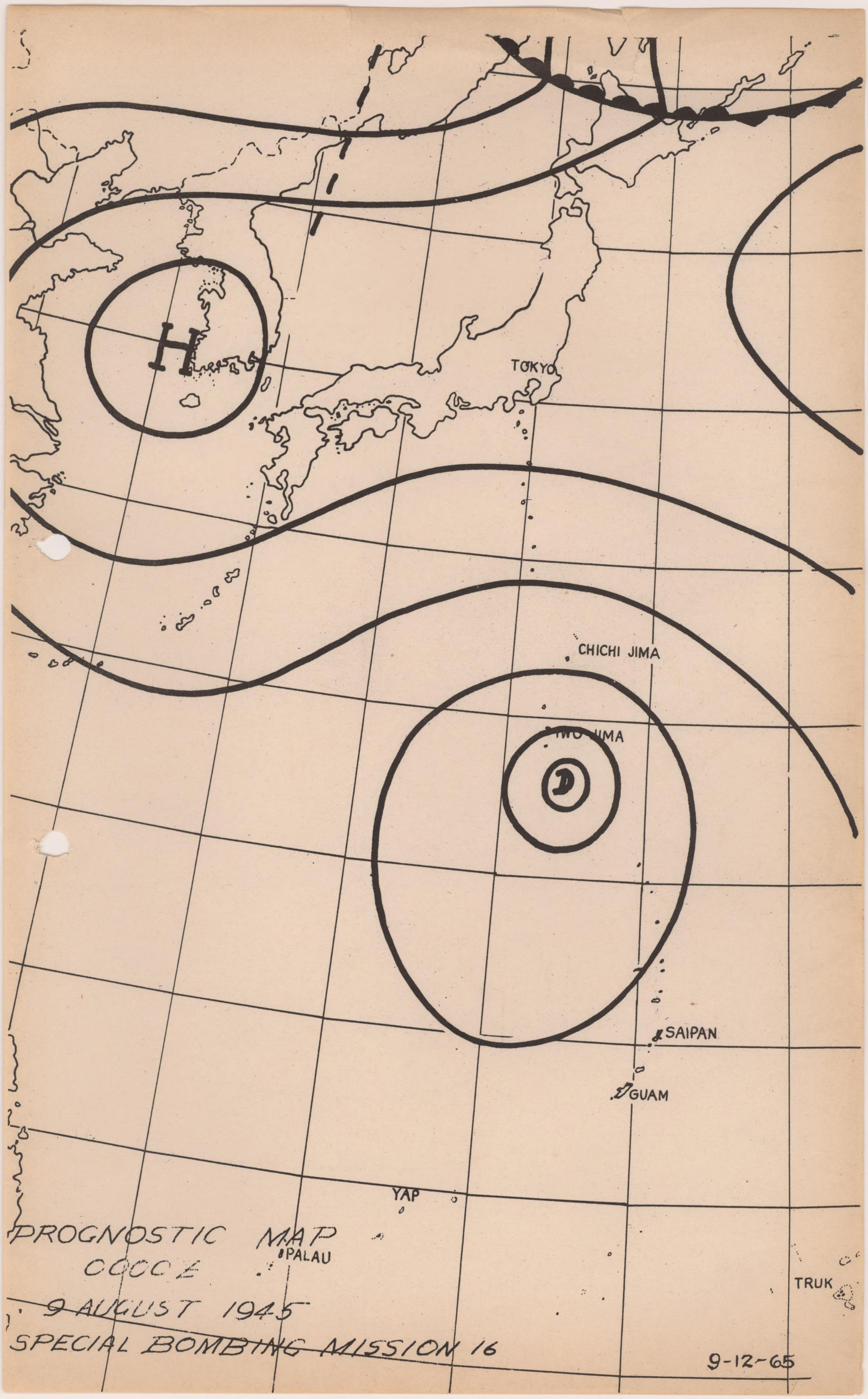
Authority NND 760063
By RT NARA Date 9-27-05



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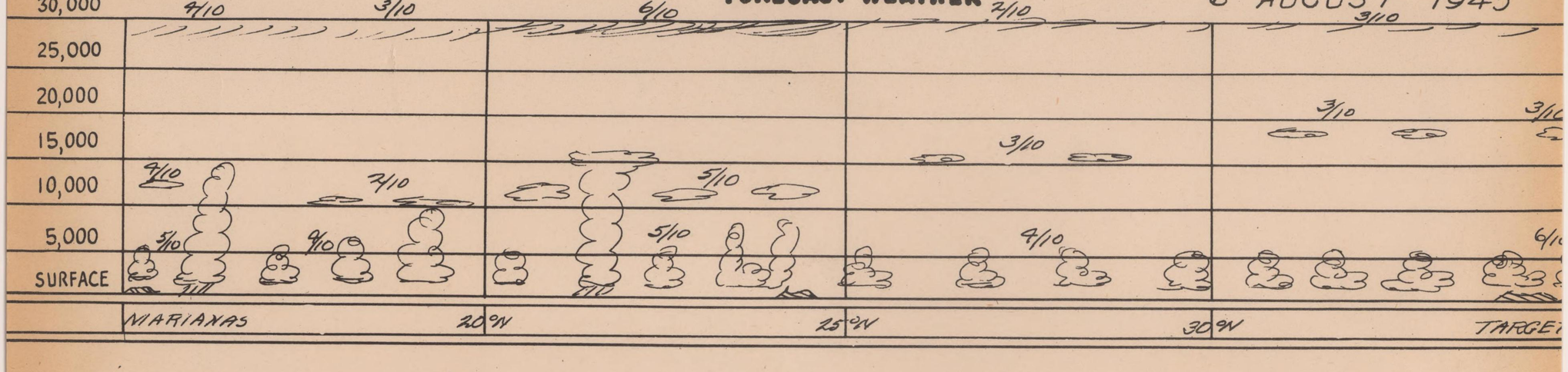
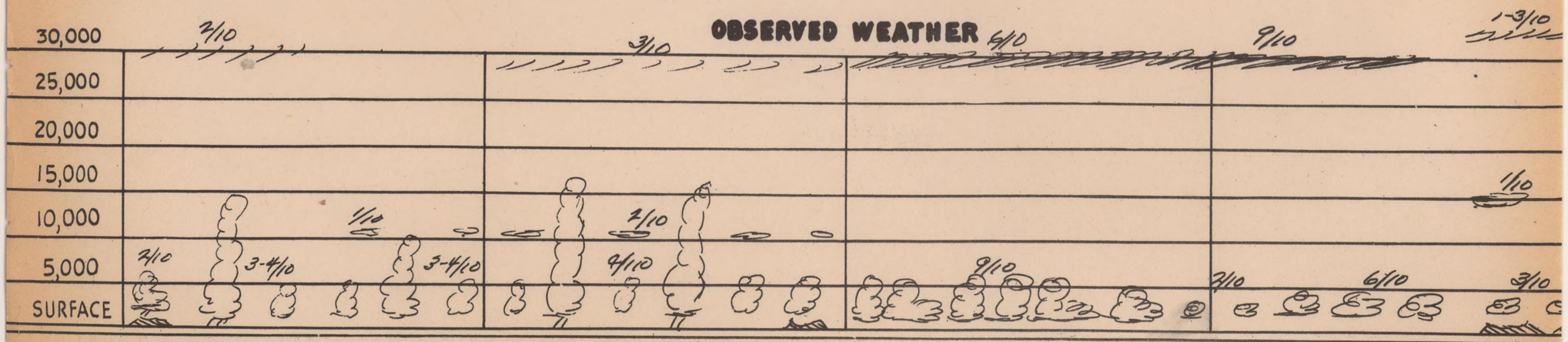
SPECIAL BOMBING MISSION 13

FORECAST WEATHER

6 AUGUST 1945



OBSERVED WEATHER



9-9-65

PART II - RADIO

Section A - Special Bombing Missions 1 through 12 on 20, 24, 26, 29 July 45.

1. Strike Reports: Thirty-seven Strike Reports (Bombs Away Messages) were received during this phase of operation. There were three Contact Reports (Ship Sightings) transmitted to the Wing Ground station.

2. Fox Transmissions: Ninty-five per cent of all aircraft radio operators successfully copied "F" type messages. Regularly scheduled broadcasts included the transmission of weather and time signals.

3. Frequencies: No evidence of enemy interference was reported during these missions. Following was a percentage breakdown of traffic per frequency: 6 per cent on 7 megacycles and 94 per cent on 11 megacycles. There was no traffic on the 3 megacycle frequency.

4. Nagivational Aid: Radio ranges, homers and broadcast stations were utilized with excellent results reported. There were no requests for bearings.

5. Net Discipline and Security: No discrepancies were reported.

6. Enemy Transmissions: There were no reports of enemy transmissions.

7. Distress: There was no distress traffic.

8. Equipment Malfunctions: RL-42: 5 weights lost. Interphone: 1 microphone switch inoperative.

Section B - Special Bombing Missions 13 and 16

1. Strike Reports: Two Strike Reports (Bombs Away Messages) were received during these two missions. One Contact Report (Ship Sightings) was received.

2. Fox Transmissions: Ninety-two per cent of "F" type messages transmitted from the Ground Station were received by aircraft over the target.

3. Frequencies: Following was a percentage breakdown of traffic per frequency: 40 per cent on 3 megacycles; 30 per cent on 7 megacycles and 30 per cent on 11 megacycles.

4. Navigational Aids: Radio ranges, homers, broadcast stations and Flight Control were successfully used.

5. Net Discipline and Security: No discrepancies were reported.

6. Enemy Transmissions: The following incidents of interference and jamming were reported;

a. 3410 kcs: Negligible.
b. 7310 cks:
   (1) Jap CW at 2220Z was very effective.
   (2) CW at 0017Z was effective.
   (3) Series of V's at 0320Z was effective.
c. 10125 kcs: Series of V's at 0315Z was effective.

7. Distress: No distress traffic reported.

8. Equipment Malfunctions: None.

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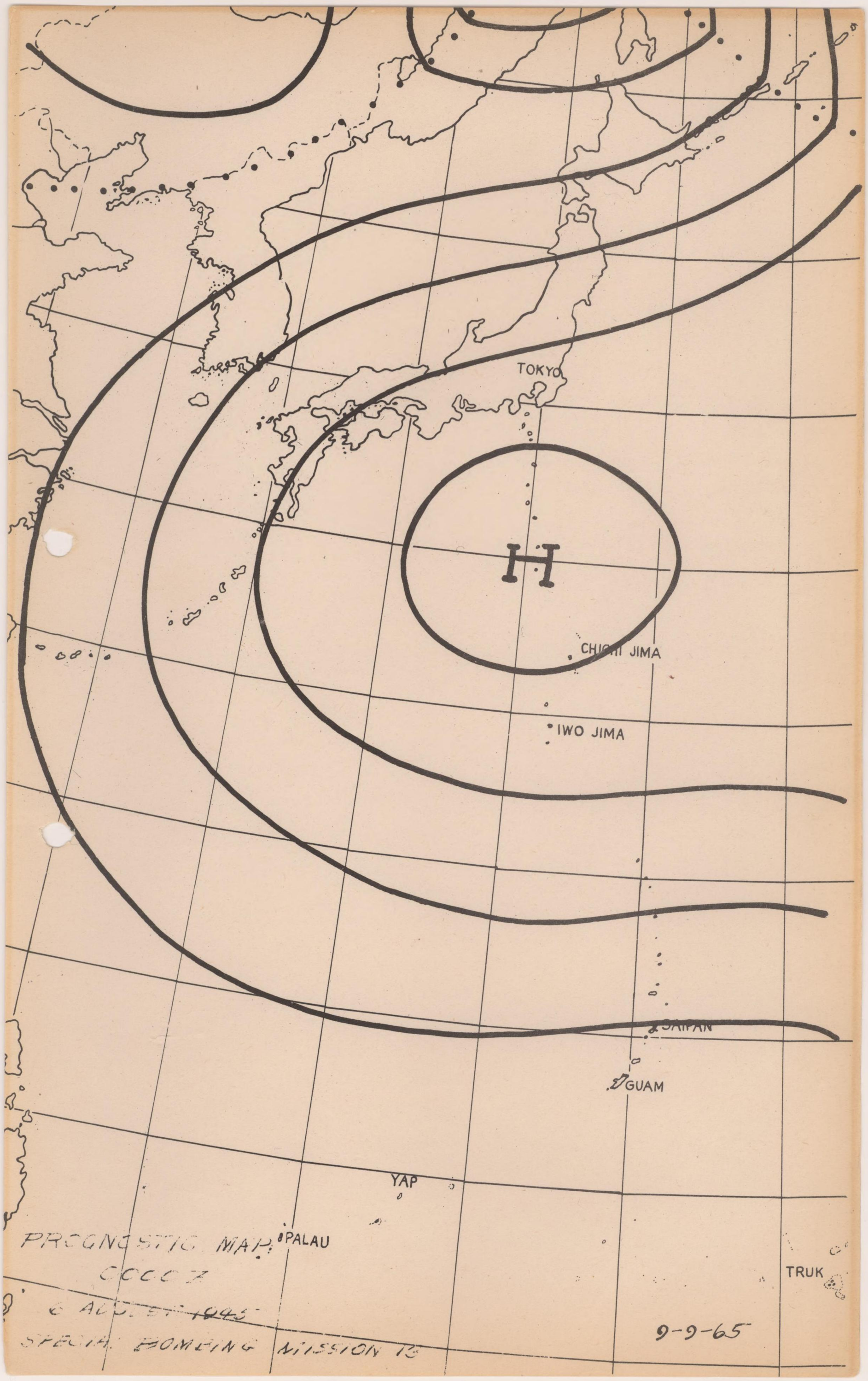

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Section C - Special Bombing Missions 14, 15, 17 and 18

1. Strike Reports: Twelve Strike Reports (Bombs Away Messages) were received during these missions.

2. Fox Transmissions: The only "F" type messages transmitted during these missions were the regularly scheduled broadcasts of weather and time signals.

3. Frequencies: No evidence of jamming or interference were reported during these missions. Following was a percentage breakdown of traffic per frequency: 20 per cent on 3 megacycles; 60 per cent on 7 megacycles and 20 per cent on 11 megacycles.

4. Navigational Aids: Radio ranges, homers and broadcast stations were utilized with excellent results reported. There were no requests for bearings.

5. Net Discipline and Security: Excellent net discipline was reported. No violations of security were logged.

6. Enemy Transmissions: Negligible.

7. Distress: None

8. Equipment Malfunctions: None

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ANNEX

D

INTELLIGENCE

Part I - Psychological Warfare

Part II - Enemy Air Opposition

Part III - Enemy Antiaircraft [illegible]

Part IV - Damage Assessment

Section A - Hiroshima

Section B - Nagasaki

Special Bombing Missions No. 1 through 18

20 July to 14 August 1945.

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By RT NARA Date 9-27-05

即刻都市より退避せよ

日本國民に告ぐ!!

このビラに書いてあることを注意して讀みなさい。

米國は今や何人もなし得なかつた極めて強力な爆藥を發明するに至つた。今回發明せられた原子爆彈は只その一箇を以てしても優にあの巨大なB-29二千機が一回に搭載し得た爆彈に匹敵する。この恐るべき事實は諸君がよく考へなければならないことであり我等は誓つてこのことが絶對事實であることを保證するものである。

我等は今や日本々土に對して此の武器を使用し始めた。若し諸君が尚疑があるならばこの原子爆彈が唯一箇廣島に投下された際如何な

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AB-11

る状態を惹起したか調べて御覧なさい。

この無益な戦争を長引かせてゐる軍事上の凡ゆる原動力を此の爆弾を以て破壊する前に我等は諸君が此の戦争を止めるよう陛下に請願することを望む。

米國大統領は曩に名譽ある降伏に関する十三ヶ條の概略を諸君に述べたこの條項を承諾しより良い平和を愛好する新日本の建設を開始するよう我等は慫慂するものである。

諸君は直ちに武力抵抗を中止すべく措置を講ぜねばならぬ。

然らざれば我等は断乎この爆弾並びに其の他凡ゆる優秀なる武器を使用し戦争を迅速且強力に終結せしめるであらう。

〃即刻都市より退避せよ。〃

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By R.T. NARA Date 9-27-05

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By CAW NARA, Date 2/6/98

Part I - Psychological Warfare

1. Below is a copy of the first leaflet (AB-11) which was dropped on Japanese cities in conjunction with the Atomic Bomb.

2. A translation of the above leaflet follows:

TO THE JAPANESE PEOPLE:

"America asks that you take immediate heed of what we say on this leaflet.

"We are in possession of the most destructive explosive ever devised by man. A single one of our newly developed atomic bombs is actually the equivalent in explosive power to what 2000 of our giant B-29's can carry on a single mission. This awful fact is one for you to ponder and we solemnly assure you it is grimly accurate.

"We have just begun to use this weapon against your homeland. If you still have any doubt, make inquiry as to what happened to Hiroshima when just one atomic bomb fell on that city.

"Before using this bomb to destroy every resource of the military by which they are prolonging this useless war, we ask that you now petition the Emperor to tnd the war. Our Presidnet has outlined for you the thirteen consequences of an honorable surrender: We urge that you accept these consequences and begin the work of building a new, better, and peace-loving Japan.

"You should take steps now to cease military resistance. Otherwise, we shall resolutely employ this bomb and all out other superior weapons to promptly and forcefully end the war."

EVACUATE YOUR CITIES

3. Below is a copy of the second leaflet (AB-12) which was dropped on Japanese cities in conjunction with the Atomic Bomb.

~~SECRET~~
DOD Dir. 5200.10, June 29, 1960
NMW by SE date 12-12-62

DECLASSIFIED
DOD Dir. 5200.10
NM By [illegible] Date 8-17-67

DECLASSIFIED
Authority NND 760063
By [illegible] NARA Date 9-27-05

日本國民に告ぐ!!

〝即刻都市より退避せよ〟

このビラに書いてあることは最も大切なことでありますから良く注意して讀んで下さい。

日本國民諸君は今や重大なる秋に直面してしまつたのである。

軍部首腦部の連中が三國共同宣言の十三ヶ條よりなる寛大なる戰爭を止めるべく機會を與へられたのであるが軍部は是を無視した。

そのために〆聯は日本に對して宣戰を布告したのである。

亦米國は今や何人もなし得なかつた恐しい原子爆彈を發明し之を使用するに至つた。之原子爆彈はたゞ一箇だけであの巨大なB-29二千機が一團に投下する爆彈に匹敵する。

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By RT NARA Date 9-27-05

AB-12

この恐るべき事實は諸君が廣島に唯一箇だけ投下された際、如何なる狀態を惹起したかはそれを見れば判るはずである。

此の無益な戰爭を長引かせてゐる軍事上の凡てをこの恐るべき原子爆彈を以て破壞する。米國はこの原子爆彈が多く使用されないうち諸君が此の戰爭を止めるよう天皇陛下に請願される事を望むものである。米國大統領は最後に諸君に對して述べた十三ヶ條よりなる寬大なる條項を速かに承諾し、より良い平和を愛好する新日本の建設をなすよう米國は慫慂するものである。

隨つて日本國民諸君は直ちに武力抵抗を中止すべきである。

然らざれば米國は斷乎この原子爆彈並に、其他凡ゆる優秀なる武器を使用しこの戰爭を迅速且強制的に終結せしむるであらう。

〝卽刻都市より退避せよ。〟

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4. A translation of the above leaflet follows:

"ATTENTION JAPANESE PEOPLE" EVACUATE YOUR CITIES

"Because your military leaders have rejected the thirteen part surrender declaration, two momentous events have occurred in the last few days.

"The Soviet Union, because of this rejection on the part of the military has notified your Ambassador Sato that it has declared war on your nation. Thus, all powerful countries of the world are now at war against you.

"Also because of your leaders' refusal to accept the surrender declaration that would enable Japan to honorably end this useless war, we have employed our atomic bomb.

"A single one of our newly developed atomic bombs is actually the equivalent in explosive power to what 2000 of our giant B-29's could have carried on a single mission. Radio Tokyo has told you that with the first use of this weapon of total destruction, Hiroshima was virtually destroyed.

"Before we use this bomb again and again to destroy every resourse of the military by which they are prolonging this useless war, petition the Emperor now to end the war. Our President has outlined for you the thirteen consequences of an honorable surrender; We urge that you accept these consequences and begin the work of building a new, better, and peace loving Japan.

"Act at once or we shall resolutely employ this bomb and all our other superior weapons to promptly and forcefully end the war."

EVACUATE YOUR CITIES

SECRET
DOD Dir. 5200.10, June 29, 1960
NMW by SE date 12-12-62

DECLASSIFIED
DOD Dir. 5200.10
NM By Date 8-17-67

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Authority NND 760063
By RT NARA Date 9-27-05

PART II - ENEMY FIGHTER REACTION

Section A - Missions 1 through 12

1. Enemy air opposition to these missions was nil. Only 3 fighters were sighted, on the 24 July strikes in the Kobe-Osaka area. No attacks occurred and crewmen made no claims.

2. Lack of air opposition was primarily attributable to the fact that these strikes were run during the period of least enemy activity, the month of July. In addition, the small force of B-29's and the very high altitude at which bombing took place reduced the enemy's capability to intercept.

Section B - Special Missions 13 and 16

Enemy fighter opposition was nil.

Section C - Special Missions 14, 15, 17 and 18

Japanese fighter opposition on these missions was nil.

*****

PART III - ENEMY ANTIAIRCRAFT

Section A - Missions 1 through 12

1. Due to the extreme altitude flown, flak was insignificant on these missions. The following table summarizes the flak encountered:

Mission No.	Target	No. A/C	Altitude	Flak
1	Koriyama	3	28,000	Nil (3 bursts)
2	Fukushima	1	29,000	Nil
3	Nagaoka	2	28,000	Nil
4	Toyama	3	29,000	Nil (1 burst)
5	Sumitomo	3	28,000	Nil
6	Kobe	4	28,700	Moderate and accurate
7	Yokkaichi	3	28,000	Meager and inaccurate
8	Nagaoka	4	28,500	Nil
9	Toyama	6	29,000	Nil
10	Ube	3	28,000	Nil
11	Koriyama	3	29,000	Nil
12	Wakayama	1	28,000	Moderate and inaccurate
	Maizuru	1	25,000	Nil

2. No aircraft were lost to flak on these missions, and of 37 aircraft bombing all targets, only one or 2.7 per cent, sustained flak damage. This aircraft was damaged over the Osaka area.

Section B - Missions 13 and 16

1. Due to the extreme altitude flown, flak was insignificant on these missions. The following table summarizes the flak encountered:

Mission No.	Target	No. A/C	Altitude	Flak
13	Hiroshima	1	30,200	Very meager and inaccurate
16	Nagasaki	1	28,000	Very meager and inaccurate.

2. No aircraft were lost or damaged as a result of flak.

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Section C - Missions Number 14, 15, 17 and 18

1. Due to the extremely high altitudes flown, flak was insignificant on these missions. The following table summarizes the flak encountered;

Mission No.	Target	No. A/C	Altitude	Flak
14	Uwajima	1	30,000	Nil
14	Tsuruga Chemical Company	1	29,000	Nil
14	Tokushima Light Industry	1	28,500	Nil
15	Utsube River Oil Refinery	1	28,500	Nil
15	Yokkaichi	1	31,000	Nil
17	Nagoya Arsenal	4	29,000	Meager to moderate, inaccurate to accurate, heavy
18	Koromo	3	29,500	Very meager and inaccurate. Heavy.

2. No aircraft were lost or damaged as a result of flak on those missions.

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PART IV - DAMAGE ASSESSMENT *

Section A - Damage Assessment Report on Hiroshima (90.30 - Urban)

SUMMARY OF DAMAGE

Built-up area: Sq. Mi. total - 6.9; Sq. Mi. destroyed - 4.1
Per cent destroyed - 60
Sq. Mi. damaged - .60; Per cent damaged - 8.5

Total destroyed and damaged: 4.7 sq. mi.
Per cent of built-up area destroyed and damaged: 68.5
Targets damaged by current strike: 6 numbered; no others.
(Complete 24 inch coverage - good quality)

Damage within limits of built-up area:

Area destroyed from current strike	Sq. Mi.	Destroyed Sq. Mi.	Destroyed Per cent
Built-up area (Urban)	5.4	3.5	64
Built-up area (Industrial)	1.5	.6	40
Built-up area (Total)	6.9	4.1	60
Area damaged from current strike:			
Built-up area (Urban)	5.4	.4	7.4
Built-up area (Industrial)	1.5	.2	13.0
Built-up area (Total)	6.9	.6	8.5
Total damaged and destroyed	6.9	4.7	68.5

Damage to targets:		Damage
737	Army Food Depot	approximately 25%
740	East Hiroshima RR Station & Yards	probable minor damage
748	Army Division Headquarters	100% destroyed
XXI-6055	Unidentified Industry	50% destroyed - 50% damaged
XXI-6163	Teikoku Textile Mill (Reported A/C parts plant)	100% damaged
XXI-6145	Signal Corps, 2nd Co.	about 12% destroyed and 55% damaged.

Note: Minor damage, previously inflicted around Target 740 is insignificant.
Damage outside built-up area (within 5 mile radius of center of city)

Area damage from current strike: about .15 sq. mi. There is an insignificant amount of destruction NW of Target 748. No damage to targets.

Inclosures: 1. Annotated mosaic showing damage
2. Post-strike print 3PR5M894 - follow this report

*Based on 20th A.F. C.I.U. D/A Report No. 192

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Section B - Damage Assessment Report on Nagasaki 90.36 Urban*

SUMMARY OF DAMAGE

Built-up area: Sq. Mi. total - 3.3; Sq. Mi. destroyed - 1.40
Per cent destroyed - 42.4

Total damage to date: 1.45 sq. mi. Per cent of built-up area: 43.9

Targets damaged by current strike: 4 numbered; 18 other

DAMAGE WITHIN LIMITS OF BUILT-UP AREA:

Area damage from current strike:	Sq. Mi.	Destroyed Sq. Mi.	Destroyed Per cent
Built-up area (Urban)	2.8	1.0	35.7
Built-up area (Industrial)	.50	.40	80.0
Built-up area (Total)	3.3	1.40	42.4

Area damage from all strikes

Built-up area (Urban)	2.8	1.0	35.7
Built-up area (Industrial)	.50	.45	90.0
Built-up area (Total)	3.3	1.45	43.9

Damage to targets		Damage
542	Akunoura Engine Works	60% destroyed and gutted (old damage - cause unknown)
546	Mitsubishi Steel & Arm Works	95% destroyed and gutted (old damage - cause unknown)
829	Mitsubishi Electric Mfg Co.	5% destroyed
1795	Mitsubishi Steel Rolling Mill	100% gutted
1842	Nagasaki & Dejima Wharves & RR Yards	60% destroyed

At least 21 small unidentified industries were in the built-up area - of these 18 were destroyed.

DAMAGE OUTSIDE BUILT-UP AREA (within 5 mile radius of center of city)

Area damage: None

Damage to targets:		Damage
543	Mistubishi Dockyard	None visible
544	Tategami Shipyard	None visible
545	Kozaki Point Oil Storage	None visible (partial coverage)
832	Megami Point Oil Storage	None visible
860	Kawanami Ind. Co. Shipyard	None visible
	Okagura Dam	None visible
	Large barracks area S of city	None visible
2022	Mitsubishi-Murakami Ordnance Plant	100% destroyed

Reference: AAF Air Objective Folder 90.36

Inclosures: 1. Annotated mosaic showing damage ----following this page
2. Post-strike mosaic

*Based on 20th A.F. CIU. D/A Report No. 187

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ANNEX

E

CONSOLIDATED STATISTICAL SUMMARY

Special Bombing Missions No. 1 through 18

20 July to 14 August 1945

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By NARA Date 9-27-05

TOP SECRET

MISSION 1 - 12

AIRCRAFT PARTICIPATING

DATE 19-28 July 1945

UNIT	A/C ON HAND	A/C SCHED-ULED	A/C FAILING TO TAKE OFF	A/C AIR-BORNE	TIME OF TAKE OFF			TIME OF RETURN			A/C BOMBING PRIMARY TARGET	A/C BOMBING SECONDARY TARGET	A/C BOMBING OTHER TARGETS		TOTAL A/C EFFECTIVE	TOTAL A/C NON-EFFECTIVE
					DATE	FIRST	LAST	DATE	FIRST	LAST						
									Missions 1, 2, 3, 4							
509 Gp	13	10	-	10	19 Jul	1600Z	1645Z	20 Jul	0445Z	0600Z	5	4	-	-	9	1
									Missions 5, 6, 7							
509 Gp	13	10	-	10	23 Jul	1601Z	1618Z	24 Jul	0351Z	0513Z	7	1	2		10	-
									Missions 8 & 9							
509 Gp	13	10	-	10	25 Jul	1629Z	1724Z	26 Jul	0512Z	0621Z	-	6	4		10	- -
									Missions 10, 11, 12							
509 Gp	13	9	1	8	28 Jul	1700Z	1714Z	29 Jul	0511Z	0639Z	4	2	2		8	-
TOTAL	52	39	1	38							16	13	8		37	1

TOP SECRET

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-SECRET-

TWENTIETH AIR FORCE

CONSOLIDATED STATISTICAL SUMMARY OF COMBAT OPERATIONS

FORM 34

MISSION NO. 1 - 12

Special Bombing Missions To Japan By 509th Bomb Group - 313th Wing

Missions 1, 2, 3, & 4 - 20 July 1945 - Koriyama, Fukushima, Nagaoka & Toyama Industries
Missions 5, 6, & 7 - 24 July 1945 - Sumitomo, Kobe and Yokkaichi Industries
Missions 8 & 9 - 26 July 1945 - Nagaoka and Toyama Areas
Missions 10, 11, & 12 - 29 July 1945 - Ube, Koriyama and Yokkaichi Industries

EFFECTIVENESS OF MISSIONS

Aircraft Airborne 38
Percent Of Aircraft On Hand 73.1%

Aircraft Bombing Primary Targets. . . 16
Percent Of Bombing Aircraft Airborne. 42.1%

Bombs Dropped On Primary Targets. . . . . 80 Tons

Bombs Dropped On Secondary Targets. . . . . 65 Tons

Bombs Dropped On Other Targets. . . . . 40 Tons

Bombing Results - Unknown

COST OF MISSIONS

Aircraft Lost . . . . . None

Aircraft Damaged. 1
Percent Of Aircraft Airborne. 2.6%

Crew Member Casualties. . . . . None

Aircraft Landing At Iwo Jima. . . . . None

DATE OF ISSUE 4 August 1945

-SECRET-

33RD STATISTICAL CONTROL UNIT

35PTU 7-11-58

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SECRET

MISSION 1 - 12
DATE 28 July 1945

BREAKDOWN OF ALL AIRCRAFT FAILING TO BOMB PRIMARY TARGET

UNIT	MECHANICAL FAILURE			PERSONNEL ERROR			FLIGHT CONDITIONS			ENEMY ACTION			OTHER		
	NON-EFFECT-IVE	BOMBED SECONDARY	BOMBED OTHER	NON-EFFECT-IVE	BOMBED SECONDARY	BOMBED OTHER	NON-EFFECT-IVE	BOMBED SECONDARY	BOMBED OTHER	NON-EFFECT-IVE	BOMBED SECONDARY	BOMBED OTHER	NON-EFFECT-IVE	BOMBED SECONDARY	BOMBED OTHER
							Missions 1,2,3,4								
509 Gp	-	-	-	1 a	-	-	-	4	-	-	-	-	-	-	-
							Missions 5,6,7								
509 Gp	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
							Missions 8 & 9								
509 Gp	-	-	-	-	-	-	-	6	4	-	-	-	-	-	-
							Missions 10,11,12								
509 Gp	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-
TOTAL	-	-	-	1	-	-	-	13	8	-	-	-	-	-	-

a Air crew personnel error.

SECRET

S E C R E T

MISSIONS 1 - 12

DATES 20,24,26, & 29 July 45

BOMBING RUN BY INDIVIDUAL AIRCRAFT

BM O.	TARGET BOMBED NAME	TYPE	TIME OF RELEASE	ALTITUDE OVER TARGET	METHOD OF BOMBING
1.	Otsu Urban Area	Sec.	2255 Z	29000	Radar
	Tokyo Urban Area	Sec.	2309 Z	29700	Radar
	Taira Urban Area	Sec.	2345 Z	31100	Radar
2.	Fukushima Light Industry	P	2332 Z	30200	Radar
3.	Taira Urban Area	Sec.	2332 Z	30000	Radar
	Atagi Mfg. Company	P	2313 Z	28000	Radar
4.	Fujikoshi Steel Products, Higashi-Iwase Plant	P	2255Z	31100	Visual
	Nichiman Aluminum Company	P	to	to	Visual
	Nippon Soda Company	P	2355 Z a	31200 a	Visual
5.	Sumitomo Chemical Company	P	2245 Z	28000	Visual
	Sumitomo Aluminum Company	TO	to	28000	Visual
	Sumitomo Aluminum Company	P	2321 Z a	28000	Visual
6.	IGR Shops	P	2305 Z	28200	Visual
	Kawasaki Car Company	P	to	to	Visual
	Mitsubishi Heavy Industry	P			Visual
	Kobe Steel Works	P	2328 Z a	28700 a	Visual
7.	Heavy Industry	P	2240 Z	28000	Radar
	Toyo Rayon Plant	TO	2240 Z	28000	Visual
	Ogaki Urban Area	Sec.	2340 Z	28000	Visual
8.	Kashiwazaki Urban Area	Sec.	2355 Z	27000	Visual
	37° 43' N - 139° 31' E	TO	2330 Z	28000	Visual
	Hitachi Copper Refinery	TO	0015 Z	28000	Visual
	Taira Industrial Area	TO	2347 Z	27000	Visual
9.	Shimoda Urban Area	Sec.	2335 Z	29000	Visual
	Nagoya Urban Area	Sec.	0041 Z	27000	Radar
	Hamamatsu Urban Area	Sec.	2357 Z	28000	Radar
	Toyama Urban Area	Sec.	0004 Z	29000	Radar
	Osaka Urban Area	Sec.	0001 Z	29000	Visual
	Yaizu RR Yards	TO	2351 Z	28000	Radar
10.	Ube Nitrogen Fertilizer Co.	P	2341 Z	27700	Visual
	Ube Soda Company	P	2349 Z	26500	Visual
	Nippon Motor Oil Company	P	0002 Z	28000	Visual
11.	Koriyama Light Industry	P	0026 Z	28900	Visual
	Nakajima A/C Engine Plant	Sec.	0023 Z	29300	Visual
	Koriyama Marshalling Yards	TO	0020 Z	29300	Visual
12.	Wakayama Oil Refinery	TO	2355 Z	30000	Visual
	Maizuru Naval Base	Sec.	2335 Z	26700	Visual

Total Bombing Primary Target - 16 Total Radar - 11
Total Bombing Secondary Target - 13 Total Visual - 26
Total Bombing Targets Of Opportunity - 8

a Data on individual aircraft not available.

NOTE: 1 - 10,000 lb "Pumpkin" bomb dropped on each of the above targets.

S E C R E T

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Authority NND 760063
By RT NARA Date 9-2705

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MISSION 1 - 12

DATE 19-28 July 1945

DISPOSITION OF BOMBS

UNIT	TYPE OF BOMB	FUZE SETTING		LOADED ON AIR-BORNE AIRCRAFT		RELEASED ON TARGETS						JETTISONED		RETURNED		OTHER	
						PRIMARY TARGETS		SEC. TARGETS		TARGETS OF OPP.							
		Nose	Tail	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
						Missions 1,2,3,4											
509 Gp	Special 10000#	Special		10	50.0	5	25.0	4	20.0	-	-	1	5.0	-	-	-	-
						Missions 5,6,7											
509 Gp	Special 10000#	Special		10	50.0	7	35.0	1	5.0	2	10.0	-	-	-	-	-	-
						Missions 8 & 9											
509 Gp	Special 10000#	Special		10	50.0	-	-	6	30.0	4	20.0	-	-	-	-	-	-
						Missions 10,11,12											
509 Gp	Special 10000#	Special		8	40.0	4	20.0	2	10.0	2	10.0	-	-	-	-	-	-
TOTAL	Special 10000#			38	190.0	16	80.0	13	65.0	8	40.0	1	5.0	-	-	-	-

NOTE: One bomb loaded per aircraft.

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MISSION ~~1-12~~
DATE ~~19-28 July~~ 1945

AIRCRAFT LOST AND DAMAGED - PERSONNEL CASUALTIES

UNIT	AIRCRAFT LOST							AIRCRAFT DAMAGED									PERSONNEL CASUALTIES				
	ENEMY A/C	ENEMY A/A	ENEMY A/C & A/A	ACC. & MECH	OTHER	UN-KNOWN	TOTAL	ENEMY A/C	ENEMY A/A	ENEMY A/C & A/A	ACC. & MECH	OWN GUNS	OTHER	UN-KNOWN	TOTAL MAJOR	TOTAL MINOR	TOTAL PARTICI-PATING	KILLED	MISS-ING	WOUNDED & INJURED	TOTAL CASUALTIES
										Missions 1,2,3,4											
509Gp							None									None	94				None
										Missions 5,6,7											
509Gp							None									None	98				None
										Missions 8 & 9											
509Gp							None									None	98				None
										Missions 10,11,12											
509Gp							None	-	1	-	-	-	-	-	-	1	76				None
TOTAL							None	-	1	-	-	-	-	-	-	1	366				None

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Authority NND 760063
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MISSION _____

DATE 19-26 July 1945

ENEMY OPPOSITION AND AMMUNITION EXPENDITURE

UNIT	ENEMY A/C SIGHTED	ATTACKS BY E/A	ENEMY A/C DESTROYED & DAMAGED			50 CALIBER AMMUNITION EXPENDITURE				
			DESTROYED	PROBABLY DESTROYED	DAMAGED	FIRED IN COMBAT	TEST FIRED	JETTISONED	ON LOST A/C	TOTAL
					Mission 1,2,3,4					
509 Gp	-	-		- -	-	-	620	-	-	620
					Mission 5,6,7					
509 Gp	3	-		- -	-	-	400	-	-	400
					Missions 8 & 9					
509 Gp	-	-		- -	-	-	520	-	-	520
					Missions 10,11,12					
509 Gp	-	-		- -	-	-	700	-	-	700
TOTAL	3	-		- -	-	-	2240	-	-	2240

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MISSIONS 1 - 12

DATES 19-28 July 1945

FLIGHT DATA & FUEL CONSUMPTION

MISSION NUMBER	#1-2-3-4	#5-6-7	#8-9	#10-11-12
UNIT (313TH WING)	509TH GROUP	509TH GROUP	509TH GROUP	509TH GROUP
AIRCRAFT CONSIDERED	9	10	10	8
AVERAGE FLYING TIME	13:14	12:36	13:04	12:38
FUEL CONSUMED:				
Average	6002	5875	6054	5973
Maximum	6284	6315	6530	6203
Minimum	5733	5307	5759	5682
FUEL REMAINING:				
Average	998	1125	980	1138
Maximum	1267	1623	1108	1605
Minimum	716	685	595	800
AVG. GALS. USED PER HOUR	453.7	466.3	463.2	472.9
TOTAL USED ON AIRBORNE A/C	54117	58753	60544	47782

WEIGHT DATA

NO. AIRCRAFT AIRBORNE	10	10	10	8
AVG. BASIC WT. OF AIRCRAFT	71779	72000	72000	72000
AVERAGE USEFUL LOAD	58578	58202	58392	59216
AVG. NO. OF BOMBS LOADED	1	1	1	1
AVG. WT. OF BOMBS LOADED	9800	9800	9800	9800
AVERAGE FUEL LOADED	7000	7000	7034	7111
AVG. WT. OF FUEL LOADED	42000	42000	42204	42666
AVERAGE MISC. WEIGHT	6778	6402	6388	6750
AVG. GROSS WT. AT TAKE OFF	130357	130202	130392	131216

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TWENTIETH AIR FORCE

CONSOLIDATED STATISTICAL SUMMARY OF COMBAT OPERATIONS

FORM 34

MISSION NO.

Special Bombing Missions 13 & 16

6th & 9th August 1945

SBM #13 - 509th Group - Hiroshima Urban Industrial Area (PV)
SBM #16 - 509th Group - Kokura Arsenal and City (PV), Nagasaki Urban Area (SV)

EFFECTIVENESS OF MISSIONS

Aircraft Airborne 11

Aircraft Bombing Primary Target 1

Aircraft Bombing Secondary Target . . . 1
Percent Of Bombing Aircraft Airborne. 100%

COST OF MISSIONS

Aircraft Lost . . . . . None

Aircraft Damaged. . . . . None

Crew Member Casualties. . . . . None

Bombing Results - Preliminary reports indicate the following damage:

Hiroshima - 4.1 sq miles or 60% of built-up area.
Nagasaki - 1.45 sq miles or 44% of built-up area.

DATE OF ISSUE

TOP -SECRET-

33RD STATISTICAL CONTROL UNIT

35PTU 7-11-58

DECLASSIFIED
Authority NND 760063
By NARA Date 9-27-05

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MISSION [redacted]

DATE 6 & 9 August 1945

AIRCRAFT PARTICIPATING

UNIT	NUMBER OF AIRCRAFT				TIME OF TAKE OFF			TIME OF RETURN			NUMBER OF AIRCRAFT						
	ON HAND	SCHEDULED	FAILING TO TAKEOFF	AIRBORNE	DATE	FIRST	LAST	DATE	FIRST	LAST	BOMBING PRIMARY TARGET	BOMBING SECONDARY TARGET	BOMBING OTHER TARGETS	COMPLETING AUXILIARY MISSIONS	EFFECTIVE	NON-EFFECTIVE	LANDING AT IWO JIMA
									SBM #13								
509 Gp	15	3	-	3 a	5 Aug.	1645 Z	1647 Z	6 Aug.	0458 Z	0507 Z	1	-	-	2	3	-	-
		3	-	3 b	5 Aug.	1537 Z	--	6 Aug.	0355 Z	-	--	--	--	3	3	-	-
									SBM #16								
509 Gp	15	3	-	3 a	8 Aug.	1749 Z	1751 Z	9 Aug.	1306 Z	1339 Z	-	1 c	-	2	3	-	-
		2	-	2 b	8 Aug.	1703 Z	-	9 Aug.	0919 Z	-	-	-	-	2	2	-	-
TOTAL	30	6	-	6							1	1	-	4	6	-	-
		5	-	5 b							-	-	-	5	5	-	-

35 PTD 7-13-54

a Includes 2 companion auxiliary aircraft.
b Weather aircraft.
c Flight conditions prevented aircraft from bombing the primary target, Kokura Arsenal target; bombed secondary visual target as directed on Field Order.

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