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Tactical Mission REPORT

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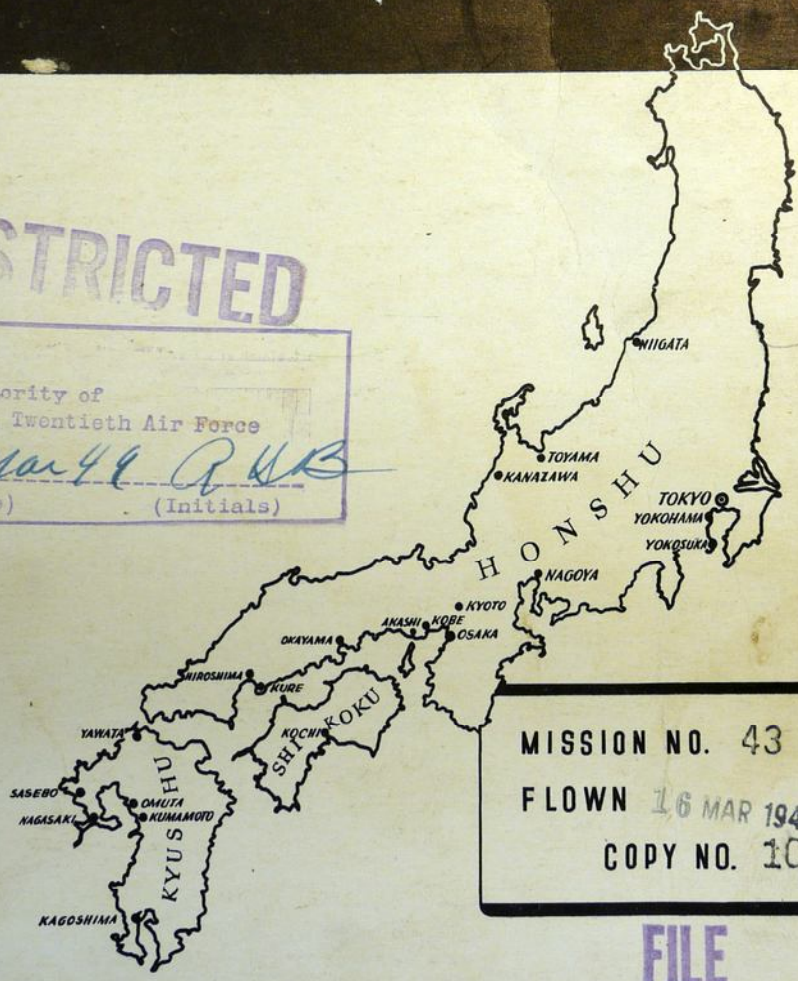

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HEADQUARTERS
XXI BOMBER COMMAND
APO 234

FOREWORD

This is the fourth report of a series covering five low-level night incendiary attacks. The broad planning for this phase appears in the first of these reports-Mission No. 40 against Tokyo.

* * * * *

This mission, executed by all 3 Wings of the XXI Bomber Command, was flown in honor of Brigadier General La Verne Saunders, B-29 pioneer, who is now recuperating in Walter Reed Hospital, Washington, D.C., from injuries received in an aircraft accident.

HEADQUARTERS
XXI BOMBER COMMAND
APO 234

TACTICAL MISSION REPORT

Field Order No. 46 Mission No. 43

Target: Urban Area of

KOBE, JAPAN

16 March 1945

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Prepared By:

A-2 Section
XXI Bomber Command

HEADQUARTERS
XXI BOMBER COMMAND
APO 234

19 April 1945

SUBJECT: Report of Operations, 16 March 1945.

TO: Commanding General, Twentieth Air Force, Washington 25, D.C.

1. IDENTIFICATION OF MISSION:

a. Field Order No. 46, Headquarters XXI Bomber Command, dated 13 March 1945, directed the 73rd, 313th and 314th Bombardment Wings to participate in an attack on Kobe, the fourth of the series of low-level incendiary strikes.

b. Targets Specified:

(1) Primary Target: Incendiary Zone No. 1 of the city of Kobe, as outlined on the photograph in Damage Assessment Report No. 23 (Annex D, Part III) of this report.

(2) No secondary or last resort target was designated.

2. STRATEGY AND PLAN OF OPERATIONS:

a. Selection of D-Day: Since the current series of incendiary, low-level efforts was planned for alternate nights and the weather prediction for the mission time was favorable, firm decision was made to attack on 16 March.

b. Importance of Target: Kobe not only is the sixth largest city in Japan with a population of 1,000,000, but also is the enemy's largest port and a key city in transportation. Its shipyards represent the country's largest ship-building and marine-engine concentration. The junction of the main railroad line from Shimonoseki with the main line west to Osaka and Tokyo is in Kobe, and a national highway, the only good road in and out of the city, runs through its congested business section. These important transportation facilities integrate Kobe closely with such key industrial facilities as steel, railway equipment, machinery, rubber and ordnance. The highly congested core of the city (an average population of over 100,000 per square mile) was selected for attack. A successful attack would handicap Japan's already inadequate ship-building and repair program; establish a bottleneck in the main east-west rail artery of Honshu; destroy stores in waterfront warehouses; and effect production in important war industries.

c. Other Factors in Selection of Target:

(1) Buildings: Only about 10 per cent of Kobe's buildings are of brick, sheet metal, stone, or concrete. Many of the modern buildings are surrounded by flimsy residences or themselves contain highly inflammable industrial materials.

(2) Water Supply: With no large river or canals, Kobe is dependent for its water supply on 3 large reservoirs, a supply which has never been plentiful and is considered inadequate for large-scale fire fighting.

(3) Fire-Fighting Equipment: Although fire hydrants are well distributed and fire-fighting equipment is believed to be the most modern available, the poor water supply and inadequate water pressure lessens effectiveness of this equipment.

d. Details of Planning--Operational:

(1) Introduction: Facts learned from the 3 previous missions were used in planning this attack. In long range planning prior to start of this series of attacks (See Tactical Mission Report No. 40), it was estimated that approximately 150 aircraft would be available for this attack; however, it was possible to schedule 342 planes since maintenance work was done faster than ever before in this Command and losses to the enemy were smaller than had been anticipated. Other facts brought out by the 3 previous missions and incorporated in planning this strike follow:

(a) Greater concentration and merging of fires must be achieved by the following methods:

1. Maximum number of aircraft must be over the target in the shortest period of time.

2. Aiming points must be as close together as possible.

3. Intervalometer spacing must be limited to 50 feet.

4. Bombs must not be dropped in isolated areas with no large fires burning nearby.

(b) Approaches to offset aiming points must be made by radar.

(c) Air discipline must be observed closely.

(d) A distinctive method of target marking must be used.

(e) Night landfalls made by individual navigators had been equal or superior to those made in daylight.

(f) Iwo Jima was a great saftey aid and a good radar check point in addition to furnishing facilities for homing radio range station.

(g) Low altitude missions to Honshu saved 100 miles in distance and an average 850 gallons of fuel per aircraft.

(2) Selection of Aiming Points: Equal forces were to attack the 4 aiming points selected, all within Incendiary Zone No. 1. One point was in the northwest corner of the zone; the second was south of the main railroad line; the third was northwest of the main railroad station; and the fourth was northeast of that point. The predicted ground wind was from the west and 3 of the 4 aiming

points were in the western section of Zone No. 1. In addition to the considerations listed, selection also was based on reasons listed in the introduction for operational planning. (For further information on aiming points see Radar Approach Chart No. RA-4 following this tactical narrative.)

(3) Bombing Plans:

(a) Determination of Bomb Load:

1. Each Wing dispatched 6 pathfinder aircraft which carried incendiary bombs fuzed instantaneous nose, non-delay tail, AN-M76, the most effective available to produce large size fires as aiming points for the main force.

2. The main force carried as many 500-pound incendiary clusters containing M-69 bombs as were available, with AN-M-17A1 clusters comprising the load for the others. E-28 and E-36 clusters were fuzed to open 2000 feet above the target, while E-46 clusters were to open 2500 feet above. These altitudes gave a greater density from individual planes than from higher openings and at the same time the striking velocity obtained was sufficient to penetrate the target. Since the M-69 bombs available were limited and there were no M-47's because of a shortage of T-19 cluster adapters, the M-17 clusters of 4-pound magnesium bombs were the only substitutes. Released from low altitudes and set to open at 3000 feet, these clusters gave the following advantages:

a. The change of bomb type from those used on similar missions would force fire fighters to adopt new tactics. Immediate attack with water greatly reduces the number of fires from the M-69 type bomb, but water causes magnesium bombs to burn faster.

b. Twenty per cent of the bombs contained explosive heads with variable delay explosion times. This would make fire fighting difficult until after explosions had occured, giving other bombs time to start fires.

c. The dock and industrial area subject to attack would be damaged by these bombs' greater penetrating ability.

d. Multiple hits would occur since the cluster contained 110 individual bombs, compared to the 38 in the M-69 type.

3. Every third airplane carried one T4E4 500-pound fragmentation cluster fuzed to open 3000 feet beneath the aircraft. These were to disrupt fire fighting as much as possible.

4. Ground spacing of 50 feet was used for all munitions, for reasons listed in paragraph (1) Introduction under Details of Planning--Operational.

(b) Bombing Methods Planned:

1. Because of Kobe's peculiar shape (10 miles long and 2 miles wide) aiming points had to be selected at greater distances apart than on previous missions. The aiming points were designated so that each wing hit down wind targets to prevent somke

from interfering with visibility. The initial point was the same for all aircraft, 34/19N - 135/06/30E. Altitudes and axes of attack for the Wings follow:

Wing	Altitude	Axis of Attack
73rd	6000 to 6500	08 degrees true (2 aiming points on same axis)
313th	7000 to 7800	10 degrees true
314th	5000 to 5800	06 degrees true

(See Radar Approach Chart No. RA-4 following this section for additonal details on axis of attack, aiming points, initial point, etc.)

2. The shape of the city offered an advantage in giving an excellent shore line as an offset aiming point.

3. Bombardiers were instructed to make a radar bombing run over a radar aiming point before making any visual correction.

(4) Navigational Planning:

Route	Reasons for Choice
Base to 25/00N - 143/00E to	The route was planned to avoid Iwo Jima operations by 75 miles.
27/15N - 140/53E to	This enabled use of Nishino-Shima as a radar check point.
35/53N - 135/03/30E to	Landfall was designated on Hino-Saki Point. The bay area between Honshu and Shikoku provided a good radar identification point and permitted easy orientation for navigators if they had made landfall error.
34/19N - 135/06/30E (IP) to	This initial point provided a peninsula which intensified land-water contrast and permitted continous orientation along Osaka Bay during the bomb run.
TARGET to 34/44N - 134/55E to	Kobe. A left hand turn off the target avoided Osaka defenses.
33/00N- 134/45E to Base	Planned west of Awaji-Shima, this point avoided incoming forces and land defense areas. Remainder of the route was direct to base, passing west of Iwo Jima to permit navigators to use radio range stations and to land in event of emergency.

(5) Flight Engineer's Planning:

(a) Except for the bombing run, which was to be made at 250 mph calibrated air speed for greater saftey, the flight plan to be flown was planned to secure maximum fuel economy and aircraft performance, The entire mission was to be flown by individual aircraft.

(b) Aircraft of the 73rd and 313th Wings carried an average fuel load of 6800 gallons, filling wing and center wing tanks to capacity. Because of greater distance, aircraft of the 314th Wing carried an additional full bomb bay tank, giving that Wing an average fuel load of 7300 gallons.

(c) No maximum or minimum bomb load was specified, but average load estimated for the 73rd and 313th Wings was slightly more than 15,000 pounds and for the 314th Wing 10,000 pounds.

(d) Two hundred rounds of 50-caliber ammunition were carried in tail turrets by the 73rd and 313th Wings, while none was specified for the 314th.

(6) Radar Planning:

(a) One initial point, a sharp projection of land into Osaka Bay was used for all Wings.

(b) From the initial point 3 approaches into the target were used: 6, 8 and 10 degrees True. The sharp and distinctly shaped harbor shore line was used as an offset aiming point instead of any one designated point.

(c) Radar operators were provided with radar navigation and approach charts which permitted them to establish proper course. The 73rd Wing used the small docking area for final correction; the 313th Wing set its course along the eastern dock areas; and the 314th Wing used a course to the right of the bulge at the mouth of the Suma River. All wings used the southern coastline of Kobe as a timing point.

(For additional information on radar planning see Approach Chart RA-4 and Scope Photos (RS-18) following the tactical narrative.)

(7) Radar Counter Measures: Routine search for enemy radar signals on frequencies between 100 mc and 3000 mc by 4 Radar Observers was planned.

(8) Air-Sea Rescue Planning:

(a) Naval: The Navy was furnished with details of this mission and requested to furnish available facilities for air-sea rescue purposes. The following were made available:

1. Five submarines were stationed, during the entire mission, at the following points: 33/00N - 134/40E; 32/30N - 135/00E; 31/30N - 135/30E; 30/30N - 136/30E; and 29/30N - 137/00E.

2. One plane tender was stationed at 18/00N-144/00E until all aircraft had passed on return from the mission.

3. Two Dumbo aircraft were assigned as follows: 1 at 22/00N - 141/40E from 2000Z to the end of the mission and 1 at 19/00N - 143/30E from 2100Z until the end of the mission.

4. Picket boats and crash boats were on duty during critical periods of take-off and landing until relieved by the Control Tower.

(b) AAF: This Command assigned 3 Super-Dumbo airplanes to orbit the following submarine positions for the specified times: 32/30N - 135/00E from 161600Z to 161900Z; 31/30N - 135/30E from 161630Z to 161845Z, and 30/30N - 136/30E from 161640Z to 161830Z.

(For additional details on air-sea rescue planning, see exhibit following Part VI in Annex A)

d. Details of Planning--Intelligence:

(1) Enemy Fighter Reaction: Information obtained from general intelligence sources indicated that the Kobe area had more fighters than any of the Command's other priority targets, in that there were 150 single-engine aircraft within a 50-mile radius and a total of 250 within a 100-mile radius. There were few, if any, twin-engine airplanes in the vicinity. These figures and past experience indicated that our aircraft would sustain more attacks during this mission than on previous similar strikes and that enemy night fighters preferred tail attacks. Because of these considerations, it was decided that ammunition would be carried in the tail guns of the 73rd and 313th Wings' planes.

(2) Enemy Antiaircraft:

(a) On the basis of flak reports on previous low level attacks and the much smaller antiaircraft defenses at Kobe (61 heavy guns and 31 automatic weapons), it was decided that the same altitude of attack would be used (5000 to 7800 feet). Staggering of aircraft in these altitudes was also planned.

(b) No barrage balloons had been reported in the area. Eighteen serachlights, a much smaller number than of other heavily defended areas, were reported. None of the searchlights was of the "spread beam" type. For these reasons, barrage balloon and searchlight considerations did not affect the planning of the mission.

(c) The best radar approach to Kobe was also the best from the point of view of flak risk. The turn left at target past Akashi and then south over the Inland sea and Awaji Island brought the aircraft within the defended areas for the shortest possible time. The turn south was made before the Himeji defenses were encountered.

3. EXECUTION OF THE MISSION:

a. Take-off: Pathfinder aircraft of the 314th Wing were scheduled to take-off at 160940Z while those of the 73rd and 313th Wings were to take-off at 161010Z. Take-off of the total force was as follows:

Wing	Aircraft Airborne	First Take-off	Last Take-off
73rd	151*	161011Z	161156Z
313th	128	161009Z	161135Z
314th	52	160939Z	161117Z
TOTAL	331 *	160939Z	161156Z

* Excludes 3 Super Dumbos and includes 1 spare A/C numbered 342.

b. Route Out: The course flown was generally as briefed, with Loran being most effective aid on the mission since turbulence and cloud cover at 1000 feet hampered celestial navigation. Radar was used for landfall and bomb run. Awaji Shima and the initial point were closed up on several radar scopes and many navigators and radar operators confused the southern point of the island with the Kobe aiming point. Despite turbulences and light showers, weather on the route out was generally good.

c. Over the Target:

(1) Primary Target: With 5/10 cumulus clouds, base 3000 feet and top 6000 feet, 250 of the 306 aircraft over the primary target bombed by radar. Bombing was at altitudes from 4660 to 9000 feet and from 1738Z to 1946Z, with 2328.1 tons of bombs being dropped. (See Consolidated Statistical Summary, Annex E, for details).

(2) Last Resort Target: One aircraft of the 73rd Wing dropped 9.1 tons of bombs on Shingu at 1900Z from an altitude of 7900 feet.

(3) Targets of Opportunity: One aircraft of the 73rd Wing dropped 9.1 tons and 1 aircraft of the 313th Wing dropped 8.5 tons of bombs, both being on unknown targets from unknown altitudes and at unknown times.

(4) Twenty-one aircraft were non-effective. (See Annex E, Consolidated Statistical Summary)

d. Route Back: After bombing, a majority of aircraft flew back as briefed. Two flew directly from target to base, going west to Iwo Jima, while 15 landed at that island, 14 refueling and one for minor maintenance. Weather for the return trip was similar to that en route to target.

e. Landing: Aircraft of the main force landed at bases under good weather conditions as follows:

Wing	First Landing	Last Landing
73rd	162340Z	170256Z
313th	170007Z	170250Z
314th	170031Z	170241Z
TOTAL	1623402	1702562

Landings exclude aircraft that landed at Iwo Jima and returned later.

f. Losses: Three B-29's were lost due to unknown reasons. (The tonnage of 2 are included under "Targets of Opportunity" that of the third under "Primary Target.")

g. Operations Summary:

(1) Navigation:(See Annex A, Part I, for details): Celestial work was hampered by cloud cover and navigators had to depend on Loran as an aid to their dead reckoning.

(2) Bombing:(See Annex A, Part II, for details) From the bombing standpoint the mission was successful. Few mechanical failures were reported, with most bombs being dropped in the briefed areas.

(3) Flight Engineering:(See Annex A, Part III, for details): The times required for climb to bombing altitude varied because different types of procedures were used. Fuel consumptions were slightly more than predicted due to slight head winds encountered. The 73rd Wing carried the greatest average bomb load that has been carried to date -- 16,637 pounds.

(4) Radar:(See Annex A, Part IV, for details). Approximately 82 per cent radar bomb releases were made. Normal use was made of SCR-718 radar altimeter and SCR-695 IFF equipment. Maximum range of Loran fixes was between 700 and 1500 nautical miles.

(5) Gunnery:(See Annex A, Part V, for details): More enemy fighters attacked than on previous night missions. Equipment operated satisfactorily.

(6) Air-Sea Rescue: Three B-29's were missing due to unknown causes. Since no positions were given, no searches could be instituted.

g. Weather:(See Annex B, for details): Weather conditions for the mission were generally as predicted. Winds on the return were from the south instead of from the north, as predicted. Weather conditions at bases were good for take-off and landing.

h. Communications:

(1) Radar Counter Measures:(See Annex C, Part I, for details) No offensive counter measures were employed. Signals intercepted in the target area failed to indicate extensive use of gun-laying activities. Suspected AI signals were intercepted, but could not be definitely associated with coordinated fighter attacks.

(2) Communications:(See Annex C, Part II, for details): A total of 39 bearings was requested and all were obtained. Net discipline was good.

i. Intelligence Summary:

(1) Enemy Fighter Reaction:(See Annex D, Part I, for details). Although 280 Japanese fighters were sighted, only 96 of them attacked with 104 attacks in total. Quality and quanity of oppostion indicated the enemy's continued inability to intercept our forces with other than negligible opposition. However, proportion of aircraft sighted to those attacking was the highest yet experienced on night missions.

(2) Enemy Antiaircraft and Air-to-Air Bombing:(See Annex D, Part II, for details) Enemy antiaircraft was meager and inaccurate. Some air-to-air bombing and rockets were observed.

(3) Bombing Results and Damage Assessment: (See Annex D, Part III, for details); Two post-mission reconnaisance flights were made and from photographs and subsequent interpretation the following results were indicated:

(a) Of Kobe's 14-square mile area, 3.0 miles (21.4 per cent) were destroyed.

(b) Forty-six per cent of Incendiary Zone No. 1 was destroyed.

(c) Target 169 (Mitsubishi Heavy Industry) was 8 per cent destroyed; Target 171 (Kawasaki Heavy Industry) was 13 per cent destroyed; and the Arata Shipyard was 21 per cent destroyed.

(d) Target 34 (Kobe Harbor District No. 2) was destroyed.

Curtis E. LeMay.
CURTIS E. LeMAY
Major General, U.S.A.
Commanding

A-2 SECTION

XXI BOMBER COM

RADAR APPROACH CHART-JAPAN

KOBE-OSAKA AREA

SCALE 1:250 000

CHART NO. RA-4

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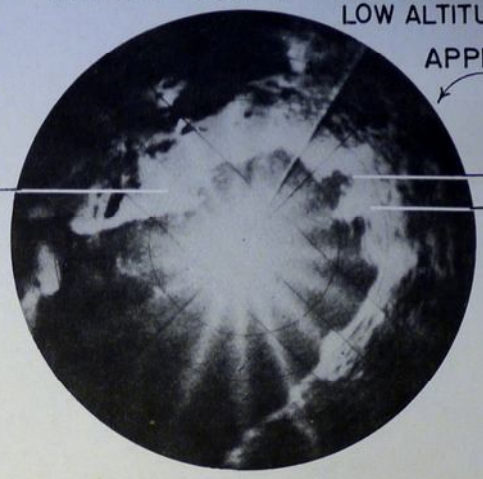
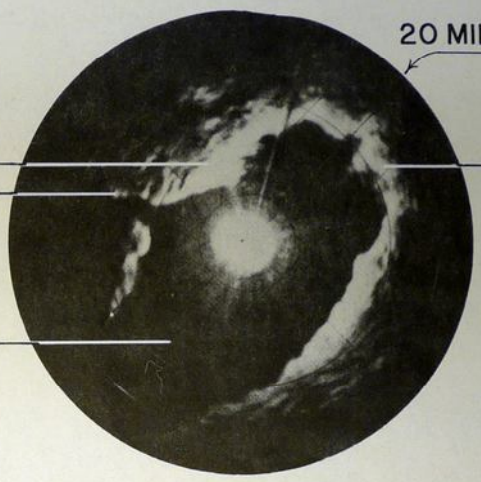
APPROACHES TO KOBE AND OSAKA

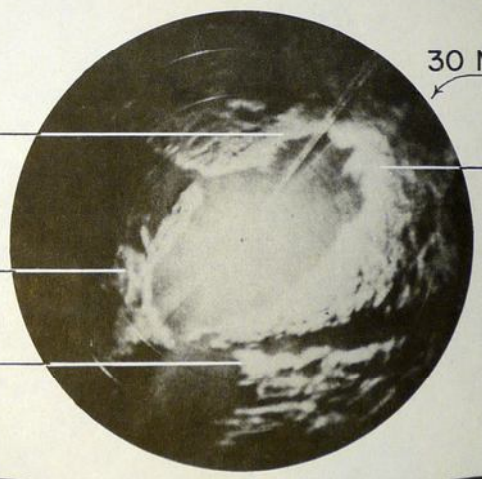
RS-18

ACTUAL SCOPE PHOTOS

LOW ALTITUDE (ABOUT 6000')







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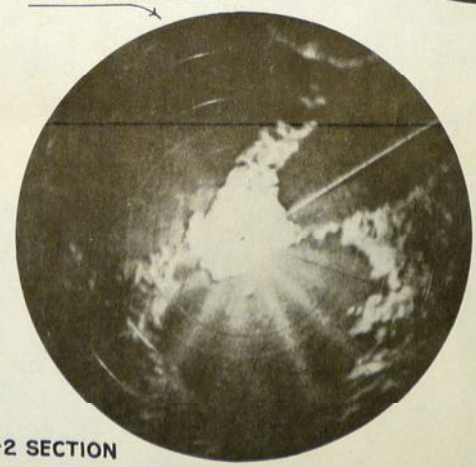

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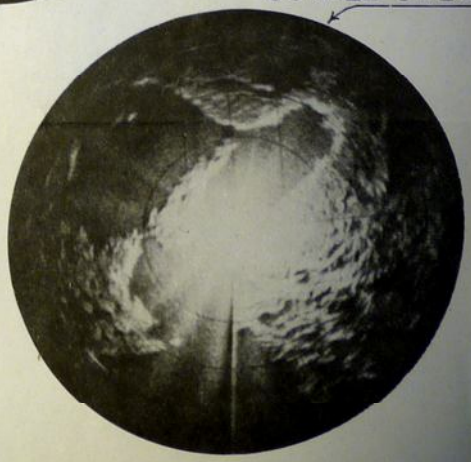

A-2 SECTION
XXI BOMBER COMMAND
MARCH, 1945

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ANNEX

A

OPERATIONS

Exhibit - Track Charts

Part I - Navigation

Part II - Bombing

Part III - Flight Engineering

Part IV - Radar

Part V - Gunnery

Part VI - Air-Sea Resuce

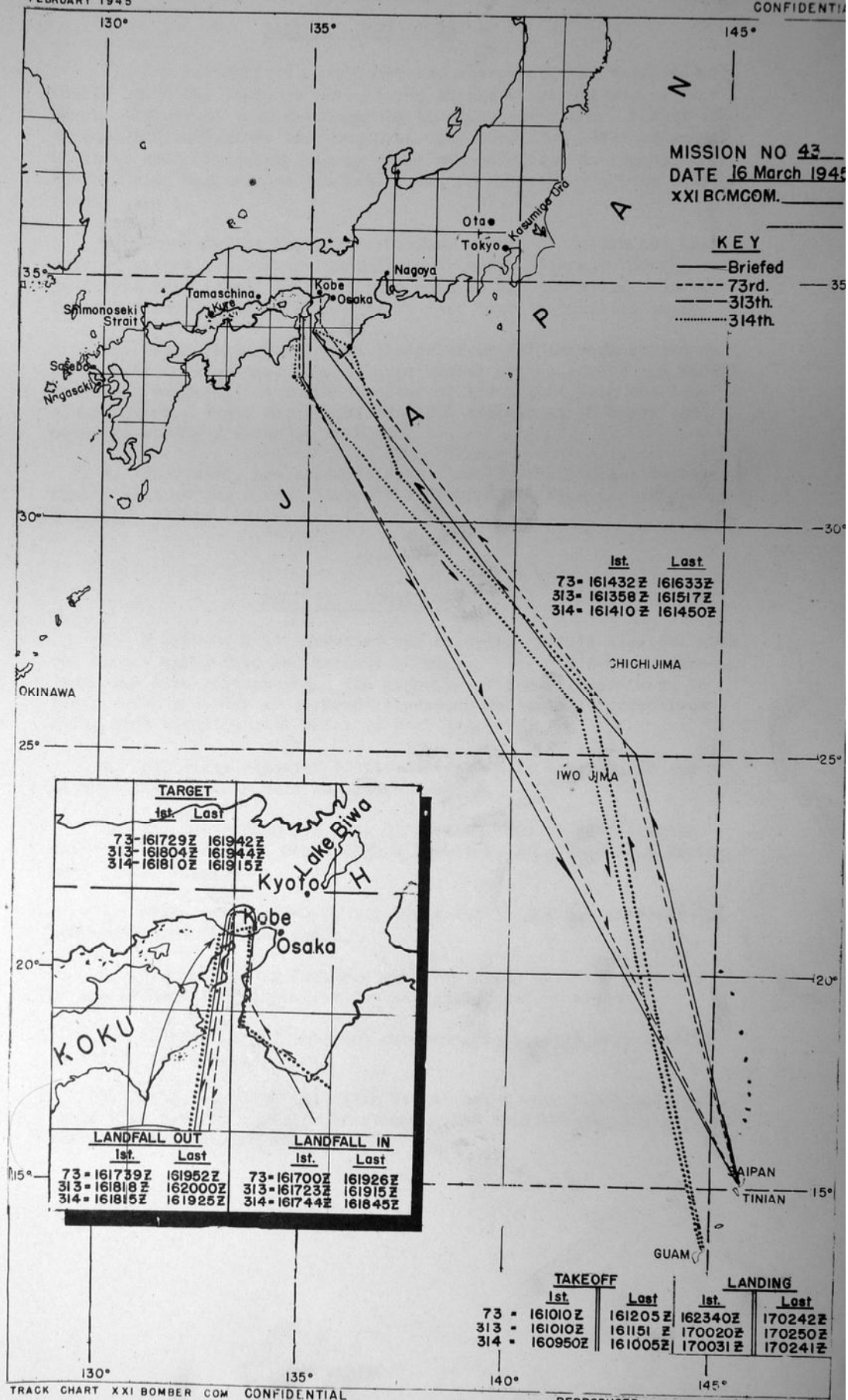
Exhibit - Air-Sea Rescue Map

Mission No. 43

16 March 1945

FEBRUARY 1945

CONFIDENTIAL



TRACK CHART XXI BOMBER COM CONFIDENTIAL

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