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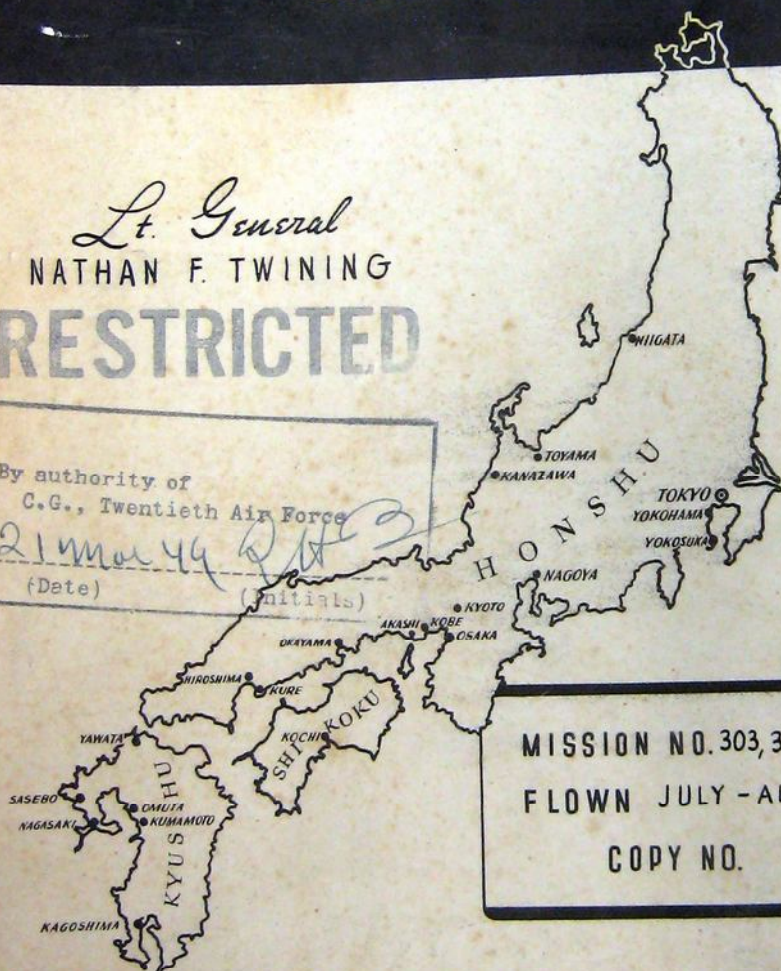
Tactical Mission REPORT

Lt. General
NATHAN F. TWINING

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By authority of
C.G., Twentieth Air Force

21 Mar 44 *NT*
(Date) (Initials)



MISSION NO. 303, 310, and 315

FLOWN JULY - AUGUST '45

COPY NO. 6

HEADQUARTERS
TWENTIETH AIR FORCE
APO 234

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F O R E W O R D

This Tactical Mission Report
includes 3 special precision radar
strikes flown by the 315th Bombardment
Wing against oil refinery and production
targets.

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TWENTIETH AIR FORCE
APO 234

TACTICAL MISSION REPORT

Field Orders No. 10, 12, and 14

Missions No. 303, 310, and 315

Targets: Shimotsu Oil Refinery (90.25- XXI BC 5046), Kawasaki
Petroleum Complex (90.17-116/127/130/128), Ube
Liquefaction Co. (90.32-1841).

28/29 July, 1/2 and 5/6 August

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Prepared By:

A-2 Section
Twentieth Air Force

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By Auth. of the C.G.:
Twentieth Air Force :
29 Jul 45 JDC
Date Initials :
:

HEADQUARTERS
TWENTIETH AIR FORCE
APO 234

SUBJECT: Report of Attacks Against 3 Precision Targets on 28/29 July,
1/2 and 5/6 August 1945.

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

1. IDENTIFICATION OF REPORT:

a. Field Orders Number 10, 12, and 14, Headquarters Twentieth Air Force, dated 27 July, 1 and 5 August 1945 respectively, directed the 315th Bombardment Wing to participate in night attacks against 3 precision targets on Honshu in Twentieth Air Force Missions Number 303, 310 and 315.

b. Targets Specified:

(1) Primary Visual and Radar Targets:

<u>Mission Number</u>	<u>Target</u>	<u>Force Assigned</u>
303	Shimotsu Oil Refinery (90.25 - XXI - 5046)	80 aircraft
310	Kawasaki Petroleum Complex (90.17 - 116/ 127/130/128)	110 aircraft
315	Ube Coal Liquefaction Co. (90.32 - 1841)	100 aircraft

(2) No other targets were specified.

2. MISSION PLANNING:

a. Selection of Targets: The selection of these targets was a continuation of the policy of assigning oil storage and refinery targets to the 315th Wing to be attacked by night radar precision bombing employing the APQ-7 radar set.

b. Importance of Targets:

(1) The Shimotsu Oil Refinery (Mission Number 303), located 40 miles southwest of Osaka and situated 1½ miles southwest of the Maruzen Oil Refinery in Shimotsu, is an important refinery of crude petroleum. Its storage capacity was estimated at 600,000 barrels. The ground area of the target installations is approximately 3,800,000 square feet.

(2) The target for Mission Number 310 actually consists of 4 targets. Three of these 4 targets (90.17 - 116/127/130) are grouped together on a block of reclaimed land and together are credited with almost 25 per cent of central Japan's crude oil refining capacity and 20 per cent of its storage capacity. The Petroleum Center (Target 90.17 - 128), which is the fourth target in the grouping of 4, is located near the other 3. This target has an estimated refining capacity of 2,000,000 barrels per year and a storage capacity of 1,230,000 barrels.

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The force of 110 B-29's planned for this mission was to be equally divided against 2 main points of impact. One force of 55 B-29's would attack a main point of impact located at the center of the complex of 3 targets (90.17 - 116/127/130). The other force of 55 B-29's was to attack the main point of impact located at the center of the Petroleum Complex (90.17 - 128). These targets are located among the extensive oil refining and storage facilities on the Kawasaki-Yokohama waterfront.

(3) The Ube Coal Liquefaction Company (90.32 - 1841) is located on the waterfront at Ube to the east of the mouth of the Koto Gawa. Ube is located on the Inland Sea about 20 miles east of Shimonoseki Straits. This is the largest synthetic plant in Japan proper. It measures 3000 by 3500 feet overall and has a rated capacity of 475,000 barrels.

c. Time Factors: Aside from the policy of conducting attacks by the 315th Wing at night and simultaneously with operations of other Wings of the Air Force, time factors were of little importance in planning of these missions.

d. Munitions and Fuel Loading:

(1) Selection of Bombs and Fuzes:

(a) Bombs: The 500- pound general-purpose bomb was selected for use against all targets on these 3 missions. The Shimotsu Oil Refinery (Mission Number 310) and the Kawasaki Petroleum Complex, 90.17 - 116/127/130/128, Mission Number 310 contained installations of both storage and refinery type, against which the large number of hits obtainable by the use of this size bomb should result in maximum damage to both manufacturing and storage facilities. The Ube Coal Liquefaction Company (Mission Number 315) contains buildings of reinforced concrete and wood frame type, all of which are small in plan area. The use of larger size bombs would prove most effective against the concrete structures, but would not permit maximum tonnage to be carried and would also decrease the number of direct hits. It was believed, in selecting the 500-pound bomb, that this bomb would be capable of destroying the wood frame structures and also would seriously damage the reinforced installations.

(b) Fuzes: Fuzing of .1-second delay nose were selected for the bombs to be employed on all 3 missions. This delay fuze was selected as an assurance fuzing only, since nose fuzes with shorter delays were not available. For use on the bombs to be employed on Mission Number 303, the non-delay tail fuze was selected. It was believed that the non-delay tail fuze would give floor level burst to bombs hitting buildings, ground level bursts to near misses, and contact functioning to bombs hitting the storage tanks. The resulting directional blast in the case of contact functioning, it was believed, would have sufficient crushing effects to destroy the tanks. For use on Mission Number 310, the .025-second delay tail fuze was selected as it would allow penetration of the bomb beneath the tank tops to a sufficient depth to assure detonation below the contents level, resulting in maximum damage. This delay would also be most effective against the buildings in the target area. For use on Mission Number 315, the .01-second delay tail fuze was selected as it would allow detonation beneath the roof level of the wood structures as well as allow penetration of the concrete installations.

(2) Bomb, Ammunition, and Fuel Loading: It was estimated that 18,500 pounds of bombs, 600 pounds of ammunition, and approximately 6500 gallons of fuel per aircraft would be carried on these missions.

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c. Flight Planning:

(1) Route: Aircraft were to fly the following routes on these missions:

(a) Mission Number 303:

<u>Route</u>	<u>Reason for Selection</u>
Base to Iwo Jima	Tactical Doctrine
to	
3000N - 13900E	This point was chosen in order to avoid flying over friendly forces.
to	
3322N - 1340230E	Landfall was to be at Hane Saki Point on lower Shikoku. This point allows a straight approach to the target through the initial point.
to	
3350N - 13445E (IP)	This point on the eastern peninsula of Shikoku, just to the left of I Shima would be easily identified by radar for a good approach to the target.
to	
Target	Right turn.
to	
3000N - 13900E	This point was chosen in order to avoid flying over friendly forces.
to	
Iwo Jima to Base	Tactical Doctrine.

(b) Mission Number 310: Two routes were specified for this mission because of weather considerations. The Commanding General of the 315th Wing was to make a decision immediately before take-off as to which route would be utilized.

Route "A"

Reason for Selection

Base to Iwo Jima	Tactical Doctrine.
to	
343630N - 1385100E	This landfall point on the lower part of the peninsula between Sagami and Suruga Bay was expected to be easily identified.
to	
3457N - 13909E (IP)	Kawana Misaki Point on the eastern shore of Sagami Bay. This point was expected to be easily identified by radar for the bomb run.
to	
Target	
to	
353230N - 1402700E	This point (land's end) was chosen in order to route the forces over the least defended areas.
to	
Iwo Jima to Base	Tactical Doctrine.

Route "B"

Reason for Selection

Base to Iwo Jima	Tactical Doctrine.
to	
3436N - 13813E	This point (Omaki Zaki Point) at the entrance to Suruga Bay was expected to be easily identified for landfall.
to	
350200N - 1384730E (IP)	This point (Ajira Point) on the eastern coast of Sagami Bay was expected to be easily identified by radar for a good approach to the target.
to	
Target	
to	
353230N - 1402700E	This point (land's end) was chosen in order to route the forces over the least defended areas.
to	
Iwo Jima to Base	Tactical Doctrine.

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(c) Mission Number 315:

<u>Route</u>	<u>Reasons for Selection</u>
Base to Iwo Jima	Tactical Doctrine
to	
3301N - 13306E	This point (Inomino Misaki Point) on the lower part of Shikoku was expected to be easily identified.
to	
334330N-1314100E (IF)	This island (Hime Jima), north of Kyushu, was expected to be easily identified for the best radar approach to the target
to	
Target	
to	
2900N - 13700E	This point was chosen in order to avoid flying over friendly forces.
to	
Iwo Jima to Base	Tactical Doctrine.

(2) Radar Factors:

(a) Mission Number 303: Landfall, located on the large pointed peninsula on Shikoku, would be excellent for making radar wind runs since the approach to this point from the south would minimize the error in wind determination. The initial point, excellently located on a peninsula, was expected to be easily identified by all radar operators. The planned axis which approximates a straight line from landfall to the target would allow each operator ample time to recheck the ground speed and kill drift. It was believed that the target, located on the coast with numerous coastal reference check points to aid in target identification and resolved on the radar scope as a single radar return, could be bombed by using the direct radar synchronous method.

(b) Mission Number 310: Landfall, which was to be made at a point on the southern tip of the arrowhead shaped peninsula south of Mount Fuji, was expected to be easily identified by all operators at a range of approximately 50 nautical miles and would be a good wind point for use in making a radar wind run. The course from landfall through the initial point (a distinctive coastal check point) to the target approximates a straight line. No difficulty was expected in identifying the target area by radar since the targets are located on patches of reclaimed land separated by canals and would be resolved as good returns on the APQ-7 radar equipment. With a straight course from landfall to the target each aircraft, it was expected, would be able to check the ground speed and drift for bomb release. Direct radar synchronous bombing was to be employed.

(c) Mission Number 315: Landfall, which was to be made at a prominent peninsula on the southwest coast of Shikoku, was expected to be easily recognized by radar. It was believed that the use of the islands and the peninsular coast line of the Inland Sea would facilitate radar navigation. The initial point, the large island of Hime Jima, was expected to be easily picked up by radar and should provide a good run to the target. It was believed that the course from landfall to the target, which approximates a straight line, would allow the radar operator ample time for computing all important data. The target, located on a coastal projection just north of the city of Ube, would be resolved as a separate return. It was planned to employ a direct radar synchronous release on this target.

(3) Antiaircraft Factors:

(a) Mission Number 303: Only meager and inaccurate, medium flak had been encountered over the Shimotsu-Wakayama area on

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previous missions. The planned route would bring strike aircraft within range of some very small defenses but only meager and inaccurate fire was expected at the planned altitudes of 10,000 to 10,800 feet.

(b) Mission Number 310: Strike aircraft, on the planned approach, would be within range of 128 heavy guns in the immediate vicinity of the target, approximately 30 heavy guns in the Yokosuka area (Sagami Bay approach), and approximately 8 heavy guns of the Hiratsuka defenses. Approximately 50 to 70 searchlights would be effective on the planned approach. Cloud undercast and searchlight counter measures were expected to decrease the effectiveness of these searchlights. The route and axis of attack were determined primarily by the standpoint of allowing for the best radar return. In order to penetrate to the Kawasaki docks area, it was difficult to plan a route that would avoid much of the concentrated defenses. In order to reduce the effectiveness of enemy antiaircraft concentrations, the axis of attack was planned as closely as possible to a downwind approach. This approach had been used before, but it was still one of the safest axes within operational limits. Only fairly accurate flak was expected at the planned altitude of 16,000 to 17,000 feet. On leaving the target area, a breakaway to the right was specified, avoiding the larger antiaircraft concentrations in South Tokyo and the Kisarazu defenses on Chiba peninsula.

(c) Mission Number 315: No antiaircraft defenses were apparent in the Ube area. However, very meager and inaccurate medium fire had been encountered there on previous missions. This would have no effect at the planned altitude of 10,000 to 11,000 feet. The route was planned to avoid other antiaircraft defenses. A sharp breakaway to the south, after bombs away, was planned in order to avoid the Shimomoseki-Moji defenses.

f. Bombing Data: Axes of attack, bombing altitudes, anticipated drift, and other pertinent bombing data were as follows:

<u>Mission Number</u>	<u>Axis of Attack (degrees)</u>	<u>Bombing Altitude (feet)</u>	<u>Drift (degrees right)</u>	<u>Length of Run (miles)</u>	<u>Time of Run (minutes)</u>	<u>Ground Speed (M.P.H.)</u>
303	50	10,000-10,800	2½	29	6½	282
310	40	16,000-17,000	3	42	10	280
315	298	10,000-11,000	3½	29	7	242

g. Defensive Tactics:

(1) Fighter Escort: Since these missions were to be flown at night, no fighter escort was planned.

(2) Enemy Fighter Reaction:

(a) Mission Number 303: It was estimated that this strike would probably meet 5 to 15 enemy fighters and interception would be nil to negligible.

(b) Mission Number 310: It was believed that 20 to 30 enemy fighters would attempt interception on this mission. Interception would probably fall off sharply after crossing Tokyo Bay on withdrawal.

(c) Mission Number 315: It was believed that not more than 15 to 20 enemy fighters would be met on this mission, most of which would intercept in the straits area.

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(3) FCM:

(a) Mission Number 303 and 315: It was planned to carry rope in each aircraft to be dispensed when protection was needed from enemy searchlights. Since the 315th Wing was not yet equipped with FCM equipment, search and jamming could not be conducted.

(b) Mission Number 310: Because of the large concentrations of antiaircraft in this target area, the 314th Wing was to furnish 2 jamming airplanes to cover this strike since the 315th Wing was not yet equipped to conduct jamming. The special airplanes (B-29's) were to orbit the point 3530N - 13942E over a radius of 10 miles at an altitude of 19,000 feet for one aircraft and 19,500 feet for the other. The special jamming aircraft were to be equipped to barrage jam the 72 to 84 and 190 to 210 megacycle regions and to spot jam any gun-laying or searchlight signals appearing outside the barrage. Rope was to be carried by all strike aircraft to be dispensed when protection was needed from radar-controlled enemy flak and searchlights.

h. Air-Sea Rescue*: (See Annex A, Part VII, for Air-Sea Rescue Chart).

(1) The Navy was furnished with details of these missions and in addition to the regular service of providing crash boats in the vicinity of the B-29 bases for take-offs and landings, provided the following air-sea rescue facilities:

(a) Mission Number 303: 11 Submarines, 8 Dumbos, and 3 surface vessels.

(b) Mission Number 310: 8 Submarines, 11 Dumbos, and 3 surface vessels.

(c) Mission Number 315: 11 Submarines, 11 Dumbos, and 4 surface vessels.

(2) This Air Force assigned the following number of Super Dumbos to orbit submarine positions: Mission Number 303, 9; Mission Number 310, 4; Mission Number 315, 5.

* The Air-Sea Rescue facilities listed herein were not assigned solely for these missions. Other major missions flown by the other Wings in this Air Force on the same dates as these missions accounted for the major consideration in the assigning of these extensive facilities.

3. EXECUTION OF THE MISSIONS: (For details of these missions, see Annexes that follow this narrative).

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

<u>Mission Number</u>	<u>Aircraft Airborne</u>	<u>First Take-Off</u>	<u>Last Take-Off</u>
303	82	280630Z	280756Z
310	128	010630Z	010744Z
315	<u>111</u>	050836Z	050823Z
Total	321*		

* The above total does not include 6 wind run aircraft (2 for each mission).

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b. Route Out: Long range navigation was accomplished by individual aircraft on all 3 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: Target area navigation, wind determination, and bombing were accomplished by radar. A total of 307 B-29's dropped 2621.5 tons of 500-pound-general purpose bombs on all primary targets as follows:

<u>Mission No.</u>	<u>A/C Bombing</u>	<u>First Bombing</u>	<u>Last Bombing</u>	<u>Altitude of Release</u>
303	78	281302Z	281523Z	10,100 to 12,000 feet
310	121	011212Z	011436Z	16,400 to 18,600 feet
315	108	051324Z	051531Z	10,300 to 12,600 feet

* These figures include bombing by 5 wind run aircraft.

(2) Targets of Opportunity: A total of 9 B-29's, 1 of which was a wind run aircraft and 3 of which also bombed primary targets, dropped 65.2 tons of 500-pound general-purpose bombs on various targets of opportunity.

(3) Fourteen aircraft were non-effective on these missions.

d. Route Back: Return to bases was as briefed. A total of 14 B-29's landed at Iwo Jima on these missions.

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

<u>Mission Number</u>	<u>First Landing</u>	<u>Last Landing</u>
303	282003Z	282206Z
310	012016Z	012209Z
315	052126Z	052338Z

f. Losses and Damage: No aircraft were lost on any of these missions. A total of 26 B-29's were damaged on these missions, 24 by enemy antiaircraft and 2 for mechanical reasons. Twenty-two of these 26 aircraft received damage as a result of enemy antiaircraft on Mission Number 310.

g. Execution Versus Planning: There were no major differences in the execution and the planning of these missions.

4. RESULTS OF MISSIONS: (See Annex D, Part III, for details).

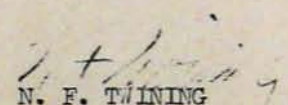
a. Mission Number 303, Shimotsu Oil Refinery: It was estimated that 75 per cent of the total storage tank capacity of this plant was destroyed or damaged, in addition to heavy damage inflicted on other units of the installations.

b. Mission Number 310, Kawasaki Petroleum Complex (90.17 - 116/127) and the Petroleum Center (90.17 - 128)*: Photo coverage shows the Mitsubishi Oil Refinery (90.17 - 116), to be practically inoperative,

with 12 of the 14 primary buildings of these installations destroyed. The Hayama Petroleum Refinery (90.17 - 127) sustained crippling damage, with 40 per cent of its primary structures being destroyed. The Petroleum Center (90.17 - 128) sustained damage to its oil storage capacity to the extent of 42 per cent as a result of this mission, in addition to other major damage to these installations and others adjoining.

* Damage listed herein for targets 90.17 - 116/127 included damage inflicted to the targets as a result of Mission Number 291.

c. Mission Number 315, Ube Coal Liquefaction Company: Damage to this target as a result of this mission alone was impossible to assess because of the fact that this strike was dispatched before photo reconnaissance could be obtained to show the results of previous strikes to the same target. As a result, damage assessment reports showed the combined damage to this target resulting from 2 previous strikes (Missions Number 270 and 283) and the present one (Mission Number 315). Damage to this target as a result of these 3 missions was extensive. The entire storage capacity of the plant has been damaged along with all the main installations including the Low Temperature Carbonization plant, gas generating plant, power stations, hydrogenation plant, and refining unit, and other installations.


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

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ANNEX

A

OPERATIONS

- Part I - Navigation Report and Track Chart
- Part II - Mean Points of Impact
- Part III - Bombing
- Part IV - Flight Engineering Report and Chart
- Part V - Radar Report and Charts
- Part VI - Gunnery
- Part VII - Air-Sea Rescue Charts

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

PART I - NAVIGATION

1. Long range navigation was accomplished by individual 315th Wing aircraft to precision targets - Shimotzu Oil Refinery, Kawasaki Petroleum Center, and Ube Coal Liquefaction Co. No errors beyond the limits of navigation accuracy were reported and no planes failed to bomb the primary target due to navigational error.
2. Target area navigation, wind determination and bombing were accomplished by radar. Three cases of incurrent radar orientation and/or overrunning the initial point were reported, but proper corrections were made to the targets in all cases.
3. Compressibility was used on Mission Number 310 only and was not used on the other 2 missions. Time compression on Mission Number 310 was satisfactory.
4. Return to base was as briefed, with the exception of 14 aircraft landing at Iwo Jima.
5. Loran work on these missions was as follows:

a. Number Loran LOP's	22775
b. Number Loran Fixes	9172
c. Number Malfunctions	8
d. Average Distance received Ground-Waves	500 N.M.
e. Average Distance received Sky-Waves	1525 N.M.
6. No jamming or Loran interference was reported.

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PART I NAVIGATION TRACK CHART

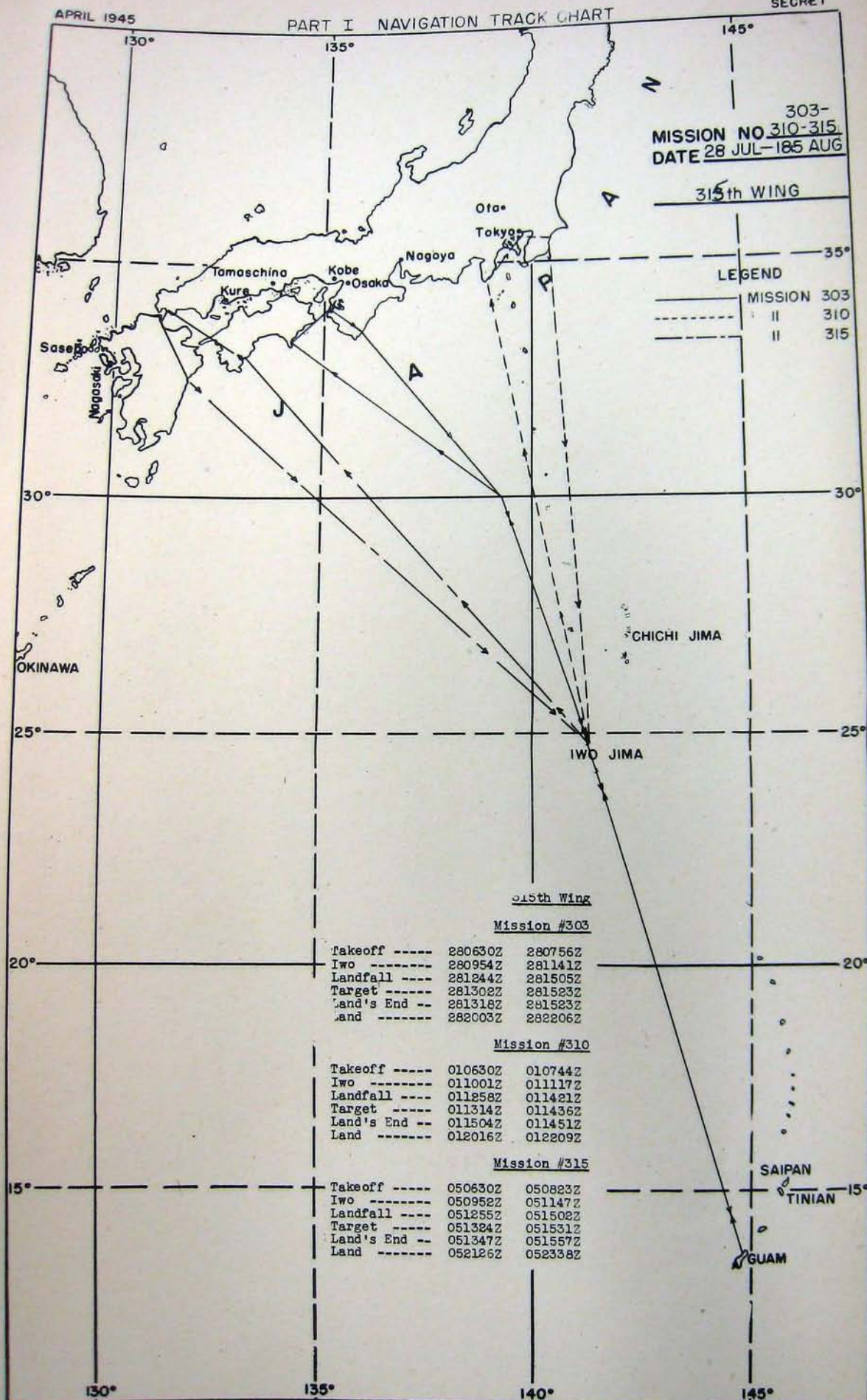
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303-
MISSION NO. 310-315
DATE 28 JUL-185 AUG

315th WING

LEGEND

MISSION 303
II 310
II 315



315th Wing

Mission #303

Takeoff -----	280630Z	280756Z
Iwo -----	280954Z	281141Z
Landfall -----	281244Z	281505Z
Target -----	281302Z	281523Z
Land's End --	281318Z	281523Z
Land -----	282003Z	282206Z

Mission #310

Takeoff -----	010630Z	010744Z
Iwo -----	011001Z	011117Z
Landfall -----	011258Z	011421Z
Target -----	011314Z	011436Z
Land's End --	011504Z	011451Z
Land -----	012016Z	012209Z

Mission #315

Takeoff -----	050630Z	050823Z
Iwo -----	050952Z	051147Z
Landfall -----	051255Z	051502Z
Target -----	051324Z	051531Z
Land's End --	051347Z	051557Z
Land -----	052126Z	052338Z

SAIPAN

TINIAN

GUAM

TRACK CHART

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PART I NAVIGATION TRACK CHART

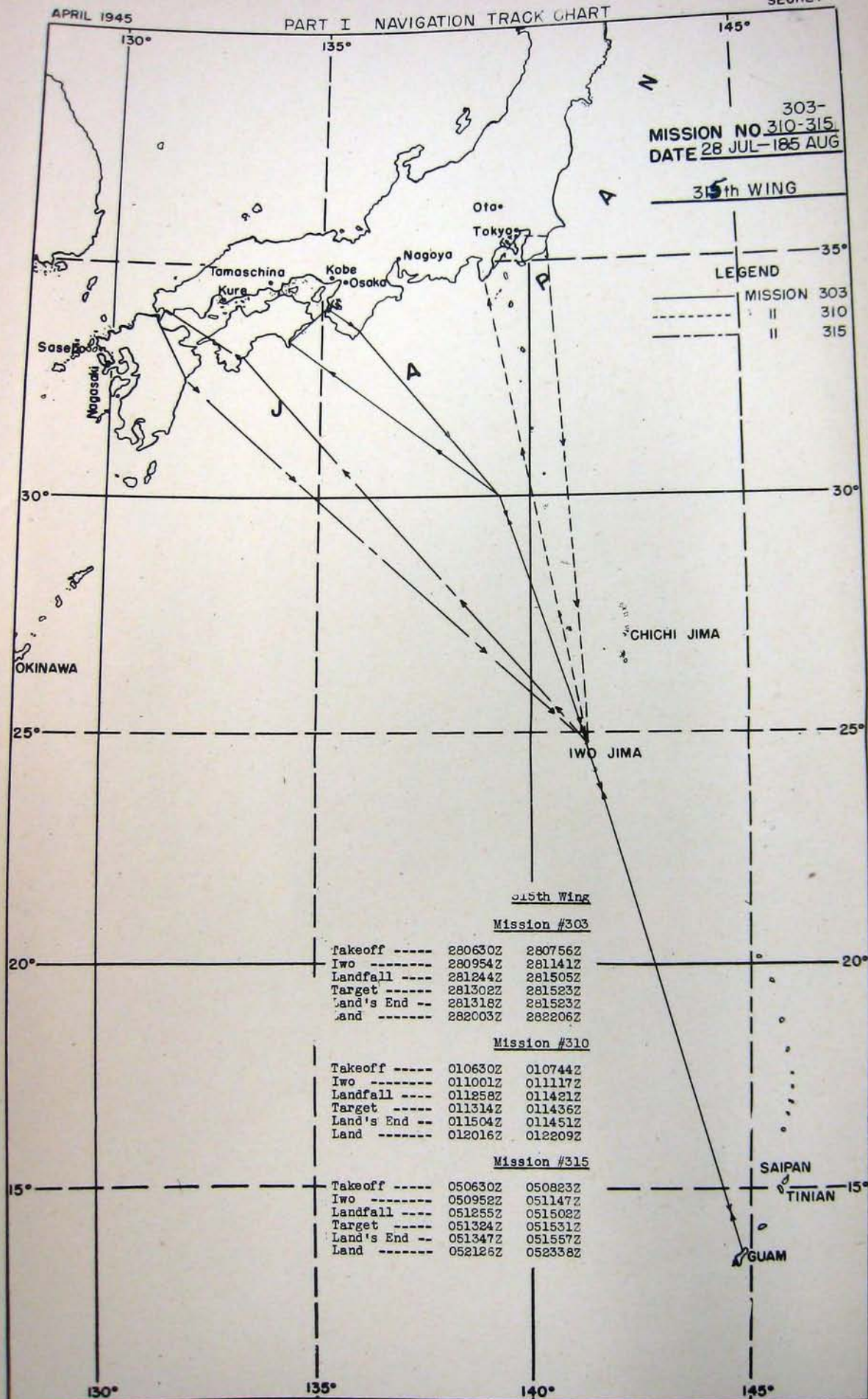
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303-
MISSION NO 310-315
DATE 28 JUL-185 AUG

315th WING

LEGEND

MISSION 303
II 310
II 315



315th Wing

Mission #303

Takeoff -----	280630Z	280756Z
Iwo -----	280954Z	281141Z
Landfall -----	281244Z	281505Z
Target -----	281302Z	281523Z
Land's End --	281318Z	281523Z
Land -----	282003Z	282206Z

Mission #310

Takeoff -----	010630Z	010744Z
Iwo -----	011001Z	011117Z
Landfall -----	011258Z	011421Z
Target -----	011314Z	011436Z
Land's End --	011504Z	011451Z
Land -----	012016Z	012209Z

Mission #315

Takeoff -----	050630Z	050823Z
Iwo -----	050952Z	051147Z
Landfall -----	051255Z	051502Z
Target -----	051324Z	051531Z
Land's End --	051347Z	051557Z
Land -----	052126Z	052338Z

SAIPAN

TINIAN

GUAM

TRACK CHART

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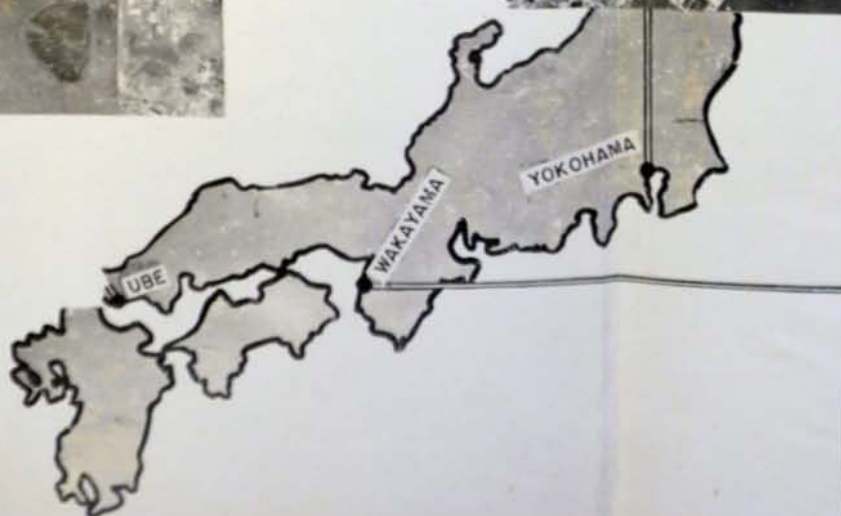
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MEAN POINTS OF IMPACT

MISSIONS NO. 303 - 310 - 315



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PART III - BOMBING*

1. Mission Number 303, Shimotsu Oil Refinery:

a. The Shimotsu Oil Refinery was attacked by 78 aircraft (including 2 wind run aircraft) of the 315th Wing with 1 MPI designated as primary radar target. Altitudes of attack varied from 10,100 to 12,000 feet. Bombing was entirely by radar as there were no possible means of performing visual sighting, as the target could not be identified visually. The mission was accomplished at night by individual aircraft.

b. The mission was considered well planned and there were no difficulties encountered. The average drift reported was 1 degree left. Compressibility for the Wing was 121 minutes.

2. Mission Number 310, Kawasaki Petroleum Complex:

a. The Kawasaki Petroleum Complex was attacked by 120 aircraft of the 315th Wing with 1 MPI designated as primary radar target. Altitudes of attack varied from 16,400 to 18,600 feet. The mission was accomplished by radar except for 6 aircraft that encountered radar malfunctions and had to bomb visually, using small fires as aiming points.

b. The mission was considered well planned and easily executed. The initial point and axis of attack proved highly satisfactory. The average drift reported was 1 degree right. Compressibility for the Wing was 82 minutes.

3. Mission Number 315, Ube Coal Liquefaction Co.:

a. The Ube Coal Liquefaction Co. was attacked by 108 aircraft of the 315th Wing with 1 MPI designated as primary radar target. Altitudes of attack varied from 10,300 to 12,600 feet. Bombing was accomplished by radar and the attacks were made by individual aircraft.

b. The mission was considered well planned and no difficulties were encountered. The average drift reported was 1 degree right. Compressibility for the wing was 127 minutes.

* Based on Wing Bombardiers Reports.

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PART IV - FLIGHT ENGINEERING

1. Narrative of Missions as Flown:

a. Route Out: Climbs were made immediately after take-off to cruising altitudes between 5,000 and 10,000 feet. Altitudes and airspeeds differed to compress the striking force. Climbs to bombing altitudes were made just off the coast of Japan.

b. Bomb Run: Bombing was conducted at an average altitude of 12,000 feet and speeds up to 220 MPH CAS.

c. Return to Base: Returns to base consisted of descending to an average altitude of 8,000 feet and cruising there until a gradual descent to base could be made.

2. Comments on the Mission:

a. Speeds used were 3 - 4 miles per hour faster than recommended.

b. Compared to other Wings of this command, the 315th Wing airplanes returned to base with an average of 300 gallons more fuel reserve. Bomb loads carried were a function of crew experience. In view of relatively low take-off gross weights and high fuel reserves, it is felt that the 315th Wing is capable of carrying a capacity load of bombs (22,000 lbs.) to all southeast coast cities of Japan.

FLIGHT ENGINEERING

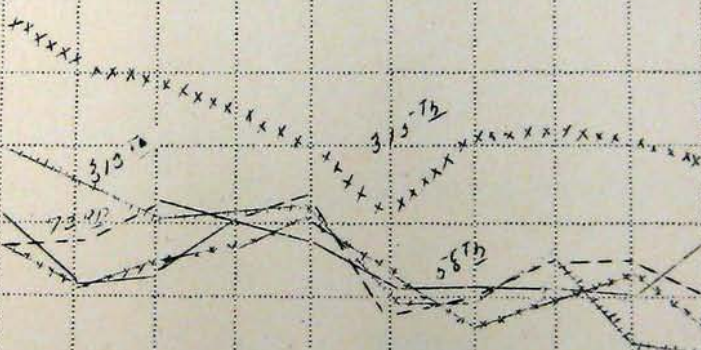
BOMB
LOAD 16,000
(105) 12,000
8000
4000
0



BOMB
ALTITUDE 25,000
(FEET) 20,000
15,000
10,000
5000



FUEL
RESERVE 1400
(GALS) 1200
1000
800
600
400



FUEL
LOAD 8,000
(GALS) 7,000
6,000
5,000
4,000



#251-#253- 5-7 July
#257-#261 9 July
#263-#268 12 July
#270-#274 15 July
#277-#281 16 July
#283-#291 17 July
#293-#295- 24 July
#297-#303 26 July
#306-#310 28 July
#312-#316 1 Aug
5 Aug

S E C R E T

PART V - RADAR

1. Equipment Performance of AN/APQ-7:

- a. Number of sets operative on take-off: 311
- b. Number of sets operative over target: 303
- c. Number of sets operative on landing: 299
- d. Number of set failures: 14
- e. Average maximum range of targets in nautical miles:
 - (1) 75 at 5,000 - 10,000 feet.
 - (2) 65 at 10,000 - 15,000 feet.
- f. Average maximum range of beacons: 121 nautical miles at 8,000 feet.
- g. Normal interference from other APQ-7 radars. Beacon "Ghost-signals" appeared on Mission Number 315.
- h. Average range of Japanese Coast: 65 nautical miles.
- i. Recurring malfunctions: Nosmeagle failure, beacon reception and CFC trouble.

2. Radar Bombing APQ-7:

- a. Briefing was very satisfactory.
- b. Aiming points were reported as fair. Mission Number 315 was reported as excellent.
- c. Landfall and IP were easily identified.
- d. Methods of release: 289 direct synchronous releases, 8 direct radar releases, and 7 visual releases.

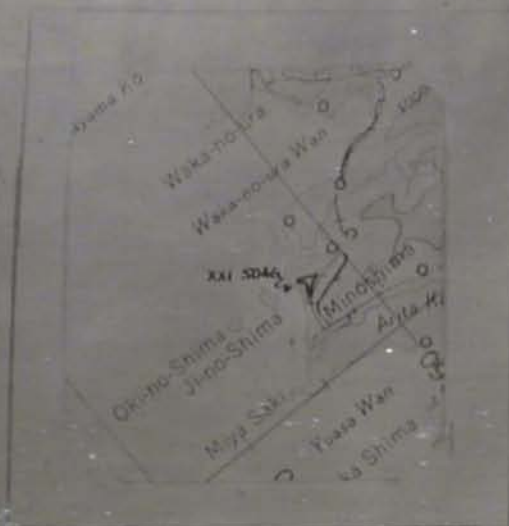
3. IFF SCR-695:

- a. Location which turned on and off SOP.
- b. Average number of times checked: 34
- c. Number of sets with malfunctions: None

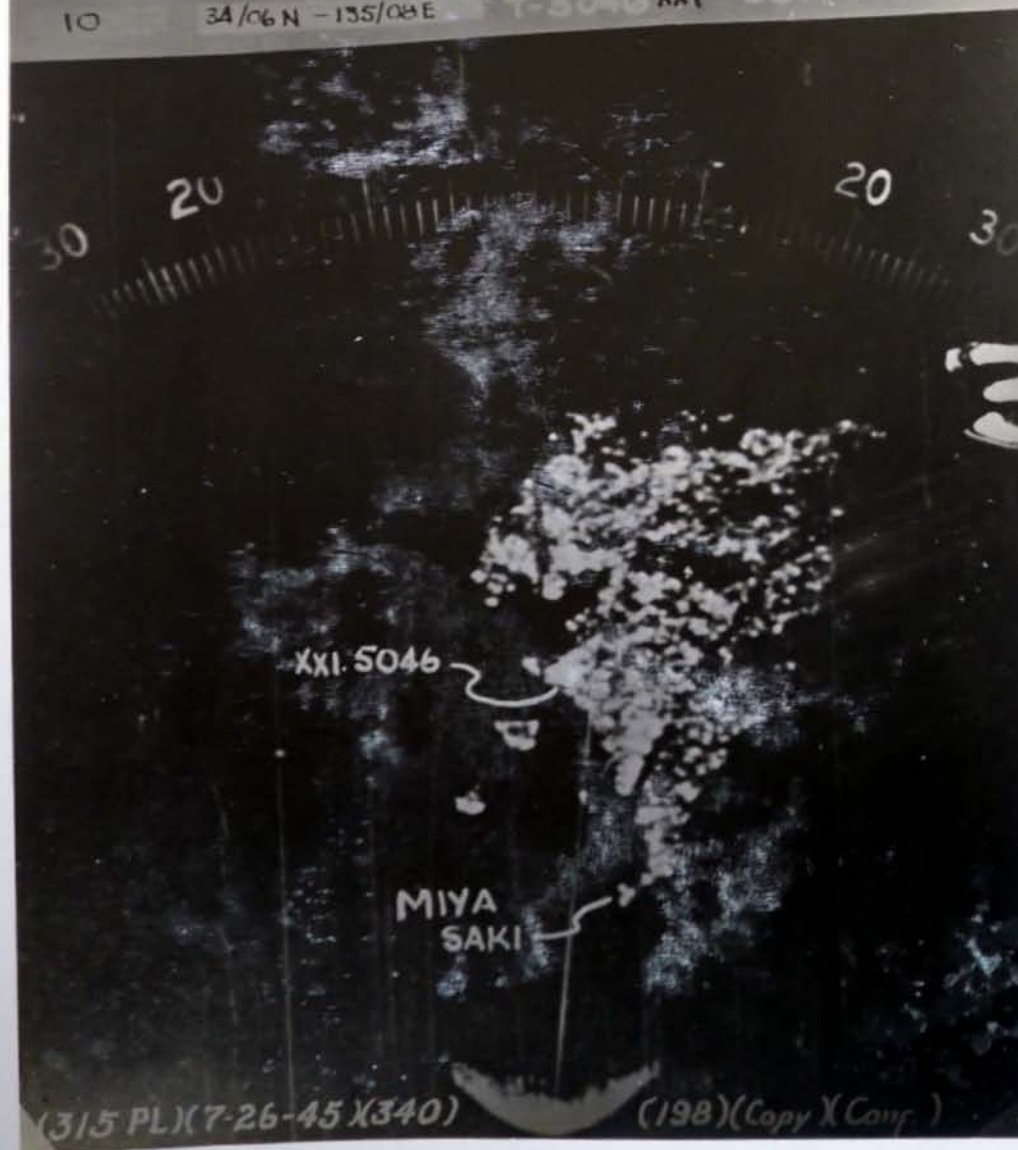
4. Altimeter on SCR-718:

None installed.

MISSION 303



10 34/06 N - 135/08 E 19-7-45 15300 53
T-3046 XXI CONF.



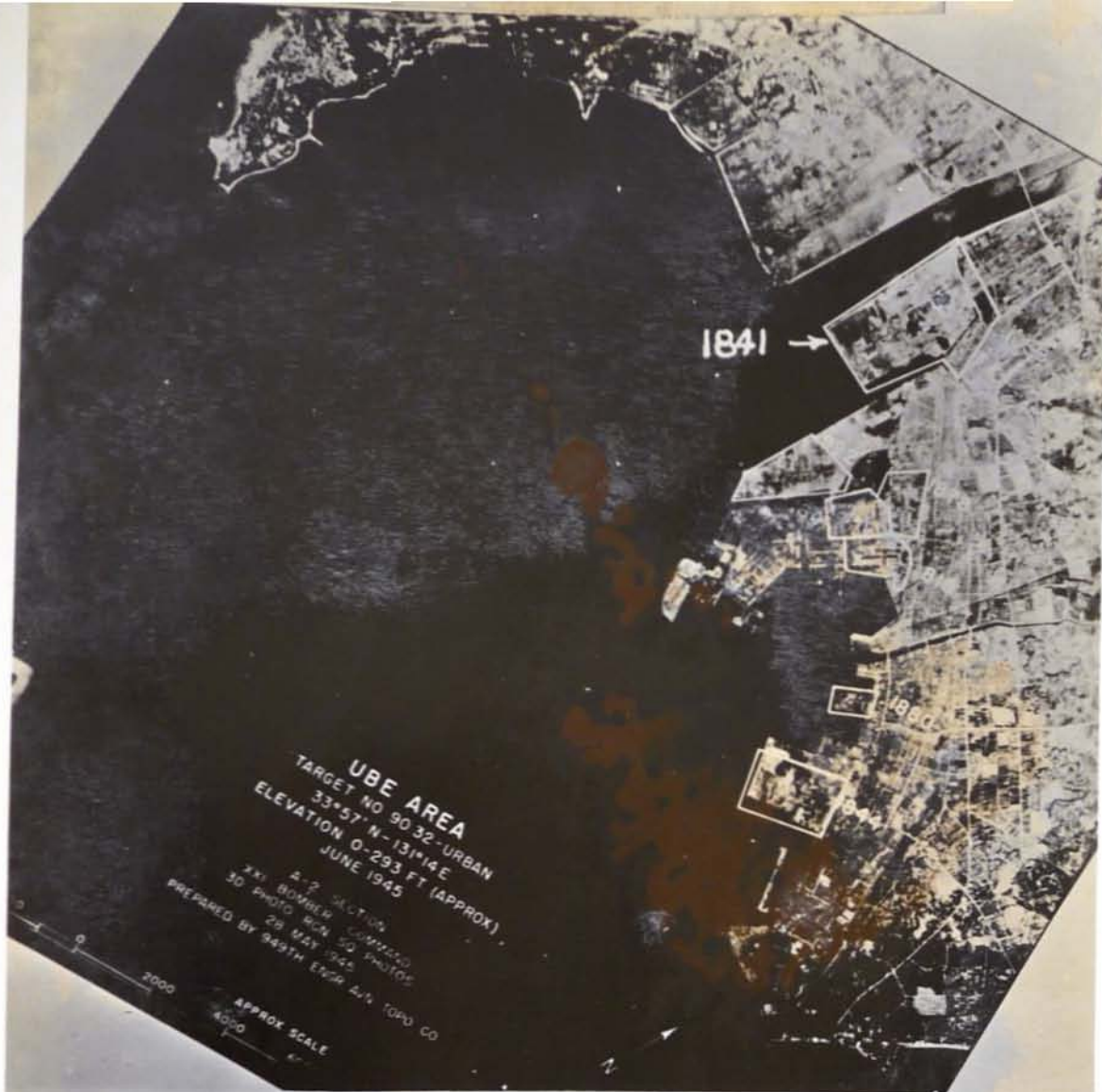
(3/5 PL)(7-26-45 X340)

(198)(Copy X Conf.)



MISSION 310





PART VI - GUNNERY

1. Number of aircraft firing: 2
2. Average tail turret load: 600 rounds
3. Number of rounds fired in combat: 90
4. Number of rounds used for test firing: 8296.
5. Guns Loaded: 315th Wing - Cold.
6. Malfunctions: A.P.G.-15: - 113 malfunctions

C.F.C.: - Firing circuit, dynamotor, elev. 1
speed systed, reset button open.

CAL. . 50 M.G.: - Sear Spring (1), gun jam (2)
cover open (1), ruptured case (1), bolt switch
backwards (1), chargers (1).

7. Total percentage of equipment operative:

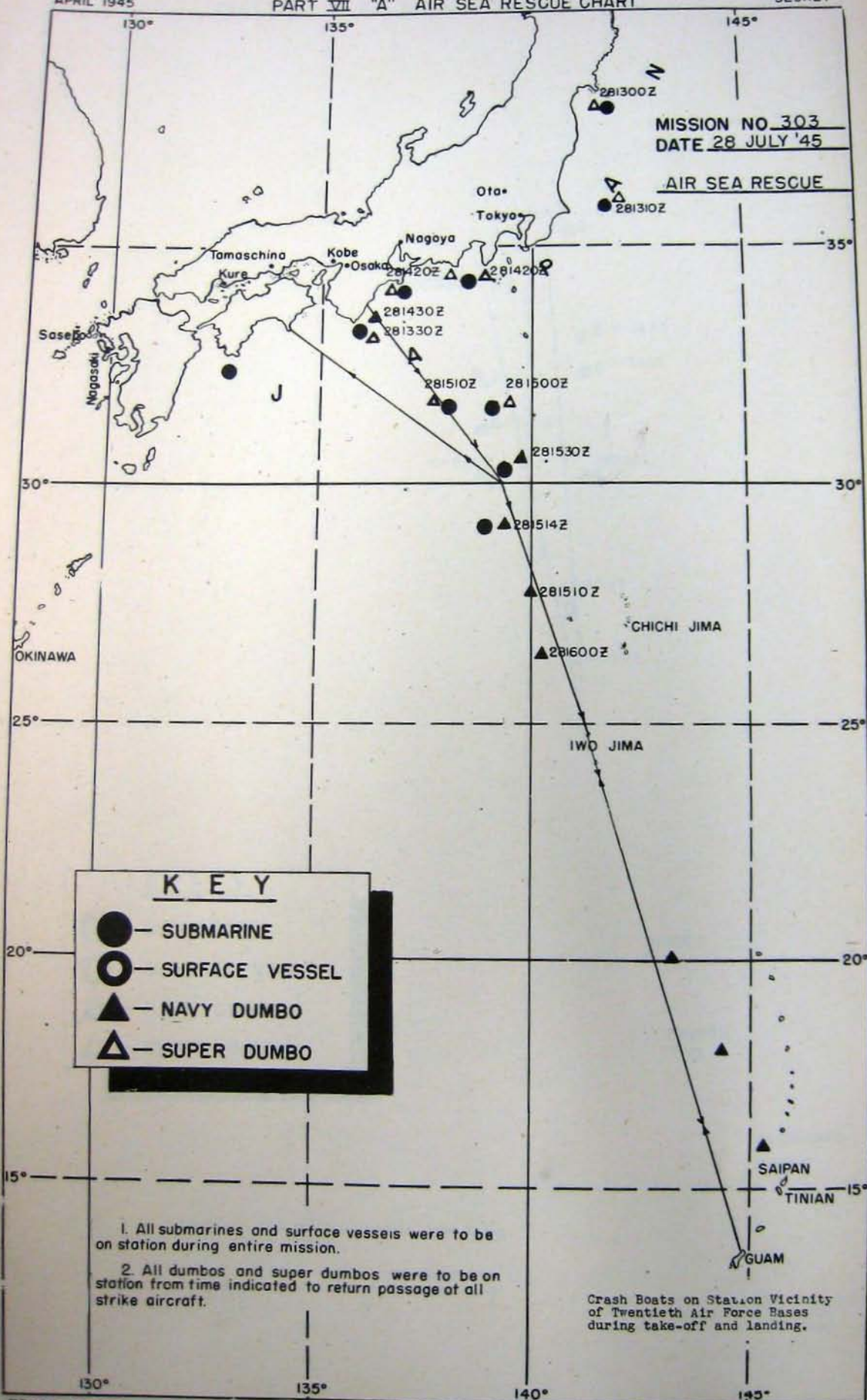
C.F.C.: - 98.6%

CAL. . 50 M.G.: - 96.7%

APRIL 1945

PART VII "A" AIR SEA RESCUE CHART

SECRET



TRACK CHART

SECRET

8-107-64 REPRODUCED 35m.P.T.U.

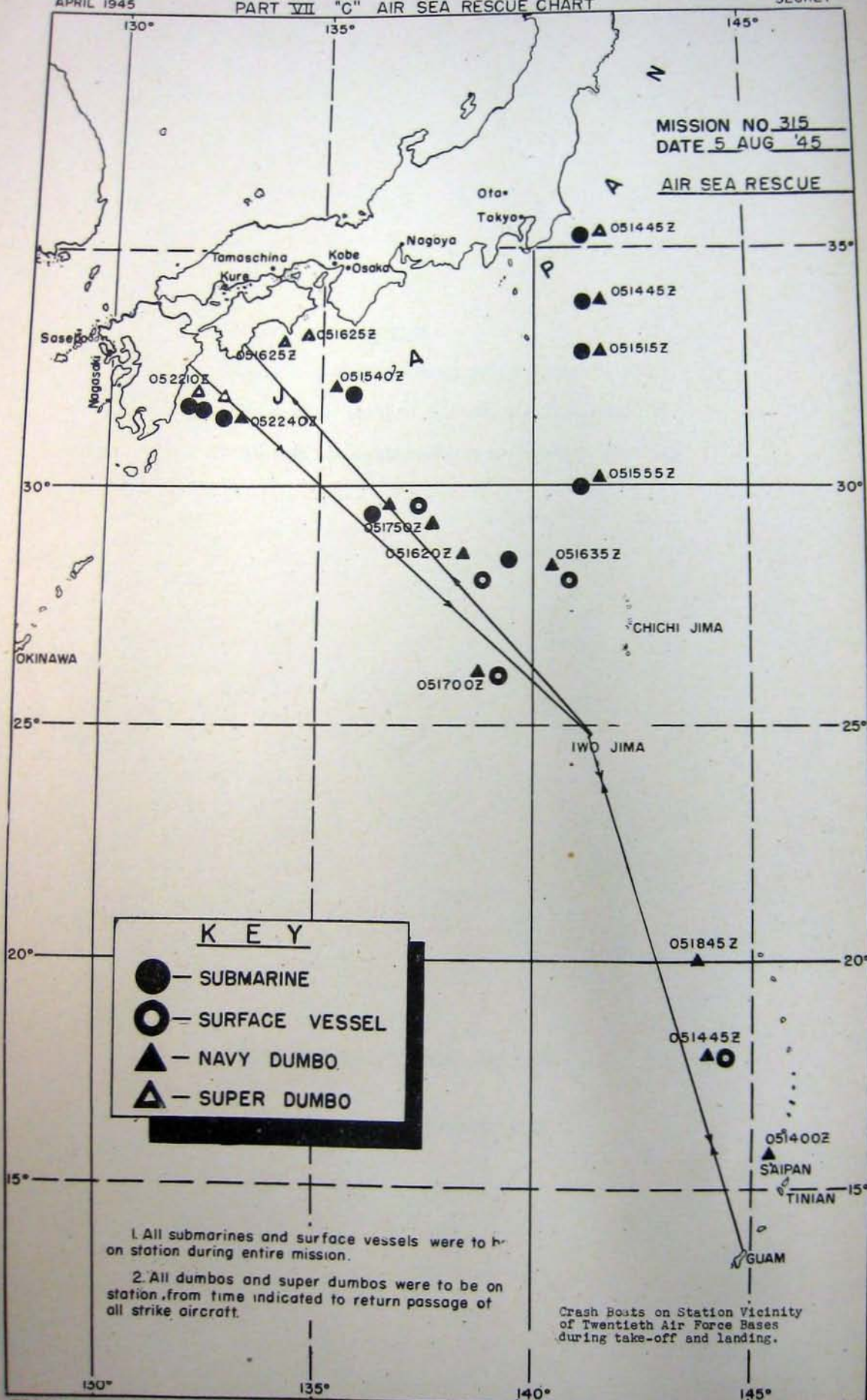
APRIL 1945

PART VII "C" AIR SEA RESCUE CHART

SECRET

MISSION NO 315
DATE 5 AUG '45

AIR SEA RESCUE



TRACK CHART

SECRET

8-107-64

REPRODUCED 35th P.T.U.

ANNEX

B

WEATHER

Part I - Weather Summary Mission No. 303

Part II - Weather Summary Mission No. 310

Part III - Weather Summary Mission No. 315

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

PART I - FINAL WEATHER SUMMARY

Mission No. 303

28/29 July 1945

Bases at Take-Off:

Broken low clouds and overcast middle clouds.

Route: Scattered to broken low clouds with occasional towering cumulus and showers and scattered middle and high clouds to 24°N. From 24°N to 31°N there were broken low clouds and scattered high clouds. A weak frontal zone between 31°N and 33°N gave overcast low and middle clouds. From 33°N to target area there were overcast low, broken middle and scattered high clouds. To Ameri: From 24°N to 35°N there were broken low which became overcast at 33°N and scattered middle clouds becoming overcast at 35°N. From 35°N to landfall at 38°N there were scattered middle clouds and a few scattered low clouds. From 38°N there were scattered middle clouds and a few scattered low clouds. From 38°N to target there were scattered middle clouds and scattered low clouds becoming overcast on the western slopes of the mountains with tops to 14,000 ft.

Target: Shimotsu: 6-10/10 low clouds, tops 10,000 ft; 3/10 high clouds. Winds at 10,000 ft were 210° at 8 knots.

Bases on Return:

Broken low and middle clouds.

* * * * *

PART II - FINAL WEATHER SUMMARY

Mission No. 310

1/2 August 1945

Bases at Take-Off:

Scattered low and high clouds with some towering cumulus.

Route: There were broken low clouds with towering cumulus and scattered high clouds with light showers to 19°N. From 19°N to 23°N there broken to overcast low clouds and overcast middle clouds with light showers. From 23°N to 30°N there were scattered low middle and high clouds. From 30°N to target there were broken to overcast low clouds.

Target: Kawasaki: Patches of low cloud, tops 6000 feet. Coverage over target varied between 3/10 and 10/10.

Base on Return:

Scattered to broken low clouds with scattered light showers in the area.

* * * * *

PART III - FINAL WEATHER SUMMARY

Mission No. 315

5/6 August 1945

Base at Take-Off:

Scattered low and scattered to broken middle clouds.

Route: There were scattered to broken low clouds with a few towering cumulus, broken middle clouds with light showers to 20°N.

PART I - FINAL WEATHER SUMMARY

Mission No. 303

28/29 July 1945

Bases at Take-Off:

Broken low clouds and overcast middle clouds.

Route: Scattered to broken low clouds with occasional towering cumulus and showers and scattered middle and high clouds to 24°N. From 24°N to 31°N there were broken low clouds and scattered high clouds. A weak frontal zone between 31°N and 33°N gave overcast low and middle clouds. From 33°N to target area there were overcast low, broken middle and scattered high clouds. To Aomori: From 24°N to 35°N there were broken low which became overcast at 33°N and scattered middle clouds becoming overcast at 35°N. From 35°N to landfall at 38°N there were scattered middle clouds and a few scattered low clouds. From 38°N there were scattered middle clouds and a few scattered low clouds. From 38°N to target there were scattered middle clouds and scattered low clouds becoming overcast on the western slopes of the mountains with tops to 14,000 ft.

Target: Shimotsu: 6-10/10 low clouds, tops 10,000 ft; 3/10 high clouds. Winds at 10,000 ft were 210° at 8 knots.

Bases on Return:

Broken low and middle clouds.

* * * * *

PART II - FINAL WEATHER SUMMARY

Mission No. 310

1/2 August 1945

Bases at Take-Off:

Scattered low and high clouds with some towering cumulus.

Route: There were broken low clouds with towering cumulus and scattered high clouds with light showers to 19°N. From 19°N to 23°N there were broken to overcast low clouds and overcast middle clouds with light showers. From 23°N to 30°N there were scattered low middle and high clouds. From 30°N to target there were broken to overcast low clouds.

Target: Kawasaki: Patches of low cloud, tops 6000 feet. Coverage over target varied between 3/10 and 10/10.

Base on Return:

Scattered to broken low clouds with scattered light showers in the area.

* * * * *

PART III - FINAL WEATHER SUMMARY

Mission No. 315

5/6 August 1945

Base at Take-Off:

Scattered low and scattered to broken middle clouds.

Route: There were scattered to broken low clouds with a few towering cumulus, broken middle clouds with light showers to 20°N.

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From 20°N to 14°N, there were broken low and middle clouds with squalls, moderate to heavy turbulence and showers. From 14°N to 20°N to the Empire there were scattered low clouds and occasional patches of middle clouds.

Summary: Wx: 2/10 stratus, top 4000 ft. Winds at 10,000 ft were 125° at 12 knots.

Remarks on Return:
Scattered low and high clouds.

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S E C R E T

ANNEX

C

COMMUNICATIONS

Part I - RCM

Part II - Radio

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

S E C R E T

S E C R E T

ANNEX

C

COMMUNICATIONS

Part I - RCM

Part II - Radio

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

- 27 -

S E C R E T

SECRET

PART I - RCM

1. Purpose:

a. To confuse enemy gun-laying and searchlight radar by the use of rope.

b. To barrage jam enemy gun-laying and searchlight radars in the 72-84 megacycle and 190-210 megacycle regions and to spot jam any gun-laying or searchlight radar appearing outside the barrage.

2. Method:

a. Fifty bundles of rope were carried by each aircraft and dispensed at the rate of 3 bundles per 10 seconds when protection was needed from searchlights.

b. Since the 315th Wing was not yet equipped with RCM equipment, special jamming airplanes were furnished by the 314th Wing to cover the 315th Wing strike on target Kawasaki Petroleum Center. These special jamming airplanes were equipped to barrage the 72-84 and 190-210 mc regions and to spot jam any gun-laying or searchlight radar signals appearing outside the barrage.

3. Results:

a. For target Kawasaki, there was a great amount of searchlight activity since the weather was CAVU to 2/10 cover. Rope was reported to be successful in approximately half the cases used.

b. At the other 2 targets, very little searchlight activity was encountered and few airplanes dispensed rope.

* * * * *

PART II - RADIO

1. Strike Reports: Thirty-three strike reports were transmitted from the aircraft to ground station during this series of missions.

2. Fox Transmissions: Weather and time signals were regularly scheduled transmissions made from the ground station.

3. Frequencies: There were no instances of intentional jamming, reported by the 315th Wing. An RCM observer accompanied the mission of 5 August to ascertain whether or not there was intentional jamming on the strike frequencies. His report indicated no evidence of intentional jamming; however, he did discover there were friendly and enemy transmissions on and near the strike frequencies causing interference. Following is a breakdown of traffic per frequency: 20 per cent on 3 megacycles; 36 per cent on 6 megacycles and 44 per cent on 10 megacycles.

4. Navigational Aids: Radio ranges, broadcast stations, and homing stations were effectively used. There was no report of use of HF and VHF/DF bearing facilities.

5. Net Discipline and Security: There was 1 instance of incorrect use of the authentication system and several cases of radio operators breaking in on other aircraft transmissions. Corrective action has been taken in each instance.

6. Enemy Transmissions: The following incidents of enemy transmissions, interference, and jamming attempts were recorded during these missions.

a. 3810 kcs:

- (1) High speed keying from 291045Z to 291940Z was ineffective.
- (2) Continuous keying and intermittent sending of "BC" between 050900Z and 052200Z were ineffective.
- (3) High speed keying from 011058Z to 011402Z was ineffective.

b. 6640 kcs:

- (1) Voice and CW between 291020Z and 292020Z were partially effective.
- (2) Japanese voice between 011230Z and 011430Z was ineffective.
- (3) Keying and voice transmissions at 050900Z were ineffective.

c. 10965 kcs:

- (1) CW and steady tone between 290930Z and 291600Z were ineffective.
- (2) CW transmissions between 050900Z and 051600Z were ineffective.

7. Distress: There were no messages in regards to distressed aircraft during these missions.

8. Equipment Malfunctions: AN/ART-13: 1 no side tone; BC-348: 8 inoperative; SCR-522: 1 receiver inoperative; 3 inoperative; AN/ARN-7: 1 inoperative; 1 needle hunting.

ANNEX

D

INTELLIGENCE

Part I - Enemy Air Opposition

Part II - Enemy Antiaircraft

Part III - Damage Assessment Reports

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

PART I - ENEMY AIR OPPOSITION*1. General Summary:

a. No B-29 was lost or damaged due to enemy fighters on these 3 missions. Approximately 67 to 82 fighters were seen on this series of strikes, but only 10 attacks were sustained by B-29's. Crews made no claims.

b. Returning crews reported "sheets of flame" resembling the blast from rocket or jet aircraft. Similar reports have been made by crews of other wings in recent months. Technical and POW reports indicated that the Japanese may fit fighters with rocket units of some sort to provide extra emergency power.

2. Summaries of Individual Missions:

a. Mission 303, Wakayama, 315th Wing: Two groups failed to see any evidence whatever of enemy air activity. Except for 2 passes the bombers from all 4 groups went to the target and returned unmolested by air defenses. Seven of the fighters were reported to be of single-engine type, the other 3 being identified as twin-engine. The passes, 1 tail and 1 nose, were made by unidentified aircraft. The tail pass was made shortly before the reporting B-29 reached land's end. The nose pass took place 37 miles beyond land's end. In neither instance was there an exchange of fire. One B-29 had a playmate from landfall to the initial point on the bomb run, 2 other B-29's had the company of 1 single-engine and 1 twin-engine aircraft. In the target area 2 more enemy aircraft made their appearance. Between the target and land's end a trio of fighters, all of single-engine variety, were engaged in acrobatics.

b. Mission 310, Kawasaki, 315th Wing:

(1) Approximately 30 to 35 Jap fighters were encountered on this mission. Three of the 4 B-29 Groups reported a total of 9 weak to moderately aggressive attacks.

(2) Between landfall and the initial point, 5 enemy aircraft were sighted, but none indicated hostile intentions. About 9 fighters were met on the bomb run and astern attacks by 2 of them were reported. Five attacks, 2 from the nose and 3 from the tail, took place in this area. One of the B-29's attacked was downed by searchlights. One attack was made by a Judy which was said to be employing 2 guns, instead of 1, in its top-turret. Another single-engine enemy aircraft fired a rocket during the progress of its attack.

(3) It was reported by 1 B-29 crew that a "sheet of flame", 8 by 10 feet in length, could be seen behind the single-engine fighter which attacked them.

(4) Five enemy aircraft, including 1 single-engine and 1 twin-engine, were sighted after land's end. Two weak tail attacks were reported to have taken place a short distance from land's end. One B-29 made a sighting at 75 miles beyond land's end; and another, a sighting at 150 miles beyond land's end.

c. Mission 315, Ube, 315th Wing:

(1) A total of 25 to 35 enemy aircraft was encountered on this mission. Restricted visibility made aircraft recognition difficult, but 5 enemy aircraft were identified as single-engine and 6 as twin-engine. Another aircraft, which was sighted on the bomb run, was thought to be jet or rocket-propelled.

(2) Opposition was limited to 2 passes and only 1 attack. One pass from the right beam, level, was made on the bomb run, by a twin-engine fighter. Between the target and the point of turning towards land's end a pass from 2 o'clock, high, was made by another twin-engine fighter against another B-29. In the case of each pass the enemy aircraft closed to less than 100 yards.

(3) A few miles beyond land's end, at 1530Z, a third B-29 was fired upon by an unidentified fighter, believed, however, to be of single-engine type, which attacked from 4 o'clock, level. The attack was broken off at 500 yards.

(4) Practically all the fighters made use of running lights and the color combinations were said to be mixed. Some of the lights were reported in colors and positions as follows:

1. Wing lights: red on left; green on right.
2. Wing lights: red on right; green on left.
3. Red and white lights on wings (positions not indicated).
4. Running lights (presumably red and green), plus a single white light.
5. Red light on each wing tip.
6. Green light on left wing only.
7. White light in nose; red lights on left wing.
8. Two white lights (on a twin-engine aircraft).

(5) The enemy sent 5 fighters to meet the bombers before landfall. A twin-engine fighter was sighted 50 miles at sea and 4 single-engine fighters about 10 miles out. Three unidentified aircraft were observed by an off-course B-29 to be taking off from Sasaki airfield at 1331Z. In the same general area at 1425Z, a returning B-29 encountered 3 unidentified enemy aircraft (possibly the same ones) which were flying a V-formation. The lead plane appeared larger than the other 2; and in the center of each plane appeared a white light. It was possible that the V-formation consisted of a night fighter, to lead, and 2 day fighters to fly wing positions.

* This report is based on evaluated information available after the compilation of the Consolidated Statistical Summary.

* * * * *

PART II - ENEMY ANTI-AIRCRAFT*

1. Mission Number 303 - Shimotzu Oil Refinery:

a. The target was bombed by 78 aircraft of the 315th Wing between 1302Z-1523Z at altitudes from 9,400 to 12,000 feet. Axis of attack was 48 to 52 degrees. Weather was reported over the target as 8/10 to 10/10.

b. En route to the target flak was nil.

* Based on Wing Officers Flak Reports.

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c. Over the target flak was described as meager and generally inaccurate, heavy and medium. One aircraft encountered accurate fire over the target. Climbing turns were effective as evasive action. Two ineffective searchlight beams were observed in the target area.

d. On withdrawal, moderate heavy flak was observed in the vicinity of Tanabe (3445N - 13525E), apparently directed at targets other than aircraft of this Wing.

e. No aircraft were lost to flak on this mission, and of 78 aircraft bombing, only 1 or 1.3%, sustained flak damage.

f. Searchlights were reported as tabulated below:

<u>Location</u>	<u>Coordinates</u>	<u>Number</u>
I.P.	3350N-13435E	1
Target Area	3406N-13507E	2
Shimosato	3334N-13555E	2

g. Parachute flares were observed over Osaka and Nagoya.

2. Mission Number 310 - Kawasaki Petroleum Complex:

a. The targets were bombed by 120 aircraft of the 315th Wing between 1314Z-1436Z at altitudes from 16,400-18,600 feet. Axis of attack was 41 degrees. Undercast varied from CAVU to 7/10.

b. Flak en route to the target was reported as follows:

<u>Location</u>	<u>Coordinates</u>	<u>Remarks</u>
Landfall	3437N-13852E	Meager and inaccurate, heavy.
I.P.	3457N-13909E	Moderate and inaccurate, medium.
Yokosuka	3517N-13939E	Meager to moderate and inaccurate, medium and heavy.
Fujisawa	3520N-13929E	Moderate and inaccurate, heavy.

c. Flak in the target area varied from meager to moderate and inaccurate, heavy and medium in the Yokohama area to moderate and accurate to inaccurate, heavy and medium in the Kawasaki area. Both continuously pointed and predicted concentrations of heavy flak were encountered with deviations generally level and left. A barrage was encountered just before bombs away. Medium flak was low. Searchlight defense was intense and effective though hampered by thin cloud cover. Lights passed aircraft effectively. Blue and green searchlights were reported.

d. Flak on withdrawal from the target was reported as follows:

<u>Location</u>	<u>Coordinates</u>	<u>Remarks:</u>
Kisarazu	3524N-13956E	Meager and inaccurate, heavy.
Goi	3530N-14005E	Moderate and accurate, heavy.
Chiba	3536N-14008E	Meager and inaccurate, heavy.

S E C R E T

<u>Location</u>	<u>Coordinates</u>	<u>Remarks</u>
Katakai	3532N-14027E	Meager to moderate and inaccurate, medium and heavy.
Ichinomiya	3522N-14022E	Moderate and inaccurate, heavy.
	3530N-14035E	Meager, inaccurate, medium.

e. No aircraft were lost to flak, and of 120 aircraft attacking, 22 or 18.4%, sustained flak damage.

f. Searchlights were reported as follows:

<u>Location</u>	<u>Coordinates</u>	<u>No. of Beams</u>
Landfall	3437N-13853E	4 White
I.P.	3457N-13909E	8 White, 2 Green
Odawara	3515N-13910E	2 to 3 White
Hiratsuka	3520N-13920E	20 White
Yokasuka	3516N-13939E	16 White, 2 Blue
Yokahama	3526N-13938E	20 White, 7 Green
Kawasaki	3529N-13943E	30 to 45
South Tokyo	3535N-13944E	25 White, 5 Green
Tokyo Bay	3535N-13958E	9 White
Kisarazu	3524N-13956E	3 White
Chiba	3536N-14008E	10 to 20 White, 1 Green
	3530N-14010E	2 White
Ichinomiya	3522N-14022E	12 White, 4 Blue

g. Miscellaneous Observations:

(1) Rockets were fired from South Tokyo (3536N - 13943E), 15 to 25 in a salvo. They were low and burned out after reaching about 14,000 feet. One crew reported that 2 rockets exploded at 25,000 feet.

(2) Green parachute flares were reported in the target area from 5,000 to 10,000 feet.

(3) Large green ground flares were reported in the target area lasting from 10 to 20 seconds and producing a strong glow in the lower altitudes but not penetrating clouds. The flares were similar to a photographer's powder flash and closely paralleled the description in A. I. R. dated 30 June 1945.

3. Mission Number 315 - Ube Coal Liquefaction Company:

a. The primary target was bombed by 108 aircraft of the 315th Wing between 1324Z-1527Z at altitudes from 10,300 to 12,600 feet. Axis of attack varied from 299 to 309 degrees. Weather was reported as CAVU to 5/10 undercast with winds of 8 to 16 miles per hour from 140 degrees.

b. En route to the target flak was encountered as tabulated below:

<u>Location</u>	<u>Coordinates</u>	<u>Remarks</u>
Ship	3343N-13149E	Meager and inaccurate, medium.
Hime Shima	3343N-13141E	Meager and inaccurate, light.
Tokuyama	3403N-13149E	Gun flashes observed.
Naka-No-Seki	3400N-13132E	Meager and inaccurate, heavy and medium.

c. Over the target area, flak was described as nil to meager, inaccurate, heavy and medium.

d. On withdrawal meager and inaccurate, medium flak was reported at Beppu (3313N - 13130E).

e. No aircraft were lost to flak on this mission, and only 1 or 0.95%, sustained flak damage.

f. Searchlights were observed as tabulated below. They were generally ineffective.

<u>Location</u>	<u>Coordinates</u>	<u>Remarks</u>
Uwa Jima	3313N-13234E	2
Ship	3343N-13149E	2-6
Tsurukawa	3333N-13144E	2
Futago Yama	3334N-13136E	2-5
Kudamatsu	3400N-13152E	5-8
Naka-No-Seki	3400N-13132E	3-8
Ube	3357N-13115E	2-7
Moji	3356N-13059E	4
Nakatsu	3336N-13111E	2
Oita	3313N-13135E	2
Ship	3300N-13155E	2

g. One green rocket was sighted from 11,000 feet at approximately 3351N - 13126E. It appeared as a green streak which eventually exploded into a green light, level, and 500 yards away at 5 o'clock.

h. Blackout was good.

PART III - SECTION A - DAMAGE ASSESSMENT - SHIMOTSU OIL REFINERY *
90.25-2252 (Formerly XXI-5046)

Twentieth Air Force Mission Number 303, 28/29 July 1945, 315th Wing

1. Summary:

a. Destruction resulting from the above mission, as shown on complete 40" coverage of excellent quality, is distributed evenly throughout the vital areas of the target. Only the extreme south and east portions containing warehouses and minor storage buildings, and Area 7 (see inclosure, containing 4 pipe furnaces and probably secondary still, received no damage.

b. Of the total storage tank capacity (1,246,000 bbls.), 927,300 bbls. or 75% has been destroyed or damaged.

c. The major portion of the probable hydrogenation areas (2, 3 and 4) is almost totally destroyed, including 5 of the 7 gasometers totalling 1,158,000 cu. ft., or 90% of the original 1,274,100 cu. ft. capacity.

d. Heavy damage was inflicted on the refined products storage area (9) and in the refining area (8). though the extent of damage in the latter area cannot be definitely ascertained.

e. The Kiesel West Line RR has been destroyed, from the tunnel entrance north of the crude oil storage area (1) to the point where it turns south, in the center of the target area. A small RR station, 1250' south of the extreme southern corner of the target area, has been destroyed. There are several sidings at the station.

2. Summary of Damage to Tankage: (42 USG equals 1 bbl.)

	Type of Storage			
	Crude	Intermediate	Refined Products	Total
Original Capacity - bbls.	908,300	69,300	268,400	1,246,000
New Damage - bbls.	747,200	27,100	153,000	927,300
-%	82	39	57	75

Enclosure: Annotated print - 3FR5M255-2: 4

3. Itemization of Damage:

ANNOT.

NO.	IDENTIFICATION	DESCRIPTION OF DAMAGE, etc.
Area 1	11 Crude oil storage tanks, capacity 908,300 bbls. 2 small buildings	9 tanks destroyed, capacity 747,200 bbls. Destroyed,

* Based on 20th A.F. CIU D.A. Report No. 172

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ANNOT. NO.	IDENTIFICATION	DESCRIPTION OF DAMAGE, etc.
Area 2	Prob. hydrogenation area. 1 large building roof area 64,000 sq.ft. 2 small building	Gutted Destroyed
Area 3	7 gasometers, capacity 1,274,100 cu.ft. 1 small building	5 destroyed (capacity 1,153,100 cu.ft.) Destroyed
Area 4	Prob. hydrogenation area. Gas converter	3 buildings gutted; 1 destroyed. Prob. damaged.
Area 5	Boiler house	Roof damaged.
Area 6	Intermediate storage tank area. 20 tanks, capacity 69,300 bbls.	8 tanks destroyed; 1 tank damaged Capacity 27,100 bbls.
Area 7	Probable secondary still area.	Undamaged.
Area 8	Refinery area.	NE corner destroyed. Probable damage throughout.
Area 9	Refined storage tank area. 43 tanks, capacity 268,400 bbls.	25 tanks destroyed; 5 tanks damaged, capacity 153,000 bbls.
Area 10	Office and lab area.	Destroyed. One two-story reinforced concrete building undamaged except for one hole in roof from direct hit. Only one other building re- mains apparently undamaged.
Area 11	Warehouses and 3 water cooling ponds	7 out of 13 warehouses destroyed, one water cooling pond damaged, 16 small storage tanks destroyed.
Area 12	Packing and drum filling. 2 small warehouses.	Principal building, 44,100 sq.ft. roof area, gutted. Destroyed
Area 13	Warehouses	Undamaged.

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TARGET 90.25-2252

Shimotsu Oil Refinery, Shimotsu
20AF Mission No. 303, 28-29 July 1945
Damage Assessment Report No. 172

C.I.U. 20AF

LEGEND

- - Destroyed or Structurally Damaged
- ▨ - Gutted
- ▧ - Minor Damage

SCALE IN FEET
0' 250' 500' 750' 1000'

Ext. from SPR 5M 255-2-4

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C O N F I D E N T I A L

PART III - SECTION B - DAMAGE ASSESSMENT - 90.17-116 MITSUBISHI
OIL REFINERY - 90.17-127 HAYAMA PETROLEUM REFINERY*

Twentieth Air Force Mission 291, 25/26 July 1945
Twentieth Air Force Mission 310, 1/2 August 1945

315th Wing
315th Wing

Note: For assessment of damage to primary target (90.17-128, Petroleum Center), see CIU Damage Assessment Report 174.

1. Summary:

a. Photos show the Mitsubishi Oil Refinery to be practically inoperative. Twelve of 14 primary buildings, as outlined by Ref. A, are destroyed. The Hayama Petroleum Refinery sustained crippling damage, 40% of its primary structures being destroyed.

b. Damage and destruction encompasses practically all of Target 116, particularly the central, western and central sections of the plant.

c. Most of the destruction at Target 127 is located in the southern half of the plant area. Residential and office areas in the northwest part of the target received extensive damage. A refinery unit and tank section, located in the northeast part of the plant, remains apparently undamaged. Four piers were destroyed. A RR yard received several direct hits.

d. A total of 537,400 barrels or 38% of the storage tank capacity (1,404,400 bbls.) were destroyed or damaged at the Mitsubishi Oil Refinery. In addition, 13,625 barrels or 30.4% of the intermediate tank capacity (44,750 bbls.) were destroyed or damaged.

e. At the Hayama Refinery 334,000 barrels or about 44% of the storage tank capacity (761,600 bbls.), and 26,100 barrels or about 26% of the intermediate tank capacity (100,800 bbls.) were damaged or destroyed.

f. A functional diagram or building analysis noting barrel capacity of these refineries is not available. The scale of photos was based on Ref. A. Shadow factor and barrel capacities were computed from photos of 3FR4M 37A-5R: 36-38 (scale 1/9500 - shadow factor 0.46).

g. Photos are unsuitable for determining the exact damage caused by either strike, however, the major portion of the damage was inflicted by Mission 310.

h. Damage to targets adjacent to the primary target:

90.17-52	Japan Steel Tube Co. (4 Sections)
A.	SE section - total damage - severe
B.	NE section - total damage - negligible
C.	NW section - total damage - moderate
D.	SW section - total damage - severe
90.17-111	Kawasaki Electric Power Plant - total damage - severe
90.17-137	Showa Fertilizer - total damage - severe
90.17-191	Mitsubishi Coal Depot - total damage - severe
90.17-1437	Mitsubishi Piece-goods Wharf & Warehouses - total damage - severe.

Inclosure: Annotated enlargement 3FR5M182-3L: 122

* Based on 20th A.F. CIU D.A. Report No. 173.

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SUMMARY OF DAMAGE TO T. MIDGE - TARGET 116

	<u>Storage</u>	<u>Intermediate Storage</u>
Orig. Capacity - bbls.	1,404,400	44,750
Total damage and removal-bbls	537,400	13,625
Percent:	38	30.4

ITEMIZATION OF DAMAGE - TARGET 116

<u>ANNT.</u> <u>NO.</u>	<u>IDENTIFICATION</u>	<u>DESCRIPTION OF DAMAGE</u>
4	Warehouse - 6400 sq. ft.	25% structural damage, 25% gutted and 50% minor roof damage.
5	Warehouse	Completely destroyed
7	Unidentified	Square portion of this small building received minor roof damage. An adjoining long, narrow building was destroyed.
8	Unidentified 13,000 sq. ft.	Half of this building was structurally damaged.
9	Two 18' diameter storage tanks 3000 bbls.	Both tanks are distorted. There is a bomb crater about 50' S/W of these tanks.
10	Warehouse	Roof damaged
11	Workers building	Destroyed
12	Office type building	Destroyed
13	Workers residences - numerous homes occupying a roughly rectangular area of approx. 20,000 sq. ft.	Devastated
14	1 storage tank 75' diameter - 25,000 bbls. 1 storage tank 15,500 bbls	Large tank structurally damaged. Smaller tank " "
15	Warehouse	Destroyed
16	Unidentified	Destroyed
17	Unidentified	Destroyed
18a	Poss. processing building	Destroyed
19	Warehouse	Destroyed
20	Unidentified	Destroyed
*21	Iso-octane unit	Destroyed
*22	Iso-octane unit	Probably received some damage when No. 21 was destroyed.
23	Furnace	Minor damage
*25	Iso-octane unit	Destroyed
*26	Iso-octane unit	Destroyed
27	Poss. processing building	Destroyed
29	Intermediate tank 1,300 bbl	Structurally damaged
30	Furnace	Minor roof damage
32	Horizontal tanks - 1725 bbls	Destroyed
33	Storage tank - 2600 bbls	Structurally damaged
34	" " 8000 bbls	Destroyed
35	Storage tank 12500 bbls	Destroyed
36	Storage tank 80000 bbls	Destroyed
40	Storage tank 80000 bbls	Destroyed
44	Unidentified - near a storage tank - 1600 bbls	Minor damage
*45	Furnace	Structurally damaged
*46	"	Structurally damaged
*47	Cracking unit	Structurally damaged. A crater is visible in the immediate vicinity.
48	Cracking unit	Structural damage caused by near misses.

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ANNT. NO.	IDENTIFICATION	DESCRIPTION OF DAMAGE
49	Cracking Unit	Same as No. 48
50	Intermediate tanks (1) 2200 bbls (5) 3000 bbls (1) 300 bbls	Structural damage - 3 or 4 near risers visible.
51	Storage tanks - (2) 4400 bbls	Minor damage - crater visible - approx 50' S of these tanks
52	Research laboratory	Structurally damaged
53	Offices	Minor roof damage
54	Personnel bldg	Destroyed
55	Probable shipping offices	Destroyed - 3 craters visible in the immediate vicinity
56	Warehouse	Destroyed
57	Warehouse	Gutted
58	Office	Destroyed
59	Boiler house	Destroyed, chimney remaining
60	Storage tank - 4000 bbls	Top apparently destroyed
61	Possible pump house	Minor roof damage
62	Chemical laboratory	Gutted
63	2 inter. tanks - 2200 bbls 3 " " 1500 bbls	Structurally damaged Destroyed
64	Possible treating plant	Damaged - crater close by
65	Possible treating plant	Damaged roof
66	Inter. tank - 900 bbls	Destroyed
*67	Primary distilling unit	(Structurally damaged. Two craters 100'-110' S of units.)
*68	" " "	"
70	1 storage tank - 4000 bbls	Destroyed
71	1 " " 26000 bbls	"
72	1 " " 26000 bbls	"
73	1 " " 60000 bbls	"
74	1 " " 3600 bbls	"
*75	Furnace	"
*76	Vacuum distillation unit	"
77	11 storage tanks - 4,800 bbls	Destroyed
78	1 storage tank - 1700 bbls	Structural damage
79	1 storage tank - 1700 bbls	Structural damage
83a	Pump house	Minor roof damage
84	2 storage tanks	Minor damage
85	Pump house	Structural damage
86	5 storage tanks - 10,000 bbls	Possibly structurally damaged. Craters in immediate vicinity.
88	1 storage tank - 7000 bbls	Same as No. 86
89	1 " " 5500 bbls	Damaged, crater immediately N of tank
92	1 " " 5500 bbls	Destroyed
99	1 " " 25000 bbls	Structurally damaged.
98	1 " " 25000 bbls	Minor damage on top cover
101	1 " " 80000 bbls	Damage to top
102	Oil bunkering pier	Pipe line from wharf destroyed. Pier shows a crater.
103	Open storage area	Cratered
104	Warehouse	Structural damage
105	" (drum storage)	Structural damage
106	Warehouse	Minor roof damage
108	Warehouse	Minor roof damage
109	Can mfg. plant	Structural damage
110	Warehouse	Half of bldg sustained minor damage; the other half is gutted.
111	Warehouse	Destroyed
112	"	Minor roof damage
113	Drum Mfg. plant	Louver on roof destroyed
114	Tank car loading rack bldg.	Roof damaged

*Primary buildings.

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SUMMARY OF DAMAGE TO LAMAGE - TARGET 127

Orig.* Capacity - bbls	<u>STORAGE</u> 761,600	<u>INTERMEDIATE STORAGE</u> 100,600
Total damage - bbls	334,000	26,100
Percent:	43.6	25.9

ITEMIZATION OF DAMAGE - TARGET 127

<u>ANNO.</u> <u>NO.</u>	<u>IDENTIFICATION</u>	<u>DESCRIPTION OF DAMAGE</u>
3	Probable office	Destroyed
4	Unidentified	Destroyed
5	Unidentified	Minor roof damage
10	Warehouse	Destroyed
11	Unidentified	Roof damage
12	Still	Destroyed - crater visible about 40' E of unit.
13	Unidentified	Roof damage
15	Unidentified	Roof damage
16	Probable storage	Roof damage
19	Not identified	Roof damage
23	Storage tank - 60,000 bbls	Minor damage - crater between tanks
24	" " " "	Minor damage - hole on top
26	" " " "	Structurally damaged
27	Unidentified	Destroyed
28	"	2 small bldgs. destroyed. One small bldg. sustained minor damage to roof.
29	Unidentified	Minor damage
32	Unidentified	Destroyed
33	2 horizontal tanks - 500 bbls, one building	Destroyed
36	Not identified	Minor roof damage
37	" "	Destroyed
44	Warehouse (16,600 sq. ft.)	Destroyed
46	Possible drum plant	Minor roof damage
48	Possible drum plant	30% gutted
*49	Stills and fractioning columns	Minor damage
60	Storage tank - 25,000 bbls	Minor damage to top
70	Storage tank - 25,000 bbls	Structural damage
76	Tanks - storage - 13,000 bbls	" "
77	Storage tank - 20,000 bbls	" "
75	Inter. tanks - 24,400 bbls	" "
78	Storage tank - 15,000 bbls	Minor damage to top
79	" " - 10,000 bbls	Minor damage
80	Warehouse	Structural damage
81	"	Destroyed
82	"	"
83	Unidentified miscellaneous store and maintenance sheds	"
84	Same as No. 83	Destroyed
85	" " " "	Destroyed
86	" " " "	Destroyed
87	Prob. warehouse and oil pier	Structural damage
*88	Still	Destroyed
*90	"	"
94	Office group	Rough triangular built-up area (22,000 sq. ft.) destroyed.
*95	Still	Destroyed
96	Unidentified	"
97	Unidentified	"
98	Unidentified	Gutted

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NO.

IDENTIFICATION

DESCRIPTION OF DAMAGE

99.

2 intermediate tanks, 1400 bbls

Destroyed

*Primary buildings.

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C O N F I D E N T I A L

PART III - SECTION C - DAMAGE ASSESSMENT - 90.17-128 PETROLEUM
CENTER * KAWASAKI*

Twentieth Air Force Mission 310, 1/2 August 1945

315th Wing

Note: For assessment of damage to other primary target (90.17-116,127) see CIU Damage Assessment Report 173.

1. Summary:

a. Damage resulting from the above mission is scattered over the target area and adjoining targets, with a heavy concentration in the Nippon Oil Co. (Area 128C, Ref.A) where tank storage, refining units and warehouses were destroyed or severely damaged.

b. Of the original oil storage capacity in the target area (1,334,000 bbls, - 42 UGS), 51% (679,400 bbls.) has been destroyed or damaged by previous strikes. Near misses adjacent to several oil storage tanks indicate possible damage not included in the above figures. Nine per cent (117,800 bbls) of the above 51% was destroyed or damaged by previous strikes.

c. The highway bridge connecting the target to the mainland has been damaged, thus cutting vehicular communications - several direct hits on the RR, on either side of the bridge, have cut rail connections.

d. New damage to adjacent targets resulting from 20th Air Force Mission 310 is as follows: (see inclosure)

- 90.17-110 Tsurumi Steam Power Plant - minor building destroyed; conveyor broken in several places; plant is inoperative.
- 90.17-133 Shibaura Engineering Works - large portions of two of the three largest buildings (probably heavy assembly shops) are destroyed or gutted. Four other major buildings not shown on annotated print are gutted.
- 90.17-481 Tokyo Gas Co., Tsurumi Branch - two of three large gas-meters appear damaged.
- 90.17-1351 Tokyo Wakayama Iron Works - part of principal building near bridge is gutted.
- 90.17-2038 Army Oil Storage - two large tanks destroyed.
 - A. Japan Casting Co - five warehouses destroyed or damaged. Probable offices, destroyed.
 - B. Mitsubishi Chemical Equipment Co. - one major building gutted; four minor buildings destroyed or damaged.
 - C. Nisshin Flour Mill - one minor building destroyed, one partially destroyed, two damaged.

Both the RR and highway bridge connecting 90.17-2038 to the mainland are damaged - communications are cut.

Note: In Damage Assessment Report 157, Targets 2038 I, J and K were incorrectly numbered as being part of Target 2038 - actually they are un-numbered targets.

Inclosure: Annotated enlargement showing damage (3FR5M22-2: 8).

* Based on 20th A.F. CIU D.A. Report No. 184.

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SUMMARY OF DAMAGE TO TANKAGE

Orig.*Capacity - bbls.	Total
	1,334,000
New Damage - bbls.	561,600
- %	42%
Old Damage - bbls	117,900
- %	9%
Total damage and Removal- bbls.	679,400
- %	51%

*Original means capacity visible on first coverage, unless new tankage has been added.

ITEMIZATION OF DAMAGE

ANNOT. NO.	IDENTIFICATION	DESCRIPTION OF DAMAGE, etc
3	Warehouse 23,200 sq.ft.	2 Direct hits, ends of bldg warped
4	" " "	Direct hit, ends of bldg warped
5	" " "	Approx 50% destroyed
6	" 3200 sq.ft.	Minor roof damage
7	" 4900 sq.ft.	" " "
9	" 5750 sq.ft.	Approx 25% destroyed
13	Oil Storage tank Cap 75000 bbl.	Retrieved
16	" " " " " "	Near Miss, prob damaged
17	" " " " " "	2 near misses prob damaged
22	Warehouse 11300 sq.ft.	Approx 25% destroyed
23	" 23200 sq.ft.	Approx 10% "
24	" " "	Cut in half, prob 100% destroyed
31	Still & Furnace	Partially destroyed
34	Processing plant	Destroyed
35	2 Storage sheds 1330 sq.ft. ea.	Destroyed
36	Processing 2730 sq.ft.	Destroyed
37	Poss Office or Lab 3700 sq.ft.	"
38	Prob boiler house 3270 sq.ft.	50% destroyed, 50% minor roof damage
39	6 intermediate tanks 2000 bbl cap. each	4 damaged, 2000 bbl cap
40	9 tanks 6000 bbl each	3 destroyed, 45000 bbl cap
44	5 tanks 6000 bbl each	4 destroyed, 24000 bbl cap
46	2 Agitator towers	1 destroyed
47	Warehouse 5740 sq.ft.	50% destroyed
49	" 7540 "	Destroyed
50	" " "	Destroyed
52	" 6700 "	Destroyed
53	" 7540 "	Destroyed
54	" 3700 "	Destroyed
56	" 6700 "	Structurally damaged
58	Storage tank 16000 bbl cap	Destroyed
59	Storage tank 13000 bbl cap	Destroyed
60	6 Storage tanks 2200 bbl cap ea.	3 destroyed 6600 bbl cap
61	Storage tank 75000 bbl cap	Destroyed
62	Storage tank 75000 bbl cap	Destroyed
71	Storage tank 29000 bbl cap	Destroyed
75	Customs office	Approx 30% destroyed
76	Shed 3430 sq.ft.	Damaged
77	Warehouse 14760 sq.ft.	30% destroyed, 70% minor roof damage
79	" " "	40% destroyed
81	Storage 4450 "	30% destroyed
83	Warehouse 14760 "	30% destroyed
84	Unid. Sheds (10)	(1) damaged
87	3 Warehouses 16200 sq.ft.	75% destroyed
88	Warehouse 5170 sq.ft.	Destroyed
88	" 2730 sq.ft.	Destroyed

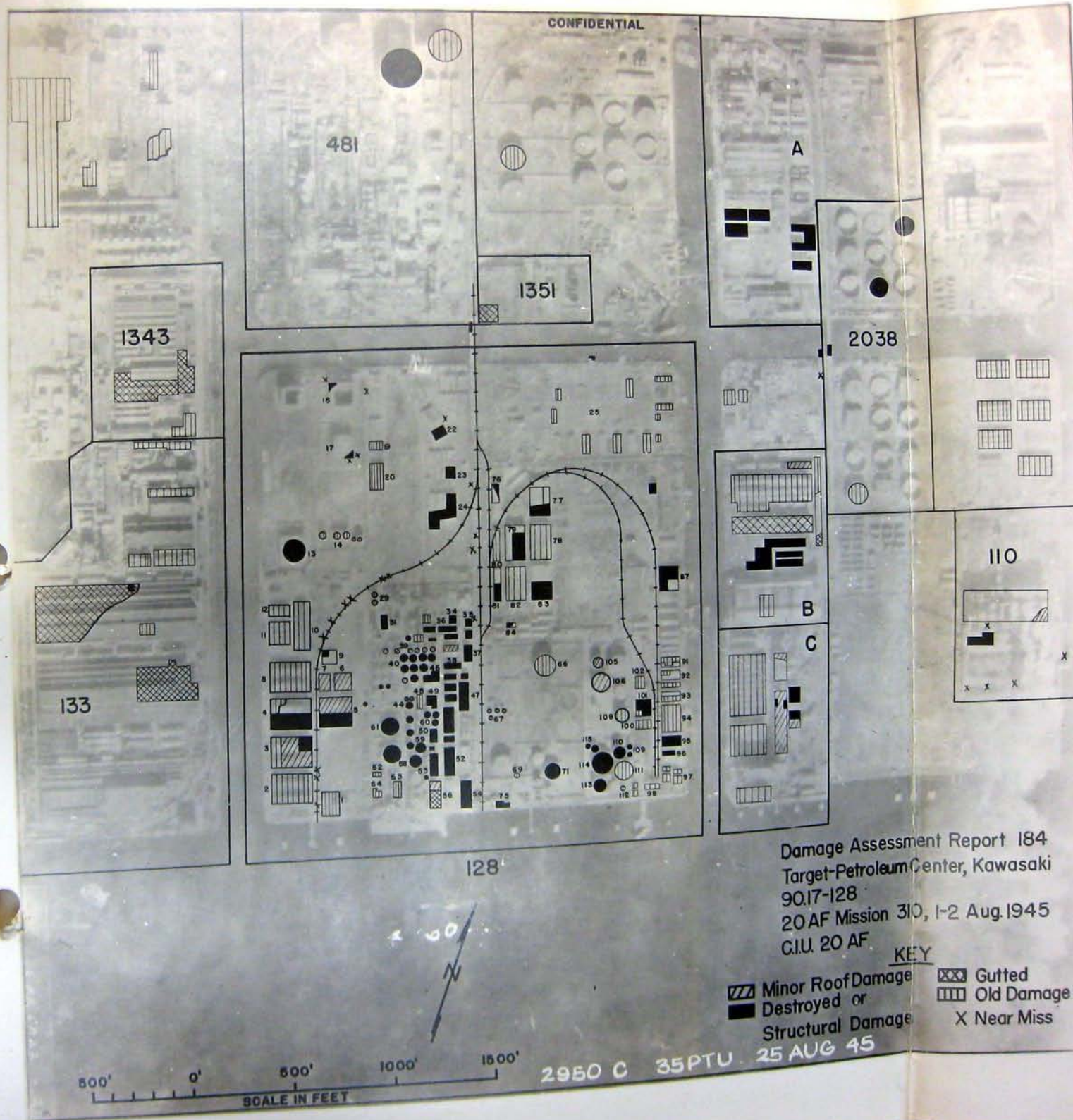
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ANNOY NO.	IDENTIFICATION	DESCRIPTION OF DAMAGE etc
101	Prob canning & Packing 4340 sq.ft.	Destroyed
105	Storage tank, 19000 bbl cap	Damaged
106	" " 42000 " "	Damaged
109	4 storage tanks 5000 bbl cap ea	2 destroyed 11600 bbl cap.
110	Storage tank 20000 bbl cap	Destroyed
113	4 Storage tanks (2) 4000 bbl cap ea (1) 20000 bbl cap (1) 32000 bbl cap	(1) 32000 bbl cap. destroyed Destroyed
114	Storage tank 75000 bbl cap	Destroyed
115	Storage tank 4000 bbl cap	Destroyed

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C O N F I D E N T I A L

PART III - SECTION D - DAMAGE ASSESSMENT* - 90.32-1841 URE COAL
LIQUEFACTION PLANT
 3357N - 13108E

XXI Bomber Command Mission 270, 15/16 July 1945
 Twentieth Air Force Mission 283, 22/23 July 1945
 Twentieth Air Force Mission 315, 5/6 August 1945

315th Wing
 315th Wing
 315th Wing

1. Summary:

a. Extensive damage has been inflicted to Target 1841 as a result of the three above listed missions. The entire storage capacity of the plant has been damaged or destroyed along with all of the main installations including the L.T.C. plant, gas generating plant, power station, hydrogenation plant, and the refining unit. Least affected is the storage and warehouse section, in the northern part of the plant area.

b. All of the coal and coke conveyors were severely damaged or destroyed as well as the rail spur leading to the plant.

c. The target was built on reclaimed land and pre-strike photos show about 10% of the area as still being covered with water. After the last strike about 50% of the plant area is covered with water as the result of several hits on retaining walls.

2. Summary of Damage to Tankage:

		Type of Storage			Total
		Crude	Intermediate	Refined Products	
Original Capacity - bbls.			35,535	114,600	150,135
New Damage	- bbls.		33,635	48,600	82,235
	- %		95	42.5	54.5
Removal	- bbls.		1,900	66,000	67,900
	- %		100	100	100
Total damage and Removal	- bbls.		35,535	114,600	150,135
	- %		5	57.5	45.5

Enclosure: Annotated enlargement (3FR5M289-2:54)

3. Itemization of Damage:

ANNOT.

NO.	IDENTIFICATION	Sq. FT.	DESCRIPTION OF DAMAGE
3	Gantry crane		Destroyed
4	Prob. storage building	6,840	"
5	" " "	6,840	"
6	" " "	6,840	"
7	" " "	6,840	"
9	Pump house	2,960	"
10	Prob. storage building	2,125	"
11	" " "	7,020	"
12	" " "	4,150	"

* Based on 20th A.F. CIU D.A. Report No. 175.

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ANNO. NO.	IDENTIFICATION	SQ.FT.	DESCRIPTION OF DAMAGE
13	Gas holder - incomplete		Destroyed
15	L.T.C. Retort house	13,300	40% structural, 40% minor roof damage, 20% gutted.
22	Conveyor		Badly damaged
27	Unidentified building	14,350	Destroyed
29	" "	12,000	"
30	Coke conveyor		"
31	Water gas plant,	6,360	Structurally damaged
32	" "	6,360	" "
33	Gas purification building	7,775	Destroyed
34	Unidentified building	1,933	Destroyed
35	Column		Badly damaged
36	Unidentified building	2,520	Destroyed
37	" "	3,720	"
38	Gas holder	56' Diam.	"
39	Work shop	6,320	"
40	" "	10,200	"
41	Pump house	3,200	"
43	Tower		Badly damaged
45	Unidentified building	13,200	Destroyed
46	Fuel crushing plant	16,300	50% gutted, 50% minor roof damage
47	Fuel conveyor		Destroyed
48a	Central power station - boiler house		50% gutted
48b	" " " "		
	generator hall	54,100	30% gutted, 70% minor roof damage
49	Unidentified building	4,830	Destroyed
50	Gas holder under construction		"
51	Unidentified building	11,970	"
52	Water tower		Badly damaged
53	Compressor & gas washing house	53,600	50% gutted
54a	Injector house	14,700	50% "
59	Unidentified building	3,530	100% minor roof damage
60	" "	3,450	100% " " "
61	" "	12,300	Destroyed
65	Feed stock tank under construction		"
66	Unidentified building	5,210	"
67	" "	3,870	"
68	Storage tanks	11,000 bbls.	Badly damaged
69	" "	11,000 "	" "
70	" "	11,000 "	" "
73	" "	11,000 "	" "
79	Two storage tanks	4,600 "	" "
82	Unidentified building	5,170	Destroyed
83	Four rundown tanks	3,200 bbls.	"
84	12 " "	7,500 "	"
85	8 " "	5,600 "	"
86	Pipe stills	1,540	Badly damaged
87	" "	1,217	" "
88	Control & pump house	6,960	Destroyed
89	6 rundown tanks	3,750 bbls.	"
90	9 " "	5,625 "	"
91	Oil treatment unit	3,240	Badly damaged
92	" " "	3,240	" "
93	Stores & workshop	6,000	Destroyed
94	" "	2,660	"
95	" "	1,400	"
96	" "	12,430	20% destroyed, 20% gutted
100	" "	1,630	Destroyed
101	" "	5,130	60% destroyed, 40% gutted
102	Main office	13,500	60% destroyed
103	Stores etc.	5,500	60% destroyed
111	" "	7,630	60% destroyed

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ASSET 90 32-1841
URE SODIFICATION PLANT
XXI BC MISSION 270 15 30 1945
20 AF MISSION 283 15 30 1945
310 15 30 1945
DAMAGE ASSESSMENT 175

- DESTROYED OR STRUCTURAL DAMAGE
- ▨ GUTTED
- ▤ MINOR ROOF DAMAGE
- ⊗ TANKS REMOVED

GIU 20 AF
2882 C 35PTU 18 AUG 45

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S E C R E T

ANNEX

E

CONSOLIDATED STATISTICAL SUMMARY

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

S E C R E T

S E C R E T

ANNEX

E

CONSOLIDATED STATISTICAL SUMMARY

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

S E C R E T

-SECRET-

TWENTIETH



AIR FORCE

CONSOLIDATED STATISTICAL SUMMARY OF COMBAT OPERATIONS

FORM 34

MISSION NO. 303, 310 & 315

28 July, 1 & 5 August 1945

Field Orders #10, #12, #14

Mission #303 - 315th Wing - 80 Aircraft - Shimotsu Oil Refinery
Mission #310 - 315th Wing - 110 Aircraft - Kawasaki Petroleum Complex (AAF Targets 116, 127, 128)
Mission #315 - 315th Wing - 100 Aircraft - Ube Coal Liquefaction Company

EFFECTIVENESS OF MISSIONS

Aircraft Airborne 327
Percent Of Aircraft On Hand 68.7%

Aircraft Bombing Primary Targets. . . 302
Percent Of Bombing Aircraft Airborne. 94.1%

Bombs Dropped On Primary Targets. 2621 Tons

Bombs Dropped On Other Targets. 65 Tons

Bombing Results - Preliminary reports indicate the following damage:

#303 - 75% of tank capacity destroyed.
#310 - (Indicates damage to date) - Target 116 - 41% storage tank capacity destroyed. Target 127 - 43% storage capacity and 35% intermediate tank capacity destroyed. Target 128 - 35% storage capacity and 15% intermediate tank capacity destroyed.
#315 - 100% of refining units and 80% of stores and workshops destroyed or damaged.

COST OF MISSIONS

Aircraft Lost 1
Percent Of Aircraft Airborne. 0.3%

Aircraft Damaged. 26
Percent Of Aircraft Airborne. 8.0%

Crew Member Casualties. 1
Percent Of Total Participating. 0.03%

Aircraft Landing At Iwo Jima. . . 14

DATE OF ISSUE 14 August 1945

-SECRET-

33RD STATISTICAL CONTROL UNIT

SECRET

MISSION 303, 310 & 315

DATE 28 July, 1 & 5 August 1945

A I R C R A F T P A R T I C I P A T I N G

UNIT	NUMBER OF AIRCRAFT				TIME OF TAKE OFF			TIME OF RETURN			NUMBER OF AIRCRAFT						
	ON HAND	SCHED- ULED	FAILING TO TAKEOFF	AIR- BORNE	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
315WG	153	85 2a	11 -	82 b 2	28 July	0630 Z	0756 Z	28 July	Mission #303 2003 Z	2206 Z	76 -	- -	1 -	- 2	77 2	5 -	2 -
315WG	160	130 2a	3 -	128 2	1 Aug.	0630 Z	0744 Z	1 Aug.	Mission #310 2016 Z	2209 Z	120 -	- -	2 -	- 2	122 2	6 -	7 -
315WG	163	111 2a	1 -	111c 2	5 Aug.	0630 Z	0823 Z	5 Aug.	Mission #315 2126 Z	2338 Z	106 -	- -	2 -	- 2	108 2	3 -	5 -
TOTAL	476	326 6	15 -	321 6							302 -	- -	5 -	- 6	307 6	14 -	14 -

35 PTM 7-13-45

- a Wind run aircraft.
 b Includes 8 spare aircraft.
 c Includes 1 spare aircraft.

NOTE: Missions #303 and #310 were previously reported on Consolidated Summaries 297-303 and 306-310. Repeated here for purposes of comparing the missions of the 315th Wing.

SECRET

S E C R E T

BREAKDOWN OF ALL AIRCRAFT FAILING TO BOMB PRIMARY TARGET

MISSION 303, 310, & 315
DATE 28 July, 1 & 5 Aug. 45

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
315VG	4	-	1	-	-	-	Mission #303	-	-	-	-	-	1	-	-
315VG	6	-	2	-	-	-	Mission #310	-	-	-	-	-	-	-	-
315VG	2	-	1	1 <u>a</u>	-	1 <u>a</u>	Mission #315	-	-	-	-	-	-	-	-
TOTAL	12	-	4	1	-	1		-	-	-	-	-	1	-	-

a Air crew error.

S E C R E T

SECRET

B O M B I N G R U N

MISSION 303, 310 & 315

DATE 28 July, 1&5 August 1945

UNIT	TARGET BOMBED		AIRCRAFT DROPPING BOMBS	TIME OF RELEASE		ALT. OF RELEASE		VISUAL SIGHTING				RADAR SIGHTING		
	NAME OF TARGET	TYPE		EARLIEST	LATEST	LOWEST	HIGHEST	STANDARD	ON REFER- ENCE OR OFFSET PT.	RADAR RUN WITH VIS. CORRECT'NS	DROPPING ON LEADER	DIRECT	OFFSET	DROPPING ON LEADER
315WG	Shimotsu Oil Refinery	P	78 <u>a</u>	1302 Z	1523 Z	Mission #303 10100	12000	-	-	-	-	78	-	-
	Kushimoto	TO	1	1332 Z	-	9400	-	-	-	-	-	1	-	-
	Kawarago	TO	1 <u>b</u>	1433 Z	-	10500	-	-	-	-	-	1	-	-
	Milwasaki	TO	1 <u>b</u>	1420 Z	-	11400	-	-	-	-	-	1	-	-
315WG	Kawasaki Petroleum Complex	P	120	1314 Z	1436 Z	Mission #310 16400	18600	6	-	-	-	114	-	-
	Shimizu Oil Refinery	P	1 <u>c</u>	1212 Z	-	17300	-	-	-	-	-	1	-	-
	Shizuoka	TO	1	1409 Z	-	10600	-	-	-	-	-	1	-	-
	Shimoda	TO	1	1337 Z	-	15000	-	-	-	-	-	1	-	-
	Shuzengi	TO	1 <u>d</u>	1158 Z	-	17700	-	1	-	-	-	-	-	-
						Mission #315								
315WG	Ube Coal Liquefaction Co.	P	108 <u>a</u>	1324 Z	1531 Z	10300	12600	2	-	-	-	106	-	-
	Shimizu	TO	1	1433 Z	-	12000	-	-	-	-	-	1	-	-
	Hososhima	TO	1	1503 Z	-	11400	-	-	-	-	-	1	-	-
	Nobeoka	TO	1 <u>b</u>	1404 Z	-	10600	-	-	-	-	-	1	-	-
TOTAL	Primary Targets	P	307					8	-	-	-	299	-	-

a Includes 2 wind run aircraft.
b Also bombed primary target.
c Primary for wind run aircraft.
d TO for wind run aircraft.

SECRET

SECRET

MISSION 303, 310, & 315

DATE 28 July, 1&5 August 1945

DISPOSITION OF BOMBS

UNIT	TYPE OF BOMB	FUZE SETTING		LOADED ON AIRBORNE AIRCRAFT		RELEASED ON TARGETS						JETTISONED		RETURNED		OTHER	
		Nose	Tail	No.	Tons	PRIMARY *		PRIMARY **		TARGETS OF OPP.		No.	Tons	No.	Tons	No.	Tons
						No.	Tons	No.	Tons	No.	Tons						
315WG	AN-M64 500# G.P.	.1	N.D.	2868	717.0	2633	Mission #303 658.3			67	16.7	168	42.0	-	-	-	-
315WG	AN-M64 500# G.P.	.1	.025	4450	1112.5	4069	Mission #310 1017.2	32	8.0	104	26.0	245a	61.3	-	-	-	-
315WG	AN-M64 500# G.P.	.1	.01	3951	987.7	3752	Mission #315 938.0			90	22.5	109	27.2	-	-	-	-
TOTAL	AN-M64 500# G.P.			11269	2817.2	10454	2613.5	32	8.0	261	65.2	522	130.5	-	-	-	-

a 18 bombs dropped safe with complete arming wires.
 * Main force.
 ** Wind run.

SECRET

S E C R E T

MISSION 303, 310, & 315
DATE 28 July, 185 August 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		TOTAL PARTICI- PATING	KILLED	MISS- ING	WOUNDED & INJURED	TOTAL CASUALTIES
															MAJOR	MINOR					
315WG							None	-	1	-	1	-	-	-	-	2	850				None
315WG							None	-	22	-	1	-	-	-	2	21	1316	-	-	1	1
315WG							None	-	1	-	-	-	-	-	-	1	1155				None
TOTAL							None	-	24	-	2	-	-	-	2	24	3321	-	-	1	1

S E C R E T

S E C R E T

MISSION ~~303, 310, & 315~~

DATE ~~26 July, 1 & 5 August 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	FIRE IN COMBAT	TEST FIRED	JETTISONED	ON LOST A/C	TOTAL
315VG	12	-	-	-	Mission #303 -	2789	-	-	-	2789
315VG	30-35	7	-	-	Mission #310 -	90	4405	-	-	4495
315VG	25-35	1	-	-	Mission #315 -	-	3891	-	-	3891
TOTAL	67-82	8	-	-	-	2879	8296	-	-	11175

S E C R E T

S E C R E T

MISSION 303, 310 & 315
 DATE 28 July, 1 & 5 August 1945

FLIGHT DATA & FUEL CONSUMPTION

MISSION NUMBER	#303	#310	#315
UNIT	315TH WING	315TH WING	315TH WING
AIRCRAFT CONSIDERED	76	118	105
AVERAGE FLYING TIME	13:59	14:02	15:16
FUEL CONSUMED:			
Average	5384	5491	5517
Maximum	5775	5970	5889
Minimum	5097	5130	5190
FUEL REMAINING:			
Average	1145	1039	969
Maximum	1656	1450	1295
Minimum	765	561	596
AVG. GALS. USED PER HOUR	385.1	391.1	361.5
TOTAL USED ON AIRBORNE A/C	432898	690827	602383

WEIGHT DATA

NO. AIRCRAFT AIRBORNE	84	130	113
AVG. BASIC WT. OF AIRCRAFT	71112	71159	71145
AVERAGE USEFUL LOAD	62196	62239	62275
AVG. NO. OF BOMBS LOADED	34.14 -	34.2 -	34.96 -
	M-64	M-64	M-64
AVG. WT. OF BOMBS LOADED	18375	18410	18704
AVERAGE FUEL LOADED	6530	6527	6486
AVG. WT. OF FUEL LOADED	39180	39162	38916
AVERAGE MISC. WEIGHT	4641	4667	4655
AVG. GROSS WT. AT TAKE OFF	133308	133398	133420

Bomb Weights: M-64 (TNT) - 535 lbs.
 M-64 (Comp B) - 550 lbs.

S E C R E T

S E C R E T

ANNEX

F

TWENTIETH AIR FORCE FIELD ORDERS

Missions No. 309, 310 and 315

28 July, 1 and 5 August 1945

S E C R E T

SECRET

SECRET

Auth: CG, Twentieth Air Force

Initials:

Date: 27 July 1945

FIELD ORDERS)

NUMBER 10)

TWENTIETH AIR FORCE

GUAM

27 July 1945 - 0500K

Maps: Japan Aviation Chart 1:218,380.

1. Omitted.
2. Twentieth Air Force attacks TSU, AOMORI, ICHINOMIYA, UJIYAMADA, OGAKI, and UNAJIMA URBAN INDUSTRIAL AREAS and 90.25 XXI BC 5046, THE SHIMOTZU OIL REFINERY on night 28/29 July 1945.
3. a. 58th Wing:

- (1) Primary visual and radar targets: TSU and AOMORI URBAN INDUSTRIAL AREAS

	<u>TARGET</u>	<u>MPI</u>	<u>FORCE REQUIRED</u>
(a)	TSU	051055	2 Groups
(b)	AOMORI	069042	2 Groups

MPI References: XXI BomCom Litho-Mosaics

(a) TSU AREA No. 90.24 - Urban Area

(b) AOMORI AREA No. 90.5 - Urban.

- (2) Route:

(a) Base	(b) Base
IWO JIMA	IWO JIMA (Staging Area)
3000N - 13900E	3545N - 14110E
3400N - 13616E (IP)	3317N - 14125E
Target	3951N - 1394530E
Right turn	4037N - 13952E
3000N - 13900E	4046N - 14004E (IP)
IWO JIMA	Target
Base.	Right Turn
	3316N - 14135E
	IWO JIMA
	Base.

- (3) Force on AOMORI will stage through IWO JIMA, the wing being held responsible for readiness of aircraft at designated takeoff time.

- (4) Altitudes:

(a) Enroute to target: 3,000 - 3,300 ft. and 3,000 - 3,300 ft.

(b) Attack: Force (a) - 10,000 - 10,800 ft.; Force (b) - 13,000 - 13,800 ft.

(c) Enroute from target: Force (a) and (b) - 15,000 ft. minimum.

SECRET

SECRET

F.O. #10

- (5) Bomb Load: 4 groups E-48 ICs fused to open 5,000 ft. above the target, with the exception of 12 pathfinder aircraft which will carry M-47 IBs fused instantaneous nose.
- (6) Intervalometer Setting:
 - (a) M-47 IBs - 75 ft.
 - (b) E-48 ICs - 50 ft.
- (7) Bombing Airspeed: 195 CIAS.
- (8) Takeoff Time:
 - (a) Force (a): 281730K.
 - (b) Force (b): 281300K (from IWO JIMA).

b. 73rd Wing:

- (1) Primary visual and radar target: ICHINOMIYA URBAN INDUSTRIAL AREA

MPI

FORCE REQUIRED

065037

4 Groups

MPI Reference: XXI BomCom Litho-Mosaic ICHINOMIYA AREA 90.20.

- (2) Route:

Base
IWO JIMA
3000N - 13900E
3351N - 13449E
352430N - 13603E (IP)
Target
3520N - 13710E
343830N - 13804E
3000N - 13900E
IWO JIMA
Base.

- (3) Altitudes:

- (a) Enroute to target: 6,000 - 6,800 ft. and 9,000 - 9,300 ft.
- (b) Attack: 14,000 - 15,400 ft.
- (c) Enroute from target: 15,000 ft. or above.

- (4) Bomb Load: Mixed load, 1/2 M-47 IBs fused instantaneous; 1/2 E-46 ICs fused to open 5,000 ft. above the target.
- (5) Intervalometer Setting: 50 ft.
- (6) Bombing Airspeed: 195 CIAS.
- (7) Takeoff: 281700K.

c. 313th Wing:

SECRET

SECRET

F.O. #10

- (1) Primary visual and radar target: UJIYAMADA URBAN INDUSTRIAL AREA

MPI

FORCE REQUIRED

087047

3 Groups

MPI Reference: XXI BomCom Litho-Mosaic UJIYAMADA AREA
90.24 - Urban.

- (2) Route:

Base
IWO JIMA
3000N - 13900E
3450N - 13820E
3459N - 13735E
344530N - 1371030E (IP)
Target
Left Turn
3000N - 13900E
IWO JIMA
Base.

- (3) Altitudes:

(a) Enroute to target: 3,000 - 3,800 ft. and 8,000 - 8,800 ft.

(b) Attack: 12,000 - 12,800 ft.

(c) Enroute from target: 15,000 ft. or above.

- (4) Bomb Load: 3 groups E-46 ICs fused to open 5,000 ft. above the target.

(5) Intervalometer Setting: 50 ft.

(6) Bombing Airspeed: 195 CLAS.

(7) Takeoff: 281930K.

d. 314th Wing:

- (1) Primary visual and radar targets: OGAKI and UWAJIMA URBAN INDUSTRIAL AREAS

TARGET

MPI

FORCE REQUIRED

(a) OGAKI

044092

3 Groups

(b) UWAJIMA

065079

1 Group

MPI References: XXI BomCom Litho-Mosaics

(a) OGAKI AREA 90.20 - Urban.

(b) 90.31 - Urban.

SECRET

SECRET

F.O. #10

(2) Route:

(a) Base
IWO JIMA
3000N - 13900E
3351N - 13449E
3450N - 13449E
3520N - 1360430E (IP)
Target
3535N - 13652E
3455N - 13300E
3000N - 13900E
IWO JIMA
Base

(b) Base
IWO JIMA
3242N - 13150E
331430N - 13147E
332030N - 13201E (IP)
Target
Right Turn
3200N - 13600E
3000N - 13900E
IWO JIMA
Base.

(3) Altitudes:

- (a) Enroute to target: 6,000 - 6,800 ft. and 9,000 - 9,800 ft.
- (b) Attack: Force (a) - 14,000 - 15,400 ft; Force (b) - 10,000 - 10,800 ft.
- (c) Enroute from target: Force (a) - 15,000 ft. or above; Force (b) - 12,000 ft. or above.
- (4) Bomb Load: Mixed load, 1/2 M-47 IBs fused instantaneous; 1/2 E-46 ICs fused to open 5,000 ft. above the target.
- (5) Intervalometer Setting: 50 ft.
- (6) Bombing Airspeed: 195 CLAS.
- (7) Takeoff: 281830K.

e. 315th Wing:

- (1) Primary visual and radar target: 90.25 - XXI BC 5046 SHIMOTZU OIL REFINERY

MPI

067071

FORCE REQUIRED

80 A/C

MPI Reference: XXI BomCom Litho-Mosaic WAKAYAMA AREA, MARUZEN OIL REFINERY No. 90.25 - 1764.

(2) Route:

Base
IWO JIMA
3000N - 13900E
3312N - 1340230E
3350N - 13445E (IP)
Target
Right Turn
3000N - 13900E
IWO JIMA
Base.

SECRET

SECRET

F.O. #10

- (3) Altitudes:
 - (a) Enroute to target: 5,000 - 5,800 ft. and 7,000 - 7,800 ft.
 - (b) Attack: 10,000 - 10,800 ft.
 - (c) Enroute from target: 15,500 ft. minimum.
- (4) Bomb Load: 500 lb GPs fused 1/10 nose and non-delay tail.
- (5) Intervalometer Setting: Minimum.
- (6) Takeoff: 281630K.
- x. (1) Method of Attack: By individual aircraft compressed into as short a strike time as possible.
- (2) Pathfinders: On all targets, except XXI BC 5046, aircraft containing best radar crews will take off in order to strike first.

4. Tactical Mission Numbers:

TSU URBAN	-	297
AKOMORI URBAN	-	298
ICHINOMIYA URBAN	-	299
UJIYAMADA URBAN	-	300
OGAKI URBAN	-	301
UWAJIMA URBAN	-	302
XXI BC 5046	-	303

- 5. a. (1) Twentieth Air Force SOI and SOP for strike reports, contact reports and IFF procedures.
- (2) Each flight squadron will be equipped to barrage jam the region 190-210 megacycles.
- (3) Observations of the extent and reliability of the barrage will be made while over the target.
- (4) Spot jamming will be conducted over the frequency ranges 180-190 and 210-220 megacycles, as desired by the Wing Commander and as governed by the capacity of each wing.
- (5) Jammers will be kept in operation at all times when closer than 50 miles to the mainland and will be turned off at all other times, except for preflight and postflight frequency checks, which are to be made on the ground while the jammers are installed in the airplanes.

b. Command Post: Hq., Twentieth Air Force, GUAM.

BY COMMAND OF MAJOR GENERAL LEMAY:

A W KISSNER -
Brigadier General, USA
Chief of Staff

OFFICIAL:

J. B. Montgomery
J. B. MONTGOMERY
Colonel, G. S. C.
D O/S, Operations

SECRET

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FIELD ORDERS)
:
NUMBER 10)

TWENTIETH AIR FORCE
GUAM
27 July 1945 - 0600K

AMENDMENT NO.:1

Change paragraph 3. b. (1) to read:

- (1) Primary visual and radar target: ICHINOMIYA URBAN
INDUSTRIAL AREA

MPI

FORCE REQUIRED

095087

4 Groups

MPI Reference: XXI Bomber Command Litho-Mosaic ICHINOMIYA
AREA 90.20 - URBAN

BY COMMAND OF MAJOR GENERAL LEMAY:

A W KISSNER
Brigadier General, USA
Chief of Staff

OFFICIAL:

J B Montgomery
J B MONTGOMERY
Colonel, G.S.C.
D C/S, Operations

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Auth: CG, 20AF

Initials *g/11*

Date 27 July 1945

FIELD ORDERS)
:
NUMBER 10)

TWENTIETH AIR FORCE
GUAM
27 July 1945 - 0700G

AMENDMENT NUMBER 2.

Change paragraph 3. e. (2) to read:

3. e. (2) Base
IWO JIMA
3000N - 13900E
3322N - 1340230E
3350N - 13445E (IP)
Target
Right Turn
3000N - 13900E
IWO JIMA
Base.

BY COMMAND OF MAJOR GENERAL LEMAY:

A W KISSNER
Brigadier General, USA
Chief of Staff

OFFICIAL:

J. M. Montgomery
J. M. MONTGOMERY
Colonel, G.S.C.
D C/S, Operations

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- 2 - 33rd SCU, Twentieth Air Force
- 1 - RCM Office, Twentieth Air Force
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- 1 - OAS, Twentieth Air Force
- 2 - CTU, Twentieth Air Force
- 1 - A-2, Reporting, Twentieth Air Force
- 4 - A-2, Twentieth Air Force

SECRET

SECRET

SECRET

Auth: CG, Twentieth Air Force

Initials:

Date: 3 August 1945

FIELD ORDERS)

NUMBER 12)

TWENTIETH AIR FORCE

GUAM

1 August 1945 - 0400Z

Maps: JAPAN Aviation Charts 1:218,880.

1. a. Omitted.
2. Twentieth Air Force attacks HACHIOJI, TOYAMA, NAGASAKA and MITO URBAN AREAS and the KAWASAKI PETROLEUM COMPLEX on night of 1/2 August with maximum effort.
3. a. 58th Wing:
 - (1) Primary visual and radar target: HACHIOJI URBAN AREA (90.17)

<u>MPI</u>	<u>FORCE REQUIRED</u>
059078	Maximum Effort
MPI Reference: XXI BomCom Litho-Mosaic, HACHIOJI URBAN AREA 90.17 - Urban.	
 - (2) Route:

Base
IWO JIMA
3441N - 1384430E
350130N - 1384730E (IP)
5339N - 13920E (Target)
Left Turn
3528N - 13825E
3438N - 13805E
IWO JIMA
Base
 - (3) Altitudes:
 - (a) Enroute to target: 6,000 - 6,800 and 9,000 - 9,800 ft.
 - (b) Attack: 15,000 - 15,800 ft.
 - (c) Enroute from target: Minimum 16,000 ft.
 - (4) Bomb Load: Pathfinders M-47 IBs fuzed instantaneous nose. Remainder of force, M-17 ICs fuzed to open 5,000 ft. above target.
 - (5) Intervalometer Setting: 50 ft.
 - (6) Bombing Airspeed: CIAS 205 MPH.
 - (7) Take Off Time: 011830 King.

b. 73rd Wing:

- (1) Primary visual and radar target: TOYAMA URBAN AREA (90.11)

<u>MPI</u>	<u>FORCE REQUIRED</u>
106107	Maximum Effort
MPI Reference: XXI BomCom Litho-Mosaic, TOYAMA AREA "A" NO. 90.11 - URBAN.	

SECRET

SECRET

(2) Route:

Base
 IWO JIMA
 3353N - 13608E
 3615N - 13608E
 3642N - 13642E (IP)
 3641N - 13713 E (Target)
 3438N - 13805E
 IWO JIMA
 Base.

(3) Altitudes:

- (a) Enroute to target: 5,000 - 5,800 ft. and 8,000 - 8,800 ft.
- (b) Attack: 12,000 - 12,800 feet.
- (c) Enroute from target: Minimum 12,000 ft., Maximum 15,000 ft.
- (4) Bomb Load: 2 groups - mixed load for each aircraft, 1/2 load M-47 IBs and 1/2 load M-17 ICs. 2 groups - M-17 ICs. M-47 IBs fused instantaneous nose M-17 ICs fused to open 5,000 ft. above the target.
- (5) Intervalometer Setting: 50 ft.
- (6) Bombing Airspeed: CIAS 195 MPH.
- (7) Take Off Time: 011830King

c. 313th Wing:

- (1) Primary visual and radar target: NAGAOKA URBAN AREA (90.9).

<u>MPI</u>	<u>OAP</u>	<u>FORCE REQUIRED</u>
070073	031088	3 Groups (Maximum Effort)

MPI and OAP Reference: XXI BomCom Litho-Mosaic. NAGAOKA AREA 90.9 - Urban

(2) Route:

Base
 IWO JIMA
 3353N - 13608E
 3530N - 13610E
 3654N - 1372430E
 3710N - 13806E (IP)
 3726N - 13850E (Target)
 3650N - 14048E
 3545N - 14105E
 IWO JIMA
 Base.

(3) Altitudes:

- (a) Enroute to target: 3,000 - 3,800 ft. and 7,000 - 7,200 ft.
- (b) Attacks: 12,000 - 12,800 ft.
- (c) Enroute from target: Minimum 15,000 ft.
- (4) Bomb Load: 12 pathfinder A/C, M-47 IBs fused instantaneous nose. Remainder of force E-46 ICs fused to open 5,000 ft. above the target.

SECRET

SECRET

F.O #12

- (5) Intervalometer Setting: 50 ft.
- (6) Bombing Airspeed: CIAS 195 MPH
- (7) Take Off Time: 011600ZKing.

d. 314th Wing:

- (1) Primary visual and radar targets: MITO URBAN AREA (90.14).

MPI

FORCE REQUIRED

053101	3 Groups (Maximum)
086085	1 Group (Effort)

MPI Reference: XXI BomCom Litho-Mosaic, MITO AREA "A"
SOUTH MITO AREA.

- (2) Route:

Base
IWO JIMA
3510N - 14023E
3558N - 14027E (IP)
3623N - 14028E (Target)
Right Turn
IWO JIMA
Base.

- (3) Altitudes:

- (a) Enroute to target: 3,000 - 3,800 ft and 7,000 - 7,800 ft.
- (b) Attack: 12,000 - 12,800 ft.
- (c) Enroute from target: Minimum 12,000 ft. , Maximum 14,000 ft.

- (4) Bomb Load: All A/C, mixed load, 1/2 load M-47 IBS fuzed instantaneous and 1/2 load E-46 ICs fuzed to open 5,000 ft. above the target.

- (5) Intervalometer Setting: 50 ft.

- (6) Bombing Airspeed: CIAS 195 MPH.

- (7) Take Off Time: 011830ZKing.

- (8) 314th Wing will dispatch 2 special RCM jamming A/C to orbit point 3530N - 13942E within a radius of 10 miles at altitude 19,000 and 19,500 ft. at time designated by 315th Wing.

e. 315th Wing:

- (1) Primary visual and radar target: 90.17 - 116/127/130/128, KAWASAKI PETROLEUM COMPLEX.

SECRET

MPIFORCE REQUIRED

121015
135150

55 A/C
55 A/C

MPI Reference: XXI BomCom Litho-Mosaic:
MPI 121015 - KAWASAKI URBAN AREA
MPI 135150 - YOKOHAMA URBAN AREA.

(2) Route:

"A"

"B"

Base

Base

Iwo Jima

Iwo Jima

343630N 13851E

3436N 13813E

3457N - 13909E (IP)

3502N - 1384730E (IP)

353230N - 14027E Target

353230N - 14027E Target

Iwo Jima

Iwo Jima

Base

Base

- (3) Immediately before take off the Wing Commanding General will make decision as to which route will be utilized, based on the latest weather forecast.

(4) Altitude:

(a) Enroute to target: 5,000 - 5,800 ft and 8,000 - 8,800 ft.

(b) Attack: 16,000 - 17,000 ft.

(c) Enroute from the target: Minimum 15,000 ft.

(5) Bomb Load: 500 lb GPs fused 1/10 nose and 1/40 tail.

(6) Take-Off Time: 011630 King.

(7) 315th Wing will notify the 314th Wing the time for arrival and departure of the special jamming A/C.

x. (1) Method of Attack: By individual A/C with main force preceded by 12 pathfinder A/C from each wing.

(2) First 12 A/C of each wing scheduled to strike target first will be designated pathfinders and will be flown by the best radar bombing crews.

4. Tactical Mission Numbers:

HACHIOJI URBAN - - - - - Mission No. 306

TOYAMA URBAN - - - - - Mission No. 307

NAGAOKA URBAN - - - - - Mission No. 308

MITO URBAN - - - - - Mission No. 309

KAWASAKI PETROLEUM COMPLEX - - Mission No. 310

5. a. (1) The special jamming aircraft for the 314th Wing will be equipped to barrage jam the regions 190-210 and 72-84 megacycles. Spot jamming will be conducted over the frequency ranges 180-190 and 210-220 megacycles as desired by the Wing Commander and as governed by the capacity of each wing. In addition, all strike aircraft will be equipped with one jammer within the barrage band listed above providing sufficient equipment is available.
- (2) 315th Wing will be equipped to barrage jam the region 190-210 megacycles. Spot jamming will be conducted over the frequency ranges 180-190, 210-220 and 72-84 megacycles as desired by the Wing Commander and as governed by the equipment available.

SECRET

SECRET

Auth: CG, Twentieth Air Force

Initials: RSB

Date: 5 August 1945

FIELD ORDERS)

NUMBER 14)

TWENTIETH AIR FORCE

GUAM

5 August 1945 - 0400K

Map: JAPAN Aviation Chart 1:218,880.

1. Omitted.

2. Twentieth Air Force attacks IMABARI, SAGA, NISHINOMIYA/MIKAGE, and MAEBASHI URBAN AREAS, and 90.32 - 1841, UBE COAL LIQUEFACTION CO., on night of 5/6 August 1945.

3. a. 58th Wing:

(1) Primary visual and radar targets: IMABARI and SAGA URBAN INDUSTRIAL AREAS

<u>TARGET</u>	<u>MPI</u>	<u>FORCE REQUIRED</u>
(a) IMABARI	125114	2 Groups Normal
(b) SAGA	082060	2 Groups Normal

MPI References: Twentieth Air Force Litho-Mosaics:

(a) IMABARI AREA 90.29 - Urban.

(b) SAGA AREA 90.35 - Urban.

(2) Routes:

(a) Base	(b) Base
IWO JIMA	IWO JIMA
3338N - 13430E	2900N - 13700E
3415N - 13334E (IP)	3047N - 13018E
Target	3148N - 12953E
Left Turn	3241N - 13008E (IP)
IWO JIMA	Target
Base.	3240N - 13150E
	2900N - 13700E
	IWO JIMA
	Base.

(3) Altitudes:

(a) Enroute to target: 5,000 - 5,800 ft. and 8,000 - 8,800 ft.

(b) Attack: 12,000 - 12,800 ft.

(c) Breakaway: Force (a) - 13,000 ft.; Force (b) - 14,000 ft.

(4) Bomb Load: E-46 ICs.

(5) Takeoff: 051700K.

b. 73rd Wing:

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F.O. #14

- (1) Primary visual and radar targets: NISHINOMIYA/MIKAGE URBAN INDUSTRIAL AREAS

<u>TARGET</u>	<u>MPI</u>	<u>FORCE REQUIRED</u>
(a) NISHINOMIYA	111091	3 Groups Normal
(b) MIKAGE	042040	1 Group Normal

MPI References: XXI BomCom Litho-Mosaics:

- (a) NISHINOMIYA AREA 90.25 - Urban.
(b) KOBE AREA, KAWANISHI AIRCRAFT CO., 90.25 - 1702.

- (2) Route::

Base
TWO JIMA
3350N - 13435E (IP)
3444N - 13520E (Target)
3453N - 13517E
3500N - 13420E
3335N - 13420E
TWO JIMA
Base.

- (3) Altitudes:

- (a) Enroute to target: 5,000 - 5,800 ft. and 8,000 - 8,800 ft.
(b) Attack: Force (a) - 12,000 - 12,800 ft.; Force (b) - 14,000 - 14,800 ft.
(c) Breakaway: Force (a) - 17,000 ft.; Force (b) - 15,000 ft.

- (4) Bomb Load: E-46 and E-46 ICs to extent available; remainder M-17 ICs.

- (5) Two special jamming airplanes will be dispatched to orbit the point 344230N - 13515E, one at 17,000 ft. and the other at 17,500 ft.

- (6) Takeoff: 051900K.

c. 313th Wing:

- (1) Primary visual and radar target: MAEBASHI URBAN INDUSTRIAL AREA

<u>MPI</u>	<u>FORCE REQUIRED</u>
102072	3 Groups Normal

MPI Reference: XXI BomCom Litho-Mosaic MAEBASHI AREA 90.13 - Urban.

- (2) Route:

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Base
IWO JIMA
3545N - 14105E
3609N - 14019E (IP)
3727N - 13851E (Target)
Right Turn
3605N - 14100E
IWO JIMA
Base.

(3) Altitudes:

- (a) Enroute to target: 3,000 - 3,800 ft. and 7,000 - 7,800 ft.
- (b) Attack: 12,000 - 12,800 ft.
- (c) Breakaway: Above 15,000 ft.

(4) Bomb Load: E-46 ICs.

- (5) Three special jamming airplanes will be dispatched to orbit the point 3615N - 13923E, one at 16,000 ft., one at 16,500 ft., and one at 17,000 ft.

(6) Takeoff: 051630K.

d. 314th Wing:

- (1) Primary visual and radar targets: NISHINOMIYA/MIKAGE URBAN INDUSTRIAL AREAS

	<u>TARGET</u>	<u>MPI</u>	<u>FORCE REQUIRED</u>
(a)	NISHINOMIYA	103048	3 Groups Normal
(b)	MIKAGE	042040	1 Group Normal

MPI References: XXI BomCom Litho-Mosaics:

- (a) As (b) below.
- (b) KOBE AREA, KAWANISHI AIRCRAFT CO., 90.25 - 1702.

(2) Route:

Base
IWO JIMA
3350N - 13445E (IP)
3444N - 13520E (Target)
3453N - 13517E
3500N - 13420E
3335N - 13420E
IWO JIMA
Base.

(3) Altitudes:

- (a) Enroute to target: 3,000 - 3,800 ft. and 7,000 - 7,800 ft.
- (b) Attack: Force (a) - 14,000 - 14,800 ft.; Force (b) - 12,000 - 12,800 ft.

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(c) Breakaway: Force (a) - 17,000 ft.; Force (b) - 15,000 ft.

(4) Bomb Load: E-46 ICs.

(5) Two special jamming airplanes will be dispatched to orbit the point 344230N - 13515E, one at 18,000 ft. and the other at 18,500 ft.

(6) Takeoff: 051830K.

e. 315th Wing:

(1) Primary visual and radar target: THE UBE COAL LIQUEFACTION CO.
90.32 - 1841

MPI

FORCE REQUIRED

097122

100 A/C

MPI Reference: XXI BomCom Litho-Mosaic UBE COAL LIQUEFACTION CO.

(2) Route:

Base
IWO JIMA
3301N - 13306E
334330N - 13141E (IP)
Target
2900N - 13700E
IWO JIMA
Base.

(3) Altitudes:

(a) Enroute to target: 6,000 - 6,800 ft. and 9,000 - 9,800 ft.

(b) Attack: 10,000 - 11,000 ft.

(c) Breakaway: Below 11,000 ft.

(4) Bomb Load: 500 lb GPs.

(5) Takeoff: 051630K.

x. (1) Method of Attack: By individual aircraft compressed into as short a strike time as possible. On all incendiary targets, the main force is preceded by pathfinders, flown by best radar crews.

(2) All A/C, except 315th Wing, will climb to a minimum of 13,000 ft. on breakaway. 315th Wing will stay below 11,000 ft.

(3) 2 pathfinders from each wing, except 315th Wing, will carry full load of 500 lb GPs.

(4) Each aircraft will carry one T4E4 frag cluster loaded to be released last.

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F.O. #14

- (5) Bomb Fuzing: All incendiary clusters fused to open 5,000 ft. above target. T4E4 Frag cluster fused to open 3,000 ft. below aircraft. 500 lb GPs fused 1/10 nose and 1/100 tail.
- (6) Intervalometer Setting: All clusters - 35 ft. 500 lb GPs - minimum.

4. Tactical Mission Numbers:

SAGA	-	312
MAEBASHI	-	313
NISHINOMIYA/MIKAGE	-	314
90.32 - 1841	-	315
IMABARI	-	316

5. a. (1) Twentieth Air Force SOI and SOP for strike reports, contact reports and IFF procedures.
- (2) The 73rd and 314th Wings will dispatch jamming airplanes to orbit the point 3443 N - 13515E, with radius of 10 miles at altitudes ranging from 17,000 to 18,500 ft. They will be equipped to barrage jam the 190-210 mc and 78 mc regions and spot jam any gun-laying or searchlight signals.
- (3) The 313th Wing will dispatch jamming airplanes to orbit the point 3615N - 13923E, with a ten mile radius at altitudes of 16,000, 16,500 and 17,000 ft. These planes will be equipped to barrage the 72-84 mc and 190-210 mc regions and to spot jam any gun-laying or searchlight radars outside the barrage.
- (4) Jammers will be kept in operation at all times when closer than 50 miles to the mainland and will be turned off at all other times, except for preflight and postflight frequency checks, which are to be made on the ground while the jammers are installed in the airplanes.

b. Command Post: Hq., Twentieth Air Force, GUAM.

BY COMMAND OF LIEUTENANT GENERAL TWINING:

R K TAYLOR
Colonel, Air Corps
Chief of Staff

OFFICIAL:

John Montgomery
J B MONTGOMERY
Colonel, G.S.C.
D C/S, Operations

DISTRIBUTION:

2 - CG, 58th Bomb Wing	6 - A-3 Tactics, Twentieth Air Force
2 - CG, 73rd Bomb Wing	2 - 33rd SCU, Twentieth Air Force
2 - CG, 313th Bomb Wing	1 - RCM Office, Twentieth Air Force
2 - CG, 314th Bomb Wing	1 - Communications, Twentieth Air Force
2 - CG, 315th Bomb Wing	1 - OAS, Twentieth Air Force
1 - CG, VII Fighter Comd	2 - CIU, Twentieth Air Force
1 - CO, 3rd Photo Recon Sq	1 - A-2 Reporting, Twentieth Air Force
	4 - A-2, Twentieth Air Force

SECRET

R E S T R I C T E D

ANNEX

G

DISTRIBUTION

Missions No. 303, 310 and 315

28 July, 1 and 5 August 1945

R E S T R I C T E D

R E S T R I C T E D

DISTRIBUTION TACTICAL MISSION REPORT

Copy No.

1	Commanding General, Army Air Forces
2	Commanding General, U.S. Army Strategic Air Forces (Rear)
3	Commanding General, U.S. Army Strategic Air Forces (Guam)
4 - 5	Chief of Staff, U.S. Army Strategic Air Forces (Guam)
6	Commanding General, Twentieth Air Force
7	Commanding General, Eighth Air Force (Okinawa)
8	Commander in Chief, U.S. Army Forces, Pacific
9	Chief of Naval Operations, OP-16-V
10	Commander in Chief, Pacific Fleet (Adv Hq)
11	Commander in Chief, Pacific Fleet (Rear Hq)
12	Commander Air Force, Pacific Fleet
13	Commander, Third Fleet
14	Commander, Fifth Fleet
15	Commander, First Carrier Task Force
16	Commander, Marianas
17	Commanding General, U.S. Army Forces, Middle Pacific
18	Commanding General, Allied Air Forces, SWPA
19	Commanding General, Far East Air Forces
20	Commanding General, U.S. Strategic Air Forces in Europe
21	Commanding General, Mediterranean Allied Air Forces
22	Commanding General, Fifteenth Air Force
23 - 24	Commanding General, Seventh Air Force
25	Commanding General, VII Bomber Command
26 - 27	Commanding General, VII Fighter Command
28	Commanding General, Eleventh Air Force
29 - 33	Commanding General, 301st Fighter Wing
34	Command Hq, Allied Air Forces, SWPA ATTN: Senior Intelligence Officer, R.A.A.F.
35	Commander in Chief, U.S. Army Forces, Pacific ATTN: G-2 (For Section 22, RCM)
36	Officer in Charge, Joint Intelligence Center Pacific Ocean Areas
37	Commanding General, Army Air Forces ATTN: AC/AS Intelligence
38 - 67	Commanding General, Army Air Forces ATTN: AC/AS Intelligence, Collection Division
68 - 69	Commanding General, U.S. Army Strategic Air Forces (Guam) ATTN: Intelligence
70	Commanding General, U.S. Army Strategic Air Forces (Guam) ATTN: Communications FCR: Counter Measures Air Analysis Center
71	Commanding Officer, Twentieth Air Force Lead Crew School
72	Brigadier General H.S. Hansell, Jr.
73	Chief of Staff, Twentieth Air Force
74	Deputy C/S, Opns, Twentieth Air Force
75	AC of S, A-2, Twentieth Air Force
76	Chemical Warfare Officer, Twentieth Air Force
77	Ordnance Officer, Twentieth Air Force
78	Director of Tactics, A-1, Twentieth Air Force
79 - 80	Historical Officer, Twentieth Air Force

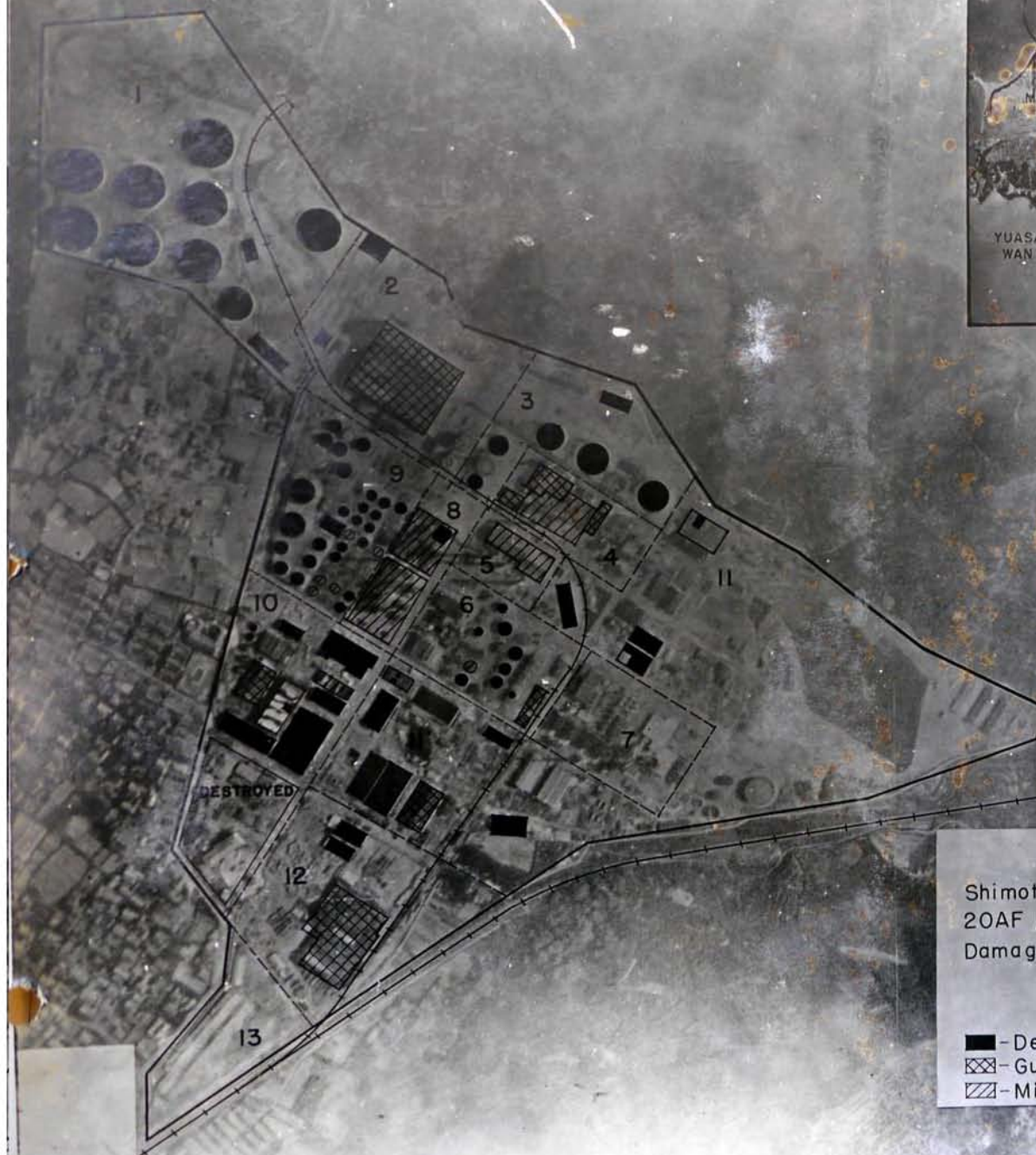
R E S T R I C T E D

R E S T R I C T E D

81	Commanding General; 58th Bombardment Wing
82	Commanding General; 73rd Bombardment Wing
83	Commanding General; 313th Bombardment Wing
84	Commanding General; 314th Bombardment Wing
85	Commanding General; 315th Bombardment Wing
86	Commanding Officer; 3rd Photo Reconnaissance Sq
87	Commanding Officer; 41st Photo Reconnaissance Sq
88	Commanding Officer; 55th Reconnaissance Sq, Long Range Weather
89	Commanding Officer, Twentieth Air Force Combat Staging Center (Provisional)
90	Commanding Officer; 33rd Statistical Control Unit
91	Commanding Officer; 6th Bomb Group (VH)
92	Commanding Officer; 9th Bomb Group (VH)
93	Commanding Officer; 16th Bomb Group (VH)
94	Commanding Officer; 19th Bomb Group (VH)
95	Commanding Officer; 29th Bomb Group (VH)
96	Commanding Officer; 39th Bomb Group (VH)
97	Commanding Officer; 40th Bomb Group (VH)
98	Commanding Officer; 330th Bomb Group (VH)
99	Commanding Officer; 331st Bomb Group (VH)
100	Commanding Officer; 444th Bomb Group (VH)
101	Commanding Officer; 462nd Bomb Group (VH)
102	Commanding Officer; 468th Bomb Group (VH)
103	Commanding Officer; 497th Bomb Group (VH)
104	Commanding Officer; 498th Bomb Group (VH)
105	Commanding Officer; 499th Bomb Group (VH)
106	Commanding Officer; 500th Bomb Group (VH)
107	Commanding Officer; 501st Bomb Group (VH)
108	Commanding Officer; 502nd Bomb Group (VH)
109	Commanding Officer; 504th Bomb Group (VH)
110	Commanding Officer; 505th Bomb Group (VH)
111	Commanding Officer; 509th Composite Group
112	Commanding Officer; 15th Fighter Group (VLR)
113	Commanding Officer; 21st Fighter Group (VLR)
114	Commanding Officer; 414th Fighter Group (VLR)
115	Commanding Officer; 506th Fighter Group (VLR)
116	Reporting Unit, 4-2 Twentieth Air Force (File Copy)
117 - 130	Reporting Unit, 4-2 Twentieth Air Force

R E S T R I C T E D

CONFIDENTIAL



TARGET 90.25-2252

Shimotsu Oil Refinery, Shimotsu
20AF Mission No.303,28-29 July 1945
Damage Assessment Report No.172

C.I.U. 20AF

LEGEND

- - Destroyed or Structurally Damaged
- ▨ - Guttled
- ▧ - Minor Damage

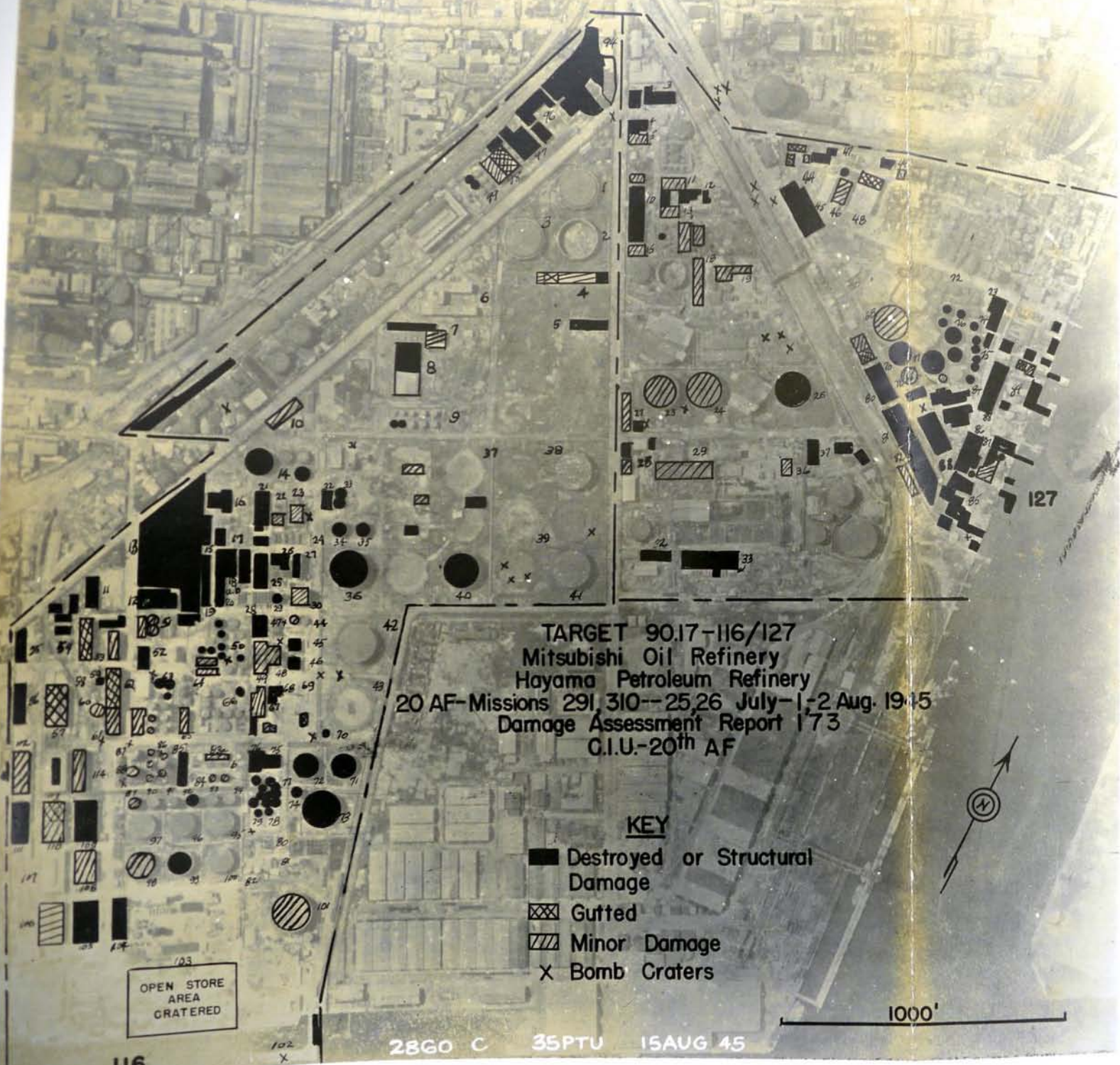
SCALE IN FEET
0' 250' 500' 750' 1000'

Enl from 3PR5M 255-2'4

CONFIDENTIAL

2381 C 3570

CONFIDENTIAL



116

CONFIDENTIAL



Damage Assessment Report 184
Target-Petroleum Center, Kawasaki
90.17-128
20 AF Mission 310, 1-2 Aug. 1945
C.I.U. 20 AF

KEY

- Minor Roof Damage
- Destroyed or Structural Damage
- Gutted
- Old Damage
- X Near Miss

500' 0' 500' 1000' 1500'
SCALE IN FEET

2950 C 35PTU 25 AUG 45

CONFIDENTIAL

TARGET 90.32-1841
 UBE LIQUIFACTION PLANT
 XXI BC MISSION 270, 15-18 JULY 1945
 20 AF MISSION 283, 22-23 JULY 1945
 315, 5-6 AUG 1945
 DAMAGE ASSESSMENT REPORT 175

C.I.U. 20 AF

2882 C 35PTU 18 AUG 45

- DESTROYED OR STRUCTURAL DAMAGE
- ▣ GUTTED
- ▤ MINOR ROOF DAMAGE
- TANKS REMOVED

CONFIDENTIAL



SECRET

PART I - PSYCHOLOGICAL WARFARE

Below is a sample of leaflet used in conjunction with these missions:



Below is the translation of leaflet shown above:

"Read this carefully as it may save your life, or the life of a relative or friend. In the next few days the military installations in some or all of the cities, named on the reverse side of this leaflet, will be destroyed by American bombs.

"These cities contain military installations and work shops or factories which produce military goods. We are determined to destroy all the tools of the military clique which they are using to prolong this useless war. But, unfortunately, bombs have no eyes. So, in accordance with America's well-known humanitarian principles, the American Air Force, which does not wish to injure innocent people, now gives you warning to evacuate the cities named and save your lives.

"America is not fighting the Japanese people but is fighting the military group which has enslaved the Japanese people.

"The peace which America will bring will free the people from the oppression of the military and cause the emergence of a new and better Japan.

下にはるんくす樹るれないすつあらで人人ち全か部品施部ん助命
さ書爆都がてこかて戦んばたふア張りア避す達道る眼部せがをこ設若数でけをあ
いいめ撃市少ものて争でも方のメリまメ難かを主かが破るこ製のをく日下た助な
て注しのく爆裏平をすつをはり込せりしら傷義分あ壊爲の造都米はのさけけた日本
あ意ま内と撃に和止と解たかん人カて裏つのりりしに勝す市空若内いれよは國民
るしす必もさ書をめよ放いのであの下にけアマまま使目るに軍干に裏のこと分民
都てずこれい復様新る部へるたはいいくりんけんけ兵な場軍爆都面ののはや告
市おき全部裏にもあるた新ら指導者でを本て壓お部をなては力御かれ器いが事撃市の都市
かきらま若く書知都市はいてまで若干あせな出さか平そ争方都まののこ爆空をまさ軍内
避す難かしうて震上すあとで引はんいに落には引軍需事全