

II a (37)

NAGASAKI

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U. S. CONFIDENTIAL
(British Confidential)

1181-68,276

ISSUED BY THE OFFICE OF THE
ASSISTANT CHIEF OF AIR STAFF, INTELLIGENCE
BY COMBINED PERSONNEL OF
U. S. AND BRITISH SERVICES
FOR THE USE OF ALLIED FORCES

Date of Issue of Report: 4 September 1945

URBAN AREA DAMAGE ASSESSMENT REPORT NO. U/DA-6

NAGASAKI URBAN AREA - DAMAGE RESULTING FROM ATOMIC BOMB ATTACK

Photography: 3PR/5M396 - Prints 9-12 (incl)
13 August 1945

Zone	<u>Pre-Attack Area</u>			<u>Post Attack</u>	
	<u>Ground</u>	<u>% Built-up</u>	<u>Roof</u>	<u>Ground Area Damage</u>	<u>Roof Area Damage</u>
<u>Residential</u>					
R ₁	21,000	45	9380	4330	1670.8
R ₂	40,300	30	12080	14398	3914.0
R ₃	27,300	12	3280	6820	1164.0
50% of X	850	33	283	505	176.7
TOTAL	89,450		25023	26053	6925.5
<u>Industrial</u>					
M	11,700	46	5360	5890	2636.5
S	4,300	28	1200	1135	115.2
T	1,000	9	90	1230	61.5
50% of X	850	33	283	505	176.8
TOTAL	17,850		6933	8760	2990.0

IN ADDITION AREAS INDICATED AS FIREBREAKS ON THE
ACCOMPANYING PLOT OCCUR AS FOLLOWS:-

<u>Residential</u>	<u>Ground Area</u>	<u>Roof Area</u>
R ₁	2610	1305
R ₂	1580	527
R ₃	10	6
M	25	15
S	110	28

* AREA FIGURES ARE GIVEN IN THOUSANDS OF SQ. FT.
DISTRIBUTED WITH THIS REPORT: DAMAGE PLOT

LEE W. KILGORE
Major, Air Corps
Chief, Evaluation Branch
Photographic Division
Office of the Asst Chief
Staff, Intelligence

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(British Confidential)

NOT TO BE TAKEN
INTO THE AIR ON
COMBAT MISSIONS

TARGET: Nagasaki Urban Industrial
Area
Objective Area: 90.36

T A R G E T I N F O R M A T I O N S H E E T

NAGASAKI URBAN INDUSTRIAL AREA

Latitude: 32° 44' N
Longitude: 129° 52' E
Elevation: Approximately Sea Level

1. LOCATION AND IDENTIFICATION: Kyushu is the southernmost main island of the mountain arc of Japan. It is about 200 miles from north to south and 150 miles across. The Gotō-Retto plus the Danjo-Gunto, extend from just off the northwest tip southwest to nearly 128° E. Off the southern tip of Kyushu the Nansei Shoto and associated islands extend all the way to Formosa.

With the exception of a few restricted alluvial deposits where some of the main streams enter the sea, the entire coast line of Kyushu is of the highly irregular submerged type. The island is composed of some sediments but lava flows and other crystalline rocks prevail. The terrain is hilly or mountainous and is chopped up by deep narrow valleys with but a few isolated lowlands limited for the most part to river mouths and bayheads. Numerous large and small volcanoes are scattered over the entire island. Some of these are active and form pillars of cloud by day and pillars of flame by night. They are symmetrical cones having steep upper slopes covered with lava and ash that descend to broad sloping ash aprons and alluvial fans along the coasts.

The more or less isolated northwest corner of Kyushu may be regarded as the "Northwest Hill Lands". This entire province is intricately cut up by rivers and arms of the sea. In the northern part are low rounded flat-topped hills that go up to 1500 feet. The southern part is rugged, has several large volcanic cones, and is separated by large deep bays into three peninsulas which are joined to the rest of Kyushu by large Tara-dake volcano (3,551 feet) and other associated lava cones. One narrow rugged peninsula swings to the north and nearby joins the mainland just south of Sasebo almost land-locking large irregular Omura Bay. Another peninsula extends eastward and its large club-foot shaped east end just about closes off Ariake Bay. It is composed mainly of Unzan-dake volcano (4,488 feet), still active, and a group of smaller cones. The third peninsula is narrow and fairly straight, and juts out to the southwest for about twelve miles. At the west side of its base is short, narrow, and protected Nagasaki Harbor which is almost completely surrounded by rugged hills the ascend abruptly to 900 to 2000 feet.

The City of Nagasaki, lying along the eastern shore of upper Nagasaki Harbor, is generally thought of as including its industrial suburbs of Inase and Akunoura on the west side of the harbor and Urakami extending northward along both sides of the Urakami River. A combined area of roughly 12 square miles occupies a site similar to an amphitheatre, reaching out from the reclaimed land along the waterfront with tentacle-like growths into the narrow valleys of the surrounding hills. The TARGET AREA (indicated as Zone 1 on the "Incendiary Zone Map of Nagasaki and Vicinity," Map M-4 in Air Objective Folder 90.36) extends from the railroad station at the northeast corner of the harbor southward along the eastern waterfront for approximately $1\frac{1}{2}$ miles, and from a quarter of a mile to a mile inland to the east. Four small rivers flow in a general westerly direction through the city, which is also traversed by several wide avenues.

2. TARGET DESCRIPTION:

a. General -- The Nagasaki area has an estimated population of 253,000 and its average population density of some 7000-8000 per square mile is far below that of Japan's principal industrial cities. However, the congestion within the city (target area) itself is reflected in the jam-packed, cave-to-cave building pattern which has caused Nagasaki to be described as "a sea of roofs". The section of the target area along the waterfront contains all the important port loading and storage facilities, including 30 or more military warehouses. Crowding against this warehouse area on the east is the highly concentrated mercantile district of the city in which are situated the chief harbor/shipping offices and business houses. In the central part of Nagasaki and extending to the NE on either side of the Nakashima River are numerous commercial and government buildings, almost engulfed by the mass of densely grouped small shop buildings and residences which press around them from all sides and overflow in terraced confusion up the slopes of the surrounding hills.

Only slightly less congested as a result of wartime expansion than Nagasaki City itself, is the narrow Akunoura-Inase-Urakami strip along the west shore of the harbor and northward along the Urakami River. (Indicated as Zone 2 on the "Incendiary Zone Map of Nagasaki and Vicinity", Map M-4 in Air Objective Folder 90.36). Construction of housing for shipyard and industrial workers has taken place in these sections and in the N Urakami area barracks for troops have been built.

b. Buildings -- While many of the commercial and public buildings in Nagasaki are of stone and reinforced concrete construction, some of them, such as the main railroad station, are wooden tile-roof structures. No statistics are available on the number of wooden buildings compared with the number of relatively modern fireproof construction, but photographic and other evidence indicates that construction in Nagasaki does not vary from that of other Japanese

cities, either large or small. It can be assumed on this basis that at least 90% of the target area is composed of crowded highly inflammable wooden structures.

c. Fire Defenses:- The street plan of Nagasaki, conforming mainly to the topographic features of the surrounding hills and the Nakashima River channel, is a negligible factor in controlling the spread of fires. Construction of firebreaks has been made impractical by the limited amount of level space in the city, although a few wide avenues and four river channels and canals running through the city might be partially effective in checking fires. Nagasaki is known to have a plentiful water supply from three reservoirs in the hills to the east, but no information is available on its fire-fighting facilities.

3. IMPORTANCE: Nagasaki's position in western Kyushu has resulted in its becoming vitally important as a port for the trans-shipment of military supplies and the embarkation of troops in support of Japan's operations in China, Formosa, Southeast Asia and the Southwest Pacific. The docks and freight yards adjacent to the target area are believed to be congested with military supplies. Reconnaissance photography and other sources indicate extensive enlargement of these dock and storage facilities.

Industrially the Nagasaki area is most important as a major shipbuilding (estimated 15% of Empire total) and repair center for both naval and merchant vessels, and it is also the location of integrated naval ordnance, marine engine, and marine electrical equipment plants.

Despite the fact that the important industrial targets lie across the harbor to the west, outside the main incendiary zone, the wartime functions of the entire Nagasaki area would be seriously disrupted by a successful incendiary attack on the prescribed target area. Destruction of the freightyards, docks, and military warehouses adjoining Zone 1 would not only cripple the supply-channel facilities, but also would destroy tremendous quantities of valuable military stores. A great many workers from the shipyards and industrial plants across the harbor live in Nagasaki proper, and a general conflagration destroying their housing would have a marked effect on the industrial production of the area.

4. AIMING POINTS: Aiming points will be specified in the Field Order.

28 March 1945

TARGET SECTION, A-2
XXI BOMBER COMMAND

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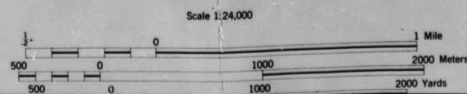




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NAGASAKI DAMAGE PLOT
 CROSS-HATCHED: CURRENT DAMAGE
 WHITE: FIREBREAKS.



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NAGASAKI CITY

32° 45' N-129° 52' W

MARCH 1945

A-2 SECTION

XXI BOMBER COMMAND

XX BOMCOM PHOTOS

AUGUST 1944

PREPARED BY 949TH ENGR AVN TOPO CO

MA6 DEC.

5°03'W

ANNUAL CHANGE

1' INC.



APPROX SCALE

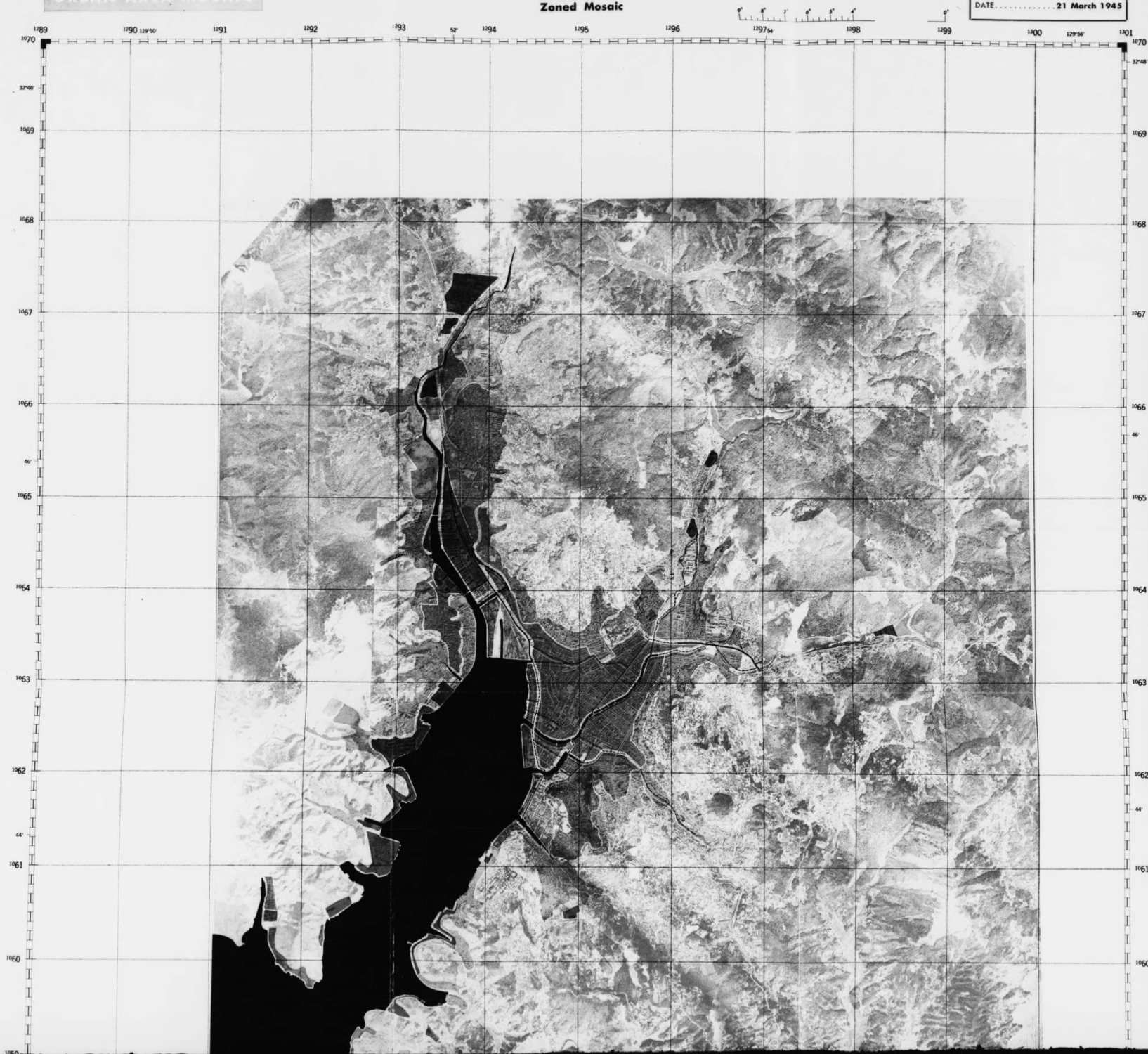
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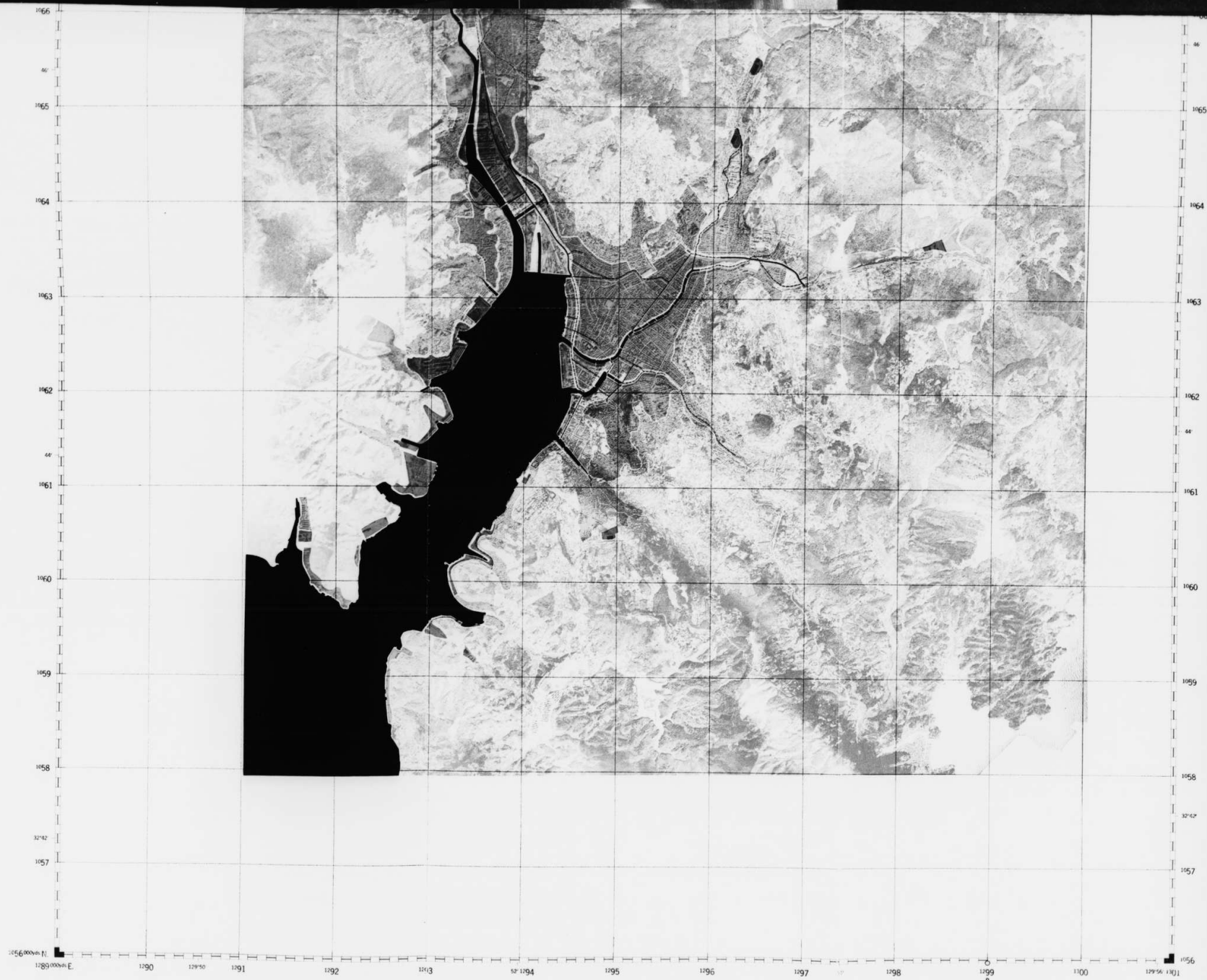
NAGASAKI — JAPAN

Zoned Mosaic

CONFIDENTIAL

SHEET: NAGASAKI-PZ
DATE: 21 March 1945



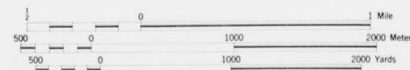


Prepared under the direction of the Chief of Engineers by the Army Map Service (AMS), U.S. Army, Washington, D.C. 1945. Most corrected by average 10 to best available map source. Aerial photographs flown by U.S.A.F. (Oct. Nov. 1944) (Source) AMS 9 12 V. (Rev. 12-28 V)

Accuracy of grid position due to best map comparison between photo map and map source map.

- RESIDENTIAL (FULLY BUILT UP: 40%)
- RESIDENTIAL (MODERATELY BUILT UP: 20%-40%)
- RESIDENTIAL (SPARSELY BUILT UP: 5%-20%)
- MANUFACTURING
- MIXED (INDUSTRIAL AND RESIDENTIAL)
- TRANSPORTATION
- STORAGE
- PRIMARY FIRE BREAK
- SECONDARY FIRE BREAK

Scale 1:25,000



ONE THOUSAND YARD WORLD POLYCONIC GRID (BAND 10, ZONE 42)
THE LATEST THREE FIGURE OF THE GRID COORDINATES ARE PRINTED
POLYCONIC PROJECTION



Use diagram only to obtain numerical values
To determine magnetic north line, connect the
great point 'P' on the south edge of the map
with the value of the angle between GRID
NORTH and MAGNETIC NORTH, as plotted on
the degree scale on the north edge of the map.

Published in Office of AC/AS Intelligence, A.A.F.,
by Combined Personnel of U.S. and British Services
for the Use of Allied Forces

NAGASAKI PZ

File No. 730,640.7

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C. I. U.
TWENTIETH AIR FORCE
APO 234, c/o POSTMASTER
SAN FRANCISCO, CALIFORNIA

SPECIAL DAMAGE ASSESSMENT
FLASH REPORT NO. 11

DATE: 10 August 1945

Mission No. 3PR5M 398

Target Area: Sasebo (90.36)

Date Flown: 10 August 1945

A/C Commander: W. L. Voris,
1st Lt., AC:

Mean Time of Photography: 1010K

Altitude (average): 31,000'

(This tentative report is subject to change
after a more detailed study and is to be
considered strictly as advance information.)

Damage to NAGASAKI - 90.36 - Urban.

20AF SBM 16 - Strike, 9 August 1945. 509th Bomb Group.

Built-up area: Sq. Mi. Total: 3.3 Sq. Mi. Destroyed: 0.98

Percent Destroyed: 30

Targets damaged by current strike: 4 numbered, 9 other.

Quality and limitations of photographs: 25% cloud cover.
Much of city in dark cloud shadow.

Damage confined mainly to NW portion of city. No
damage in South quarter of city.

No damage to shipping noted.

Damage to targets is as follows:

<u>Number</u>	<u>Name</u>	<u>Extent of Damage</u>
546	Mitsubishi Steel & Arms Works. (In cloud shadow)	Probably destroyed.
2022	Mitsubishi-Urakami Ordnance Plant	30% damaged. 70% cloud ob- scured. One large saw-tooth roof building gutted. 5 smaller buildings gutted.
	Urakami Branch, Gas Works	90% destroyed. All buildings seem destroyed. Gasometer ap- parently remains. Photo coverage dark and hazy.
	Mitsubishi Woodworking Plant	100% destroyed.
	Kyushu Gas Works	50% destroyed. 3 buildings destroyed. Two gasometers apparently undamaged.

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SPECIAL DAMAGE ASSESSMENT
FLASH REPORT NO. 11, Cont'd.

<u>Target - Name</u>	<u>Extent of Damage</u>
Nagasaki Station & Freight Yard	- 20% destroyed. Hazy photos show numerous small shop-type bldgs. destroyed. 2 possible train sheds - gutted.
Unidentified Industry	100% destroyed or damaged. Partly smoke obscured area seems a mass of crumbled ruins.
Steam Power Plant	90% destroyed. 2 largest bldgs. gutted. Several small bldgs. destroyed. Fire noted still burning in target area.
Several small Unidentified Factories	- 100% destroyed or damaged. Partly smoke obscured. Target area seems a mass of crumbled ruins.
Unidentified Small Industry	Target area still afire. Plant area obscured by smoke.
Unidentified Industry	100% damaged. One large bldg. still burning. 5 small bldgs. apparently damaged.
Prison	Probably 100% destroyed. All bldgs. apparently destroyed. Area partly smoke obscured.
1842 - Nagasaki & Dejima Wharves & R. R. Yards.	- 25% destroyed.
542 - Akunoura Engine Works (Mitsubishi Jukogyo KK)	- About 65% damage (gutted or structural)
Bldg. No. 12E	- 100% destroyed.
" " 12F	- 100% Structural Damage.
" " 12G	- Minor Damage.
" " 12H	- " "
" " 15a, b, c, d, e	- 100% structural damage.
" " 16	- Minor Damage.

(Reference: J.T.G. Illustration No. 90.36-542 P3/1, 21 March 1945)

Damage is located as follows on XXI BC Litho-Mosaic, Nagasaki Area, Mitsubishi Steel & Arms Works, 90.36-546, June 1945.

Area bounded by: 075130, 081120, 082113, 080099, 085090, 090085, 118064, 112059, 110055, 104056, 106060, 103065, 100065, 099067, 099070, 092078, 089076, 080085, 078102, 073109, 070114, 069117, 070120, 073123, 075130.

Area bounded by: 069119, 070113, 072110, 073107, 076105, 077100, 077094, 070095, 069102, 064104, 067105, 065111, 061114, 059115, 060116, 069119.

Area bounded by: 077088, 077084, 071084, 073085, 071091, 072092, 073091, 077088.

Area bounded by: 081082, 088075, 089072, 086072, 083074, 079070, 080076, 078078, 081082.

Area bounded by: 084051, 081045, 079044, 077050, 080051, 084051.

APPROVED: *[Signature]* HAMILTON D. DARBY, Major, AC, In Charge. APPROVED: *[Signature]* FRANK E. DEIANEY, Captain, AC, Asst A-2

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C. I. U.
TWENTIETH AIR FORCE
APO 234, c/o POSTMASTER
SAN FRANCISCO, CALIFORNIA

10 August 1945

SPECIAL FLASH DAMAGE ASSESSMENT REPORT NO. 10

Mission No.: 3FR5M 395

Target Area: Sasebo (90.36)

Date Flown: 9 August 1945

Airplane Commander: T. C. Kendall
1st Lt, AC

20 AF Mission SBM 16, 9 August 1945, 509th Group

TARGET NAGASAKI 90.36 URBAN:

Photos show target completely smoke obscured.

Approved.....

FRANK E. DELANEY
CAPT, AC, Asst A-2

Approved.....

HAMILTON D. DAREY
MAJOR, AC, In Charge

CONFIDENTIAL

NAGASAKI CITY

32° 45' N- 129° 52' W

MARCH 1945

A-2 SECTION

XXI BOMBER COMMAND

XX BOMCOM PHOTOS

AUGUST 1944

PREPARED BY 949TH ENGR AVN TOPO CO

MAG. DEC.

5° 03' W

ANNUAL CHANGE

1' INC.

APPROX SCALE
0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 FEET

1290 129 50

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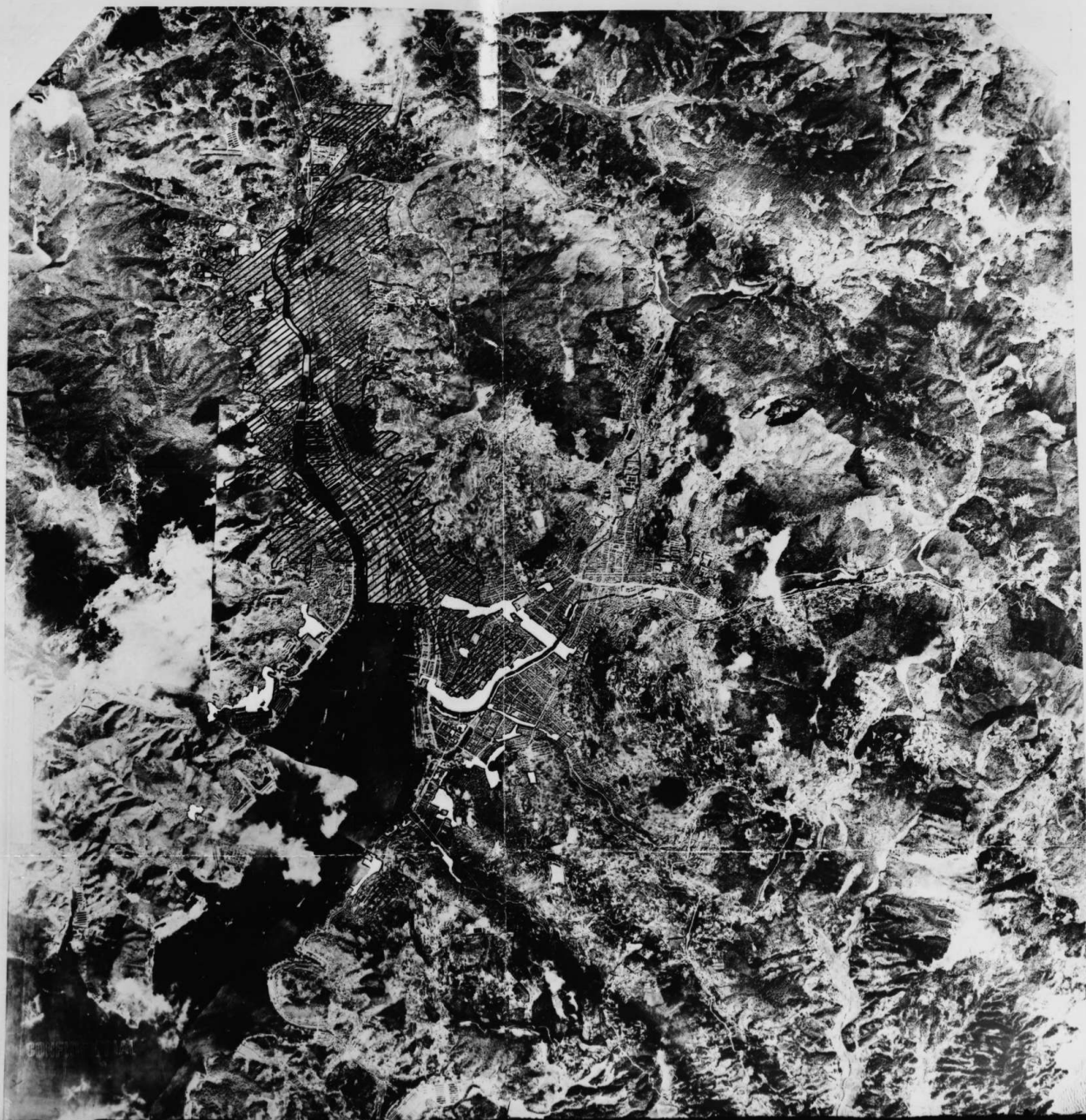
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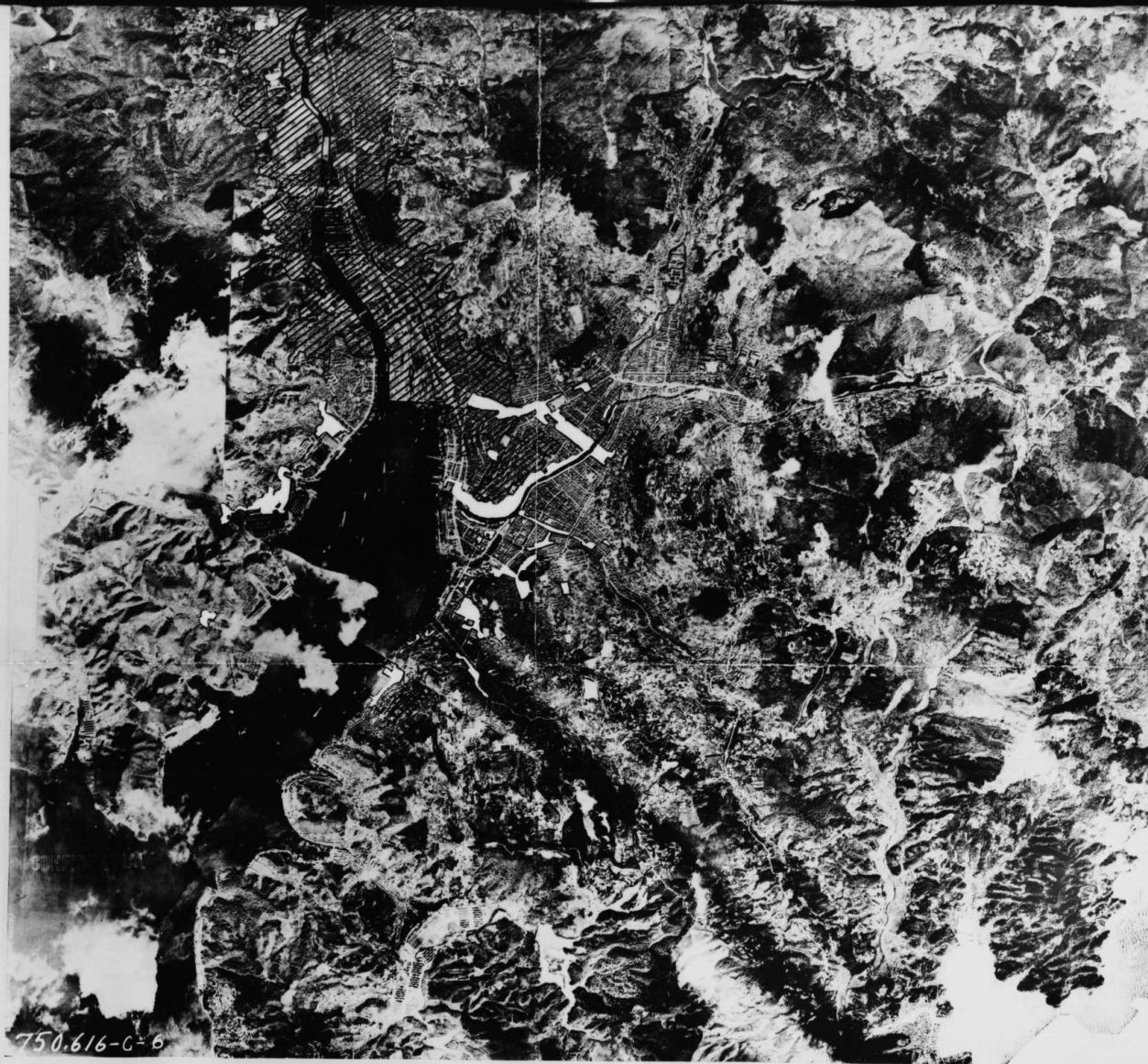
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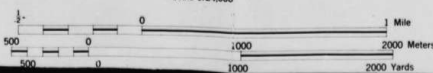


750.616-C-6

NAGASAKI DAMAGE PLOT
 CROSS-HATCHED: CURRENT DAMAGE
 WHITE: FIREBREAKS.

N 89 000m E. 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 129 56 129 57 129 58 129 59 129 60 129 61 129 62 129 63 129 64 129 65 129 66

Scale 1:24,000



Prepared under the direction of
 the Chief of Engineers, by the
 Army Map Service (AMS),
 U. S. Army, Washington, D. C. 1945.
 Maps corrected by average 1:10
 scale.