Target Material

FEA, MA[illegible]

APPENDIX B

EO-115.2

SUMMARY
BY-PRODUCT COKE OVEN PLANTS UNDER JAPANESE CONTROL
COKE AND BY-PRODUCTS

City, Town or Village	Company	Total Number of Batteries	Total Number of Ovens	Estimated Coal Carbonizing Capacity (1000 m.t.) a/	Estimated Coke Capacity c/: Total b/	Estimated Coke Capacity c/: Of Which is Furnace Grade (1000 m.t.)	Percentage of Total Capacity
Japan Proper							
Hokkaido							
?	Hokkaido Jinzo Sekiyu	1	40	284	199	169	1.4
Muroran-shi	Nippon Seitetsu	4	125	493	345	293	2.5
Honshu							
Kamaishi-shi	Nippon Seitetsu	5	145	524	367	312	2.6
Tokyo-shi	Tokyo Gasu	2	40	76	53	45	0.4
Tokyo-shi	Tokyo Gasu	4	98	206	144	122	1.0
Kawasaki-shi	Nippon Kokan	2	75	347	243	207	1.7
Kawasaki-shi	Nippon Yuka	2	30	173	121	103	0.9
Yokohama-shi	Tokyo Gasu	2	72	155	109	93	0.8
Yokohama-shi	Nippon Kokan	2	60	125	88	75	0.6
Yokohama-shi	Keihin Ko-Kusu	3	80	384	269	229	1.9
Yokohama-shi	Keihin Ko-Kusu	1	40	87	61	52	0.4
Nagoya-shi	Toho Gasu	3	64	212	148	126	1.1
Osaka-shi	Osaka Gasu	3	92	222	155	132	1.1
Osaka-shi	Osaka Gasu	3	72	175	123	105	0.9
Osaka-shi	Nakayama Seikosho	1	55	302	211	179	1.5
Kobe-shi	Kobe Gasu	2	44	168	118	100	0.8
Hiro-mura	Nippon Seitetsu	3	150	1049	734	623	5.2
Kure-shi	Hiroshima Gasu Denki	2	24	68	47	40	0.3
Kyushu							
Yawata-shi	Nippon Kasei Kogyo	3	130	616	431	366	3.1
Yawata & Tobata-shi	Nippon Seitetsu	11	755	3203	2242	1906	16.0
Omuta-shi	Mitsui Kozan	6	202	605	424	360	3.0
Shikoku							
Niihama-shi	Sumitomo Kagaku	1	35	179	125	106	0.9
Sub-Total (Japan Proper)		66	2428	9653	6757	5743	48.1
Korea							
Konan-yu	Chosen Chisso Hiryo	1	16	47	33	28	0.2
Kenjiho	Nippon Seitetsu	5	180	773	541	460	3.9
Sub-Total (Korea)		6	196	820	574	488	4.1
Manchuria							
Anshan	Showa Seikosho	24	914	6376	4463	3794	31.8
Penhsihu	Honkeiko Baitetsu Kosho	3	96	327	229	195	1.6
Kungyuan	Honkeiko Baitetsu Kosho	5	300	1736	1215	1033	8.7
Fushun	Minami Manshu Tetsuda	1	30	51	36	30	0.2
Erh-tao-chiang	Tohendo Kaihatsu	1	36	259	181	154	1.3
?	Manshu Jukogyo Kaihatsu	2	76	521	365	310	2.6
Dairen (near)	Manshu Kagaku Kogyo	1	35	150	105	89	0.7
Sub-Total (Manchuria)		37	1487	9420	6594	5605	46.9
Occupied China							
Shihchiachuang	Chili Ching Hsing Mining Co.	2	30	57	40	34	0.3
Taiyuan (near)	Northwestern Steel Works	1	36	119	83	71	0.6
Sub-Total (Occupied China)		3	66	176	123	105	0.9
Grand Total (33 plants)		112	4177	20,069	14,048	11,941	100.0

a/ Nearest 1000 metric tons from calculations.

b/ Based on a 70% yield of total coke (includes breeze).

c/ Based on an 85% yield of furnace grade coke from total coke.

Shurcliff SWS
Green G
Kolchin K

ANSHAN
IRON & STEEL

AREA C
TARGETS
ECON
TAS

July 29, '44

(b) ANSHAN is on the South Manchurian Railway, some 62 miles south of MUKDEN, the great industrial, distributing, and rail centre, and 187 miles due north of DAIREN its logical seaport. The present population is about 200,000 of whom 80,000 are housed in the model city area. The industrial importance of the city centres round the Showa Steel Works, the second largest supplier of steel in JAPAN. The Works carry out the entire process of steel manufacture from the mining of ore to the finished steel product, and are exceptionally well located near the necessary raw materials, although these are not ofhigh quality. They produce more than 80% of the iron output of MANCHURIA, and nearly all the steel. The nine blast furnaces in operation produce some 1,600,000 tons of pig iron per annum, and the two open hearth steel furnaces, with a capacity of 1,200,000 tons, produce about 1,000,000 tons of steel ingots. In addition there is asteel rolling mill with a capacity of 1,500,000 tons. About 3,200,000 tons of furnace coke is also produced annually. By-products of the steel works include ammonium sulphate, benzol, naphthalene, and pitch.

The Penhsihu Coal & Iron Co., is 4 miles east of the town of PENHSI, close to the MUKDEN-ANTUNG railway on the Taitzu River, and 40 miles southeast of MUKDEN. Prior to 1931, the company confined its activities to coal mining, but is now ranks second to the Showa Steel Works as a pig iron producer. It has 5 blast furnaces in operation, and an annual pig iron output of about 520,000 tons, but it has not yet become a steel producer of any consequence. The coke oven capacity of the producer company is about 1,700,000 tons, of coke per annum, produced from PENHSIHU (HONKEIKO) and Fushun coal.

Dairen, the captial of the KWANTUNG LEASOU TERRITORY, with a population of about half a million, is the main sea outlet of the South Manchurian railway and can be kept free from ice all the year round. Its chief industrial activity until 1937 was the milling os soya beans, but engineering works have been developed there, and it has an important chemical industry. A recent potential competiror with DAIREN is the newly developed port of ANTUNG-TATUNG.

(From - JICA/CBI - FAR EASTERN WEEKLY INTELLIGENCE SUMMARY No. 82 for week ending ~~11-18~~ - 44 - ~~SECRET~~ SECRET - JICPOA 51845 - CER 22496)
4 Aug.

COKE INDUSTRY

(1) Showa Steel Works, Anshan. 16 batteries. Estimated tonnage (metric) 2,574,644. Page 73.	7-29-44. 464 500-lb GP. 7.5% destroyed.	9-7/8-44. 826 500-lb. GP. 27.7% destroyed.	9-26-44. 187.75 tons GP. No damage.		
(2) Imperial Iron & Steel Works, Yawata. 1 of 2 largest producers of steel in the Jap. Empire. Page 79.	6-15/16-44. 50 planes Bombs? Results?	7-7-44. 1-2 planes Bombs? Results?	8-20/21-44. 71 planes Bombs? Hits on ovens		

COKE, IRON AND STEEL INDEX

TARGET NUMBER	NAME
28 (84.1)	JAPAN IRON WORKS (SEISHIN)
28 (90.34)	THE IMPERIAL IRON & STEEL WORKS (JAPAN IRON WORKS), YAWATA, JAPAN
29 (90.34)	JAPAN IRON WORKS, TOBATA PLANT
29 (93.3)	SHOWA STEEL WORKS, ANSHAN, MANCHURIA
30 (93.3)	PENHSIHU IRON WORKS (OLD PLANT)
51 (90.17)	ASANO IRON WORKS (Japan Steel Tube Co.)
52 (90.17)	JAPAN IRON WORKS, YAWATA PLANT (Japan Steel Tube Co.)
66 (84.3)	**(Former)** ~~JAPAN IRON WORKS (KENJIHO~~) **FUSHUN COLLIERY** (Iron & Steel) **COKE OVEN PLANT**
165 (90.34)	KOKURA STEEL WORKS
171 (93.3)	PENHSIHU IRON WORKS (New Plant)
189 (90.8)	JAPAN IRON WORKS, KAMAISHI (Iron & Steel)
247D (90.20)	DAIDO ELECTRIC STEEL, MINAMI PLANT
379 (90.3)	WANISHI IRON WORKS, MURORAN (Iron & Steel)
713 (90.25)	NAKAYAMA STEEL MFG. COMPANY, OSAKA
1290 (90.27)	JAPAN IRON WORKS, HIROHATA PLANT (Iron & Steel)
5 (90.25)	KOBE STEEL WORKS
6 (90.25)	" " "
1768 (90.25)	" " "

CONFIDENTIAL

Sheet ATI/I/CIS
Date 18 January 1945
Page No. 1 (1 page)

Joint Target Group, Washington, D. C.

AIR TARGET INDEX — JAPANESE WAR
PART I — SYSTEM INDEX

COKE, IRON AND STEEL

COKE, IRON and STEEL

Target Name	Place Name	Target Number
Asano Iron Works	Kawasaki (Japan)	90.17-51
Daido Electric Steel, Minami Plant	Nagoya (Japan)	90.20-247D
Japan Iron Works, Hirohata Plant	Hirohata (Japan)	90.27-1290
Japan Iron Works, Kamaishi	Kamaishi (Japan)	90.8-189
Japan Iron Works, Kenjiho	Kenjiho (Korea)	84.3-66
Japan Iron Works, Seishin	Seishin (Korea)	84.1-28
Japan Iron Works, Tobata Plant	Tobata (Japan)	90.34-29
Japan Iron Works, Yawata Plant	Yawata (Japan)	90.34-28
Japan Steel Tube Co.	Kawasaki (Japan)	90.17-52
Kobe Steel Works	Kobe (Japan)	90.25-5
Kobe Steel Works	Kobe (Japan)	90.25-6
Kobe Steel Works	Kobe (Japan)	90.25-1768
Kokura Steel Works	Kokura (Japan)	90.34-165
Nakayama Steel Mfg. Co.	Osaka (Japan)	90.25-713
Nihon Steel Co. (1)	Muroran (Japan)	90.3-378 no page
Penhsihu Iron Works, New Plant	Miyanohara (Manchuria)	93.3-171
Penhsihu Iron Works, Old Plant	Penhsihu (Manchuria)	93.3-30
Showa Steel Works	Anshan (Manchuria)	93.3-29
Wanishi Iron Works	Muroran (Japan)	90.3-379

(1) See "Armament".

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JOINT TARGET GROUP, WASHINGTON, D. C.

TARGET LOCATION SHEET

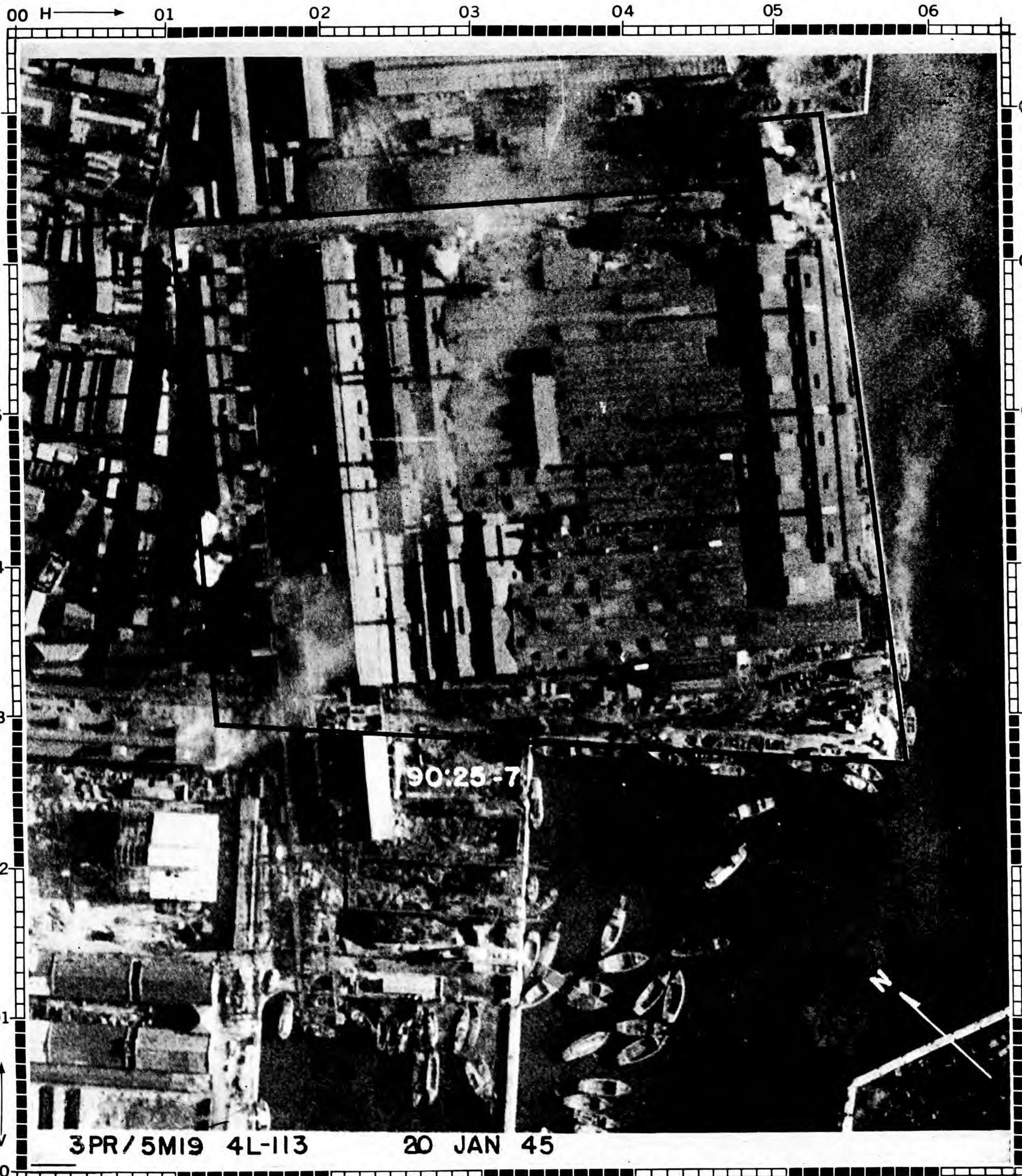
KAWASAKI HEAVY INDUSTRY
KOBE JAPAN

SHEET No. .... 90.25-7—TL
DATE................ 19 May 1945
TARGET No. 90.25-7
CATEGORY
End Prdt. Ind.—Coke-Iron-Steel
COORDINATES..... 34°42'N 135°13'E
ALTITUDE .... 10 feet

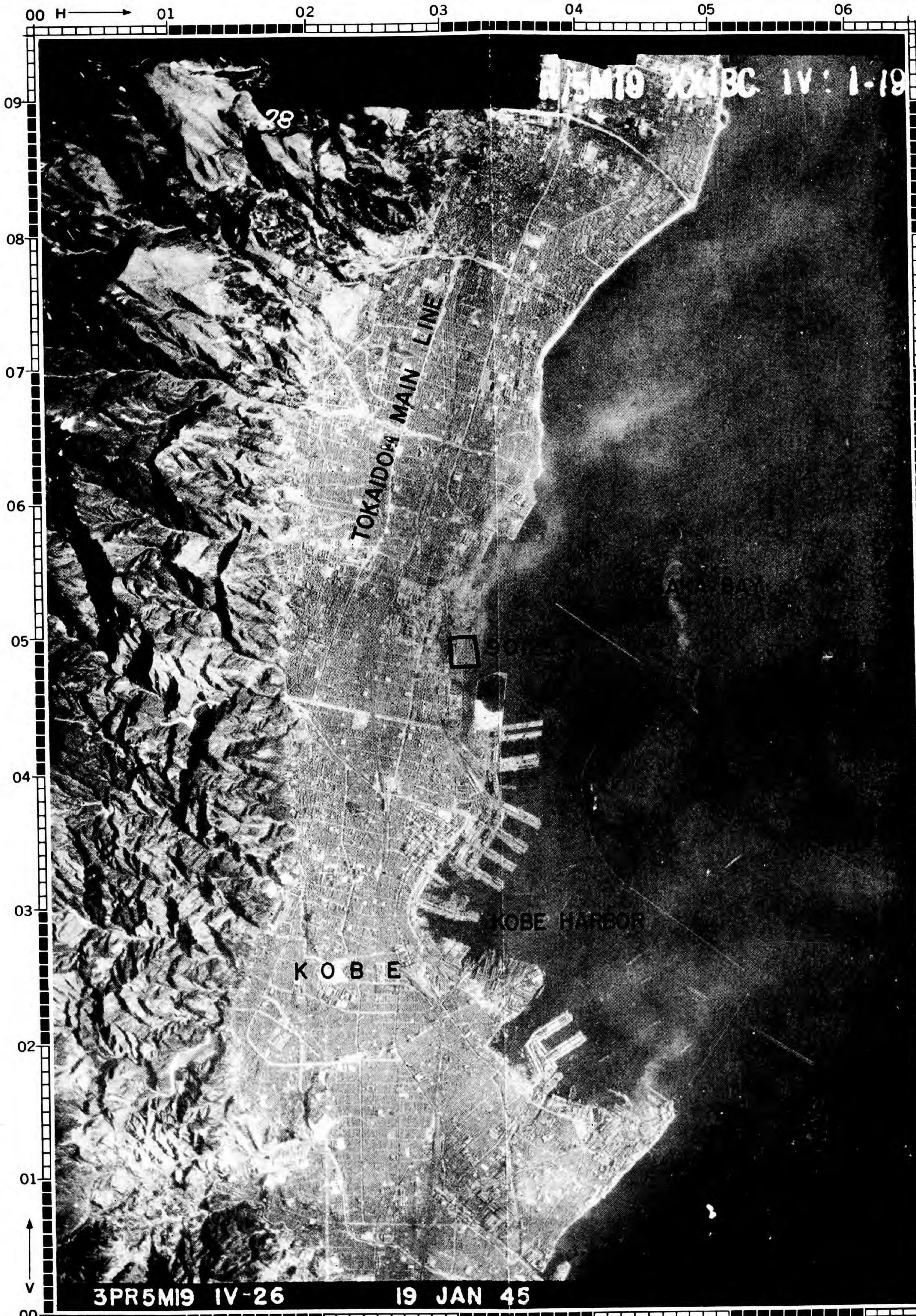
SIGNIFICANCE:

Large producer of open hearth steel (5% of Empire total), steel plates and sheets. Capacity for heavy ships plate (10% of Empire total) among 4 largest in Empire. Supplies rolled products, forgings and castings to company's shipyard (90.25-171), and locomotive and car company (90.25-11), both among the Empire's largest.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel.



LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:3,000



SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:60,000

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JAPAN IRON WORKS (SEISHIN)
(Iron and Steel)

LATITUDE: 41/45 N.
LONGITUDE: 129/46 E.

TARGET NO. 84.1-28

Reported Korea's largest works producing pig iron. Known equipment: one 700,ton blast furnace and one furnace, capacity unknown. Estimated present annual pig iron production around 620,000 metric tons. Iron ore supplied from Mozan Iron Mine (Target 32). Planned production for plant (metric tons): pig iron 700,000: steel ingots 800,000; rolled products, 400,000. Unconfirmed reports estimate present production of 150,000-245,000 metric tons of steel ingots. No information on rolled products installations. Plant located four mi. W.S.W. of Seishin, S. of Yujosen River. Ships dock at Company wharf.

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

JAPAN IRON WORKS (84:1-28)
MITSUBISHI IRON CO. (84:1-29)
SEISHIN KOREA

SHEET 84:1-28, 84:1-29–TL
DATE.................1 June 1945
TARGET 84:1-28, 84:1-29
CATEGORY..........Bsc. Proc. Ind.–
COKE–IRON–STEEL
COORDINATES ....41°45'N 129°46'E
ALTITUDE ....20 feet

SIGNIFICANCE:

These two plants, probably operating under the same management, together seem to be Korea's major pig iron producer. Adequate photo cover is unavailable for determining the success of the widely publicized ambitious expansion program. Nearby Mozan mine supplies the iron ore and coking coal is imported from North China and Manchuria. The iron and steel output is mainly shipped to Japan.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel.

LARGE SCALE ILLUSTRATION–SCALE APPROX.: 1:30,000

SMALL SCALE ILLUSTRATION–SCALE APPROX.: 1:60,000

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THE IMPERIAL IRON AND STEEL WORKS
(JAPAN IRON WORKS), YAWATA, JAPAN
TARGET NO. 90.34-28
Lat. 33-52' N. - Long. 130-48' E.
(Approximately)

The Imperial Iron and Steel Works at Yawata, one of the two largest producers of steel in the Japanese, Empire, is an extremely important strategic target. While no reliable figures are available, rough estimates indicate that this hugh plant produces between 20 to 25 per cent of Japan's pig iron, 20 to 30 per cent of her steel ingot, and possibly 25 per cent of her rolled-steel products. Virtually the entire iron and steel production of the works depends upon the output of the two coking plants, destruction of which would bring the works to a virtual standstill.

XX B.C. MISSION NO. 2 - 15/16 June 1944.

50 of 67 B-29s of the 20th B.C. dispatched against Japan effectively attacked this steel works, 1600 miles from their base. Bomb loads and results of attack unknown.

XX B.C. MISSION NO. 3 - 7 July 1944.

Of the 18 B-29s dispatched against targets in the Japanese Emprie, 2 hit vital war industrial areas at OMURA and YAWATA. Bomb loads and results unknown.

XX B.C. MISSION NO. 7 - 20-21 August 1944.

Attacked by 61 planes in the day and by 10 at night. Bomb loads, types of bombs, etc., unknown. Results of strike from visual observation (and not including the night attack which followed the day attack) and photographic analysis: One direct hit on SW battery coke ovens with several bursts in the immediate vicinity. Possible direct hits to the unfinished north batteries. One coke oven in old plant burning, probably a direct hit. Batty to the south obsecured by smoke. Photos of October 6, 1944 showed two coke oven batteries out, not working.

PW sketch and numbered identification of this plant filed in CE under KAMAISHI, December 1941. (ATIS SWPA SERIAL 722 APPENDIX "F")

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET INFORMATION SHEET

SHEET No. . .90.34-28-TI
DATE. . . . . .14 May 1945
PAGE 1

JAPAN IRON WORKS
YAWATA PLANT

YAWATA JAPAN

TARGET No. . . .90.34-28
OBJ. AREA. 90.34
OBJ. FOLDER No. . . .90.34
CATEGORY
Basic Proc. Ind., Coke, Iron and Steel

LAT. . . . . .33°52'N
LONG. . . . . .130°48'E
ALT. . . . . .30 feet

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel with other 90.34-28 material.

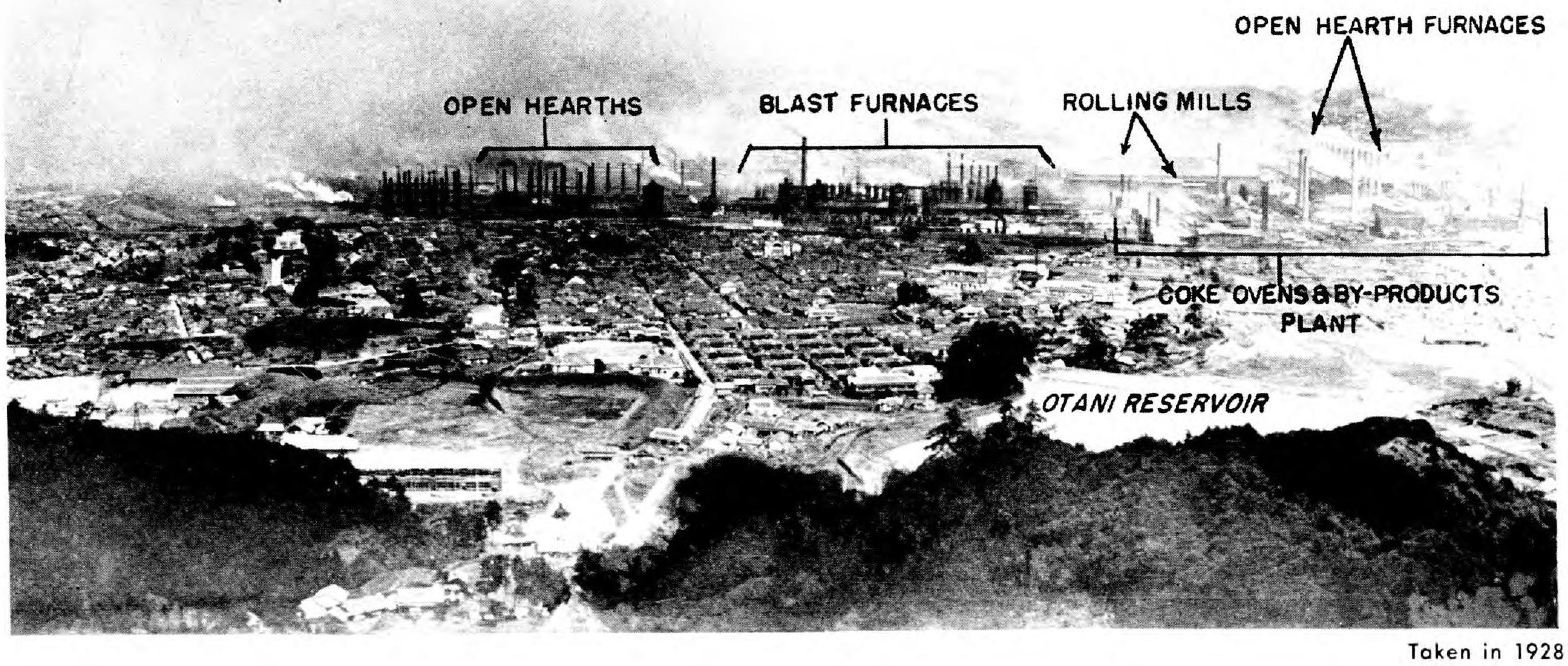
SIGNIFICANCE

This is the most important target in the iron and steel industry in the home islands and dominates the industrial activity of the Shimonoseki Area. It has the largest steel capacity of any unit in the Empire, and in coke oven capacity is second only to Showa Steel Works at Anshan, Manchuria (TARGET 93.3-29). It is recently reported to be producing large quantities of special steel for the aircraft industry. Since it involves the shortest water haul for iron ore and coking coal from Fusan and Dairen, and since some of its coal requirements can be met by the Kyushu mines, it can be expected to operate at a higher percentage of capacity than most home island plants. Its target importance in the industry is exceeded only by plants in Manchuria and Korea whose proximity to raw materials assures their capacity operation and whose pig iron producing facilities could not well be replaced by idle capacity in the home islands because it would require transporting coal and ore three times the equivalent weight of pig iron.

The plant was attacked by B-29's in August 1944 and there was some evidence of damage to one or two coke oven batteries, three or four condensers, and a few gas mains and minor structures. Photographs later in the year showed all completed coke oven batteries in operation, no remaining damage of any significance, and the plant operating at or near capacity with very substantial stocks of ore on hand. Photography of 28 March 1945 shows a somewhat lower level of stocks and activity, confirming reports of decreasing stocks due to transportation difficulties and perhaps also indicating an effort to disperse production within the home islands.

The plant is completely integrated from coke ovens to rolling mills with facilities for production of casting and forgings and every category of rolled steel products except tube. It includes electric power plants, a cement plant, a refractory brick plant and other incidental facilities. Its estimated 1944 capacities and percentages of Empire and home island capacities are:

	Capacity Metric Tons	Empire	Home Islands
Metallurgical Coke	1,898,000	20.6%	32.8%
Pig Iron	1,670,000	18.3%	27.7%
Ingot Steel	3,145,000	22.7%	27.4%
Open Hearth	2,795,000	25.5%	31.3%
Electric	90,000	3.8%	4.5%
Bessemer	260,000	46.4%	46.4%
Primary Rolled Steel	2,700,000	—	—
Secondary Rolled Steel	1,877,000	18.6%	20.5%
Rails	312,000	32.6%	38.3%
Structural Shapes	294,000		
Plates	430,000	16.7%	18.5%
Sheets, Tin Plate	150,000	9.8%	10.1%
Bars	490,000	19.3%	20.6%
Wire Rod, Wire	141,000		
Miscellaneous	60,000	13.8%	16.9%



Taken in 1928

(75)

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

LOCATION

(Refer to Illustration No. 90.34-28 P2)

Situated in northernmost Kyushu about 7 miles WSW of the SW narrows of Shimonoseki Strait where the Kammon RR Tunnel connects Honshu and Kyushu. It is about 3 miles S of Wakamatsu breakwater, and S of a bend where the channel that runs between the cities of Wakamatsu and Tobata broadens to form Dokai Bay. An elbow shaped inlet known as Maeda Anchorage, running S from Dokai Bay, is surrounded by the target plant, and another smaller inlet forms most of its NW boundary. It is bounded on the S and E by the Fukuoka-Kokura Railroad, and built-up sections of the city of Yawata.

Japan Iron Works, Tobata Plant (TARGET 90.34-29) is about 1.3 miles NE, and Kokura Steel Works (TARGET 90.34-165) is about 3.5 miles ENE.

DESCRIPTION AND LAYOUT

(Refer to Illustrations No. 90.34-28 P4, P5.) The target area measures about 2 miles E-W and 1.5 miles N-S. It is a huge sprawling mass of smoke stacks, furnaces, ovens, mills, coal towers, and connecting mains and rail lines, covering about 45,000,000 square feet, of which the plan area of buildings totals 10,200,000 square feet.

The old part of the plant lies S and E of Maeda Anchorage. The new part, mostly built since 1935, is on the broad tongue of land to the N known as Kukino Oka. Wharves on both sides of the anchorage have modern cranes and loading equipment.

There are 16 different sections apparent, each more or less independent in function. Farthermost SE are the original coke and by-products plant and a blast furnace area, while next N and W is the largest area in the plant, containing open hearth furnaces, soaking pits, rolling mills and auxiliary installations. Farther W are a large plant for making refactory brick for coke ovens, blast furnaces, open hearth furnaces and soaking pits, and a newer and smaller group of open hearth furnaces and related structures. Farther N and E of Maeda Anchorage are the laboratory area, a storage and warehouse area, the administration area, and an area containing plants for making rolls for the rolling mills and boilers. On Kukino Oka the new coke and by-products plant is at the NE with a blast furnace and loading and unloading area along the anchorage next S. Farther W on Kukino Oka are a cement plant, a slag processing area, a storage and warehouse area, a probable sintering plant, and an area containing forges, rolling mills and Bessemer converters.

Coke and By-products. There are ten coke oven batteries with 627-655 by-product ovens. The coke plant on Kukino Oka has six batteries (32a, 33a, 34a) of 75 ovens each including one (W half of 32a) still under construction. The five operable batteries have a metallurgical coke capacity of about 1,140,000 metric tons per annum. The older coke plant has four batteries, two (316c, d, e and 318b) of 36-40 ovens each, and two (295h, k, l, m and 298h, i) of 90-100 ovens each, with a combined metallurgical coke capacity of about 758,000 metric tons. Close to the coke ovens are the essential exhausters for drawing off gases (31, 51, 303 and 320) and buildings for producing ammonium sulphate (27,304), benzol (26) and 28 other buildings identified as units of the by-products plants. A high prominent tank (39a) W of the new ovens is a coke oven gas holder. There is a slight excess of coke capacity over blast furnace requirements if the normal approximate ratio of 1 ton of coke to 1 ton of pig iron is assumed, and this excess is probably used by the blast furnaces at the nearby plants at Tobata (TARGET 90.34-29) and Kukura (TARGET 90.34-165) where coke capacity is insignificant.

Pig Iron. There are ten blast furnaces, of from 285 to 1000 tons rated capacity. Four on Kukino Oka (108, 109, 110, 114) have an effective annual capacity of about 993,000 tons of pig iron, and six older and smaller ones with a similar capacity of about 677,000 tons. The essential installations most difficult to replace in connection with these furnaces are the blower engines which are in buildings 72, 73, 103 or 104 for the Kukino Oka plant and in buildings 280 and 283 for the older furnaces. Prominent near the furnaces are rows of tall round cylinders comprising the hot stoves (107, 111, 284) where air for the hot blast is heated. Molten iron tapped from the furnaces can be conveyed in ladle cars to pig casting shops (121 and 256) in adjacent areas.

Electric Power Plants. There are two especially numbered electric power targets included within the overall target boundaries. They have a combined installed capacity of about 134,000 KW or 25 percent of the total for the N Kyushu power area. Most of their power is probably consumed in the target area, but a large part of the capacity is 50-cycle and tied in with the N Kyushu network.

The first of these, Target 28A, situated just N of the easternmost open hearth furnaces and W of the administration area, includes a boiler house (158) and a recently enlarged generator hall (157), formerly known as No. 3 electric power plant, and a new adjacent building (150), sometimes referred to as No. 5 electric power plant, housing additional boilers. Their combined capacity is estimated at 72,000 KW. The second, Target 28B, (buildings 198-201) formerly known as No. 4 electric power plant, is S of the W end of Maeda Anchorage, and has an estimated capacity of 62,000 KW. There is a reported additional capacity of 5,250 KW in a building (277), known as No. 1 electric power plant, in the old blast furnace area, but it is believed no longer in use. The No. 2 electric power plant formerly reported in the section now identified as laboratory area, has not been confirmed. It is believed to have been removed.

Steel Furnaces and Converters. Four steel making processes are known to be used here. There are about 50 open hearth furnaces with over 4 5 of the plant's ingot steel capacity, in five large buildings (168, 254, 263, 175 and 337) close to the plant's E and S boundaries. Electric furnaces and crucible furnaces for special steel are in buildings (252 and 253) near the center of the S part of the plant. Four electric furnaces

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel after 90.34-28-TI, page 1.

(75)

were there in 1938, and four have been reported added to the plant since. Two Bessemer converters are known to have been at the plant. These are most probably in the westernmost large building (92) on Kukino Oka, which may also contain four additional converters. Excess steel over rolling mill, foundry and forge requirements is sent to Tobata (TARGET 90.34-29) for finishing.

Primary and Secondary Mills. There are numerous facilities for processing steel spread throughout the plant. Seven primary or blooming mills have been reported, and three (168v-x, 250h and j, and 255) identified in the center of the old plant. Others are probably among the unidentified mills—in the same general area (209a), at the W end of the plant (339, 341g and j) and on Kukino Oka (92b, e, f and 97). Buildings housing the specialized motors and intricate wiring needed for these mills have been identified in two instances (168y and 341h). Identified secondary mills include plate mills (168d-j, 209g-j, 234 and 250a, b), structural shape mills (168n-q and aa), a rail mill (209c), sheet mills (234a, h and j, 247a and b), tin plate mills (247h and j) and a wire mill (208).

PRIMARY OBJECTIVES

(Refer to Illustrations No. 90.34-28 P4, P5). The primary objectives are the ten coke oven batteries: six (2 each at 32a, 33a and 34a) on Kukino Oka, including one (W half of 32a) still under construction, and four in the original plant (295h, k, l, m; 298h, i; 316c, d, e, and 318b). The newer batteries are contained in a circle of 525 foot radius and the older ones, about a mile SE, in a circle of 650 foot radius.

The physical vulnerability of coke ovens is reasonably high. A direct hit on a battery will, because of misalignment of oven walls through shock action and secondary damage due to rapid cooling of oven walls, usually necessitate almost complete rebuilding of the entire battery requiring a minimum of 6 months' time.

Pig iron facilities including coke ovens are economically the most vulnerable part of a Japanese steel plant. Without coke, steel production is limited to minor amounts from scrap iron and sponge iron.

While not selected as primary objectives the blower installations (in buildings 72, 73, 103, 104, 280, 283) are vital to blast furnace operations and their replacement time is long. The blower engines are relatively small targets, and the building housing them are in each case within 1000 feet of coke oven batteries.

CONSTRUCTION AND VULNERABILITY

(Refer to Illustration No. 90.34-28 P5.)

PRIMARY OBJECTIVES:

Building No.	Plan Area (sq. ft.)	HE Vulnerability
32a	42,000*	Special Case— Coke ovens
33a	42,000	
34a	42,000	
295h,k,l,m	23,700	Refer to Annex 1 to JTG Coke, Iron and Steel Industry, General Analysis (ATSF CIS-A1, 24 March 1945)
298h,i	18,400	
316c,d,e	9,600	
318b	6,000	
	183,700	

*Includes battery of 75 ovens under construction.

CONSTRUCTION OF COKE OVENS:

Coke ovens are built upon a reinforced concrete decking, supported by reinforced concrete columns, about 2 to 3 feet in length, resting on the heavy concrete "raft" about 3 feet thick.

A typical individual oven is 3 to 4 feet wide, about 40 to 50 feet in length, and built of carefully fitted refractory brick. Exterior walls are 12 inches thick, and the roof is solid brickwork 3 feet thick.

A unit of coke ovens is subdivided into batteries by concrete buttresses, a battery generally consisting of from 36 to 90 ovens, interconnected by a network of flues and gas mains.

COMBUSTIBILITY OF BUILDINGS AND CONTENTS:

For detailed study of the fire susceptibility of structures and contents refer to Illustration No. 90.34-28 P5. Available ground photographs indicate that much of the old plant, especially the large mill buildings, was constructed of steel frame weathered with corrugated iron sheeting. The newer section appears more substantial. Many of the mill buildings are masonry load bearing with roofs of sheet iron; one a steel truss. Smaller buildings that clearly show gable parapets are indicative of masonry load bearing with wood rafters and battens. Very few combustible timber framed units are found.

WEAPON RECOMMENDATIONS

Reference should be made to weapon Recommendations Sheet No. 90.34-28-WR1 for high and medium altitude attack and to Weapon Recommendations Sheet No. 90.34-28-WR2 for low altitude attack.

CAMOUFLAGE, DECOYS, AND SMOKE SCREENS

No camouflage or decoys have been observed. It is possible to use open hearths, blast furnaces and even coke ovens to create smoke screens.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel after 90.34-28-TI, page 2.

JOINT TARGET GROUP, WASHINGTON, D. C.
WEAPON RECOMMENDATIONS SHEET

SHEET No. 90.34-28 WR-1
DATE.....14 May 1945
PAGE.................1

TARGET No. ...90.34-28
OBJ. AREA 90.34
OBJ. FOLDER No....90.34
CATEGORY Basic Proc. Ind., Coke, Iron and Steel

JAPAN IRON WORKS, YAWATA PLANT

YAWATA JAPAN

LAT. ....33°52'N
LONG. ....130°48'E
ALT.............30 feet

HIGH AND MEDIUM ALTITUDE ATTACK

(See also 90.34-28 TI and associated target illustrations.)

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel with other 90.34-28 material.

AIMING POINT

"*New*" *Coke Oven Battery Area*. For maximum damage to primary objectives the aiming point should be 33a. (Illustration 90.34-28 P5.)

"*Old*" *Coke Oven Battery Area*. For maximum damage to primary objectives the aiming point should be the South end of 295 (Illustration 90.34-28 P5).

WEAPONS AND FUZING

	HE	Fuze	IB
Preferred:	500 lb GP	0.1 N/0.1 T	None
Alternative:	1000-lb GP	0.1 N/0.1 T	None
Not recommended:	Smaller GP bombs SAP or AP bombs Depth bombs		

Notes: (a) The above recommendations apply to both coke oven battery areas.

(b) The 1000-lb GP is approximately 65% as effective as the 500-lb GP.

LOADING TABLE FOR INITIAL ATTACK

LOADING TABLE FOR PREFERRED HIGH EXPLOSIVE BOMB(2)

(This table is prepared for an initial attack on this target. For its application to later attacks see JTG Memorandum No. 3/1.)

Tons (actual) dispatched	Percent of bombs dispatched falling within 1000 feet of aiming point.			
	10%	15%	20%	30%
	F(1)	F(1)	F(1)	F(1)
100	—	10	10	15
200	10	15	20	30
400	20	30	35	50
800	35	50	60	—
1200	50	65	—	—
1600	60	—	—	—

(1) Expected percent of coke ovens destroyed.

(2) This table applies separately to the "new" and the "old" coke oven battery areas. If the alternative bomb is used, the expected percent of coke ovens destroyed will, of course, be lower.

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JOINT TARGET GROUP, WASHINGTON, D. C.
WEAPON RECOMMENDATIONS SHEET

SHEET No. 90.34-28 WR-2
DATE.....14 May 1945
PAGE.....1

JAPAN IRON WORKS, YAWATA PLANT

YAWATA **JAPAN**

TARGET No. . . .90.34-28
OBJ. AREA 90.34
OBJ. FOLDER No. . . .90.34
CATEGORY
Basic Proc. Ind., Coke, Iron and Steel

LAT. . . . . .33°52'N
LONG. . . . . . . .130°48'E
ALT. . . . . .30 feet

LOW LEVEL ATTACK

(See also 90.34-28 TI and associated target illustrations.)

TYPE OF ATTACK

This sheet applies primarily to an attack by carrier based aircraft, fighter bombers, or other similar aircraft which carry out dive, glide, low level, or minimum altitude attacks.

BUILDINGS CONSIDERED

Data are given below for an attack on primary objectives only (see Illustration No. 90.34-28 P5).

WEAPONS AND FUZING

A pure HE attack (no incendiaries) may be launched against the coke oven battery units specified in the table below. The choice of a particular HE weapon for attack on a given unit can be made by considering both the number of hits on that unit required for the various bombs (see the table at the right) and the stowage capabilities of the aircraft to be used. The proper fuzings for the HE weapons to be used against the individual units are given in the table below, with the exception that for minimum altitude attacks a 4-5 sec. delay is required for safety to the aircraft. The use of SAP, AP, smaller GP, or depth bombs is not recommended for this target.

NUMBER OF HITS

NUMBER OF HITS REQUIRED TO ACHIEVE 50% SERIOUS DAMAGE TO INDIVIDUAL COKE OVEN BATTERY UNITS(1)

Coke oven battery units (Ill. 90.34-28 P5)	Number of Hits		Fuzing
	500-lb GP	1000-lb GP	
"New" Coke Oven Battery Area			
32a	3	3	Against all coke oven battery units use 0.1 N/0.1 T fuzing.
33a	7	5	
34a	7	5	
"Old" Coke Oven Battery Area			
295 h, k, l, m	4	3	
298 h, i	3	3	
316 c, d, e	2	2	
318 b	1	1	

(1) To obtain the number of hits required to achieve 30% serious damage to individual coke oven battery units, multiply the appropriate entry in the preceding table by 0.5; for 70% serious damage, multiply by 1.7.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel with other 90.34-28 material.

(76)

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TARGET NO. 90.34-28

JAPAN IRON WORKS
YAWATA, JAPAN

ILLUSTRATION NO. 90.34-28 PI

APPROX. COORDINATES 33° 52' N 130° 48' E

30 AUGUST 1944

PHOTOGRAPHED 18 JUNE 1944

0 2000 4000 6000 FEET
0 1/2 1 MILE
1:32 000 APPROX.

CONFIDENTIAL

TYPE A

CONFIDENTIAL

AC/AS, INTELLIGENCE

JOINT
TARGET
GROUP
WASHINGTON, D. C.

JAPAN IRON WORKS, YAWATA PLANT
YAWATA JAPAN

RESTRICTED

ILLUSTRATION NO.	90.34-28 P2/1
DATE	29 April 1945
TARGET No.	90.34-28
COORDINATES	33°52'N 130°48'E
PHOTOGRAPHED	18 June 1944

0 2000 4000 6000 FEET
0 ½ 1 MILE
1:32 000 APPROX.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel in place of 90.34-28 P2.

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RESTRICTED

RESTRICTED

JOINT
TARGET
GROUP
WASHINGTON, D. C.

JAPAN IRON WORKS

YAWATA PLANT YAWATA, JAPAN

ILLUSTRATION No.	90.34-28 P3/1
DATE	23 May 1945
TARGET No.	90.34-28
COORDINATES	33°52'N 130°48'E
PHOTOGRAPHED	18 June 1944

Joint Target Group Folders should insert this in Target System Folder: Japanese Coke, Iron & Steel in place of 90.34-28 P3.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel in place of 90.34-28 P3.

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JOINT TARGET GROUP
WASHINGTON, D. C.

JAPAN IRON WORKS

YAWATA PLANT YAWATA, JAPAN

CONFIDENTIAL

ILLUSTRATION No. 90.34-28 P4/1
DATE . . . . 23 May 1945
TARGET No. 90.34-28
COORDINATES . . . . 33°52'N 130°48'E
PHOTOGRAPHED . . . . 18 June 1944

0 500 1000 1500 2000 2500 3000 FEET
0 1/4 1:6000 APPROX. 1/2 MILE

LEGEND

1	Loading station
2	Warehouse
3-9	Service to cement plant
10	Unidentified
11	Unit of cement plant
12	Cement plant
13	Unit of cement plant
14-16	Unit of by-products plant
17	Unidentified
18-22	Coal preparation
22A	Unidentified
23	Coal preparation
24, 25	Unidentified
26	Benzol house
27	Ammonium sulphate building
28-30	Unit of by-products plant
31	Exhauster house
31A	Decantation tanks
31B, 31C	Primary coolers
P32-34	Coke ovens
35	Conveyor house (diverter)
36	Unidentified
36A	Sub-unit of No. 36
37	Coke loading
38	By-products processing
39	Unidentified
39A	Coke oven gas holder
40	Unit of by-products plant
41-48	By-products servicing units
49	Boiler plant
50	Unit of by-products plant
51	Exhauster house
52, 53	Slag processing plant
54	Unidentified
55-57	Unit of by-products plant
58	Loading bays
59	Unidentified
60-63	Storage sheds
64-66	Workshops
67	Loading bays
68	Workshops
69, 70	Unidentified
71	Fuel storage
72	Part of No. 73
73	Boiler and blower house
74	Gas cleaning
74A	Gas holder
75	Servicing building
76	Unidentified
77	Warehouse
78, 79	Unidentified
80-84	Service Building
85	Unidentified
86, 87	Warehouse
87A-91	Unidentified
92	Rolling mill
92a	Soaking pits
92b, e, f	Rolling mills
92h	Probable Bessemer converters
93-96	Unidentified
97	Rolling mill
98, 99	Unidentified
100	Probable heavy forge
101, 102	Unidentified
103, 104	Part of No. 73
105, 106	Gas cleaning
107	Hot stoves
108-110	Blast furnace
111	Hot stoves
112, 113	Gas cleaning
114	Blast furnace
115	Unidentified
116-120	Warehouse
121	Pig casting plant
122-126	Unidentified
127	Probable ore sintering
128	Unidentified
129	Coke oven by-products storage
130-132	Repair shop
133	Warehouse
134	Boiler factory
135	Roll casting shop
136	Finished products storage
137	Unidentified
138	Roll turning shop
139	Unidentified
140-149	Warehouse
150	No. 5 Electric power plant
151	Laboratory
152, 153	Administration
154	Warehouse
155	Oil and tar products
156	Warehouse
157	No. 3 Electric power plant
158	Boiler house for 157
159-167	Unidentified
168a	Open hearth furnaces
168b, c	Soaking pits
d-i	Heavy plate mill
n-q	Small and medium shape mills
u-x	Blooming mill
y	Motor room
z	Soaking pits
aa	Heavy shapes mill
cc, dd	Soaking pits
169	Ladles and scrap car track cover
170, 171	Unidentified
172-174	Unit of refractory brick plant
175	Warehouse
176-179	Unidentified
180-182	Unit of refractory brick plant
183	Unidentified
184-189	Unit of refractory brick plant
190	Brick kilns
191	Unit of refractory brick plant
192	Refractory brick plant
193	Unit of refractory brick plant
194	Warehouse
195	Unidentified
196	Car repair shop
197	Unidentified
198	Service unit for No. 199
199	No. 4 Electric power plant
200, 201	Service unit for No. 199
202, 203	Cooling towers
204	Repair shop
205, 206	Warehouse
207	Wire mill
208	Unidentified
209, 209a	Rolling mill
209c	Rail mill
209g-j	Medium plate mill
210	Bolt shop
211a-d	Casting shop
g-j	Tin plate shop
212	Heat treating shop
213-215	Laboratory
216	Repair shop
217-220	Laboratory
221	Sub-section of No. 216
222	Locomotive shed
223	Unidentified
224, 225	Locomotive shed
226, 227	Servicing building
228	Electric shop
229-233	Unidentified
234	Rolling mill
234a	Thin sheet mill
h-j	Medium sheet mill
m, n	Soaking pits
o	Plate mill
236	Boiler house
237	Refractory brick plant
238, 239	Service to refractory brick plant
240, 241	Refractory brick plant
242-245	Unit of refractory brick plant
246	Warehouse
247	Rolling mill
247a, b	Light sheet mill
h, j	Tin plate mill
248, 249	Unidentified
250	Rolling mill
251	Wheel plant
252	Electric furnaces
253	Crucibles
254	Open hearth furnaces
255	Blooming mill
256	Pig iron casting
257	Cement plant
258, 259	Unit of cement plant
260-262	Unidentified
263, 264	Open hearth furnaces
265	Ladle and scrap car track cover
266, 267	Unidentified
268	Rest room
269, 270	Unidentified
271	Heat treating
272-274	Unidentified
275	Open hearth furnaces
276	Unidentified
277	No. 1 Electric power plant
278	Gas cleaning
278A, 278B	Gas holders
279	Unidentified
280	Blower house
281, 282	Gas cleaning
283	Blower house
284	Hot stoves
285-288	Blast furnaces
289	Water tower
290	Unidentified
291	Servicing
292, 293	Unidentified
294	Decanting tank
P295	Coke ovens
296, 297	Unidentified
P298	Coke ovens
299	Unidentified
300-302	Unit of by-products plant
303	Exhauster house
304	Ammonium sulphate building
305	Part of No. 298
306	Unidentified
307-311	Unit of by-products plant
312, 313	Unidentified
314, 315	Unit of by-products plant
P316	Coke ovens
317	Unidentified
P318	Coke ovens (part of No. 316)
319	Unit of by-products plant
320	Exhauster house
321	Coal preparation
322, 323	Unit of by-products plant
324-326	Unidentified
327,328	Unit of by-products plant
329	Administration
330-332	Unidentified
333	Cooling Tower
334-336	Unidentified
337	Open hearth furnaces
338	Unidentified
339	Rolling mills
340	Unidentified
341	Rolling mills
341a-d	Boiler unit
f	Soaking pits
g, i	Rolling mills
h	Motor room
342, 343	Unidentified

P-denotes Primary Buildings

...lders of Joint Target Group Folders should insert this
...eet in Air Target System Folder: Japanese Coke, Iron
& Steel in place of 90.34-28 P4.

78, 79 Unidentified

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90.34-28 P4/1

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CONFIDENTIAL

JAPAN IRON WORKS
YAWATA PLANT
YAWATA, JAPAN
SCALE 1:6,000

ILLUSTRATION NO. 90.34-28-P5
DATE 10 MARCH 1945
TARGET NO. 90.34-28
COORDINATES 33°52' NORTH 130°48' EAST
PHOTOGRAPHED 18 June 1944

LEGEND

1	Loading station
2	Warehouse
3-9	Service to cement plant
10	Unidentified
11	Unit of cement plant
12	Cement plant
13	Unit of cement plant
14-16	Unit of by-products plant
17	Unidentified
18-22	Coal preparation
22A	Unidentified
23	Coal preparation
24, 25	Unidentified
26	Benzol house
27	Ammonium sulphate building
28-30	Unit of by-products plant
31	Exhauster house
31A	Decantation tanks
31B, 31C	Primary coolers
P32-34	Coke ovens
35	Conveyor house (diverter)
36	Unidentified
36A	Sub-unit of No. 36
37	Coke loading
38	By-products processing
39	Unidentified
39A	Coke oven gas holder
40	Unit of by-products plant
41-48	By-products servicing units
49	Boiler plant
50	Unit of by-products plant
51	Exhauster house
52, 53	Slag processing plant
54	Unidentified
55-57	Unit of by-products plant
58	Loading bays
59	Unidentified
60-63	Storage sheds
64-66	Workshops
67	Loading bays
68	Workshops
69, 70	Unidentified
71	Fuel storage
72	Part of No. 73
73	Boiler and blower house
74	Gas cleaning
74A	Gas holder
75	Servicing building
76	Unidentified
77	Warehouse
78, 79	Unidentified
80-84	Service building
85	Unidentified
86, 87	Warehouse
87A-91	Unidentified
92	Rolling mill
92a	Soaking pits
92b, e, f	Rolling mills
92h	Probable Bessemer converters
93-96	Unidentified
97	Rolling mill
98, 99	Unidentified
100	Probable heavy forge
101, 102	Unidentified
103, 104	Part of No. 73
105, 106	Gas cleaning
107	Hot stoves
108-110	Blast furnace
111	Hot stoves
112, 113	Gas cleaning
114	Blast furnace
115	Unidentified
116-120	Warehouse
121	Pig casting plant
122-126	Unidentified
127	Probable ore sintering
128	Unidentified
129	Coke oven by-products storage
130-132	Repair shop
133	Warehouse
134	Boiler factory
135	Roll casting shop
136	Finished products storage
137	Unidentified
138	Roll turning shop
139	Unidentified
140-149	Warehouse
150	No. 5 Electric power plant
151	Laboratory
152, 153	Administration
154	Warehouse
155	Oil and tar products
156	Warehouse
157	No. 3 Electric power plant
158	Boiler house for 157
159-167	Unidentified
168a	Open hearth furnaces
168b, c	Soaking pits
d-j	Heavy plate mill
n-q	Small and medium shape mills
u-x	Blooming mill
y	Motor room
z	Soaking pits
aa	Heavy shapes mill
cc, dd	Soaking pits
169	Ladles and scrap car track cover
170, 171	Unidentified
172-174	Unit of refractory brick plant
175	Warehouse
176-179	Unidentified
180-182	Unit of refractory brick plant
183	Unidentified
184-189	Unit of refractory brick plant
190	Brick kilns
191	Unit of refractory brick plant
192	Refractory brick plant
193	Unit of refractory brick plant
194	Warehouse
195	Unidentified
196	Car repair shop
197	Unidentified
198	Service unit for No. 199
199	No. 4 Electric power plant
200, 201	Service unit for No. 199
202, 203	Cooling towers
204	Repair shop
205, 206	Warehouse
207	Wire mill
208	Unidentified
209, 209a	Rolling mill
209c	Rail mill
209g-j	Medium plate mill
210	Bolt shop
211a-d	Casting shop
g-j	Tin plate shop
212	Heat treating shop
213-215	Laboratory
216	Repair shop
217-220	Laboratory
221	Sub-section of No. 216
222	Locomotive shed
223	Unidentified
224, 225	Locomotive shed
226, 227	Servicing building
228	Electric shop
229-233	Unidentified
234	Rolling mill
234a	Thin sheet mill
h-j	Medium sheet mill
m, n	Soaking pits
o	Plate mill
236	Boiler house
237	Refractory brick plant
238, 239	Service to refractory brick plant
240, 241	Refractory brick plant
242-245	Unit of refractory brick plant
246	Warehouse
247	Rolling mill
247a, b	Light sheet mill
h, j	Tin plate mill
248, 249	Unidentified
250	Rolling mill
251	Wheel plant
252	Electric furnaces
253	Crucibles
254	Open hearth furnaces
255	Blooming mill
256	Pig iron casting
257	Cement plant
258, 259	Unit of cement plant
260-262	Unidentified
263, 264	Open hearth furnaces
265	Ladle and scrap car track cover
266, 267	Unidentified
268	Rest room
269, 270	Unidentified
271	Heat treating
272-274	Unidentified
275	Open hearth furnaces
276	Unidentified
277	No. 1 Electric power plant
278	Gas cleaning
278A, 278B	Gas holders
279	Unidentified
280	Blower house
281, 282	Gas cleaning
283	Blower house
284	Hot stoves
285-288	Blast furnaces
289	Water tower
290	Unidentified
291	Servicing
292, 293	Unidentified
294	Decanting tank
P295	Coke ovens
296, 297	Unidentified
P298	Coke ovens
299	Unidentified
300-302	Unit of by-products plant
303	Exhauster house
304	Ammonium sulphate building
305	Part of No. 298
306	Unidentified
307-311	Unit of by-products plant
312, 313	Unidentified
314, 315	Unit of by-products plant
P316	Coke ovens
317	Unidentified
P318	Coke ovens (part of No. 316)
319	Unit of by-products plant
320	Exhauster house
321	Coal preparation
322, 323	Unit of by-products plant
324-326	Unidentified
327,328	Unit of by-products plant
329	Administration
330-332	Unidentified
333	Cooling Tower
334-336	Unidentified
337	Open hearth furnaces
338	Unidentified
339	Rolling mills
340	Unidentified
341	Rolling mills
341a-d	Boiler unit
f	Soaking pits
g, i	Rolling mills
h	Motor room
342, 343	Unidentified

P-denotes Primary Buildings

(47)

FIRE SUSCEPTIBILITY PLAN

PRIMARY BUILDINGS (P) — FIRE WALL, CERTAIN
SECONDARY BUILDINGS (S) — FIRE WALL, PROBABLE

BUILDINGS	CONTENTS
COMBUSTIBLE	SUSCEPTIBILITY TO INCENDIARIES:
NON-COMBUSTIBLE	NONE
FIRE RESISTANT	POOR
COMBINATION I.E. COMBUSTIBLE ROOF RESISTANT FLOORS	FAIR
	GOOD
WATER TANK (W)	EXCELLENT

AREA IN SQ. FT.	PRIMARY	SECONDARY	ALL BLDGS. SHOWN
NO. OF BUILDINGS	7	—	338
NO. OF FIRE DIVISIONS	—	—	—
PLAN AREA	183,700	—	10,200,000
TOTAL FLOOR AREA	183,700	—	10,800,000
SITE AREA	45,000,000 (including anchorage)		

PREPARED BY AERONAUTICAL CHART SERVICE, AAF.

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Services for the use of Allied Forces

JAPAN IRON WORKS, TOBATA PLANT

LATITUDE: 33/54 N
LONGITUDE: 130/50 E.

TARGET NO. 90.34-29

Location has been confirmed on this target. Plant lies between the railway tracks and Nagoya Point in N Tobata. Auxiliary of Yawata Plant (Target 28) from which it obtains steel. The Tobata plant is among the largest and most modern rolling mills in Japan, with 43" hot strip mill, five-stand continuous tandem 42" cold rolling mill and latest tin plate processing equipment. Cap for sheet, strip and tin plate, 300,000 metric tons per year; for total rolled products, 400,000 metric tons, Plant has at least one coke oven battery with 55 ovens; capacity 200,000 metric tons coke per year; coke-oven by product plant.

TARGET NO. 90.34-29

APPROX. COORDINATES 33° 54'N 130° 50'E

PHOTOGRAPHED 18 JUNE 1944

JAPAN IRON WORKS
TOBATA JAPAN

ILLUSTRATION NO. 90.34-29 . P I

ISSUED SEPT 1944

CONFIDENTIAL

0 2000 4000 6000 FEET
0 1/2 1 MILE
1:32 000 APPROX.

CONFIDENTIAL

TYPE A

JOINT TARGET GROUP
WASHINGTON, D. C.

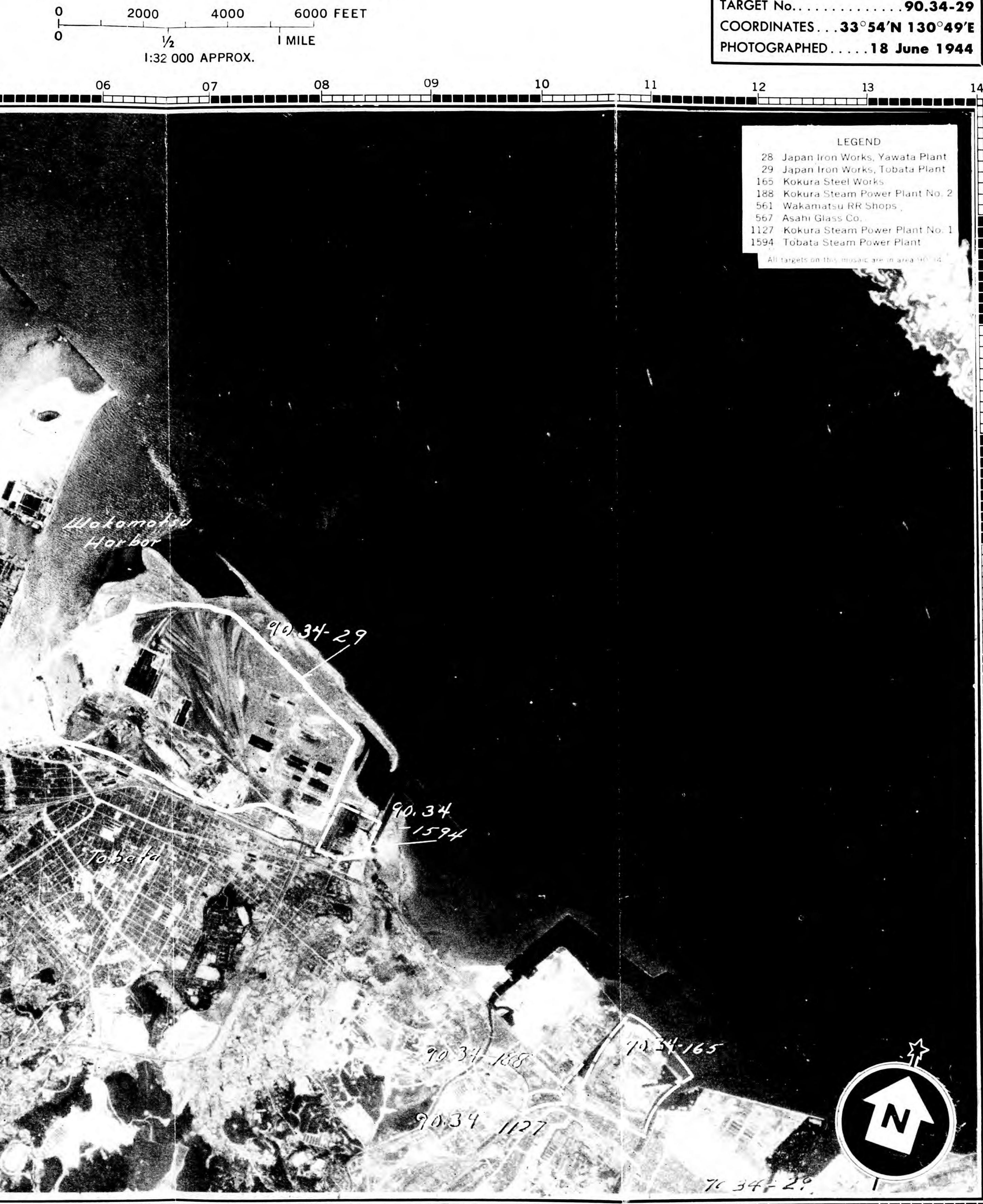
JAPAN IRON WORKS, TOBATA PLANT

TOBATA **JAPAN**

RESTRICTED

ILLUSTRATION No. . . . 90.34-29 P2/1
DATE. . . . . 29 April 1945
TARGET No. 90.34-29
COORDINATES . . . 33°54'N 130°49'E
PHOTOGRAPHED . . . . . 18 June 1944

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel in place of 90.34-29 P2.



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RESTRICTED

TARGET NO. 90.34-29

JAPAN IRON WORKS
TOBATA, JAPAN

ILLUSTRATION NO. 90.34-29 P3

APPROX. COORDINATES 33° 54' N 130° 50' E

ISSUED SEPT. 1944

PHOTOGRAPHED 18 JUNE 1944

CONFIDENTIAL

0 500 1000 1500 2000 2500 3000 FEET
0 1/4 1/2 MILE
1:6000 APPROX.

AC/AS, INTELLIGENCE

CONFIDENTIAL

TYPE B

TARGET NO. 90.34-29

JAPAN IRON WORKS
TOBATA, JAPAN

ILLUSTRATION NO. 90.34-29 P 4

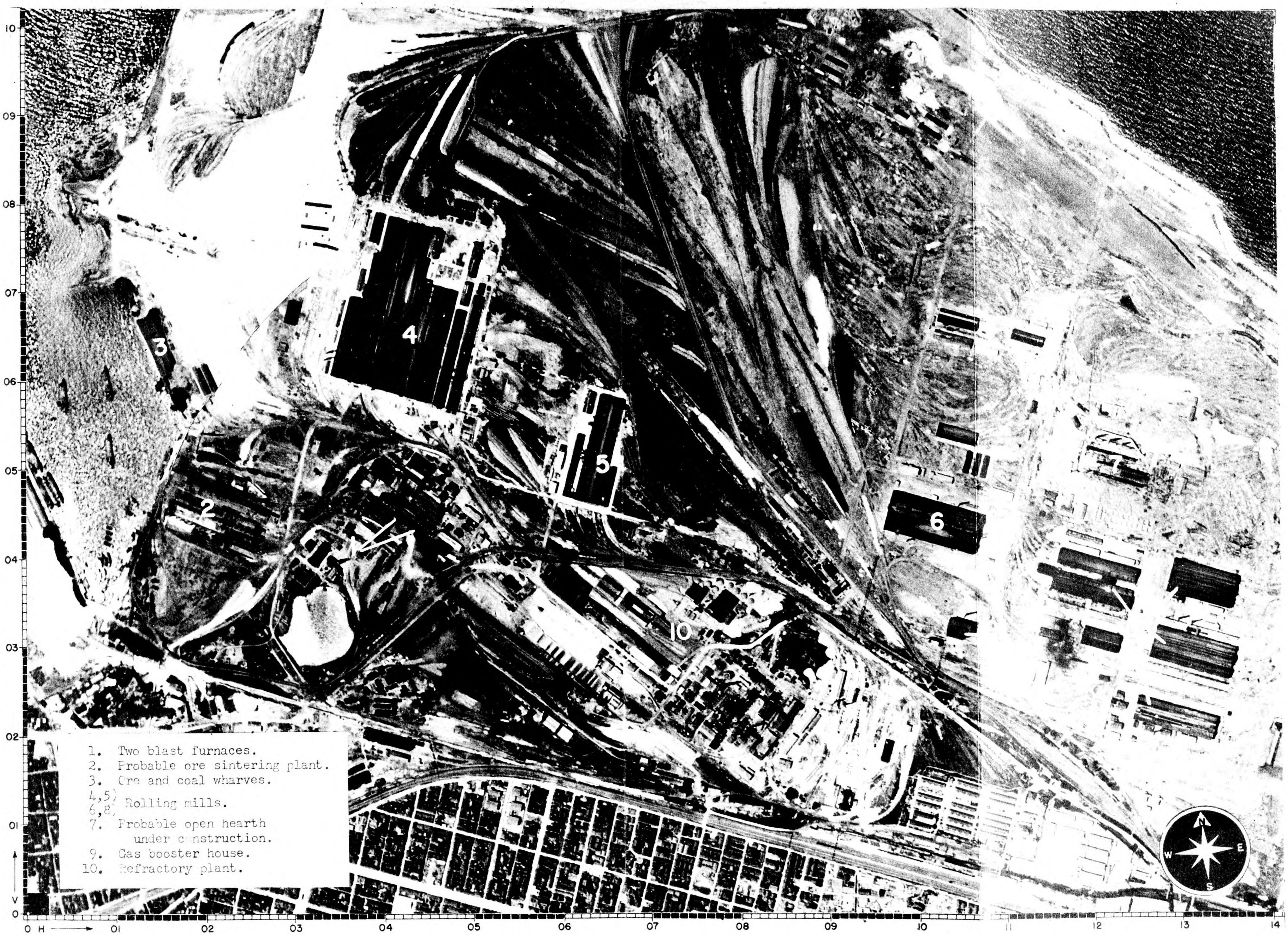
APPROX. COORDINATES 33° 54'N 130° 50' E

ISSUED SEPT. 1944

PHOTOGRAPHED 18 JUNE 1944

CONFIDENTIAL

0 500 1000 1500 2000 2500 3000 FEET
0 1/4 1/2 MILE
1:6000 APPROX.



SHOWA STEEL WORKS
ANSHAN, MANCHURIA.
TARGET NO. 93.3 - 29
Lat. 41-08' N.
Long. 122-58' E.

The Anshan Coke Plant of the Showa Steel Works is a target of vital importance. This plant comprises 16 batteries with an estimated total annual tonnage of 2,574,644 (metric tons).

Completion of the destruction of the Anshan Coke Plant would deprive Japan of the iron and steel products of the SHOWA STEEL WORKS since no coke is available from other sources to sustain the operations of these works.

XX B.C. MISSION NO. 4 - July 29, 1944.

464 500-lb. GP AN-M-64 Bombs (Composition B) fuzed 0.1 sec. nose, 0.025 sec. tail. All four coking units hit or suffered near misses. Primary coal pulverizing, screening, and conveying system to all of the coking units severely damaged. Approximately 9 acres of the S. section of the coke by-products plant almost completely destroyed. Rail system in yard hard hit. Hits on the raw material conveyors to the E. blast furnaces. The results of this mission are summarized as follows:-

	Metallurigical Coke Output (in metric tons.)	Percentage of Original Total: Showa	Percentage of Original Total: Jap.Emp.
Before Mission	2,574,644	100.0	26.4
Destroyed by Mission	193,200	7.5	2.0
Remainder	2,381,444	92.5	24.4

XX B.C. MISSION NO. 8 - September 7/8, 1944.

90 A/C Bombing. 206.5 tons, 826, 500-lb. GP AN-M-64 bombs, fuzed 0.1 sec. nose and 0.025 sec. tail. This mission is estimated to have caused a reduction in the annual output of the SHOWA COKE OVEN PLANT amounting to 715,900 metric tons (27.7% of its original production.). The results of this mission are summarized as follows:-

	Metallurigical Coke Output (in metric tons.)	Percentage of Original Total: Showa	Percentage of Original Total: Jap.Emp.
Before Mission	2,381,444	92.5	24.4
Destroyed by Mission	715,900	27.7	7.3
Remainder	1,665,544	64.8	17.1

XX B.C. MISSION NO. 9 - September 26, 1944.

73 A/C out of 109 airborne hit primary target dropping 187.75 tons (751 500-lb GP bombs, AN-M-64 - TNT filled - fuzed .1 sec. nose and .025 sec. tail. No specific item of damage definitely attributale to this attack was identified within the confines of the SHOWA IRON AND STEEL WORKS proper.

TARGET NO. 93.3-29

SHOWA STEEL WORKS
ANSHAN, MANCHURIA

ILLUSTRATION NO. 93.3-29 PI

APPROX. COORDINATES 41° 08' N 122° 56' E

30 AUGUST 1944

PHOTOGRAPHED 4 AUGUST 1944

0 2000 4000 6000 FEET
0 1/2 1 MILE
1:32 000 APPROX.

CONFIDENTIAL

AC/AS. INTELLIGENCE

CONFIDENTIAL

TYPE A

TARGET NO. 93.3-29

SHOWA STEEL WORKS
ANSHAN, MANCHURIA

ILLUSTRATION NO. 93.3-29 P2

APPROX. COORDINATES 41° 08' N 122° 56' E

30 AUGUST 1944

PHOTOGRAPHED 4 AUGUST 1944

0 2000 4000 6000 FEET
0 1/2 1 MILE
1:32 000 APPROX.

CONFIDENTIAL

AC/AS, INTELLIGENCE

CONFIDENTIAL

TYPE A

TARGET NO. 93.3-29

SHOWA STEEL WORKS
ANSHAN, MANCHURIA

ILLUSTRATION NO. 93.3-29 P3

APPROX. COORDINATES 41° 08' N 122° 56' E

30 AUGUST 1944

PHOTOGRAPHED 4 AUGUST 1944

CONFIDENTIAL

0 1000 2000 3000 4000 5000 6000 FEET
0 1/2 1 MILE
1:12000 APPROX.

AC/AS, INTELLIGENCE

CONFIDENTIAL

TYPE B

TARGET NO. 93.3-29

SHOWA STEEL WORKS
ANSHAN, MANCHURIA

ILLUSTRATION NO. 93.3-29 P4

APPROX. COORDINATES 41° 08' N 122° 56' E

30 AUGUST 1944

PHOTOGRAPHED 4 AUGUST 1944

CONFIDENTIAL

AC/AS, INTELLIGENCE

CONFIDENTIAL

TYPE B

JOINT TARGET GROUP
WASHINGTON, D. C.
FIRE SUSCEPTIBILITY PLAN

SHOWA STEEL WORKS
ANSHAN, MANCHURIA

SCALE 1:6,000

500 0 500 1000 1500 2000 2500 FEET

CONFIDENTIAL

ILLUSTRATION NO. 93.3-29-P5a
DATE 13 APRIL 1945
TARGET NO. 93.3-29
COORDINATES 41°08' NORTH 122°58' EAST
PHOTOGRAPHED 4 AUGUST 1944

FIRE SUSCEPTIBILITY PLAN

PRIMARY BUILDINGS (P)	FIRE WALL, CERTAIN
SECONDARY BUILDINGS (S)	FIRE WALL, PROBABLE

BUILDINGS	CONTENTS
	SUSCEPTIBILITY TO INCENDIARIES:
COMBUSTIBLE	NONE
NON-COMBUSTIBLE	POOR
FIRE RESISTANT	FAIR
COMBINATION I.E. COMBUSTIBLE ROOF RESISTANT FLOORS	GOOD
WATER TANK (W)	EXCELLENT

AREA IN SQ. FT.	PRIMARY	SECONDARY	ALL BLDGS. SHOWN
NO. OF BUILDINGS	4	0	499
NO. OF FIRE DIVISIONS	—	—	—
PLAN AREA	153,300	—	13,800,000
TOTAL FLOOR AREA	153,300	—	15,400,000
SITE AREA	109,000,000		

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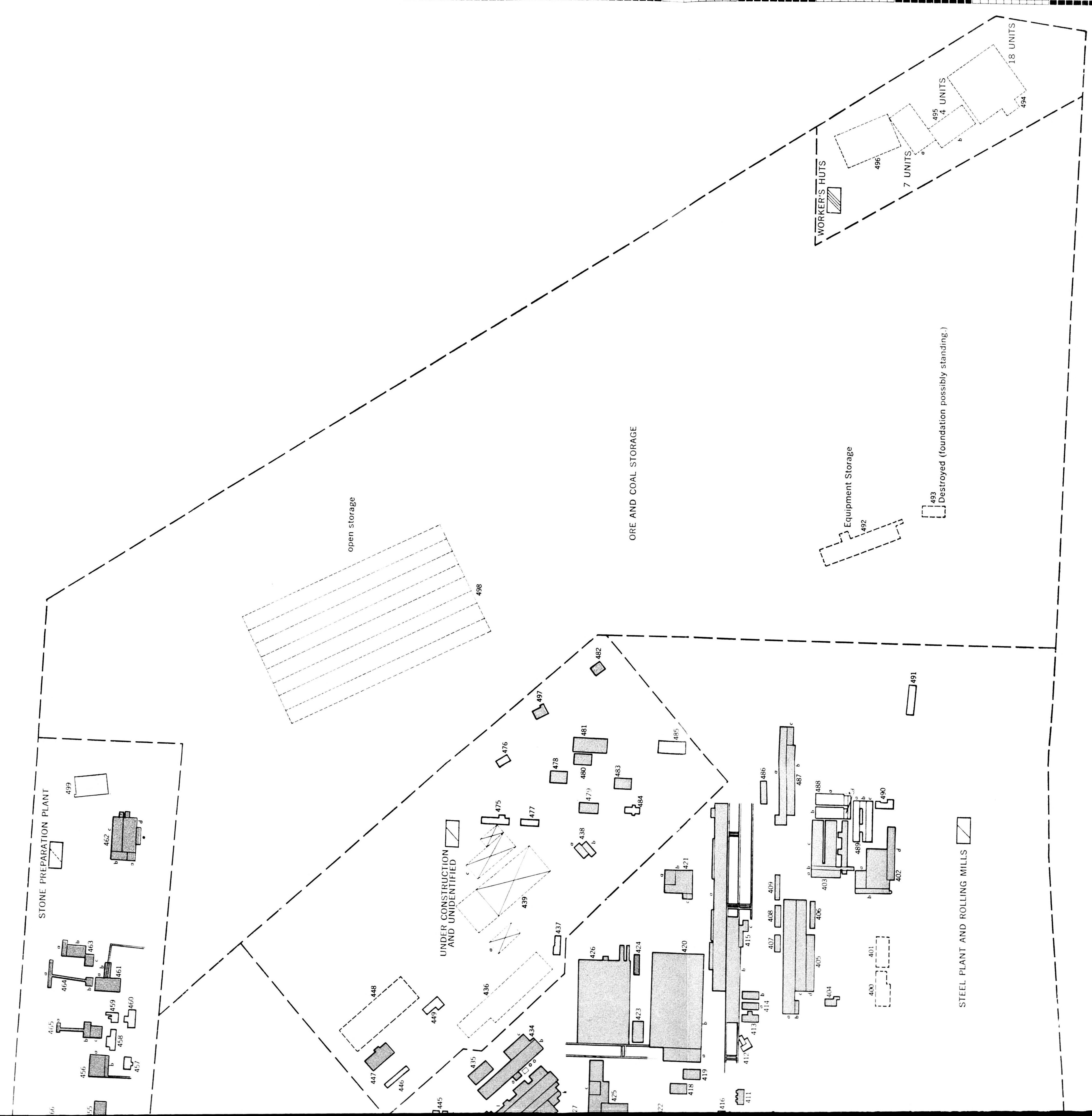

LEGEND

230	Exhauster building
232	Unidentified
233-237	Storage
238	Benzol scrubbers and final coolers
244-246	Unidentified
248	Servicing unit of No. 2 Bar Mill
249	No. 2 Bar Mill
268	Black sheet mill
269	Bar mill
270	Gantry cover
272-275	Unidentified
276	Mill
279	Light and medium plate mill
280-292	Unidentified
293	Open hearth furnace
303-304	Brick Plant
305	Brick Plant (kilns under construction)
306-321	Brick Plant
322	Brick Plant (kilns)
323	Brick Plant (kilns)
324	Brick Plant (kilns)
325-329	Brick Plant
330-333	Unidentified
334-335	Refractory & brick plant
336	Storage
337	Storage
338-361	Refractory & brick plant
362	Storage
363-369	Refractory & brick plant
370	Storage
371-394	Finished products storage
395	Turntable
396	RR roundhouse
397	RR workshops
398	RR workshops
399	RR workshops
400	Unidentified
401	Unidentified
402	Manchuria Zinc Plating Co.
403	Manchuria Zinc Plating Co.
404	Unidentified
405	Manchuria Steel Tube Co.
406-409	Manchuria Steel Tube Co.
410-414	Anzan Kosai Kaisha Plant
415	Anzan Kosai Kaisha Plant
416	Anzan Kosai Kaisha Plant
417-419	Manchuria Sumitomo Metallic Industry Co.
420	Manchuria Sumitomo Metallic Industry Co.
421-424	Manchuria Sumitomo Metallic Industry Co.
425	Manchuria Sumitomo Metallic Industry Co.
426	Manchuria Sumitomo Metallic Industry Co.
427	Manchuria Sumitomo Metallic Industry Co.
428-432	Manchuria Steel Works
433	Manchuria Steel Works

280-292	Unidentified
293	Open hearth furnace
303-304	Brick Plant
305	Brick Plant (kilns under construction)
306-321	Brick Plant
322	Brick Plant (kilns)
323	Brick Plant (kilns)
324	Brick Plant (kilns)
325-329	Brick Plant
330-333	Unidentified
334-335	Refractory & brick plant
336	Storage
337	Storage
338-361	Refractory & brick plant
362	Storage
363-369	Refractory & brick plant
370	Storage
371-394	Finished products storage
395	Turntable
396	RR roundhouse
397	RR workshops
398	RR workshops
399	RR workshops
400	Unidentified
401	Unidentified
402	Manchuria Zinc Plating Co.
403	Manchuria Zinc Plating Co.
404	Unidentified
405	Manchuria Steel Tube Co.
406-409	Manchuria Steel Tube Co.
410-414	Anzan Kosai Kaisha Plant
415	Anzan Kosai Kaisha Plant
416	Anzan Kosai Kaisha Plant
417-419	Manchuria Sumitomo Metallic Industry Co.
420	Manchuria Sumitomo Metallic Industry Co.
421-424	Manchuria Sumitomo Metallic Industry Co.
425	Manchuria Sumitomo Metallic Industry Co.
426	Manchuria Sumitomo Metallic Industry Co.
427	Manchuria Sumitomo Metallic Industry Co.
428-432	Manchuria Steel Works
433	Manchuria Steel Works
434-435	Manchuria Steel Works
436	Building under construction
437	Unidentified
438	Unidentified
439	Buildings under construction
440-449	Manchuria Rolling Mills
450	Manchuria Rolling Mills
451	Manchuria Rolling Mills
452	Manchuria Rolling Mills
453-462	Probable Stone Preparation Plant
463-493	Unidentified
494-496	Workers' huts
497	Unidentified
498	Open storage
499	Unidentified
P	Primary Building.

CONTINUED ON ILLUSTRATION NO. 93.3-29-P5b

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93:3-29-P5a

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JOINT TARGET GROUP
WASHINGTON, D. C.
FIRE SUSCEPTIBILITY PLAN

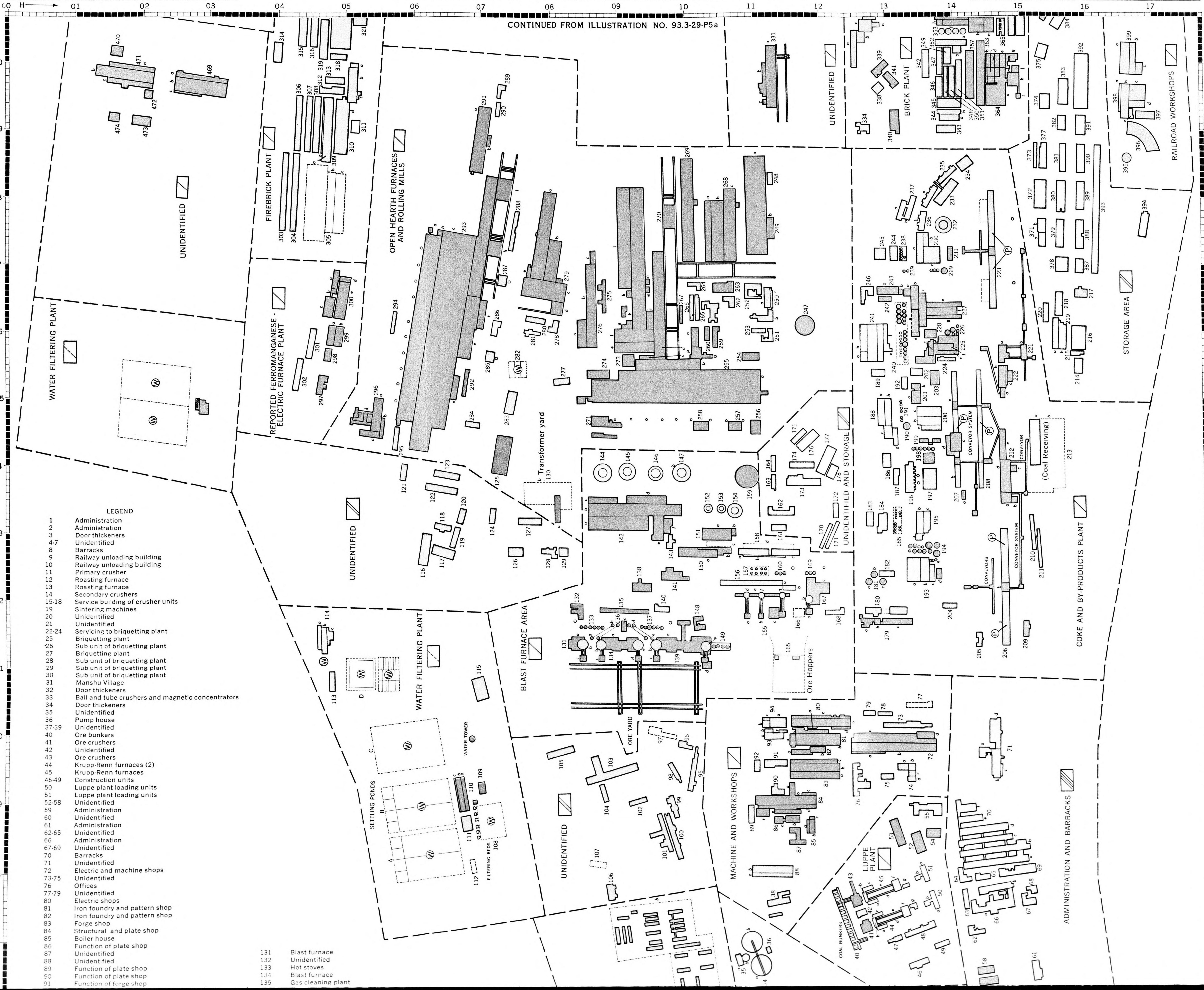
SHOWA STEEL WORKS
ANSHAN, MANCHURIA

SCALE 1:6,000

500 0 500 1000 1500 2000 2500 FEET

ILLUSTRATION NO. 93.3-29-P5b
DATE 13 APRIL 1945
TARGET NO. 93.3-29
COORDINATES 41°08' NORTH 122°58' EAST
PHOTOGRAPHED 4 AUGUST 1944

CONTINUED FROM ILLUSTRATION NO. 93.3-29-P5a



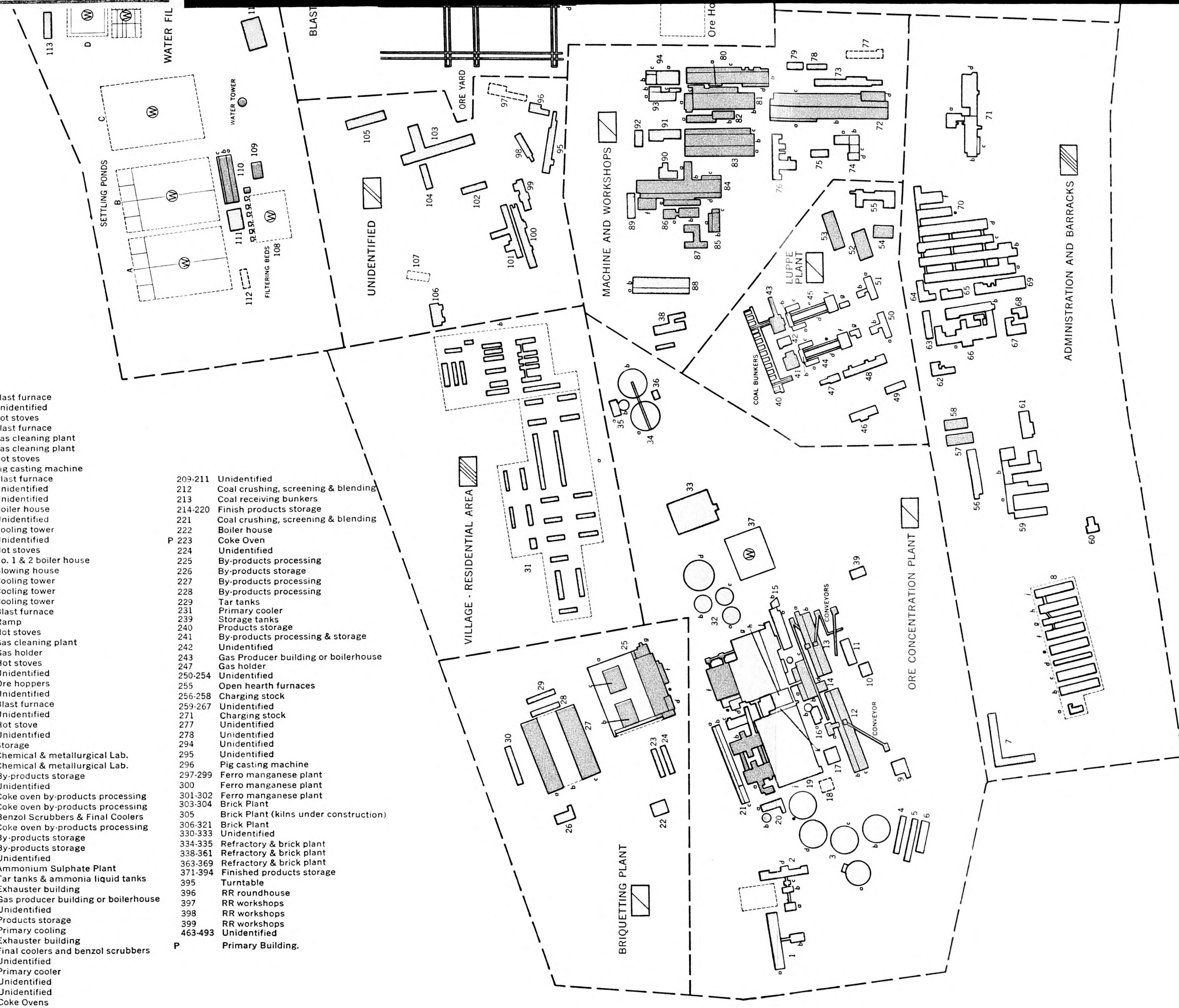
LEGEND

1	Administration
2	Administration
3	Door thickeners
4-7	Unidentified
8	Barracks
9	Railway unloading building
10	Railway unloading building
11	Primary crusher
12	Roasting furnace
13	Roasting furnace
14	Secondary crushers
15-18	Service building of crusher units
19	Sintering machines
20	Unidentified
21	Unidentified
22-24	Servicing to briquetting plant
25	Briquetting plant
26	Sub unit of briquetting plant
27	Briquetting plant
28	Sub unit of briquetting plant
29	Sub unit of briquetting plant
30	Sub unit of briquetting plant
31	Manshu Village
32	Door thickeners
33	Ball and tube crushers and magnetic concentrators
34	Door thickeners
35	Unidentified
36	Pump house
37-39	Unidentified
40	Ore bunkers
41	Ore crushers
42	Unidentified
43	Ore crushers
44	Krupp-Renn furnaces (2)
45	Krupp-Renn furnaces
46-49	Construction units
50	Luppe plant loading units
51	Luppe plant loading units
52-58	Unidentified
59	Administration
60	Unidentified
61	Administration
62-65	Unidentified
66	Administration
67-69	Unidentified
70	Barracks
71	Unidentified
72	Electric and machine shops
73-75	Unidentified
76	Offices
77-79	Unidentified
80	Electric shops
81	Iron foundry and pattern shop
82	Iron foundry and pattern shop
83	Forge shop
84	Structural and plate shop
85	Boiler house
86	Function of plate shop
87	Unidentified
88	Unidentified
89	Function of plate shop
90	Function of plate shop
91	Function of forge shop
131	Blast furnace
132	Unidentified
133	Hot stoves
134	Blast furnace
135	Gas cleaning plant

30 Sub unit of briquetting plant
31 Manshu Village
32 Door thickeners
33 Ball and tube crushers and magnetic concentrators
34 Door thickeners
35 Unidentified
36 Pump house
37-39 Unidentified
40 Ore bunkers
41 Ore crushers
42 Unidentified
43 Ore crushers
44 Krupp-Renn furnaces (2)
45 Krupp-Renn furnaces
46-49 Construction units
50 Luppe plant loading units
51 Luppe plant loading units
52-58 Unidentified
59 Administration
60 Unidentified
61 Administration
62-65 Unidentified
66 Administration
67-69 Unidentified
70 Barracks
71 Unidentified
72 Electric and machine shops
73-75 Unidentified
76 Offices
77-79 Unidentified
80 Electric shops
81 Iron foundry and pattern shop
82 Iron foundry and pattern shop
83 Forge shop
84 Structural and plate shop
85 Boiler house
86 Function of plate shop
87 Unidentified
88 Unidentified
89 Function of plate shop
90 Function of plate shop
91 Function of forge shop
92 Function of forge shop
93-107 Unidentified
108 Filtering beds
109 Function of filtering beds
110 Water purification
111 Unidentified
112 Unidentified
113 Water purification
114 Water purification
115-129 Unidentified
130 Transformer station

131 Blast furnace
132 Unidentified
133 Hot stoves
134 Blast furnace
135 Gas cleaning plant
136 Gas cleaning plant
137 Hot stoves
138 Pig casting machine
139 Blast furnace
140 Unidentified
141 Unidentified
142 Boiler house
143 Unidentified
144-147 Cooling tower
148 Unidentified
149 Hot stoves
150 No. 1 & 2 boiler house
151 Blowing house
152 Cooling tower
153 Cooling tower
154 Cooling tower
155 Blast furnace
156 Ramp
157 Hot stoves
158 Gas cleaning plant
159 Gas holder
160 Hot stoves
161-164 Unidentified
165 Ore hoppers
166 Unidentified
167 Blast furnace
168 Unidentified
169 Hot stove
170-172 Unidentified
173-178 Storage
179 Chemical & metallurgical Lab.
180 Chemical & metallurgical Lab.
181 By-products storage
182 Unidentified
183 Coke oven by-products processing
184 Coke oven by-products processing
185 Benzol Scrubbers & Final Coolers
186-189 Coke oven by-products processing
190 By-products storage
191 By-products storage
192 Unidentified
193 Ammonium Sulphate Plant
194 Tar tanks & ammonia liquid tanks
195 Exhauster building
196 Gas producer building or boilerhouse
197 Unidentified
198 Products storage
199 Primary cooling
200 Exhauster building
201 Final coolers and benzol scrubbers
202 Unidentified
203 Primary cooler
204 Unidentified
205 Unidentified
P 206 Coke Ovens
P 207 Coke Ovens
P 208 Coke Ovens

209-211 Unidentified
212 Coal crushing, screening & blending
213 Coal receiving bunkers
214-220 Finish products storage
221 Coal crushing, screening & blending
222 Boiler house
P 223 Coke Oven
224 Unidentified
225 By-products processing
226 By-products storage
227 By-products processing
228 By-products processing
229 Tar tanks
231 Primary cooler
239 Storage tanks
240 Products storage
241 By-products processing & storage
242 Unidentified
243 Gas Producer building or boilerhouse
247 Gas holder
250-254 Unidentified
255 Open hearth furnaces
256-258 Charging stock
259-267 Unidentified
271 Charging stock
277 Unidentified
278 Unidentified
294 Unidentified
295 Unidentified
296 Pig casting machine
297-299 Ferro manganese plant
300 Ferro manganese plant
301-302 Ferro manganese plant
303-304 Brick Plant
305 Brick Plant (kilns under construction)
306-321 Brick Plant
330-333 Unidentified
334-335 Refractory & brick plant
338-361 Refractory & brick plant
363-369 Refractory & brick plant
371-394 Finished products storage
395 Turntable
396 RR roundhouse
397 RR workshops
398 RR workshops
399 RR workshops
463-493 Unidentified
P Primary Building.



FIRE SUSCEPTIBILITY PLAN

PRIMARY BUILDINGS (P) — FIRE WALL, CERTAIN
SECONDARY BUILDINGS (S) — FIRE WALL, PROBABLE

BUILDINGS	CONTENTS
COMBUSTIBLE	SUSCEPTIBILITY TO INCENDIARIES:
NON-COMBUSTIBLE	NONE
FIRE RESISTANT	POOR
COMBINATION I.E. COMBUSTIBLE ROOF RESISTANT FLOORS	FAIR
	GOOD
WATER TANK (W)	EXCELLENT

AREA IN SQ. FT.	PRIMARY	SECONDARY	ALL BLDGS. SHOWN
NO. OF BUILDINGS	4	0	499
NO. OF FIRE DIVISIONS	—	—	—
PLAN AREA	153,300	—	13,800,000
TOTAL FLOOR AREA	153,300	—	15,400,000
SITE AREA	109,000,000		

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93:3-29-P5b

PENHSIHU IRON WORKS (OLD PLANT)
(Iron and Steel)

LATITUDE: 41/20 N.
LONGITUDE: 123/46 E.

TARGET NO. 93.3-30

Original plant, in operation since 1925. Two blast furnaces, capacity 145,000 metric tons; coke oven capacity 200,000 metric tons with by-products plant. Cement plant in target area (capacity 100,000 tons) reported converted to produce 20,000 tons sponge iron. Two steam power plants and sulphuric acid plant. Approximately two miles N. of new plant (target 171).

See Functional Analysis Report No. F/A-20; 20 Dec 44 - in file folder for identification of buildings, etc.)

TARGET NO. 93.3-30

APPROX. COORDINATES 41°20′ NORTH
123°46′ EAST

PHOTOGRAPHED 19 JUNE 1944

JOINT TARGET GROUP - WASHINGTON, D. C.

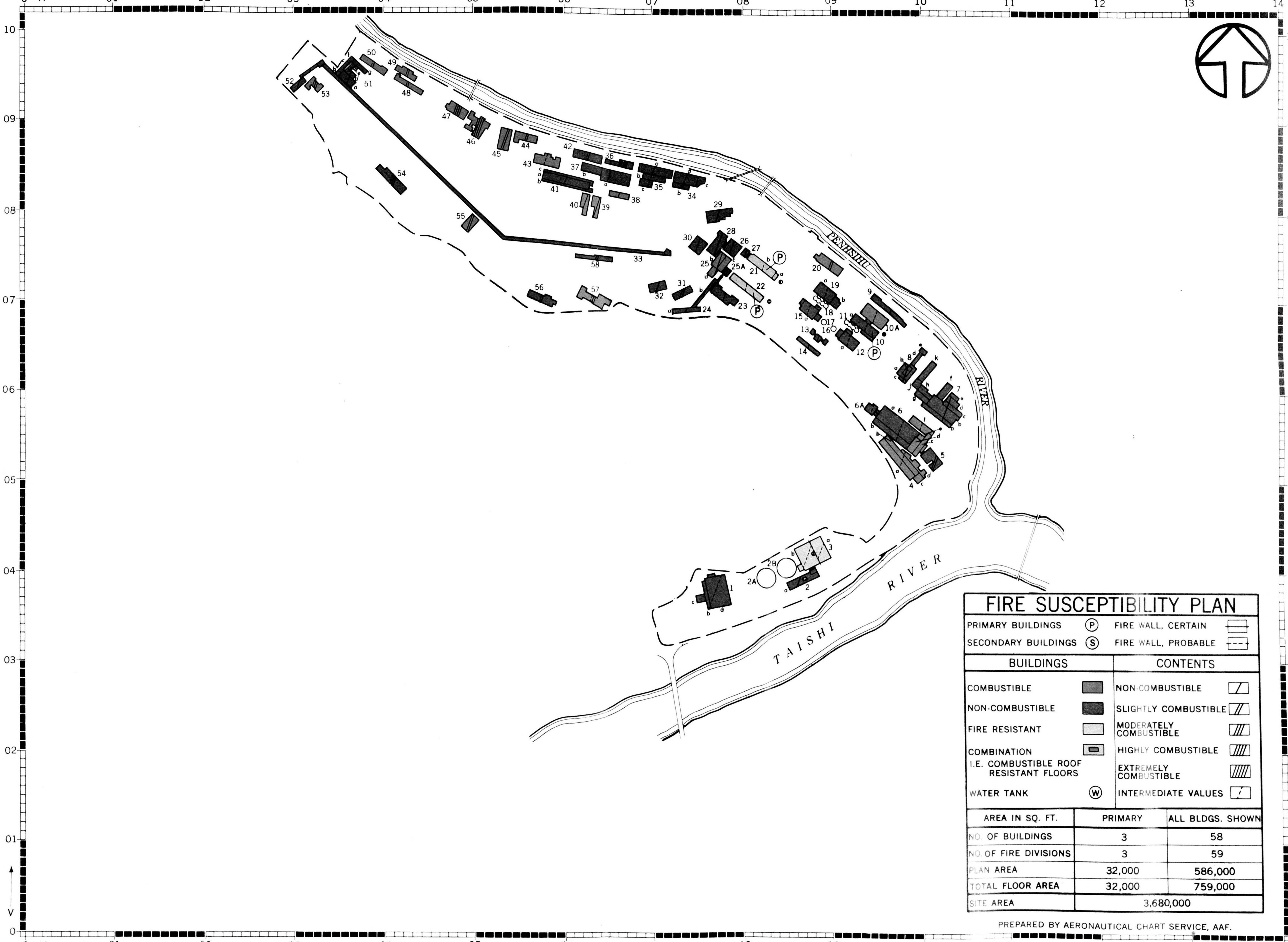
PENHSIHU IRON WORKS
OLD PLANT
PENHSIHU, MANCHURIA

SCALE 1:6,000

ILLUSTRATION NO. 93.3-30-P5

ISSUED 1 JANUARY 1945

CONFIDENTIAL



FIRE SUSCEPTIBILITY PLAN

PRIMARY BUILDINGS	(P)	FIRE WALL, CERTAIN	
SECONDARY BUILDINGS	(S)	FIRE WALL, PROBABLE	

BUILDINGS		CONTENTS	
COMBUSTIBLE		NON-COMBUSTIBLE	
NON-COMBUSTIBLE		SLIGHTLY COMBUSTIBLE	
FIRE RESISTANT		MODERATELY COMBUSTIBLE	
COMBINATION I.E. COMBUSTIBLE ROOF RESISTANT FLOORS		HIGHLY COMBUSTIBLE	
		EXTREMELY COMBUSTIBLE	
WATER TANK	(W)	INTERMEDIATE VALUES	

AREA IN SQ. FT.	PRIMARY	ALL BLDGS. SHOWN
NO. OF BUILDINGS	3	58
NO. OF FIRE DIVISIONS	3	59
PLAN AREA	32,000	586,000
TOTAL FLOOR AREA	32,000	759,000
SITE AREA	3,680,000	

PREPARED BY AERONAUTICAL CHART SERVICE, AAF.

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NOT TO BE TAKEN INTO THE AIR

JOINT TARGET GROUP, WASHINGTON, D.C.
TARGET LOCATION SHEET

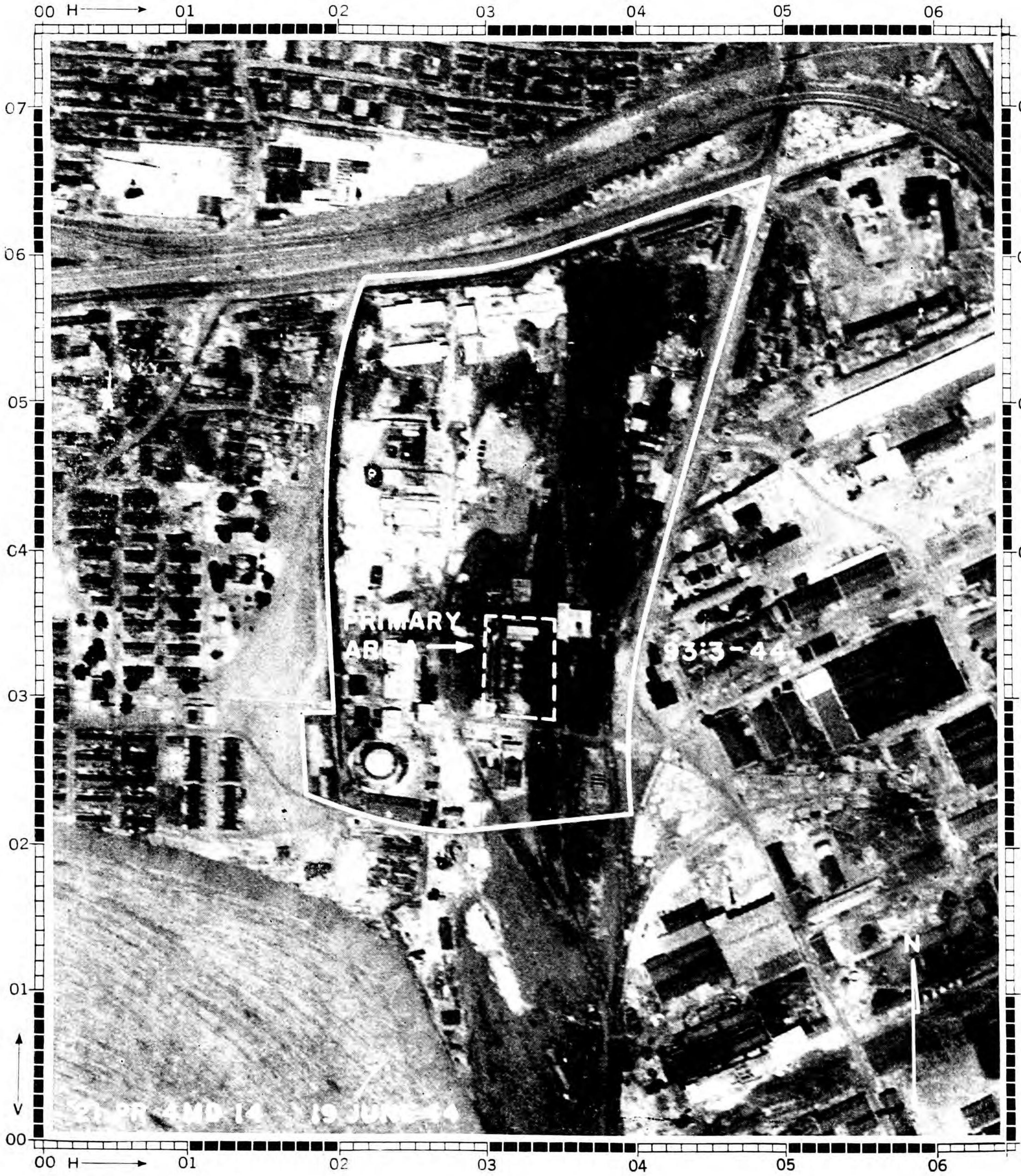
FUSHUN COLLIERY, COKE OVEN PLANT
FUSHUN — MANCHURIA

SHEET 93:3-44-TL
DATE . . . . 28 May 1945
TARGET 93:3-44
CATEGORY
Bsc. Proc. Ind.—COKE-IRON-STEEL
COORDINATES . . . . . 41°51'N 123°52'E
ALTITUDE . . . . 280 feet

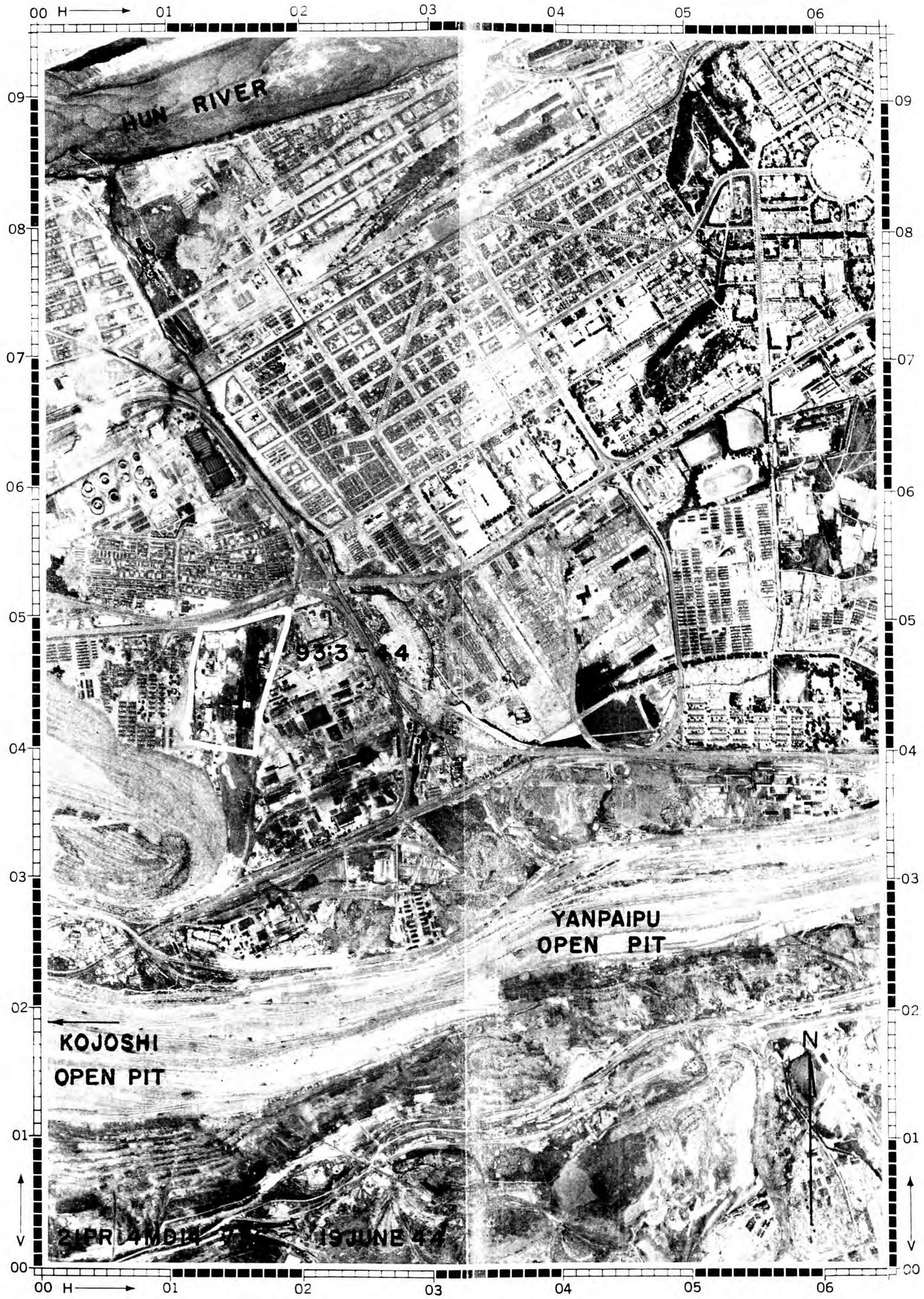
Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.

SIGNIFICANCE:

One of about 30 plants in Japanese Empire capable of producing metallurgical coke, the critical point in Japanese steel production. Supplies gas to nearby power units and other products to shale oil, hydrogenation, chemical, light metals plants. Annual metallurgical coke capacity 40,000 metric tons (.4% of Empire total).



LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:3,500



SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:14,000

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ASANO IRON WORKS
(Japan Steel Tube Company)

Latitude: 35/29 N.
Longitude: 139/42 E.

TARGET NO. 90.17-51

This target is now a part of NIPPON KOKAN, is a producer of light, medium and heavy plates, sheets, and light castings. The plant is a completely intergrated iron and steel works, having two batteries of coke ovens (approx 60-70 ovens), a small by products plant, two blast furnaces, possibly eight open-hearth furnaces, possibily one foundry and three rolling mills.

The plants is served by four spur tracks enter from the TSURUMIRINKO R.R. LINE. The coal supply for the coke plant is brought in by barge, thev iron ore and limestone by rail and barge. The coke is transported by conveyor or plant R.R. to the blast furnaces the iron by R.R. to the open hearths. The finished products leave the plant mainly by rail, the plates and castings probably being sent to Target #122 for ship-building, the sheets to Target #1343 for the production of auto and truck bodies.

JOINT TARGET GROUP, WASHINGTON, D. C.

TARGET INFORMATION SHEET

SHEET...... **90:17-51–TI**
DATE...... **12 May 1945**
PAGE................ **1**

ASANO IRON WORKS

KAWASAKI JAPAN

TARGET....... **90:17-51**
OBJ. AREA........ **90:17**
OBJ. FOLDER...... **90:17**
CATEGORY..... **Bsc. Proc. Ind.–Coke, Iron & Steel**

LAT........... **35° 29′ N**
LONG........ **139° 42′ E**
ALT............. **15 feet**

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90:17-51 material.

SIGNIFICANCE

This is the third largest producer of steel plate in the Japanese Empire. The major outlets for its ships' plates are its affiliates, Tsurumi Steel and Shipbuilding Co. (TARGET 90:17-122) and Asano Dockyard (TARGET 90:17-70). The former, adjacent to the W of the target, is a major producer of medium size merchant vessels as well as destroyer escorts and patrol craft. The latter, 3.6 miles SW of the target in Yokohama Inner Harbor, is a repair yard for medium size vessels. At current operating levels, these yards might together require as much as 75,000 tons of ship's plate per year or about 30 percent of the plant's capacity.

The plant has integrated facilities, from coke ovens to rolling mills, although the capacities of the various facilities are not in balance. It is likely that sheets and castings are furnished to Ishikawajima Motor Co. (TARGET 90:17-1343) immediately SE, a manufacturer of combat vehicles. Some castings may also be furnished to Shibaura Engineering Works Ltd. (TARGET 90:17-133) 500 feet SE, a major manufacturer of machine tools and heavy electrical equipment. The plant is believed currently operating at 30 to 50 percent of capacity.

Estimated 1945 effective capacity and percentages of estimated Japanese capacities are:

	Metric Tons	Empire	Home Islands
Metallurgical coke	73,000	.8%	1.3%
Pig Iron	155,000	1.7%	2.6%
Ingot Steel	269,000	2.0%	2.4%
Rolled Products	283,000	2.8%	3.1%
Plates	268,000	10.4%	11.5%
Sheets	15,000	1.0%	1.0%

LOCATION

(Refer to Illustration No. 90:17-51 P2.) On the Kawasaki waterfront in Tokyo Bay on the second inland block of reclaimed land NE of the Tsurumi River. It is about 4.5 miles WSW of the Tama River mouth and 4000 feet NE of the mouth of the Tsurumi River. The compound is bounded on the W by the Tsurumi Shipbuilding Co. (TARGET 90:17-122), on the N by the waterfront branch RR line, on the E by a ship canal, on the SE by the Ishikawajima Motor Co. (TARGET 90:17-1343) separating the target from Shibaura Engineering Works Ltd. (TARGET 90:17-133) to the S, and on the SW by ship canals.

DESCRIPTION AND LAYOUT

(Refer to Illustration No. 90:17-51 P3.) The target area is roughly rectangular minus its SE corner (occupied by the Ishikawajima Motor Co.). It measures about 2300 feet N-S by 1600 feet E-W and covers an area of about 3,450,000 square feet. All but the W edge is compactly built-up.

Coke and By-products

Coal is unloaded along the southern edge of the plant by 2 cranes (3 and 4), and reaches the 60 coke ovens (10), at the S end, arranged in 2 batteries containing 30 ovens each. Gases are drawn off by the exhausters (11), and by-products are manufactured and stored in 6, 7, and 8. Coke capacity is less than 50 percent of that required by full operation of the blast furnaces. Additional coke, when required, is probably supplied by the Tokyo Gas Company, Tsurumi Branch (TARGET 90:17-481) immediately NE, which is capable of furnishing the balance of the plant's needs.

Pig Iron

There are 2 blast furnaces (20, 26), just S of the center of the compound, of about 250 metric tons rated capacity each. Coke, iron ore, and limestone are charged into the furnaces and molten iron is tapped from the bottom. The blast furnaces are served by a boiler house (29) and by a blower house (30) which is essential to their operation.

Steel Furnaces

The 7 or 8 open hearth furnaces (39), N of the blast furnaces, make steel from pig iron and scrap from the rolling mills. Their capacity would supply less than 75 percent of the steel required by capacity operations of the rolling mills and foundry.

Rolling Mills

Ingots from the steel furnaces are heated to the proper temperature in the soaking pits (32a and 34) and are then conveyed to the rolling mills (32b, 40, 43) in the NE quarter of the compound. It is not known whether or not there is a primary mill but it would be logical to assume the presence of a slabbing mill in building 40. Heavy and medium plate are also probably rolled in building 40, light plate in building 43 and some sheet in building 32b.

Castings

Some molten steel from the open hearth furnaces is conveyed to the foundry (16), SE of the blast furnaces, for the production of small and medium castings.

PRIMARY OBJECTIVES

(Refer to Illustration No. 90:17-51 P3.) The primary objectives are the coke ovens (10). Pig iron facilities, including coke ovens, are economically the most vulnerable part of a Japanese steel plant. Without coke, steel production is limited to minor amounts from scrap iron and emergency substitute techniques.

(135)

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The physical vulnerability of coke ovens is reasonably high. A direct hit on a battery of ovens will, because of misalignment of oven walls through shock action, and secondary damage due to rapid cooling of oven walls, usually necessitate almost complete rebuilding of the entire battery, requiring at least 6 months. The coke ovens at Tokyo Gas Works, Tsurumi Plant (TARGET 90:17-481), about 1700 feet NE of the Asano ovens, would also have to be attacked in order further to curtail pig iron supplies to Asano.

Destruction of the blowing engines in building 29 would, in the absence of standby equipment, effectively stop blast furnace operations and replacement might require as much as a year. Destruction of the exhausters in building 11 would effectively stop coke oven operations.

If it were desired to attack shipbuilding facilities directly, the plate mill in building 40 would be the most effective objective. If hits were to destroy the motors, the mill could not operate for at least a year. The blowing engines, exhausters and plate mill motors are relatively small and thus are difficult targets to hit.

CONSTRUCTION AND VULNERABILITY

(Refer to Illustration No. 90:17-51 P3.) Plant layout is compact and built-upness is high. Primary objectives (coke ovens) occupy only a very small fraction of total plant area. Coke ovens are of normal construction. Exhauster and blower houses are medium size, one-story structures with normal spans and heights to eaves. Roofs are gabled and covering is light. Buildings 32, 39, 40 and 43 are large, steel framed structures housing traveling cranes. Roof spans are large and height to eaves above normal. Roof covering is light. Other structures are small, framed (probably timber) with short roof spans and low eave heights.

For a discussion of the vulnerability of coke ovens see Annex 1 to JTG Coke, Iron and Steel Industry, General Analysis (ATSF/CIS-A1, 24 March 1945). HE vulnerability classification (as defined in Memorandum JTG/M-3/1) of buildings 32, 39, 40 and 43 is V2. Vulnerability classification of other structures is V4.

WEAPON RECOMMENDATIONS

Instructions with regard to weapons will usually be given in Field or Operational Orders, but in the absence of such instructions and to assist Planners in formulating such orders the following information is given:

An attack with high explosive bombs alone is recommended. The construction of the coke oven batteries is such that weapons should be selected as follows:

	High Explosive	Fuzing	Incendiary
Preferred:	500-lb GP	0.1 N/0.1 T	None
Alternative:	1000-lb GP	0.1 N/0.1 T	None
Not recommended:	Other GP bombs		
	SAP or AP bombs		
	Depth bombs		

Notes: (a) The 1000-lb GP bomb is approximately 65 percent as effective as the 500-lb GP bomb.
(b) The above recommendations are on a weight for weight basis.
(c) Direct hits and very near misses by the 500-lb bomb also would be effective against the blowing engines, exhausters, and plate mill motors.

CAMOUFLAGE, DECOYS, AND SMOKE SCREENS

Photography of 28 January 1945 shows some disruptive painting. Given short notice of air attack, it is possible to use the blast furnaces, open hearths and even coke ovens to create a smoke screen.

ADDITIONAL INFORMATION

This target is an affiliate of Japan Steel Tube Co. (TARGET 90:17-52), located about one mile NE, the second largest steel plant in the home islands.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel after page 90:17-51—TI page 1.

JOINT
TARGET
GROUP
WASHINGTON, D. C.

ASANO IRON WORKS

KAWASAKI JAPAN

0 2000 4000 6000 FEET
0 ½ 1 MILE
1:32 000 APPROX.

RESTRICTED

ILLUSTRATION	90:17-51 P1
DATE	12 May 1945
TARGET	90:17-51
COORDINATES	35°29'N 139°42'E
PHOTOGRAPHED	28 January 1945

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel with other 90:17-51 material.

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JOINT TARGET GROUP
WASHINGTON, D. C.

ASANO IRON WORKS

KAWASAKI JAPAN

0 2000 4000 6000 FEET
0 ½ 1 MILE
1:32 000 APPROX.

ILLUSTRATION	90:17-51 P2
DATE	12 May 1945
TARGET	90:17-51
COORDINATES	35°29'N 139°42'E
PHOTOGRAPHED	28 January 1945

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JOINT TARGET GROUP
WASHINGTON, D. C.

ASANO IRON WORKS

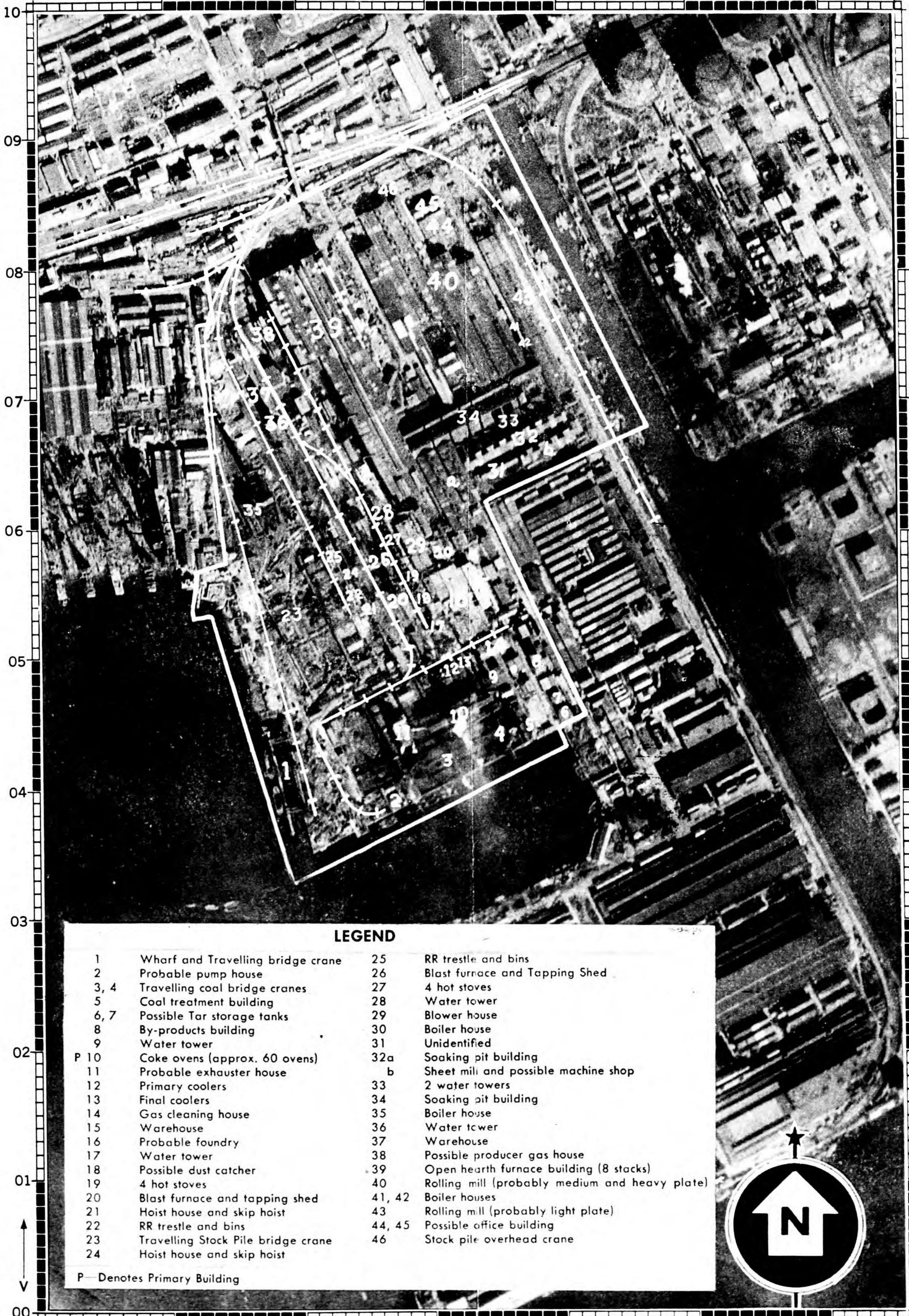
KAWASAKI JAPAN

0 2000 4000 6000 FEET
0 ½ I MILE
1:32 000 APPROX.

CONFIDENTIAL

ILLUSTRATION	90:17-51 P3
DATE	12 May 1945
TARGET	90:17-51
COORDINATES	35°29'N 139°42'E
PHOTOGRAPHED	28 January 1945

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel with other 90:17-51 material.



LEGEND

1	Wharf and Travelling bridge crane	25	RR trestle and bins
2	Probable pump house	26	Blast furnace and Tapping Shed
3, 4	Travelling coal bridge cranes	27	4 hot stoves
5	Coal treatment building	28	Water tower
6, 7	Possible Tar storage tanks	29	Blower house
8	By-products building	30	Boiler house
9	Water tower	31	Unidentified
P 10	Coke ovens (approx. 60 ovens)	32a	Soaking pit building
11	Probable exhauster house	b	Sheet mill and possible machine shop
12	Primary coolers	33	2 water towers
13	Final coolers	34	Soaking pit building
14	Gas cleaning house	35	Boiler house
15	Warehouse	36	Water tower
16	Probable foundry	37	Warehouse
17	Water tower	38	Possible producer gas house
18	Possible dust catcher	39	Open hearth furnace building (8 stacks)
19	4 hot stoves	40	Rolling mill (probably medium and heavy plate)
20	Blast furnace and tapping shed	41, 42	Boiler houses
21	Hoist house and skip hoist	43	Rolling mill (probably light plate)
22	RR trestle and bins	44, 45	Possible office building
23	Travelling Stock Pile bridge crane	46	Stock pile overhead crane
24	Hoist house and skip hoist		

P— Denotes Primary Building

JAPAN IRON WORKS, YAWATA PLANT
(Japan Steel Tube Company)

LATITUDE: 35/30 N
Longitude: 139/43 E.

TARGET NO. 90.17-52

Most important steel plant in area. Total 540,000 tons steel annually; 360,000 tons tubes, plates, rails, bars, shapes. Chief by products nitrogen and coke. Three main divisions; (1) Japan Steel Tube (Nippon Kokan;) five bldgs with 11 chimneys in com ound 3000 ft E-W; 1500 ft N-S. Open hea ths; cast iron and pipe works. Connected by ov rhead cable to (2) Showa Steel Pipe Co. (Showa Tekka Kaisha) SE across tube production equipment; at least 5 chimne s. (3) Nihon Steel Pipe Works, newest extension, on reclaimed land E of (2) approx 500 ft square. Tube equipment. N is Kawasaki freight yard and station, small diamond-shaped area serving waterfront RR lines.

FUSHUN COLLIERY COKE OVEN PLA

(Former) JAPAN IRON WORKS (Kenjiho)
(Iron and steel)

LATITUDE: 38/44 N.
LONGITUDE: 125/37 E.

TARGET NO. 84.3-66

Older plant of company. Reported Korea's largest steel plant, second largest pig iron production. Estimated percentages of total Japanese Empire production; pig iron, 3%; steel ingot, 2%; rolled products, 2%; coke, 4%. Equipment and total annual capacity: four blast furnaces, 400,000 metric tons of pig iron; open-hearth furnaces, 240,000 metric tons of steel; rolling mills, 175,000 metric tons of shapes and plates. Plant reported to have five batteries (total 180 ovens) of by-product coke ovens with total annual carbonizing capacity of about 670,000 metric tons of coal (yield about 470,000 tons of coke). Ammonium sulphate and other coke oven by products.

KOKURA STEEL WORKS

LATITUDE: 33/53 N.
LONGITUDE: 130/53 E.

TARGET NO. 90.34-165

An iron and steel plant located on reclaimed land on Kokura waterfront. Latest estimates on annual capacity: Pig: 250,000 to 300,000 metric tons. Steel: 200,000 metric tons.

Rolling estimates vary. Large capacity for rails, structurals and shapes. May have blast furnaces.

A subsidiary of the Company, Kokura Chikko, located on the same plot of land, produces steel bars.

TARGET NO. 90.34-165

KOKURA STEEL WORKS
KOKURA, JAPAN

ILLUSTRATION NO. 90.34-165 P1

APPROX. COORDINATES 33° 53'N 130° 53'E

ISSUED OCTOBER 1944

PHOTOGRAPHED 18 JUNE 1944

CONFIDENTIAL

0 2000 4000 6000 FEET
0 1/2 1 MILE
1:32 000 APPROX.

AC/AS. INTELLIGENCE

CONFIDENTIAL

TYPE A

JOINT TARGET GROUP
WASHINGTON, D. C.

KOKURA STEEL WORKS

KOKURA JAPAN

0 2000 4000 6000 FEET
0 ½ 1 MILE
1:?2 000 APPROX.

ILLUSTRATION No.	90.34-165 P2/1
DATE	29 April 1945
TARGET No.	90.34-165
COORDINATES	33°53'N 130°52'E
PHOTOGRAPHED	18 June 1944

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel in place of 90.34-165 P2.

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TARGET NO. 90.34-165

APPROX. COORDINATES 33° 53' N 130° 53' E

PHOTOGRAPHED 18 JUNE 1944

KOKURA STEEL WORKS
KOKURA JAPAN

ILLUSTRATION NO. 90.34-165 P3

ISSUED OCTOBER 1944

CONFIDENTIAL

0 500 1000 1500 2000 2500 3000 FEET
0 1/4 1/2 MILE
1:6000 APPROX.

AC/AS, INTELLIGENCE

CONFIDENTIAL

TYPE B
C5-2604, A

PENHSIHU IRON WORKS (NEW PLANT)

LATITUDE: 41/20 N.
LONGITUDE: 123/46 E.

TARGET NO. 93.3-171

This target is a producer of high quality, low phosphorus pig iron necessary for the manufacture of high grade and special steels. The pig iron plant includes five batteries of coke ovens (300 ovens), 2 blast furnaces with evidence that two more are under construction, a power house, a gas cleaning unit, and a pig iron casting plant. Associated with this are a by-products plant, an ore briquetting and sintering plant, a water filtration unit, and an unidentified unit under construction possibly a steel plant. In the immediate vicinity are found the raw materials coal, iron ore, and limestone.

The New Plant is located about three miles SE of the Old Plant (target 93.3-30) and is on the East bank of the Taishi River. It is bounded on the East by the mainline of the Mukden-Antung Railroad. The plant boundaries are irregular in shape but most closely resembles an elongated rectangle in the North-South direction.

The Mukden-Antung mainline railroad runs along the east boundry of the plant. A spur line owned by the iron company brings in coal from the mine ab ut two miles to the west. (See Functional Analysis Report No . F/A-19, 20 Dec 44 for legend of building and further details, in file folder)

JOINT TARGET GROUP
WASHINGTON, D. C.
FIRE SUSCEPTIBILITY PLAN

PENHSIHU IRON WORKS
NEW PLANT
MIYANOHARA, MANCHURIA

SCALE 1:6,000

500 0 500 1000 1500 2000 2500 FEET

CONFIDENTIAL

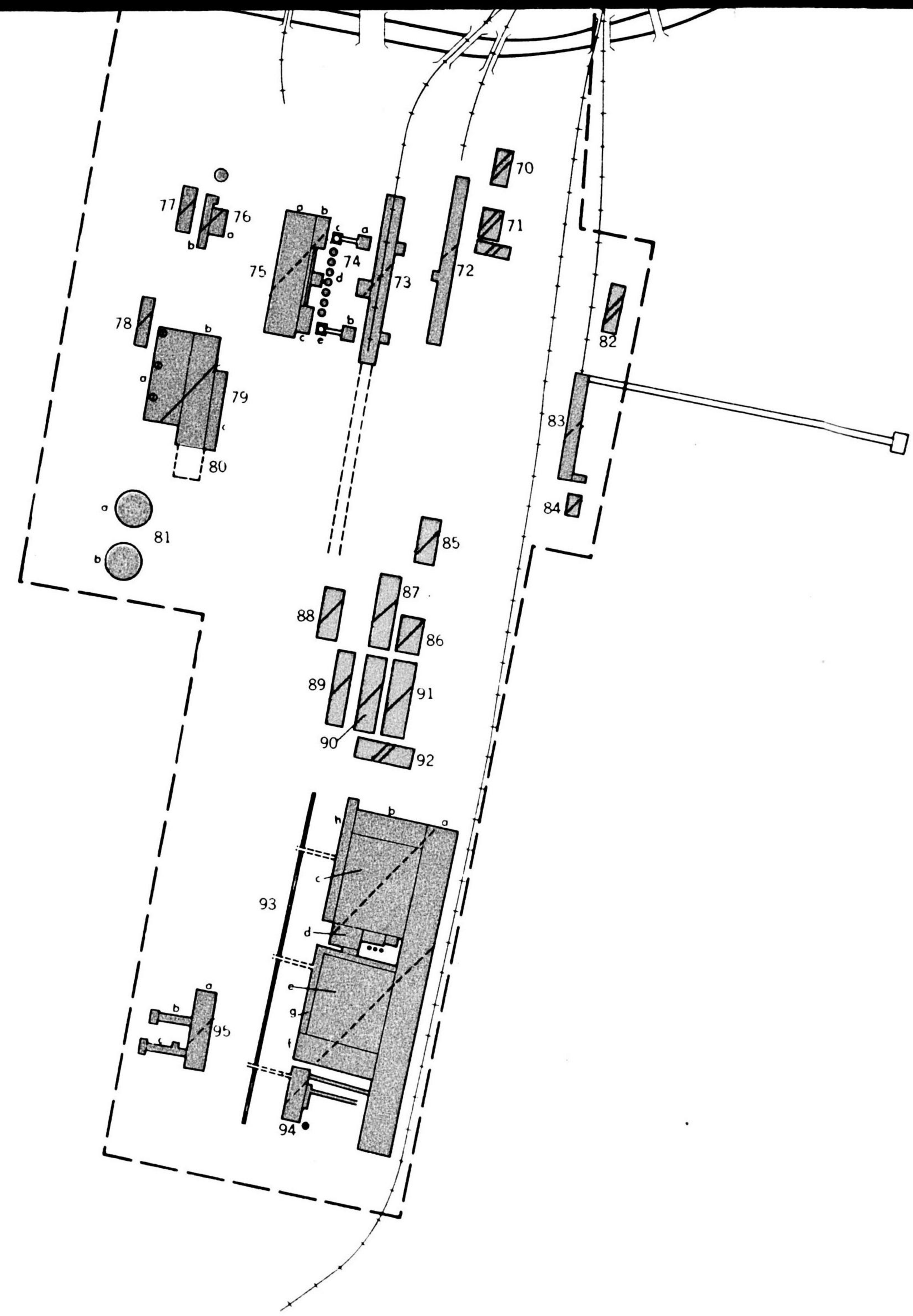
ILLUSTRATION NO. 93.3-171-P5
DATE 2 APRIL 1945
TARGET NO. 93.3-171
COORDINATES 41°18′ NORTH 123°45′ EAST
PHOTOGRAPHED 8 AUGUST 1944

LEGEND

1 through 8 Unidentified

62 Unidentified unit of by-products plant

HOLDERS OF JTG FOLDERS SHOULD INSERT THIS SHEET IN AIR TARGET SYSTEM FOLDER: JAPANESE COKE, IRON & STEEL WITH OTHER 93.3.171 MATERIAL



LEGEND

1 through 8 Unidentified
9 Railroad car repair shop
10 through 14 Unidentified
15 Railroad car repair shop
16 Unidentified
17 through 22 Storage sheds
23 Unidentified
24 Storage Shed
25 through 27 Storage sheds
28 Unidentified
29 Water settling pools and reservoirs
30 Water tank
31 Pump and filtering house
32 Water intake station
33 Unidentified unit of by-products plant
34 Boiler house
35 through 38 Unidentified
39 through 43 Warehouses
44 Unidentified
45 and 46 Warehouses
47 Coal unloading bins
48 Unidentified with 2 stacks
49 Coal crushing building
50 Coal screening and blending building
51 Coke screening plant
P52 Coke ovens, cooling and quenching tower
53 Primary coolers
54 By-products house (exhauster house)
55 Benzol scrubbers and final cooling towers
56 Ammonium sulphate building
57 Probable tar distillation house
58 Probable tar storage tanks
59 Unidentified unit of by-products plant
60 Unidentified by-products storage tanks
61 Unidentified unit of by-products plant
62 Unidentified unit of by-products plant
63 By-products storage
64 Cooling towers
65 Unidentified unit of by-products plant
66 Unidentified unit of by-products plant
67 Decanting tanks
68 Probable ammonium liquer cooling tower
69 Gas holder
70 through 72 Unidentified
73 Stock trestle
74 Two blast furnaces (with hot stoves and hoist houses)
75 Blast furnace tapping house
76 and 77 Gas cleaning unit
78 Unidentified
79 Power house and blast furnace blowers
a. Boilers
b. Generators and blast furnace blowers
c. Electrical control and transformers
80 Transformer and switching yard
81 Cooling towers
82 Unidentified
83 Limestone storage building
84 Unidentified
85 through 92 Warehouses
93 Ore briquette and sintering plant
a. Probable briquette storage
b. Briquette press
c. Briquette ovens
d. Sintering plant
e. Briquette ovens
f. Briquette press
94 Sintering plant
95 Pig iron casting plant

P—denotes Primary Building

(44)

FIRE SUSCEPTIBILITY PLAN

PRIMARY BUILDINGS (P) FIRE WALL, CERTAIN
SECONDARY BUILDINGS (S) FIRE WALL, PROBABLE

BUILDINGS	CONTENTS
COMBUSTIBLE	SUSCEPTIBILITY TO INCENDIARIES:
NON-COMBUSTIBLE	NONE
FIRE RESISTANT	POOR
COMBINATION I.E. COMBUSTIBLE ROOF RESISTANT FLOORS	FAIR
	GOOD
WATER TANK (W)	EXCELLENT

AREA IN SQ. FT.	PRIMARY	SECONDARY	ALL BLDGS. SHOWN
NO. OF BUILDINGS	1	—	95
NO. OF FIRE DIVISIONS	—	—	—
PLAN AREA	22,000	—	1,220,000
TOTAL FLOOR AREA	22,000	—	1,430,000
SITE AREA	10,000,000		

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PENHSIHU IRON WORKS—P5

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

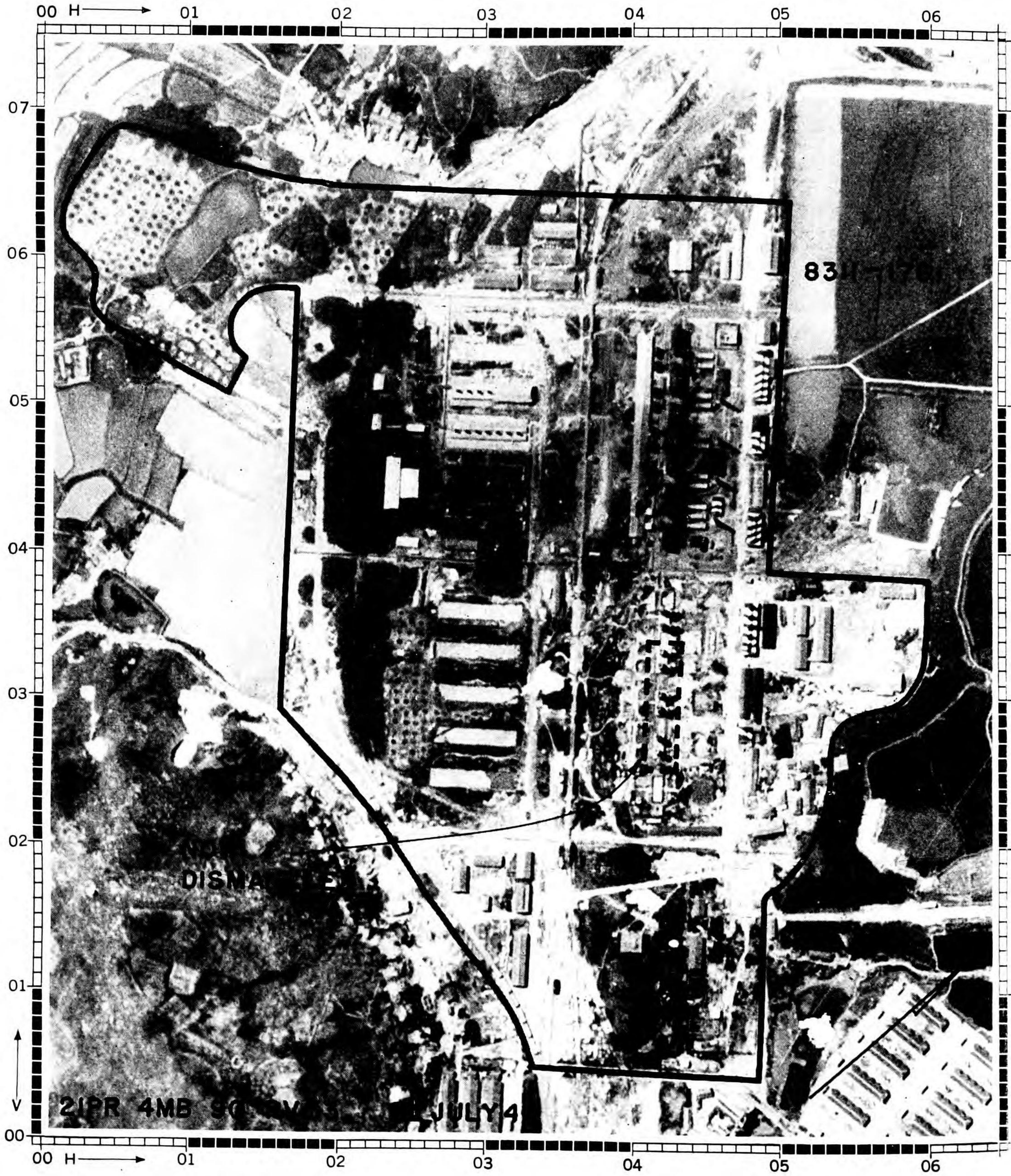
MAANSHAN IRON WORKS
MAANSHAN NORTH CHINA

SHEET 83:1-176–TL
DATE . . . . 28 May 1945
CATEGORY
Bsc. Proc. Ind.—COKE-IRON-STEEL
COORDINATES . . . . . 31°43'N 118°28'E
ALTITUDE . . . . 75 feet

SIGNIFICANCE:

Important producer of pig iron in Occupied China. Currently accounts for about 10% of total capacity for Occupied China. Eight partially completed blast furnaces were dismantled in late 1944 but the balance are currently operating and some building activity is apparent in the area.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.



LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:3,700

SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:60,000

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JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

SHIHCHINGSHAN IRON WORK
PEIPING NORTH CHIN

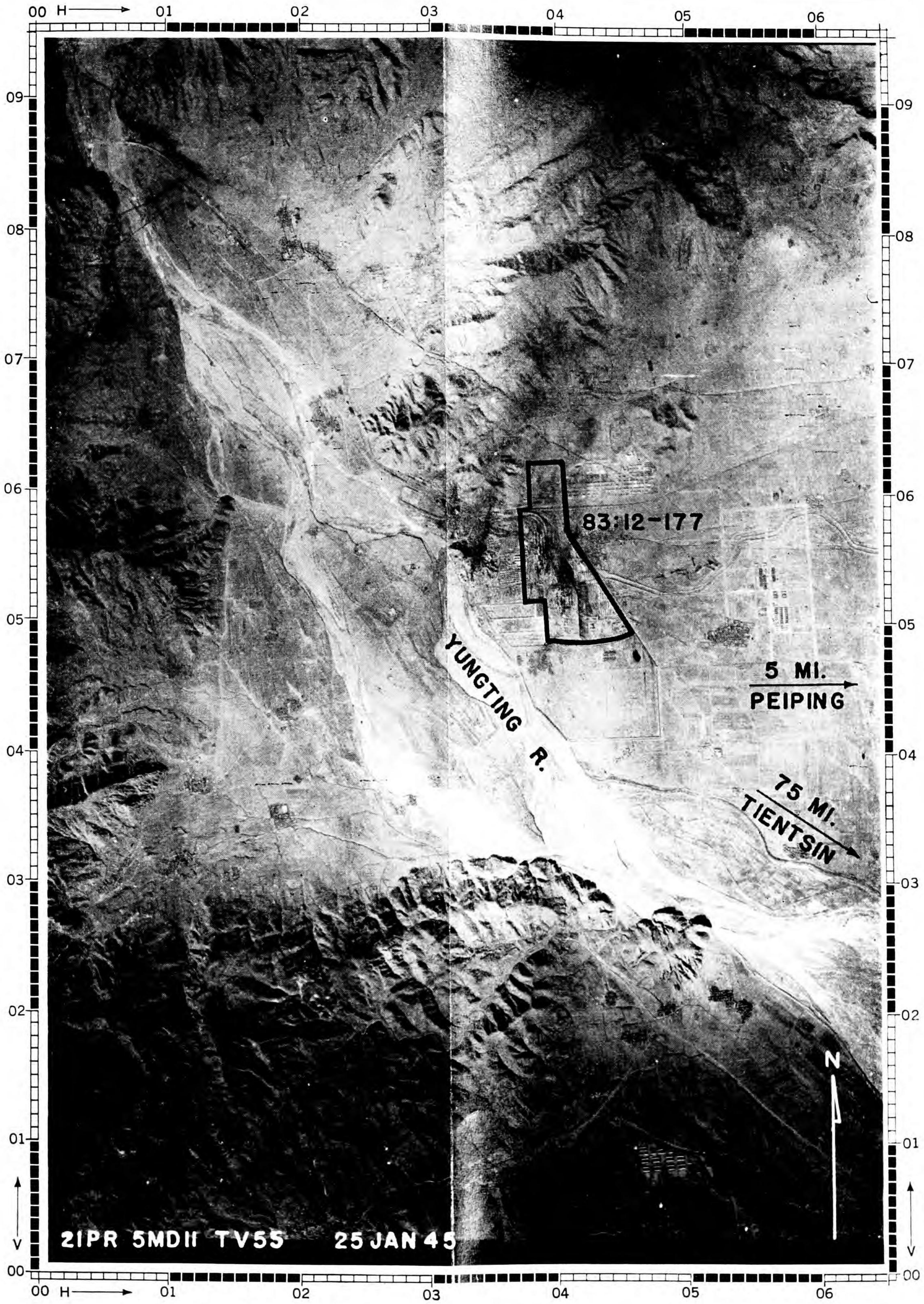
SHEET 83:12-177-TL
DATE. . . . . 28 May 1945
CATEGORY
Bsc. Proc. Ind.—COKE-IRON-STEEL
COORDINATES. . . . . 39°55'N 116°10'E
ALTITUDE. . . . . 47 feet

SIGNIFICANCE:

Largest producer of pig iron in Occupied China. Plant still expanding. Completion of present installations will bring rated capacity to 350,000 metric tons (about 30% of total Occupied China capacity). Current output about 120,000 metric tons, bulk of which is shipped to Japan via Manchuria. Some iron pipe is cast locally and the balance of output is used in Tientsin and Peiping for steel and steel products.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.

LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:15,500



SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:62,000

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JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

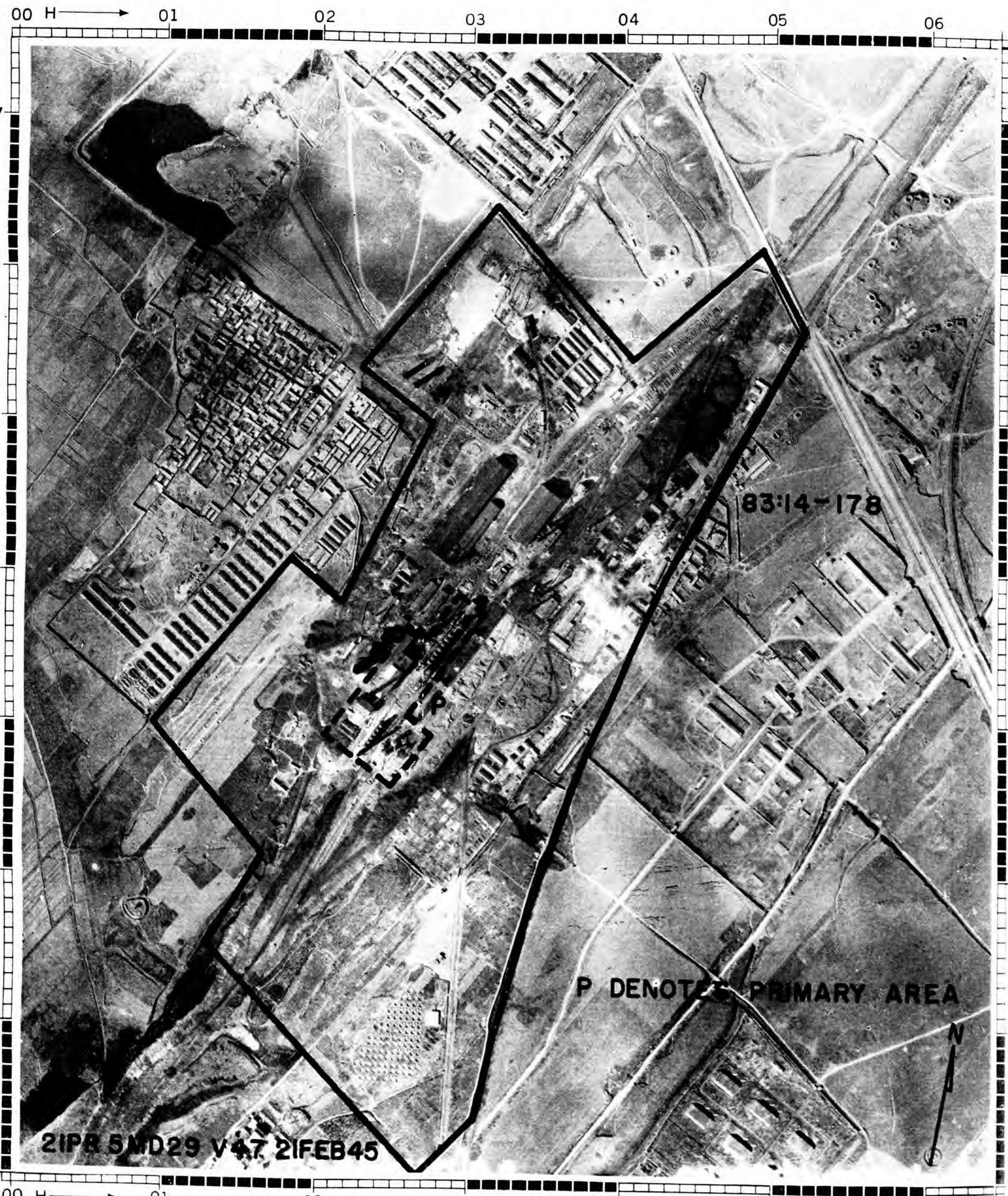
TAIYUAN IRON AND STEEL WORKS
TAIYUAN NORTH CHINA

SHEET . . . . 83:14-178—TL
DATE. . . . . 25 May 1945
CATEGORY
Bsc. Proc. Ind.—COKE-IRON-STEEL
COORDINATES. . . . . 37°56'N 112°30'E
ALTITUDE . . . . Unknown

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.

SIGNIFICANCE:

One of the three largest producers of pig iron in Occupied China. Of great additional importance as one of the few producers of steel and rolled products in Occupied China. Probably allocates its output to railroad shops, arsenals and other manufacturers in surrounding area.



LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:10,500

SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:46,000

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JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

TANGSHAN IRON AND STEEL PLANT
TANGSHAN NORTH CHINA

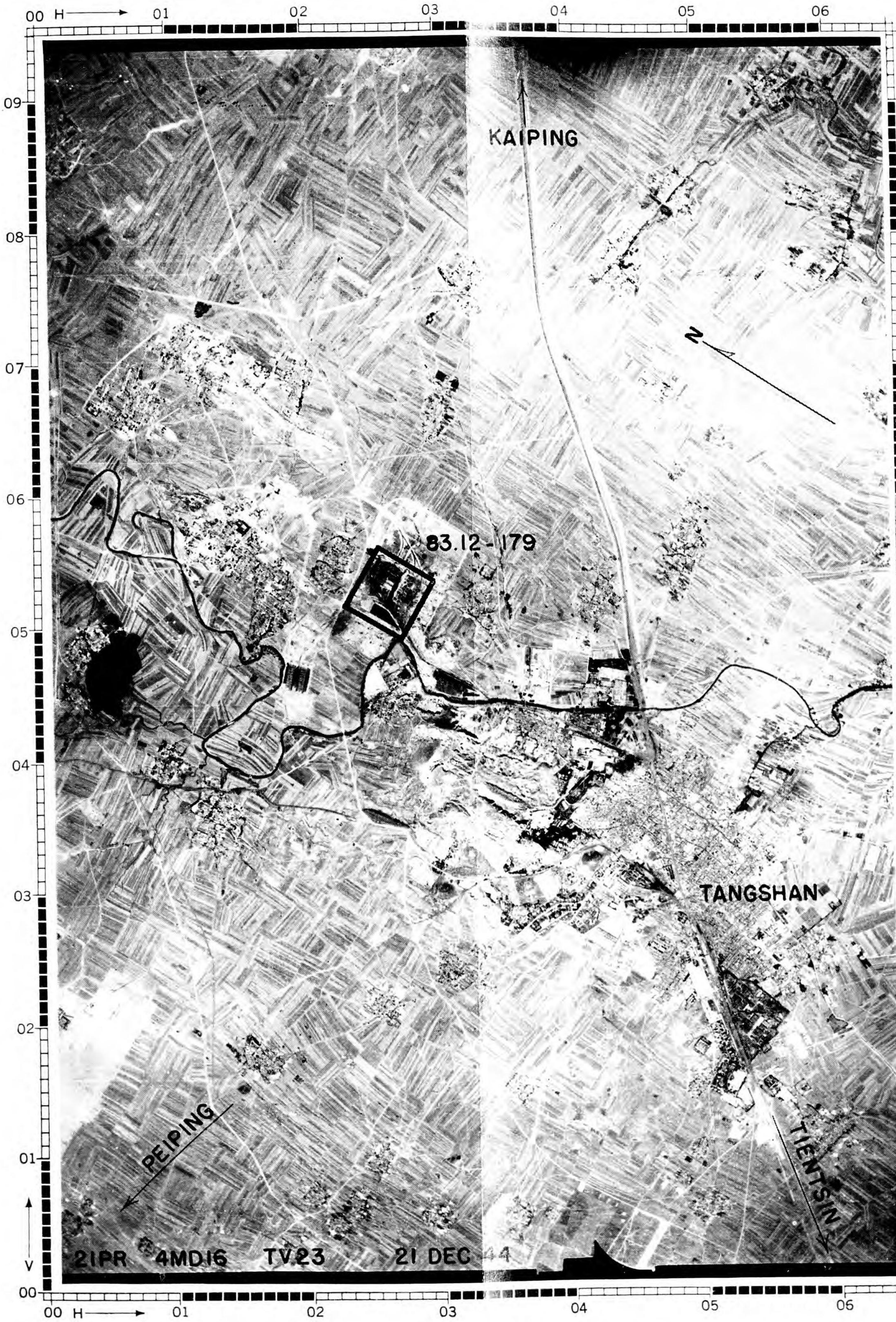
SHEET 83:12-179–TL
DATE ....28 May 1945
CATEGORY
Bsc. Proc. Ind.–COKE-IRON-STEEL
COORDINATES.....39°38′N 118°12′E
ALTITUDE....................46 feet

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.

SIGNIFICANCE:

This iron works, in the heart of the North China coal fields and proximate to large iron ore deposits, is naturally adapted to expansion as a principal pig iron producing unit. On the basis of inadequate photo cover, the plant is estimated to have a minimum of 7% of the total pig iron capacity in Occupied China.

LARGE SCALE ILLUSTRATION–SCALE-APPROX.: 1:9,600



SMALL SCALE ILLUSTRATION–SCALE APPROX.: 1:48,000

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JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

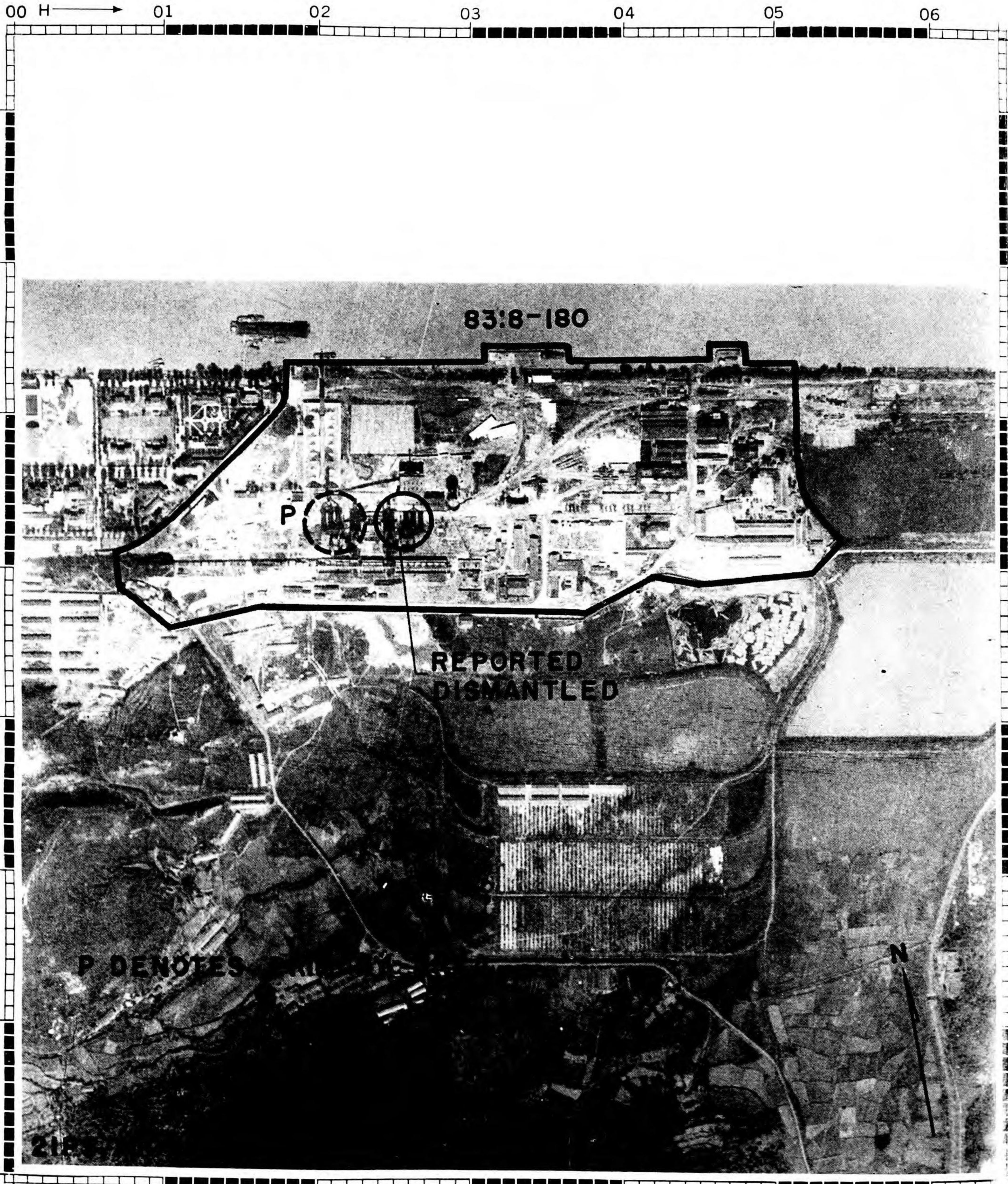
TAY H IRON AND STEEL WORKS
SHIHHWEIYAO CHINA

SHEET 83:8-180-TL
DATE.................25 May 1945
CATEGORY
Bsc. Proc. Ind.—COKE-IRON-STEEL
COORDINATES.....30°13'N 115°04'E
ALTITUDE..................100 feet

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.

SIGNIFICANCE:

Formerly the most important producer of pig iron in Occupied China. As a result of aerial attack, one of the two blast furnaces has been removed or cannibalized. The remaining blast furnace (either 250 or 450 ton capacity) accounts for about 10% of pig iron capacity in Occupied China and is again operating as shown by latest photo cover.



LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:8,000

SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:67,800

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JAPAN IRON WORKS, KAMAISHI
(Iron and steel)

LATITUDE: 39/16 N.
LONGITUDE: 141/53 E.

TARGET NO. 90.8-189

Integrated steel plant rated sixth largest under Japanese control. Estimated capacity is as follows:-

	METRIC TONS	% JAP TOTAL
Coke	365,000	3%
Pig Iron	535,000	4%
Steel Ingots	620,000	5%
Rolled Products	450,000	5%

Plant area extends for about one mile along S bank of small shallow Owatari River just inside mouth. Mountains rise abruptly on both sides of narrow river valley. Plant connected with local mines by RR spur to W., and by spurs to piers NE of plant area. Plant also connected with Tohoku mainline by coastal line via Miyako to the N.

Installations: At least three blast furnaces, five batteries (145 ovens) coke ovens with by-products plants, open hearth furnaces, rolling mills and a 42,600 KW steam power plant

JOINT TARGET GROUP
WASHINGTON, D. C.

DAIDO ELECTI C STEEL, ATSUTA PLANT
NAGOYA JAPAN

0 200 4000 6000 FEET
0 ½ 1 MILE
1:32 000 APPROX.

ILLUSTRATION No.	90.20-247B P1
DATE	5 May 1945
TARGET No.	90.20-247B
COORDINATES	35°07'N 136°55'E
PHOTOGRAPHED	23 November 1944

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20-247B material.

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JOINT
TARGET
GROUP
WASHINGTON, D. C.

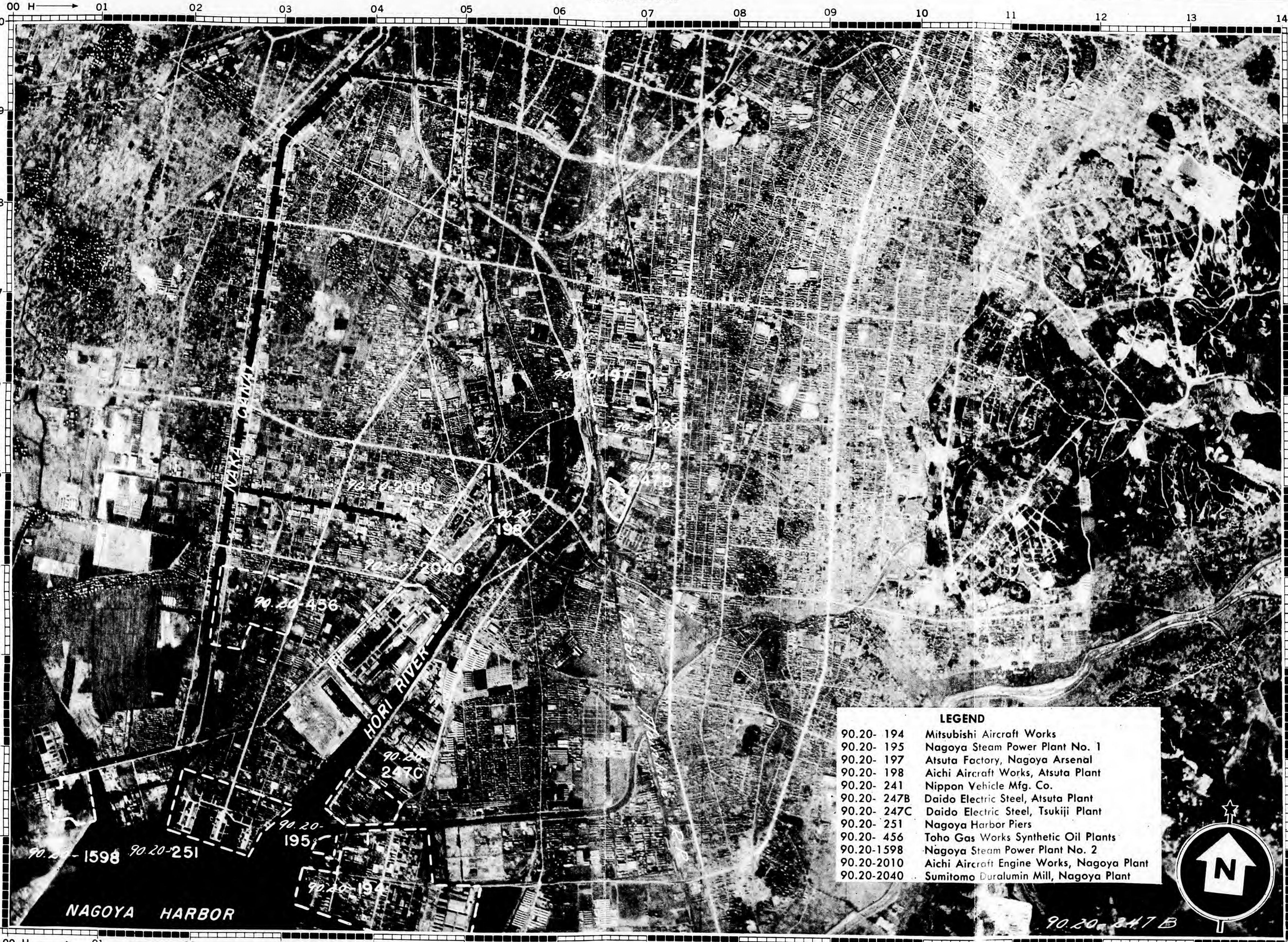
DAIDO ELECTRIC STEEL, ATSUTA PLANT
NAGOYA JAPAN

RESTRICTED

ILLUSTRATION No. . . . 90.20-247B P2
DATE. . . . . 29 April 1945
TARGET No. 90.20-247B
COORDINATES . . . 35°07'N 136°55'E
PHOTOGRAPHED 23 November 1944

0 2000 4000 6000 FEET
0 ½ 1 MILE
1:32 000 APPROX.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20-247B material.



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JOINT TARGET GROUP
WASHINGTON, D. C.

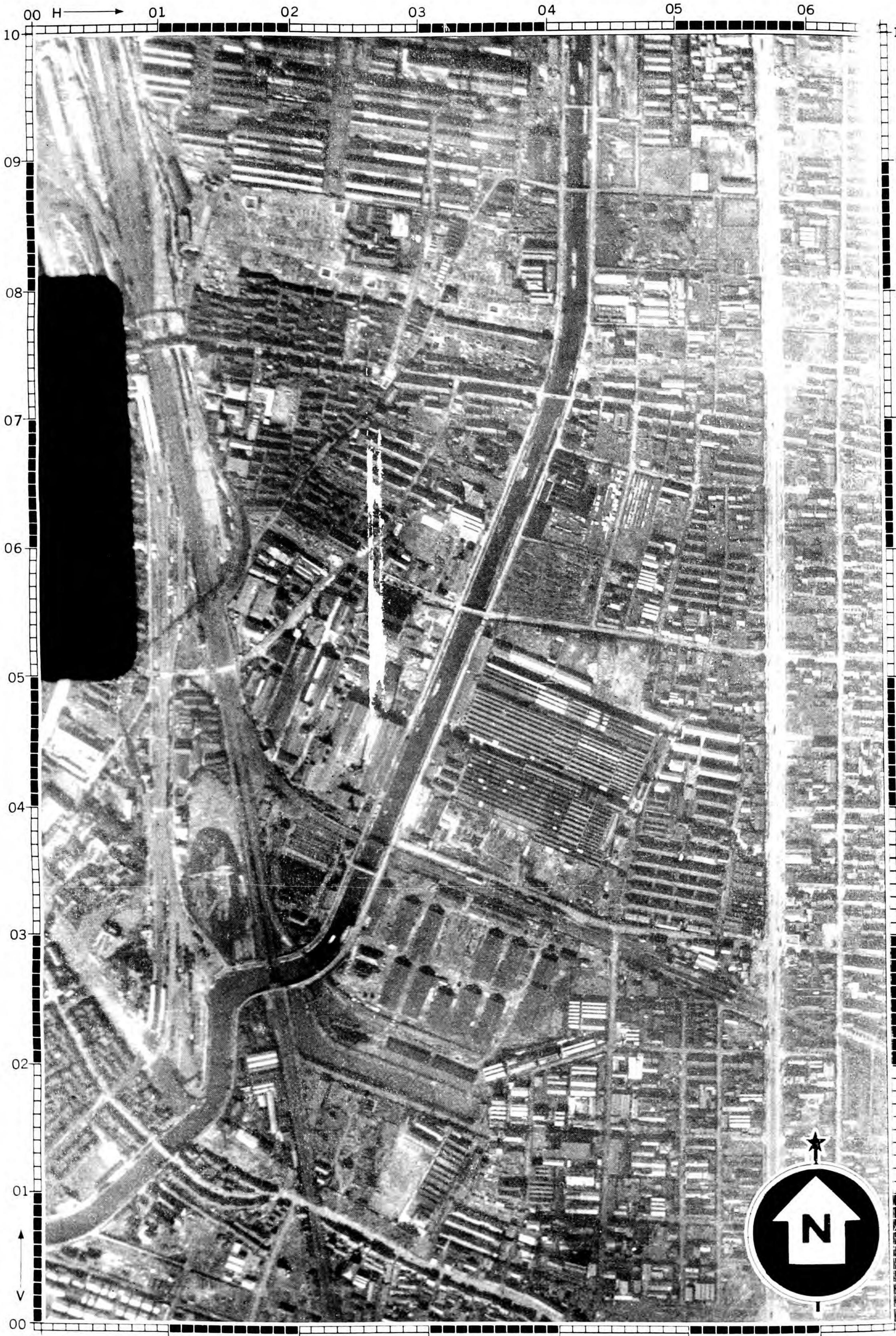
DAIDO ELECTRIC STEEL, ATSUTA PLANT

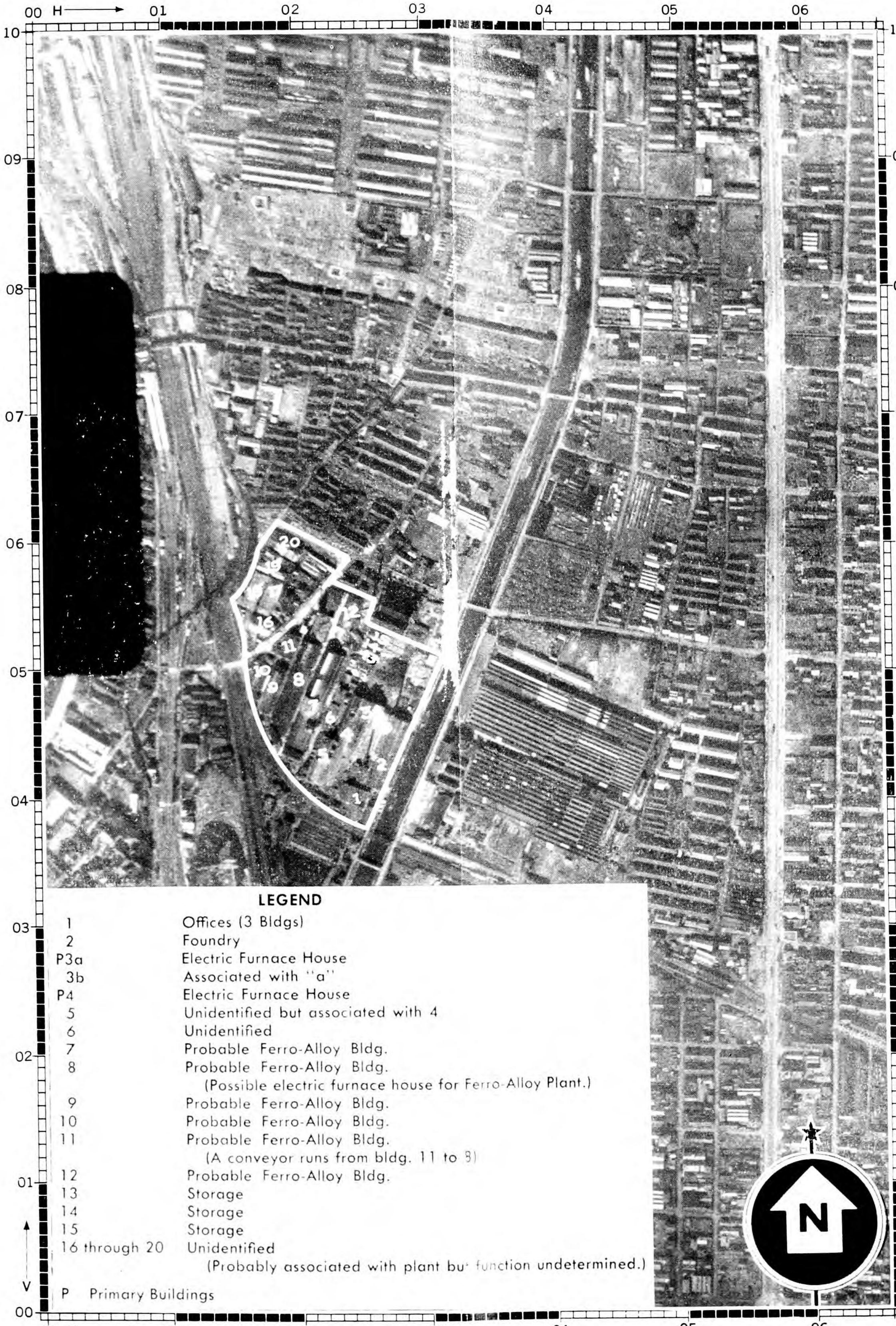
NAGOYA JAPAN

ILLUSTRATION No.	90.20-247 B P3
DATE	5 May 1945
TARGET No.	90.20-247 B
COORDINATES	35°07'N 136°55'E
PHOTOGRAPHED	23 November 1944

0 500 1000 1500 2000 2500 3000 FEET
0 1:6000 APPROX. 1/2 MILE

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20 247 B material.





LEGEND

1	Offices (3 Bldgs)
2	Foundry
P3a	Electric Furnace House
3b	Associated with "a"
P4	Electric Furnace House
5	Unidentified but associated with 4
6	Unidentified
7	Probable Ferro-Alloy Bldg.
8	Probable Ferro-Alloy Bldg. (Possible electric furnace house for Ferro-Alloy Plant.)
9	Probable Ferro-Alloy Bldg.
10	Probable Ferro-Alloy Bldg.
11	Probable Ferro-Alloy Bldg. (A conveyor runs from bldg. 11 to 8)
12	Probable Ferro-Alloy Bldg.
13	Storage
14	Storage
15	Storage
16 through 20	Unidentified (Probably associated with plant but function undetermined.)
P	Primary Buildings

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JOINT TARGET GROUP
WASHINGTON, D. C.

DAIDO ELECTRI STEEL, TSUKIJI PLANT
NAGOYA JAPAN

RESTRICTED

ILLUSTRATION No.	90.20 247 C P1
DATE	26 April 1945
TARGET No.	90.20-247 C
COORDINATES	35°05'N 136°54'E
PHOTOGRAPHED	23 November 1944

0 2000 4000 6000 FEET
0 1 MILE
1:3 00 APPROX.

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20-247C material.

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RESTRICTED

JOINT TARGET GROUP
WASHINGTON, D. C.

DAIDO ELEC IC STEEL, TSUKIJI PLANT

NAGOYA JAPAN

0 2 4000 6000 FEET
0 ½ 1 MILE
2 000 APPROX.

RESTRICTED

ILLUSTRATION No.	90.20-247 C P2
DATE	26 April 1945
TARGET No.	90.20-247 C
COORDINATES	35°05'N 136°54'E
PHOTOGRAPHED	23 November 1944

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JOINT
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GROUP
WASHINGTON, D. C.

DAIDO ELECTRIC STEEL, TSUKIJI PLANT
NAGOYA — JAPAN

CONFIDENTIAL

ILLUSTRATION No. . . . 90.20-247C P3
DATE. . . . . 26 April 1945
TARGET No. 90.20-247C
COORDINATES . . . 35°05'N 136°54'E
PHOTOGRAPHED 23 November 1944

0 500 1000 1500 2000 2500 3000 FEET
0 1:6000 APPROX. ½ MILE

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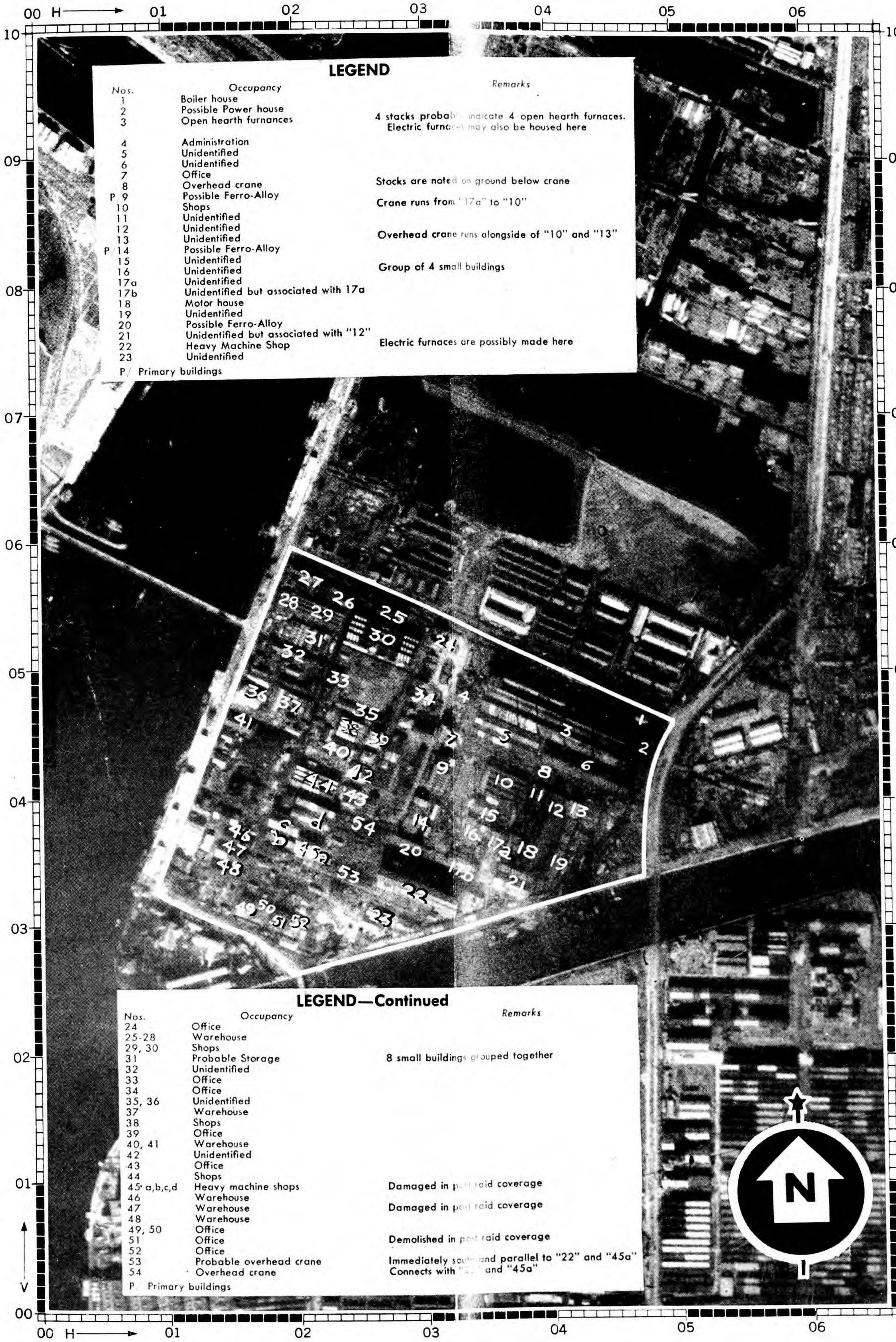

LEGEND

Nos.	Occupancy	Remarks
1	Boiler house	
2	Possible Power house	
3	Open hearth furnances	4 stacks probably indicate 4 open hearth furnaces. Electric furnaces may also be housed here
4	Administration	
5	Unidentified	
6	Unidentified	
7	Office	
8	Overhead crane	Stocks are noted on ground below crane
P/9	Possible Ferro-Alloy	
10	Shops	Crane runs from "17a" to "10"
11	Unidentified	
12	Unidentified	
13	Unidentified	Overhead crane runs alongside of "10" and "13"
P/14	Possible Ferro-Alloy	
15	Unidentified	
16	Unidentified	Group of 4 small buildings
17a	Unidentified	
17b	Unidentified but associated with 17a	
18	Motor house	
19	Unidentified	
20	Possible Ferro-Alloy	
21	Unidentified but associated with "12"	
22	Heavy Machine Shop	Electric furnaces are possibly made here
23	Unidentified	

P/ Primary buildings

LEGEND—Continued

Nos.	Occupancy	Remarks
24	Office	
25-28	Warehouse	
29, 30	Shops	
31	Probable Storage	8 small buildings grouped together
32	Unidentified	
33	Office	
34	Office	
35, 36	Unidentified	
37	Warehouse	
38	Shops	
39	Office	
40, 41	Warehouse	
42	Unidentified	
43	Office	
44	Shops	
45 a,b,c,d	Heavy machine shops	Damaged in post raid coverage
46	Warehouse	
47	Warehouse	Damaged in post raid coverage
48	Warehouse	
49, 50	Office	
51	Office	Demolished in post raid coverage
52	Office	
53	Probable overhead crane	Immediately south and parallel to "22" and "45a"
54	Overhead crane	Connects with "[illegible]" and "45a"

P/ Primary buildings

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90.20-247D

DAIDO ELECTRIC STEEL, MINAMI PLANT

LATITUDE: 35/04 N.
Longitude: 136/55 E.

TARGET NO. 90.20-247D

Whether all of the expansion area belongs to this plant cannot definitely be stated. The plant is known to produce electric furnace steel and in addition the photographs show facilities for making rolled steel products, and foundries for medium size castings, as well as other unidentified installations of a character not normally associated with a steel works.

The whole target is roughly rectangular approximately 3500' x 1800'. It is situated due S of the city of Nagoya in the waterfront area 1½ miles E. of Nagoya harbor, 1 mile S of the Yamasaki River and 1¼ miles W of the Takaido Main line of the Imperial Government Railway.

The plant is served by one main road on the West. The North boundry is formed by a canal or waterway running from Nagoya harbor, capable of barge and small boat traffic. A newly constructed railway spur from the Takaido main line enters the plant from the W and extends just inside the W. border of the main portion of the plant.

Estimated capacity is 720,000 metric tons of electric steel per year. 11 Electric arc furnaces.

XXI B.C. DAMAGE ASSESSMENT REPORT NO. 77 - 25 May 1945.

As a result of XXI B.C. Mission 174 and 176 when Nagoya city was the primary target of an incendiary raid this target (247-D) was hit and as a result 40 medium sized and small buildings were destroyed - possible damage to remaining buildings, 35% of plant is destroyed.

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET INFORMATION SHEET

Sheet No.	90.20–247B–TI
Date	19 April 1945
Page	1
Target No.	90.20–247B
Obj. Area	90.20
Obj. Folder No.	90.20
Air Target System:	Coke, Iron and Steel
Lat.	35°07′ N
Long.	136°55′ E
Alt.	10 feet

DAIDO ELECTRIC STEEL, ATSUTA PLANT
(Daido Seiko K. K.)

NAGOYA • • • • • • • • • • • • JAPAN

ALL PREVIOUS SHEETS CANCELLED

HOLDERS OF JTG FOLDERS SHOULD INSERT THIS SHEET IN AIR TARGET SYSTEM FOLDER—JAPANESE COKE, IRON & STEEL WITH OTHER 90.20–247B MATERIAL

SIGNIFICANCE

This plant and two other Daido Electric Steel Company plants in the Nagoya area, the Minami Plant (Target 90.20–247D) and the Tsukiji Plant (Target 90.20–247C), together constitute the largest concentration of electric and alloy steel capacity in the Japanese Empire. This plant, the smallest of the three, has an estimated annual capacity of 35,000 metric tons of electric and alloy steel, or about 1.5 percent of the Empire total, and also a reported 6,000 metric ton annual capacity of steel castings.

There were no visible stockpiles and little evidence of activity in photographs of 23 November 1944, in spite of the importance of special steels and the demands of the Nagoya aircraft industry.

LOCATION

(Refer to Illustration No. 90.20–247B P2.) About 2.5 miles NE of Nagoya Harbor between the E branch of the Hori River and the Tokaido Main Line Railroad, N of their intersection. The compound is bounded on the W by the Tokaido Railroad, on the E by the Hori River, on the SW by a branch line of the railway curving toward the SE, and on the NE by the Atsuta Power Plant.

DESCRIPTION AND LAYOUT

(Refer to Illustration No. 90.20–247B P3.) The target area is shaped roughly like a quarter circle, measuring about 1,200 feet N-S and 750 feet E-W. It covers about 12 acres (527,000 square feet).

Two buildings (3 and 4), SE of the center of the area probably house the 9 electric furnaces for steel-making that are reported at the plant, while 4 reported furnaces for making steel alloys may be in buildings further W (5, 7, 8, 9, 10, or 11). A large building (2) near the E boundary houses the foundry_for casting molten steel and alloys.

PRIMARY OBJECTIVES

(Refer to Illustration No. 90.20–247B P3.) Electric furnace buildings 3a and 4.

CONSTRUCTION AND VULNERABILITY

Buildings are generally rather large 1-story structures of normal span and greater height than normal, heavily framed in steel and containing high-capacity traveling cranes serving massive steel-making equipment. Roof and wall surfaces are probably of lightweight noncombustible sheet material.

WEAPON RECOMMENDATIONS

Instructions with regard to weapons will usually be given in Field or Operational Orders, but in the absence of such instructions and to assist Planners in formulating such orders the following information is given:

An attack with high explosive bombs alone is recommended. A preliminary structural and occupancy analysis of the plant indicates that weapons should be selected as follows:

	High explosive	Fuze	Incendiary
Preferred	2000-lb GP	0.1 N/0.1 T	None
Alternative	500-lb GP	0.1 N/0.1 T	None
	1000-lb GP	0.1 N/0.1 T	

Not Recommended: Smaller GP bombs.
SAP or AP bombs.
Depth bombs.

NOTE.—The above recommendations are on a weight for weight basis.

CAMOUFLAGE, DECOYS, AND SMOKE SCREENS

Photography of 23 November 1944 shows no attempt at camouflage or use of decoys. No use of smoke screens has been reported.

ADDITIONAL INFORMATION

Daido Electric Steel Company's Minami Plant (Target 90.20–247D) is about 2.75 miles S, and its Tsukiji Plant (Target 90.20–247C) about 2 miles SW.

The Oe Plant (Target 90.20–247A), believed producing special steel castings only, has now been located about 800 feet W of the Minami Plant. It is on the opposite side of the canal SE of the location previously reported in Air Objective Folder Nagoya Area, 90.20, issued 6 July 1944.

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202T–4

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET INFORMATION SHEET

DAIDO ELECTRIC STEEL, TSUKIJI PLANT
(Daido Seiko K. K.)
NAGOYA • • • • • • • • • • • • • JAPAN

Sheet No.	90.20-247C-TI
Date	19 April 1945
Page	1 (of 2 pages)
Target No.	90.20-247C
Obj.	90.20
Obj. Folder No.	90.20
Air Target System:	Coke, Iron and Steel
Lat.	35°05′ N
Long.	136°54′ E
Alt.	15 feet

ALL PREVIOUS SHEETS CANCELLED

SIGNIFICANCE

This plant and two other Daido Electric Steel Company plants in the Nagoya area, the Minami Plant (Target 90.20-247D) and the Atsuta Plant (Target 90.20-247B), together constitute the largest concentration of electric and alloy steel capacity in the Japanese Empire, accounting for about 10 percent of such capacity. Second to the Minami Plant, this plant's annual capacity is about 36,000 metric tons of electric and alloy steel or about 1.5 percent of the Empire total. It also has capacity for about 136,000 metric tons of open hearth steel (about 1 percent of the Empire total), and manufactures some finished steel products, probably including electric furnaces.

Because of the importance of special steels and of the Nagoya aircraft industry demands, it may be operating at a higher percentage of capacity than most home island steel plants.

LOCATION

(Refer to Illustration No. 90.20-247C P2.) At the intersection of the Hori and Yamasaki Rivers near the NE corner of Nagoya Harbor, just N across the Yamasaki River from Nagoya Steam Power Plant No. 1 (Target 90.20-195) and Mitsubishi Aircraft Works, Nagoya Airframe Plant (Target 90.20-194). It is bounded on the W by the Hori River, on the S by the Yamasaki River, on the N by miscellaneous small industry, and along the SW and E by streets serving bridges across the Yamasaki River. A bridge crosses the Hori River from near the NW corner of the plant.

DESCRIPTION AND LAYOUT

(Refer to Illustration 90.20-247C P3.) The target area is shaped like a right-triangle with the acute corners cut off, and measures about 1,500 feet on each side. It covers about 46 acres (2,000,000 square feet).

Eleven electric furnaces have been reported. Some are probably located in two buildings (9 and 14) in the center of the target area and some may be in the large building (3) near the E corner which also contains four open hearth furnaces. A group of buildings (11, 12, 13, 17, 19, and 21) near the SE corner of the area may contain reported rolling mills, though they do not correspond to the conventional rolling mill arrangement. Electric furnaces may be fabricated in a heavy machine shop (22) near the center of the S boundary. Another heavy machine shop (45) next building W, was shown by photographs of 18 December 1944 strike to have been extensively damaged.

PRIMARY OBJECTIVES

(Refer to Illustration No. 90.20-247C P3.) Electric furnaces, buildings 9 and 14.

CONSTRUCTION AND VULNERABILITY

(Refer to Illustration No. 90.20-247C P3.) Buildings 9 and 14 and most other major buildings are one-story structures of normal span and greater height then normal, heavily framed in steel and containing high-capacity traveling cranes serving massive steel-making and steel-working equipment. There are a few sawtooth-roofed shops, also one-story and steel-framed but probably of short span and without cranes. Roof and wall surfaces are probably of lightweight noncombustible sheet material.

WEAPON RECOMMENDATIONS

Instructions with regard to weapons will usually be given in Field or Operational Orders, but in the absence of such instructions and to assist Planners in formulating such orders the following information is given:

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202T-1

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET INFORMATION SHEET

An attack with high explosive bombs alone is recommended. A preliminary structural and occupancy analysis of the plant indicates that weapons should be selected as follows:

	High explosive	Fuze	Incendiary
Preferred	2000-lb GP	0.1 N/O.1 T	None
Alternative	500-lb GP	0.1 N/O. 1 T	None
	1000-lb GP	0.1 N/O.1 T	

Not Recommended: Smaller GP bombs.
SAP or AP bombs.
Depth bombs.

NOTE.—The above recommendations are on a weight for weight basis.

CAMOUFLAGE, DECOYS, AND SMOKE SCREENS

Photography of 18 December 1944 shows extensive use of disruptive painting, but no use of decoys. No use of smoke screens has been reported.

ADDITIONAL INFORMATION

Daido Electric Company's Minami Plant (Target 90.20–247D) is about 1.25 miles SE, and its Atsuta Plant (Target 90.20–247B) about 2 miles NE.

The Oe Plant (Target 90.20–247A), believed producing special steel castings only, has now been located about 800 feet W of the Minami Plant. It is on the opposite side of the canal SE of the location previously reported in Air Objective Folder Nagoya Area, 90.20, issued 6 July 1944.

HOLDERS OF JTG FOLDERS SHOULD INSERT THIS SHEET IN AIR TARGET SYSTEM FOLDER—JAPANESE COKE, IRON & STEEL WITH OTHER 90.20–247C MATERIAL.

Sheet No.	90.20-247D-TI
Date	19 April 1945
Page	1 (of 2 pages)
Target No.	90.20-247D
Obj. Area	90.20
Obj. Folder No.	90.20
Air Target System:	Coke, Iron & Steel
Lat.	35°04′ N
Long.	136°55′ E
Alt.	15 feet

JOINT TARGET GROUP, WASHINGTON, D. C.

TARGET INFORMATION SHEET

DAIDO ELECTRIC STEEL, MINAMI PLANT (Daido Seiko K. K.)

NAGOYA • • • • • • • • • • • • JAPAN

ALL PREVIOUS SHEETS CANCELLED

HOLDERS OF JTG FOLDERS SHOULD INSERT THIS SHEET IN AIR TARGET SYSTEM FOLDER—JAPANESE COKE, IRON & STEEL WITH OTHER 90.20-247D MATERIAL

SIGNIFICANCE

This plant as now expanded is the Japanese Empire's largest in electric and alloy steel capacity, with an estimated minimum annual capacity of 160,000 metric tons, or 7 percent of the Empire total. It also has a minimum capacity of 120,000 metric tons of primary rolled steel, 40,000 metric tons of sheet, and 30,000 metric tons of wire rod, and a large capacity for medium sized steel castings.

Daido Electric Steel Company, from this and three smaller plants in the Nagoya district, supplies products for the Nagoya aircraft and machine tool plants and the bearing plants at Kuwana, about 13 miles W. It is probably operating at a higher percentage of capacity than most home island steel plants because of the importance of special steels and of the Nagoya aircraft industry demands.

LOCATION

(Refer to Illustration No. 90.20-247D P2.) On the SE edge of the city, 1.5 miles E of Nagoya Harbor and 1.25 W of the Tokaido Main Line Railway, to which it is connected by a new spur. Bounded on the N by an E-W canal which runs along the S side of the Mitsubishi Aircraft Works, Nagoya Airframe Plant (Target 90.20-194) to the harbor; on the W by a main highway, running S from the city; and on the SE by open fields.

DESCRIPTION AND LAYOUT

(Refer to Illustration No. 90.20-247D P4.) The target area is roughly rectangular in shape, measuring about 3,600 feet E-W, and about 1,800 feet N-S, and covering about 152 acres, or 6,600,-000 square feet. The main industrial functions are in the closely built-up western half and its expansion eastward along the canal. The southeastern 46 acres is of apparently minor importance although its exact function has not been determined.

Unloading is done by cranes along the canal—3 at the NW corner (1), 1 in front of building 49m, and 1 at the NE corner (98).

Electric furnace for making steel and steel alloys are probably intsalled in three buildings in the SE corner of the built-up western half (59a, 66, and 68). It is known that by the end of 1939 the plant had 13 furnaces, and it is estimated that it now has 20.

The rolling mills, two large buildings near the center of the western half (49 and 42), process steel ingots, both from the electric furnaces and from other plants. The most vital facility, the primary or blooming mill, is in either 49j, 49k, 49l, or 49m.

The main foundries for producing castings are in the large building near the NE corner (90) and in a building near the center of the western half (46), though 3 others (43, 44, and 50) near building 46 may contain additional foundries. Preparation of molds may also take place in building 49 p, q, and r. Size of castings is probably limited by lack of rail transportation within the plant.

The boiler house near the center of the W half (45) and the pump house and water tower on the SW boundary (60) are both essential for operation of the plant. The power lines and transformers supplying the electric furnaces are not apparent.

PRIMARY OBJECTIVES

(Refer to Illustration No. 90.20-247D P4.) Blooming mill (building 49); electric furnaces (buildings 59, 66, 68).

CONSTRUCTION AND VULNERABILITY

Major buildings are one-story structures of normal span and greater height than normal, heavily framed in steel and containing high-capacity traveling cranes serving massive steel-making and steel-working equipment. Roof and wall surfaces are probably of lightweight non-combustible sheet material. There are a few sawtooth-roofed shops, also one-story and steel-framed but of short span and without cranes; and a number of scattered small buildings, probably combustible.

WEAPON RECOMMENDATIONS

Instructions with regard to weapons will usually be given in Field or Operational Orders, but in the absence of such instructions and to assist Planners in formulating such orders the following information is given:

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202T-3

An attack with high explosive bombs alone is recommended. A preliminary structural and occupancy analysis of the plant indicates that weapons should be selected as follows:

	HE	Fuze	IB
Preferred	2,000-lb GP	0.1 N/0.1 T	None
Alternative	500-lb GP	0.1 N/0.1 T	None
	1,000-lb GP	0.1 N/0.1 T	

Not recommended: Smaller GP bombs.
SAP or AP bombs.
Depth bombs.

NOTE.—The above recommendations are on a weight for weight basis.

CAMOUFLAGE, DECOYS, AND SMOKE SCREENS

Photography of 18 December 1944 shows some use of disruptive painting, but no use of decoys. No use of smoke screens has been reported.

ADDITIONAL INFORMATION

The other Nagoya plants of Daido Electric Steel Company are the Tsukiji Plant (Target 90.20–247C) about 1.25 miles NW, the Atsuta Plant (Target 90.20–247B) about 2.75 miles N, and the Oe Plant (Target 90.20–247A).

The Oe Plant was reported in Air Objective Folder, Nagoya Area, 90.20, issued 6 July 1944, to be in the area now included in the Mitsubishi Aircraft Works, Nagoya Airframe Plant (Target 90.20–194), on the opposite side of the canal from the Minami Plant. It is now believed on the same side of the canal and about 800 feet W of the Minami Plant. The Tsukiji Plant and the Atsuta Plant each have about 1.5 percent of Empire electric and alloy steel capacity. The Oe Plant is believed limited to producing castings for Mitsubishi.

HOLDERS OF JTG FOLDERS SHOULD INSERT THIS SHEET IN AIR TARGET SYSTEM FOLDER—JAPANESE COKE, IRON & STEEL WITH OTHER 90.20-247D MATERIAL

JOINT
TARGET
GROUP
WASHINGTON, D. C.

DAIDO ELECTRIC STEEL, MINAMI PLANT

NAGOYA **JAPAN**

0 200 4000 6000 FEET
0 ½ 1 MILE
1 2 000 APPROX.

RESTRICTED

ILLUSTRATION No. . .	90.20-247 D P1
DATE.	30 April 1945
TARGET No.	90.20-247 D
COORDINATES . .	35°04'N 136°55'E
PHOTOGRAPHED	23 November 1944

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20-247 D material.

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JOINT TARGET GROUP
WASHINGTON, D. C.

DAIDO ELECTRIC STEEL, MINAMI PLANT
NAGOYA JAPAN

0 2000 4000 6000 FEET
0 ½ 1 MILE
2 000 APPROX.

ILLUSTRATION No.	90.20-247 D P2
DATE	30 April 1945
TARGET No.	90.20-247 D
COORDINATES	35°04'N 136°55'E
PHOTOGRAPHED	23 November 1944

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20-247 D material.

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JOINT TARGET GROUP
WASHINGTON, D. C.

DAIDO ELEC[illegible] C STEEL, MINAMI PLANT
NAGOYA JAPAN

ILLUSTRATION No.	90.20-247 D P3
DATE	30 April 1945
TARGET No.	90.20-247 D
COORDINATES	35°04'N 136°55'E
PHOTOGRAPHED	23 November 1944

0 500 1000 1500 2000 2500 3000 FEET
0 1:6000 APPROX. 1/2 MILE

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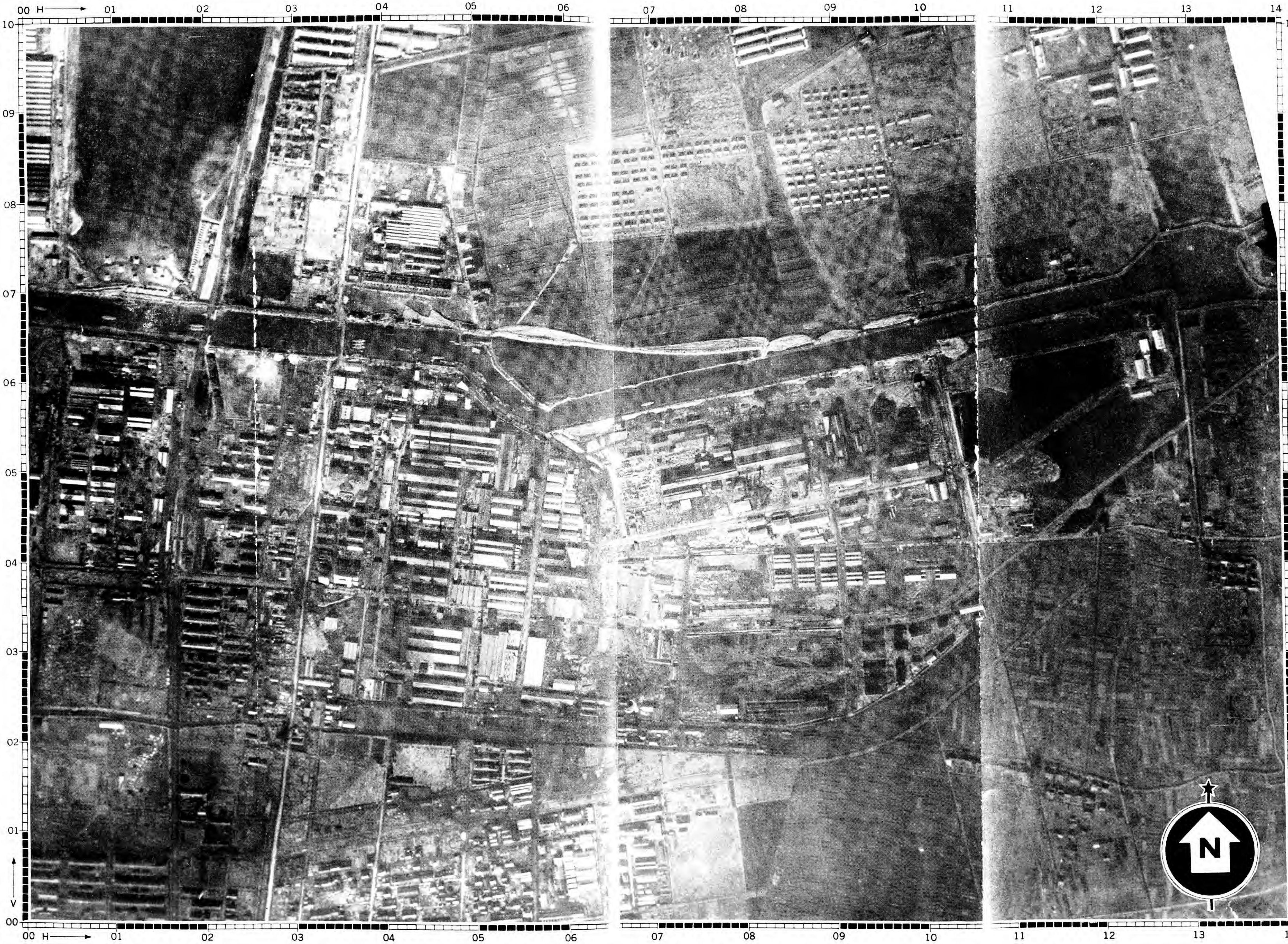

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JOINT TARGET GROUP
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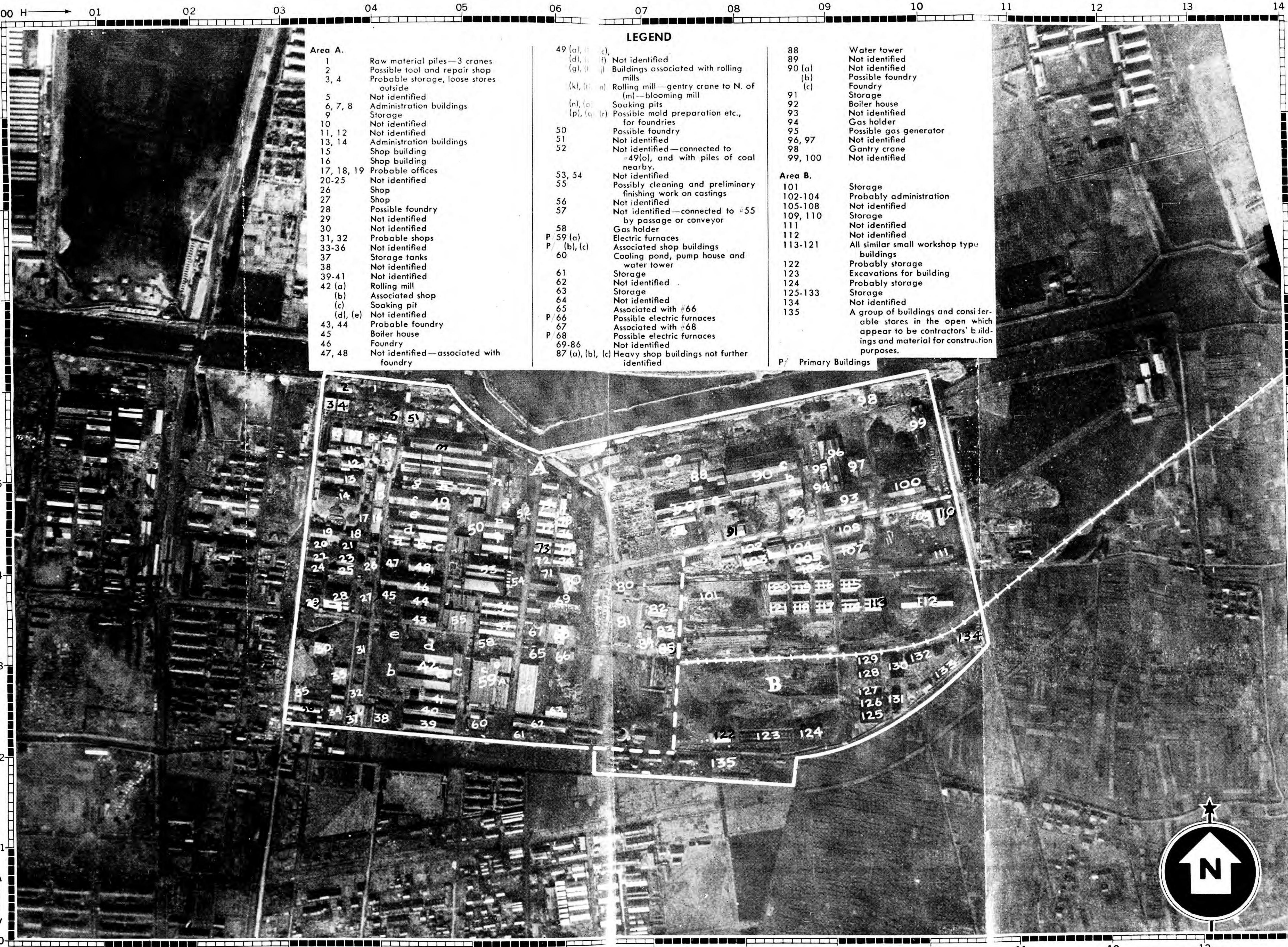
DAIDO ELECTRIC STEEL, MINAMI PLANT
NAGOYA JAPAN

ILLUSTRATION No.	90.20-247 D P4
DATE	30 April 1945
TARGET No.	90.20-247 D
COORDINATES	35°04'N 136°55'E
PHOTOGRAPHED	23 November 1944

0 500 1000 1500 2000 2500 3000 FEET
0 ¼ 1:6000 APPROX. ½ MILE



LEGEND

Area A.

1	Raw material piles—3 cranes
2	Possible tool and repair shop
3, 4	Probable storage, loose stores outside
5	Not identified
6, 7, 8	Administration buildings
9	Storage
10	Not identified
11, 12	Not identified
13, 14	Administration buildings
15	Shop building
16	Shop building
17, 18, 19	Probable offices
20-25	Not identified
26	Shop
27	Shop
28	Possible foundry
29	Not identified
30	Not identified
31, 32	Probable shops
33-36	Not identified
37	Storage tanks
38	Not identified
39-41	Not identified
42 (a)	Rolling mill
(b)	Associated shop
(c)	Soaking pit
(d), (e)	Not identified
43, 44	Probable foundry
45	Boiler house
46	Foundry
47, 48	Not identified—associated with foundry
49 (a), [illegible] (c),	
(d), [illegible] (f)	Not identified
(g), [illegible] (j)	Buildings associated with rolling mills
(k), [illegible] (m)	Rolling mill—gentry crane to N. of (m)—blooming mill
(n), (o)	Soaking pits
(p), (q), (r)	Possible mold preparation etc., for foundries
50	Possible foundry
51	Not identified
52	Not identified—connected to #49(o), and with piles of coal nearby.
53, 54	Not identified
55	Possibly cleaning and preliminary finishing work on castings
56	Not identified
57	Not identified—connected to #55 by passage or conveyor
58	Gas holder
P/ 59 (a)	Electric furnaces
P/ (b), (c)	Associated shop buildings
60	Cooling pond, pump house and water tower
61	Storage
62	Not identified
63	Storage
64	Not identified
65	Associated with #66
P/ 66	Possible electric furnaces
67	Associated with #68
P/ 68	Possible electric furnaces
69-86	Not identified
87 (a), (b), (c)	Heavy shop buildings not further identified
88	Water tower
89	Not identified
90 (a)	Not identified
(b)	Possible foundry
(c)	Foundry
91	Storage
92	Boiler house
93	Not identified
94	Gas holder
95	Possible gas generator
96, 97	Not identified
98	Gantry crane
99, 100	Not identified

Area B.

101	Storage
102-104	Probably administration
105-108	Not identified
109, 110	Storage
111	Not identified
112	Not identified
113-121	All similar small workshop type buildings
122	Probably storage
123	Excavations for building
124	Probably storage
125-133	Storage
134	Not identified
135	A group of buildings and considerable stores in the open which appear to be contractors' buildings and material for construction purposes.

P/ Primary Buildings

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel with other 90.20-247 D material.

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JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

OSAKA IRON WORKS, UNIT NO. 1
OSAKA JAPAN

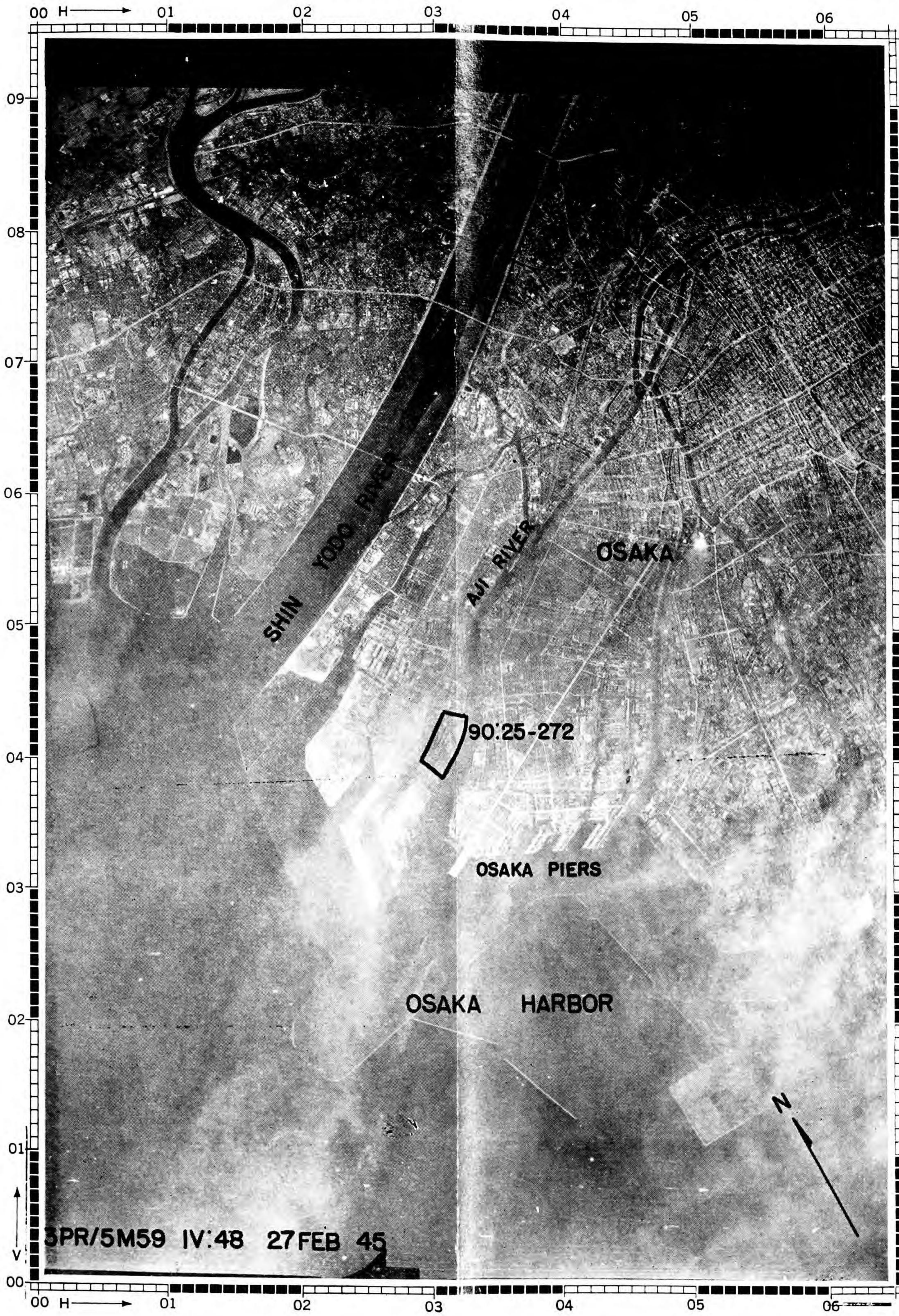
SHEET 90:25-272–TL
DATE..................2 June 1945
CATEGORY
Bsc. Eqpt. Ind.–TRNSPTN. EQPT.
COORDINATES.....34°40'N 135°26'E
ALTITUDE...................10 feet

SIGNIFICANCE:

One of 7 major shipyards ranking after the largest 5 in Japan, this yard specializes in the construction of medium and small standardized freighters and tankers. Principal structural shops lie W of the single graving dock and 5 building ways. The shops in S quarter of the yard are associated with fitting and repair. This company also operates the larger HABU Shipyard on INNOSHIMA (Target 90:29-927A).

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron & Steel.

LARGE SCALE ILLUSTRATION–SCALE APPROX.: 1:15,000



SMALL SCALE ILLUSTRATION–SCALE APPROX.: 1:61,000

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WANISHI IRON WORKS, Muroran
(Iron and Steel)

LATITUDE: 42/20 N.
LONGITUDE: 141/01 E.

TARGET NO. 90.3-379

On East shore of harbor. Second largest pigiorn and third largest steel capacity in Japan. This plant and the adjacent Nihon Steel Co. (target 378) have for years produced primarily for the Army and Navy. Both plants have been under complete Government control since 1936. The two together are located in an areacovering more than 30 acres, of which more than 1,000,000 sq.ft. are covered by buildings. Rail and dock facilities complete and modern.

If plans for expansion have been carried out, this plant has an annual capacity of 1,500,000 tons of pig (9 blast furnaces) and 950,000 tons of steel annually. Plant includes RR repair shops.

JOINT TARGET GROUP, WASHINGTON, D. C.
TARGET LOCATION SHEET

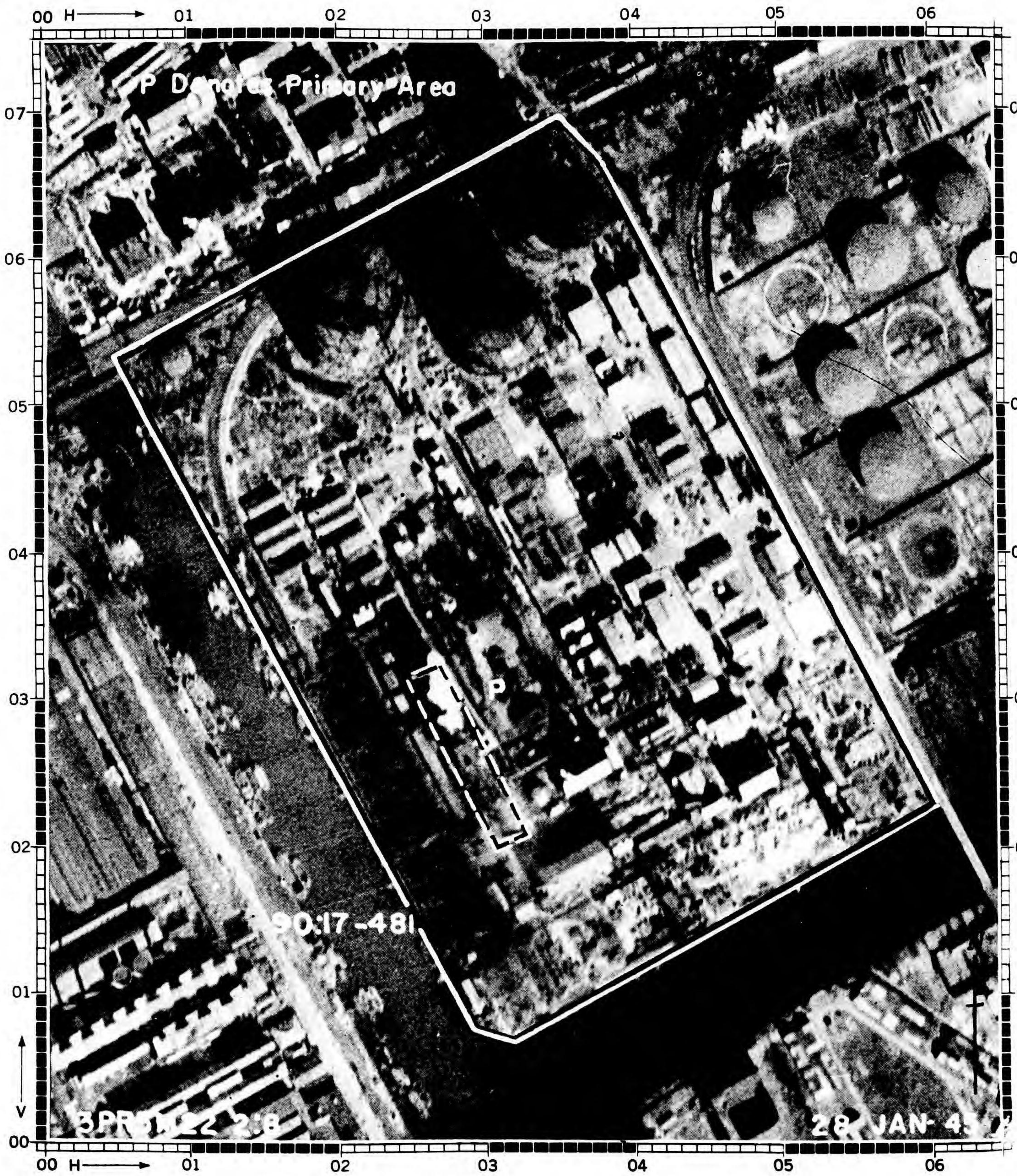
TOKYO GAS CO., TSURUMI BRANCH
KAWASAKI JAPAN

SHEET No.	90.17-481-TL
DATE	18 May 1945
TARGET No.	90.17-481
CATEGORY	Bsc. Proc. Ind.—Coke-Iron-Steel
COORDINATES	35°30'N 139°42'E
ALTITUDE	10 feet

SIGNIFICANCE:

Second of 3 municipal gas plants in Tokyo Area having coke ovens. One of about 30 plants in Empire capable of producing metallurgical coke, the critical point in Japanese steel production. Has 72 coke ovens arranged in 2 batteries. Annual metallurgical coke capacity 92,000 metric tons (1% of Empire total).

Holders of Joint Target Group Folders should insert this sheet in Air Target System Folder: Japanese Coke, Iron and Steel.



LARGE SCALE ILLUSTRATION—SCALE APPROX.: 1:3,875

SMALL SCALE ILLUSTRATION—SCALE APPROX.: 1:62,000

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NAKAYAMA STEEL MFG. COMPANY
Osaka

(Iron and Steel)

LATITUDE: 34/37 N.
LONGITUDE: 135-28 E.
TARGET NO. 90.25-713

One of 13 leading plants in Japan for production of steel ingots, plates and section for shipbuilding. Total production of steel ingots for company of which this is largest plant, is 300,000 metric tons. Pig iron capacity undergoing large expansion. Other products; steel parts, thin iron plate, tin plate, special steel, zinc plating, etc. Company reported to have purdhased section of Kizugawa airport for expansion.