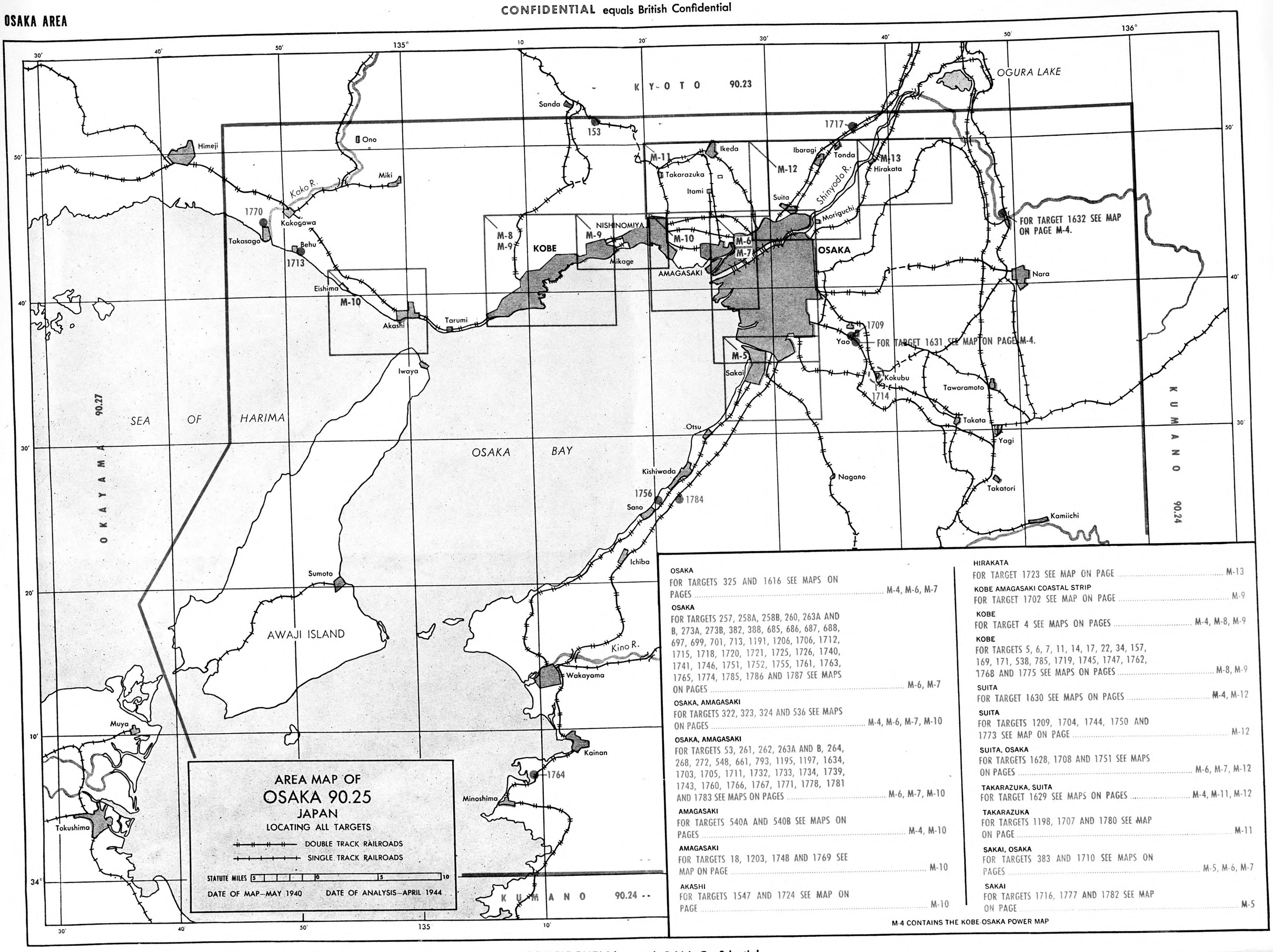
OSAKA AREA



OSAKA
FOR TARGETS 325 AND 1616 SEE MAPS ON PAGES M-4, M-6, M-7

OSAKA
FOR TARGETS 257, 258A, 258B, 260, 263A AND B, 273A, 273B, 382, 388, 685, 686, 687, 688, 697, 699, 701, 713, 1191, 1206, 1706, 1712, 1715, 1718, 1720, 1721, 1725, 1726, 1740, 1741, 1746, 1751, 1752, 1755, 1761, 1763, 1765, 1774, 1785, 1786 AND 1787 SEE MAPS ON PAGES M-6, M-7

OSAKA, AMAGASAKI
FOR TARGETS 322, 323, 324 AND 536 SEE MAPS ON PAGES M-4, M-6, M-7, M-10

OSAKA, AMAGASAKI
FOR TARGETS 53, 261, 262, 263A AND B, 264, 268, 272, 548, 661, 793, 1195, 1197, 1634, 1703, 1705, 1711, 1732, 1733, 1734, 1739, 1743, 1760, 1766, 1767, 1771, 1778, 1781 AND 1783 SEE MAPS ON PAGES M-6, M-7, M-10

AMAGASAKI
FOR TARGETS 540A AND 540B SEE MAPS ON PAGES M-4, M-10

AMAGASAKI
FOR TARGETS 18, 1203, 1748 AND 1769 SEE MAP ON PAGE M-10

AKASHI
FOR TARGETS 1547 AND 1724 SEE MAP ON PAGE M-10

HIRAKATA
FOR TARGET 1723 SEE MAP ON PAGE M-13

KOBE AMAGASAKI COASTAL STRIP
FOR TARGET 1702 SEE MAP ON PAGE M-9

KOBE
FOR TARGET 4 SEE MAPS ON PAGES M-4, M-8, M-9

KOBE
FOR TARGETS 5, 6, 7, 11, 14, 17, 22, 34, 157, 169, 171, 538, 785, 1719, 1745, 1747, 1762, 1768 AND 1775 SEE MAPS ON PAGES M-8, M-9

SUITA
FOR TARGET 1630 SEE MAPS ON PAGES M-4, M-12

SUITA
FOR TARGETS 1209, 1704, 1744, 1750 AND 1773 SEE MAP ON PAGE M-12

SUITA, OSAKA
FOR TARGETS 1628, 1708 AND 1751 SEE MAPS ON PAGES M-6, M-7, M-12

TAKARAZUKA, SUITA
FOR TARGET 1629 SEE MAPS ON PAGES M-4, M-11, M-12

TAKARAZUKA
FOR TARGETS 1198, 1707 AND 1780 SEE MAP ON PAGE M-11

SAKAI, OSAKA
FOR TARGETS 383 AND 1710 SEE MAPS ON PAGES M-5, M-6, M-7

SAKAI
FOR TARGETS 1716, 1777 AND 1782 SEE MAP ON PAGE M-5

M-4 CONTAINS THE KOBE-OSAKA POWER MAP

Numerical Index of Targets in Osaka Area, No. 90.25

Target Number	Name	Text Page
4	Minatogawa Steam Power Plant	49
5	Kobe Steel Works	45
6	Kobe Steel Works	45
7	Kawasaki Heavy Industry	45
11	Kawasaki Locomotive and Car Co.	49
14	Nippon Dunlop Rubber Co.	45
17	Rising Sun Petroleum Oil Storage	48
18	Kawanishi Aircraft Co.	60
22	Kobe Harbor District No. 1	47
34	Kobe Harbor District No. 2	47
53	Osaka Harbor	29
153	Senkari Reservoir Dam	61
157	Sannomiya Railroad Station	50
169	Mitsubishi Heavy Industries	46
171	Kawasaki Heavy Industry	46
257	Maruzen Oil Refinery & Toyo Oil Refinery	25
258A & B	Mitsubishi Oil Storage	25
260	Rising Sun Petroleum Oil Storage	28
261	Standard Vacuum Oil Storage & Nippon Oil Storage	32
262	Sumitomo Electric Industries Co.	33
263A	Sumitomo Metal Industry & Sumitomo Aluminium Co.	30
263B	Sumitomo Metal Industry & Sumitomo Aluminium Co.	30
264	Sumitomo Metal Industry	31
268	Osaka Steel Mfg. Co.	39
272	Osaka Iron Works Unit No. 1	30
273A	Fujinagata Shipbuilding Co.	24
273B	Fujinagata Shipbuilding Co.	24
322	Kasugade No. 1 Steam Power Plant	34
323	Kasugade No. 2 Steam Power Plant	34
324	Fukuzaki Steam Power Plant	39
325	Kizugawa Steam Power Plant	23
382	Osaka Arsenal	37
383	Dai Nippon Celluloid Co.	39
388	Osaka Machinery Co.	36
536	Amagasaki Steam Power Plant	55
538	I.G.R. Shops	48
540A	Kansai Kyodo Steam Power Plant No. 1	56
540B	Kansai Kyodo Steam Power Plant No. 2	56
548	Rolling Stock Mfg. Co.	31
661	Amatsuji Steel Ball Mfg. Co.	39
685	Kurimoto Iron Works	28
686	Osaka Metal Industry Co.	39
687	Osaka Wakayama Iron Works	39
688	Kubota Iron & Machinery Works	25
697	Mitsubishi Copper Refinery	39
699	Osaka Iron Works Unit No. 2	25
701	Kubota Iron & Machinery Works	23
713	Nakayama Steel Mfg. Co.	24
785	Kanegafuchi Soda Industry	50
793	Fukuda Light Airplane Co.	40, 57
1191	Hatsudoki Engine Works	40
1195	Sumitomo Metal Industry	53
1197	Kubota Iron & Machinery Works	54
1198	Toyo Bearing Mfg. Co.	63
1203	Nippon Oil Refinery & Tank Farm	55
1206	Osaka Railroad Station	36
1209	Suita RR Yards and Shops	61
1547	Kawasaki Aircraft Co.	65
1616	Kujo Steam Power Plant	35
1628	Takeda Drug Co.	33
1629	Amagasaki Transformer Station	63
1630	Osaka Transformer Station	63
1631	Yao Transformer Station	64
1632	Kizu Transformer Station	63
1634	Mizaguchi Gear Works	40, 57

Target Number	Name	Text Page
1702	Kawanishi Aircraft Co.	63
1703	Toyowa Heavy Industry Co.	25
1704	Strong Engineering Works Co.	63
1705	Strong Engineering Works Co.	33
1706	Mizuno Sporting Goods Co.	39
1707	Toyo Metal and Wood Co.	63
1708	Nippon Aluminium Works	41
1709	Sumitomo Aluminium Co.	64
1710	Takada Aluminium Mfg. Co.	64
1711	Osaka Shipbuilding Works	29
1712	Osaka Gas Co. Coke Oven Plant	35
1713	Tagi Fertilizer Co.	65
1714	Kwoyo Precision Works Co.	64
1715	Kwoyo Precision Works Co.	41
1716	Asahi Precision Work Co.	64
1717	Yuasa Storage Battery Mfg. Co.	63
1718	Kwoyo Precision Works Co.	31
1719	Nippon Airbrake Co.	50
1720	Kwoyo Precision Works Co.	31
1721	Tanaka Piston Ring Co.	31
1723	Hirakata Branch, Osaka Army Arsenal	63
1724	Kawasaki Aircraft Co.	62
1725	Asano Portland Cement Co.	27
1726	Osaka Ceramic Industry Cement Co.	24
1732	Rasa Industry Co.	41
1733	Japan Dyestuff Mfg. (Dye Plant)	32
1734	Japan Dyestuff Mfg. (Drugs Plant)	35
1739	Furukawa Electrical Co.	57
1740	Furukawa Electrical Co.	40
1741	Sankyo Co.	41
1743	Dai Nichi Electric Wire Co.	57
1744	Matsushita Wireless Co.	63
1745	Kawanishi Machine Shop	50
1746	Oki Electric Co.	41
1747	Oki Electric Co.	50
1748	Showa Electrode Co.	55
1750	Matsushita Dry Battery Co.	63
1751	Matsushita Dry Battery Co.	41
1752	Osaka Electric Machinery Co.	41
1755	Nakayama Steel Mfg. Co.	41
1756	Oriental Cable Co.	64
1760	Asahi Glass Co.	54
1761	Nitta Leather Belt Mfg. Co.	28
1762	Kawasaki Heavy Industry	50
1763	Kurimoto Iron Works	41
1764	Maruzen Oil Refinery	64
1765	Japan Iron Works	41
1766	Daido Steel Mfg. Co.	54
1767	Tokyo Rolling Works	54
1768	Kobe Steel Works	45
1769	Amagasaki Steel Works	54
1770	Nippon Iron Sand Industry Co.	65
1771	Nakayama Steel Mfg. Co.	54
1773	Osaka Chain & Machinery Works	63
1774	Yamato Steel Works	27
1775	Kawasaki Heavy Industry	50
1777	Kubota Iron and Machinery Works	64
1778	Kubota Iron and Machinery Works	41
1780	Osaka Machinery Co.	63
1781	Osaka Machinery Co.	41
1782	Osaka Metal Industry Co.	64
1783	Osaka Wakayama Iron Works	41
1784	Osaka Wakayama Iron Works	64
1785	Oriental Can Mfg. Co.	25
1786	Oriental Can Mfg. Co.	41
1787	Oriental Can Mfg. Co.	35

3621—3—Osaka—5-23-44—Final Proof

Classified Index of Targets in Osaka Area, No. 90.25

CLASSIFICATION AND NAME	LOCATION (GENERAL)	TARGET NUMBER	APPROXIMATE COORDINATES	TEXT ON PAGE	MAP ON PAGE	PHOTO ON PAGE
AIRCRAFT						
Kawanishi Aircraft Company	Naruo	**18**	34° 42′N 135° 22′E	60	10	55, 60
Osaka Metal Industry Company	Osaka	**686**	34° 39′N 135° 30′E	39	6, 7	
Fukuda Light Airplane Company	Osaka-Amagasaki	**793**	34° 43′N 135° 27′E	40, 57	6, 7, 10	
Kawasaki Aircraft Company	Akashi	**1547**	34° 39′N 134° 57′E	65	10	
Kawanishi Aircraft Company	Fukae	**1702**	34° 43′N 135° 17′E	63	9	
Strong Engineering Works Company	Ibaragi	**1704**	34° 49′N 135° 26′E	63	12	
Strong Engineering Works Company	Osaka	**1705**	34° 42′N 135° 27′E	33	6, 7, 10	
Mizuno Sporting Goods Company	Osaka	**1706**	34° 42′N 135° 29′E	39	6, 7	
Toyo Metal and Wood Company	Itami	**1707**	34° 48′N 135° 25′E	63	11	
Kawasaki Aircraft Company	Akashi	**1724**	34° 39′N 134° 59′E	62	10	62
ARSENALS & MILITARY STORES						
Osaka Arsenal	Osaka	**382**	34° 41′N 135° 32′E	37	6, 7	21, 37, 38
Hirakata Branch, Osaka Army Arsenal	Hirakata	**1723**	34° 50′N 135° 40′E	63	13	
CHEMICALS						
Dai Nippon Celluloid Company	Sakai	**383**	34° 36′N 135° 29′E	39	5, 6, 7	
Kanegafuchi Soda Industry	Kobe	**785**	34° 39′N 135° 10′E	50	8, 9	
Takeda Drug Company	Osaka	**1628**	34° 43′N 135° 29′E	33	6, 7, 12	33
Tagi Fertilizer Company	Behu	**1713**	34° 43′N 134° 51′E	65		
Rasa Industry Co.	Osaka	**1732**	34° 41′N 135° 28′E	41	6, 7, 10	
Japan Dyestuff Mfg. (Dye Plant)	Osaka	**1733**	34° 40′N 137° 27′E	32	6, 7, 10	32
Japan Dyestuff Mfg. (Drugs Plant)	Osaka	**1734**	34° 41′N 135° 26′E	35	6, 7, 10	
Sankyo Company	Osaka	**1741**	34° 43′N 135° 31′E	41	6, 7	
Asahi Glass Company	Amagasaki	**1760**	34° 43′N 135° 25′E	54	6, 7, 10	53, 54
ELECTRIC EQUIPMENT						
Sumitomo Electric Industries Company	Osaka	**262**	34° 41′N 135° 27′E	33	6, 7, 10	33
Furukawa Electrical Company	Amagasaki	**1739**	34° 42′N 135° 25′E	57	6, 7, 10	
Furukawa Electrical Company	Osaka	**1740**	34° 42′N 135° 31′E	40	6, 7	
Dai Nichi Electric Wire Company	Amagasaki	**1743**	34° 42′N 135° 25′E	57	6, 7, 10	
Matsushita Wireless Company	Moriguchi	**1744**	34° 44′N 135° 35′E	63	12	
Kawanishi Machine Shop	Kobe	**1745**	34° 39′N 135° 10′E	50	8, 9	
Oki Electric Company	Osaka	**1746**	34° 42′N 135° 29′E	41	6, 7	
Oki Electric Company	Kobe	**1747**	34° 41′N 135° 12′E	50	8, 9	
Showa Electrode Company	Naruo	**1748**	34° 42′N 135° 23′E	55	10	55
Matsushita Dry Battery Company	Moriguchi	**1750**	34° 44′N 135° 34′E	63	12	
Matsushita Dry Battery Company	Osaka	**1751**	34° 44′N 135° 29′E	41	6, 7, 12	
Osaka Electric Machinery Company	Osaka	**1752**	34° 37′N 135° 29′E	41	6, 7	
Nakayama Steel Mfg. Company	Osaka	**1755**	34° 39′N 135° 29′E	41	6, 7	
Oriental Cable Company	Kaji	**1756**	34° 26′N 135° 20′E	64		
ELECTRIC POWER						
Minatogawa Steam Power Plant	Kobe	**4**	34° 39′N 135° 09′E	49	4, 8, 9	49
Kasugade No. 1 Steam Power Plant	Osaka	**322**	34° 40′N 135° 28′E	34	4, 6, 7, 10	34
Kasugade No. 2 Steam Power Plant	Osaka	**323**	34° 40′N 135° 28′E	34	4, 6, 7, 10	34
Fukuzaki Steam Power Plant	Osaka	**324**	34° 39′N 135° 28′E	39	4, 6, 7, 10	39
Kizugawa Steam Power Plant	Osaka	**325**	34° 37′N 135° 29′E	23	4, 6, 7	23, 24
Amagasaki Steam Power Plant	Amagasaki	**536**	34° 42′N 135° 24′E	55	4, 6, 7, 10	55
Kansai Kyodo Steam Power Plant No. 1	Amagasaki	**540A**	34° 42′N 135° 24′E	56	4, 10	55, 56, 60
Kansai Kyodo Steam Power Plant No. 2	Amagasaki	**540B**	34° 42′N 135° 24′E	56	4, 10	55, 56, 60
Kujo Steam Power Plant	Osaka	**1616**	34° 40′N 135° 29′E	35	4, 6, 7	35
Amagasaki Transformer Station	Amagasaki	**1629**	34° 45′N 135° 29′E	63	4, 11, 12	
Osaka Transformer Station	Osaka	**1630**	34° 44′N 135° 36′E	63	4, 12	

3621—4—Osaka— 5-23-44—Final Proof

CLASSIFIED INDEX OF TARGETS IN OSAKA AREA, No. 90.25—Continued

CLASSIFICATION AND NAME	LOCATION (GENERAL)	TARGET NUMBER	APPROXIMATE COORDINATES	TEXT ON PAGE	MAP ON PAGE	PHOTO ON PAGE
ELECTRIC POWER (Continued)						
Yao Transformer Station	Yao	1631	34° 37′N 135° 37′E	64	4	
Kizu Transformer Station	Kizu	1632	34° 35′N 135° 50′E	63	4	
HARBOR FACILITIES						
Kobe Harbor District No. 1	Kobe	22	34° 41′N 135° 12′E	47	8, 9	43, 46, 47
Kobe Harbor District No. 2	Kobe	34	34° 40′N 135° 11′E	47	8, 9	46
Osaka Harbor	Osaka	53	34° 39′N 135° 26′E	29	6, 7, 10	29, 30
IRON AND STEEL						
Kobe Steel Works	Kobe	5	34° 42′N 135° 13′E	45	8, 9	44, 45
Kobe Steel Works	Kobe	6	34° 42′N 135° 13′E	45	8, 9	44, 45
Kawasaki Heavy Industry	Kobe	7	34° 42′N 135° 13′E	45	8, 9	44
Sumitomo Metal Industry	Osaka	264	34° 40′N 135° 27′E	31	6, 7, 10	30, 31
Osaka Steel Manufacturing Company	Osaka	268	34° 42′N 135° 27′E	39	6, 7, 10	
Kurimoto Iron Works	Osaka	685	34° 39′N 135° 29′E	28	6, 7	28
Nakayama Steel Manufacturing Company	Osaka	713	34° 37′N 135° 28′E	24	6, 7	23, 24
Sumitomo Metal Industry	Amagasaki	1195	34° 43′N 135° 25′E	53	6, 7, 10	53
Kawasaki Heavy Industry	Kobe	1762	34° 39′N 135° 09′E	50	8, 9	
Kurimoto Iron Works	Osaka	1763	34° 37′N 135° 28′E	41	6, 7	
Japan Iron Works	Osaka	1765	34° 38′N 135° 29′E	41	6, 7	
Daido Steel Mfg. Company	Amagasaki	1766	34° 43′N 135° 26′E	54	6, 7, 10	
Tokyo Rolling Works	Amagasaki	1767	34° 42′N 135° 24′E	54	6, 7, 10	
Kobe Steel Works	Kobe	1768	34° 42′N 135° 13′E	45	8, 9	44, 45
Amagasaki Steel Works	Amagasaki	1769	34° 43′N 135° 24′E	54	10	
Nippon Iron Sand Industry Company	Takasago	1770	34° 45′N 134° 49′E	65		
Nakayama Steel Manufacturing Company	Amagasaki	1771	34° 42′N 135° 25′E	54	6, 7, 10	
Yamato Steel Works	Osaka	1774	34° 38′N 135° 29′E	27	6, 7	27
Kawasaki Heavy Industry	Kobe	1775	34° 41′N 135° 13′E	50	8, 9	
MACHINERY AND MACHINE TOOLS						
Osaka Machinery Company	Osaka	388	34° 42′N 135° 30′E	36	6, 7	36
Amatsuji Steel Ball Manufacturing Company	Osaka	661	34° 43′N 135° 28′E	39	6, 7, 10	
Osaka Wakayama Iron Works	Osaka	687	34° 39′N 135° 30′E	39	6, 7	
Kubota Iron and Machinery Works	Osaka	688	34° 39′N 135° 30′E	25	6, 7	
Kubota Iron and Machinery Works	Osaka	701	34° 38′N 135° 28′E	23	6, 7	23, 24
Hatsudoki Engine Works	Osaka	1191	34° 42′N 135° 29′E	40	6, 7	
Kubota Iron and Machinery Works	Amagasaki	1197	34° 43′N 135° 25′E	54	6, 7, 10	53, 54
Toyo Bearing Manufacturing Company	Takarazuka	1198	34° 47′N 135° 22′E	63	11	
Mizaguchi Gear Works	Osaka-Amagasaki	1634	34° 43′N 135° 27′E	40, 57	6, 7, 10	
Toyowa Heavy Industry Company	Osaka	1703	34° 39′N 135° 29′E	25	6, 7, 10	
Kwoyo Precision Works Company	Kokubu	1714	34° 34′N 135° 38′E	64		
Kwoyo Precision Works Company	Osaka	1715	34° 39′N 135° 32′E	41	6, 7	
Asahi Precision Work Company	Sakai	1716	34° 31′N 135° 27′E	64	5	
Yuasa Storage Battery Manufacturing Company	Takasuki	1717	34° 51′N 135° 37′E	63		
Kwoyo Precision Works Company	Osaka	1718	34° 39′N 135° 33′E	31	6, 7	
Nippon Airbrake Company	Kobe	1719	34° 42′N 135° 13′E	50	8, 9	44, 45
Kwoyo Precision Works Company	Osaka	1720	34° 39′N 135° 33′E	31	6, 7	
Tanaka Piston Ring Company	Osaka	1721	34° 41′N 135° 31′E	31	6. 7	21
Osaka Chain and Machinery Works	Ibaragi	1773	34° 49′N 135° 33′E	63	12	
Kubota Iron and Machinery Works	Sakai	1777	34° 33′N 135° 28′E	64	5	
Kubota Iron and Machinery Works	Osaka	1778	34° 40′N 135° 28′E	41	6, 7, 10	
Osaka Machinery Company	Itami	1780	34° 47′N 135° 25′E	63	11	
Osaka Machinery Company	Osaka	1781	34° 44′N 135° 28′E	41	6, 7, 10	

3621—5—Osaka—5-23-44—Final Proof

CLASSIFIED INDEX OF TARGETS IN OSAKA AREA, No. 90.25—Concluded

CLASSIFICATION AND NAME	LOCATION (GENERAL)	TARGET NUMBER	APPROXIMATE COORDINATES	TEXT ON PAGE	MAP ON PAGE	PHOTO ON PAGE
MACHINERY AND MACHINE TOOLS (Continued)						
Osaka Metal Industry Company	Sakai	1782	34° 34′N 135° 29′E	64	5	
Osaka Wakayama Iron Works	Osaka	1783	34° 43′N 135° 28′E	41	6, 7, 10	
Osaka Wakayama Iron Works	Tsuda	1784	34° 22′N 135° 26′E	64		
MISCELLANEOUS						
Osaka Gas Company Coke Oven Plant	Osaka	1712	34° 40′N 135° 29′E	35	6, 7	35
Asano Portland Cement Company	Osaka	1725	34° 38′N 135° 29′E	27	6, 7	27
Nitta Leather Belt Manufacturing Company	Osaka	1761	34° 39′N 135° 29′E	28	6, 7	28
Oriental Can Manufacturing Company	Osaka	1785	34° 38′N 135° 28′E	25	6, 7	25, 26
Oriental Can Manufacturing Company	Osaka	1786	34° 42′N 135° 29′E	41	6, 7	
Oriental Can Manufacturing Company	Osaka	1787	34° 41′N 135° 29′E	35	6, 7	35
PETROLEUM						
Rising Sun Petroleum Oil Storage	Kobe	17	34° 39′N 135° 09′E	48	8, 9	48
Maruzen Oil Refinery & Toyo Oil Refinery	Osaka	257	34° 38′N 135° 28′E	25	6, 7	26
Mitsubishi Oil Storage	Osaka	258A & B	34° 38′N 135° 28′E	25	6, 7	25, 26
Rising Sun Petroleum Oil Storage	Osaka	260	34° 38′N 135° 29′E	28	6, 7	24, 27
Standard Vacuum Oil Storage and Nippon Oil Storage	Osaka	261	34° 40′N 135° 27′E	32	6, 7, 10	32
Nippon Oil Refinery and Tank Farm	Amagasaki	1203	34° 42′N 135° 24′E	55	10	55, 60
Maruzen Oil Refinery	Shimotsu	1764	34° 06′N 135° 09′E	64		
NON-FERROUS						
Sumitomo Metal Industry Company, and Sumitomo Aluminum Company	Osaka	263A	34° 40′N 135° 27′E	30	6, 7, 10	30, 31
Sumitomo Metal Industry Company and Sumitomo Aluminum Company	Osaka	263B	34° 41′N 135° 29′E	30	6, 7	30
Mitsubishi Copper Refinery	Osaka	697	34° 42′N 135° 31′E	39	6, 7	21, 39
Nippon Aluminum Works	Osaka	1708	34° 44′N 135° 30′E	41	6, 7, 12	
Sumitomo Aluminum Company	Yao	1709	34° 47′N 135° 36′E	64		
Takada Aluminum Manufacturing Company	Sakai	1710	34° 35′N 135° 28′E	64	5, 6, 7	
Osaka Ceramic Industry Cement Company	Osaka	1726	34° 38′N 135° 28′E	24	6, 7	23, 24, 27
RUBBER						
Nippon Dunlop Rubber Company	Kobe	14	34° 42′N 135° 13′E	45	8, 9	44, 45
SHIPYARDS						
Mitsubishi Heavy Industries	Kobe	169	34° 39′N 135° 11′E	46	8, 9	43, 44, 46
Kawasaki Heavy Industry Company	Kobe	171	34° 40′N 135° 11′E	46	8, 9	43, 44, 46
Osaka Iron Works Unit No. 1	Osaka	272	34° 40′N 135° 27′E	30	6, 7, 10	30
Fujinagata Shipbuilding Company	Osaka	273A	34° 37′N 135° 28′E	24	6, 7	23, 24
Fujinagata Shipbuilding Company	Osaka	273B	34° 37′N 135° 28′E	24	6, 7	23, 25
Osaka Iron Works Unit No. 2	Osaka	699	34° 38′N 135° 27′E	25	6, 7	23, 24, 26
Osaka Shipbuilding Works	Osaka	1711	34° 39′N 135° 27′E	29	6, 7, 10	29
TRANSPORTATION						
Kawasaki Locomotive and Car Company	Kobe	11	34° 39′N 135° 10′E	49	8, 9	49
Sannomiya Railroad Station	Kobe	157	34° 41′N 135° 12′E	50	8, 9	43
I. G. R. Shops	Takatori	538	34° 39′N 135° 08′E	48	8, 9	48
Rolling Stock Manufacturing Company	Osaka	548	34° 40′N 135° 27′E	31	6, 7, 10	31
Osaka Railroad Station	Osaka	1206	34° 42′N 135° 30′E	36	6, 7	36
Suita RR Yards and Shops	Suita	1209	34° 46′N 135° 32′E	61	12	61
WATER SUPPLY						
Senkari Reservoir Dam	Senda	153	34° 52′N 135° 16′E	61		61

3621—6—Osaka—5-23-44—Final Proof

Summary and Evaluation of Osaka Area, No. 90.25

SIGNIFICANCE: The Osaka Area, including both Kobe and Osaka, is one of the four primary industrial centers in Japan Proper. Extending around Osaka Bay at the eastern end of the Inland Sea, the area is the approximate center of the densely populated and heavily industrialized part of Japan Proper, and is a focal point for both land and water-borne transportation as well as a center of highly diversified industry.

Industry in the area ranges from steel mills and shipyards to precision tools and anti-friction bearings. In addition to plants supplying aircraft components, the area includes two of Japan's leading aircraft/engine works and what is reported to be the largest producer of propellers and aluminum sheet.

Osaka is the second largest city in Japan. It is highly industrialized. Outstanding among the city's industries are machinery and machine tools, anti-friction bearings, ship building and repair, chemicals and pharmaceuticals, aluminum rolling and fabrication, electrical equipment, and copper refining. The Osaka Arsenal is one of Japan's largest, producing a wide range of ordnance. There are a number of large plants, but a considerable part of Osaka's industrial importance is based on the output of a very large number of small factories, which are integrated into basic war production both within and beyond the area. These factories and shops present dispersed and obscure individual targets, but tend to be clustered in mixed industrial/residential sections.

Kobe is a heavy industry center, important for ship building and repair, iron and steel, railway equipment and ordnance, and rubber tires. The city's shipyards probably represent Japan's largest single concentration of ship building and marine engine capacity. The production of steel, electrical equipment and machinery is closely integrated into the ship building industry, and all principal ship components are produced in the city.

Kobe and Osaka are the principal cities in a continuous urban/industrial area extending some 50 miles around the head of Osaka Bay. The third largest industrial concentration is at Amagasaki, a politically separate city which in effect is a suburb of Osaka. It is principally important for its huge steam power plants, which supply electric power for the entire Area. Amagasaki also is the site of plants producing iron and steel, electrical equipment and machinery, and of a sizeable oil refinery.

The Akashi-Takasago coastal strip west of Kobe is a newer industrial area, which includes the main engine works of Kawasaki Aircraft. The coastal strip between Kobe and Amagasaki is principally important as the site of the Kawanishi Aircraft Works.

Other significant industrial plants are located along the railroad lines which lead out of Osaka. Sakai, almost a suburb of Osaka, has a large gunpowder plant and several internal combustion engine works. Machinery and tool plants are located along the railroad to the SW of Sakai. To the NE of Osaka toward Kyoto, are several battery and electrical appliance factories, machine tool plants, and the important Hirakata branch plant of the Osaka Arsenal. Large machine tool and bearing plants and a reported aircraft factory are located in the Takarazuka-Itami district. This is a new industrial area which, on the basis of available information, cannot be accurately evaluated. It is believed to be important as a new center of war production.

This folder lists 132 objectives, of which the following are rated as Key Targets in Japan's wartime economy:

No.	Name	Location	Page
1547	Kawasaki Aircraft Company	Akashi	65
18	Kawanishi Aircraft Company	Naruo	60
263A	Sumitomo Metal Industry and Aluminum Company	Osaka	30
171	Kawasaki Dockyard	Kobe	46
273A & B	Fujinagata Shipbuilding Company	Osaka	24
661	Amatsuji Steel Ball Manufacturing Company	Osaka	39
1198	Toyo Bearing Mfg. Co.	Takarazuka	63
5, 6 & 1768	Kobe Steel Works	Kobe	45
7, 1775 & 1762	Kawasaki Heavy Industry	Kobe	45, 50
262	Sumitomo Electric Industries	Osaka	33
1733	Japan Dyestuff Manufacturing Company	Osaka	32
540A & B	Kansai Kyodo Steam Power Plants, Nos. 1 & 2	Amagasaki	56
382	Osaka Arsenal	Osaka	37

In addition to a number of other major objectives, the targets listed include a substantial number, the present importance of which can not be accurately evaluated. They are listed and located as an aid to interpretation of photographic and other intelligence. This particularly pertains to several plants developed in the immediate pre-war period, on which intelligence has been fragmentary. Not listed as targets are a number of textile mills, in and near Osaka City which have been reported converted to "munitions" or other industrial uses. Osaka is a large textile center, and there are many such plants which could be converted, since Japan's textile capacity is believed to exceed considerably her supply of cotton and other fibers.

AIRCRAFT: The area is of major importance in Japan's production of military aircraft. It includes Kawanishi's production of multi-engine flying boats, and what is reported to be the main engine plant of Kawasaki Aircraft. Sumitomo Metal Industry is one of the two largest propeller plants, as well as a leading producer of dural sheet, forgings, castings and other aircraft items. In addition to several smaller factories producing aircraft or components, the area includes a large number of anti-friction bearing, machine tool, machining, forging, and electrical equipment factories (for the most part listed under separate target categories) which are of major importance in Japan's aircraft production.

The Kawasaki plant at Akashi **TARGET 1547** is one of the two principal works of Kawasaki Aircraft, which is rated next to Nakajima and Mitsubishi. The Akashi plant is reported to be Kawasaki's main engine

3621—7—Osaka—5-23-44—Final Proof

SUMMARY AND EVALUATION OF OSAKA AREA, No. 90.25

works, new and set up for mass production.

Kawanishi is the principal, if not the only, producer of multi-engine flying boats for the Japanese Navy. In addition to assembly of these large aircraft, the plant at Naruo **TARGET 18** is reported to be an integrated unit producing engines, propellers and other components. **TARGET 1702** is the site of the new plant at Fukae which Kawanishi was reported to be building in 1940 to approximate the size of the expanded Naruo works.

Listed as targets are several plants which have produced light planes, gliders, etc. Their present importance is not known, but the plants are spotted as an aid to interpretation of photo or other intelligence which may become available.

Sumitomo Kinzoku Aluminum is rated one of Japan's two largest producers of propellers and one of the two largest rolling mills for dural sheet. It also produces crankshafts, forgings, stampings, etc. It has not been established whether all of this production, or which parts of it, are at **TARGET 263A;** several sources attribute a substantial part of the output to a branch plant, **TARGET 263B,** the existence of which has not been confirmed.

A new branch aircraft plant (company unknown) has been reported in the vicinity of Takarazuka-Itami. Information concerning its location is fragmentary, but it is generally reported as being south of Takarazuka and west of Itami. An airfield is reported to adjoin the plant on the west. A large airport is located about 3 miles NE of Itami.

ARMS, MUNITIONS: The Osaka Arsenal **TARGET 382** is one of Japan's most important arsenals, and ranks among the outstanding major objectives in this area. The arsenal proper occupies a very extensive site along the eastern side of the Osaka Castle Grounds. It specializes in medium artillery, A/A guns, small arms, shells, bombs and fuses. Precision components for heavy artillery and other ordnance are also manufactured here.

A branch of the Osaka Arsenal is located at Hirakata **TARGET 1723,** about 12 miles NE of Osaka Castle. This plant is reported to be manufacturing heavy artillery, aircraft guns and A/A guns, as well as bombs and shells.

In addition to these two main units, several small machinery and tool plants (some housed in converted textile mills) are also controlled by the arsenal. Several of these are reported to be in northeastern Osaka, near the main arsenal. There is inadequate information for listing these plants as targets.

Listed under other categories are numerous steel, machinery and tool, etc., plants which are reported to be producing munitions or components for ordnance.

CHEMICALS: Of the chemical plants listed in the area, only two rank as major targets. These are the two plants of the Japan Dyestuff Mfg. Co., both in Osaka. One of these, the Dye plant—**TARGET 1733,** ranked as the leading pre-war dye plant in Japan, accounting for 20% of dye production and 30% of intermediates. It has undoubtedly been converted to the production of explosives, drugs, poison gases, etc. **TARGET 1734** is the Drugs plant of this company. It is a modern plant, one of the largest in Japan, capable of producing many essential drugs.

Another important chemical plant (though not a major target) is the Takeda Drug Co.—**TARGET 1628** (Osaka). One of the largest pharmaceutical plants in Japan, it is principally important as a large producer of quinine.

The Dai Nippon Celluloid Co.—**TARGET 383** is also important. This plant, located in Sakai, is reported to have been converted to explosives and is said to rank seventh in Japan in the production of propellant powders.

A great many other chemical plants, a large number too small to be included as targets but in the aggregate producing important amounts of basic chemicals, are in this area. It is these many medium and small plants rather than a few large ones which give the area considerable importance in the chemical industry.

ELECTRICAL EQUIPMENT: Of the several plants in this area which produce electrical equipment, only one ranks as a major objective. The others, relatively small producers of wire and cable, spark plugs, batteries, telephone and radio equipment, are of secondary importance individually.

Sumitomo Electric Industries (Osaka), **TARGET 262** is a major objective. This plant is estimated to account for about 25% of Japan's total output of insulated wire and cable. While Japan is known to have an adequate capacity in this industry, it is believed that war requirements have necessitated maximum production, and the loss of this plant would have an important (but not decisive) influence on the electrical and communications equipment industries. This plant also produces machine tools, tubes, bars, rods and sheets.

A new plant of Mitsubishi Electric Manufacturing Co. is reported located just south of Itami. Information concerning its present status is fragmentary and the plant is not designated as a numbered target. This is an important concern, now manufacturing such varied products as heavy ship and locomotive electrical machinery, machine tools, and aircraft components and equipment.

ELECTRIC POWER (Central Honshu Power Network): The Kobe-Osaka district is the heart of the Central Honshu electric power network, which extends as far west as Himeji and meets the Tokyo network to the east (see maps on page M-5).

Between these two power networks are a few large hydro plants equipped to supply either the Central Honshu or the Tokyo systems, which operate on different frequencies. The bulk of this "double-frequency" power is believed normally to move into the Tokyo region but there is no technical barrier against its diversion to the Osaka Area in an emergency. Aside from these double-frequency plants, almost

3621—8—Osaka—5-23-44—Final Proof

SUMMARY AND EVALUATION OF OSAKA AREA, No. 90.25

200 hydro stations are regularly available to the Central Honshu system. However, almost half of its total generating capacity is concentrated in a few steam power plants located at the two major consuming centers, Nagoya and Kobe-Osaka.

For part of the year, hydro power meets as much as two-thirds of the region's total power needs, but during the dry seasons (December-March and August) the great bulk of electric power is supplied by large steam plants, the most important of which are **TARGETS 540 and 536** at Amagasaki in the Osaka Area and **TARGETS 1598 and 195** in Nagoya city (90.20). These four targets are base-load plants and their elimination is considered fundamental to operations against electric power in either district. With the exception of two generating stations in the Himeji district and one near the Maizuru naval base, all other large steam plants in the Central Honshu supply region are located in the Kobe-Osaka district.

Destruction of the chief base-load and standby power plants in the Osaka Area would effect a critical power shortage there for most of the year, but some essential activity could still be maintained during the wet season unless the area were isolated from outside power sources. Practically all power moving into the Osaka Area from the NE must pass over one of four high voltage transmission lines. This power can be denied to the Osaka Area by neutralizing four primary transformer stations **TARGETS 1629, 1630, 1631, 1632** or by creating power stringencies in Tokyo and Nagoya that would preclude emergency diversion to Osaka. Since the transmission lines and transformer stations are fully interconnected, operations against the latter would need to be synchronized for maximum effect. To assure a long-run critical interference with essential power requirements in the Osaka Area, coordinated operations against key electric power targets in Nagoya and Tokyo are indicated.

The two largest generating stations in Japan **TARGETS 540A and 540B** are located on a small island in Amagasaki Harbor. Along with **TARGET 536** nearby, these constitute the most important year-round source of power for the Kobe-Osaka district. The output of older, less efficient plants in Osaka **TARGETS 322, 323, 325** and Kobe **TARGET 4** meets peak demands and is essential during the dry season. Together with the Amagasaki base-load targets these standby plants account for 85% of the Osaka Area's generating capacity. Two secondary standby plants **TARGETS 1613 and 324** in Osaka are also listed as targets.

A high degree of concentration prevails among power plants in the Osaka Area. The two buildings comprising **TARGET 540** in Amagasaki are less than 1000 feet apart while **TARGET 536** is only 4000 feet distant. **TARGETS 322 and 323** in Osaka are directly adjacent and **TARGET 1613** is an integral part of the main Osaka Gas Works **TARGET 1712.** Aside from the four transformer stations, all electric power targets in the Area are located close to the waterfront, near other important targets, and have conspicuous identifying features. Even the largest have relatively light roof structures with vital equipment distributed over the entire building area. **TARGETS 540, 536, and 325** operate at relatively high steam pressures. Under present conditions, such boilers, condensers and turbo-generators would be almost impossible to replace, provided a number of installations were seriously damaged.

Movement of coal from North Kyushu to the Amagasaki and Osaka steam power plants constitutes one of the largest regular items of traffic into those harbors, especially during the dry seasons. Elaborate storage and coal handling equipment adjoins **TARGETS 540, 536 and 325.** Coal is lightered to all Osaka plants, but the Amagasaki plants can accommodate vessels up to 7000 tons directly alongside.

IRON AND STEEL: The iron and steel plants in this area are estimated to account for about 10% of pig iron, 20% of steel and over 21% of rolled products—in terms of total Japanese Empire capacity. This concentration of steel and rolling capacity ranks second only to that at Yawata; pig iron capacity ranks below that found at Yawata, Tokyo-Yokohama, Anshan, and Muroran-Wanishi. While the aggregate production of steel and rolled products is of major significance, it is distributed among some 19 separate plants. Six plants, all in Kobe, account for the great bulk of the production.

Three of these are plants of the Kobe Steel Works—**TARGETS 5, 6, and 1768**—situated within a 2000 foot radius in eastern Kobe. Total company capacity is estimated at 750,000 metric tons of pig iron, 320,000 tons of carbon steel and 20,000 tons of steel alloys. The company also has a large rolling and wire-rod capacity. In addition to supplying ship-plate to Kobe's two large shipyards, this company also manufactures internal combustion engines, other machinery and tools.

The remaining three plants are units of the Kawasaki Heavy Industry—**TARGETS 1762, 7, and 1775.** This company is credited with an annual capacity of 260,000 metric tons of pig iron, and 460,000 tons of steel. It supplies ship-plate and other steel products to the Kawasaki Dockyard in Kobe. One of these plants **TARGET 7** adjoins the southwesternmost plant of the Kobe Steel Works **TARGET 5** and a second is located about ½ mile to the southwest. The third plant **TARGET 1762** is located in western Kobe.

The concentration of steel capacity in eastern Kobe ranks as one of the outstanding target clusters in the area, the significance of which is further increased by the adjoining Nippon Dunlop Rubber Company, **TARGET 14**—also a major target.

MACHINERY AND MACHINE TOOLS: As is the case throughout Japan, the production of machinery, machine tools and anti-friction bearings in the Osaka Area is distributed among numerous moderate-size plants, very few of which account for a sufficient capacity to warrant consideration as major targets. In the aggregate, however, the production of machinery, tools and bearings in this area accounts for a significant percentage of Japan's total output—especially in the categories of general purpose tools, heavy

3621—9—Osaka— 5-23-44—Final Proof

SUMMARY AND EVALUATION OF OSAKA AREA, No. 90.25

machinery and both high quality and second grade bearings.

Plants which rate special notice as major targets are

a. Amatsuji Steel Ball Manufacturing Company (Osaka)—**TARGET 661**

Reported to be one of the three leading producers of steel balls for bearings, this plant supplies many of the leading bearing concerns.

b. Toyo Bearing Manufacturing Company (Takarazuka)—**TARGET 1198**

One of 3 plants of this concern. Toyo Bearing Manufacturing Company is Japan's largest manufacturer of high grade ball and roller bearings.

The Kwoyo Precision Works Company, large producers of second grade bearings (ball, tapered and solid types) has three plants in Osaka City, **TARGETS 1715, 1718 and 1720** all within an area measuring ¾ mile E-W by ½ mile N/S. While these are lower quality bearings and the capacity of any one plant is not sufficient to rate major consideration, the proximity of the three plants is such as to constitute a significant alternate objective for area bombing.

Although available information is too inadequate to permit a final evaluation, the Mizaguchi Gear Works **TARGET 1634** in Osaka is believed to be an important objective. Equipped with the finest imported tools and machinery, this plant is one of the few which can manufacture very large precision gears and training rings for the propulsion and gun turret mechanisms of naval vessels. Much of its equipment was obtained under Army and Navy contracts.

The Itami plant of Osaka Machinery Company **TARGET 1780,** one of Japan's leading specialized machine tool concerns, also warrants special notice. This is a new plant, reported expanded in 1941, which is licensed to produce various tools and precision lathes in addition to hydraulic cylinders for aircraft.

NON-FERROUS METALS: Two objectives in this category, both in Osaka City, rank as major targets:

a. Sumitomo Metal Industry and Aluminum Companies—**TARGET 263A**

Principally important for its propeller and duralumin production, this objective is discussed in the summary of major objectives under AIRCRAFT.

b. Mitsubishi Mining Company—**TARGET 697**

Credited with about 21% of Japan's total copper refining capacity, this plant constitutes a major target.

There are no other significant objectives in this category in the area. A small amount of aluminum and alumina is reported to be produced in recently converted cement and ceramics plants, but the total production is probably too small to warrant major consideration.

RUBBER: The Nippon Dunlop Rubber Company plant at Kobe **TARGET 14** ranks as a major objective in the rubber tire industry. Japan's largest tire factory, it is credited with a daily capacity of 2900 tires or 31% of total Japanese controlled capacity. This and three other factories (at Kurume, Yokohama, and Buitenzorg in Java) account for approximately 82% of Japan's tire capacity. While the Kobe plant represents an important concentration of manufacturing capacity, it should be noted that:

a. Japan has an ample tire manufacturing capacity and a large surplus of rubber.

b. There are many sizeable footwear and general rubber products plants which can be converted to tire manufacturing in approximately 6 months—if equipment is available.

c. Like other large tire plants, this is a heavy reinforced concrete structure and essential equipment is scattered throughout the plant. Partial destruction would probably not halt all production, unless the factory's steam plant were destroyed.

SHIPBUILDING: The Osaka Area ranks as one of Japan's leading ship building and repair centers. During the peak pre-war ship building years of 1936-38, it accounted for approximately 25-30% of the total tonnage of launchings (both naval and merchantmen) in Japan Proper. During the same period this area also accounted for approximately 30% of the total output of marine engines. It was also credited with about 25% of Japan's drydock and ship repair capacity. Japan's accelerated ship construction program has undoubtedly led to the rapid expansion of newer, mass production yards outside the Osaka Area, but it is believed that the larger shipyards in this Area still rank as leading producers.

Four shipyards rank as major objectives:

a. Kawasaki Dockyard (Kobe)—**TARGET 171**

During 1936-38, this yard accounted for approximately 17-21% of the total tonnage of launchings (both naval and merchantmen) and over 18% of marine engine production — ranking first in both among all Japanese shipyards.

b. Mitsubishi Heavy Industry (Kobe)—**TARGET 169**

During 1936-38, this yard accounted for 4-6% of the total tonnage of launchings, and ranked among the leading ship repair yards.

c. Fujinagata Ship Building Company, Units I and II (Osaka)—**TARGETS 273A and 273B**

During 1936-38 these yards accounted for only about 0.5% of the total tonnage of launchings, but were credited with over 12% of total marine engine production, in which the company specializes.

d. Osaka Iron Works, Units I and II—**TARGETS 272 and 699**

During 1936-38, these yards accounted for only an estimated 1-2% of total tonnage launchings, but ranked as important ship repair yards.

Recent reports state that Osaka City has become an important center for standardized wooden cargo ship production. The yards producing such ships are not known, but there are several small yards in the general neighborhood of the Osaka Iron Works and the Fujinagata shipyards which could build them. In any event, it is believed that the only critical item is the production of marine engines. There are several companies in Osaka and Sakai (See MACHINERY AND MACHINE TOOLS) which build small marine engines suitable for such ships.

3621—10—Osaka—5-23-44—Final Proof

SUMMARY AND EVALUATION OF OSAKA AREA, No. 90.25

TRANSPORTATION FACILITIES: The cities of Osaka and Kobe are focal points in a great system of land/sea transportation which centers at the head of Osaka Bay. Located at the heart of the most industrialized and populated part of Japan, on a sheltered bay which gives access to both the Inland Sea and the Pacific Ocean, these cities are vital railroad corridors and rank as Japan's leading ports.

RAILROAD TRANSPORTATION: Osaka is the center of an extensive system of railways, including the Tokaido Main Line (principal Honshu Island trunk railroad), the Kansai Line (alternate route to Nagoya) and numerous local electric lines. The Osaka Railroad Station **TARGET 1206** is the city's principal freight and passenger station and serves the harbor area. The station faces on a large square which is bordered by the terminals of four city transit lines. An alternate freight/passenger terminal, the Temoji Station on the Kansai Line, is located in the southern part of the city and is connected with **TARGET 1206** by a belt line which circles the city. The Rolling Stock Manufacturing Company **TARGET 548** is one of the large manufacturers of locomotives and rolling stock. It is an old plant and is probably not converted to munitions.

In Kobe the Tokaido Main Line connects with the Sanyo Main Line (route to Shimonoseki and to Kyushu Island via the tunnel under the Shimonoseki Strait). There are several large freight and passenger stations, most of which are included in the areas of other targets. The Kawasaki Locomotive and Car Company **TARGET 11** is a major objective, producing not only locomotives and cars, but also ordnance and army vehicles. The I.G.R. Shops **TARGET 538** at the Takatori Railroad Station are also important, ranking among Japan's five leading repair and maintenance shops. The only other significant railroad objective in this area is **TARGET 1209,** the Suita Railroad Yards and Shops, principal marshalling yard for the Tokaido Line in this area, and third largest yard in Japan.

HARBOR FACILITIES AND SHIP CONCENTRATIONS: Japan's leading pre-war harbors, Osaka and Kobe have highly developed ports with extensive storage and rail/ship loading facilities. Osaka Harbor **TARGET 53,** expanded and modernized in recent years, is congested with large storehouses, most of which are now probably used for military supplies. Kobe Harbor is divided into two districts, of which District No. 1 **TARGET 22** is more significant. This part of the harbor comprises several large piers which are congested with warehouses and also includes a large railroad yard. District No. 2 **TARGET 34** is largely devoted to coastwise and Inland Sea shipping.

A new port has recently been completed at Amagasaki to serve the city's industries and especially to accommodate the coaling vessels which supply the huge steam power plants here.

Of even greater significance than the harbor facilities themselves, however, are the large ship concentrations which may be expected at these ports. It is estimated that Kobe and Osaka are focal points for ship concentrations which rank second in size only to those in the Shimonoseki Strait. This estimate is based primarily on the tonnage of essential industrial cargo which must be moved by ships into these ports, but it also tends to reflect the fact that these were Japan's leading peacetime overseas trade ports. Japan's stringent shipping position and changing military requirements have undoubtedly reduced these concentrations and given them an intermittent character. Submarine activity near the mainland and the general shipping shortage have also forced the diversion of all possible tonnage to the railways which serve these cities. However, the large number of industrial plants and steam power stations in this Area require a heavy and constant supply of coal, iron and non-ferrous ores, basic chemical materials, oil, metal products, etc., the great bulk of which is moved by ships. For example, the 3 large steam power plants at Amagasaki alone are estimated to consume approximately 400 tons of coal per hour when in full operation.

These industrial requirements are the basis for the expectation of consistently large ship concentrations in these ports. The large ship building and repair yards at Kobe and Osaka also account for a number of ships in port, awaiting complete outfitting or repairs. In addition, a much higher tonnage of shipping is believed to concentrate here intermittently for military embarkation and convoy assembly.

URBAN INDUSTRIAL AREAS: The vulnerability of selected Japanese urban industrial areas to incendiary attack has been set forth in "Japan—Incendiary Attack Data —October 1943" published by this office. Three cities in the Osaka Area (Osaka, Kobe and Amagasaki) are included among those analyzed for their vulnerability to this type of attack.

Population density, congestion and combustible construction combine to make these cities vulnerable to sweeping fires. Moreover, they are characterized by a very large number of small industrial establishments, many of which are integrated as "shadow plants" into both local and national war production. Much more numerous and more significant in Japan than in other highly industrialized nations, the great bulk of these plants present dispersed and obscure targets for air attack. They tend, however, to cluster in mixed industrial/residential sections of the cities, where they are crowded by combustible houses. It is indicated that concentrated incendiary attacks calculated to overwhelm the fire defenses would start conflagrations capable of destroying factories, storage and commercial facilities, and military objectives over wide sections of these cities. (See maps on pages M-7 and M-9.)

3621—11—Osaka—5-23-44—Final Proof

Tabulation of Airports and Seaplane Anchorages, Osaka Area

Since airports and seaplane anchorages are a special category of targets, the characteristics and importance of which are subject to considerable change, none are listed as targets. (See Map 13)

AIRPORTS

NAME	COORDINATES	NAME	COORDINATES	NAME	COORDINATES
Akashi	34° 39′N 134° 59′E	Ikomayama	34° 37′N 135° 38′E	Koriyama	34° 38′N 135° 46′E
Amagasaki	34° 42′N 135° 25′E	Itami	34° 48′N 135° 27′E	Tatesu	34° 41′N 135° 37′E
Hanshin (or Taisho)	34° 36′N 135° 35′E	Kakogawa	34° 46′N 134° 52′E		

SEAPLANE ANCHORAGES

Amagasaki	34° 41′N 135° 22′E	Kizugawa	34° 37′N 135° 28′E	Sakai	34° 34′N 135° 27′E

NOTE: Osaka Aerodrome, known as Kizugawa, has been abandoned in favor of Itami. It is believed that Hanshin or Taisho reported at 34° 36′ N–135° 35′ E is probably same as Kizugawa. The seaplane facilities at Kizugawa are still in use.

Geographical Summary of Osaka Area, No. 90.25

The Osaka Area of Honshu Island lies at the east end of the Inland Sea. The maximum E-W extent of the Area is 78 miles (between 134° 39′ E Longitude), and the maximum N-S extent is 60 miles (between 34° and 34° 52′ N Latitude). Within this Area are Awaji Island, Osaka Bay, and the land bordering the Bay on the N, E, and S.

Awaji Island extends 32 miles NNE-SSW and separates Osaka Bay from the Inland Sea. The island is largely low-lying, and the highest elevation, found in the SE section, is approximately 2000 feet.

Osaka Bay extends NE from the E side of Awaji Island, forming an ellipse, the axis of which is oriented NE-SW. The Akashi Straits, at the N tip of Awaji Island, give access to the Inland Sea. The shipping lane to the Pacific Ocean passes the SE tip of Awaji Island and continues due S, between Shikoku Island and Honshu Island.

Kobe and Osaka, two of the largest and most important urban centers in Japan, lie at the head of Osaka Bay, on the coastal plain. Kobe, on the NW side of Osaka Bay, lies 6 or 7 miles NE of the N tip of Awaji Island. Mountains rise sharply behind Kobe, confining the city to a narrow coastal strip, 10 miles long, and 2 or 3 miles wide at its broadest points. The mountain range behind Kobe parallels the coast, and trends NE-ward, beyond Kobe. Elevations behind Kobe are between 1000 and 2300 feet; the highest point in the entire W half of the Osaka Area, 3058 feet, is located 9 miles NE of the center of Kobe. W and NW of the Kobe mountains the Area slopes gradually to the plain of the Kako River, which borders the shore of the Inland Sea. Elevations in the NW part of the Area are less than 1000 feet, and numerous ponds dot the valley and coastal plains.

The cities of Mikage, Nishinomiya, Fukae, Imatsu, and Amagasaki lie along the N shore of Osaka Bay on a coastal plain which broadens eastward to the Shin Yodo River plain. The Shin Yodo River, flowing southeastward, enters Osaka Bay SE of Amagasaki. Osaka City lies S of the mouth of the Shin Yodo River, with a small portion of the city extending N of the river's lower courses.

Approximately 9 miles SW of Kyoto the plain of the Shin Yodo River is 4 miles wide. The plain then fans out to the SW, until it borders the NE and E shores of Osaka Bay as a broad lowland. Osaka is situated in the middle of this lowland. S and SSW of Osaka, on the coastal plain, are many small rivers and ponds.

A mountain range trends N-S about 13 miles east of Osaka Harbor. This range, 12 miles long, has a maximum elevation of 2106 feet. The southward trend of this range is interrupted at Kokubu, where the Yamato River passes westward to Osaka Bay. NE and SE of Kokubu is a lowland area, in which are located the cities of Nara, Koriyama, Sakurai and many others; also several small lakes, and the tributaries of the Yamato River. Eleven miles S of Kokubu, mountains rise gradually to a maximum elevation of 3648 feet, in a continuation of the N range. The mountains then trend W by S, decreasing in elevation to the peninsula on the E side of Tomogashima Straits, at the S end of Osaka Bay. The Kino River parallels the S side of these mountains, and has its mouth at Wakayama.

South of the Kino River valley the Area is mountainous, with elevations generally over 2000-3000 feet, and peaks as high as 4700 feet in the SE section.

The E border of the Area, E of Nara and Sakurai, is generally mountainous, with average elevations over 1500 feet, and peaks as high as 2700 feet.

Important railroads and highways follow the coasts of the mainland. In the eastern half of the Area lanes of transportation funnel through the Shin Yodo Valley SSW of Kyoto; through the valley NE of Nara; and through the valley east of Sakurai.

See photographs of Relief Model, Kobe-Osaka Approach Area on page M-2.

3621—12—Osaka—5-23-44—Final Proof

Map Information for Osaka Area, No. 90.25

LEGEND FOR THE USE OF JAPANESE IMPERIAL LAND SURVEY MAPS, 1:50,000

Density of Construction in Urban Areas

Dense | Moderate | Sparse

- Navy Lookout Tower
- Factory
- Bank
- Powder Magazine
- Water Wheel or Mill
- Generating Plant
- Masonry Wall
- Fences
- Bamboo Fences
- Stone Wall
- Earthen Wall
- Hedge
- Cemetery
- Ditches
- Shrine Gate
- Stone Lantern
- Monument
- Statue
- Signpost
- Stone Steps
- Crane
- Oil Well
- Mileage Marker
- Stumps
- Isolated Trees
- Chimney
- 96,1 Triangulation Point
- 365,37 Secondary Control Point
- 423,42 Bench Mark
- 32,5 Spot Elevation

All above Sea Level

- Old Battlefield
- Spring
- Tomb
- Castle Site
- Volcano
- Mineral Spring
- Material Dump
- Mine
- Boundary Marker

- Shrine
- Temple
- Grave
- Pagoda
- Church
- Japanese Government Building
- Foreign Government Building
- Military Reservation
- Naval Reservation
- Division Headquarters
- Brigade Headquarters
- Fortress and Defense Headquarters
- Battalion Headquarters and Garrison
- Regimental Headquarters
- Naval Station
- Secondary Naval Station
- Naval Camp
- Army Camp
- Shipyard
- Prefectural Seat
- Sub-prefectural, Island-office or Gun Seat
- City Office
- Town, Village or Ward Office
- School
- Hospital
- Isolation Hospital
- Gendarmerie Post
- Police Station
- Court of Appeals
- Prison
- Customs House
- Tax Office
- Forestry Office
- Mining Office
- Government Monopoly Bureau Office or Factory
- Office of Maritime Affairs
- Meteorological Station
- Post Office (with Telegraph and Telephone service)
- Post Office
- Telegraph Office
- Telephone Office

CONTOUR INTERVAL 20 METERS
HEIGHTS IN METERS

- National Highway
- Main Prefectural Roads
- More than 3 Meters Wide
- More than 2 Meters Wide
- More than 1 Meter Wide
- Less than 1 Meter Wide
- Impassable for Carts
- Tree-lined Roads: (A) Narrow (B) Wide
- Power Lines along Road: (A) Ordinary (B) High Tension
- Government Railways: (A) Two Tracks (B) Single Track (C) Station
- Feeder Railways: (D) Double (E) Single

- Boundaries: International
- Prefectural (A) Fixed (B) Approximate
- Province (Obsolete)
- Gun, shi or Sub-prefectural
- Ward, Machi or Mura (A) Fixed (B) Approx.
- Government Lands
- Property Lines (A) Fixed (B) Approximate

CONVERSION GRAPH

Meters	Feet
3,000	10,000
	9,000
2,500	8,000
	7,000
2,000	6,000
1,500	5,000
	4,000
1,000	3,000
	2,000
500	1,000
0	0

4,7 Height of Bank
2,8 Depth of Water

(A) Iron Bridge
(B) Wooden Bridge
(C) Foot Bridge
(D) Foot Ford
(E) Vehicular Ford
(F) Passenger Ferry (Single Boat)
(G) Passenger and Horse Ferry (Two Boats)
(H) Steam Ferry

- Lighthouse
- Radio Mast
- Warning Signal
- Boat Anchorage
- Ship Anchorage
- Anchorage
- Commercial Port
- Fixed Beacon
- Fixed Beacon (Lightless)
- Buoy (Lightless)

(A) Flower Garden
(B) Grove
(C) Truck Garden

(A) Orchard
(B) Tea
(C) Mulberry
(D) Cultivated marsh
(E) Irrigated rice field
(F) Dry Rice Field

(A) Wild Land
(B) Palm
(C) Bamboo
(D) Conifers
(E) Broad-leaf Trees
(F) Grass Land

(A) Cliff
(B) Rock Outcropping
(C) Scattered Rock
(D) Talus Slope
(E) Depression
(F) Ravine, Gully
(G) Crumbling Bank

GLOSSARY

VARIANTS IN PARENTHESES

-bae (-hae) rock	-goe (-koe) mountain pass	-jima (-shima, -tō) island	-mura township	-suidō channel	
-bakufu waterfall	-gun county	-kai (-umi) bay, gulf	-nada sea	-tai (-dai) plateau, plain	
-bama (-hama) beach, field	-guntō archipelago	-kaikyō strait	-no plain, field	-take (-dake) mountain	
-bana (-hana) point	-fuji mountain	-kawa (-gawa) river	-onsen hot spring, spa	-taki (-daki) waterfall	
-bara (-hara) plain, field	-hae (-bae) rock	-ken prefecture	-rettō island chain	-tani (-dani) valley, stream	
-chō (-machi) township	-hama (-bama) beach, field	-ko lake	-saki (-zaki, -misaki) cape	-tō (-shima, -jima) island	
-dai (-tai) plateau, plain	-hana (-bana) point	-kō harbor	-san (-zan, -yama) mountain, ridge	-tōge mountain pass	
-dake (-take) mountain	-hantō peninsula	-koe (-goe) mountain pass	-se reef, shoal, rapid	-uchi inlet	
-daki (-taki) waterfall	-hara (-bara) plain, field	-kojima small isle	-seto strait	-umi (-kai) bay, gulf	
-dani (-tani) valley, stream	-ike pond	-machi (-chō) township	-shi municipality, city	-ura inlet, beach	
-gan (-iwa) rock, cliff	-ishi rock, cliff	-mine mountain	-shima (-jima, -tō) island	-wan bay	
-gata bay, inlet, lake	-iso rock, skoal	-misaki (-saki, -zaki) cape	-shō reef, shoal	-yama (-san, -zan) mountain, ridge	
-gawa (-kawa) river	-iwa (-gan) rock, cliff	-mori mountain, forest	-shotō island group	-yu mineral spring, spa	
				-zaki (-saki, -misaki) cape	
				-zan (-san, -yama) mountain, ridge	

3621—13—Osaka—4-3-44—First Proof

Weather Information for Osaka Area, No. 90.25

NUMBER OF DAYS SUITABLE FOR BOMBARDMENT

The Kobe-Osaka area has a high number of days suitable for various types of aerial bombardment. This is particularly true for the winter season. Bombing weather is related to the direction of air flow over the target area. To demonstrate this relationship and to show graphically the proportionate number of days suitable for various types of bombing, roses have been constructed, and are presented in Figure 1. The total length of a bar on the rose represents the number of days during the particular season on which the general air flow over the region was from the specified direction. Each bar is divided into segments, whose length represents the number of days favorable for high-level visual bombing, low-level visual bombing (excluding high-level visual), instrument bombing (excluding high-and low-level visual), or number of days on which the target was closed to flying, as indicated by the legend.

These roses show average seasonal differences in number of days suitable for these various types of operations, and may be used in

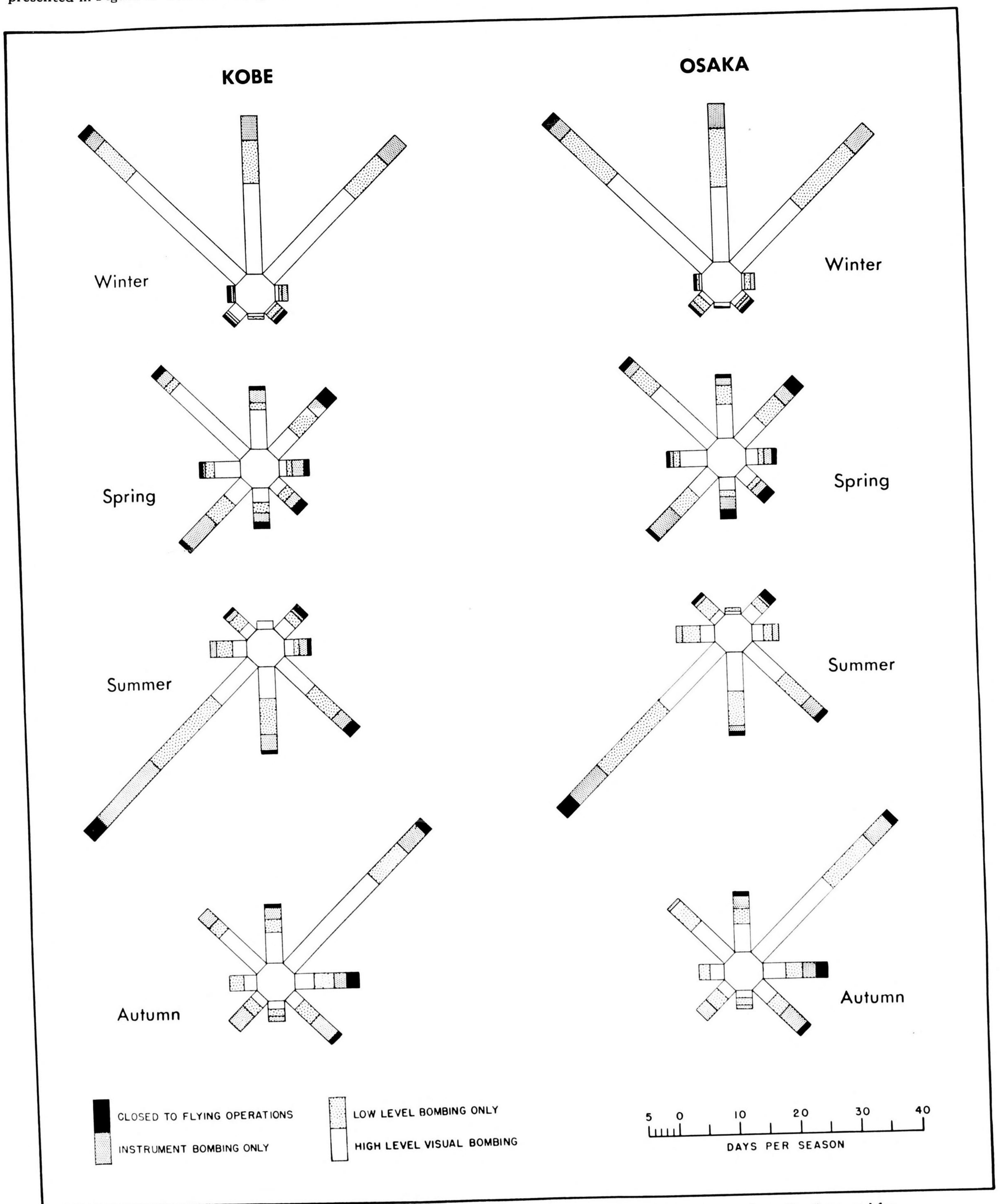


Figure 1.—Roses for Kobe and Osaka for each season, showing the frequency of air-flow from various directions, and for each direction the average number of days suitable for various types of bombing at the target.

3621—14—Osaka—5-23-44—Final Proof

Issued June 15, 1944

AIR OBJECTIVE FOLDER, JAPAN

OSAKA AREA No. 90.25

TABLE OF CONTENTS

INDEX:

PAGE

Alphabetical Index of Targets 2
Numerical Index of Targets 3
Classified Index of Targets 4

TEXT-PHOTO SECTION:

Summary and Evaluation of Osaka Area 7
Tabulation of Airports and Seaplane Anchorages Osaka Area 12
Geographical Summary of Osaka Area 12
Map information 13
Weather Information Osaka Area 14
Target Chart Information Osaka Area 18

Osaka City

Index of Targets Osaka City 19
Summary and Evaluation of Osaka City 20
Incendiary Attack Data for Osaka City 20
Target Descriptions and PHOTOS, Osaka City 21

Kobe City

Index of Targets Kobe City 42
Summary and Evaluation Kobe City 43
Incendiary Attack Data Kobe City 43
Target Descriptions and PHOTOS, Kobe City 45

Amagasaki City

Index of Targets Amagasaki City 51
Summary and Evaluation of Amagasaki City 52
Incendiary Attack Data for Amagasaki City 52
Target Descriptions and PHOTOS, Amagasaki City 53

Outlying Targets

Index of Outlying Targets 58
Summary and Evaluation of Outlying Targets 59
Takarazuke-Itami District 59
Akashi-Takasago Coastal Strip 59
Kobe-Amagasaki Coastal Strip 59
Target Descriptions and PHOTOS, Outlying Targets 60

MAP SECTION:

M — *refers to pages in map section*

Index Map of Objective Areas in Japan ..... COVER
Area Map of Osaka, No. 90.25, Locating ALL targets ..... FOLD-UP
Japan—Generalized Topography M-1
Relief Model Kobe-Osaka Approach Area (photos) M-2
Airport Map of Osaka 90.25 ..... M-3
Electric Power Map of Osaka-Kobe District M-4
Sakai and Vicinity M-5
Electric Power—Central Honshu and Tokyo Networks M-5
Osaka M-6
Osaka Incendiary Zone Map M-7
Kobe M-8
Kobe Incendiary Zone Map M-9
Kobe—Amagasaki Coastal Strip M-9
Akashi and Vicinity M-10
Amagasaki and Vicinity M-10
Takarazuka-Itami District M-11
Suita and Vicinity M-12
Hirakata and Vicinity M-13
Relief Map of Southern Japan ..... MAP POCKET

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Alphabetical Index of Targets in Osaka Area, No. 90.25

Target Name	Target Number	Text Page
Amagasaki Steam Power Plant	536	55
Amagasaki Steel Works	1769	54
Amagasaki Transformer Station	1629	63
Amatsuji Steel Ball Mfg. Co.	661	39
Asahi Glass Co.	1760	54
Asahi Precision Work Co.	1716	64
Asano Portland Cement Co.	1725	27
Daido Steel Mfg. Co.	1766	54
Dai Nichi Electric Wire Co.	1743	57
Dai Nippon Celluloid Co.	383	39
Fujinagata Shipbuilding Co.	273A	24
Fujinagata Shipbuilding Co.	273B	24
Fukuda Light Airplane Co.	793	40, 57
Fukuzaki Steam Power Plant	324	39
Furukawa Electrical Co.	1739	57
Furukawa Electrical Co.	1740	40
Hatsudoki Engine Works	1191	40
Hirakata Branch, Osaka Army Arsenal	1723	63
I.G.R. Shops	538	48
Japan Dyestuff Mfg. (Drugs Plant)	1734	35
Japan Dyestuff Mfg. (Dye Plant)	1733	32
Japan Iron Works	1765	41
Kanegafuchi Soda Industry	785	50
Kansai Kyodo Steam Power Plant No. 1	540A	56
Kansai Kyodo Steam Power Plant No. 2	540B	56
Kasugade No. 1 Steam Power Plant	322	34
Kasugade No. 2 Steam Power Plant	323	34
Kawanishi Aircraft Co.	18	60
Kawanishi Aircraft Co.	1702	63
Kawanishi Machine Shop	1745	50
Kawasaki Aircraft Co.	1547	65
Kawasaki Aircraft Co.	1724	62
Kawasaki Heavy Industry (Kobe)	7	45
Kawasaki Heavy Industry (Kobe)	171	46
Kawasaki Heavy Industry (Kobe)	1762	50
Kawasaki Heavy Industry (Kobe)	1775	50
Kawasaki Locomotive and Car Co.	11	49
Kizu Transformer Station	1632	63
Kizugawa Steam Power Plant	325	23
Kobe Harbor District No. 1	22	47
Kobe Harbor District No. 2	34	47
Kobe Steel Works	5	45
Kobe Steel Works	6	45
Kobe Steel Works	1768	45
Kubota Iron & Machinery Works (Osaka)	688	25
Kubota Iron & Machinery Works (Osaka)	701	23
Kubota Iron & Machinery Works (Amagasaki)	1197	54
Kubota Iron & Machinery Works (Sakai)	1777	64
Kubota Iron & Machinery Works (Osaka)	1778	41
Kujo Steam Power Plant	1616	35
Kurimoto Iron Works	685	28
Kurimoto Iron Works	1763	41
Kwoyo Precision Works Co. (Kokubu)	1714	64
Kwoyo Precision Works Co. (Osaka)	1715	41
Kwoyo Precision Works Co. (Osaka)	1718	31
Kwoyo Precision Works Co. (Osaka)	1720	31
Maruzen Oil Refinery	1764	64
Maruzen Oil Refinery & Toyo Oil Refinery	257	25
Matsushita Dry Battery Co.	1750	63
Matsushita Dry Battery Co.	1751	41
Matsushita Wireless Co.	1744	63
Minatogawa Steam Power Plant	4	49
Mitsubishi Copper Refinery	697	39
Mitsubishi Heavy Industries	169	46
Mitsubishi Oil Storage	258A & B	25
Mizaguchi Gear Works	1634	40, 57
Mizuno Sporting Goods Co.	1706	39

Target Name	Target Number	Text Page
Nakayama Steel Mfg. Co. (Osaka)	713	24
Nakayama Steel Mfg. Co. (Osaka)	1755	41
Nakayama Steel Mfg. Co. (Amagasaki)	1771	54
Nippon Airbrake Co.	1719	50
Nippon Aluminum Works	1708	41
Nippon Dunlop Rubber Co.	14	45
Nippon Iron Sand Industry Co.	1770	65
Nippon Oil Refinery and Tank Farm	1203	55
Nitta Leather Belt Mfg. Co.	1761	28
Oki Electric Co.	1746	41
Oki Electric Co.	1747	50
Oriental Cable Co.	1756	64
Oriental Can Mfg. Co.	1785	25
Oriental Can Mfg. Co.	1786	41
Oriental Can Mfg. Co.	1787	35
Osaka Arsenal	382	37
Osaka Ceramic Industry Cement Co.	1726	24
Osaka Chain and Machinery Works	1773	63
Osaka Electric Machinery Co.	1752	41
Osaka Gas Co. Coke Oven Plant	1712	35
Osaka Harbor	53	29
Osaka Iron Works Unit No. 1	272	30
Osaka Iron Works Unit No. 2	699	25
Osaka Machinery Co. (Osaka)	388	36
Osaka Machinery Co. (Itami)	1780	63
Osaka Machinery Co. (Osaka)	1781	41
Osaka Metal Industry Co.	686	39
Osaka Metal Industry Co.	1782	64
Osaka Railroad Station	1206	36
Osaka Shipbuilding Works	1711	29
Osaka Steel Mfg. Co.	268	39
Osaka Transformer Station	1630	63
Osaka Wakayama Iron Works (Osaka)	687	39
Osaka Wakayama Iron Works (Osaka)	1783	41
Osaka Wakayama Iron Works (Tsuda)	1784	64
Rasa Industry Co.	1732	41
Rising Sun Petroleum Oil Storage	17	48
Rising Sun Petroleum Oil Storage	260	28
Rolling Stock Mfg. Co.	548	31
Sankyo Co.	1741	41
Sannomiya Railroad Station	157	50
Senkari Reservoir Dam	153	61
Showa Electrode Co.	1748	55
Standard Vacuum Oil Storage and Nippon Oil Storage	261	32
Strong Engineering Works Co.	1704	63
Strong Engineering Works Co.	1705	33
Suita RR Yards and Shops	1209	61
Sumitomo Aluminium Co.	1709	64
Sumitomo Electric Industries Co.	262	33
Sumitomo Metal Industry	264	31
Sumitomo Metal Industry	1195	53
Sumitomo Metal Industry and Sumitomo Aluminium Co.	263A	30
Sumitomo Metal Industry and Sumitomo Aluminium Co.	263B	30
Tagi Fertilizer Co.	1713	65
Takada Aluminium Mfg. Co.	1710	64
Takeda Drug Co.	1628	33
Tanaka Piston Ring Co.	1721	31
Tokyo Rolling Works	1767	54
Toyo Bearing Mfg. Co.	1198	63
Toyo Metal and Wood Co.	1707	63
Toyowa Heavy Industry Co.	1703	25
Yamato Steel Works	1774	27
Yao Transformer Station	1631	64
Yuasa Storage Battery Mfg. Co.	1717	63

3621—2—Osaka—5-23-44—Final Proof

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WEATHER INFORMATION FOR OSAKA AREA, No. 90.25—Concluded

Table 1.—Average Number of Days with Weather Suitable for Various Types of Bombing#—Osaka and Kobe

Type of Operation	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Winter	Spring	Summer	Fall
Osaka																
High-level visual bombing	17	13	15	14	13	8	11	14	10	15	15	16	46	42	33	40
Low-level visual bombing*	27	24	23	20	22	21	22	25	21	23	25	25	76	65	68	69
Instrument bombing**	30	27	27	25	28	27	26	30	27	29	28	30	87	80	83	84
Closed to operations	1	1	4	5	3	3	5	1	3	2	2	1	3	12	9	7
Kobe																
High-level visual bombing	20	15	14	14	13	8	9	13	13	10	16	18	53	41	30	49
Low-level visual bombing*	26	24	22	20	22	20	19	23	20	22	23	25	75	64	62	65
Instrument bombing**	30	27	28	25	27	26	27	29	26	29	28	30	87	80	82	83
Closed to operations	1	1	3	5	4	4	4	2	4	2	2	1	3	12	10	8

*Includes days suitable for high-level visual bombing.
**Includes days suitable for high- and low-level visual bombing.
#Suitable for: high-level visual—0.3 or less cloud cover over target, no obstructions to visibility.
low-level visual—0.4 or more cloud cover, no low clouds, no obstructions to visibility.
instrument—not closed to flying.

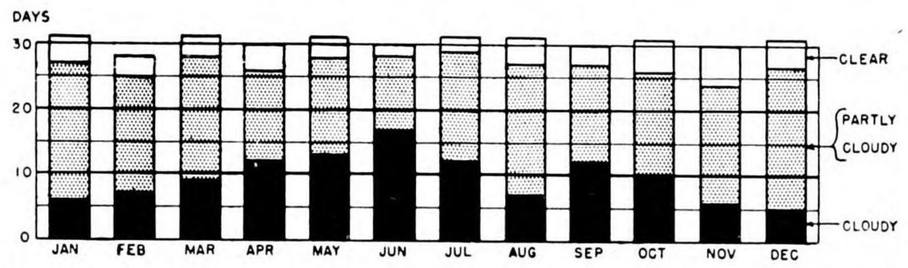


Figure 2.—Average number of clear (less than 0.2 cloud cover), partly cloudy (0.2-0.8 cloud cover), and cloudy (over 0.8 cloud cover) days at Osaka for each month.

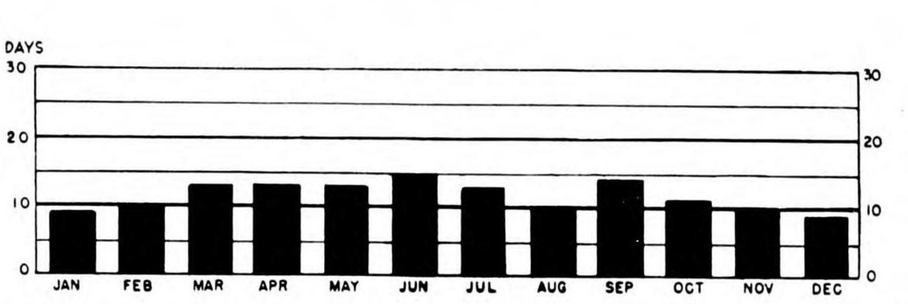


Figure 3.—Average number of days during each month with precipitation of 0.004 inch or more at Osaka.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PREVAILING DIRECTION	→	↓	↙	↙	↙	↙	→	↙	↙	↙	↙	→
AV VELOCITY M.P.H.	7	7	7	7	6	6	6	6	6	6	6	7

Figure 4.—Prevailing direction of surface winds and average wind speed in miles per hour by months at Osaka.

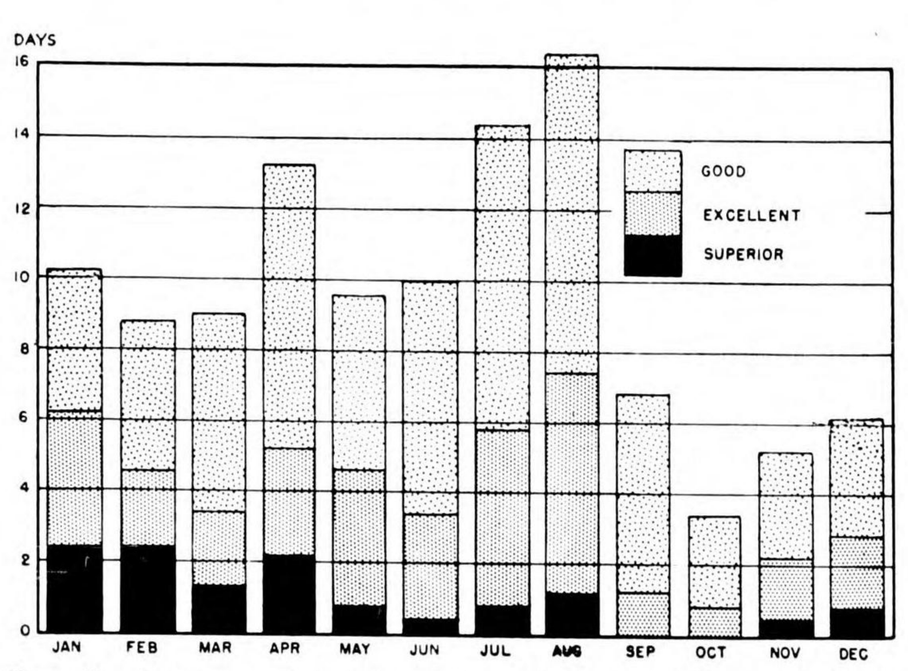


Figure 5.—Average number of days per month when conditions at Osaka are rated good, excellent, or superior for the spread of fire.

the planning of operations, and, also, by weather officers in forecasting probable bombing conditions over the target when the general direction of air flow over the area is known. It should be noted that the number of favorable bombing days refers only to conditions over the target, and should not be assumed to indicate the number of days when conditions from bases to the target and return are favorable.

The outstanding facts brought out by these roses are, 1) that air flow from northerly directions is most common in winter and provides the greatest number of bombing days during this season; (2) air flow from southwesterly directions is most frequent in summer and gives the greatest number of good bombing days; 3) best bombing weather in autumn occurs with the prevailing northeasterly wind; 4) the highest frequency of closed days occurs in spring.

WINTER: During winter, the prevailing direction of air flow is from northwest through northeast, and movement of the air down the mountain slopes to the north of Kobe and Osaka causes clearing of the air over the target area, while the west coast is usually blanketed in clouds. The Kobe-Osaka area is not, however, as well sheltered in winter as the Tokio region, which lies in the lee of mountains 6000 feet high.

The most favorable months for bombing Kobe and Osaka and their suburbs are those from November through February. August, also, is a favorable month. During December and January, there are, on the average about 17 days when high-level visual bombing is possible (see table 1).

The months of November through February are most favorable for bombing because they have the least number of cloudy and rainy days. During these months, for example, Osaka averages only 6 days per month with overcast sky, and 10 days with precipitation (figures 2 and 3).

Precipitation is very light in this area in winter, and snow occurs on the average only 5 to 8 days at Kobe and Osaka during January and February. The snowfall is generally in the form of snow showers which have carried over the mountains from the west coast of Japan. They are a result of convection and occur most frequently in the late afternoon. In a period of 30 years, the maximum duration of snow cover has been 3 days and occurred in early February.

SUMMER: April through July and the month of September are least favorable for bombing this area. During these months, the prevailing direction of air flow is from the southwest, bringing warm, moist air into the region. There are many days during these months on which the sky is overcast and when rain occurs. June is a particularly unfavorable month for aerial activity, since rain falls on about 15 days, and 17 to 18 days on the average have overcast skies. Usually, only 8 days in June have less than 0.3 cloud cover and, hence, are suitable for high-level visual bombing, and fewer days would be favorable if conditions in the afternoon hours only were considered.

The average duration of a rain spell in summer in this area is 3 days; however, in July and September, 11 percent of the rain spells are of 7 or more days duration. In a period of 30 years, at Osaka, there has occurred one rainy spell during which rain fell every day between June 15 and July 14. It should not be inferred, however, that bombing activity would be at a standstill throughout such a period, as most of the rain falls in afternoon showers. On the other hand, unusually favorable conditions for bombing may occur even in summer. There is on record for Osaka one period of 43 days, from July 18 to August 29, when no rain fell.

The cloudy skies, light winds, and high relative humidity of the summer season (see tables 2 and 3 for Kobe and Osaka) are particularly favorable for the use of hygroscopic smoke screens, and the enemy may be expected to take advantage of this fact.

3621—15—Osaka—5-23-44—Final Proof

WEATHER INFORMATION FOR OSAKA AREA, No. 90.25—Continued

INCENDIARY BOMBING

The Kobe-Osaka area is rated as one of the best in Japan for effective incendiary bombing. This rating was made on the basis of the number of occasions per month when wind speed and dryness of the surfaces are favorable for the rapid spread of fire. Figure 5 shows by means of bar graphs the average number of days each month when conditions at Osaka are rated good, excellent or superior for the spread of fire. Optimum conditions for effective incendiary bombing are a period of 5 or more days without rain, no snow cover, the sky mostly clear, and the wind speed over 19 m.p.h. Periods with such conditions may occur at any season but are most likely during winter.

DIURNAL VARIATIONS IN BOMBING WEATHER

It is important to know the hour-to-hour differences in such factors as cloudiness, wind speed, and wind direction, in order to exploit these differences to advantage in bombing.

The most outstanding diurnal variation occurs in the direction of the surface winds in summer. Although the general direction of air flow in the surface layers is from southerly directions during summer, the winds are very light, and land and sea breezes are well developed. A sea breeze from the southwest sets in at Osaka at about 1100, and lasts until about 1800. The wind then shifts through the northwest to the northeast. This northeast wind, or land breeze, becomes well developed at about 2100. It is a downslope wind which blows counter to the prevailing air flow direction and, therefore, is light compared with the sea breeze, which augments the prevailing southwesterly air flow.

The sea breeze reaches speeds of 10 to 15 m.p.h. between 1400 and 1500, while the maximum speed of the land breeze is about 8 m.p.h. at 0700. The layer of air involved in the sea-breeze circulation is about 2000 feet in thickness, but the land breeze probably does not often affect the circulation above 1000 feet elevation. The enemy may be expected to take advantage of these land and sea breezes in the use of smoke screens. Their use in spreading fires started by incendiaries should be considered.

The diurnal variation in wind speed is slightly more pronounced in summer than in winter, as is shown by the graphs of mean wind speed by hours for Kobe (figure 6). The maximum mean velocity occurs in the afternoon between 1300 and 1700 in June, and between 1100 and 1600 in December.

Diurnal differences in cloudiness are particularly well marked in the Kobe-Osaka region. In general, minimum cloudiness occurs at night, during the time of the land breeze, while maximum cloudiness occurs in the afternoon during the time when the sea breeze attains its maximum strength.

The hours when bombing missions are most likely to find the minimum amount of cloud over the targets are those from 2100 to 2400 (see figure 7, showing diurnal variation of mean cloud amount during June and December at Kobe). For visual bombing during the winter months, it would be advisable to arrive over the target before 1000 or after 1600. In summer, the hours between 0300 and 1100, and, also 1700 to 1900, have the maximum cloudiness.

WINDS ALOFT AND ICING CONDITIONS

Morning and afternoon observations of upper air winds at Osaka indicate generally low wind speeds (less than 20 m.p.h.) at all levels below 10,000 feet. The highest velocities occur in autumn and winter with westerly winds.

In winter, above about 2000 feet, the winds are usually northwesterly, shifting to westerly at about 7000 feet. These prevailing westerly winds probably extend to at least 30,000 feet. In summer, the upper air winds, above the level of the land and sea breeze circulation, are variable and light up to about 7000 feet. At this level, the prevailing westerlies are observed.

In spring, below about 7000 feet, there is no pronounced prevailing direction. The frequent passages of fronts at this season are associated with air flow from various directions. At 7000 feet, however, the westerlies set in. The upper air circulation in autumn resembles that of summer. Light and variable winds are usually found up to 7000 feet, at which level the westerlies begin.

Icing is primarily a hazard in flying a route, and will rarely be encountered over a target on days suitable for bombing. Moderate icing might be encountered in cumulus clouds of afternoon, in both summer and winter. In winter, the freezing level is about 4000 feet, and in summer about 10,000 feet. The worst icing conditions are met with during spring and autumn in the vicinity of fronts.

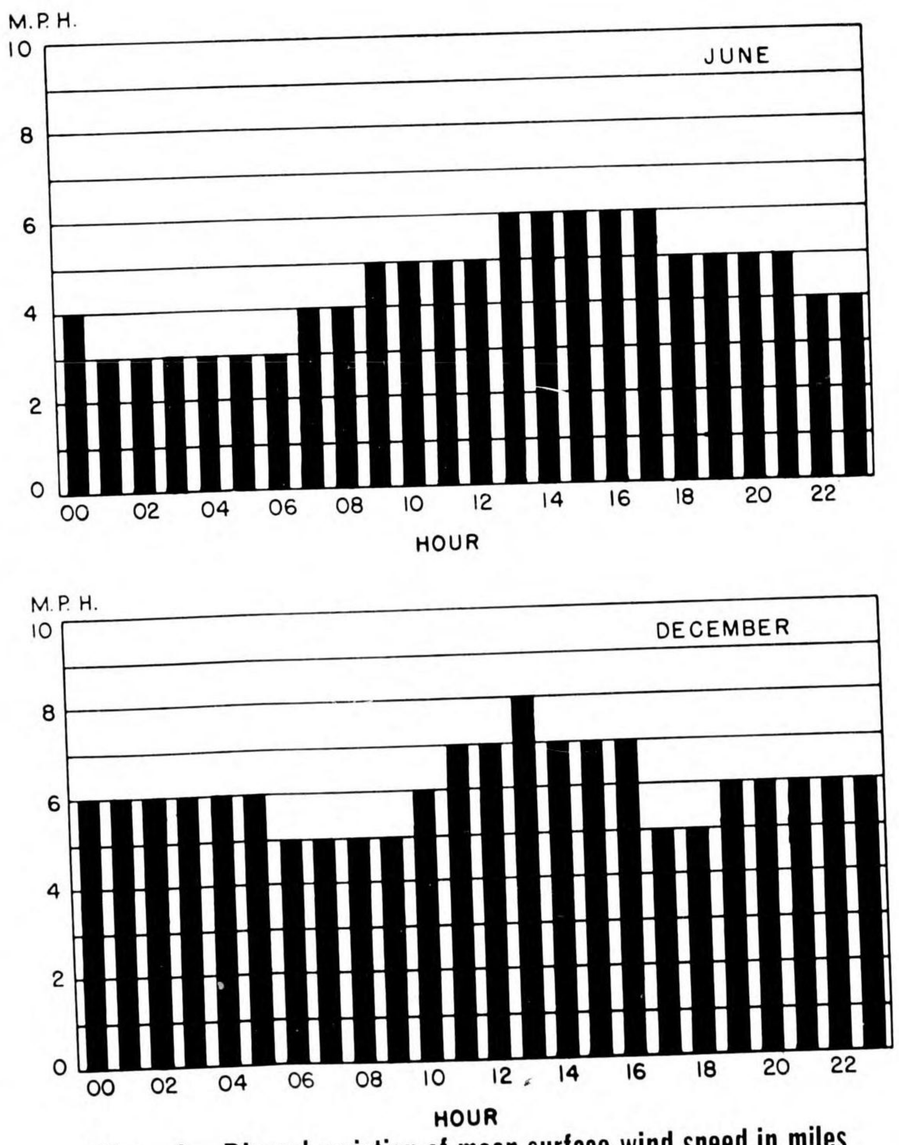


Figure 6.—Diurnal variation of mean surface wind speed in miles per hour for June and December at Kobe.

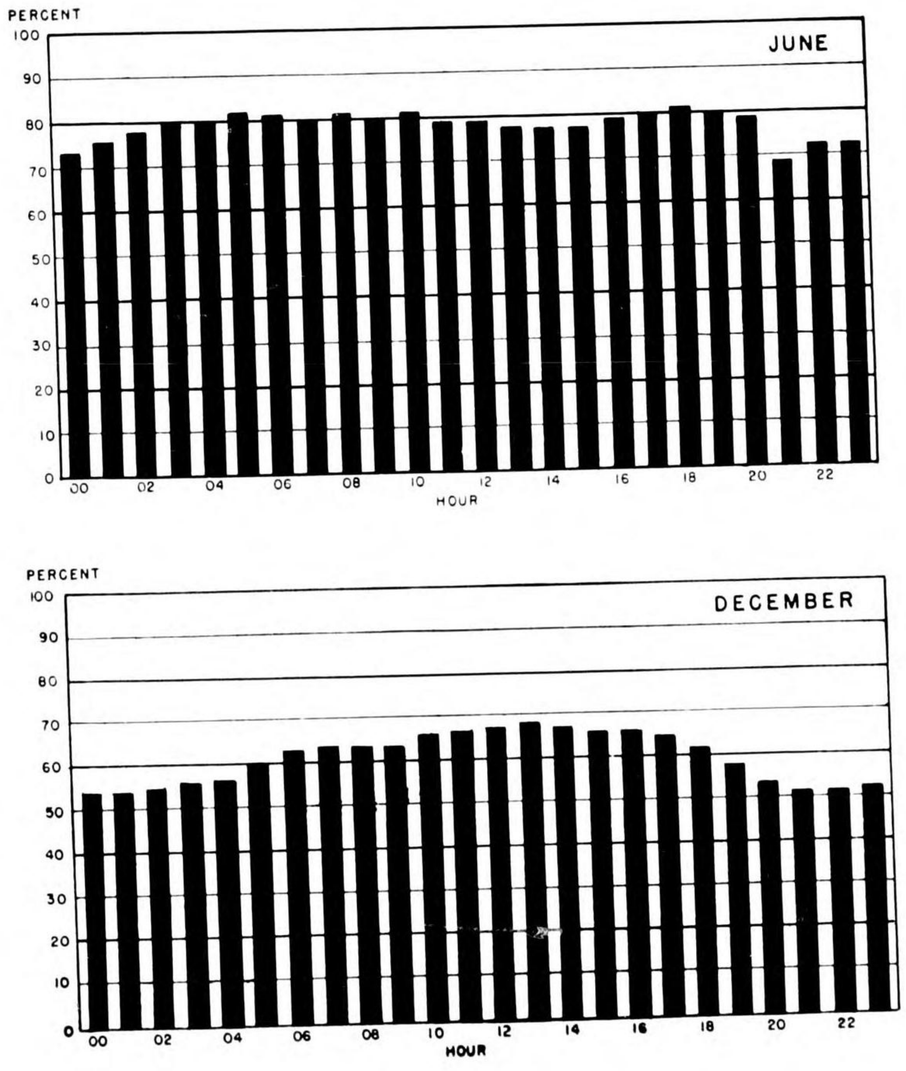


Figure 7.—Diurnal variation of mean cloud cover, in percentage, for June and December at Kobe.

3621—16—Osaka—5-23-44—Final Proof

WEATHER INFORMATION FOR OSAKA AREA, No. 90.25—Continued

Table 2.—Summary of Climatic Data for Kobe—34°41′ N., 135°11′ E. Elev. 191 ft. (30-Year Record)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Cloudiness													
Mean % of sky covered	54	58	61	64	66	77	71	60	69	59	51	48	62
All hours	58	52	62	64	64	83	77	68	77	64	49	43	63
0600 l.c.t.	73	79	75	64	65	79	69	60	75	68	60	59	69
1400 l.c.t.													
Number of days	3	2	3	3	4	1	1	3	2	5	6	5	38
clear (<0.2 cloud)	6	7	10	12	14	18	14	10	14	11	7	5	128
cloudy (>0.8 cloud)													
Precipitation													
Mean amount (in.)	1.9	2.1	3.6	5.0	4.9	8.2	6.0	4.6	7.7	4.8	2.5	1.8	53.1
Number of days with 0.004 in.	10	11	14	13	12	15	12	10	15	11	10	10	143
Temperature													
Mean maximum (° F.)	49	48	54	65	72	78	85	89	82	71	61	53	67
Mean minimum (° F.)	34	32	38	48	55	64	71	73	67	57	46	37	52
Relative Humidity													
Mean (%) 0600	79	74	77	78	78	86	85	83	85	80	77	74	80
1400	62	56	58	56	58	68	64	61	67	63	58	55	60
Wind													
Prevailing direction	N&W	N&W	N	N	N	W	SW&W	E	N	N	N	W	N
Mean velocity (m.p.h.)	6	6	6	6	5	5	5	6	6	5	6	6	6
Number of Days													
Thunderstorms	*	*	*	1	*	*	1	2	2	*	*	*	8
Snowfall	7	8	5	*	0	0	0	0	0	0	*	3	23

*Less than 0.5 day.

Table 3.—Summary of Climatic Data for Osaka—34°39′ N., 135°29′ E. Elev. 10 ft. (30-Year Record)

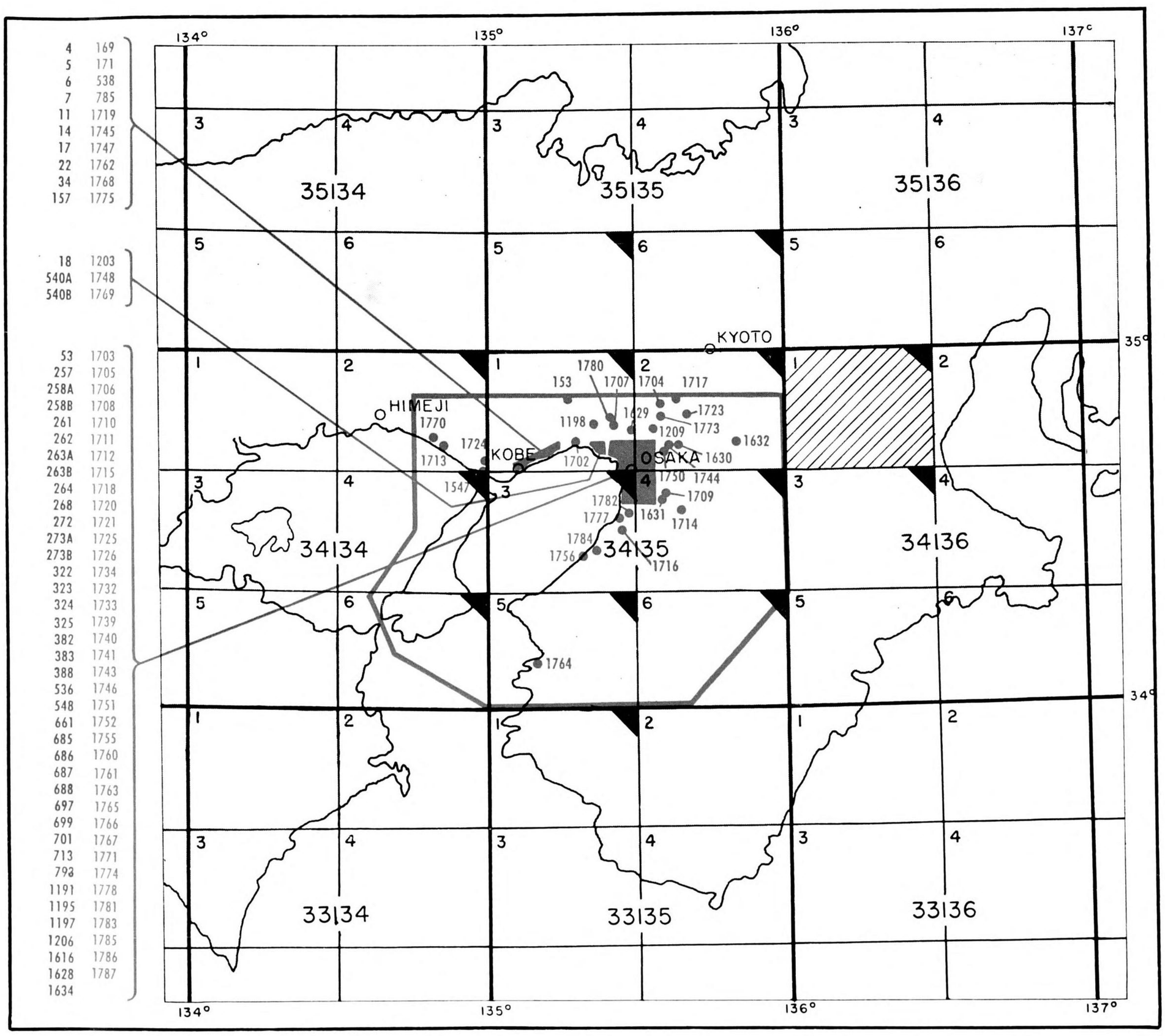
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Cloudiness													
Mean % of sky covered	54	58	60	62	64	74	65	52	65	58	50	48	59
All hours	48	61	58	64	64	75	69	55	69	57	54	53	61
0600 l.c.t.	66	71	62	65	66	71	60	55	72	62	62	66	65
1400 l.c.t.													
Number of days	4	3	3	4	4	2	2	4	3	5	6	4	44
clear (<0.2 cloud)	6	7	9	12	13	17	12	7	12	10	6	5	116
cloudy (>0.8 cloud)													
Precipitation													
Mean amount (in.)	2.0	2.3	4.0	5.2	5.2	8.2	6.4	4.2	7.5	5.0	2.6	1.9	54.5
Number of days with 0.004 in.	9	10	13	13	13	15	13	10	14	11	10	9	140
Temperature													
Mean maximum (° F.)	48	48	54	65	73	79	87	90	82	72	62	52	68
Mean minimum (° F.)	33	32	37	47	55	64	73	74	67	55	44	36	51
Relative Humidity													
Mean (%) 0600	80	79	81	83	85	86	89	87	88	87	85	82	84
1400	57	58	56	59	62	64	67	61	61	58	58	60	60
Wind													
Prevailing direction	Winter (December-February)			Spring (March-May)			Summer (June-August)			Autumn (Sept.-Nov.)			
a.m.		NE			NE			NE			NE		
p.m.		SW			SW			SW			SW		
Mean velocity (m.p.h.)	7	7	7	7	6	6	6	6	6	6	6	7	6.5
Number of Days													
Thunderstorms	*	*	*	1	1	1	2	3	3	*	*	*	12
Snowfall	5	6	4	*	0	0	0	0	0	0	0	2	17

*Less than 0.5 day.

3621—17—Osaka—5-23-44—Final Proof

Target Chart Information for Osaka Area, No. 90.25

TARGET AREA BASE MAPS



● 1761 —TARGET NUMBERS IN RED

6 —BASE MAP FILM POSITIVE PUBLISHED AND DISTRIBUTED

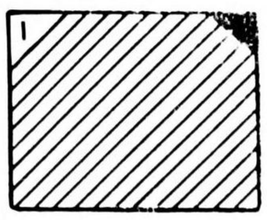
5 —BASE MAP FILM POSITIVE AVAILABLE ON SPECIFIC REQUEST

EXPLANATION: In lieu of AAF Target Charts which heretofore have been distributed in conjunction with Air Objective Folders, Target Area Base Maps are being distributed in limited quantities to Theater Air Force Headquarters according to the coverage indicated by this index map. These maps are in the form of color-separation film positives which can be amplified with field intelligence and used as a base for target charts. In the event that the theater is unable to prepare specific charts, these will be prepared by Headquarters, AAF upon request.

PURPOSE AND USE: These film positives provide Theater Air Force Headquarters with the best map compilation of target areas that is available at Headquarters, AAF. Targets are identified by number on the film positives and are coordinated with the targets listed in Air Objective Folders. The maps are on a scale of 1:75,000 and are suitable for use with a bombardier grid in the bombing of obscured targets. Adjacent maps of the area may be joined to form a film positive from which a four-color target chart with a 12-mile radius may be prepared on any target or targets in this Air Objective Folders. These base maps also provide ground control for the laying of aerial mosaics.

INDEX: The objective area covered by this Air Objective Folder is indexed for base map coverage in "blocks" bounded by one full degree of latitude and longitude. These blocks are further subdivided into six (6) individual sheets numbered from 1 to 6.

Thus a block is identified by the *reading of the coordinates at its SW corner*, and the sheet by its *individual sheet number*.



FOR EXAMPLE: Sheet 1 in the Index Map on this page is identified by the block, (the reading at its SW corner is Lat. 34°N., Long. 136°E.) and then the sheet (Sheet 1).

The correct sheet number is therefore: "34136-1".

3621—18—Osaka—5-23-44—Final Proof

OSAKA CITY

Air Objective Folder

OSAKA AREA, No. 90.25

INDEX OF TARGETS BY NUMBER, CLASSIFICATION AND NAME

TARGET NUMBER	NAME	PAGE
	AIRCRAFT	
263A & B	Sumitomo Metal Industry and Sumitomo Aluminium Company	30
686	Osaka Metal Industry Company	39
793	Fukuda Light Airplane Company	40, 57
1705	Strong Engineering Works Company	33
1706	Mizuno Sporting Good Company	39
	ARSENALS AND MILITARY STORES	
382	Osaka Arsenal	37
	CHEMICALS	
383	Dai Nippon Celluloid Company	39
1628	Takeda Drug Company	33
1732	Rasa Industry Company	41
1733	Japan Dyestuff Manufacturing (Dye Plant)	32
1734	Japan Dyestuff Manufacturing (Drugs Plant)	35
1741	Sankyo Company	41
1760	Asahi Glass Company	54
	ELECTRIC EQUIPMENT	
262	Sumitomo Electric Industries Company	33
1739	Furukawa Electrical Company	57
1740	Furukawa Electrical Company	40
1743	Dai Nichi Electric Wire Company	57
1746	Oki Electric Company	41
1751	Matsushita Dry Battery Company	41
1752	Osaka Electric Machinery Company	41
1755	Nakayama Steel Manufacturing Company	41
	ELECTRIC POWER	
322	Kasugade No. 1 Steam Power Plant	34
323	Kasugade No. 2 Steam Power Plant	34
324	Fukuzaki Steam Power Plant	39
325	Kizugawa Steam Power Plant	23
536	Amagasaki Steam Power Plant	55
1616	Kujo Steam Power Plant	35
	HARBOR FACILITIES	
53	Osaka Harbor	29
	IRON & STEEL	
264	Sumitomo Metal Industry	31
268	Osaka Steel Manufacturing Company	39
685	Kurimoto Iron Works	28
713	Nakayama Steel Manufacturing Company	24
1195	Sumitomo Metal Industry	53
1763	Kurimoto Iron Works	41
1765	Japan Iron Works	41
1766	Daido Steel Manufacturing Company	54
1767	Tokyo Rolling Works	54
1771	Nakayama Steel Manufacturing Company	54
1774	Yamato Steel Works	27

TARGET NUMBER	NAME	PAGE
	MACHINERY & MACHINE TOOLS	
388	Osaka Machinery Company	36
661	Amatsuji Steel Ball Manufacturing Company	39
687	Osaka Wakayama Iron Works	39
688	Kubota Iron and Machinery Works	25
701	Kubota Iron and Machinery Works	23
1191	Hatsudoki Engine Works	40
1197	Kubota Iron and Machinery Works	54
1634	Mizaguchi Gear Works	40, 57
1703	Toyowa Heavy Industry Company	25
1715	Kwoyo Precision Works Company	41
1718	Kwoyo Precision Works Company	31
1720	Kwoyo Precision Works Company	31
1721	Tanaka Piston Ring Company	31
1778	Kubota Iron and Machinery Works	41
1781	Osaka Machinery Company	41
1783	Osaka Wakayama Iron Works	41
	MISCELLANEOUS	
1712	Osaka Gas Company Coke Oven Plant	35
1725	Asano Portland Cement Company	27
1761	Nitta Leather Belt Manufacturing Company	28
1785	Oriental Can Manufacturing Company	25
1786	Oriental Can Manufacturing Company	41
1787	Oriental Can Manufacturing Company	35
	NON-FERROUS	
263A & B	Sumitomo Metal Industry Company, and Sumitomo Aluminium Company	30
697	Mitsubishi Copper Refinery	39
1726	Osaka Ceramic Industry Cement Company	24
	PETROLEUM	
257	Maruzen Oil Refinery & Toyo Oil Refinery	25
258A & B	Mitsubishi Oil Storage	25
260	Rising Sun Petroleum Oil Storage	28
261	Standard Vacuum Oil Storage and Nippon Oil Storage	32
	SHIPYARDS	
272	Osaka Iron Works Unit No. 1	30
273A	Fujinagata Shipbuilding Company	24
273B	Fujinagata Shipbuilding Company	24
699	Osaka Iron Works Unit No. 2	25
1711	Osaka Shipbuilding Works	29
	TRANSPORTATION	
548	Rolling Stock Manufacturing Company	31
1206	Osaka Railroad Station	36

OSAKA 90.25 INDEX OF TARGETS (OSAKA CITY)

3621—19—Osaka—5-23-44—Final Proof

OSAKA 90.25 INDEX OF TARGETS (OSAKA CITY)

Summary and Evaluation of Osaka City

Osaka is built on level delta land formed by the Shin Yodo River and its numerous tributaries. The city is also cut up by many canals, especially in the central section where they form regular rectangular patterns. Conspicuous landmarks, in addition to the rivers and canals, are the pincer-like harbor breakwaters, the public buildings on Nakano Island, Osaka Castle, and the western-type buildings in the central business district. The city is low-lying and it is marked by very many short chimneys (particularly numerous in the northern industrial part of the city), indicative of the thousands of small factories which are located here.

Importance: Osaka's industrial importance, and the major objectives in the city, are discussed in the Summary and Evaluation of Osaka Area, pp. 7 to 11.

Osaka is a highly industrialized city, principally important for aluminum rolling and fabrication (aircraft parts), anti-friction bearings, machinery and machine tools, ship building and repair, chemicals and pharmaceuticals, electrical equipment, copper refining, munitions and ordnance. In addition to the large plants, discussed as major targets in the Summary and Evaluation, there are hundreds of small, but significant, plants in the city (the great bulk of which are too small individually to be considered as targets) which are integrated into essential industrial production both within and beyond the Osaka Area.

The city is also a major land/sea transportation hub, important both as a terminal for rail/ship transshipment and as a through railroad corridor.

Incendiary Attack Data: With a population in 1940 of 3,252,340, Osaka is Japan's second largest city. It ranks among Japan's three most densely-populated cities, having an overall population density of about 45,000 persons per square mile. As is the case throughout Japan, the predominant construction materials (perhaps 90%) are wood and plaster, the remainder being brick, sheet metal, stone or concrete.

There is a distinct pattern of land use. The predominantly residential districts are located in three parts of the city, the largest of which occupies the entire southeastern section. A second residential district stretches along the north bank of the Shin Yodo River. A third, and more open, residential district occupies the northeastern part of the city. The central commercial district, marked by clusters of western-type buildings, occupies the center of the city west of Osaka Castle — a section intersected by many narrow canals. The principal industrial plants are located in a semi-circular area starting at the mouth of the Kizu River to the south, extending north along the waterfront to the Shin Yodo River and then bending eastward along the south bank of this river.

This regular pattern is broken by the frequent interspersion of workers' homes among industrial and commercial buildings, particularly along the waterfront, in the central commercial section and NW of Osaka Castle. Secondary industrial concentrations are found among the predominantly residential districts in the northern and south-central parts of the city. Thousands of small factories and household industries (reported to number over 15,000 in 1938) are distributed throughout the city, but they are especially numerous in that part of the city lying between the Aji and Shin Yodo rivers. While wartime conversion has undoubtedly eliminated many of these small plants, they are probably still much more numerous and more significant in Japanese cities than in those of any other industrial nation. To a greater extent than in most cities, the areas of greatest congestion and susceptibility to conflagration border or coincide with important industrial and storage concentrations.

As indicated on the Incendiary Zone Map of Osaka (M-7) two general classes of fire areas are indicated for incendiary attack.

Zone I—This is the most vulnerable part of the city, where population density is estimated to average 81,000 persons per square mile. This zone covers the central commercial district and mixed residential/industrial districts to the NE and SW. In addition to the significant numbered targets in this zone, there are scattered along the SW and NE districts several hundred small factories (textile mills, machinery, chemical, etc.) and extensive warehouse areas.

Zone II—Less congested than Zone I, this zone is nevertheless more vulnerable than the average European city and is profitable for incendiary attack because of the large number of industrial plants which it includes. Population density is estimated to average 61,000 persons per square mile. This zone comprises four general fire areas:

(1) The southwestern area includes the harbor warehouse district and the important waterfront industrial section, the site of numerous numbered targets. The eastern section of this area is a mixed residential/industrial district.

(2) The eastern area includes the congested residential/industrial districts N and S of the large Osaka Arsenal.

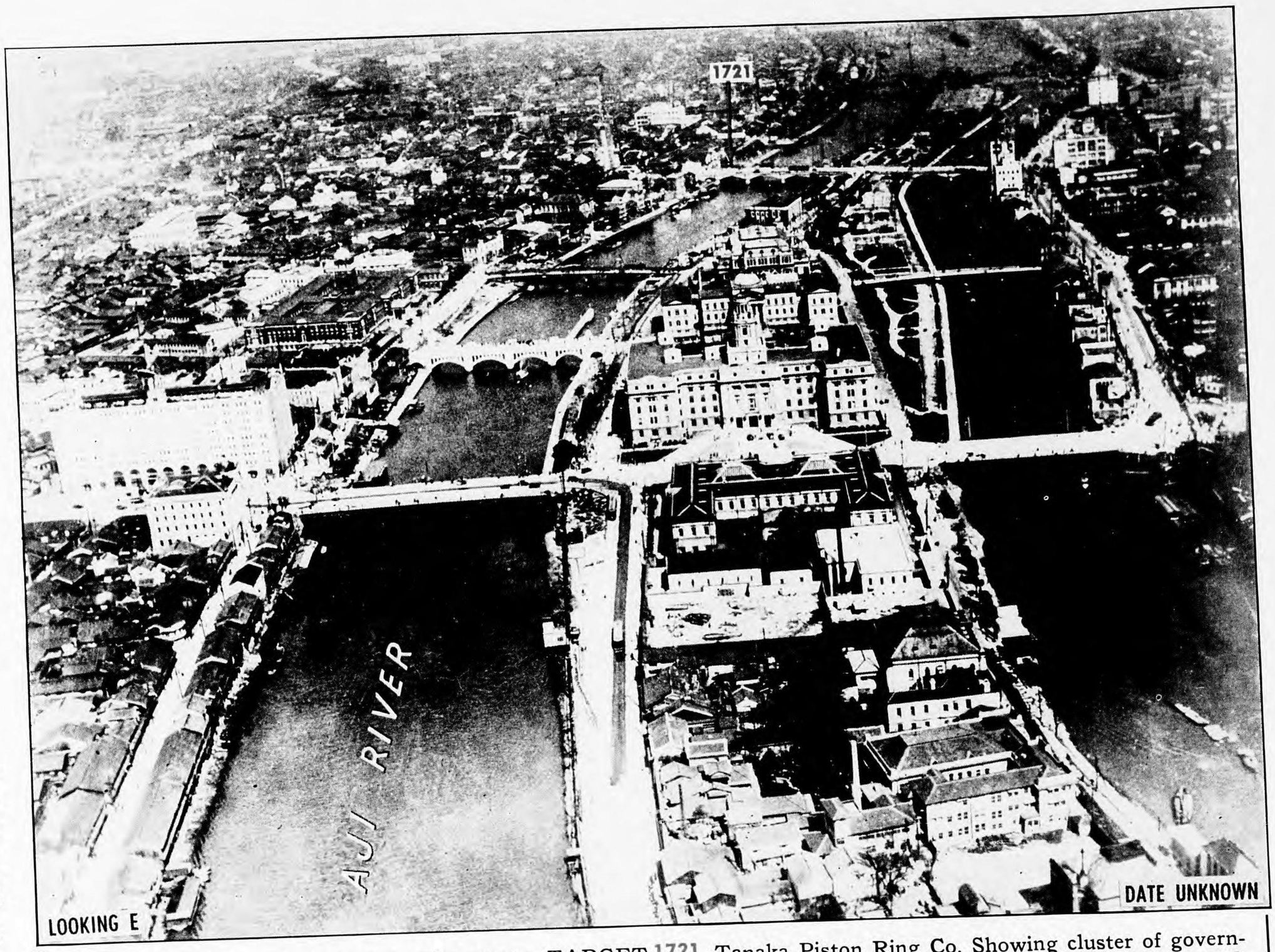
(3) The Aji-Shin Yodo River industrial strip comprises a third area of Zone II. This is one of the most heavily industrialized sections of the city and the fire hazard is increased by the presence of solid masses of sheet metal and wooden storehouses along the river banks.

(4) The northernmost area of Zone II is a mixed residential/industrial district, more open than other parts of this zone, but still vulnerable to incendiary attack.

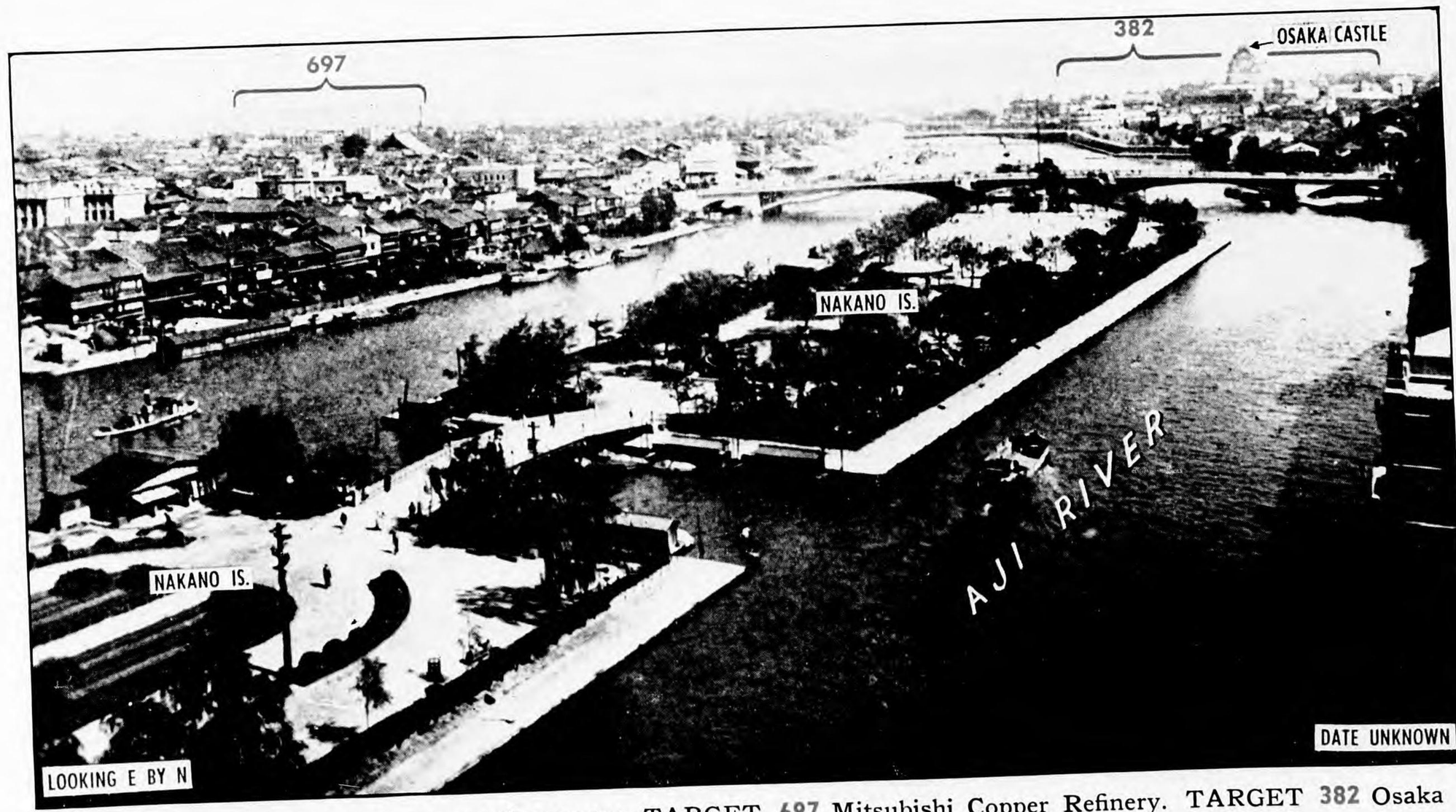
Combustible construction and typical Japanese housing congestion render Osaka a profitable objective for incendiary attack. The conflagration hazard is such that there is a real possibility of starting sweeping fires capable of destroying factories and military objectives over wide areas of the city.

OSAKA 90.25 SUMMARY (OSAKA CITY)

3621—20—Osaka—5-23-44—Final Proof



Osaka—Target shown, text on another page: TARGET 1721 Tanaka Piston Ring Co. Showing cluster of government offices and part of the mixed residential/industrial fire area in northern Osaka which is designated as Zone II.

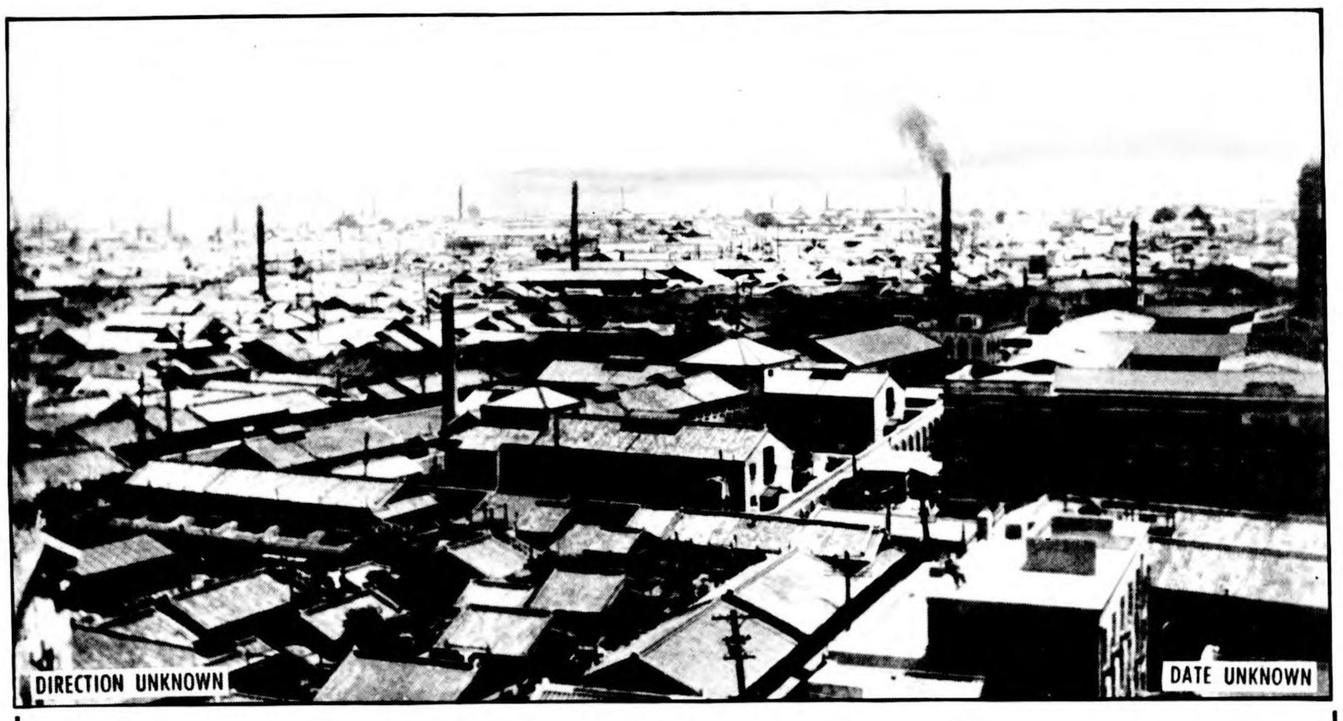


Osaka—Target shown, text on another page: TARGET 697 Mitsubishi Copper Refinery. TARGET 382 Osaka Arsenal.

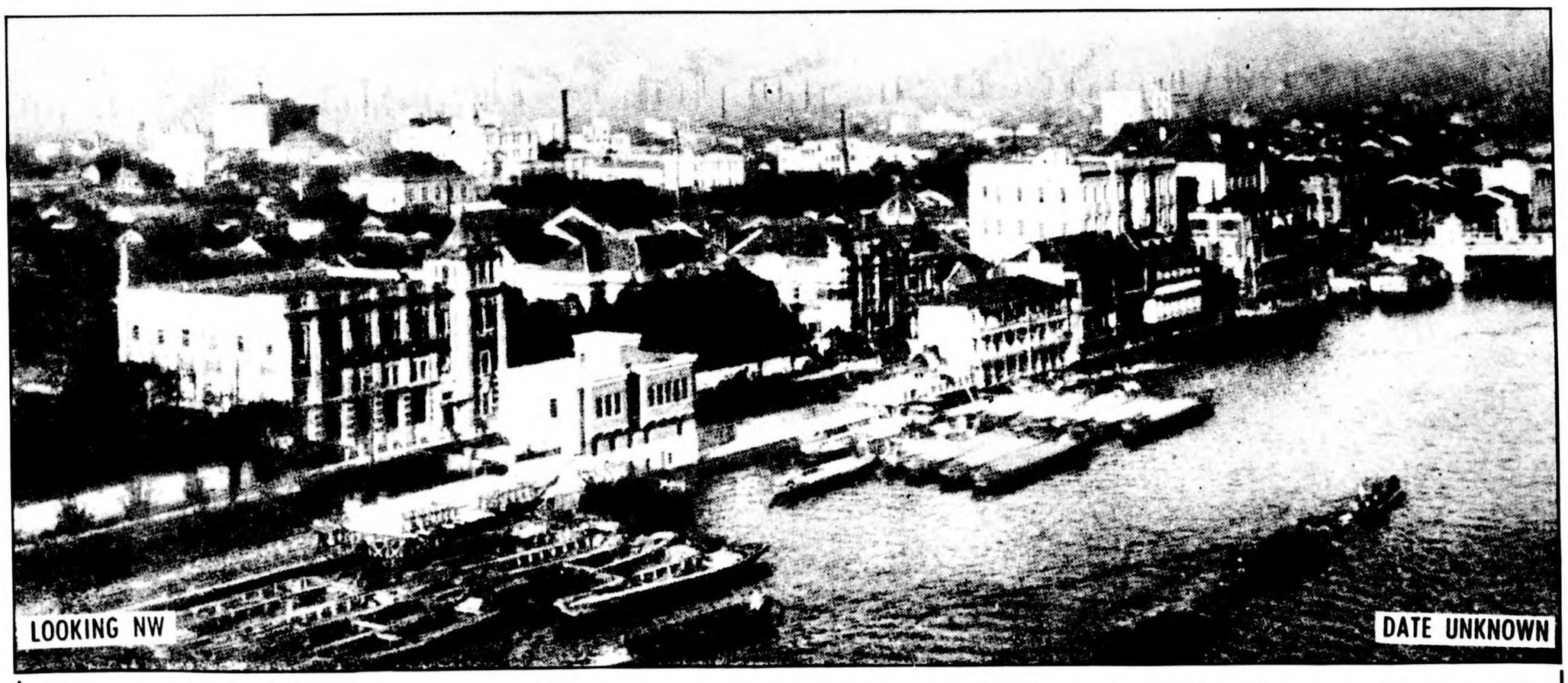
OSAKA 90.25 SUMMARY (OSAKA CITY)

3621—21—Osaka— 4-3-44—First Proof

Osaka—Part of the central commercial district in the Zone I fire area. View shows typical interspersion of predominantly wooden structures among larger, more fire-resistant buildings.



Osaka—View of congested residential and small factory section in NE Osaka, showing typical congestion of predominantly wooden dwellings and small shops. Zone II.

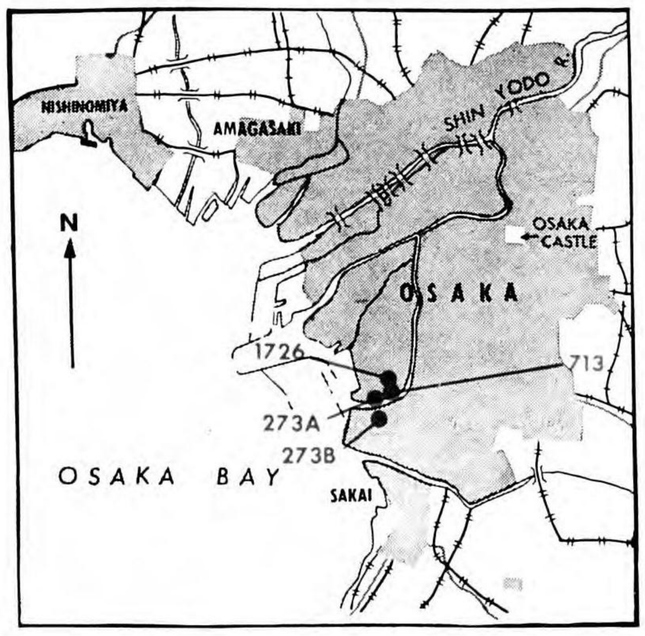


Osaka—Looking NW across part of central commercial district, Zone I, into the industrial section, Zone II, of northwestern Osaka.

OSAKA 90.25 SUMMARY (OSAKA CITY)

OSAKA 90.25 SUMMARY (OSAKA CITY)

3621—22—Osaka—4-3-44—First Proof



TARGET

713 NAKAYAMA STEEL MFG. CO.

(K.K. Nakayama Seikosho)

OSAKA

(IRON & STEEL)

34° 37′ N 135° 28′ E (Approx)—One of 13 leading plants in Japan for production of steel ingots, plates and sections for shipbldg. Total production of steel ingots for Co, of which this is largest plant, is 300,000 metric tons. Pig iron cap undergoing large expansion. Other products: steel parts, thin iron plate, tin plate, special steel, zinc plating, etc. Co reported to have purchased section of Kizugawa airport for expansion.

(See photos on pages 23 and 24; maps on pages M-6 and M-7.)

TARGET

273A FUJINAGATA SHIPBUILDING CO.

(K.K. Fujinagata Zosen Sho)

OSAKA

(SHIPYARDS)

34° 37′ N 135° 28′ E (Approx)—Drydock 483 ft long. Three ways, each approx 370 ft long and one way 328 ft long. One of leading marine engine producers.

(See photos on pages 23 and 24; maps on pages M-6 and M-7.)

TARGET

273B FUJINAGATA SHIPBUILDING CO.

(K.K. Fujinagata Zosen Sho)

OSAKA

(SHIPYARDS)

34° 37′ N 135° 28′ E (Approx)—Reported in use by the Japanese Navy. Has four drydocks and can accommodate large ships.

(See photos on pages 23 and 25; maps on pages M-6 and M-7.)

TARGET

1726 OSAKA CERAMIC INDUSTRY CEMENT CO.

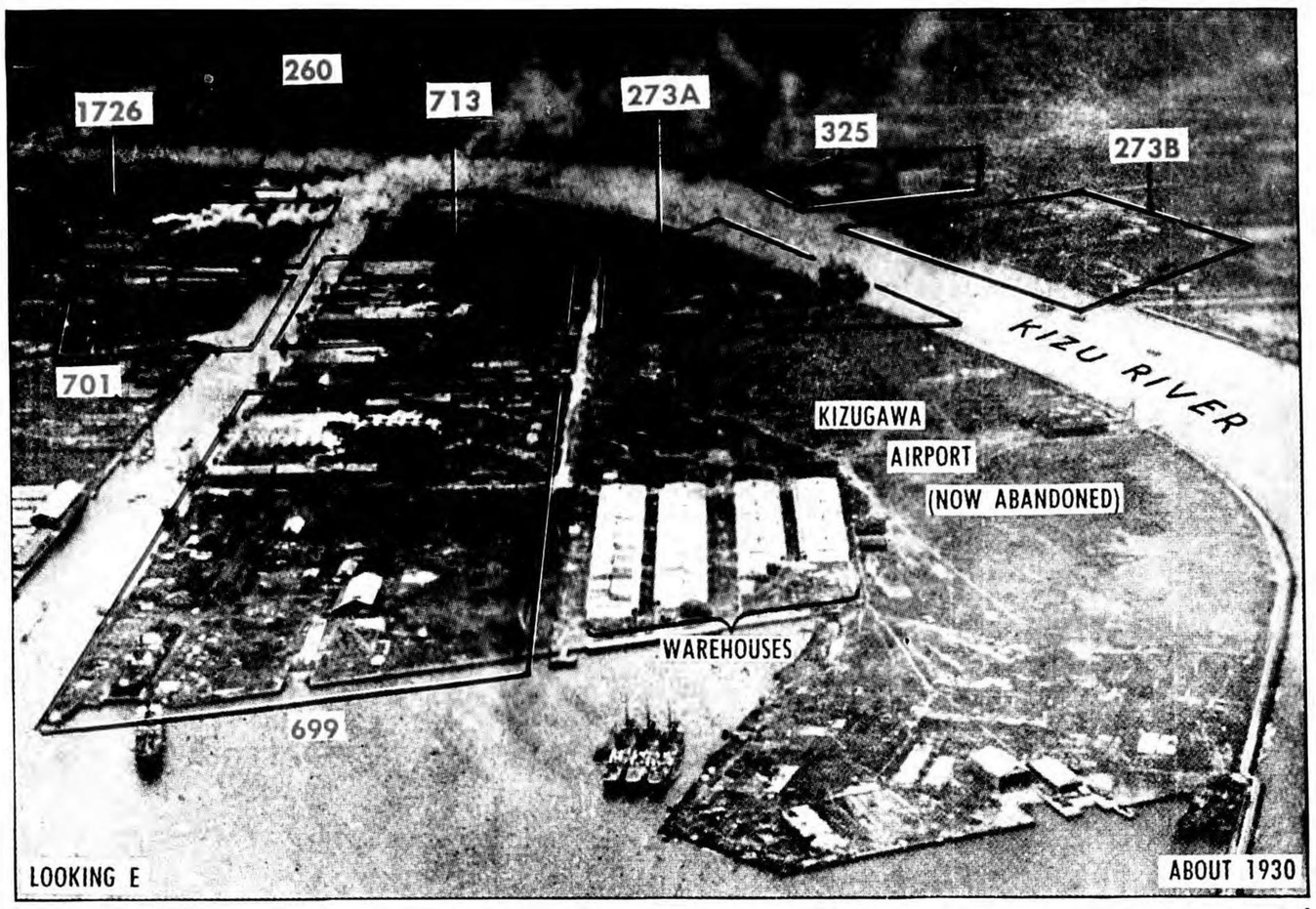
(Osaka Yogyo Cement K.K.)

OSAKA

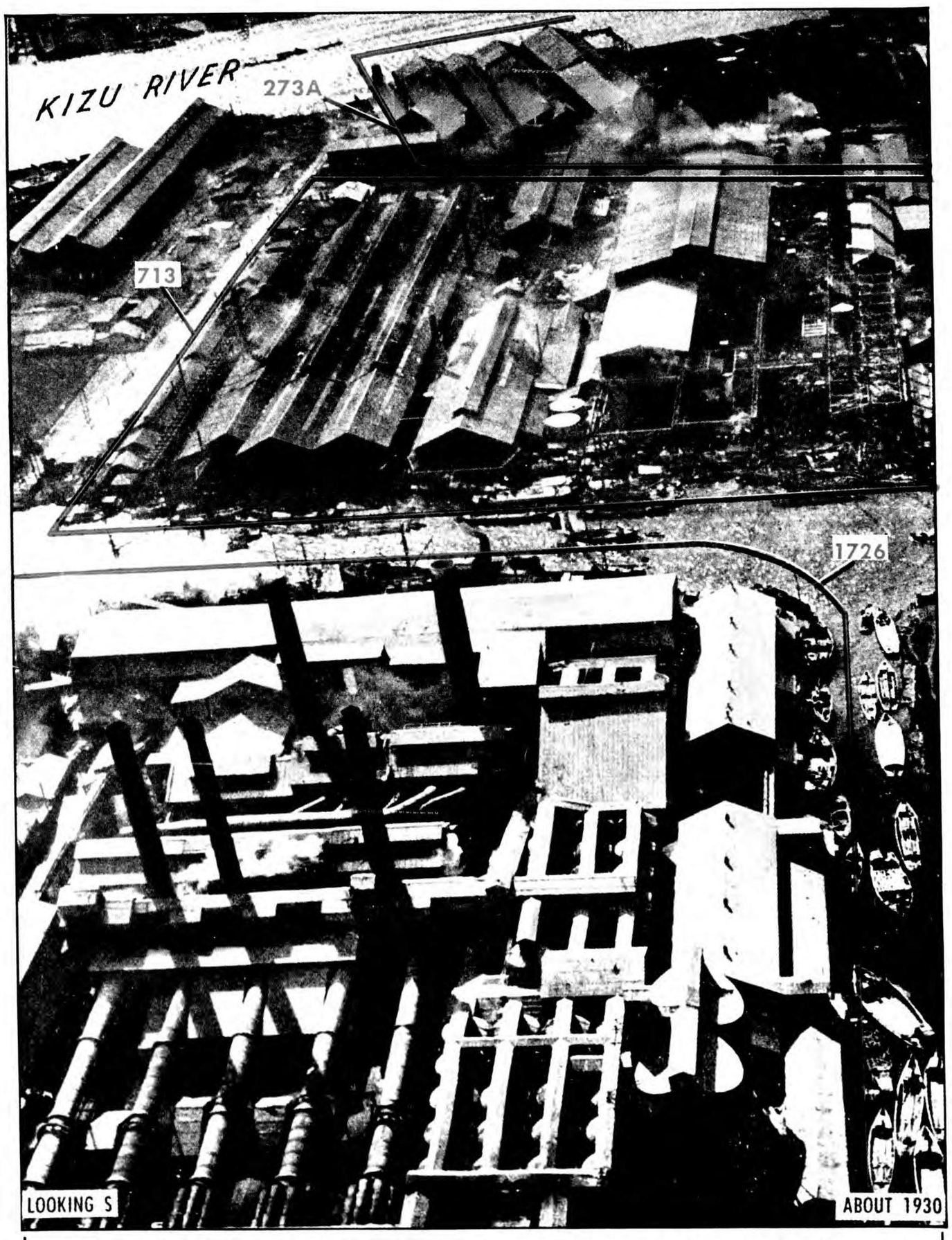
(NON FERROUS METALS)

34° 38′ N 135° 28′ E (Approx)—In 1937 this large plant installed equipment for alumina production. Also reported to be producing aluminum. Estimated cap: 2000 metric tons per year. Also reported to produce cement and small amount of pig iron and iron alloy.

(See photos on pages 23, 24 and 27; maps on pages M-6 and M-7.)



Osaka—TARGET 1726 Osaka Ceramic Industry Cement Co. TARGETS 273A and B Fujinagata Ship Building Co. TARGET 713 Nakayama Steel Mfg. Co. Target shown, text on another page: TARGET 260 Rising Sun Petroleum Oil Storage, TARGET 325 Kizugawa Steam Power Plant, TARGET 701 Kubata Iron and Machinery Works.

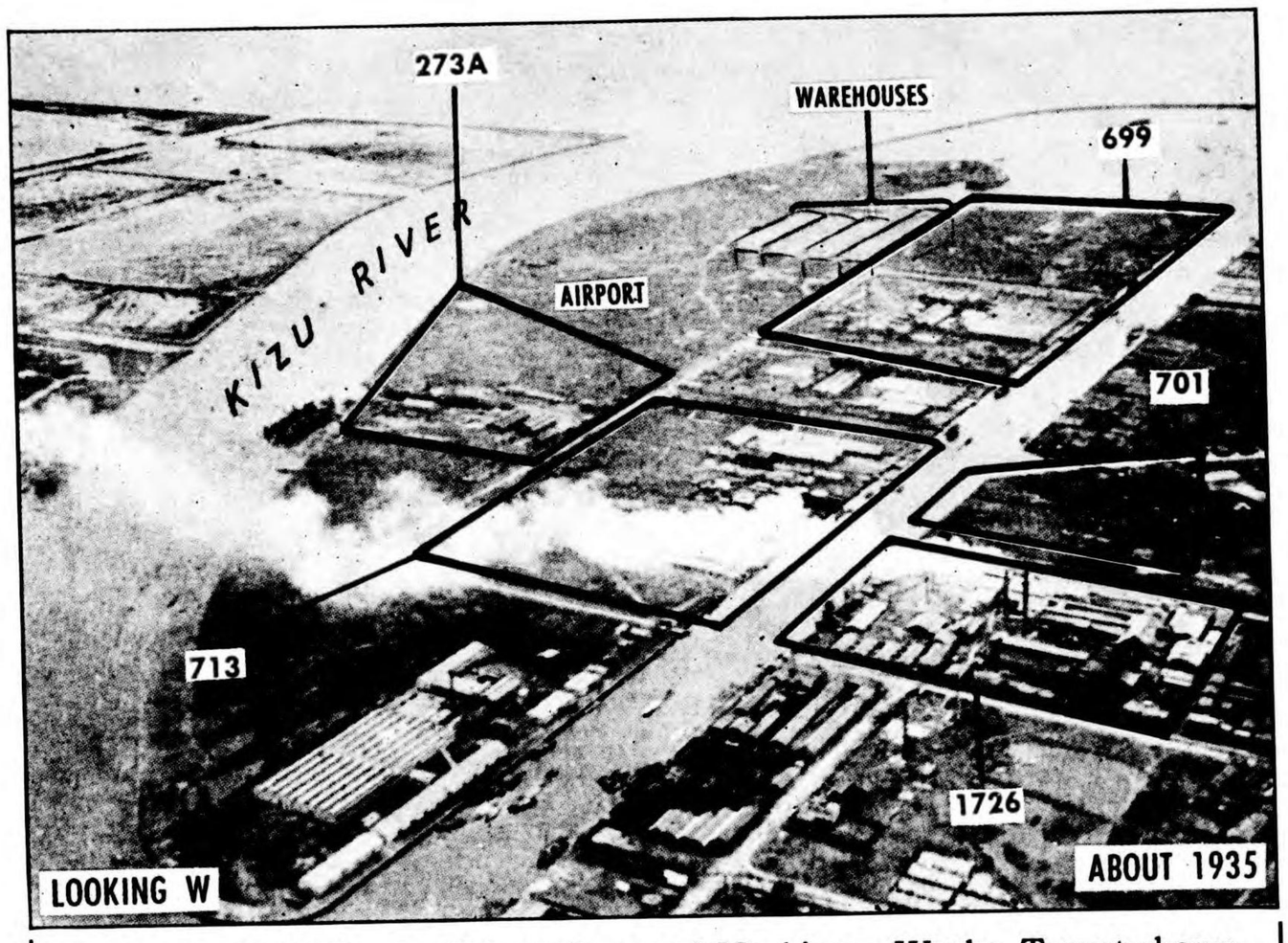


Osaka—TARGET 1726 Osaka Ceramic Industry Co. TARGET 713 Nakayama Steel Mfg. Co. TARGET 273A Fujinagata Ship Building Co.

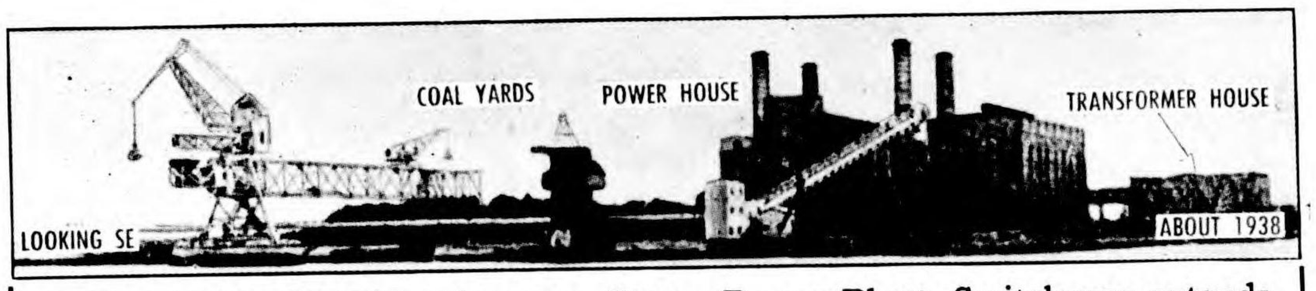
OSAKA 90.25 TARGETS 273A, 273B, 713, 1726 (OSAKA CITY)

3621—24—Osaka—4-3-44—First Proof

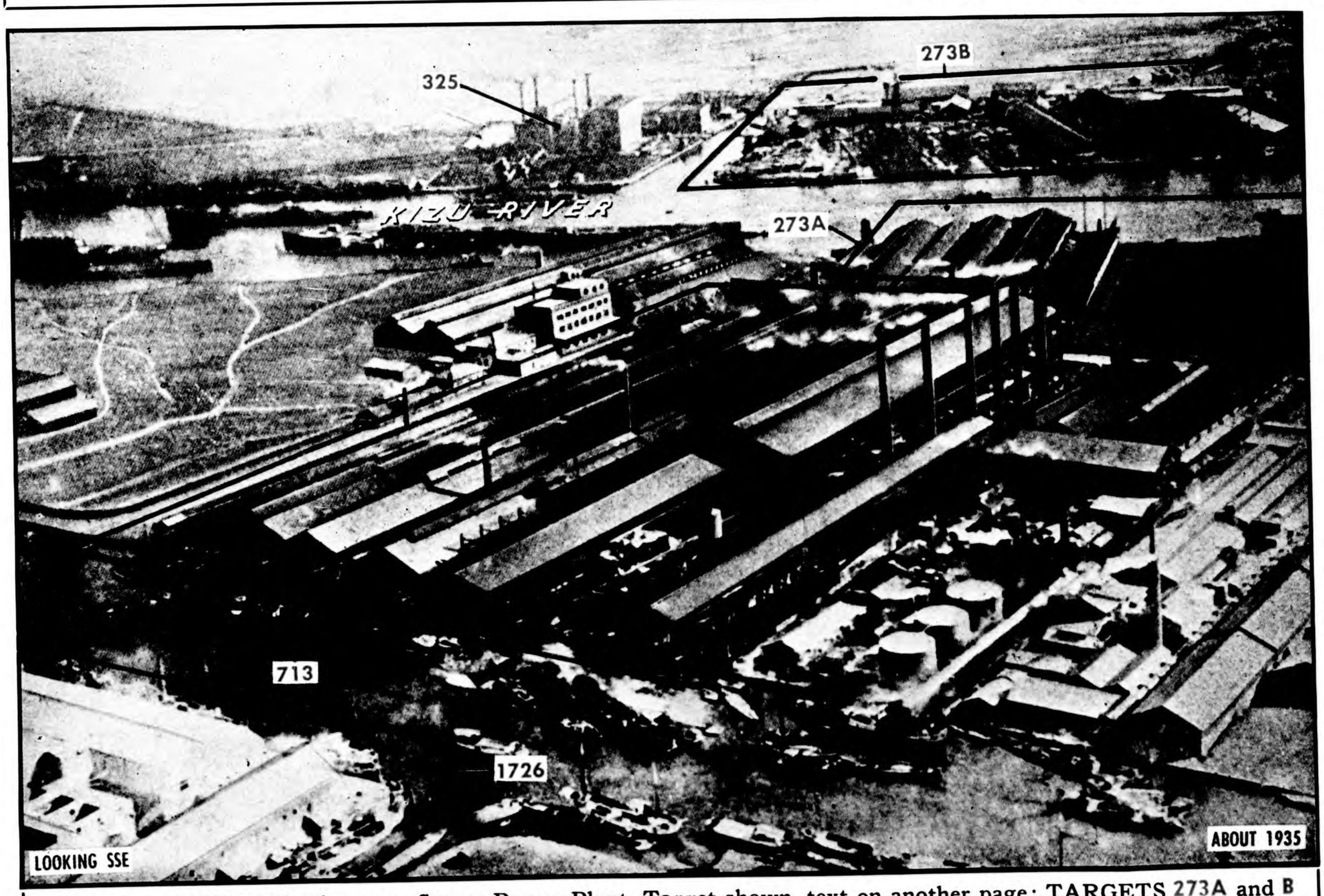
DESCRIPTION OF TARGETS



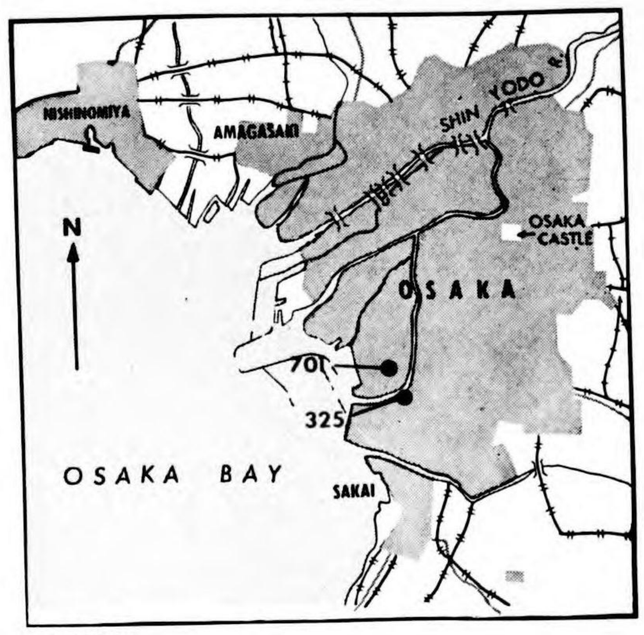
Osaka—TARGET 701 Kubota Iron and Machinery Works. Target shown, text on another page: TARGET 699 Osaka Iron Works, Unit No. 2, TARGET 713 Nakayama Steel Mfg. Co., TARGET 273A Fujinagata Ship Building Co., TARGET 1726 Osaka Ceramic Industry Cement Co. Kizugawa Airport is reported to have been abandoned, although seaplane facilities at the far end were still in use.



Osaka—TARGET 325 Kizugawa Steam Power Plant. Switchgear extends along canal behind transformer house.



Osaka—TARGET 325 Kizugawa Steam Power Plant. Target shown, text on another page: TARGETS 273A and B Fujinagata Ship Building Co., TARGET 713 Nakayama Steel Mfg. Co., TARGET 1726 Osaka Ceramic Industry Cement Co.



TARGET **325** **KIZUGAWA STEAM POWER PLANT**

OSAKA

(ELECTRIC POWER)

34° 37′ N 135° 29′ E (Approx)—Important standby plant. Considerably more efficient than TARGETS 322 & 323 and in more continuous use. Reinforced concrete structure with four steel stacks. Coal hoists and extensive coal storage along Kizu River front. Transformer bldg and outdoor switchgear along canal on W side.

(See photos on pages 23 and 24; maps on pages M-4, M-6 and M-7.)

TARGET **701** **KUBOTA IRON & MACHINERY WORKS**

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 38′ N 135° 28′ E (Approx)—See TARGET 688.

(See photos on pages 23 and 24; maps on pages M-6 and M-7.)

OSAKA 90.25 TARGETS 325, 701 (OSAKA CITY)

3621—23—Osaka—4-3-44—First Proof

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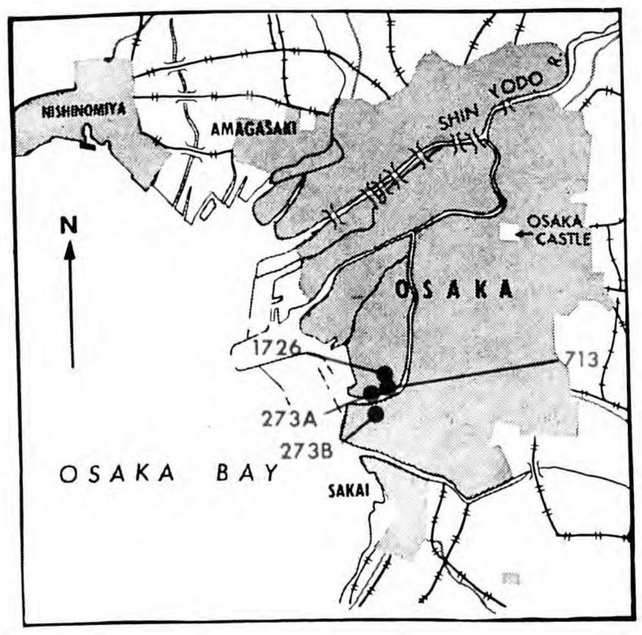
CONFIDENTIAL equals British Confidential



TARGET
713

NAKAYAMA STEEL MFG. CO.

(K.K. Nakayama Seikosho)

OSAKA

(IRON & STEEL)

34° 37′ N 135° 28′ E (Approx)—One of 13 leading plants in Japan for production of steel ingots, plates and sections for shipbldg. Total production of steel ingots for Co, of which this is largest plant, is 300,000 metric tons. Pig iron cap undergoing large expansion. Other products: steel parts, thin iron plate, tin plate, special steel, zinc plating, etc. Co reported to have purchased section of Kizugawa airport for expansion.

(See photos on pages 23 and 24; maps on pages M-6 and M-7.)

TARGET
273A

FUJINAGATA SHIPBUILDING CO.

(K.K. Fujinagata Zosen Sho)

OSAKA

(SHIPYARDS)

34° 37′ N 135° 28′ E (Approx)—Drydock 483 ft long. Three ways, each approx 370 ft long and one way 328 ft long. One of leading marine engine producers.

(See photos on pages 23 and 24; maps on pages M-6 and M-7.)

TARGET
273B

FUJINAGATA SHIPBUILDING CO.

(K.K. Fujinagata Zosen Sho)

OSAKA

(SHIPYARDS)

34° 37′ N 135° 28′ E (Approx)—Reported in use by the Japanese Navy. Has four drydocks and can accommodate large ships.

(See photos on pages 23 and 25; maps on pages M-6 and M-7.)

TARGET
1726

OSAKA CERAMIC INDUSTRY CEMENT CO.

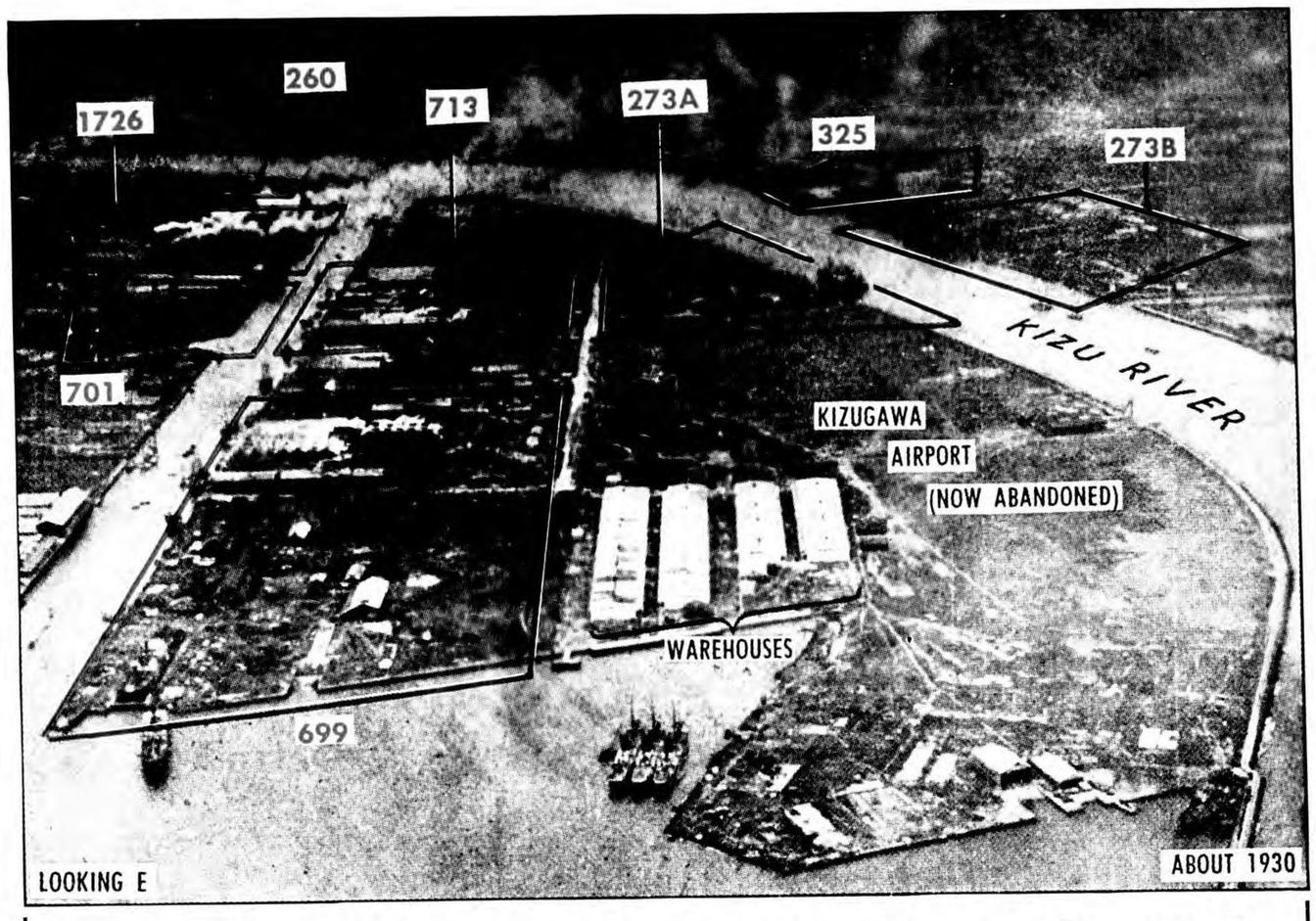
(Osaka Yogyo Cement K.K.)

OSAKA

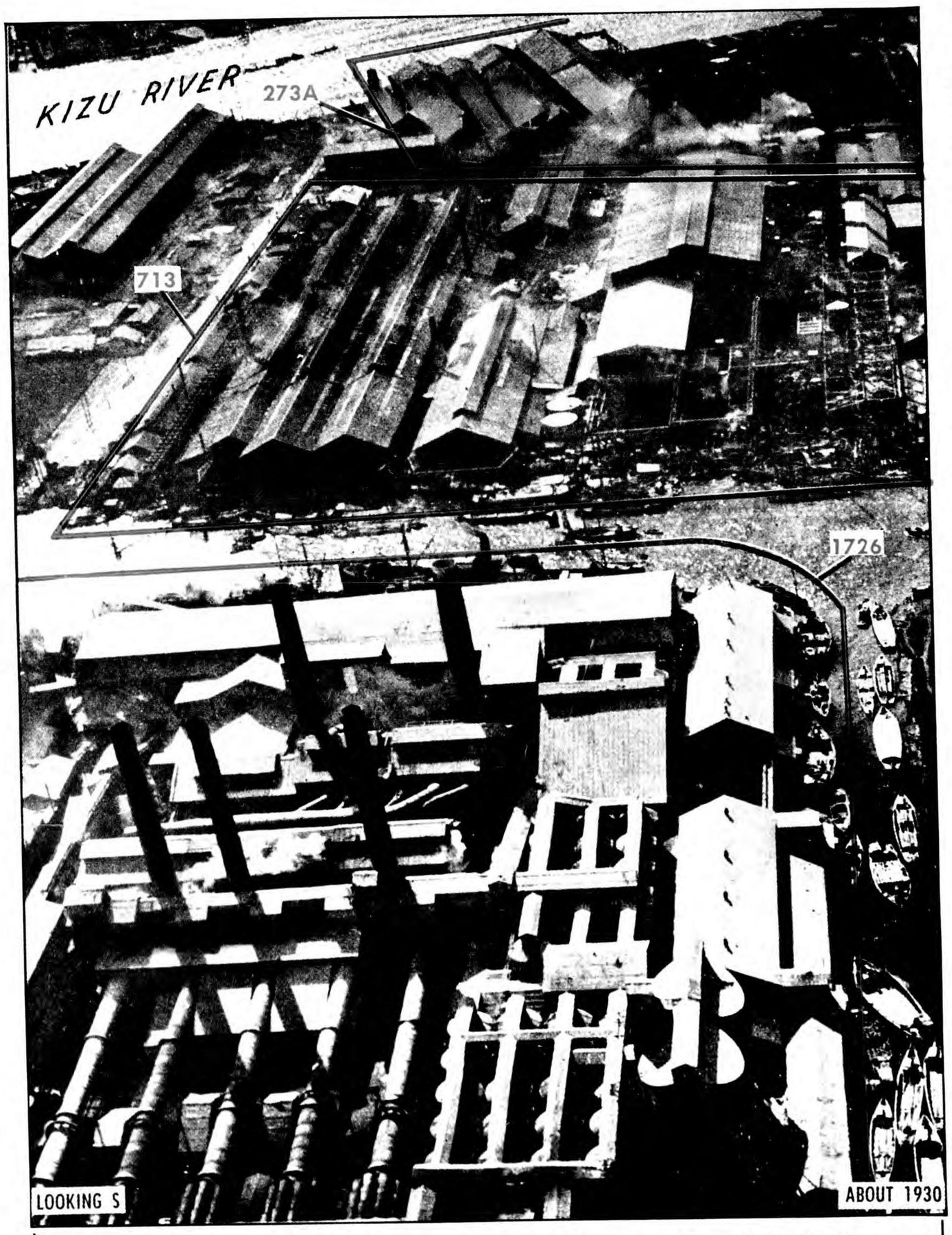
(NON FERROUS METALS)

34° 38′ N 135° 28′ E (Approx)—In 1937 this large plant installed equipment for alumina production. Also reported to be producing aluminum. Estimated cap: 2000 metric tons per year. Also reported to produce cement and small amount of pig iron and iron alloy.

(See photos on pages 23, 24 and 27; maps on pages M-6 and M-7.)



Osaka—TARGET 1726 Osaka Ceramic Industry Cement Co. TARGETS 273A and B Fujinagata Ship Building Co. TARGET 713 Nakayama Steel Mfg. Co. Target shown, text on another page: TARGET 260 Rising Sun Petroleum Oil Storage, TARGET 325 Kizugawa Steam Power Plant, TARGET 701 Kubata Iron and Machinery Works.



Osaka—TARGET 1726 Osaka Ceramic Industry Co. TARGET 713 Nakayama Steel Mfg. Co. TARGET 273A Fujinagata Ship Building Co.

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3621—24—Osaka—4-3-44—First Proof

Osaka—TARGETS 258A and B Mitsubishi Oil Storage. TARGET 1785 Oriental Can Mfg. Co. Target shown, text on another page: TARGET 273B Fijinagata Ship Building Co.

TARGET 258 A&B

MITSUBISHI OIL STORAGE

(Mitsubishi Sekiyu K.K.)

OSAKA

(PETROLEUM)

34° 38′ N 135° 28′ E (Approx) Two groups of tanks, separated by the General Motors testing ground. Diesel oil and gasoline. Tanks: nine large, seven small. Total tankage in excess of 70,000 bbls.

(See photos on pages 25 and 26; maps on pages M-6 and M-7.)

TARGET 1703

TOYOWA HEAVY INDUSTRY CO.

(Toyowa Ju Kogyo K.K.)

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 39′ N 135° 29′ E (Approx) Branch plant of former Toyoda Shiki Shokki K.K., originally manufactured looms, reported converted to machine tools, munitions, aircraft parts.

(See maps on pages M-6, M-7 and M-10.)

TARGET 1785

ORIENTAL CAN MFG. CO.

(Toyo Seikwan K.K.)

OSAKA

(MISCELLANEOUS)

34° 38′ N 135° 28′ E (Approx) One of three plants of Co which is reported to produce bomb and grenade casings as well as cans.

(See photos on pages 25 and 26; maps on pages M-6 and M-7.)

TARGET 688

KUBOTA IRON & MACHINERY WORKS

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 39′ N 135° 30′ E (Approx) The exact output of individual plants is not known. The Co is of medium importance, has six plants of which five are in this Area. Products: 130,000 tons of pipes; fittings, valves, hydrants, Diesel and oil engines (land and marine), scales, stokers, etc.

(See maps on pages M-6 and M-7.)

TARGET 699

OSAKA IRON WORKS UNIT No. 2

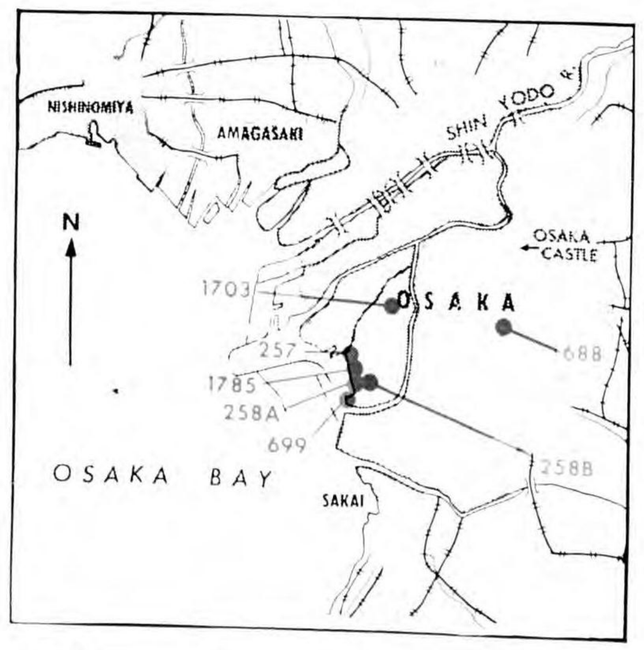
(K.K. Osaka Tekko Sho)

OSAKA

(SHIPYARDS)

34° 38′ N 135° 27′ E (Approx) Operates in conjunction with TARGET 272. Repair yd, no construction. Drydock facilities. Docks next to airfield. Reported cranes for hoisting planes on to carriers.

(See photos on pages 23, 24 and 26; maps on pages M-6 and M-7.)



TARGET 257

MARUZEN OIL REFINERY

(Maruzen Sekiyu K.K.)

and TOYO OIL REFINERY

(Toyo Sekiyu K.K.)

OSAKA

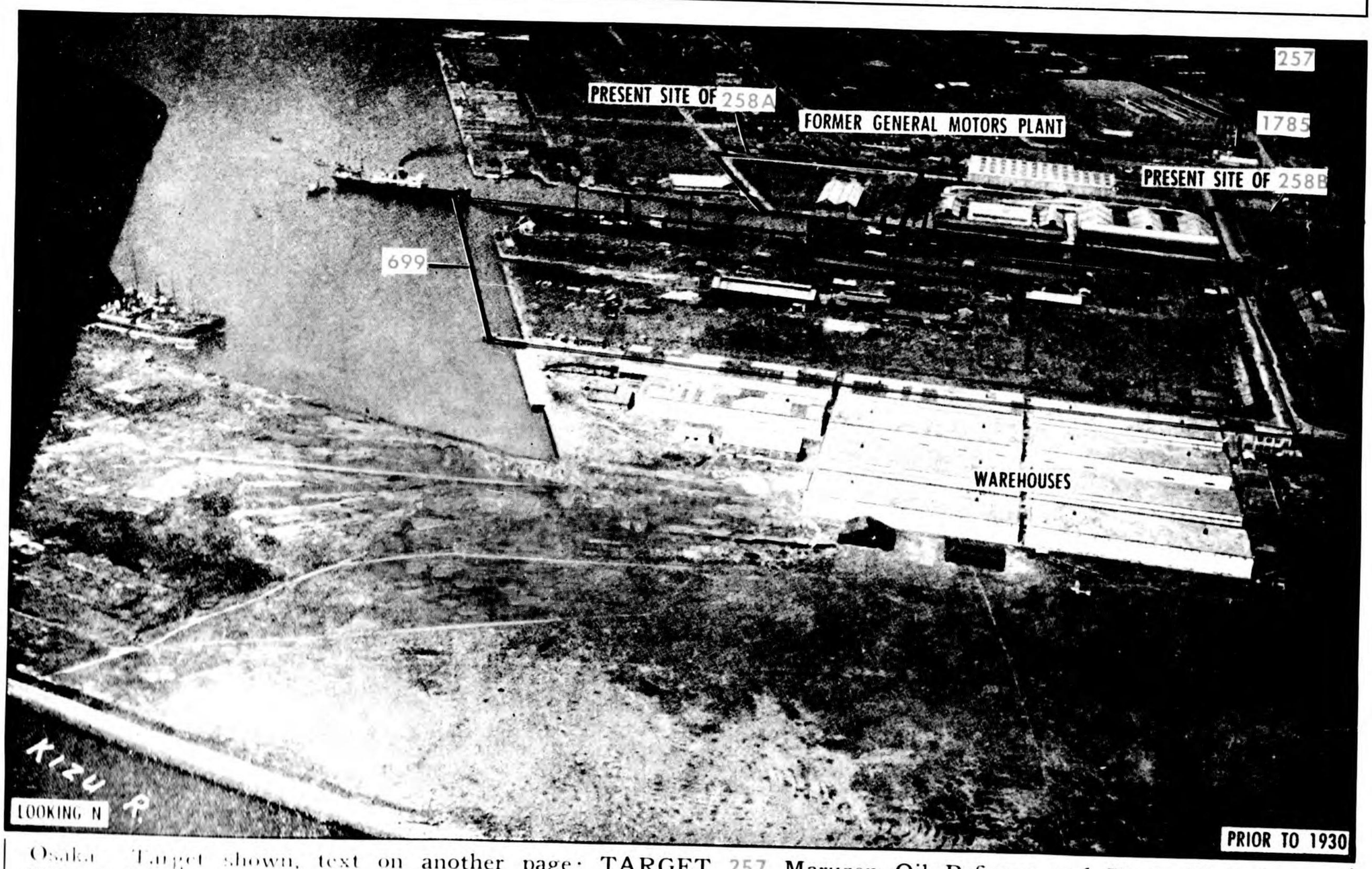
(PETROLEUM)

34° 38′ N 135° 28′ E (Approx) Two small refineries on adjoining lots. Crude cap: Maruzen 1000 bbls per day, Toyo 700 bbls per day. Said to produce high quality lube oil and gasoline.

(See photo on page 26; maps on pages M-6 and M-7.)

3621—25—Osaka—5-23-44—Final Proof

Osaka—Target shown, text on another page: TARGET 1785 Oriental Can Mfg. Co., TARGETS 258A and B Mitsubishi Oil Storage, TARGET 699 Osaka Iron Works.



Osaka—Target shown, text on another page: TARGET 257 Maruzen Oil Refinery and Toyo Oil Refinery, TARGET 1785 Oriental Can Mfg. Co. TARGETS 258A and B Mitsubishi Oil Storage. TARGET 699 Osaka Iron Works, Unit No. 2.

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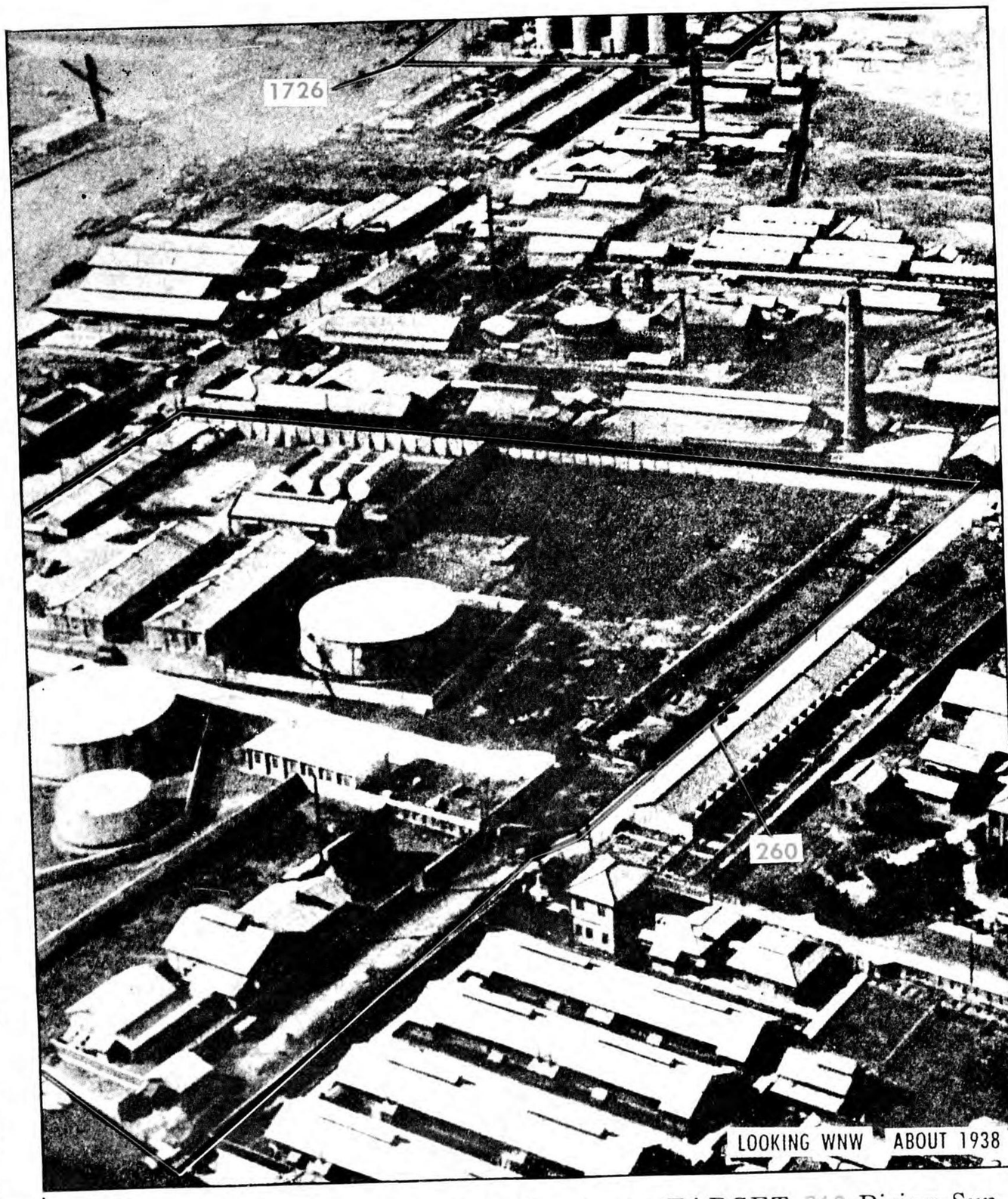
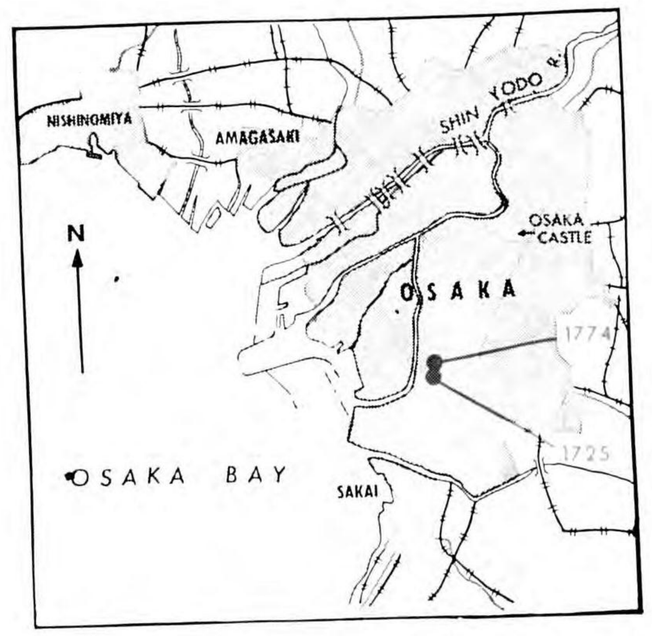
OSAKA 90.25 TARGETS 257, 258A&B, 699, 1785 (OSAKA CITY)

OSAKA 90.25 TARGETS 257, 258A&B, 699, 1785 (OSAKA CITY)

3621—26—Osaka—4.3.44—First Proof



Osaka—Target shown, text on another page: TARGET 260 Rising Sun Petroleum Oil Storage, TARGET 1726 Osaka Ceramic Industry Cement Plant.



TARGET 1725

ASANO PORTLAND CEMENT CO.

(Asano Cement K.K.)

OSAKA

(MISCELLANEOUS)

34° 38′ N 135° 29′ E (Approx)—One of the larger cement plants of Japan. Annual production: 324,960 metric tons. Reported also producing some alumina.

(See photo on page 27; maps on pages M-6 and M-7.)

TARGET 1774

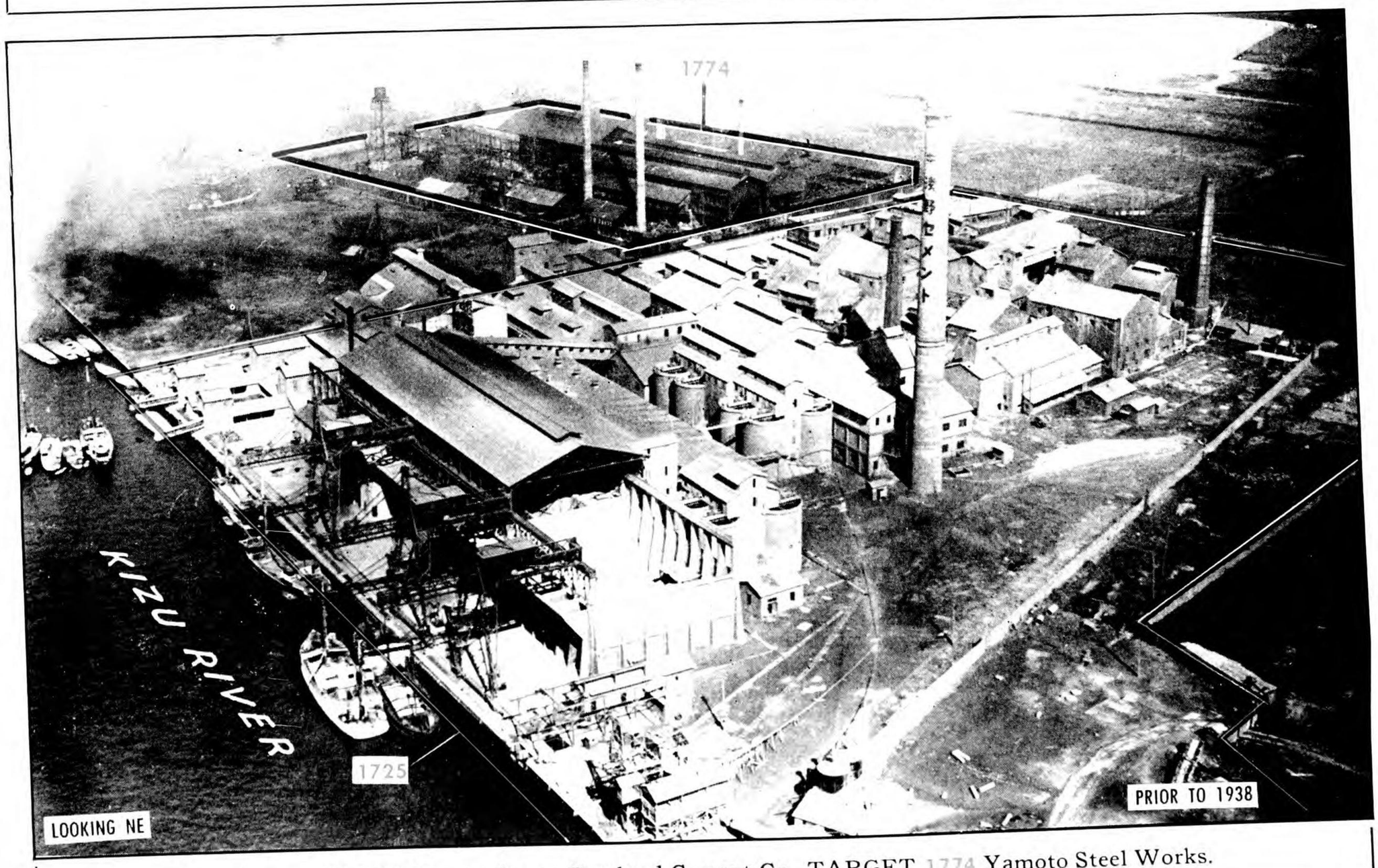
YAMATO STEEL WORKS

OSAKA

(IRON & STEEL)

34° 38′ N 135° 29′ E (Approx)—Large plant. 156,000 tons of steel ingots. Rolls thick and medium plates. Located NE of TARGET 1725 on S bank of canal.

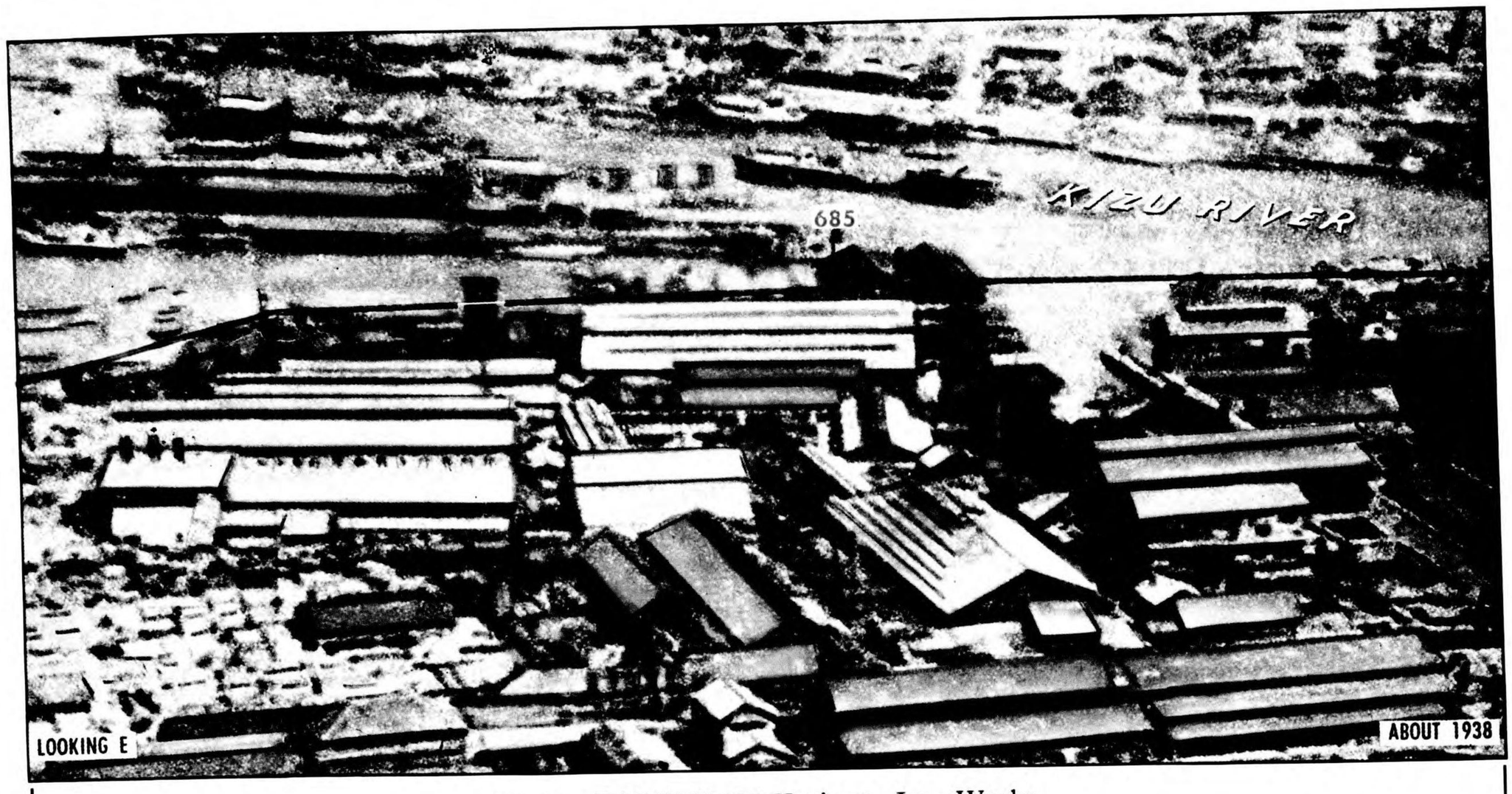
(See photo on page 27; maps on pages M-6 and M-7.)



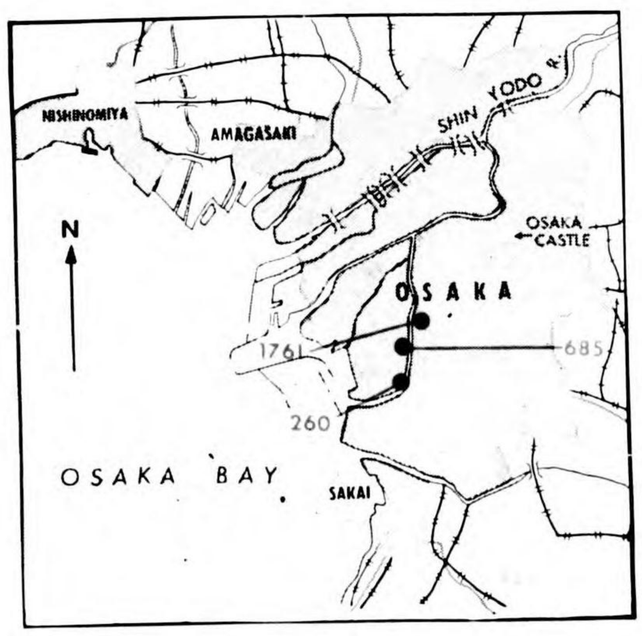
Osaka—TARGET 1725 Asano Portland Cement Co. TARGET 1774 Yamoto Steel Works.

OSAKA 90.25 TARGETS 1725, 1774 (OSAKA CITY)

3621—27—Osaka—4-3-44—First Proof



Osaka—TARGET 685 Kurimoto Iron Works.



TARGET
685 **KURIMOTO IRON WORKS**
(K.K. Kurimoto Tekko Sho)
OSAKA
(IRON & STEEL)

34° 39′ N 135° 29′ E (Approx)—Co produces steel tubes and pipes, castings, & chemical machinery.

(See photo on page 28; maps on pages M-6 and M-7.)

TARGET
260 **RISING SUN PETROLEUM OIL STORAGE**
OSAKA
(PETROLEUM)

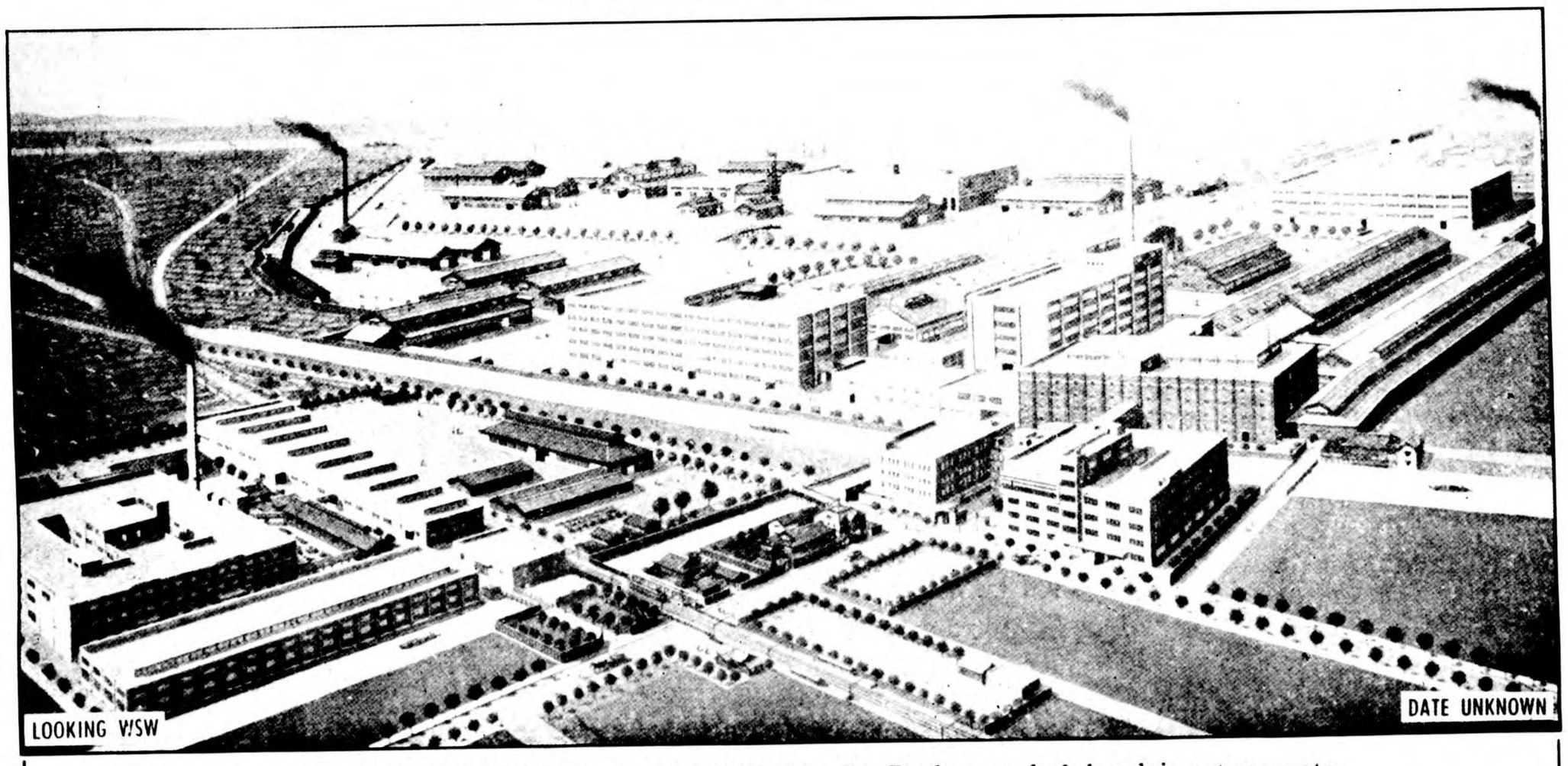
34° 38′ N 135° 29′ E (Approx)—Cap approx 93,000 bbl. Benzene and Diesel oil. Six large tanks and several small.

(See photos on pages 24 and 27; maps on pages M-6 and M-7.)

TARGET
1761 **NITTA LEATHER BELT MFG. CO.**
(Gomei Kaisha Nitta Obikawa Seizo Sho)
OSAKA
(MISCELLANEOUS)

34° 39′ N 135° 29′ E (Approx)—Largest belting manufacturer in Japan. Products: industrial belting of leather and rubber.

(See photo on page 28; maps on pages M-6 and M-7.)



Osaka—TARGET 1761 Nitla Leather Belt Mfg. Co. Background of sketch is not accurate.

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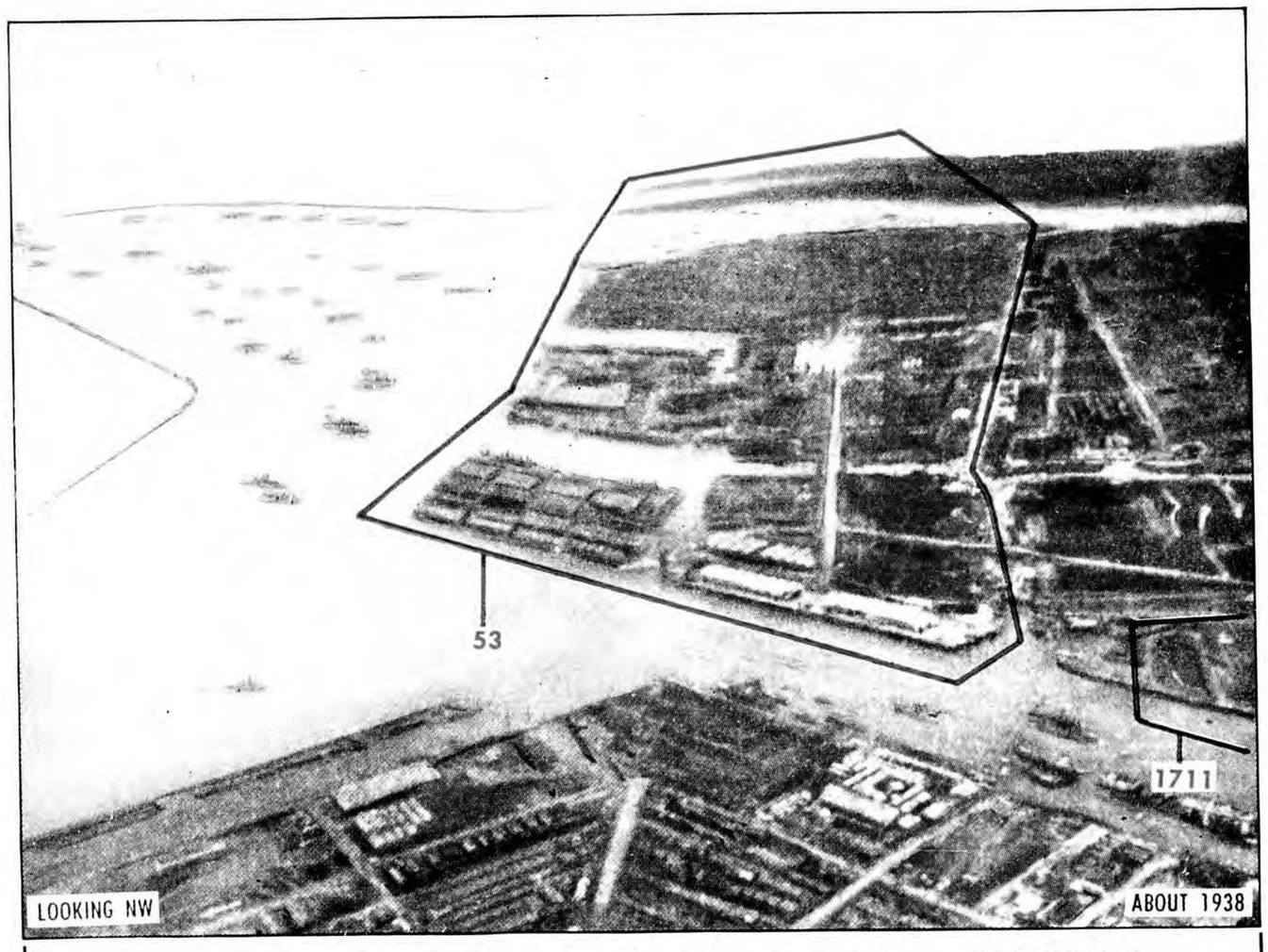
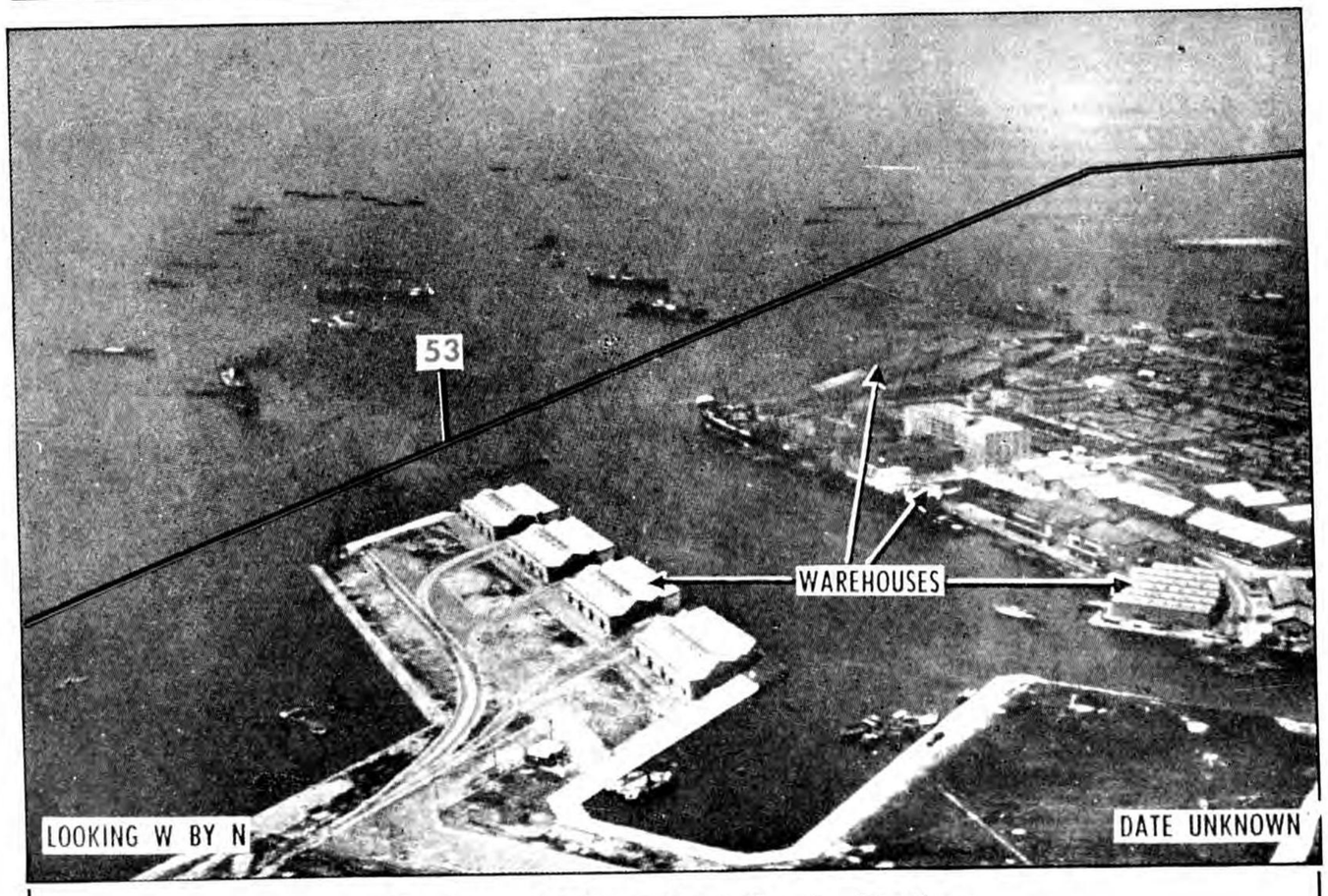
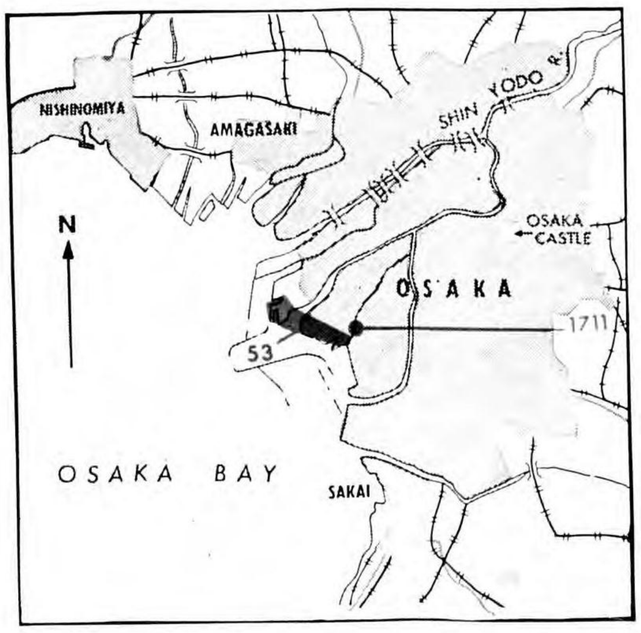


Osaka—TARGET 1711 Osaka Ship Building Works, TARGET 53 Osaka Harbor.

Osaka—TARGET 53 Osaka Harbor.



Osaka—TARGET 53 Osaka Harbor.



TARGET **53**

OSAKA HARBOR

OSAKA

(HARBOR FACILITIES)

34° 39′ N 135° 26′ E (Approx)—One of Japan's important harbors. Pincer-like breakwaters extend far into Osaka Bay. NW section of Target (N of the Aji R) contains large oil storage and coal dump. SE section of Target is solidly whses and docking facilities with extensive and modern hauling and loading equipment.

(See photos on pages 29 and 30; maps on pages M-6, M-7 and M-10.)

TARGET **1711**

OSAKA SHIPBUILDING WORKS

(K.K. Osaka Zosen Sho)

OSAKA

(SHIPYARDS)

34° 39′ N 135° 27′ E (Approx)—Small plant probably concentrating on small freighters and naval craft.

(See photo on page 29; maps on pages M-6, M-7 and M-10.)

OSAKA 90.25 TARGETS 53, 1711 (OSAKA CITY)

3621—29—Osaka— 4-3-44—First Proof

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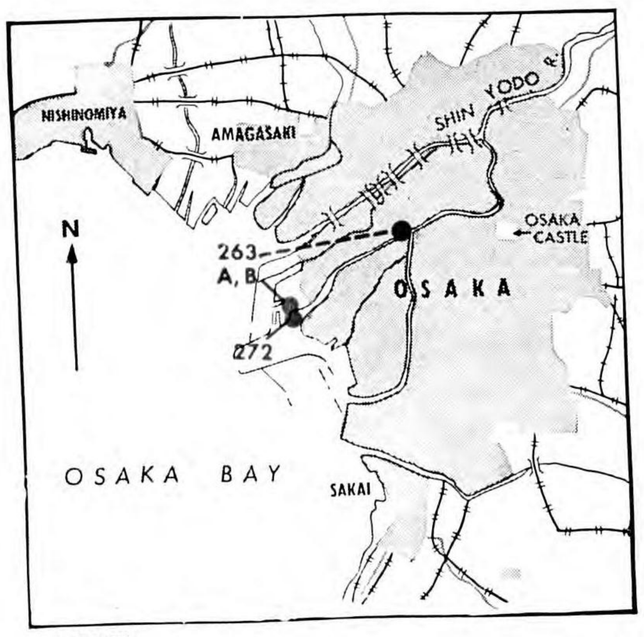


TARGET

263A & B SUMITOMO METAL INDUSTRY CO. AND SUMITOMO ALUMINUM CO.

(Sumitomo Kinzoku Aluminium K.K.)

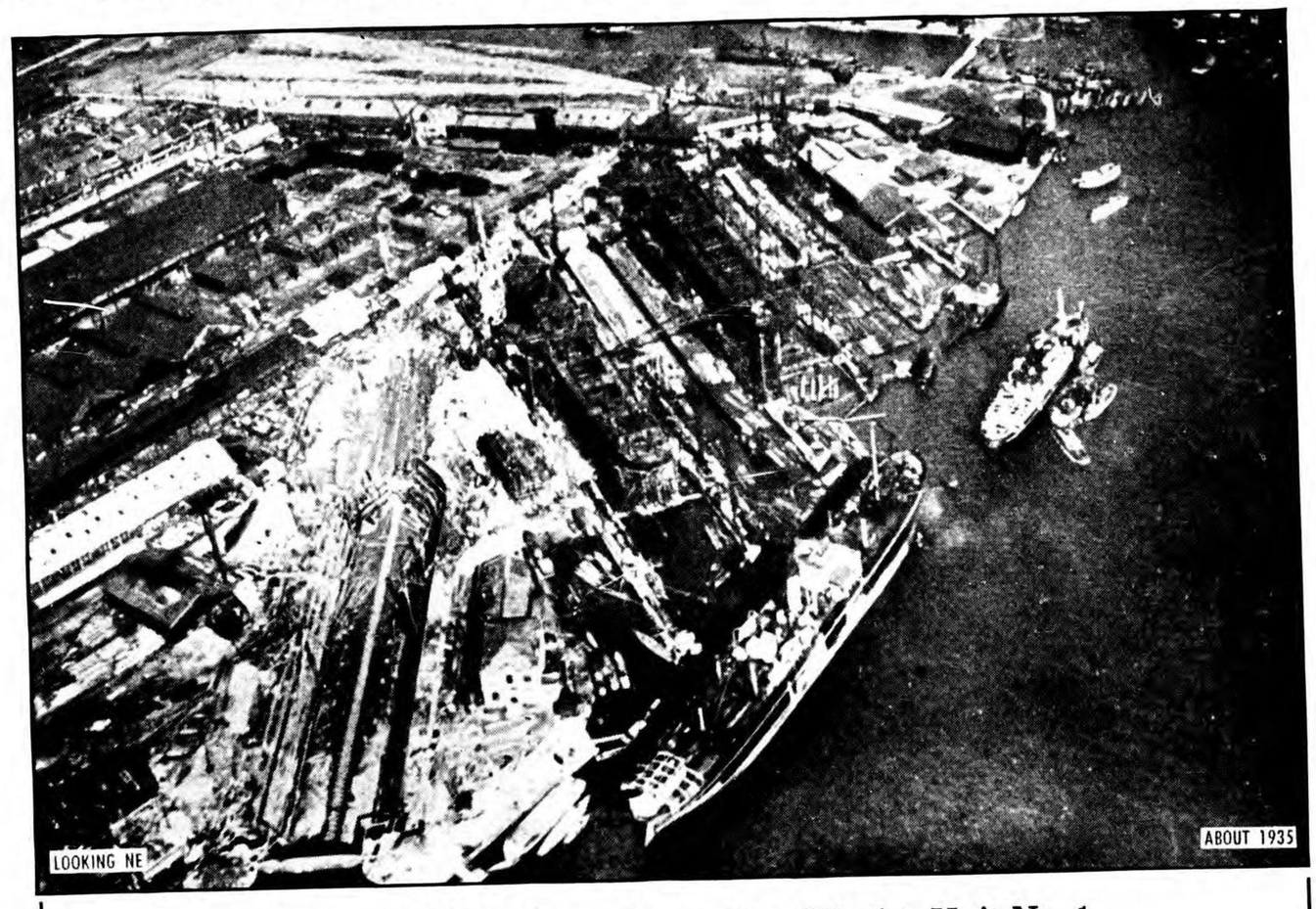
OSAKA

(NON FERROUS METALS)

34° 40′ N 135° 27′ E (Approx)—Both plants within same compound. Reported main plant of company. Products include sheets, strips, plates, tubes, pipes, bars, light alloy castings and forgings, (made from copper, brass, aluminum, light allows and other non-ferrous metals), crank shafts, propellers and other parts. Said to have the largest and most modern rolling mill for aluminum sheets in Japan. Produces 12,000 tons per year of duralumin. Cold strip and sheet mill, also hot mill. Covers approx 45 acres. Completely modern with latest technical installations.

(Alternate source locates Sumitomo Aluminum rolling mill at 34° 41′ N and 135° 29′ E, indicated by TARGET 263B, shown by broken line.)

(See photos on pages 30 and 31; maps on pages M-6, M-7, and M-10.)



Osaka—TARGET 272 Osaka Iron Works, Unit No. 1.

TARGET

272 OSAKA IRON WORKS UNIT No. 1

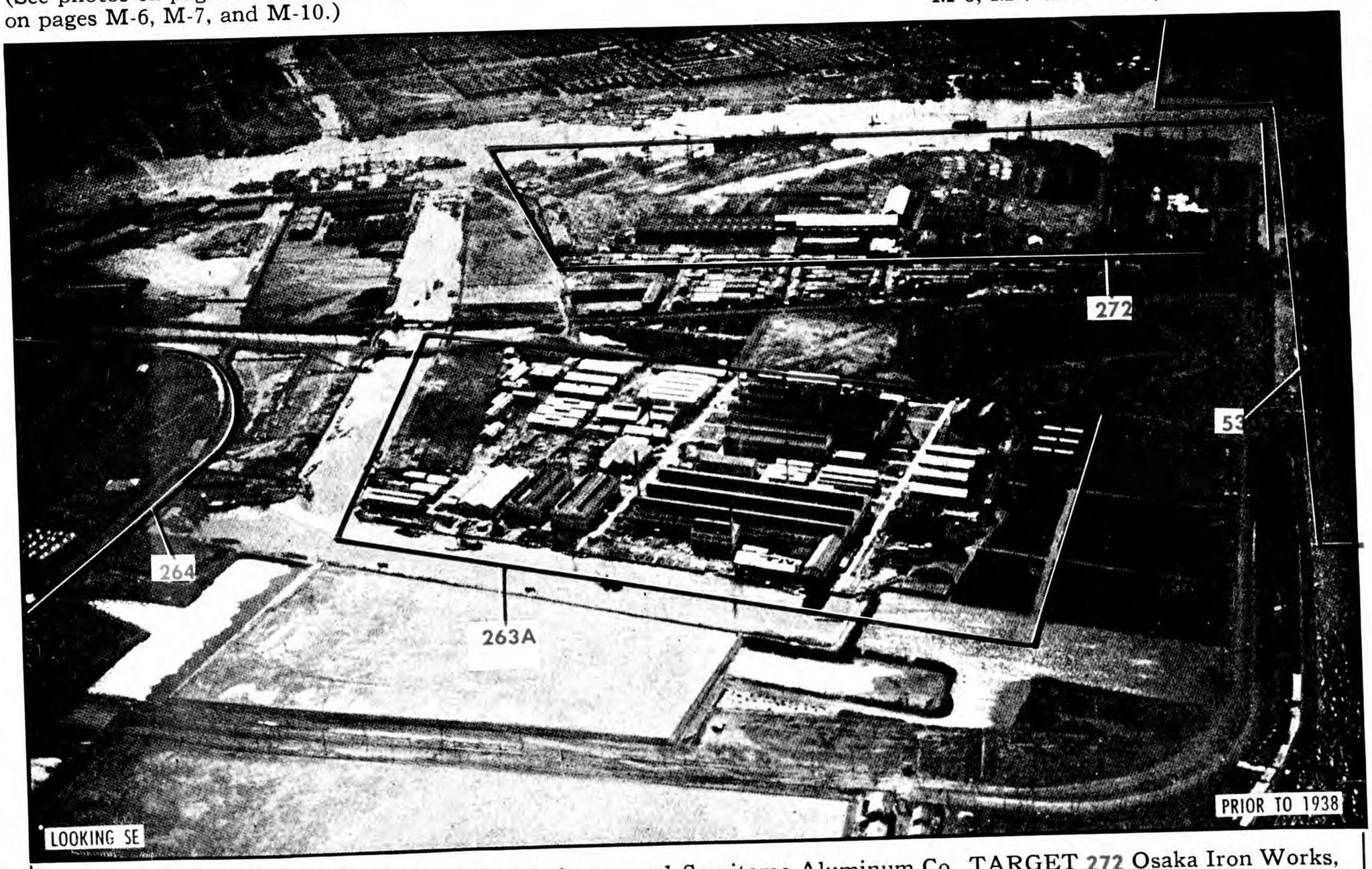
(K.K. Osaka Tekko Sho)

OSAKA

(SHIPYARDS)

34° 40′ N 135° 27′ E (Approx)—Can build ships up to 12,000 tons and repair ships up to 15,000 tons. Modern equipment. Five ways (four over 500 ft long, one 305 ft), electric furnace (cap 36,000 tons per year), steel, iron and brass foundries, rolling mills. Employed over 14,000 men in 1938. Products: ships (cruisers, submarines, mine-sweepers, freighters, oil tankers), rolling stock, steam and Diesel engines, turbines, heavy castings and forgings, structural steel.

(See photo on page 30; maps on pages M-6, M-7 and M-10.)



Osaka—TARGET 263A Sumitomo Metal Industry and Sumitomo Aluminum Co. TARGET 272 Osaka Iron Works, Unit No. 1. Target shown, text on another page: TARGET 53 Osaka Harbor, TARGET 264 Sumitomo Metal Industry.

OSAKA 90.25 TARGETS 263A&B, 272 (OSAKA CITY)

3621—30—Osaka—5-23-44—Final Proof

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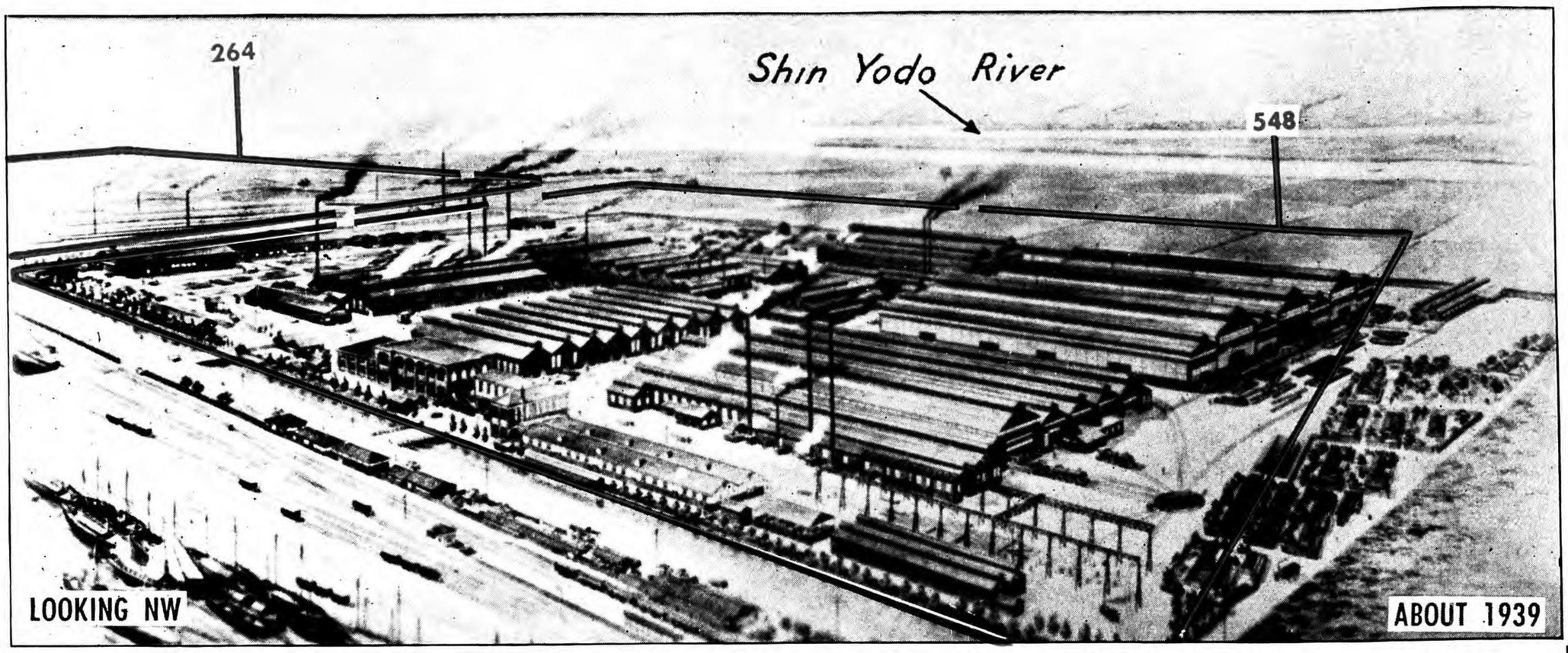


Osaka—Artist's sketch TARGET 548 Rolling Stock Mfg. Co. TARGET 264 Sumitomo Metal Industry.

TARGET
1721 TANAKA PISTON RING CO.
(Tanaka Piston Ring K.K.)
OSAKA
(MACHINERY & MACHINE TOOLS)

34° 41′ N 135° 31′ E (Approx)—Medium size plant. Produces piston rings. Cap unknown.

(See photo on page 21; maps on pages M-6 and M-7.)

TARGET
264 SUMITOMO METAL INDUSTRY
(Sumitomo Kinzoku Kogyo K.K.)
OSAKA
(IRON & STEEL)

34° 40′ N 135° 27′ E (Approx)—Modern plant, covering approx 66 acres. Open-hearth and electric furnaces. Actual production in 1936 was 95,000 metric tons of steel. Estimated max cap 100,000 tons of carbon steel and 50,000 tons of electric steels; 76,000 ton rolling cap, 20,000 tons of steel forgings, 20,000 tons of castings, 36,000 tons of wheels. Co designs and manufactures machinery and tools.

(See photos on pages 30 and 31; maps on pages M-6, M-7 and M-10.)

TARGET
1720 KWOYO PRECISION WORKS CO.
(Kwoyo Seiko K.K.)
OSAKA
(MACHINERY & MACHINE TOOLS)

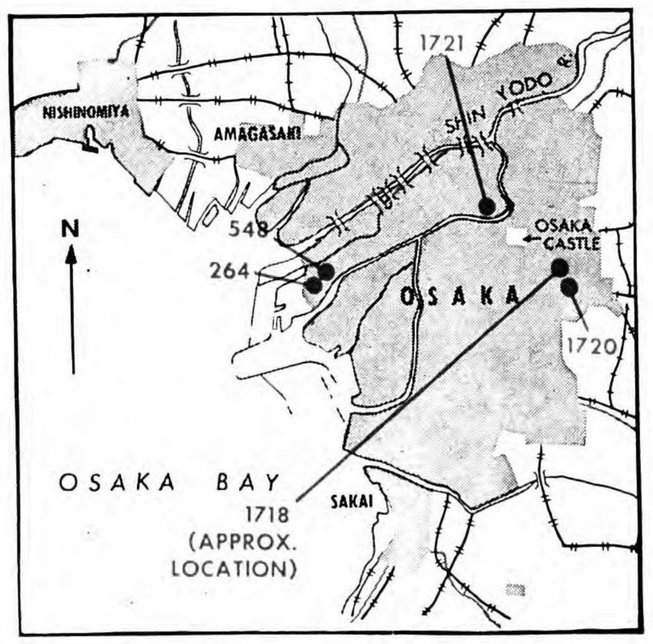
34° 39′ N 135° 33′ E (Approx)—Small plant. Produces ball bearings, roller bearings and precision gauges. Cap unknown.

(See maps on pages M-6 and M-7.)

TARGET
548 ROLLING STOCK MFG. CO.
(Kisha Seizo K.K.)
OSAKA
(TRANSPORTATION)

34° 40′ N 135° 27′ E (Approx)—Cap 21,800 metric tons of steel per year. One electric furnace for castings, cap 5450 metric tons per year. Ship parts for Navy. Equipped to produce locomotives, freight cars, steel bridges and frames, machine tools, boilers, stokers, road rollers, etc. Reported converted to arms manufacture.

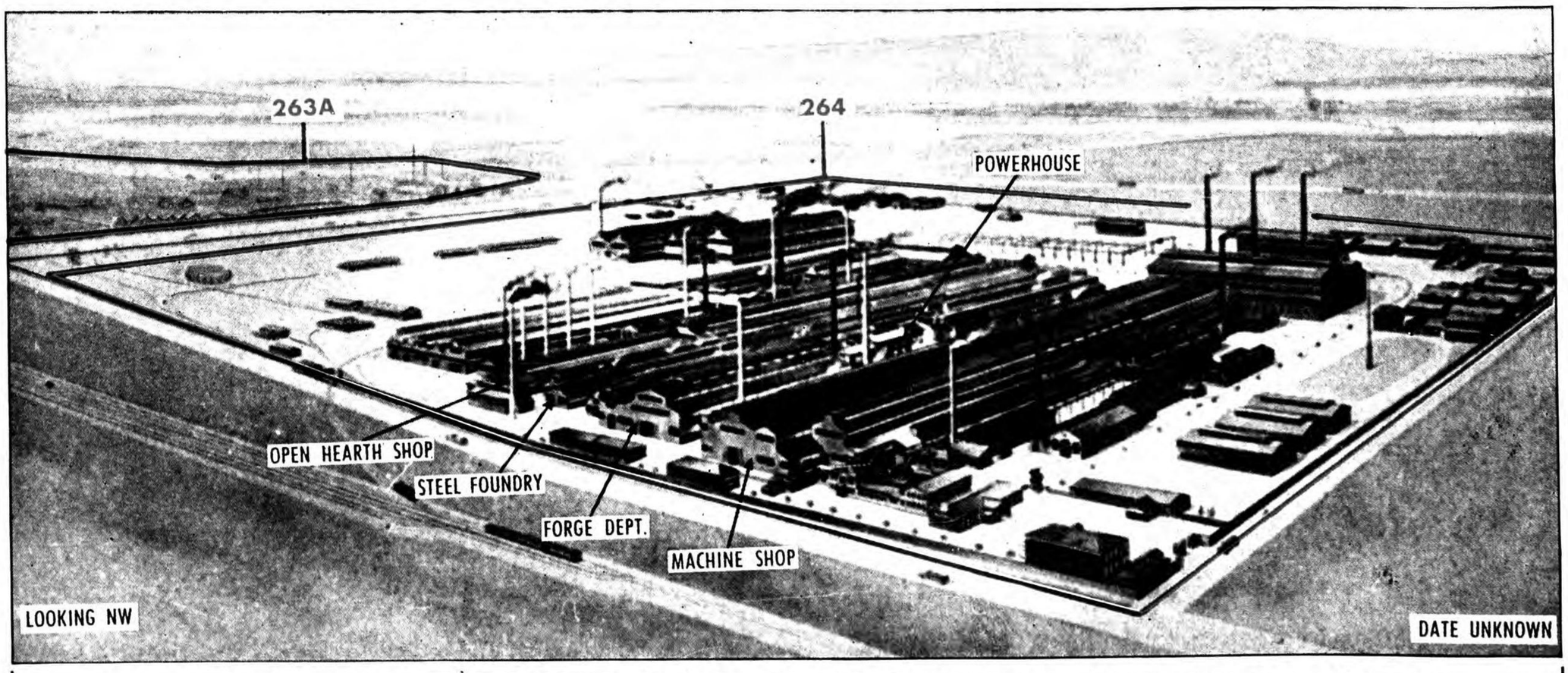
(See photo on page 31; maps on pages M-6, M-7 and M-10.)



TARGET
1718 KWOYO PRECISION WORKS CO.
(Kwoyo Seiko K.K.)
OSAKA
(MACHINERY & MACHINE TOOLS)

34° 39′ N 135° 33′ E (Approx)—Small plant. Produces ball bearings, roller bearings and precision gauges. Cap unknown.

(See maps on pages M-6 and M-7.)



Osaka—Artist's sketch TARGET 264 Sumitomo Metal Industry. Target shown, text on another page: TARGET 263A Sumitomo Metal Industry and Sumitomo Aluminum Co.

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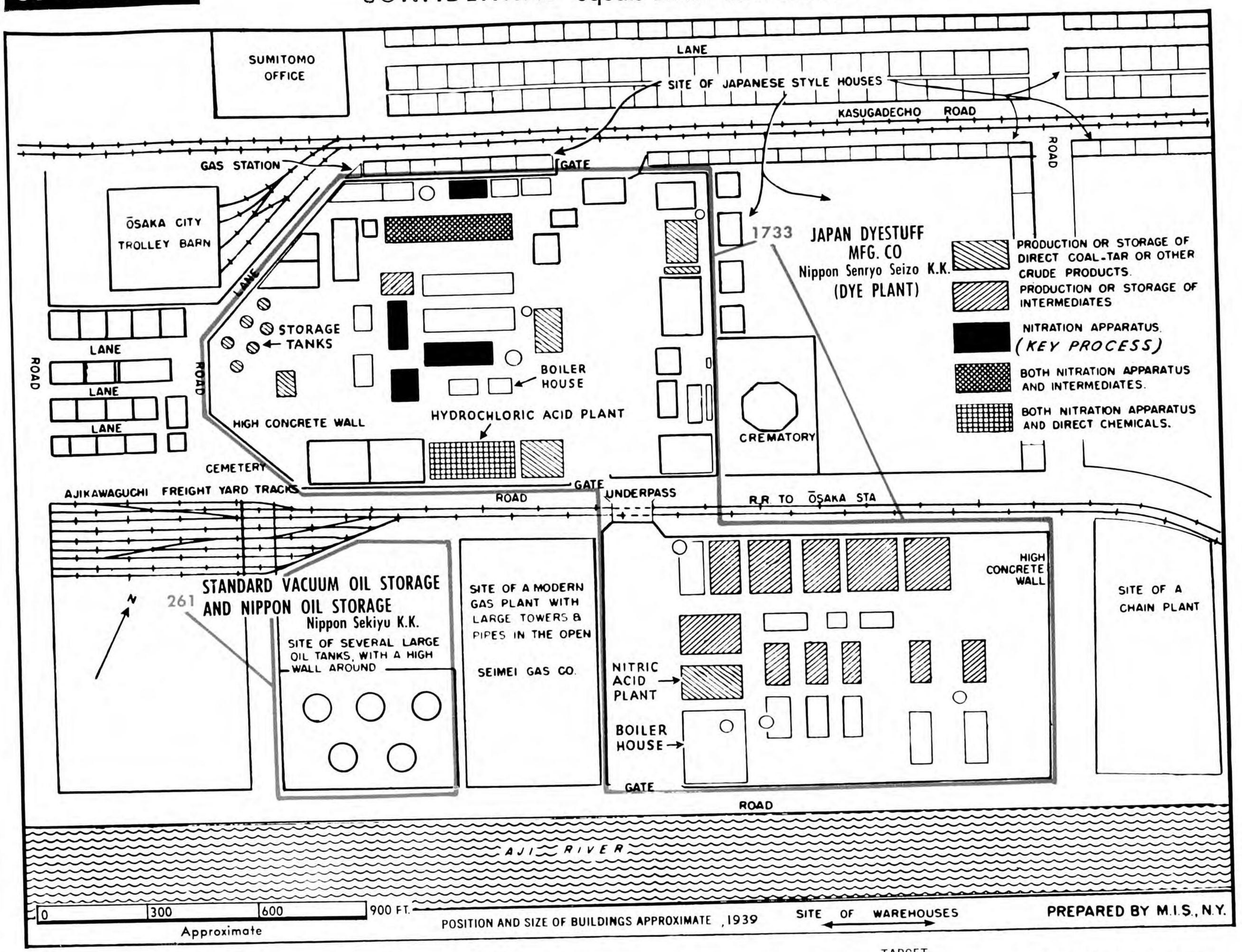
3621—31—Osaka—5-23-44—Final Proof



TARGET **261**

STANDARD VACUUM OIL STORAGE & NIPPON OIL STORAGE

(Nippon Sekiyu K.K.)

OSAKA

(PETROLEUM)

34° 40′ N 135° 27′ E (Approx)—These two adjacent storage depots on NW bank of Ajikawa R. Total tankage of approx 50,000 bbls. Most of tankage for Diesel oil; some gasoline. Three large tanks, five small. Numerous whses.

(See photo on page 32; maps on pages M-6, M-7 and M-10.)

TARGET **1733**

JAPAN DYESTUFF MFG. (Dye Plant)

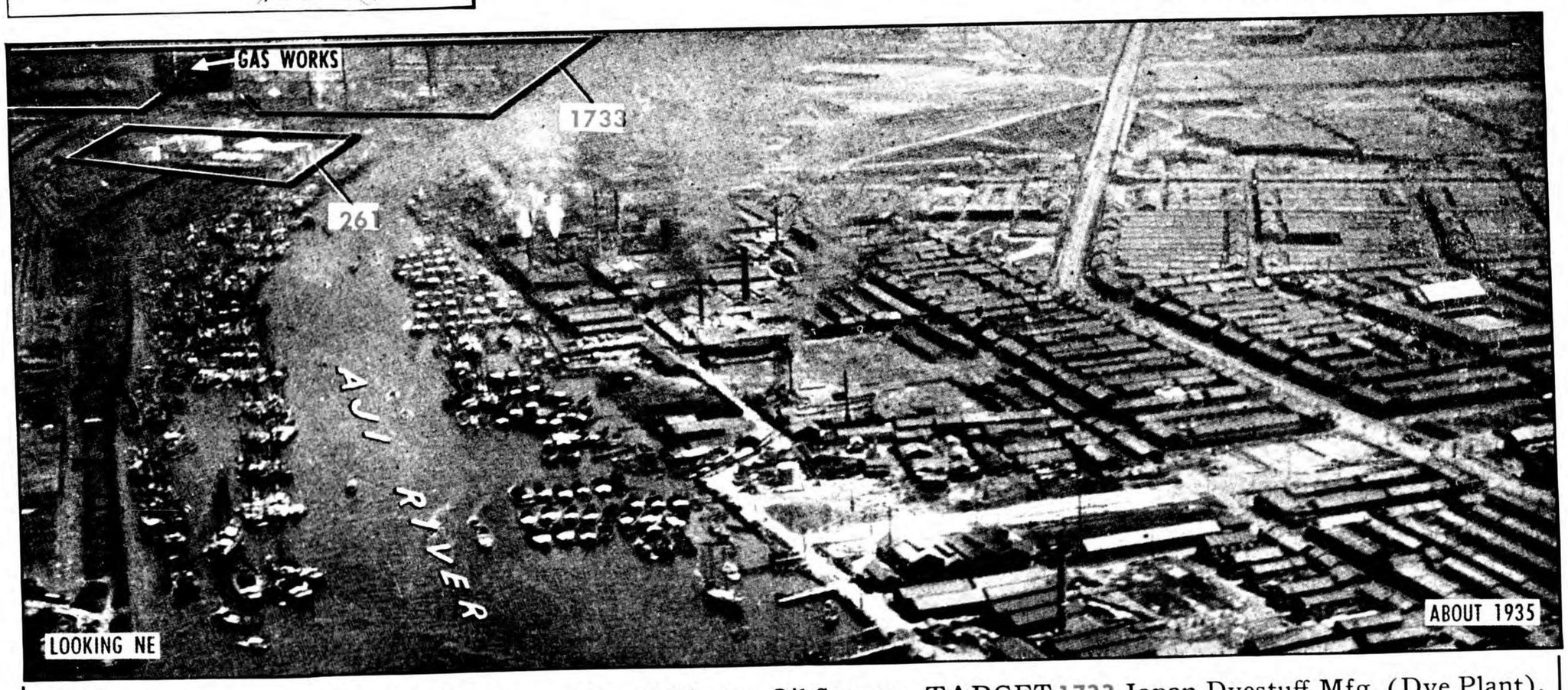
(Nippon Senryo Seizo K.K.)

OSAKA

(CHEMICALS)

34° 40′ N 135° 27′ E (Approx)—Most important pre-war dye plant in Japan. Accounted for 20% of Japanese dye production and 30% of its intermediates. Undoubtedly converted to production of essential war materials; could make explosives, drugs, poison gases, chemicals.

(See photo on page 32; maps on pages M-6, M-7 and M-10.)

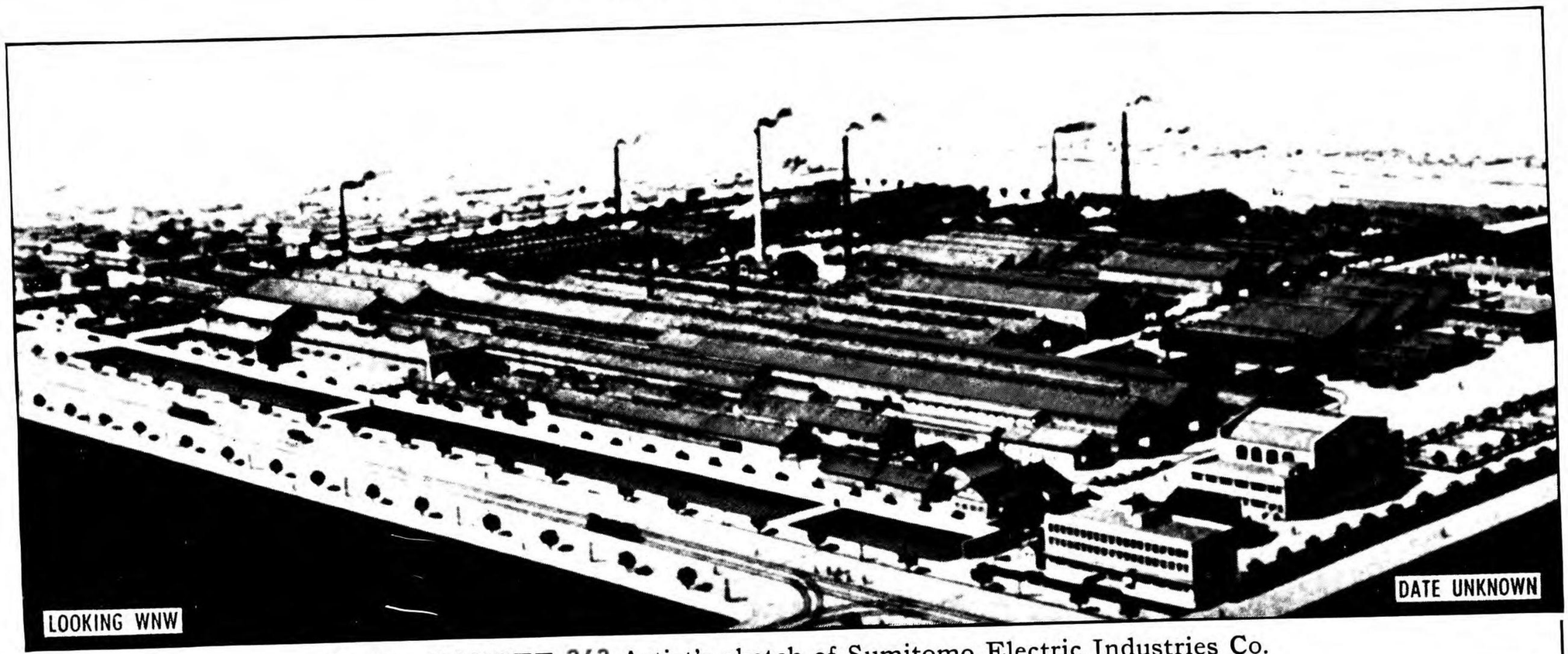


Osaka—TARGET 261 Standard Vacuum Oil and Nippon Oil Storage. TARGET 1733 Japan Dyestuff Mfg. (Dye Plant).

OSAKA 90.25 TARGETS 261, 1733 (OSAKA CITY)

3621—32—Osaka—4-3-44—First Proof

CONFIDENTIAL equals British Confidential



Osaka—TARGET 262 Artist's sketch of Sumitomo Electric Industries Co.

TARGET
262 SUMITOMO ELECTRIC INDUSTRIES CO.

(Sumitomo Denki Kogyo K.K.)

OSAKA

(ELECTRIC EQUIPMENT)

34° 41′ N 135° 27′ E (Approx)—Very important producer of electric wire and cable. Estimated 25% of total insulated wire and cable for Empire. Bldgs and equipment completely modern. Products: electric wire and cable, aircraft and other electrical equipment, high-speed tools and other machine tools; metal bars, rods, sheets and tubes. Now reported producing synthetic rubber.

(See photo on page 33; maps on pages M-6, M-7 and M-10.)

TARGET
1628 TAKEDA DRUG CO.

(Chobei Takeda)

OSAKA

(CHEMICALS)

34° 43′ N 135° 29′ E (Approx)—Only plant in Japan known to make quinine. One of largest pharmaceutical plants in Japan.

(See photo on page 33; maps on pages M-6, M-7 and M-12.)

TARGET
1705 STRONG ENGINEERING WORKS CO.

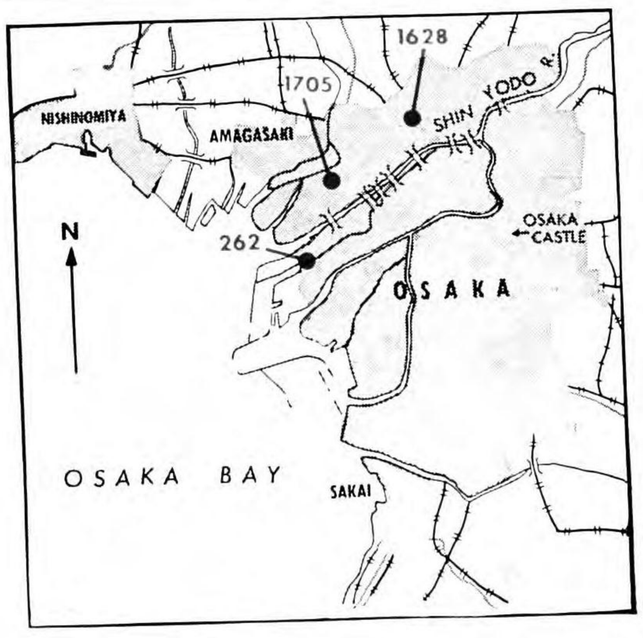
(K.K. Strong Seisakusho)

OSAKA

(AIRCRAFT)

34° 42′ N 135° 27′ E (Approx)—Small plant producing pistons, other airplane parts.

(See maps on pages M-6, M-7 and M-10.)



Osaka—TARGET 1628 Artist's sketch of Takedo Drug Co.

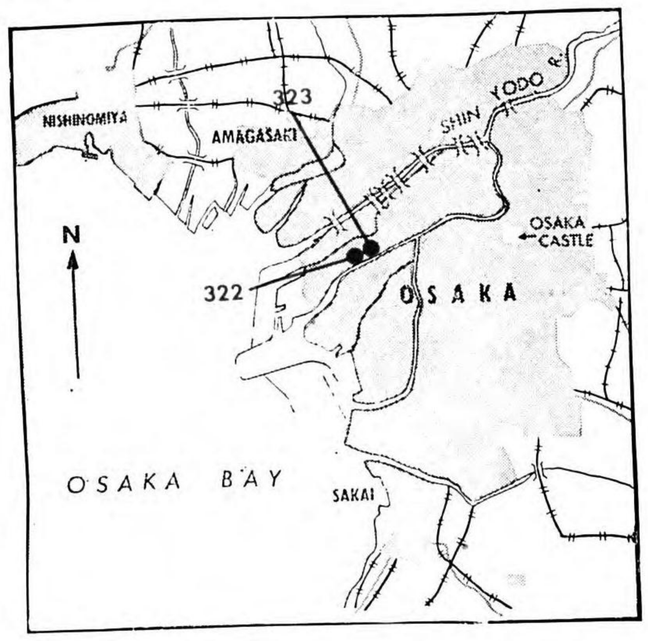
CONFIDENTIAL equals British Confidential

3621—33—Osaka—5-23-44—Final Proof

DESCRIPTION OF TARGETS

OSAKA 90.25 TARGETS 322, 323 (OSAKA CITY)

CONFIDENTIAL equals British Confidential



TARGET
322

KASUGADE No. 1 STEAM POWER PLANT

OSAKA

(ELECTRIC POWER)

34° 40′ N 135° 28′ E (Approx)—Important standby plant. Expanded to 63,000 KW in 1938. Construction: Generator room-reinforced concrete; Boiler bays—sheet metal over steel frame. Less than 600 ft WSW of TARGET 323.

(See photo on page 34; maps on pages M-4, M-6, M-7 and M-10.)

TARGET
323

KASUGADE No. 2 STEAM POWER PLANT

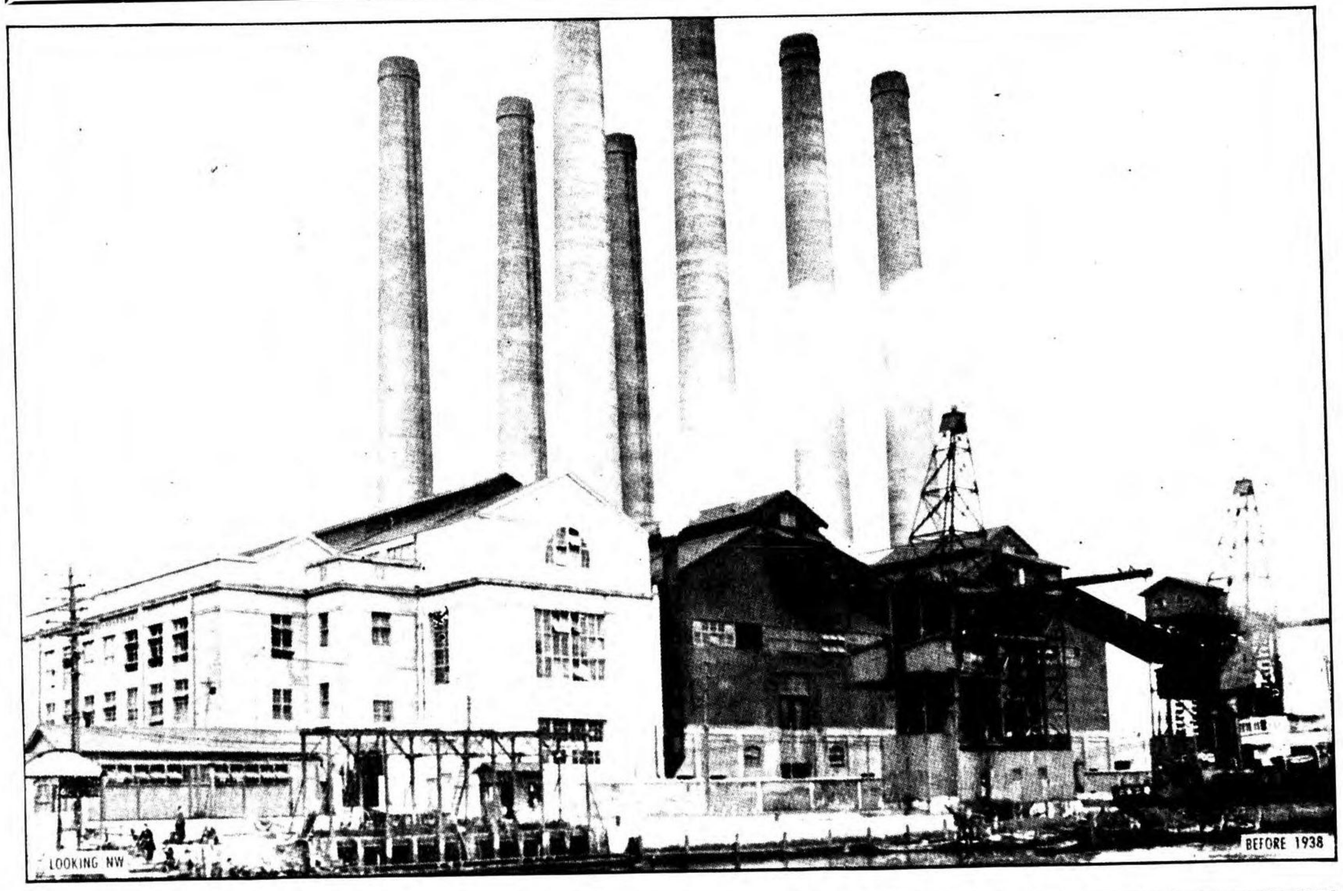
OSAKA

(ELECTRIC POWER)

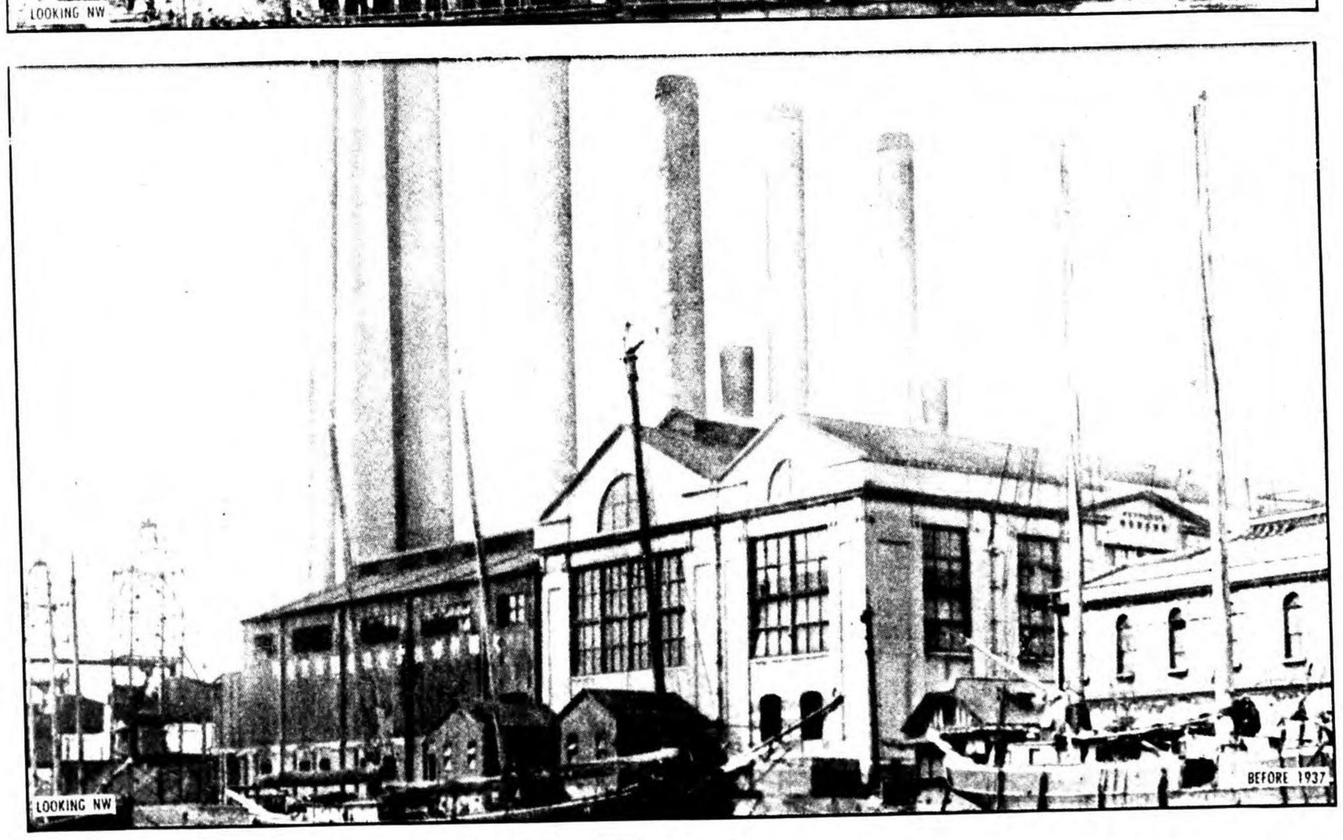
34° 40′ N 135° 28′ E (Approx)—Important standby plant. Expanded to 65,000 KW in 1937. Construction: Generator room—reinforced concrete; Boiler bays—sheet metal over steel frame. Less than 600 ft ENE of TARGET 322.

(See photo on page 34; maps on pages M-4, M-6, M-7 and M-10.)

Osaka—TARGET **322** Kasugade No. 1 Steam Power Plant. TARGET **323** Kasugade No. 2 Steam Power Plant. Space between plants partially covered by extensions in 1937-38.



Osaka — TARGET **323** Kasugade Steam Power Plant No. 2. Plant was expanded in 1938, probably to the left.



Osaka — TARGET **322** Kasugade Steam Power Plant No. 1. Plant was extended to right in 1937.

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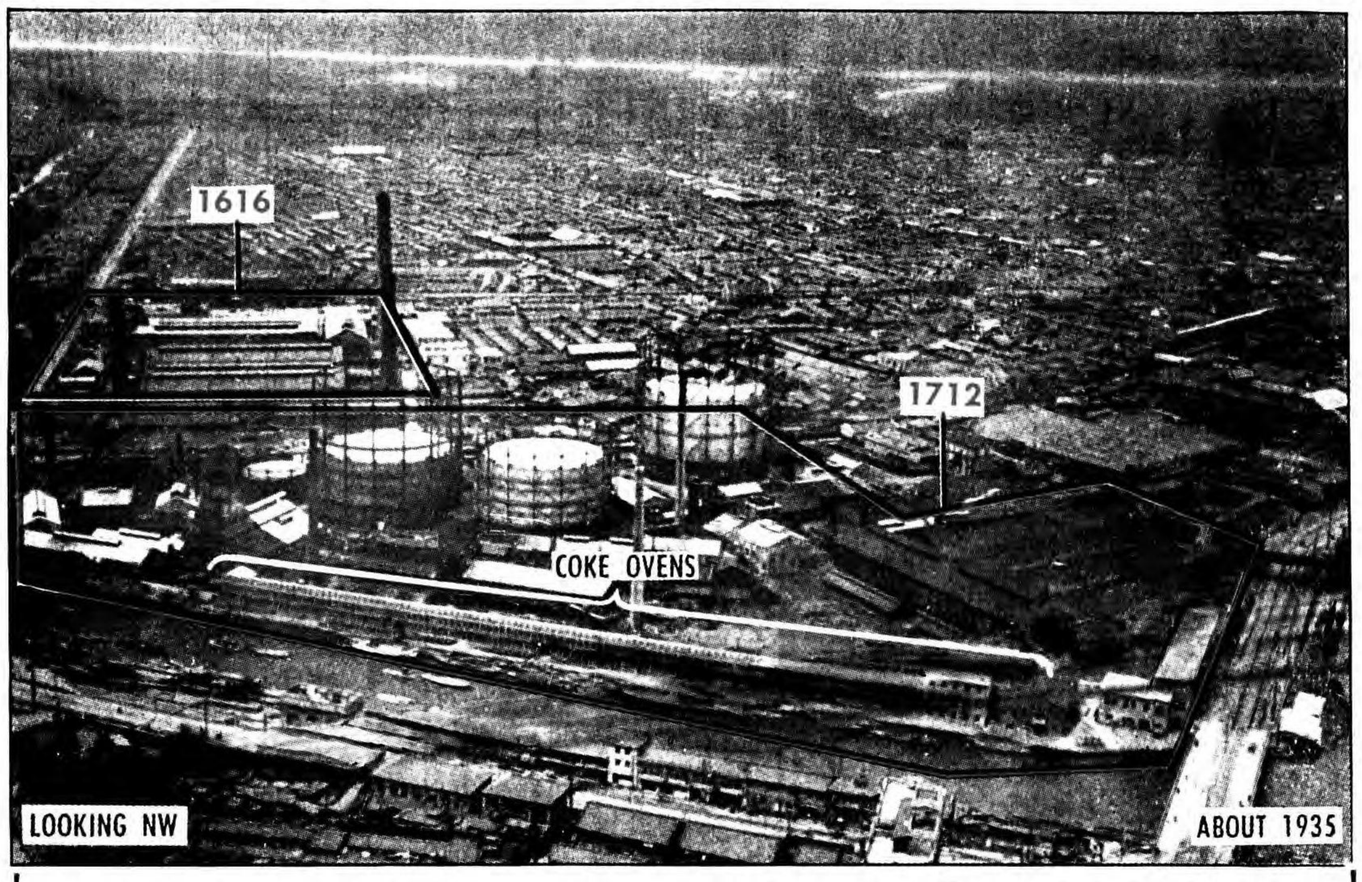
OSAKA 90.25 TARGETS 322, 323 (OSAKA CITY)

3621—34—Osaka—4-3-44—First Proof

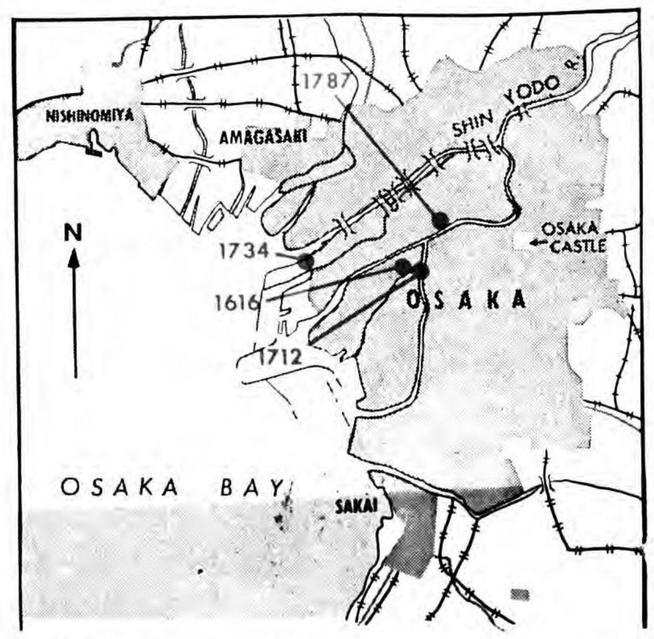
OSAKA 90.25 TARGETS 1616, 1712, 1734, 1740 (OSAKA CITY)

CONFIDENTIAL equals British Confidential

DESCRIPTION OF TARGETS



Osaka—TARGET 1712 Osaka Gas Co. Coke Oven Plant. TARGET 1616 Kujo Steam Power Plant.



TARGET
1712 OSAKA GAS CO. COKE OVEN PLANT

OSAKA

(MISCELLANEOUS)

34° 40′ N 135° 29′ E (Approx)—Larger of Co's two plants in Osaka. Supply coke and gas for the iron foundries and steel works in the vicinity. The annual cap of these ovens for coke is 398,000 metric tons, (about 3% of total Japanese coke oven cap). Note: 2nd plant of Co not listed as target. Located at 34° 40′ N 135° 27′ E, immediately NE of TARGET 261.

(See photo on page 35; maps on pages M-6 and M-7.)

TARGET
1734 JAPAN DYESTUFF MFG. (Drugs Plant)

(Nippon Senryo Seizo K.K.)

OSAKA

(CHEMICALS)

34° 41′ N 135° 26′ E (Approx)—Important producer of high grade medicines. Compound approx 1400 yds along Shin Yodo R, width approx 450 yds, 60-70 bldgs in W end. Bldgs two-storied, sawtooth roofs, reinforced concrete construction. Large piles of chemicals at SE end of compound. 75-90 ft concrete chimney important landmark. All bldgs modern style and construction.

(See maps on pages M-6, M-7 and M-10.)

TARGET
1616 KUJO STEAM POWER PLANT

OSAKA

(ELECTRIC POWER)

34° 40′ N 135° 29′ E (Approx)—Secondary standby plant. Adjoining units of 40,000 KW and 6000 KW. Brick and sheet metal construction. One tall and several short concrete chimneys. Note: Main Osaka gas works (TARGET 1712) located directly S across canal.

(See photo on page 35; maps on pages M-4, M-6 and M-7.)

TARGET
1787 ORIENTAL CAN MFG. CO.

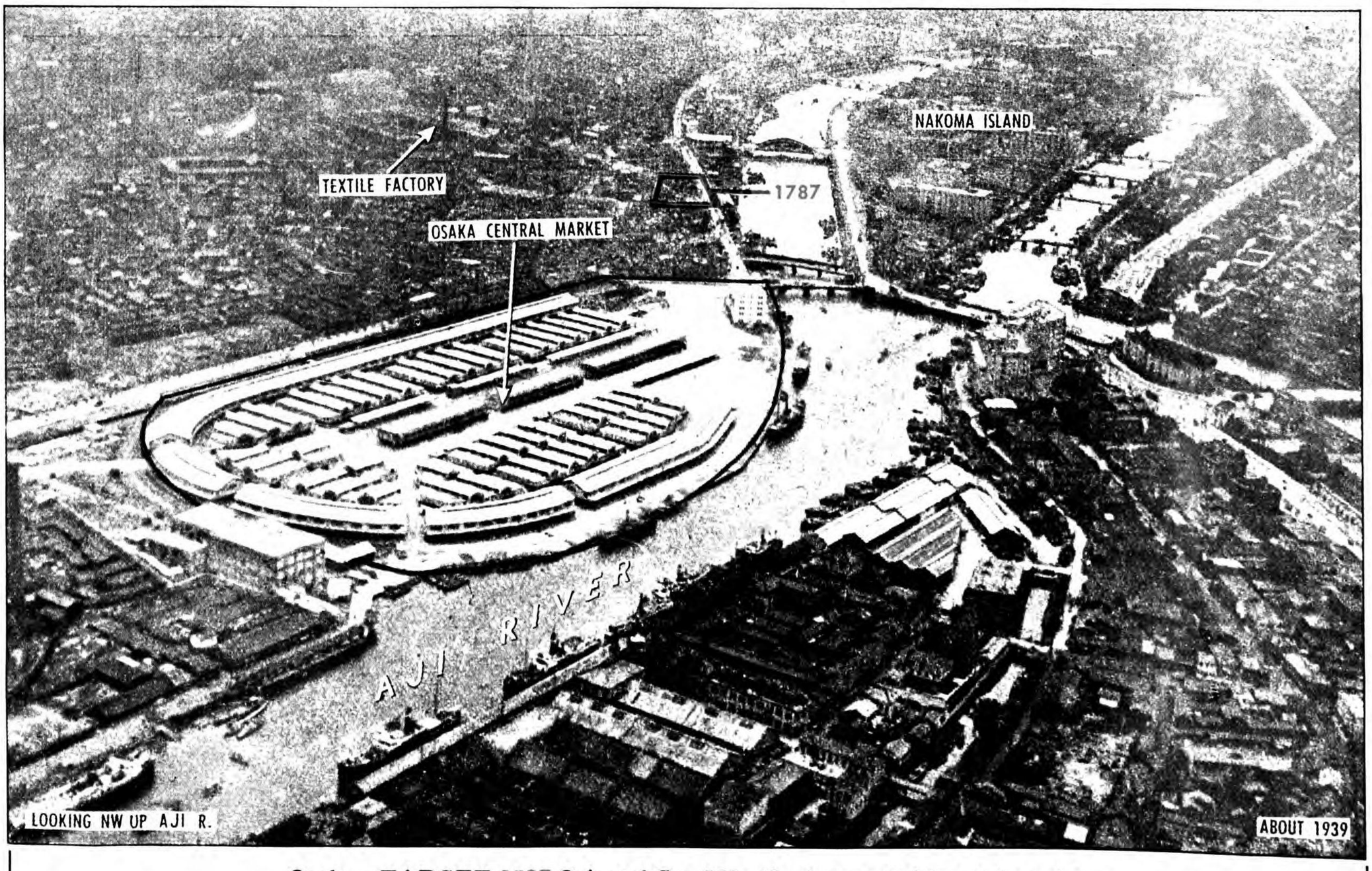
(Toyo Seikwan K.K.)

OSAKA

(MISCELLANEOUS)

34° 41′ N 135° 29′ E (Approx)—One of three plants of Co which is reported to produce bomb and grenade casings as well as cans.

(See photo on page 35; maps on pages M-6 and M-7.)



Osaka—TARGET 1787 Oriental Can Mfg. Co. is reported located as shown.

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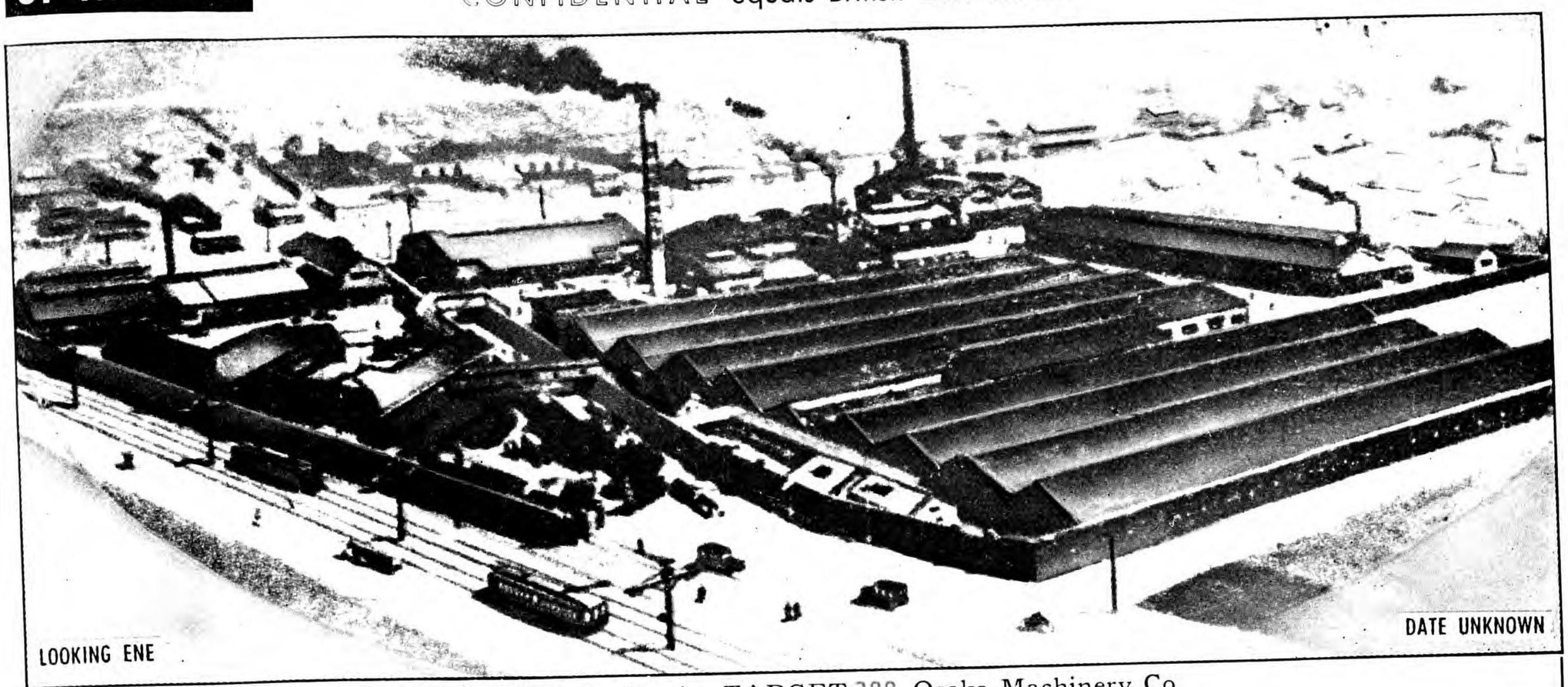


Osaka—Artist's sketch TARGET 388 Osaka Machinery Co.

TARGET **1206**

OSAKA RAILROAD STATION

OSAKA

(TRANSPORTATION)

34° 42′ N 135° 30′ E (Approx)—Northern part of Osaka. City's principal passenger/freight sta. Extensive yards adjoin station on N. On Tokaido Main Line, connects with Kansai Line and water-front belt RR.

(See photos on page 36; maps on pages M-6 and M-7.)

TARGET **388**

OSAKA MACHINERY CO.

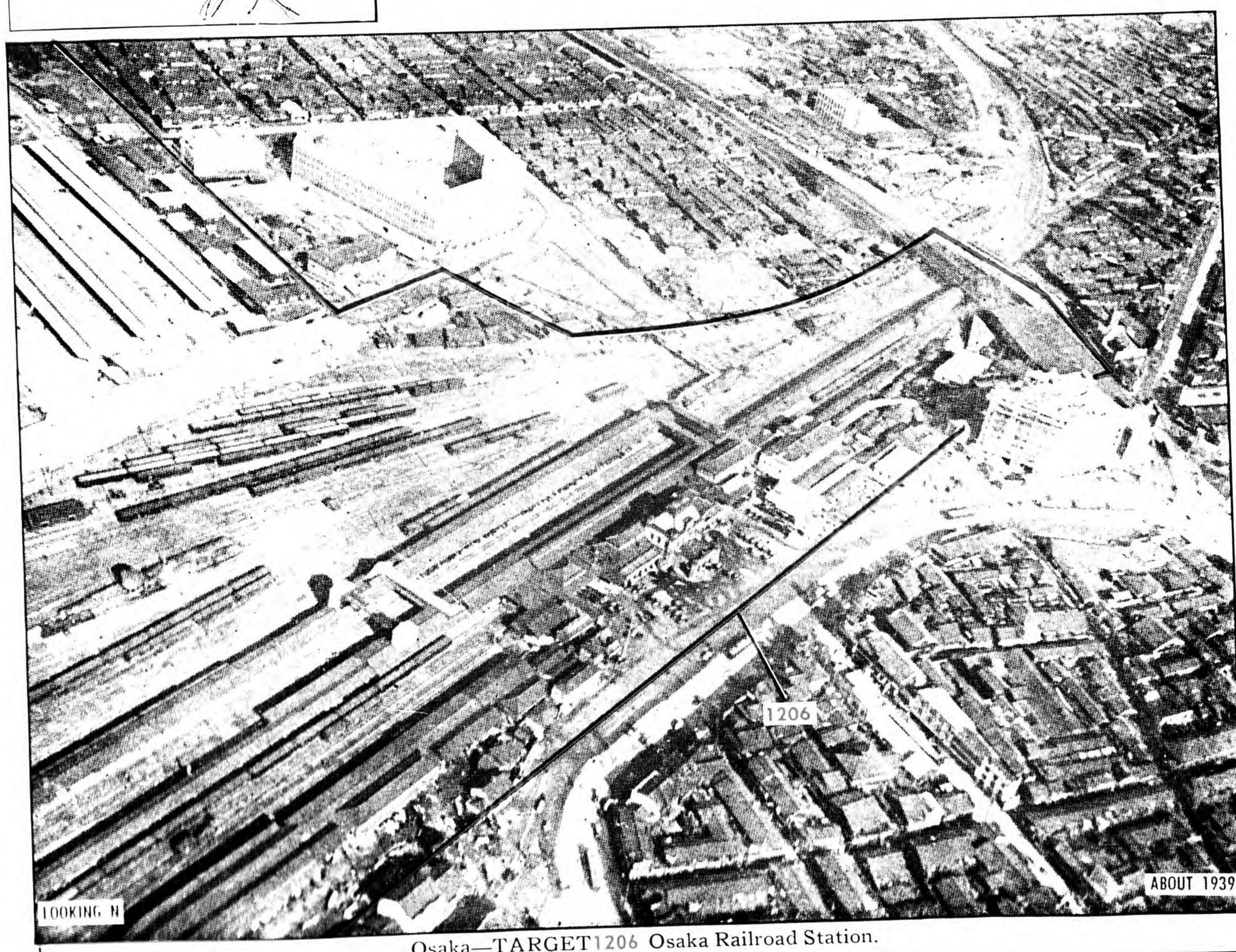
(Osaka Kiko K.K.)

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 42′ N 135° 30′ E (Approx)—Produces meters, Diesel engines and possibly munitions. (See TARGET 1780 on page 63.)

(See photo on page 36; maps on pages M-6 and M-7.)



Osaka—TARGET 1206 Osaka Railroad Station.

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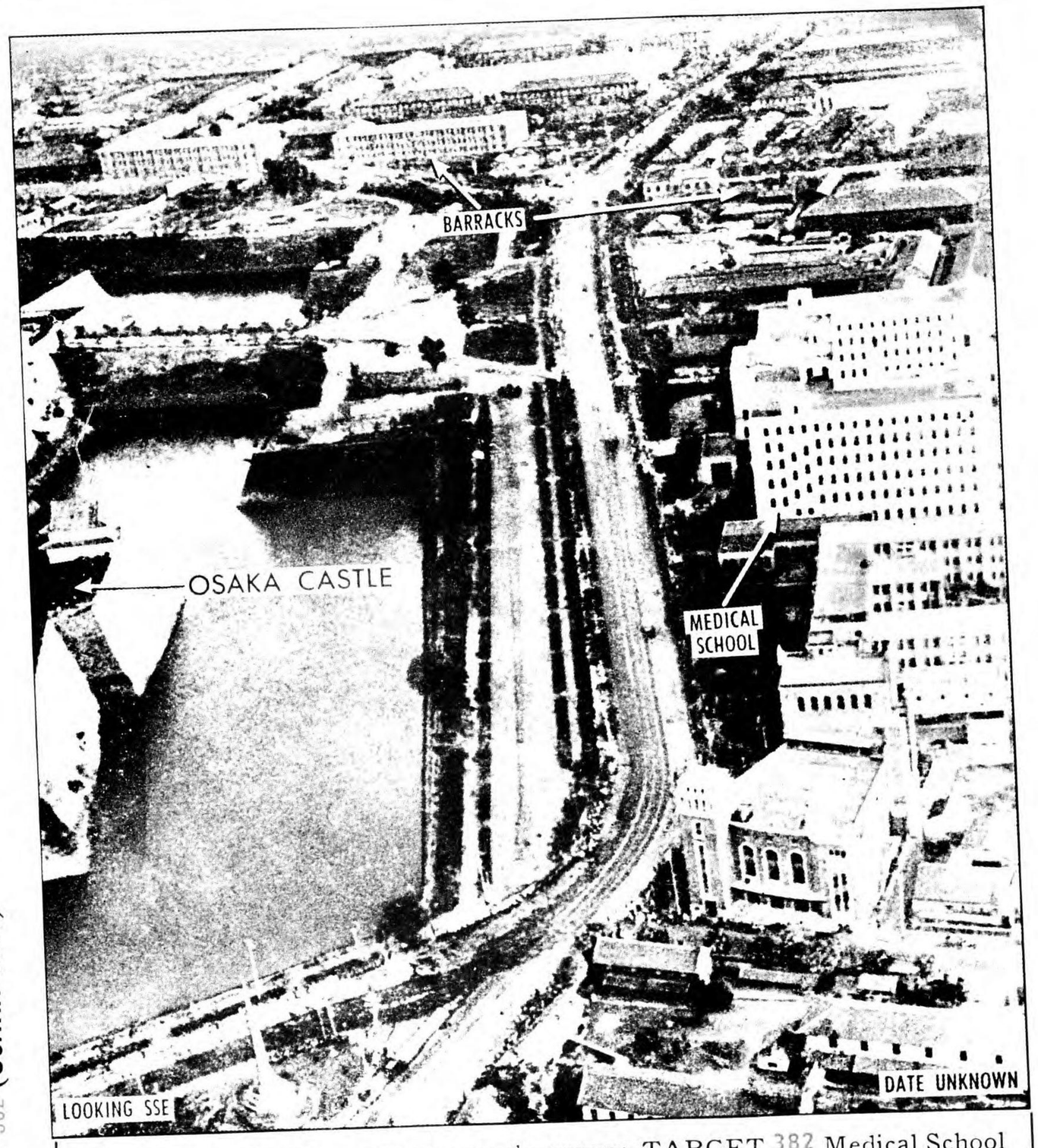
OSAKA 90.25 TARGETS 388, 1206 (OSAKA CITY)

3621—36—Osaka—5-23-44—Final Proof

CONFIDENTIAL equals British Confidential



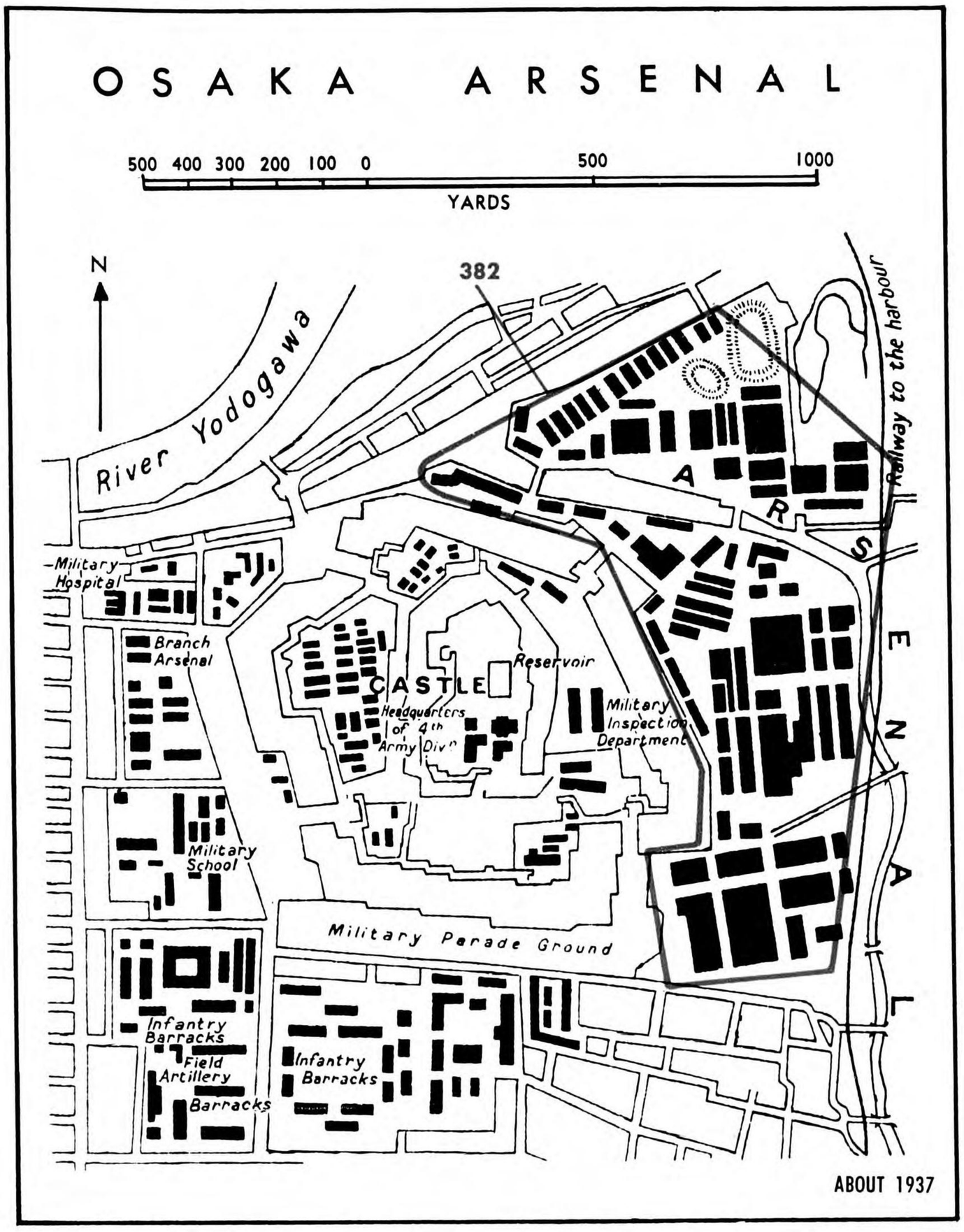
Osaka—Target shown, text on another page: TARGET 382 Medical School and barracks area near the Osaka Arsenal.

Osaka—Target shown, text on another page: TARGET 382 Osaka Arsenal. This view was taken before the Castle was rebuilt.

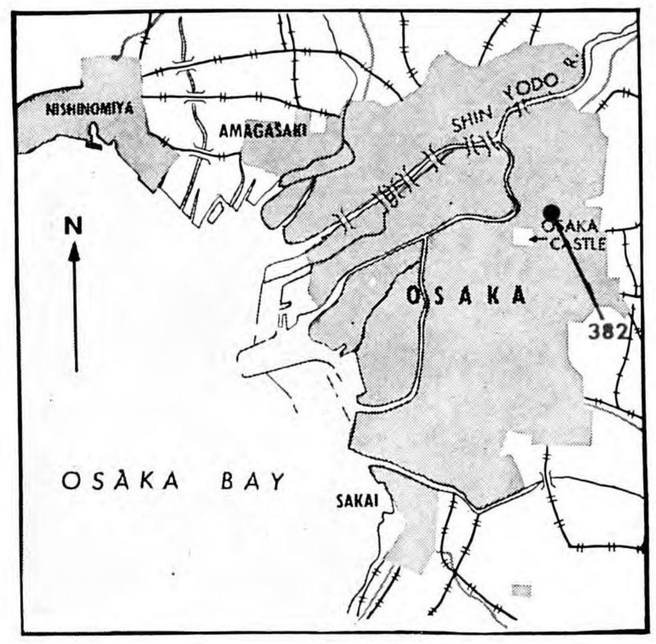
CONFIDENTIAL equals British Confidential

OSAKA 90.25 TARGET 382 (OSAKA CITY)

3621—38—Osaka—4-3-44—First Proof



ABOUT 1937



TARGET
382

OSAKA ARMY ARSENAL

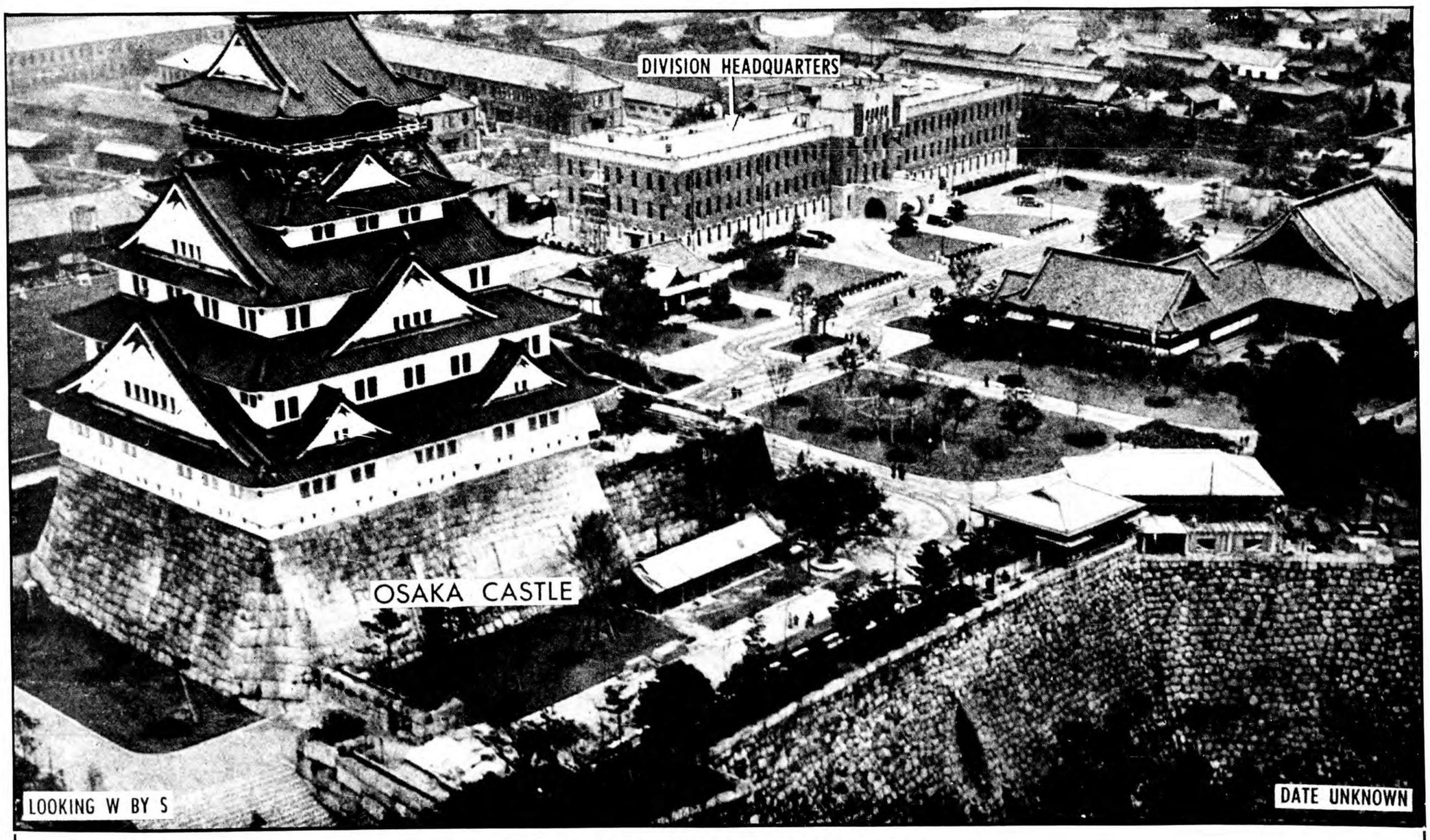
(Osaka Rikugun Zoheisho)

OSAKA

(ARSENALS & MILITARY STORES)

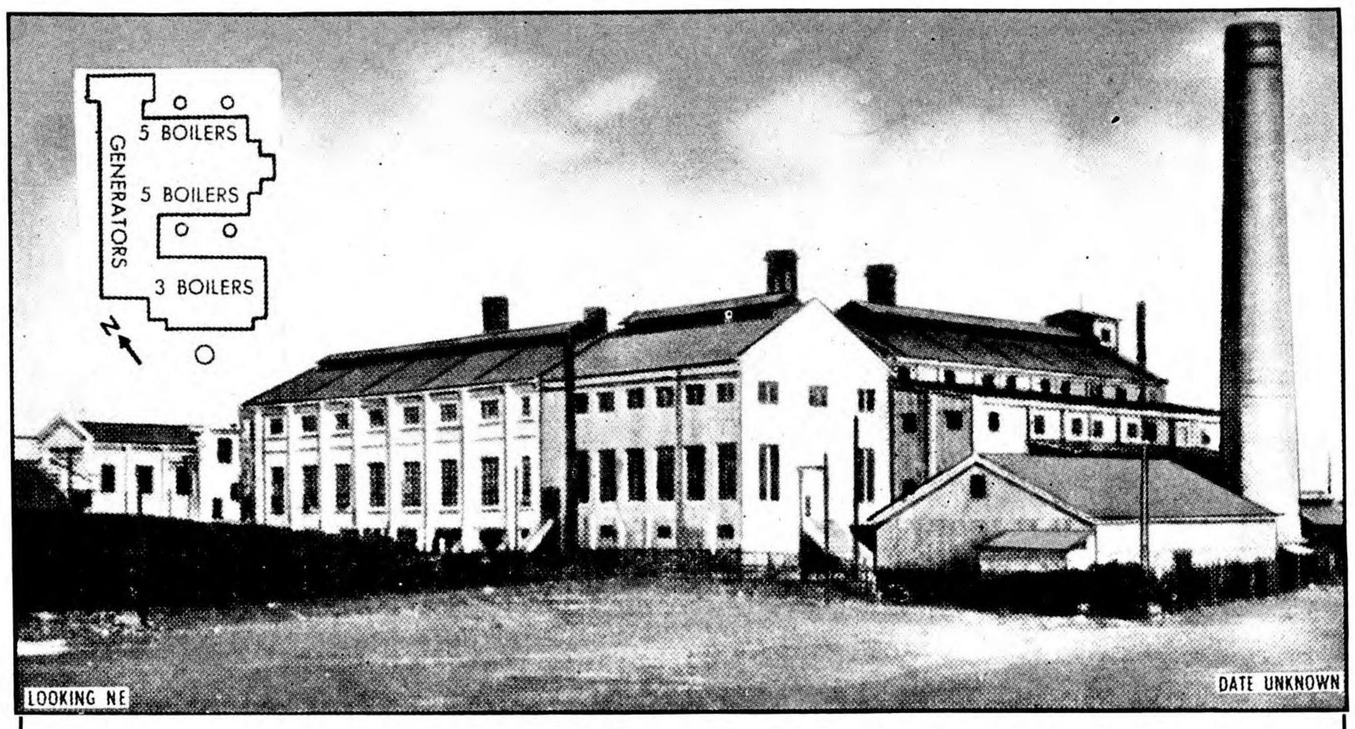
34° 41′ N 135° 32′ E (Approx)—One of Japan's most important arsenals, specializing in medium caliber artillery and small arms. Immediately E and adjacent to Osaka Castle. Produces AA guns, artillery, machine guns, rifles, shell cases and projectiles, breech blocks, tubes for field and coastal artillery up to 155 mm, gun mechanisms, bombs and fuses. Major installations include: steel mill and gun/munition factories and research laboratory. Produced in 1938: 130,000 rifles, 16,000 light machine guns and barrels, 13,000 heavy machine guns and barrels, 1200 field and AA guns of various calibers, and 900,000,000 small arms cartridges. Covers approx 150 acres. Bldgs mostly of brick.

(See photos on pages 21, 37 and 38; maps on pages M-6 and M-7.)

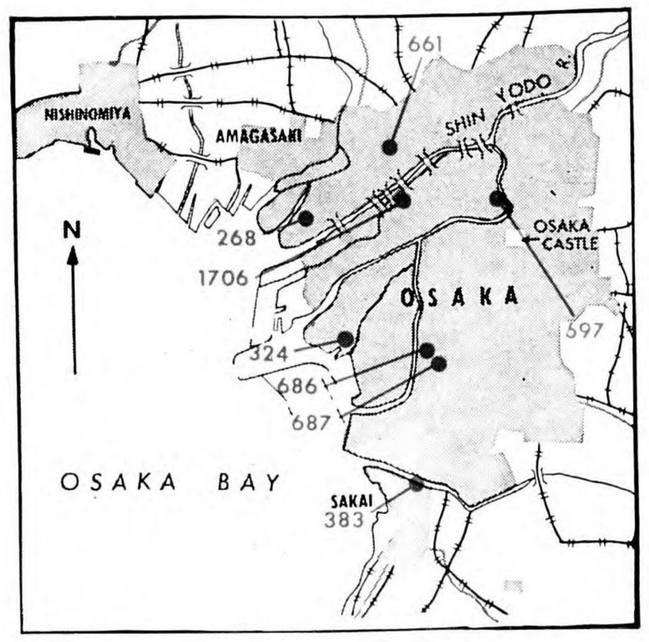


Osaka—TARGET 382 Osaka Army Arsenal.

CONFIDENTIAL equals British Confidential



Osaka—TARGET 324 Fukuzaki Steam Power Plant.



TARGET **383**

DAI NIPPON CELLULOID CO.

(Dai Nippon Celluloid K.K.)

SAKAI

(CHEMICALS)

34° 36′ N 135° 29′ E (Approx)—Converted to production of explosives. Reported 7th largest producer of propellant powders in Japan. Products: smokeless and propellant (cordite type) powders. Main bldg in N half of compound; whses in S half. Reported recent, major expansion.

(See maps on pages M-5, M-6 and M-7.)

TARGET **268**

OSAKA STEEL MFG. CO.

(Osaka Seiko K.K.)

OSAKA

(IRON & STEEL)

34° 42′ N 135° 27′ E (Approx)—Main plant of Co, with cap of 84,000 metric tons of steel ingots. Products are soft steel, hard carbon, nickel chromium and chrome steels, other high grade wrought and special steels. Co manufactures a variety of rolled steels and heavy machinery.

(See maps on pages M-6, M-7 and M-10.)

TARGET **1706**

MIZUNO SPORTING GOODS CO.

(Mizuno Undo Yohin K.K.)

OSAKA

(AIRCRAFT)

34° 42′ N 135° 29′ E (Approx)—Small plant manufacturing gliders.

(See maps on pages M-6 and M-7.)

TARGET **687**

OSAKA WAKAYAMA IRON WORKS

(K.K. Osaka Wakayama Tekko Sho)

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 39′ N 135° 30′ E (Approx)—Machine tools, pumps, gears, oil filters and piston rings.

(See maps on pages M-6 and M-7.)

TARGET **661**

AMATSUJI STEEL BALL MFG. CO.

(Amatsuji Kokyu Seisakusho)

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 43′ N 135° 28′ E (Approx)—Important. Reported one of three plants in Japan producing steel balls for bearings, supplied to leading manufacturers of ball bearings.

(See maps on pages M-6, M-7 and M-10.)

TARGET **324**

FUKUZAKI STEAM POWER PLANT

OSAKA

(ELECTRIC POWER)

34° 39′ N 135° 28′ E (Approx)—Secondary standby plant. Cap 40,000 KW. Reinforced concrete bldg. One concrete, four steel stacks. Coal storage along canal to SE.

(See photo on page 39; maps on pages M-4, M-6, M-7 and M-10.)

TARGET **686**

OSAKA METAL INDUSTRY CO.

(Osaka Kinzoku Kogyo K.K.)

OSAKA

(AIRCRAFT)

34° 39′ N 135° 30′ E (Approx)—Important production of propeller governor mechanisms, landing gear and other hydraulic aircraft equipment. Supplies Mitsubishi, Nakajima, Kawasaki.

(See maps on pages M-6 and M-7.)

TARGET **697**

MITSUBISHI COPPER REFINERY

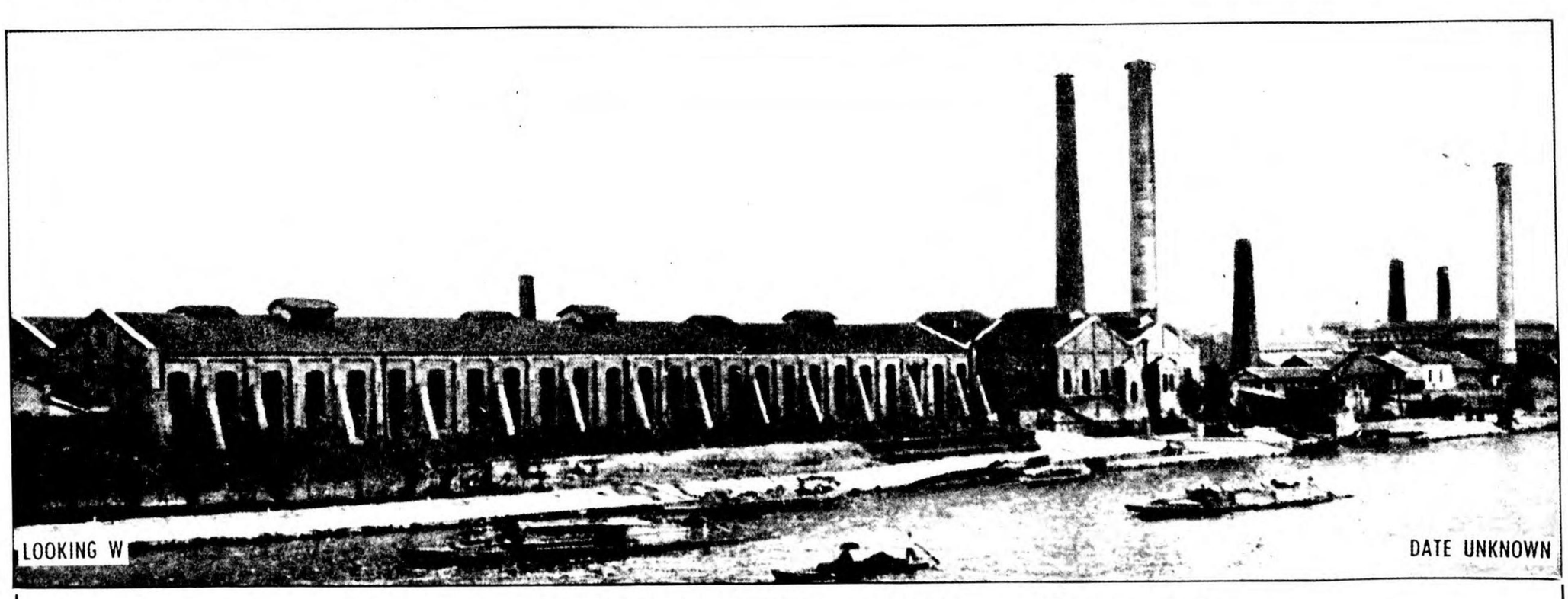
(Mitsubishi Kwogyo K.K.)

OSAKA

(NON FERROUS METALS)

34° 42′ N 135° 31′ E (Approx)—Largest copper refinery in Japan and controlled territory. Produces electrolytic copper, other metals. Est cap 30,000 metric tons per year of refined copper; approx 21% of Japanese cap.

(See photo on pages 21 and 39; maps on pages M-6 and M-7.)



Osaka—TARGET 697 Mitsubishi Copper Refinery, old photograph.

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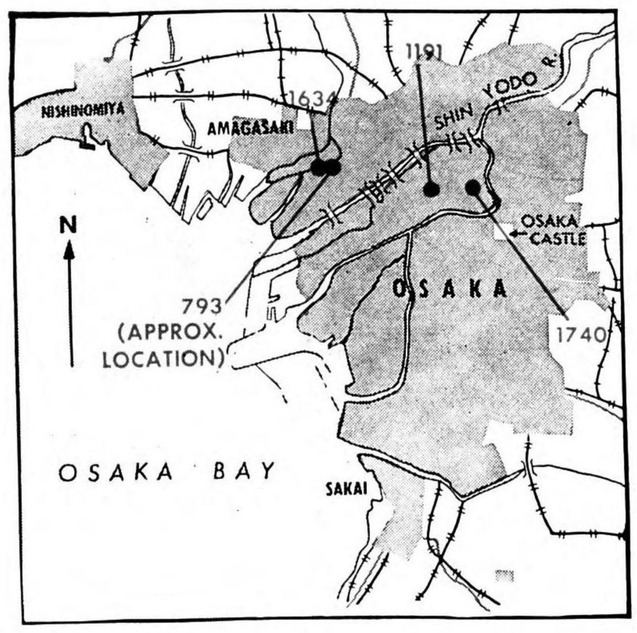
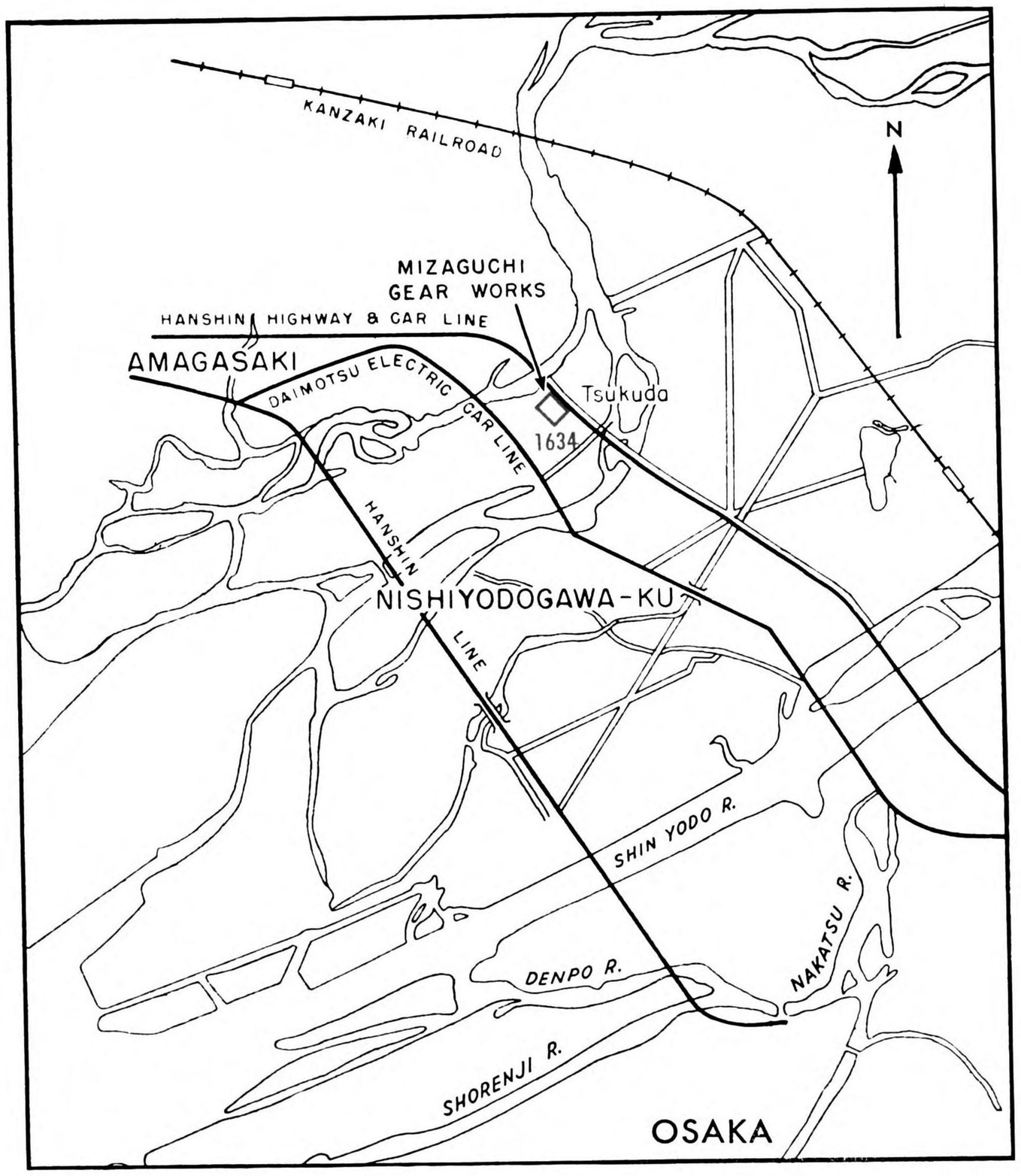
3621—39—Osaka—5-23-44—Final Proof





TARGET

1634 MIZAGUCHI GEAR WORKS

OSAKAŒAMAGASAKI

(MACHINERY & MACHINE TOOLS)

34° 43′ N 135° 27′ E (Approx)—Important producer of very large precision gears and training rings for propulsion and gun turret mechanisms of naval vessels. Reported equipped with finest imported machines and tools which are duplicated only in Japan's leading naval arsenals. In 1939, plant comprised small group of bldgs, most important of which was the central one housing the largest gear cutter equipment. Expansion reported.

(See maps on pages M-6, M-7 and M-10.)

TARGET

1191 HATSUDOKI ENGINE WORKS

(Hatsudoki Seizo K.K.)

OSAKA

(MACHINERY & MACHINE TOOLS)

34° 42′ N 135° 29′ E (Approx)—Medium size plant producing Diesel engines, locomotives, parts and machinery, five main bldgs in compound.

(See maps on pages M-6 and M-7.)

TARGET

1740 FURUKAWA ELECTRICAL CO.

(Furukawa Denki Kogyo K.K.)

OSAKA

(ELECTRIC EQUIPMENT)

34° 42′ N 135° 31′ E (Approx)—Produces copper, aluminum, zinc and alloys; plates, rods and pipes. Reported in 1941 to be expanding.

(See maps on pages M-6 and M-7.)

TARGET

793 FUKUDA LIGHT AIRPLANE CO.

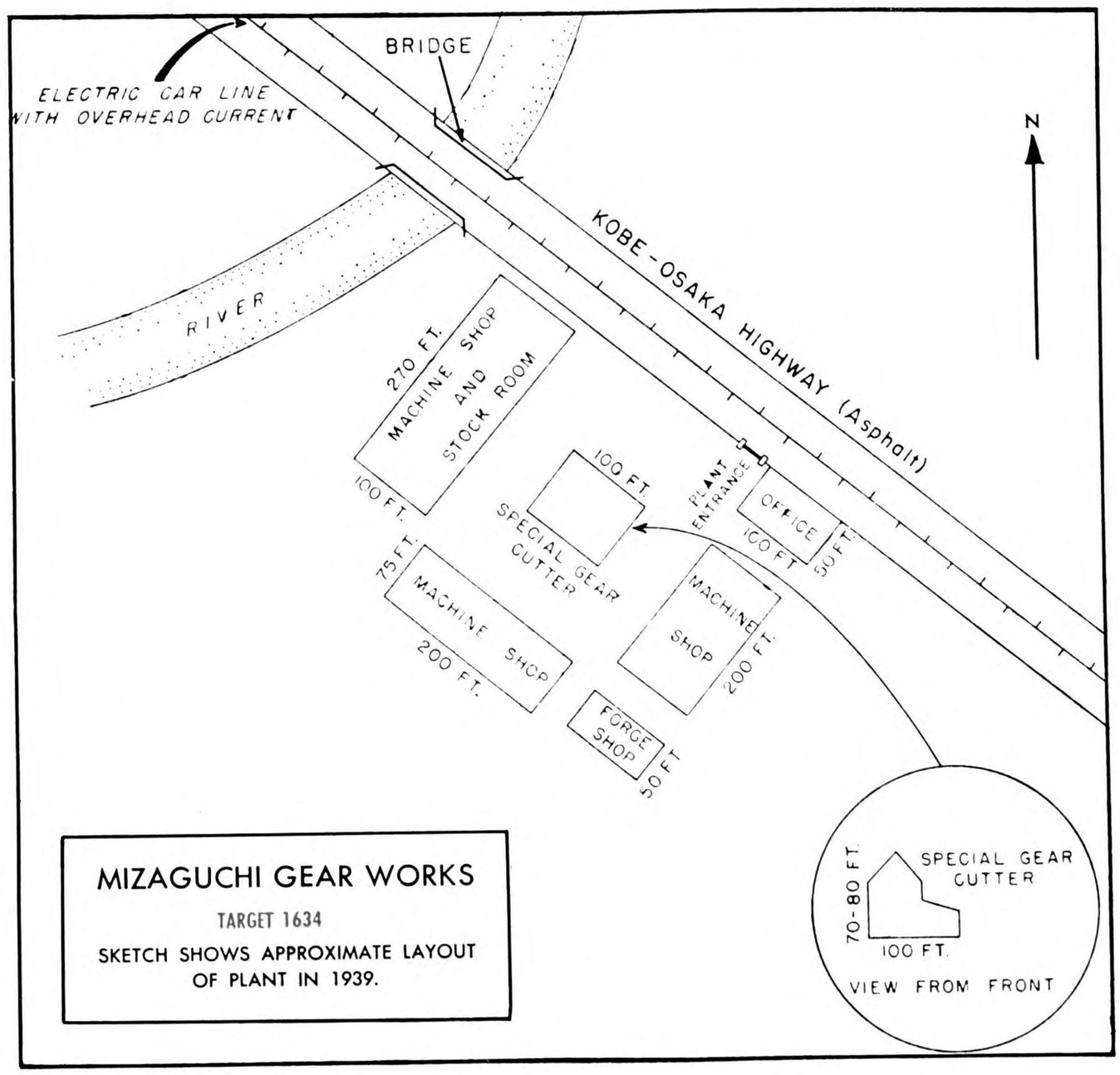
(Fukuda Kei Hikoki K.K.)

OSAKA—AMAGASAKI

(AIRCRAFT)

34° 43′ N 135° 27′ E (Approx)—Light planes and gliders. Reported production of auto parts, fuselages, undercarriages.

(See maps on pages M-6, M-7 and M-10.)



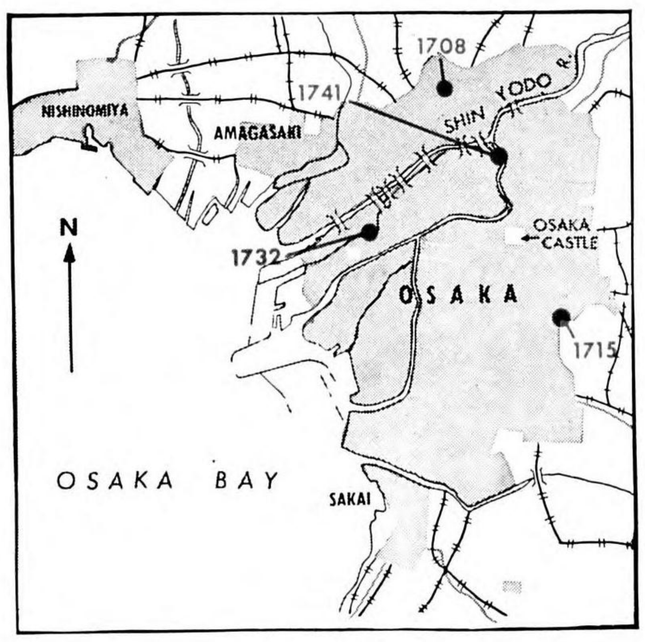
MIZAGUCHI GEAR WORKS

TARGET 1634

SKETCH SHOWS APPROXIMATE LAYOUT OF PLANT IN 1939.

OSAKA 90.25 TARGETS 793, 1191, 1634, 1740 (OSAKA CITY)

3621—40—Osaka—5-23-44—Final Proof



TARGET
1708 NIPPON ALUMINUM WORKS
(K.K. Nippon Aluminium Seizo Sho)
OSAKA
(NON-FERROUS METALS)

34° 44′ N 135° 30′ E (Approx)—Probably a remelt, rolling and fabrication plant of medium size. Production: 2000 tons per year sheet aluminum. Products: aluminum plate, wire, pipe, aircraft parts, duralumin plate.
(See maps on pages M-6, M-7, and M-12.)

TARGET
1715 KWOYO PRECISION WORKS CO.
(Kwoyo Seiko K.K.)
OSAKA
(MACHINERY & MACHINE TOOLS)

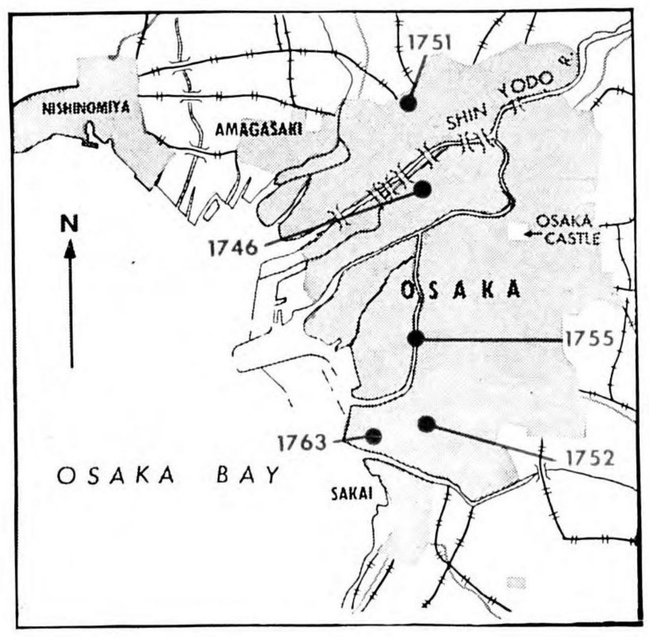
34° 39′ N 135° 32′ E (Approx)—Number 2 plant of Co. Produces ball bearings, tapered and solid roller bearings. Cap unknown.
(See maps on pages M-6 and M-7.)

TARGET
1732 RASA INDUSTRY CO.
(Rasa Kogyo K.K.)
OSAKA
(CHEMICALS)

34° 41′ N 135° 28′ E (Approx)—Chemical plant producing superphosphates (144,000 metric tons), sulphuric acid (111,400 metric tons), liquid chlorine (3500 metric tons) as well as synthetic hydrochloric acid, caustic soda, abrasives and bleaching powder.
(See maps on pages M-6, M-7 and M-10.)

TARGET
1741 SANKYO CO.
(Sankyo K.K.)
OSAKA
(CHEMICALS)

34° 43′ N 135° 31′ E (Approx)—Branch plant of Japan's largest pharmaceuticals Co; industrial chemicals and medical supplies.
(See maps on pages M-6 and M-7.)



TARGET
1746 OKI ELECTRIC CO.
(Oki Denki K.K.)
OSAKA
(ELECTRIC EQUIPMENT)

34° 42′ N 135° 29′ E (Approx)—Produces telephonic and other communications equipment.
(See maps on pages M-6 and M-7.)

TARGET
1751 MATSUSHITA DRY BATTERY CO.
(Matsushita Kendenchi K.K.)
OSAKA
(ELECTRIC EQUIPMENT)

34° 44′ N 135° 29′ E (Approx)—Batteries and electrical appliances.
(See maps on pages M-6, M-7, and M-12.)

TARGET
1752 OSAKA ELECTRIC MACHINERY CO.
(Osaka Denki K.K.)
OSAKA
(ELECTRIC EQUIPMENT)

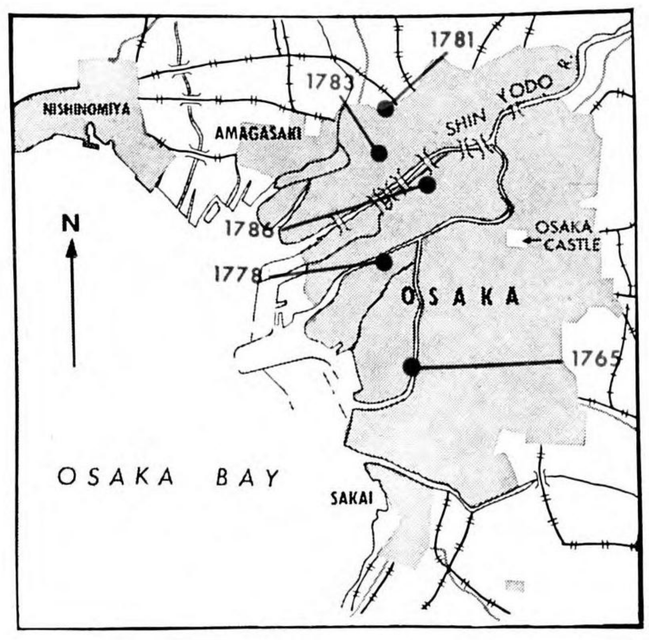
34° 37′ N 135° 29′ E (Approx)—Medium size plant produces munitions, electric welders, transformers, switchboards and accessories.
(See maps on pages M-6 and M-7.)

TARGET
1755 NAKAYAMA STEEL MFG. CO.
(K.K. Nakayama Seiko Sho)
OSAKA
(ELECTRIC EQUIPMENT)

34° 39′ N 135° 29′ E (Approx)—Located on an island in the Kuzu R. Produces wire and accessories. Reported expansion.
(See maps on pages M-6 and M-7.)

TARGET
1763 KURIMOTO IRON WORKS
(K.K. Kurimoto Tekko Sho)
OSAKA
(IRON & STEEL)

34° 37′ N 135° 28′ E (Approx)—Steel cap at this plant is 24,000 metric tons per year. Co produces steel tubes and pipes, castings & chemical machinery.
(See maps on pages M-6 and M-7.)



TARGET
1765 JAPAN IRON WORKS
(Nippon Seitetsu K.K.)
OSAKA
(IRON & STEEL)

34° 38′ N 135° 29′ E (Approx)—Production of steel ingots in 1937 was 146,000 metric tons, with corresponding rolling cap. Plates, bars and shapes.
(See maps on pages M-6 and M-7.)

TARGET
1778 KUBOTA IRON & MACHINERY WORKS
OSAKA
(MACHINERY & MACHINE TOOLS)

34° 40′ N 135° 28′ E (Approx)—See TARGET 688.
(See maps on pages M-6, M-7 and M-10.)

TARGET
1781 OSAKA MACHINERY CO.
(Osaka Kiko K.K.)
OSAKA
(MACHINERY & MACHINE TOOLS)

34° 44′ N 135° 28′ E (Approx)—Branch plant of one of Japan's leading machine tool concerns. Makes Diesel and internal combustion engines. Reported to be producing munitions. Other plant, TARGET 1780 on page 63.
(See maps on pages M-6, M-7 and M-10.)

TARGET
1783 OSAKA WAKAYAMA IRON WORKS
(K.K. Osaka Wakayama Tekko Sho)
OSAKA
(MACHINERY & MACHINE TOOLS)

34° 43′ N 135° 28′ E (Approx)—Machine tools and airplane parts.
(See maps on pages M-6, M-7 and M-10.)

TARGET
1786 ORIENTAL CAN MFG. CO.
(Toyo Seikwan K.K.)
OSAKA
(MISCELLANEOUS)

34° 42′ N 135° 29′ E (Approx)—One of three plants of Co which is reported to produce bomb and grenade casings as well as cans.
(See maps on pages M-6 and M-7.)

OSAKA 90.25 TARGETS 1708, 1715, 1732, 1741, 1746, 1751, 1752, 1755, 1763, 1765, 1778, 1781, 1783, 1786 (OSAKA CITY)
3621—41—Osaka—5-23-44—Final Proof

KOBE CITY

Air Objective Folder

OSAKA AREA No. 90.25

INDEX OF TARGETS BY NUMBER, CLASSIFICATION AND NAME

TARGET NUMBER	NAME	PAGE
	CHEMICALS	
785	Kanegafuchi Soda Industry	50
	ELECTRIC EQUIPMENT	
1745	Kawanishi Machine Shop	50
1747	Oki Electric Company	50
	ELECTRIC POWER	
4	Minatogawa Steam Power Plant	49
	HARBOR FACILITIES	
22	Kobe Harbor District No. 1	47
34	Kobe Harbor District No. 2	47
	IRON & STEEL	
5	Kobe Steel Works	45
6	Kobe Steel Works	45
7	Kawasaki Heavy Industry	45
1762	Kawasaki Heavy Industry	50
1768	Kobe Steel Works	45
1775	Kawasaki Heavy Industry	50
	MACHINERY & MACHINE TOOLS	
1719	Nippon Airbrake Company	50
	PETROLEUM	
17	Rising Sun Petroleum Oil Storage	48
	RUBBER	
14	Nippon Dunlop Rubber Company	45
	SHIPYARDS	
169	Mitsubishi Heavy Industries	46
171	Kawasaki Heavy Industry Company	46
	TRANSPORTATION	
11	Kawasaki Locomotive and Car Company	49
157	Sannomiya Railroad Station	50
538	I.G.R. Shops	48

OSAKA 90.25 INDEX OF TARGETS (KOBE CITY)

3621—42—Osaka— 5-23-44—Final Proof

OSAKA 90.25 INDEX OF TARGETS (KOBE CITY)

Summary and Evaluation of Kobe City

The city occupies a long, narrow strip of land, flanked on the south by Osaka Bay and on the north by a range of high, wooded hills. Conspicuous landmarks in the city, in addition to the waterfront piers and breakwaters, are the elevated Tokaido railway, the western-type buildings in the central business district, and the clusters of large factories at the west, east and southwest sides of the city.

Importance: Kobe's industrial importance, and the major objectives in the city, are discussed in the Summary and Evaluation, pages 7 to 11.

This is a heavy industry center, important for ship building and repair, iron and steel, railway equipment and ordnance, and rubber tires. Ship building is the principal industry and Kobe contains probably the outstanding single concentration of ship and marine engine capacity in Japan. Unlike most other cities of comparable size in Japan, Kobe has comparatively few small miscellaneous industrial plants.

Kobe is served by both the Tokaido and Sanyo Main Lines and its port is one of the largest and best equipped in Japan.

Incendiary Attack Data: With a population of 967,234 in 1940, Kobe ranks among the three most densely populated cities, having an overall population density of 30,500 persons per square mile. As is the case throughout Japan, the predominant construction materials are wood and plaster (perhaps 90% of the total), the remainder being brick, sheet metal, stone or concrete.

The restricted area of level land between the waterfront and the flanking hills has shaped the pattern of land use. The industrial concentrations are located near the waterfront, and at the E and W ends of the densely built-up part of the city. Predominantly residential districts extend along the northern, eastern and western sides of the city, becoming more open along the foothills to the north and beyond the E and W industrial concentrations. The commercial district, marked by western-type buildings, is located just NW of the central harbor piers and south of the elevated railroad line which runs the length of the city. Prefectural and municipal offices as well as military buildings are located north and west of the commercial district.

Two general classes of fire areas are indicated on the Incendiary Zone Map of Kobe City (M-9).

Zone I—This is the most vulnerable part of the city. It extends along both sides of the Tokaido Main Line and is bounded on the east by a cluster

Kobe—TARGET 22 Kobe Harbor District No. 1. TARGET 157 Sannomiya RR Station, TARGET 169 Mitsubishi Heavy Industries, TARGET 171 Kawasaki Heavy Industry Co. Typical congestion of predominantly wooden houses in Incendiary Zone I in foreground. Upper half shows storehouses and factory districts located in Zone II.

OSAKA 90.25 SUMMARY (KOBE CITY)

OSAKA 90.25 SUMMARY (KOBE CITY)

3621—43—Osaka— 5-23-44—Final Proof

Kobe—TARGETS 5, 6 and 1768 Kobe Steel Works. TARGET 1719 Nippon Airbrake Co. TARGET 14 Nippon Dunlop Rubber Co., TARGET 7 Kawasaki Heavy Industry. Foreground shows solid areas of houses crowding large factories in Incendiary Zone I. Zone II residential district in background.

of conspicuous steel and rubber plants and on the west by the Shinminato River. This zone includes the principal government and commercial buildings, as well as the city's most congested residential districts. Population density in this zone is estimated at over 100,000 persons per square mile. While there are relatively fewer small factories scattered throughout this zone than in corresponding sections of large Japanese cities, a very important cluster of numbered targets is included at the east end and a secondary cluster at the west.

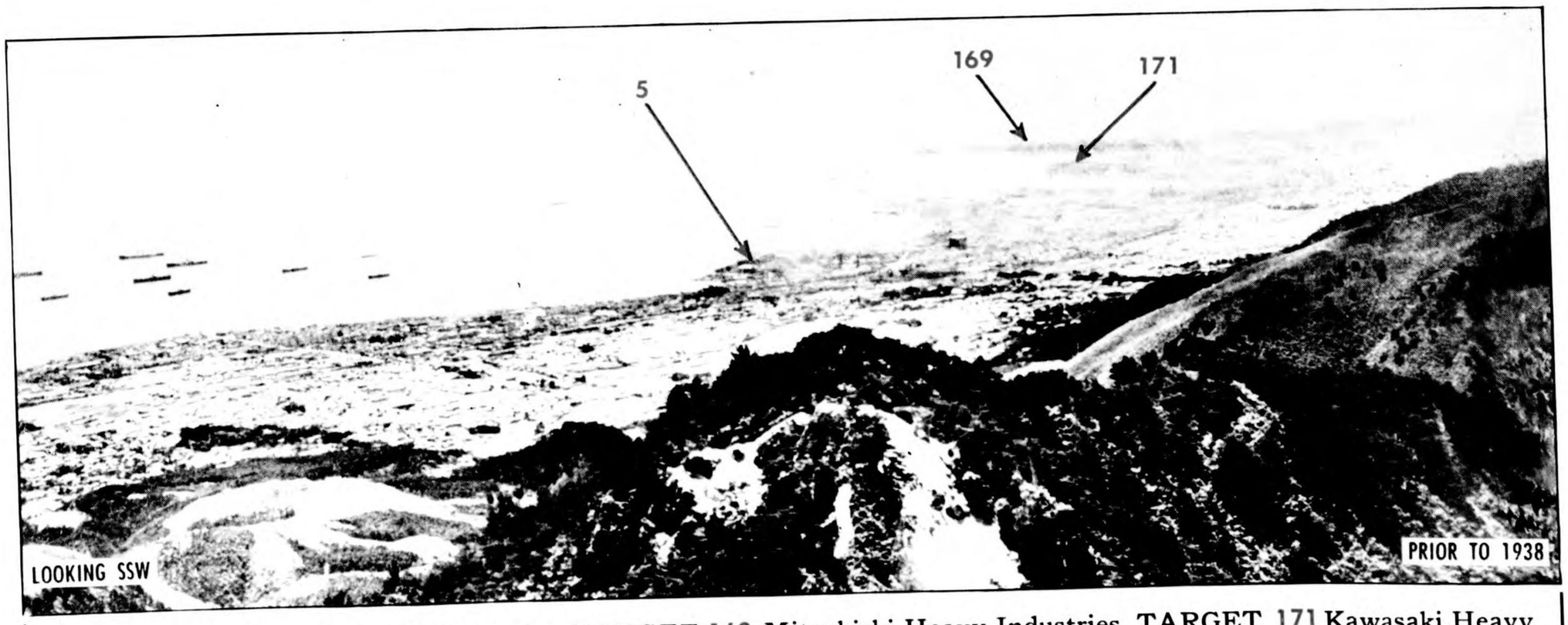
Zone II—Less vulnerable than Zone I, this zone is still very congested by European standards and is vulnerable to incendiary attack. Population density is estimated to average 60,000 persons per square mile. This zone comprises three general fire areas:

(1) The westernmost area covers a heavily industrialized district, with many important numbered targets, as well as the city's westernmost residential district.

(2) A second area covers the city's important harbor district, with its heavy concentration of warehouses and shipyard buildings.

(3) The third area covers the city's easternmost residential district, a section with relatively few industries, but densely built-up with predominantly wooden dwellings.

Restricted area and great congestion, scarcity of effective firebreaks and the intermingling of combustible workers' houses and major factories, make Kobe an effective objective for incendiary attack.



Kobe—TARGET 5 Kobe Steel Works. TARGET 169 Mitsubishi Heavy Industries. TARGET 171 Kawasaki Heavy Industry.

3621—44—Osaka—4-3-44—First Proof

OSAKA 90.25 TARGETS 5, 6, 7, 14, 1768 (KOBE CITY)

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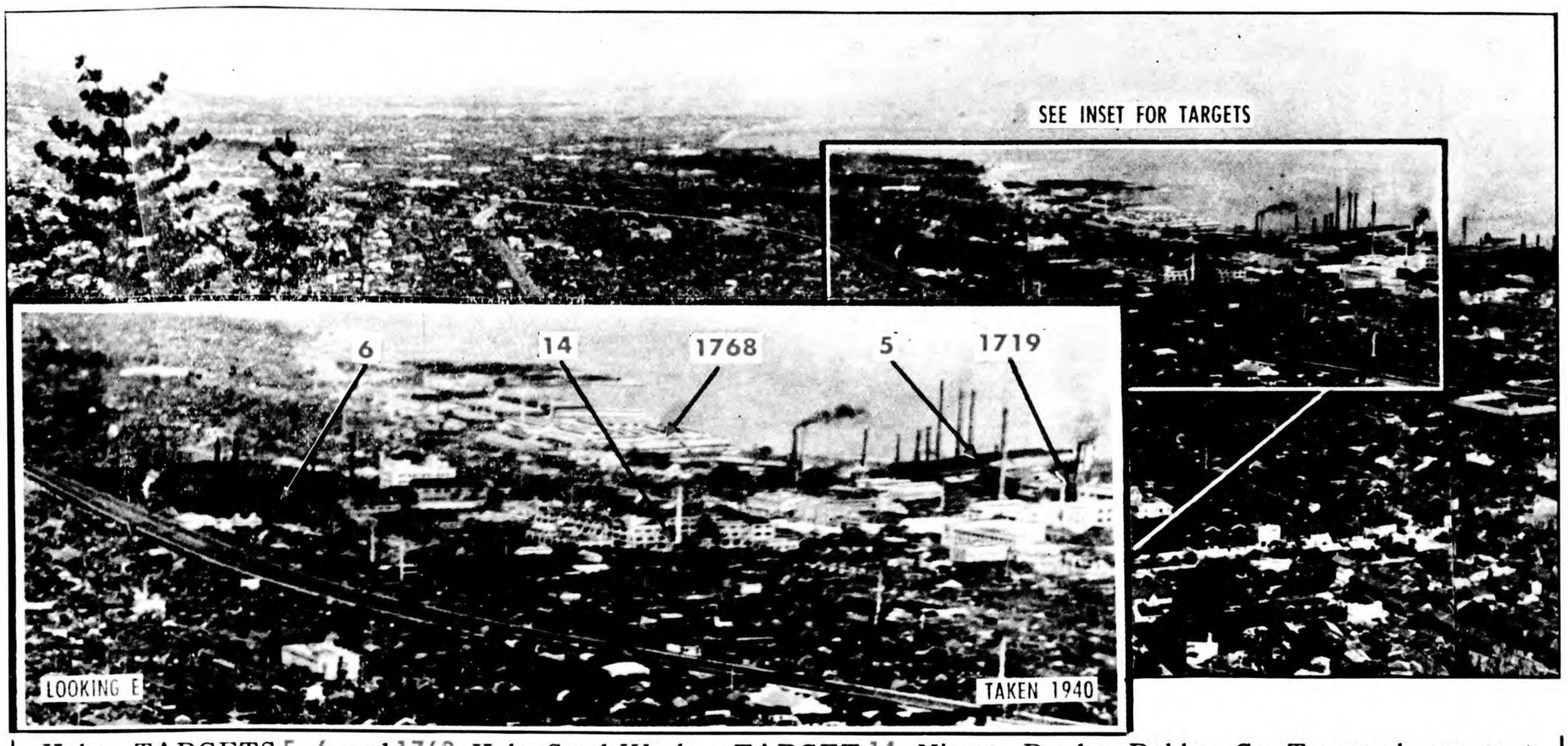


Kobe—TARGETS 5, 6 and 1768 Kobe Steel Works. TARGET 14 Nippon Dunlop Rubber Co. Target shown, text on another page: TARGET 1719 Nippon Airbrake Co. View shows several unidentified factory-type buildings.

TARGET 5

KOBE STEEL WORKS

(K.K. Kobe Seiko Sho)

KOBE

(IRON & STEEL)

34° 42′ N 135° 13′ E (Approx)—Three plants of Co (this and TARGETS 6 and 1768) within one sq mi in east part of city. Pig iron cap: 750,000 metric tons, carbon steel 320,000 metric tons, alloy steel 20,000 metric tons. Products include steel plates, sheets, bars, wire rods, tubes and shapes. Rolling mill cap estimated at 290,000 metric tons (1937), with planned increase of 180,000 metric tons. Wire-rod mill reported to have cap of over 200,000 metric tons (1936). Reported also rolling aluminum sheet. Equipped to make ordnance for Japanese Navy, internal combustion and Diesel engines, machinery and shipbldg material and tools.

(See photos on pages 44 and 45; maps on pages M-8 and M-9.)

TARGET 6

KOBE STEEL WORKS

(K.K. Kobe Seiko Sho)

KOBE

(IRON & STEEL)

34° 42′ N 135° 13′ E (Approx)—See TARGET 5.

(See photos on pages 44 and 45; maps on pages M-8 and M-9.)

TARGET 14

NIPPON DUNLOP RUBBER CO.

(Nippon Dunlop Gomu K.K.)

KOBE

(RUBBER)

34° 42′ N 135° 13′ E (Approx)—Estimated 31% of tire cap of Japanese Empire. Tires are principal product. Covers entire city block. Main bldg of reinforced concrete construction.

(See photos on pages 44 and 45; maps on pages M-8 and M-9.)

TARGET 1768

KOBE STEEL WORKS

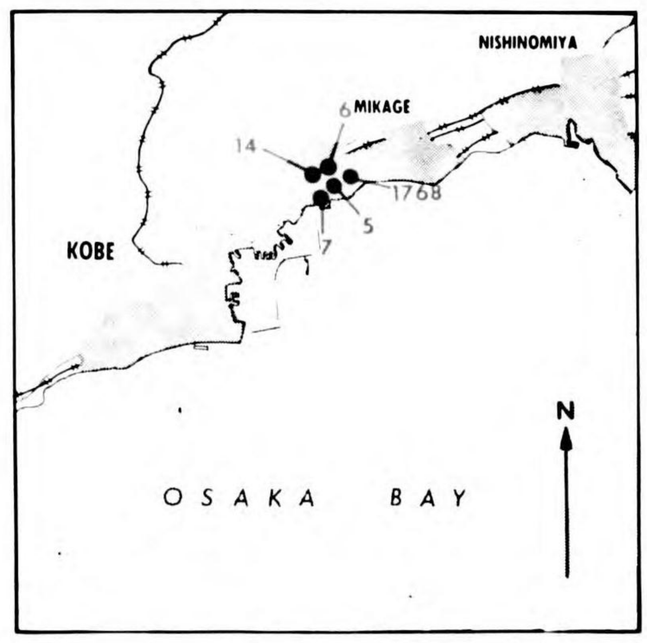
(K.K. Kobe Seiko Sho)

KOBE

(IRON & STEEL)

34° 42′ N 135° 13′ E (Approx)—See TARGET 5.

(See photos on pages 44 and 45; maps on pages M-8 and M-9.)



TARGET 7

KAWASAKI HEAVY INDUSTRY

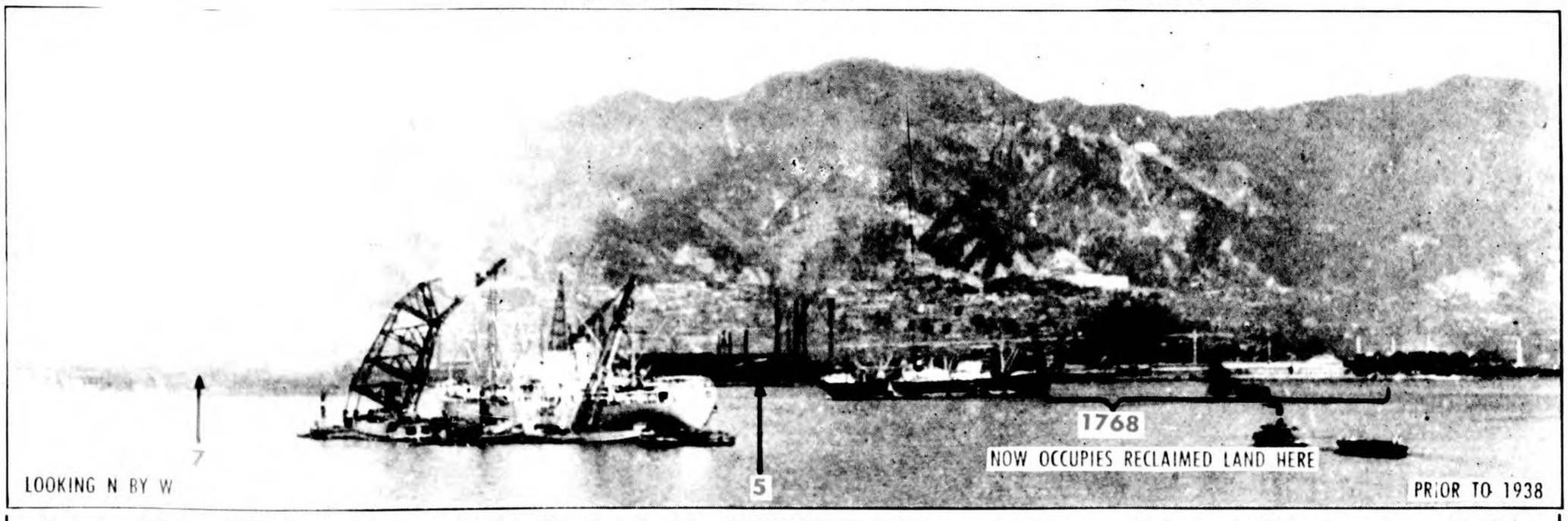
(Kawasaki Ju Kogyo K.K.)

KOBE

(IRON & STEEL)

34° 42′ N 135° 13′ E (Approx)—(See TARGET 1762). This plant produces sheets and steel plates, including cold-rolled and alloy steels. Supplies shipbldg works of Kawasaki (See TARGET 171).

(See photo on page 44; maps on pages M-8 and M-9.)



Kobe—TARGETS 5 and 1768 Kobe Steel Works. TARGET 7 Kawasaki Heavy Industry. Ship in foreground is unloading by floating crane.

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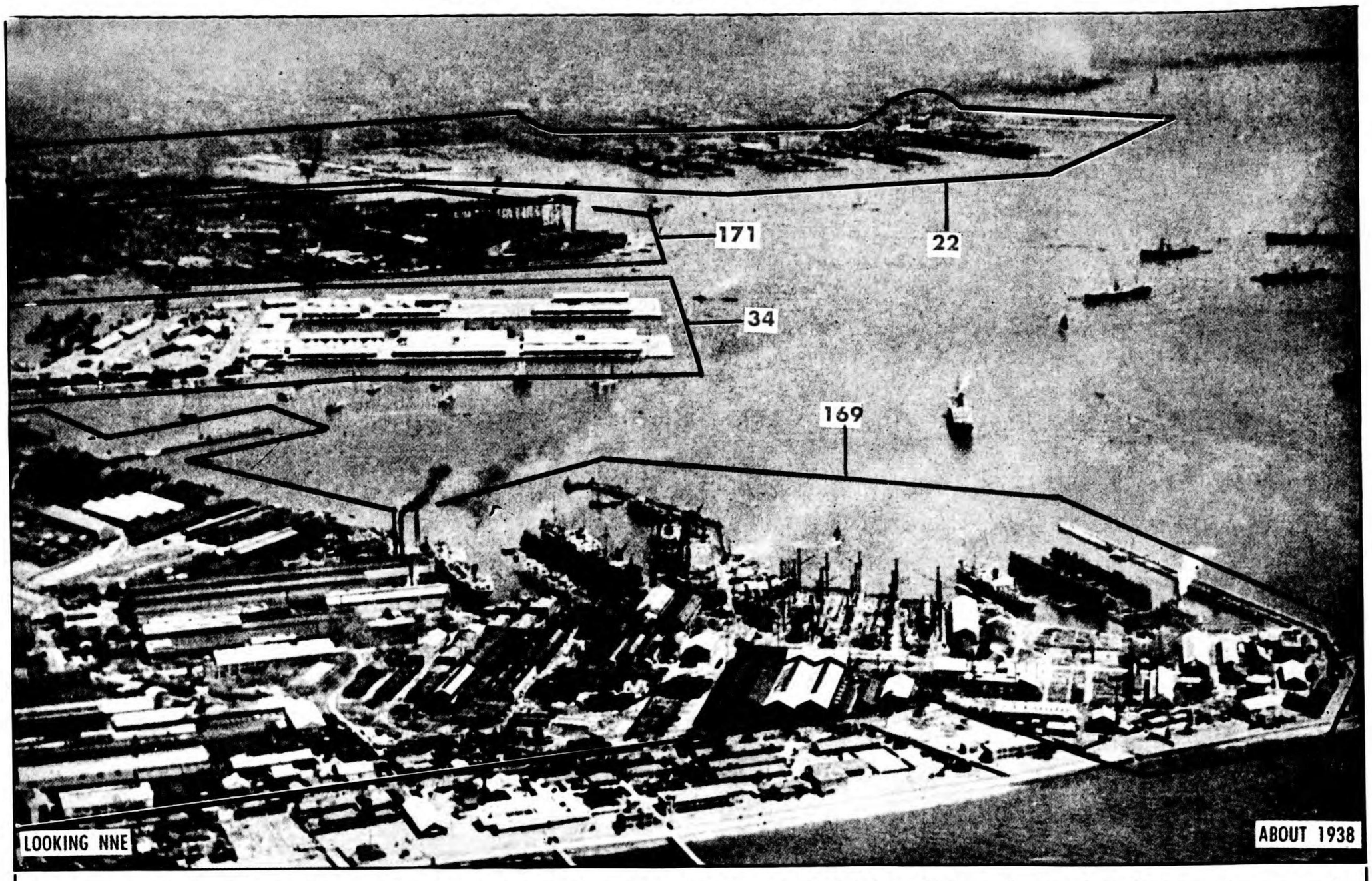
OSAKA 90.25 TARGETS 5, 6, 7, 14, 1768 (KOBE CITY)

3621—45—Osaka—5-23-44—Final Proof

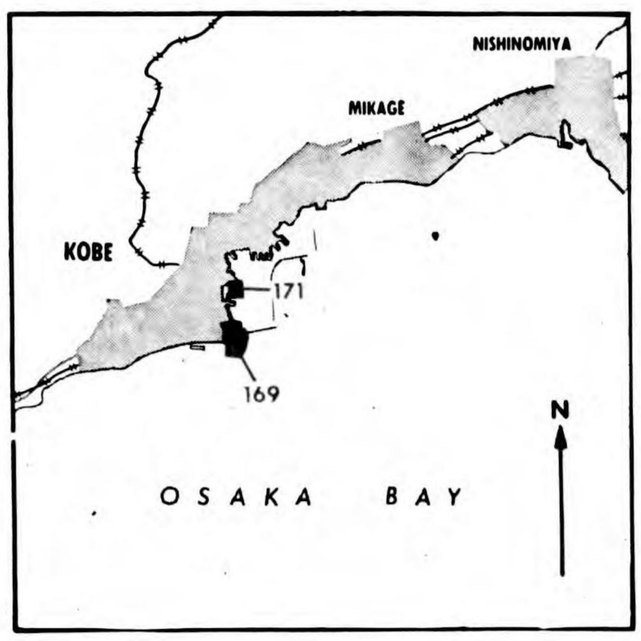


Kobe—TARGET 171 Kawasaki Heavy Industry Co. TARGET 169 Mitsubishi Heavy Industries. Target shown, text on another page: TARGET 22 Kobe Harbor District No. 1, TARGET 34 Kobe Harbor District No. 2.

TARGET
171 KAWASAKI HEAVY INDUSTRY CO.
(Kawasaki Ju Kogyo K.K.)
KOBE
(SHIPYARDS)

34° 40′ N 135° 11′ E (Approx)—Jappan's largest pre-war shipyard. Located approx in center of Kobe Harbor waterfront. Builds capital ships. Equipment includes: 6 bldg ways (one 1000 ft, two 750 ft, one 568 ft, two others), iron, steel and brass foundries, engine, boiler and electrical mfg shops, one drydock (426 ft), turbine assembly shop. Bldgs steel frame, covered either by asbestos cement or corrugated metal sheeting. Builds ships of all classes (recent concentration on oil tankers, submarines, destroyers, aircraft carriers), marine engines, submarine engines, Diesel engines, boilers, bridges, girders, rudders, and propellers. Most prominent feature of target area is high gantry crane.

(See photos on pages 43, 44, and 46; maps on pages M-8 and M-9.)



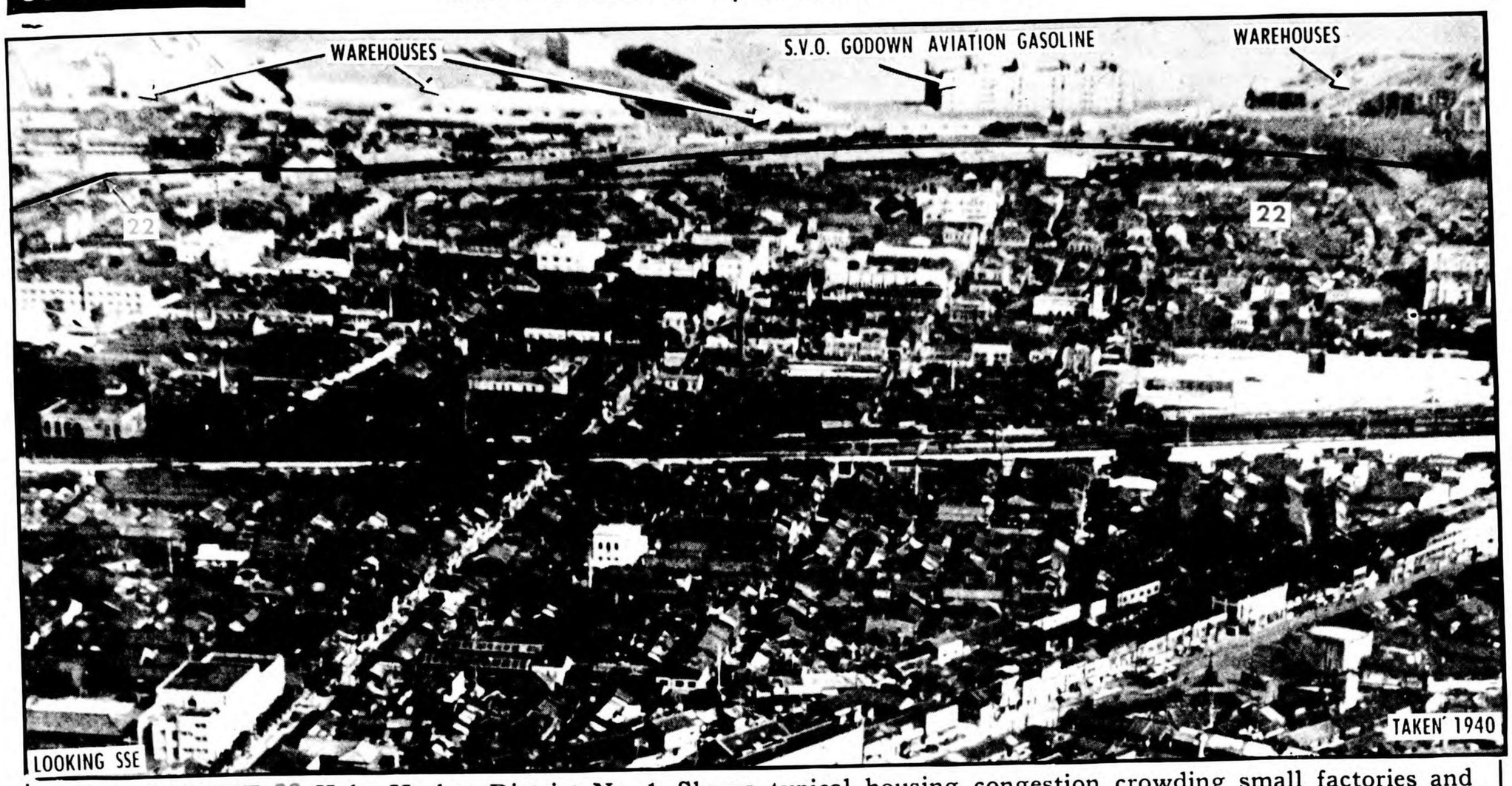
TARGET
169 MITSUBISHI HEAVY INDUSTRIES
(Mitsubishi Ju Kogyo K.K.)
KOBE
(SHIPYARDS)

34° 39′ N 135° 11′ E (Approx)—Very important naval and merchant ship repair and building yard. Can build capital ships and make repairs of all types on any class of ship. Located on the SW end of Kobe Harbor waterfront. Equipment includes one drydock, three floating docks, five building ways. Plant site includes important Mitsubishi Electric factory, with foundries, engine and boiler works, heavy machine shops. Bldgs, steel frame covered with asbestos cement. Target area also includes Wadamisaki RR Sta (NW section) which provides direct rail connections to the harbor.

(See photos on pages 43, 44, and 46; maps on pages M-8 and M-9.)

Kobe—TARGET 169 Mitsubishi Heavy Industries. TARGET 171 Kawasaki Heavy Industry Co. Target shown, text on another page: TARGET 22 Kobe Harbor District No. 1.

3621—46—Osaka—5-23-44—Final Proof



Kobe—TARGET 22 Kobe Harbor District No. 1. Shows typical housing congestion crowding small factories and warehouses.

TARGET
22 KOBE HARBOR DISTRICT No. 1
KOBE
(HARBOR FACILITIES)

34° 41′ N 135° 12′ E (Approx)—Most important section of Kobe Harbor. Many large piers. Extensive railway and whse facilities. In NE section of target area are the Onohama Ry Sta, freight sta, RR yards.

(See photos on pages 43, 46 and 47; maps on pages M-8 and M-9.)

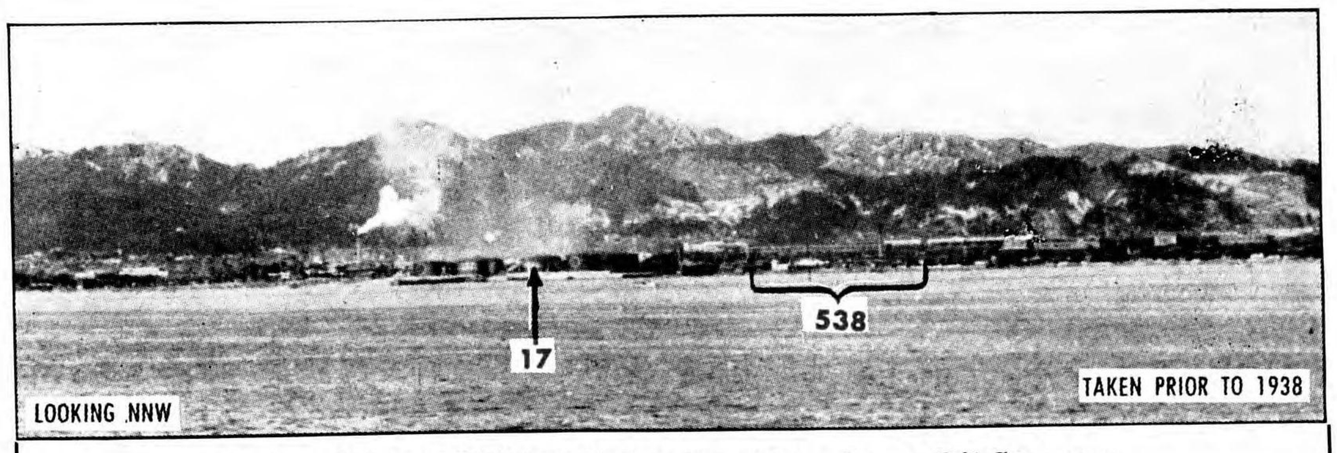
TARGET
34 KOBE HARBOR DISTRICT No. 2
(Hyogo Harbor)
KOBE
(HARBOR FACILITIES)

34° 40′ N 135° 11′ E (Approx)—Of particular importance to coastwise shipping in Inland Sea. Large whses. Located between TARGETS 169 and 171.

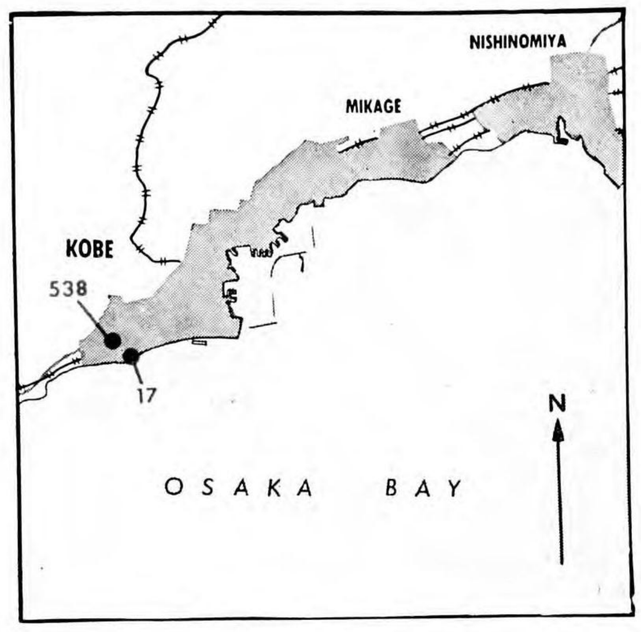
(See photo on page 46; maps on pages M-8 and M-9.)

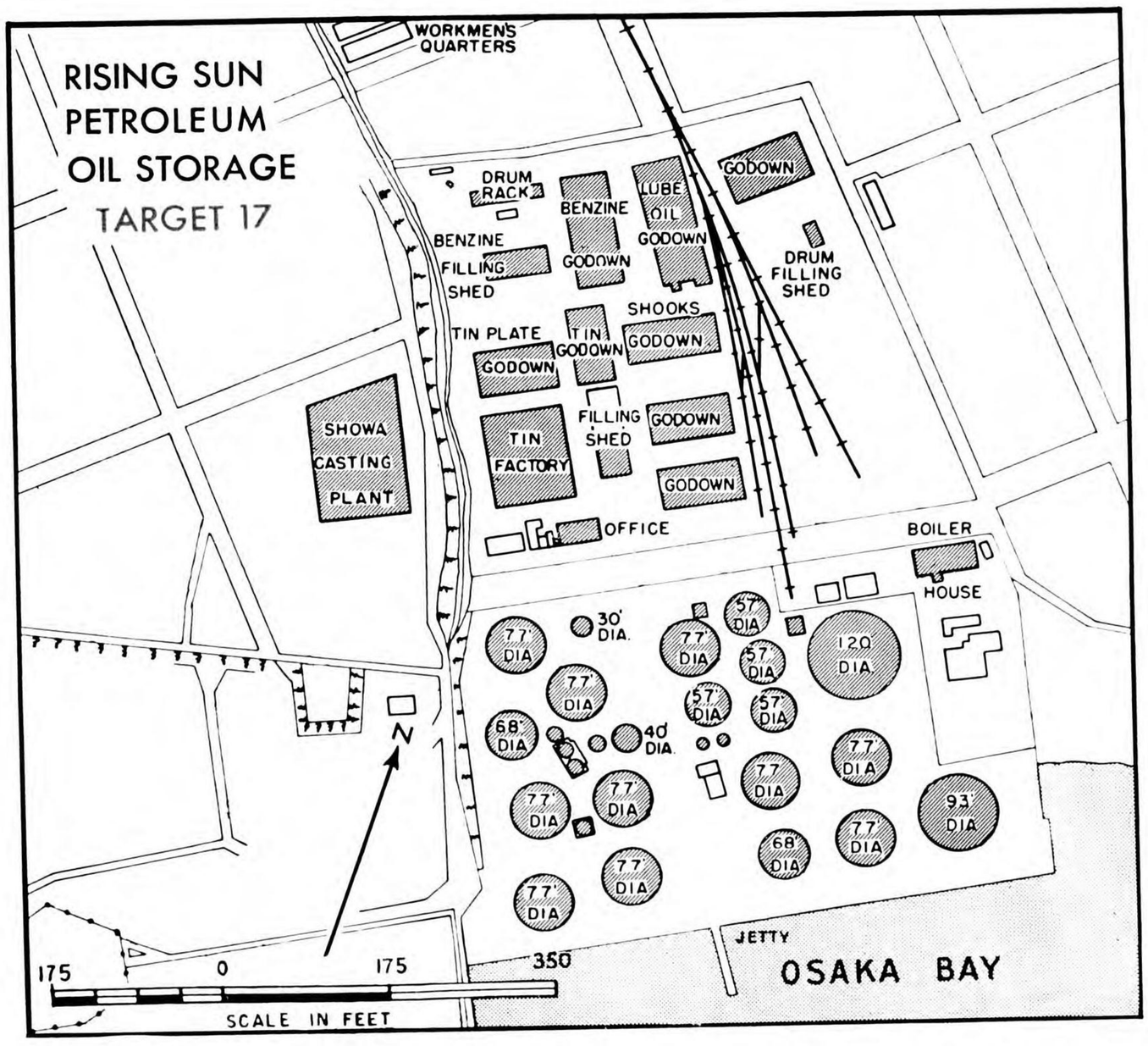
Kobe—TARGET 22 Kobe Harbor District No. 1, shows typical storehouses (on piers) and permanent warehouses (at right).

DESCRIPTION OF TARGETS



Kobe—TARGET 17 Rising Sun Petroleum Oil Storage.
Takatori—TARGET 538 I.G.R. Shops.





TARGET **17**

RISING SUN PETROLEUM OIL STORAGE

KOBE

(PETROLEUM)

34° 39′ N 135° 09′ E (Approx)—Most important oil storage in Kobe and probably in area; located on shore. Total tankage approx 490,000 bbls. 18 large, 9 small tanks. Numerous whses. One pier; floating pipe lines.

(See photo on page 48; maps on pages M-8 and M-9.)

TARGET **538**

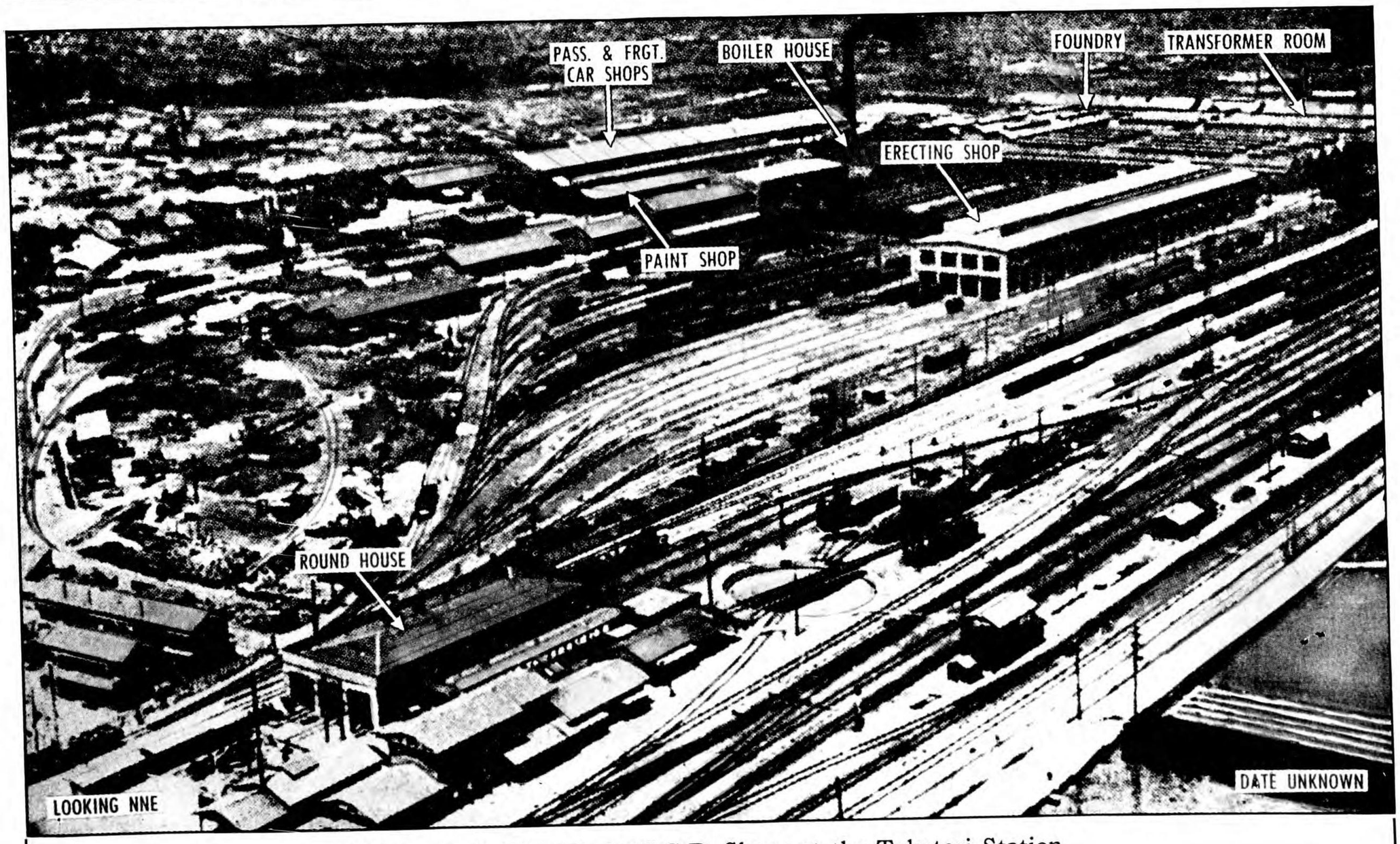
I. G. R. SHOPS

TAKATORI

(TRANSPORTATION)

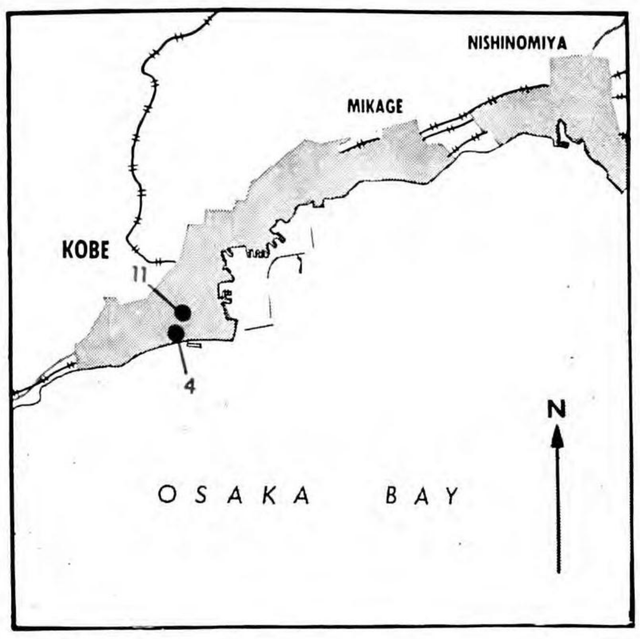
34° 39′ N 135° 08′ E (Approx)—One of five most important repair and maintenance shops in Japan. Bldgs steel frame and brick, one or two stories, asbestos and tiled roofs, mostly glassed sides and partially glassed roofs. Plant covers approx 234,477 sq yds. Takatori RR sta lies immediately SE of I.G.R. shops.

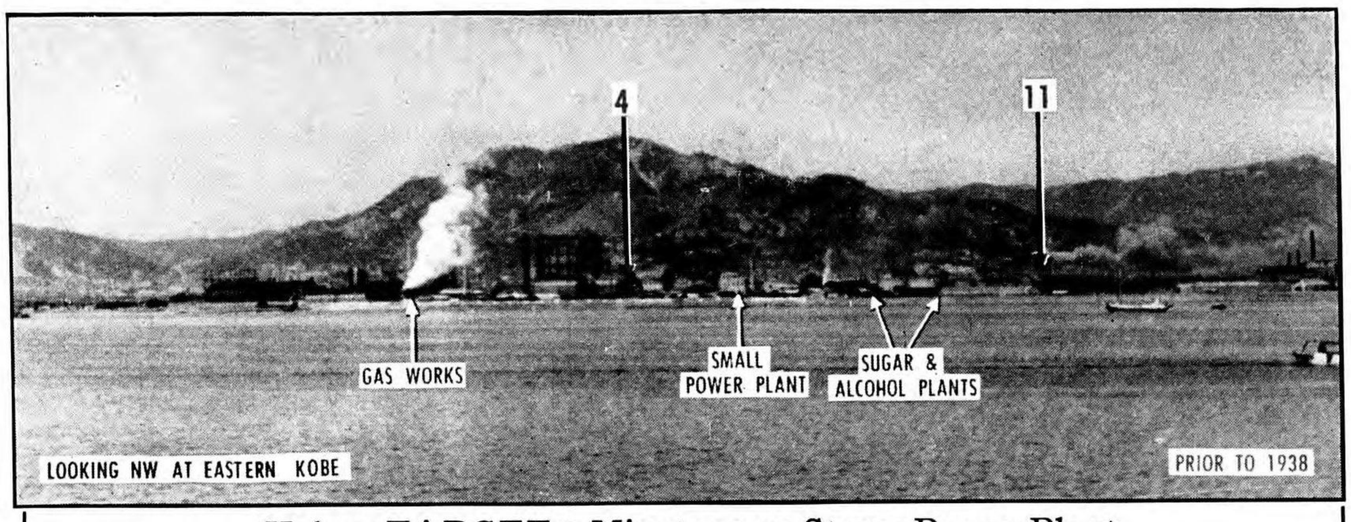
(See photo on page 48; maps on pages M-8 and M-9.)



Takatori—TARGET 538 I.G.R. Shops at the Takatori Station.

3621—48—Osaka—4-3-44—First Proof





Kobe—TARGET 4 Minatogawa Steam Power Plant.
TARGET 11 Kawasaki Locomotive and Car Co.

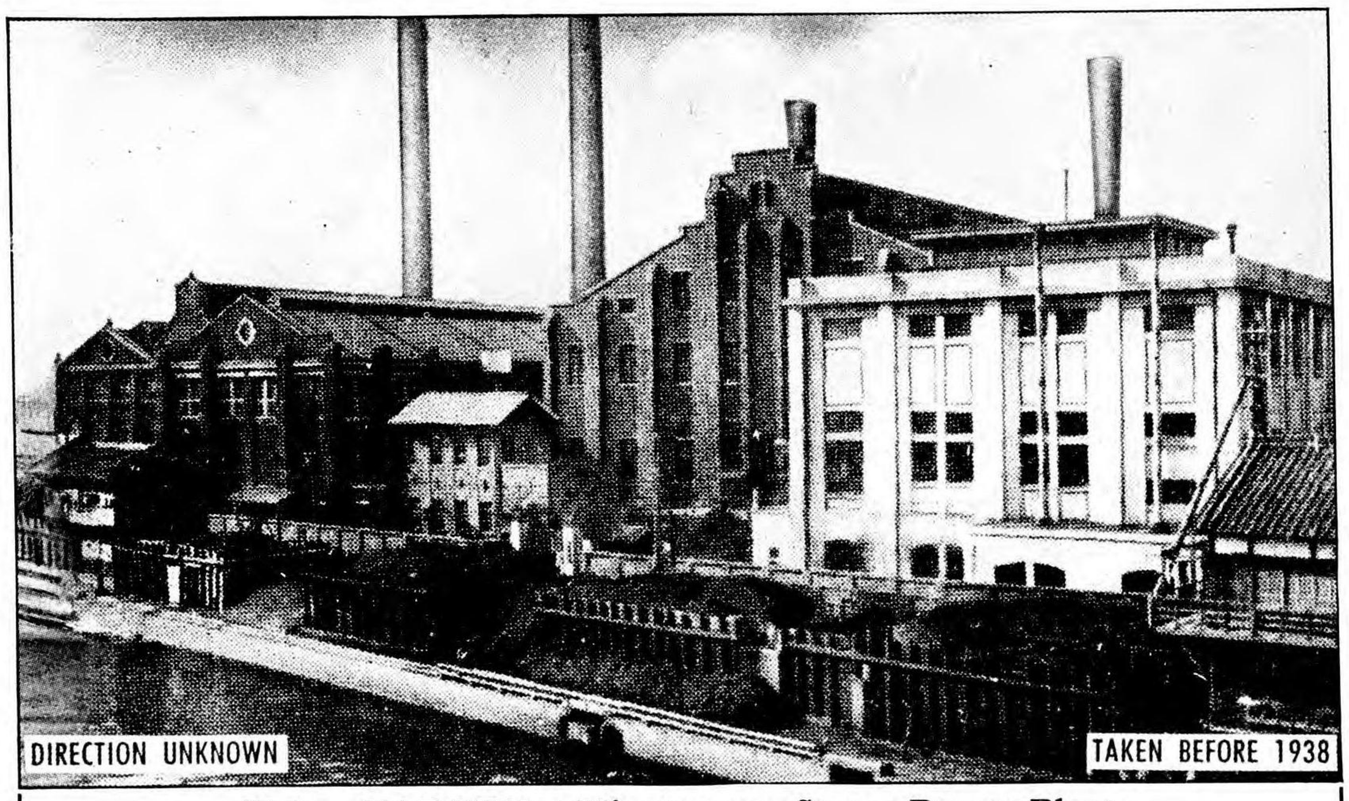
TARGET
4 MINATOGAWA STEAM POWER PLANT

KOBE

(ELECTRIC POWER)

34° 39′ N 135° 09′ E (Approx)—Important standby plant. Cap 36,000 KW in 1938; reported expanded to 66,000 KW. Four adjoining reinforced concrete bldgs; two tall and four short stacks. On west bank at mouth of Shinminato R.

(See photo on page 49; maps on pages M-4, M-8 and M-9.)



Kobe—TARGET 4 Minatogawa Steam Power Plant.

TARGET
11 KAWASAKI LOCOMOTIVE & CAR CO.

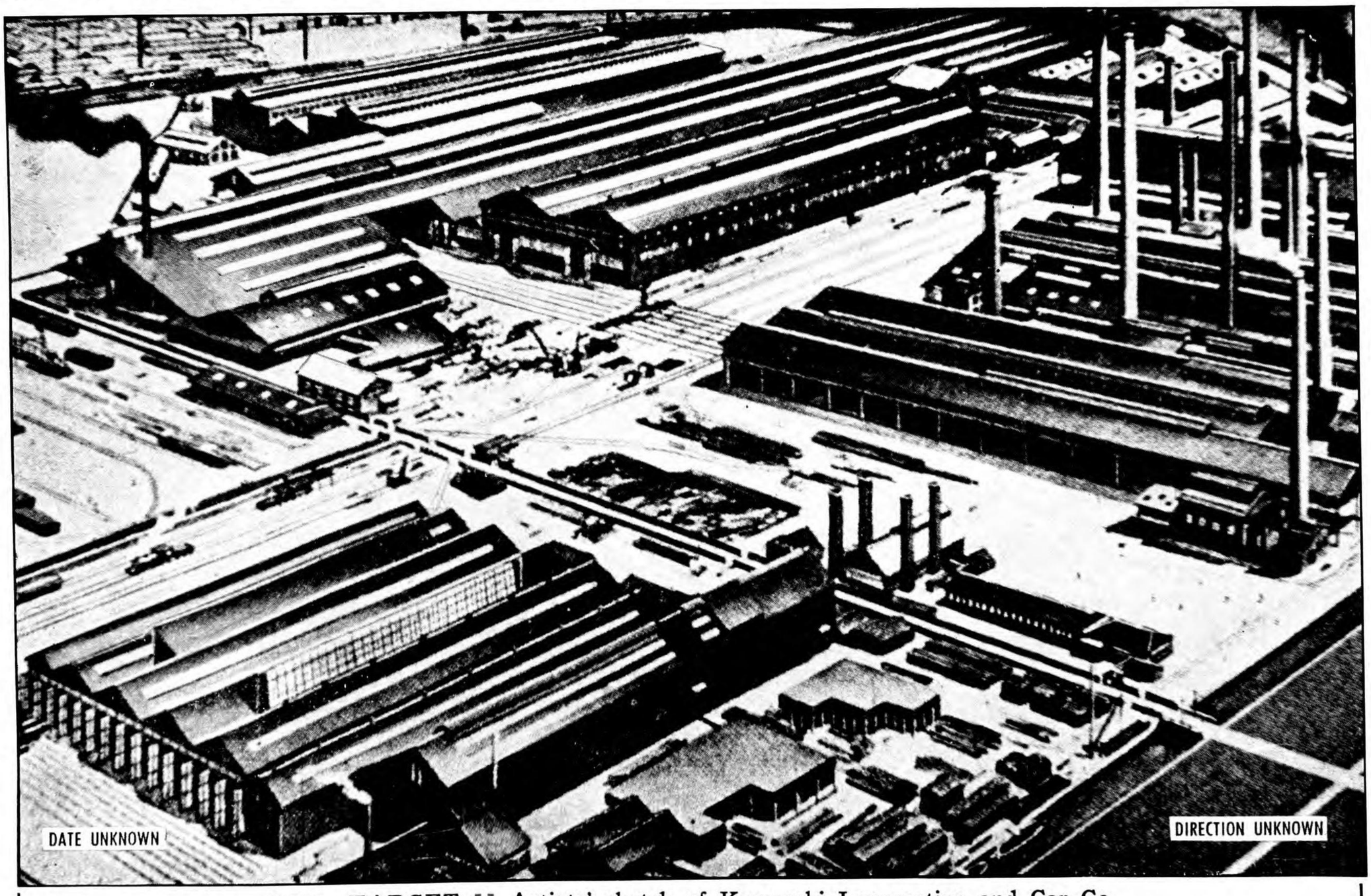
(Kawasaki Sharyo K.K.)

KOBE

(TRANSPORTATION)

34° 39′ N 135° 10′ E (Approx)—Target area includes Kawasaki Locomotive and Car Co and two adjacent plants of Kawasaki Aircraft Industry. (Production of aircraft reported moved to Akashi—See TARGET 1547). Main plant now doing military work, has open-hearth furnaces and produces billets and 44,000 metric tons of plates. Finished products include electric and Diesel locomotives, railway cars, trucks and autos. The two plants of Kawasaki Aircraft are now producing autos and trucks for the Kawasaki Locomotive and Car Co. These two plants located at N and E ends of site.

(See photo on page 49; maps on pages M-8 and M-9.)



Kobe—TARGET 11 Artists' sketch of Kawasaki Locomotive and Car Co.

OSAKA 90.25 TARGETS 4, 11 (KOBE CITY)

3621—49—Osaka—4-3-44—First Proof

TARGET
157 SANNOMIYA RAILROAD STATION
KOBE
(TRANSPORTATION)

34° 41′ N 135° 12′ E (Approx)—Important sta on Tokaido Main line and on Hankyu and Hanshin through electric railways. Heavy passenger and through-freight traffic.

(See photo on page 43; maps on pages M-8 and M-9.)

TARGET
785 KANEGAFUCHI SODA INDUSTRY
(Kanegafuchi Soda Kogyo K.K.)
KOBE
(CHEMICALS)

34° 39′ N 135° 10′ E (Approx)—Important producer of chlorine. Located between TARGETS 169 and 11. Produces 3200 metric tons of chlorine as well as large quantities of caustic soda and magnesium.

(See maps on pages M-8 and M-9.)

TARGET
1719 NIPPON AIRBRAKE CO.
(Nippon Airbrake K.K.)
KOBE
(MACHINERY & MACHINE TOOLS)

34° 42′ N 135° 13′ E (Approx)—Manufactures airbrakes for vehicles; small motor cars and machinery. Capacity unknown. (Spotting approximate).

(See photos on pages 44 and 45; maps on pages M-8 and M-9.)

TARGET
1745 KAWANISHI MACHINE SHOP
(K.K. Kawanishi Kikai Seisakosho)
KOBE
ELECTRIC EQUIPMENT

34° 39′ N 135° 10′ E (Approx)—Important plant adjacent to TARGET 11. Electrical apparatus, vacuum tubes, electric light bulbs, tungsten and molybdenum filaments, aircraft parts. (Associated with TARGETS 1701 and 18).

(See maps on pages M-8 and M-9.)

TARGET
1747 OKI ELECTRIC CO.
(Oki Denki K.K.)
KOBE
(ELECTRIC EQUIPMENT)

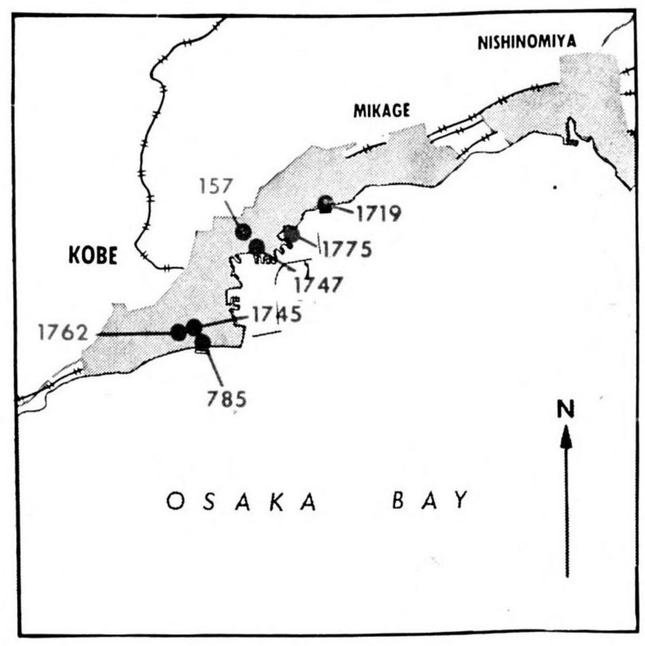
34° 41′ N 135° 12′ E (Approx)—Small plant. Produces telephonic and other electrical communications equipment.

(See maps on pages M-8 and M-9.)

TARGET
1775 KAWASAKI HEAVY INDUSTRY
(Kawasaki Ju Kogyo K.K.)
KOBE
(IRON & STEEL)

34° 41′ N 135° 13′ E (Approx)—(See TARGET 1762). Plant makes special steel plates. Not as large as TARGET 7.

(See maps on pages M-8 and M-9.)



TARGET
1762 KAWASAKI HEAVY INDUSTRY
(Kawasaki Ju Kogyo K.K.)
KOBE
(IRON & STEEL)

34° 39′ N 135° 09′ E (Approx)—Company has three plants in Kobe (See TARGETS 7 and 1775, page 000.) Important units. Total capacity of Co for pig iron is 260,000 metric tons per year; for steel, 460,000 metric tons per year. This plant produces steel forgings, alloy steel castings and forgings, bronze, aluminum and magnesium alloy castings.

(See maps on pages M-8 and M-9.)

OSAKA 90.25 TARGETS 157, 785, 1719, 1745, 1747, 1762, 1775 (KOBE CITY)

36-21—50—Osaka—5-23-44—Final Proof

OSAKA 90.25 TARGETS 157, 785, 1719, 1745, 1747, 1762, 1775 (KOBE CITY)
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AMAGASAKI CITY
Air Objective Folder
OSAKA AREA No. 90.25

INDEX OF TARGETS BY NUMBER, CLASSIFICATION AND NAME

TARGET NUMBER	NAME	PAGE
	AIRCRAFT	
793	Fukuda Light Airplane Company	40, 57
	CHEMICALS	
1760	Asahi Glass Company	54
	ELECTRICAL EQUIPMENT	
1739	Furukawa Electrical Company	57
1743	Dai Nichi Electric Wire Company	57
1748	Showa Electrode Company	55
	ELECTRIC POWER	
536	Amagasaki Steam Power Plant	55
540A	Kansai Kyodo Steam Power Plant No. 1	56
540B	Kansai Kyodo Steam Power Plant No. 2	56
	IRON & STEEL	
1195	Sumitomo Metal Industry	53
1766	Daido Steel Manufacturing Company	54
1767	Tokyo Rolling Works	54
1769	Amagasaki Steel Works	54
1771	Nakayama Steel Manufacturing Company	54
	MACHINERY & MACHINE TOOLS	
1197	Kubota Iron and Machinery Works	54
1634	Mizaguchi Gear Works	40, 57
	PETROLEUM	
1203	Nippon Oil Refinery and Tank Farm	55

3621—51—Osaka—5-23-44—Final Proof

OSAKA 90.25 INDEX OF TARGETS (AMAGASAKI CITY)

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Summary and Evaluation of Amagasaki City

Amagasaki is situated on level delta land between the Muko River to the west and a tributary of the Shin Yodo River to the southeast. The city is further outlined by the multi-track Tokaido RR to the north and by regular-shaped islands of reclaimed land in the harbor to the south.

Importance: The city's industrial importance, and its outstanding objectives, are discussed in the Summary and Evaluation of Osaka Area, pp. 7.

Amagasaki is principally important for its three very large steam power plants, which supply a substantial amount of the Osaka Area's year-'round power requirements. The city is also the site of plants producing substantial amounts of iron and steel, electrical equipment and machinery. A sizeable oil refinery is located just to the SW of the city.

Incendiary Attack Data: Amagasaki's industrial expansion is indicated by the fact that its population more than doubled in the past 10 years, and was reported to be 181,000 in 1940. Because it is in effect a suburb of Osaka, the city has no conventional land use pattern. Available maps do not show the expansion which has occurred in the past few years, and the actual limits of the densely built-up areas cannot at present be established with certainty. Overall population density is reported to be 29,600 persons per square mile, indicating a high degree of congestion.

The main residential district, also the site of scattered commercial buildings, is located in the "Y" formed by the main harbor channel and its two tributaries. A cluster of public buildings occupies the southeastern portion of this district. More open residential/industrial districts extend north, east and west of the central section. Most industrial plants are located near the waterfront.

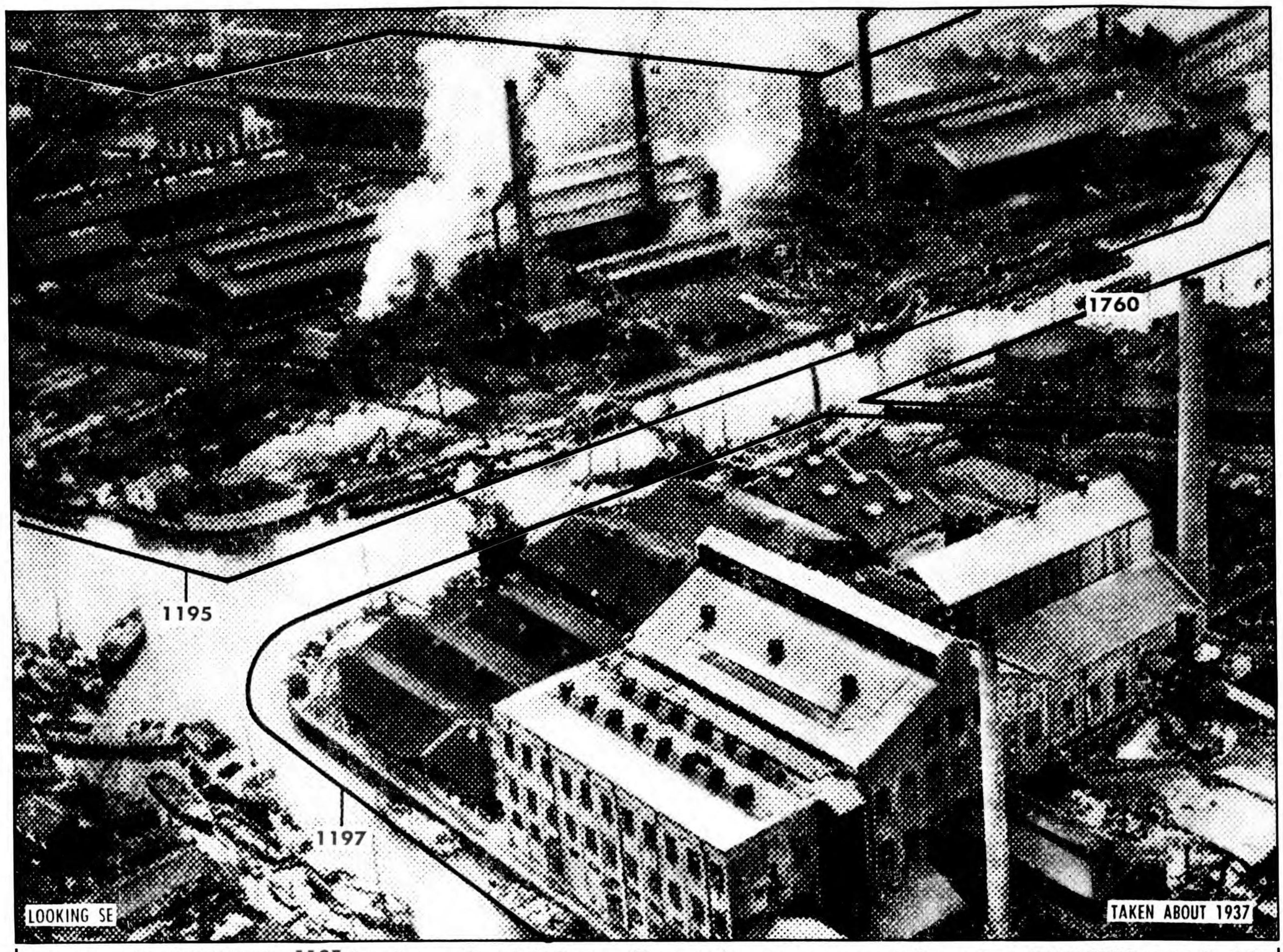
Since the limits of the city's heavily built-up areas cannot be accurately fixed, no incendiary zone map has been compiled for this city.

A final evaluation of the city's vulnerability to incendiary attack must be deferred until reconnaissance becomes available. Present indications are that it is a profitable objective for incendiaries. Situated between Kobe and Osaka, it would become an important source of relief housing and emergency aid should these cities be attacked.

Amagasaki—The population has doubled since photo was taken and the city is now more densely built-up.

OSAKA 90.25 SUMMARY (AMAGASAKI CITY)

3621—52—Osaka—5-23-44—Final Proof



Amagasaki—TARGET 1195 Sumitomo Metal Industry. Target shown, text on another page: TARGET 1760 Asahi Glass Co., TARGET 1197 Kubota Iron and Machinery Works.

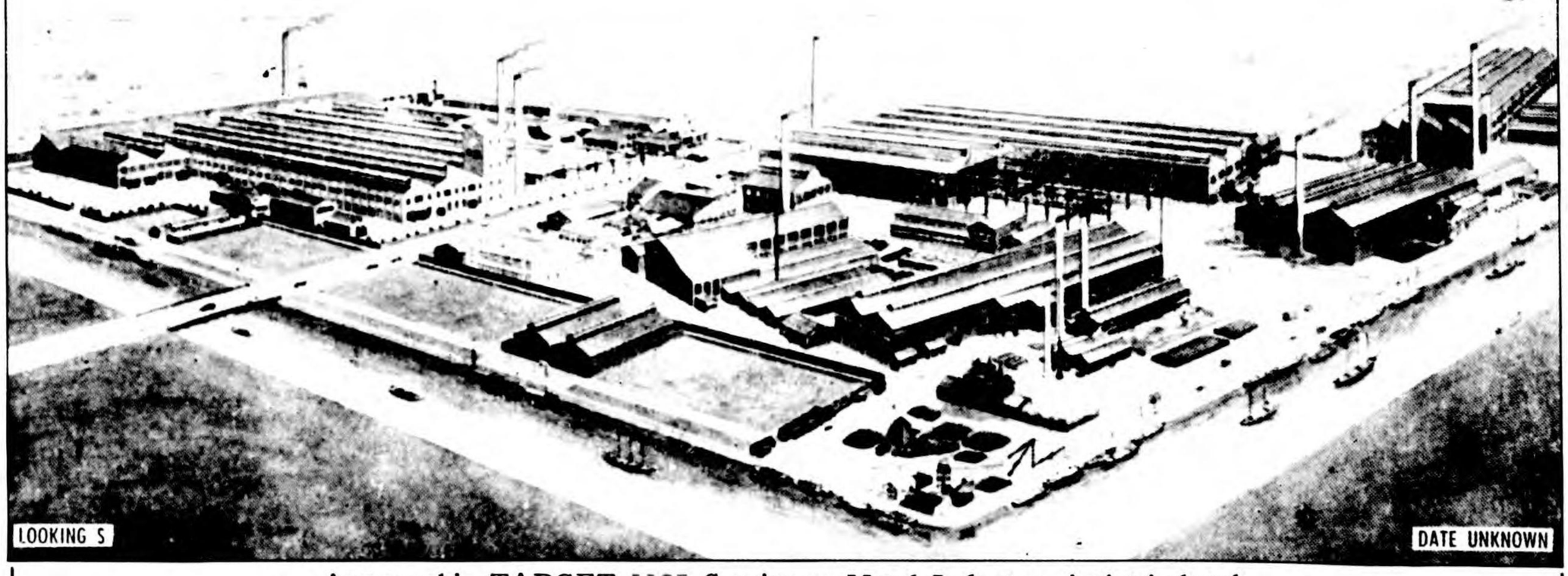
TARGET
1195 SUMITOMO METAL INDUSTRY
(Sumitomo Kinzoku Kogyo K.K.)

AMAGASAKI

(IRON & STEEL)

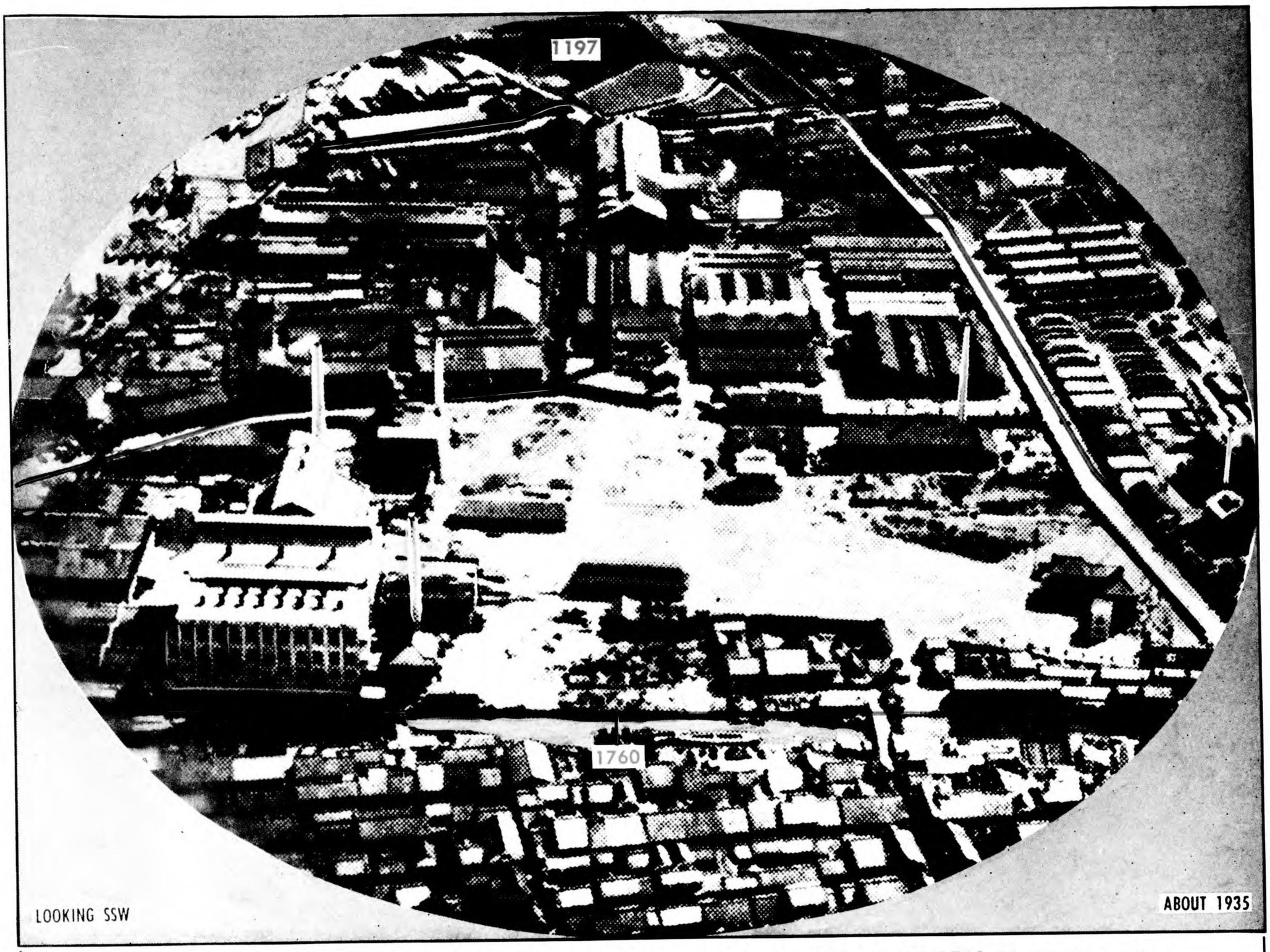
34° 43′ N 135° 25′ E (Approx)—Capacity 60,000 metric tons of steel ingots. 1937 rolling cap 93,000 metric tons; maximum rolling cap 154,000 tons. One of 13 most important plants in Japan for production of plates and sections for shipbuilding. Leading producer of all types of cold drawn tube and hot-finished tube for auto, airplane, chemical, railroad and shipbuilding industries.

(See photo on page 53; maps on pages M-6, M-7, and M-10.)



Amagasaki—TARGET 1195 Sumitomo Metal Industry. Artists' sketch.

OSAKA 90.25 TARGET 1195 (AMAGASAKI CITY)
3621—53—Osaka—4-3-44—First Proof



Amagasaki—TARGET 1197 Kubota Iron and Machinery Works. TARGET 1760 Asahi Glass Co.

TARGET 1197

KUBOTA IRON & MACHINERY WORKS

AMAGASAKI

MACHINERY & MACHINE TOOLS

34° 43′ N 135° 25′ E (Approx) Produces machinery. Importance not established.

(See photos on pages 53 and 54; maps on pages M-6, M-7 and M-10.)

TARGET 1760

ASAHI GLASS CO.

(Asahi Gurasu K.K.)

AMAGASAKI

(CHEMICALS)

34° 43′ N 135° 25′ E (Approx) Very large glass plant. Largely converted to the production of heavy war glass and safety glass. Fire brick factory in compound.

(See photos on pages 53 and 54; maps on pages M-6, M-7 and M-10.)

TARGET 1766

DAIDO STEEL MFG. CO.

(Daido Seiko K.K.)

AMAGASAKI

(IRON & STEEL)

34° 43′ N 135° 26′ E (Approx) Main plant of Co. Company produces 80,000 metric tons of steel ingots. Products include 70,000 metric tons of sheets, bars and netting, also corrugated, galvanized iron, nails, metal lath, etc. (Formerly the Tominaga Steel Industry, Ltd., Tominaga Kogyo K.K.)

(See maps on pages M-6, M-7 and M-10.)

TARGET 1767

TOKYO ROLLING WORKS

(K.K. Tokyo Roll Seisakusho)

AMAGASAKI

(IRON & STEEL)

34° 42′ N 135° 24′ E (Approx) Important plant, producing cast iron and steel, alloys, rolled ingot cases, and rolling machinery.

(See maps on pages M-6, M-7 and M-10.)

TARGET 1769

AMAGASAKI STEEL WORKS

(K.K. Amagasaki Seikosho)

AMAGASAKI

(IRON & STEEL)

34° 43′ N 135° 24′ E (Approx) Capacity (1938) of 168,000 metric tons carbon steel ingots, and 19,000 tons special steel. Two blast furnaces, 1940 pig iron capacity 126,000 tons. Estimated rolling capacity 130,000 tons. Products include ingots, structural steel, special steels, rails and tubes. Plans for machine tool production.

(See map on page M-10.)

TARGET 1771

NAKAYAMA STEEL MFG. CO.

(K.K. Nakayama Seikosho)

AMAGASAKI

(IRON & STEEL)

34° 42′ N 135° 25′ E (Approx) Important branch of company. Main plant, TARGET 713, Osaka.

(See maps on pages M-6, M-7 and M-10.)

OSAKA 90.25 TARGETS 1197, 1760, 1766, 1767, 1769, 1771 (AMAGASAKI CITY)

3621—54—Osaka—5-23-44—Final Proof

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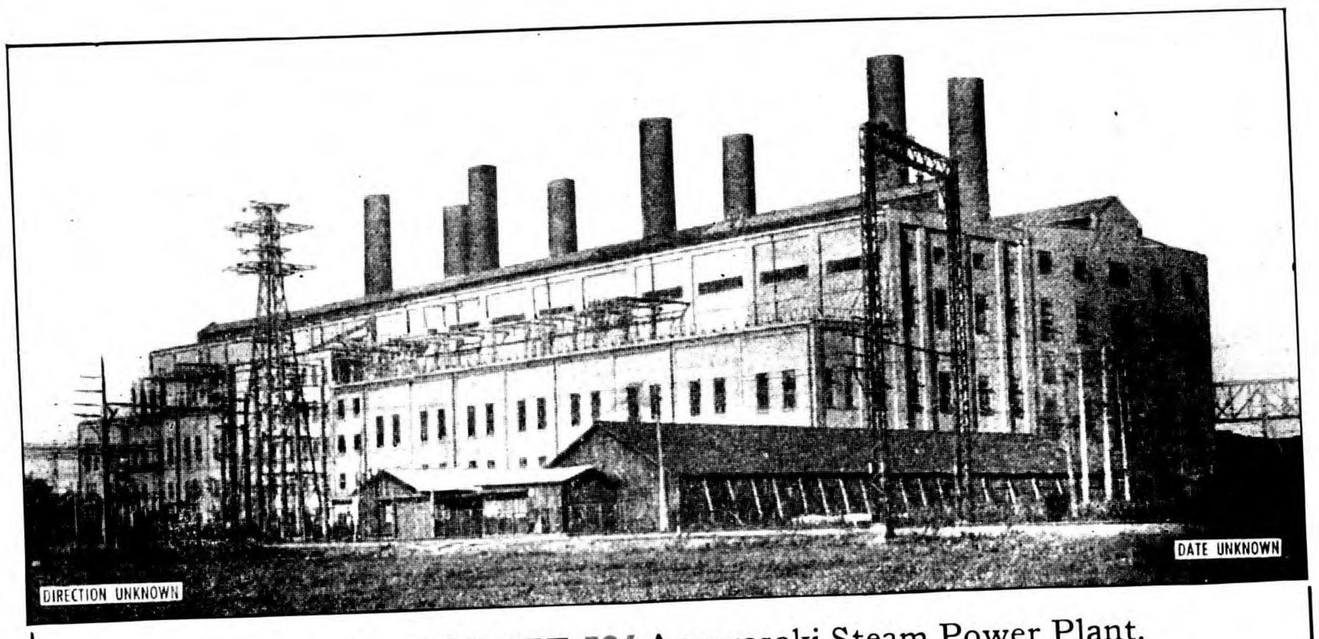
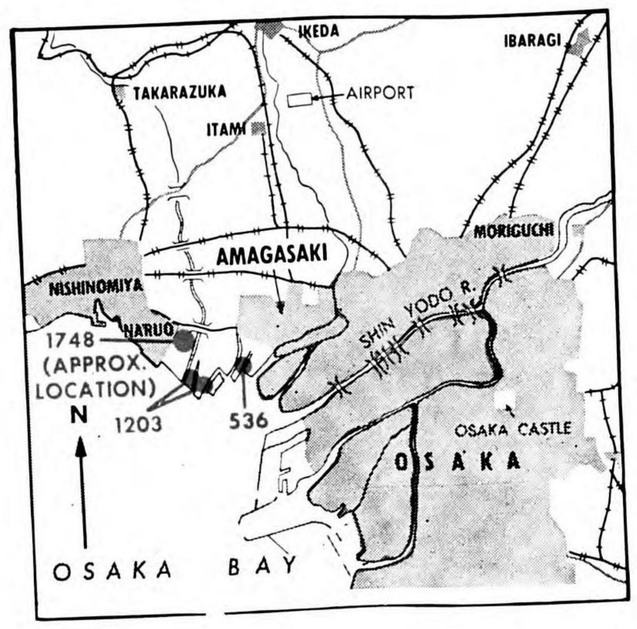
DESCRIPTION OF TARGETS



Amagasaki—TARGET 536 Amagasaki Steam Power Plant.



TARGET **536**

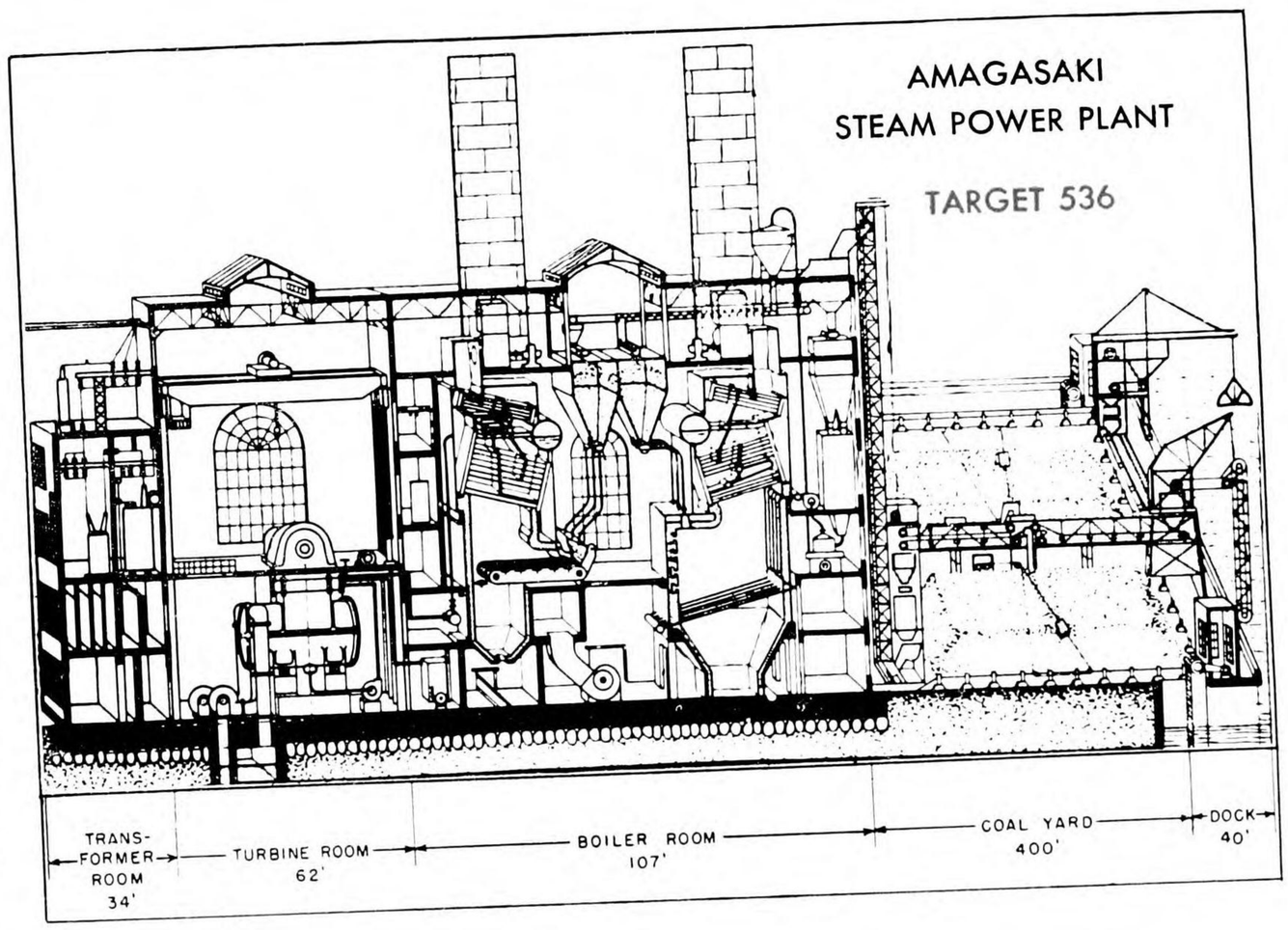
AMAGASAKI STEAM POWER PLANT

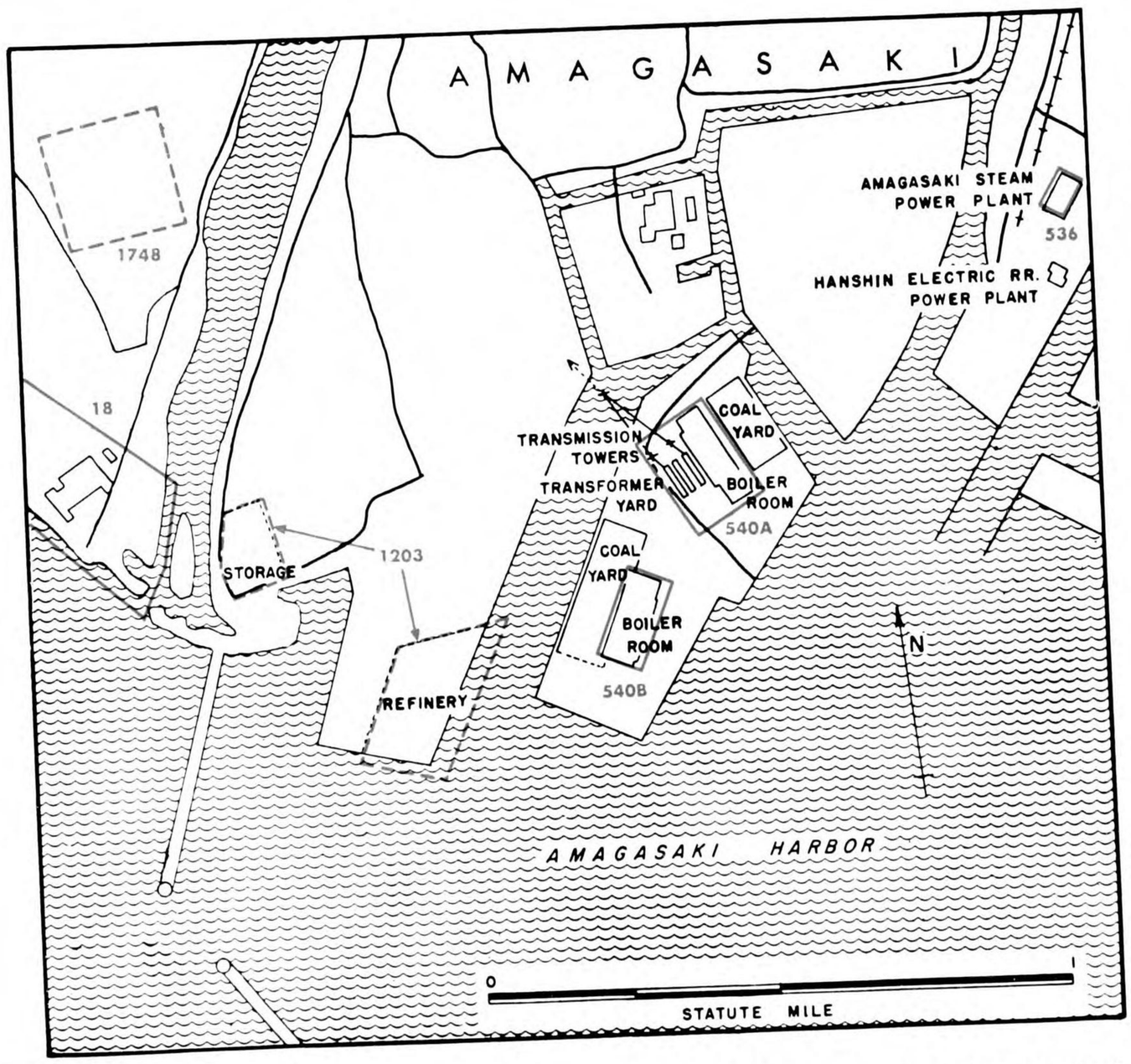
AMAGASAKI

(ELECTRIC POWER)

34° 42′ N 135° 24′ E (Approx)—Important base-load plant. Capacity 140,000 KW. Located 4000 ft NE of TARGET 540A. Reinforced concrete bldg 200 by 480 ft. Eight steel stacks in two rows of four each. Large coal yard, conveyors and hoists along canal to east. Transmission lines run NW across R. Note: A minor power sta (one tall concrete chimney) is located directly to south of Amagasaki plant.

(See photo on page 55; maps on pages M-4, M-6, M-7 and M-10.)





TARGET **1203**

NIPPON OIL REFINERY & TANK FARM

(Nippon Sekiyu K.K.)

AMAGASAKI

(PETROLEUM)

34° 42′ N 135° 24′ E (Approx)—Most important refinery in area. Crude cap 5,000 bbls per day, approx 5.5% of Japanese cap; cracking cap 1500 bbls. day. Produces gasoline, fuel oil and by-products. No known aviation gasoline. Large tank farm (approx 30 tanks) NW of refinery, near mouth of Mukogawa R.

(See photos on pages 55 and 60; map on page M-10.)

TARGET **1748**

SHOWA ELECTRODE CO.

(Showa Denkyoku K.K.)

NARUO

(ELECTRIC EQUIPMENT)

34° 42′ N 135° 23′ E (Approx)—One of the three large manufacturers of electrodes in Japan, important for steel and chemical industries.

(See photo on page 55; map on page M-10.)

OSAKA 90.25 TARGETS 536, 1203, 1748 (AMAGASAKI CITY)

3621—55—Osaka—5-23-44—Final Proof

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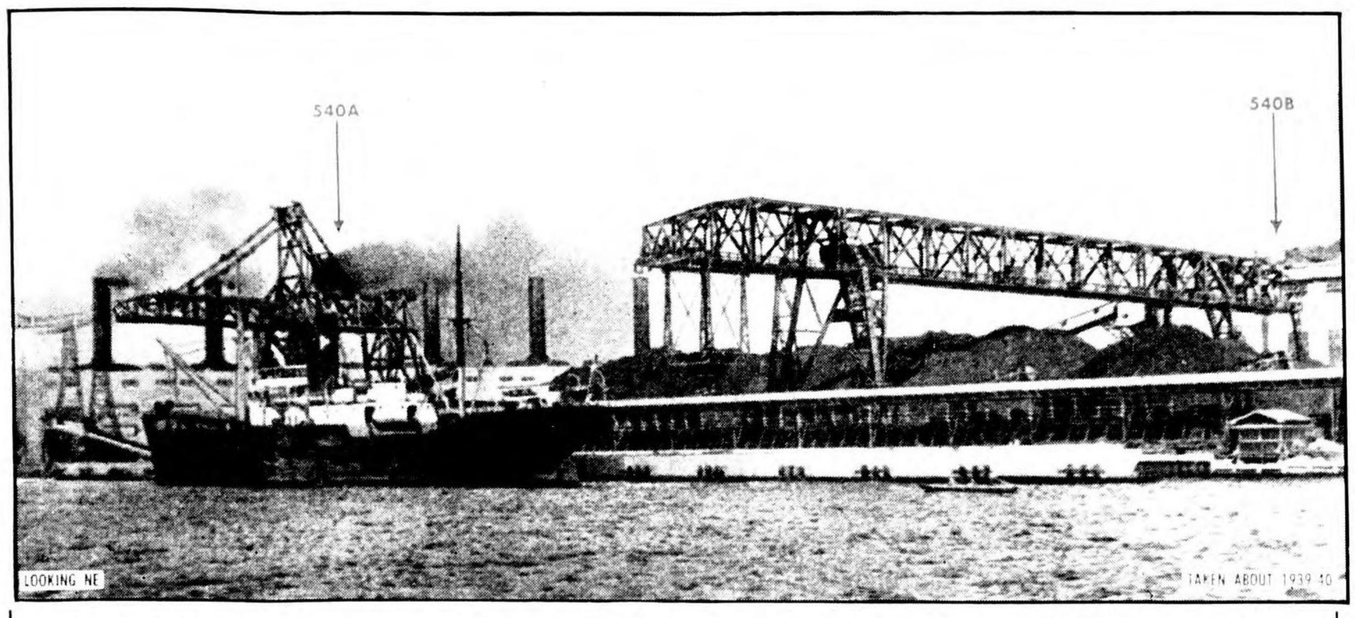
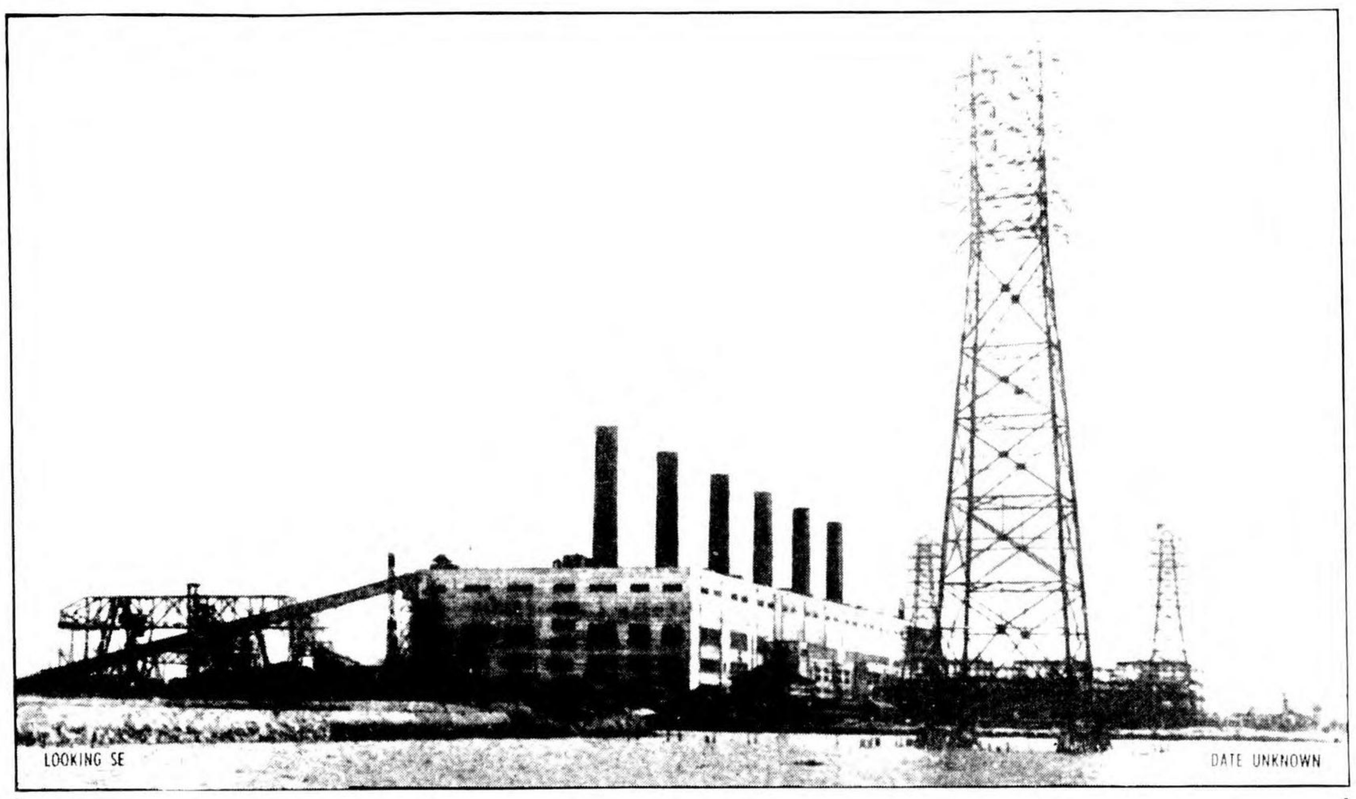
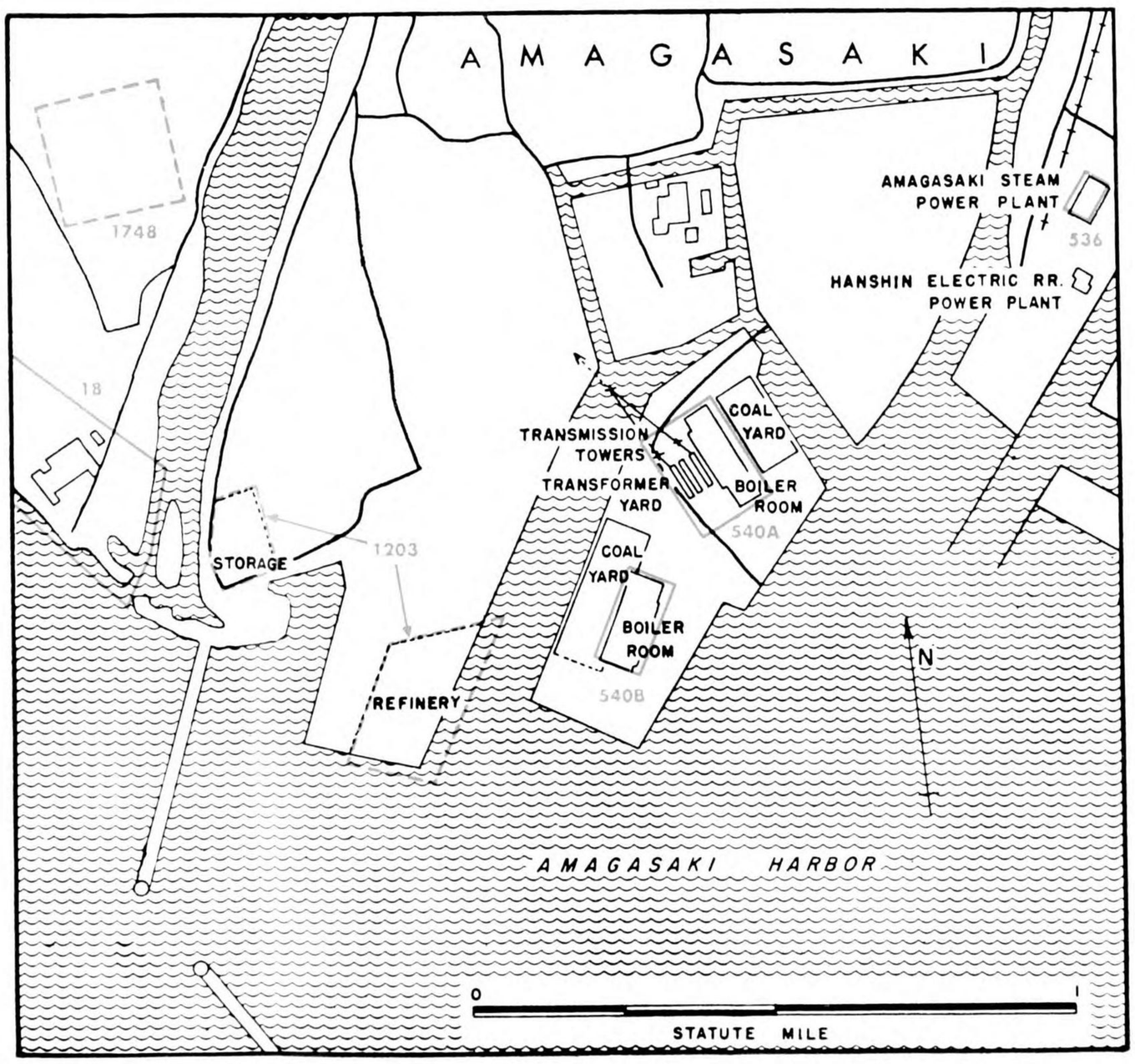


Amagasaki—TARGETS 540A and 540B Kansai Kyodo Steam Power Plant. View shows coal hoist and other coal handling equipment available alongside plants.



Amagasaki—TARGET 540A Kansai Kyodo Steam Power Plant Unit No. 1.



TARGET
540 A&B KANSAI KYODO STEAM POWER PLANTS, Nos. 1 and 2
AMAGASAKI
ELECTRIC POWER

34° 42′ N 135° 24′ E (Approx)—Largest generating sta in Japan. Cap 693,000 KW in 1940; scheduled for expansion to 768,000 KW. Key base-load power source for Osaka area. Two powerhouses (TARGETS 540A and 540B) 1000 ft apart, each measuring approx 225 by 725 ft. Large coal hoists, conveyors and coal yd on canal side of each powerhouse. Total coal storage estimated at 200,000 tons. Coal wharves have 28 ft of water alongside.

(See photos on pages 55, 56 and 60; maps on pages M-4 and M-10.)

TARGET
540A KANSAI KYODO STEAM POWER PLANT No. 1
AMAGASAKI

Reinforced concrete structure houses six 53,000 KW units. Six steel stacks in line. Extensive transformer yd and switchgear to SW, between 540A and 540B. High transmission towers lead from switchgear NW across canal.

(See photos on pages 55, 56 and 60; maps on pages M-4 and M-10.)

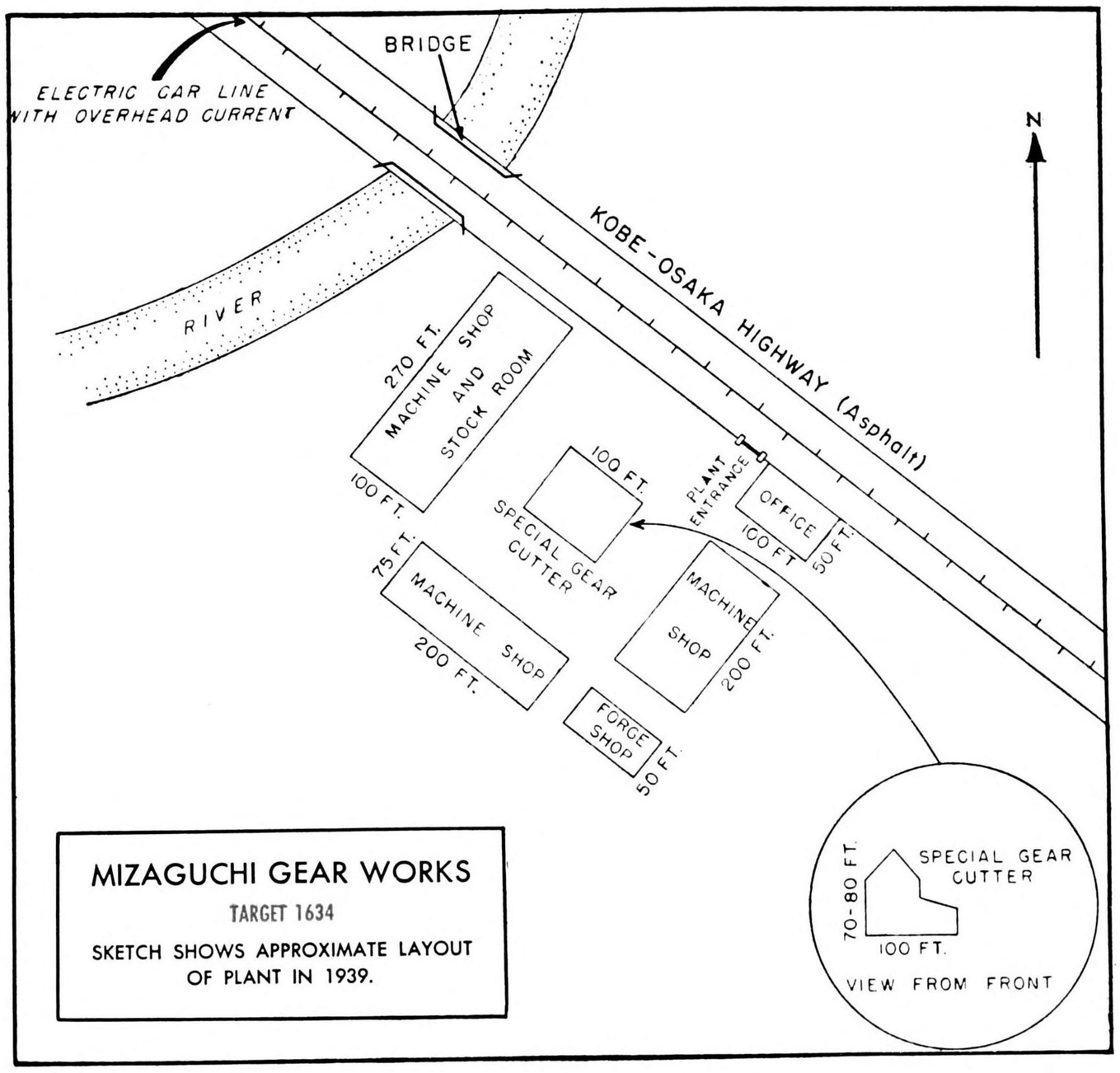
TARGET
540B KANSAI KYODO STEAM POWER PLANT No. 2
AMAGASAKI

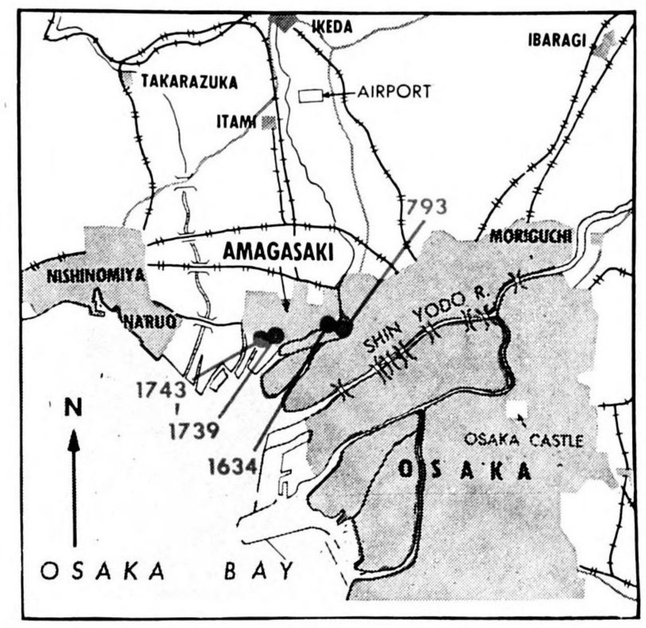
1000 ft SW of TARGET 540A. Reinforced concrete structure houses five (probably six) 75,000 KW units. Five (or six) stacks in line.

(See photos on pages 55, 56 and 60; maps on pages M-4 and M-10.)

3621—56—Osaka—4-3-44—First Proof

DESCRIPTION OF TARGETS





TARGET
1634 MIZAGUCHI GEAR WORKS
OSAKA—AMAGASAKI
(MACHINERY & MACHINE TOOLS)

34° 43′ N 135° 27′ E (Approx)—Important producer of very large precision gears and training rings for propulsion and gun turret mechanisms of naval vessels. Reported equipped with finest imported machines and tools which are duplicated only in Japan's leading naval arsenals. In 1939, plant comprised small group of bldgs, most important of which was the central one housing the largest gear cutter equipment. Expansion reported.
(See maps on pages M-6, M-7 and M-10.)

TARGET
1743 DAI NICHI ELECTRIC WIRE CO.
(Dai Nichi Densen K.K.)
AMAGASAKI
(ELECTRIC EQUIPMENT)

34° 42′ N 135° 25′ E (Approx)—Insulated wire and cable. Credited with 4% of total production in Japanese Empire.
(See maps on pages M-6, M-7 and M-10.)

TARGET
793 FUKUDA LIGHT AIRPLANE CO.
(Fukuda Kei Hikoki K.K.)
OSAKA—AMAGASAKI
(AIRCRAFT)

34° 43′ N 135° 27′ E (Approx)—Light planes and gliders. Reported production of auto parts, fuselages, undercarriages.
(See maps on pages M-6, M-7 and M-10.)

TARGET
1739 FURUKAWA ELECTRICAL CO.
(Furukawa Denki Kogyo K.K.)
AMAGASAKI
(ELECTRIC EQUIPMENT)

34° 42′ N 135° 25′ E (Approx)—Important fabricating plant. Copper, aluminum and brass bars, rods, pipes, tubes, sheets, plates, wire, batteries. Estimated annual production: 5000 tons of copper, 2000 tons of lead, 10,000 ounces silver. Recently expanded with emphasis on light alloy production.
(See maps on pages M-6, M-7 and M-10.)

OSAKA 90.25 TARGETS 793, 1634, 1739, 1743 (AMAGASAKI CITY)

3621—57—Osaka—4-3-44—First Proof

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OSAKA 90.25 TARGETS 793, 1634, 1739, 1743 (AMAGASAKI CITY)

OUTLYING TARGETS

Air Objective Folder

OSAKA No. 90.25 AREA

INDEX OF TARGETS BY NUMBER, CLASSIFICATION AND NAME

TARGET NUMBER	NAME	PAGE
	AIRCRAFT	
18	Kawasaki Aircraft Company	60
1547	Kawasaki Aircraft Company	65
1702	Kawanishi Aircraft Company	63
1704	Strong Engineering Works Company	63
1707	Toyo Metal and Wood Company	63
1724	Kawasaki Aircraft Company	62
	ARSENALS AND MILITARY STORES	
1723	Hiraka Branch, Osaka Army Arsenal	63
	CHEMICALS	
1713	Tagi Fertilizer Company	65
	ELECTRIC EQUIPMENT	
1744	Matsushita Wireless Company	63
1750	Matsushita Dry Battery Company	63
1756	Oriental Cable Company	64
	ELECTRIC POWER	
1629	Amagasaki Transformer Station	63
1630	Osaka Transformer Station	63
1631	Yao Transformer Station	64
1632	Kizu Transformer Station	63
	IRON & STEEL	
1770	Nippon Iron Sand Industry Company	65
	MACHINERY & MACHINE TOOLS	
1198	Toyo Bearing Manufacturing Company	63
1714	Kwoyo Precision Works Company	64
1716	Asahi Precision Works Company	64
1717	Yuasa Storage Battery Manufacturing Company	63
1773	Osaka Chain and Machinery Works	63
1777	Kubota Iron and Machinery Works	64
1780	Osaka Machinery Company	63
1782	Osaka Metal Industry Company	64
1784	Osaka Wakayama Iron Works	64
	PETROLEUM	
1764	Maruzen Oil Refinery	64
	NON-FERROUS	
1708	Nippon Aluminum Works	41
1709	Sumitomo Aluminum Company	64
1710	Takada Aluminum Manufacturing Company	64
	TRANSPORTATION	
1209	Suita RR Yards and Shops	61
	WATER SUPPLY	
153	Senkari Reservoir Dam	61

3621—58—Osaka—5-23-44—Final Proof

OSAKA 90.25 INDEX OF TARGETS (OUTLYING TARGETS)

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Summary and Evaluation of Outlying Targets

Significant concentrations of targets are located along the RR lines leading SW, SE, and NE from Osaka City. The district NE of Osaka, extending along both sides of the Shin Yodo River, is particularly important. In addition to the large Hirakata Arsenal (a branch of the Osaka Arsenal), this district is the site of plants producing batteries, wireless equipment, and machine tools. The extensive RR yards and shops near Suita are also significant.

Sakai is the site of a large powder plant and several marine engine works. Numerous other small plants (textiles, machinery and chemicals), none of which are listed as targets, are also located here. Several machinery and machine tool plants are located along the coast to the south of Sakai.

A secondary cluster of targets is located SE of Osaka, at Yao (aluminum foil plant and power transformer station) and at Kokubu (anti-friction bearings plant).

A navy-operated refinery and tank farm is located at Nishinoura, on Osaki Bay, near the southern limit of this Area.

TAKARAZUKA-ITAMI DISTRICT. Several significant factories have recently been established in this district as part of a program to decentralize war production. Of the plants known to have been located here, a bearing plant **TARGET 1780** and a machine tool plant **TARGET 1707** are most important. Several sources have reported a branch aircraft factory in this district, but its exact location has not been established. A new plant of the Mitsubishi Electric Manufacturing Co. has been reported just south of Itami. This is an important concern, but information concerning this plant is too fragmentary to warrant listing as a numbered target.

AKASHI-TAKASAGO COASTAL STRIP. The coastal strip between Akashi and Takasago is a newly developed industrial district. Most important among the plants located here is the main engine works of the Kawasaki Aircraft Co. Sources differ as to the location of this plant, but it is generally reported just west of Akashi and south of the coastal railroad. Not listed as targets are several small machinery works and a marine engine works in Akashi.

KOBE-AMAGASAKI COASTAL STRIP. The two plants of Kawanishi Aircraft Co. constitute the only significant objectives along the coast between Kobe and Amagasaki. The main plant **TARGET 18** at Naruo is definitely located, although it has been expanded recently and may extend over a larger area than is indicated. The branch plant at Fukae, **TARGET 1702,** is not located precisely, but is reported to be in the general area indicated.

OSAKA 90.25 SUMMARY (OUTLYING TARGETS)

3621—59—Osaka—4-3-44—First Proof

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Naruo—TARGET 18 Kawanishi Aircraft Co. (plant has been expanded to left). Targets shown, text on another page: TARGET 540A Kansai Kyodo Steam Power Plant, Unit No. 1, TARGET 540B Kansai Kyodo Steam Power Plant Unit No. 2, TARGET 1203 Nippon Oil Refinery and Tank Farm.

TARGET 18

KAWANISHI AIRCRAFT CO.

(Kawanishi Kokuki K.K.)

NARUO

(AIRCRAFT)

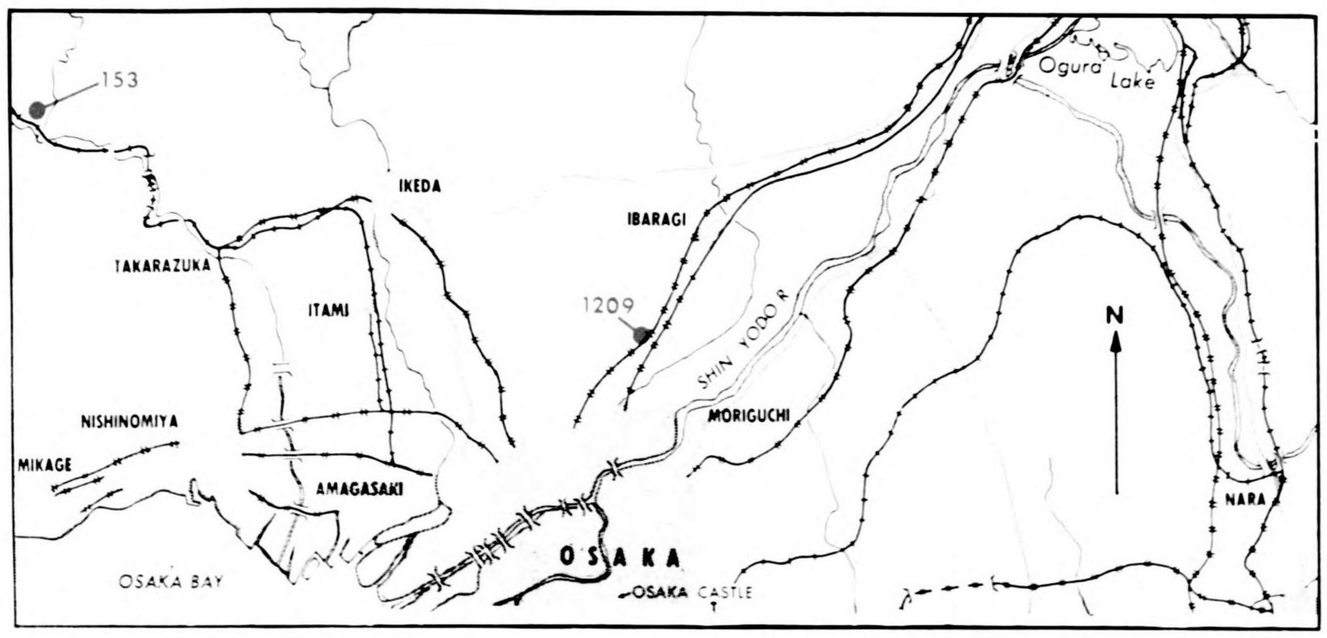
34° 42′ N 135° 22′ E (Approx) Key aircraft plant. Produces multi-engine, flying boats. Reported integrated plant, including production of engines, propellers, other components. Expanded, reported to have been extended to N.

(See photos on pages 55 and 60; map on page M-10.)

Sakai—Sakai Harbor. The small factories in this view are not listed as targets.

3621—60—Osaka—4-3-44—First Proof

Suita—TARGET 1209 Suita RR Yards and Shops. Roundhouse and shops are at far end of yard.



TARGET
1209

SUITA RR YARDS & SHOPS

SUITA

(TRANSPORTATION)

34° 46′ N 135° 32′ E (Approx)—Important RR yds and shops. Covers large area about 5½ miles NE of Osaka Sta on Tokaido Main line.

(See photo on page 61; map on page M-12.)

TARGET
153

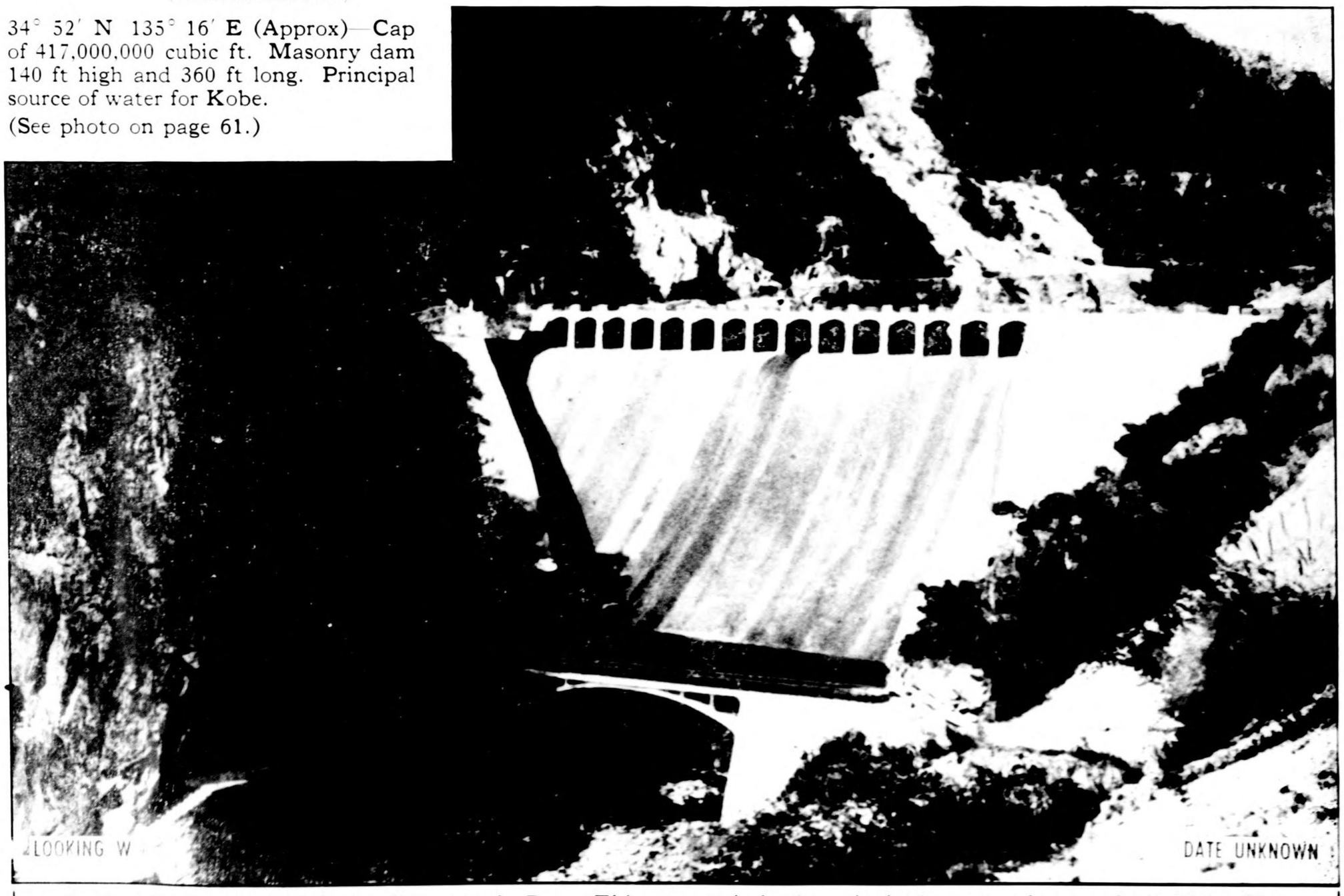
SENKARI RESERVOIR DAM

SENDA

(WATER SUPPLY)

34° 52′ N 135° 16′ E (Approx)—Cap of 417,000,000 cubic ft. Masonry dam 140 ft high and 360 ft long. Principal source of water for Kobe.

(See photo on page 61.)

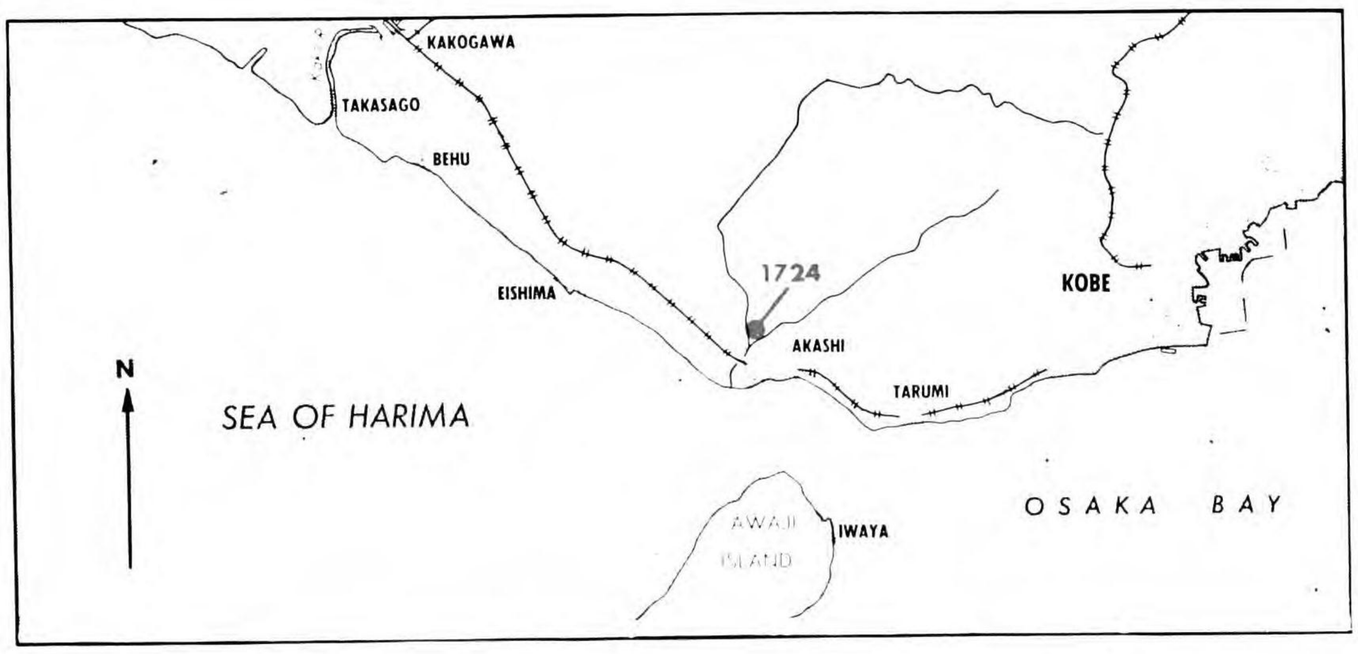


Senda—TARGET 153 Senkari Reservoir Dam. This reservoir is the principal source of water from Kobe City.

OSAKA 90.25 TARGETS 153, 1209 (OUTLYING TARGETS)

3621 61 Osaka 4-3-44 First Proof

Akashi—TARGET 1724 Kawasaki Aircraft Co. Reported to be located on the bend of the river as shown.



TARGET
1724 **KAWASAKI AIRCRAFT CO.**
(Kawasaki Kokuki Kogyo K.K.)
AKASHI
(AIRCRAFT)

34° 39′ N 134° 59′ E (Approx)—Aircraft oxygen equipment, anti-gas equipment. Spotting approx. Small plant surrounded by rice paddy-fields. Main bldg of red brick, peaked tile roof, two to three stories.

(See photo on page 62; map on page M-10.)

Toyo Cotton Mill—A typical textile factory located just north of Osaka, of which there are many in the area.

OSAKA 90.25 TARGET 1724 (OUTLYING TARGETS)

3621—62—Osaka—4-3-44—First Proof

TARGET
1198 TOYO BEARING MFG. CO.

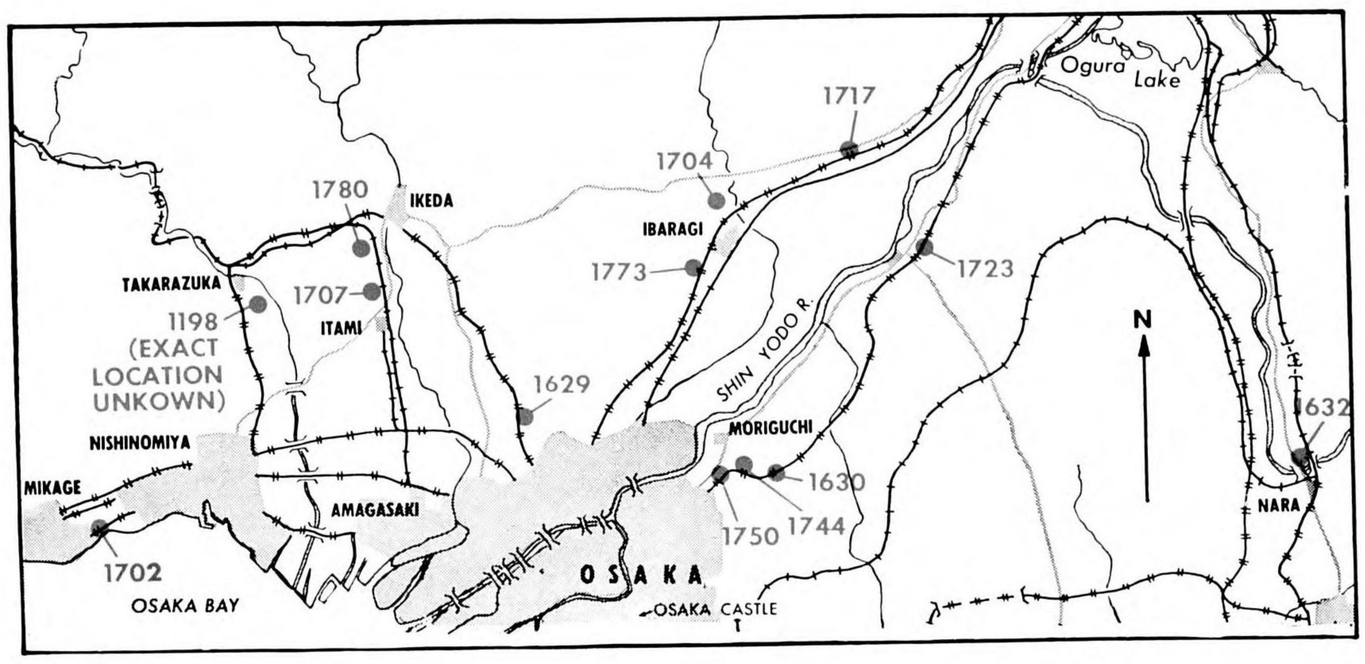
(Toyo Bearing Seizo K.K.)

TAKARAZUKA

(MACHINERY & MACHINE TOOLS)

34° 47′ N 135° 22′ E (Approx)—One of three plants of Toyo Bearing (NTN), Japan's largest manufacturer of ball and roller bearings. Reported cap 10,000 ball bearings per day. Reported adjacent dormitories for entire personnel.

(See map on page M-11.)



TARGET
1629 AMAGASAKI TRANSFORMER STATION

AMAGASAKI

ELECTRIC POWER

34° 45′ N 135° 29′ E (Approx)—One of four primary transformer stas controlling power from NE. Transformer yd approx 1000 ft square. Substation bldg 75 by 175 ft. Small cooling pond. Situated ½ mi west of large textile mill, two miles west of Suita RR yds (TARGET 1203).

(See maps on pages M-4, M-11 and M-12.)

TARGET
1630 OSAKA TRANSFORMER STATION

OSAKA

(ELECTRIC POWER)

34° 44′ N 135° 36′ E (Approx)—One of four primary transformer sta controlling power from NE. Transformer yd approx 1000 ft square T-shaped substation bldg 200 by 150 ft; cooling pond. Located 4 mi SE of Suita RR yds (TARGET 1203). Located S of electric RR line.

(See maps on pages M-4 and M-12.)

TARGET
1632 KIZU TRANSFORMER STATION

KIZU

(ELECTRIC POWER)

34° 35′ N 135° 50′ E (Approx)—One of four primary transformer stas controlling power from NE. Located E of Kizu Village (2 miles N of Nara) between railroad and river.

(See map on page M-4.)

TARGET
1702 KAWANISHI AIRCRAFT CO.

(Kawanishi Kokuki K.K.)

FUKAE

(AIRCRAFT)

34° 43′ N 135° 17′ E (Approx)—New plant under construction in 1940. Planned to be approx size of original Naruo plant (TARGET 18). No information on present status.

(See map on page M-9.)

TARGET
1704 STRONG ENGINEERING WORKS CO.

(K.K. Strong Seisakusho)

IBARAGI

(AIRCRAFT)

34° 49′ N 135° 26′ E (Approx)—Small plant producing pistons, other aircraft parts.

(See map on page M-12.)

TARGET
1707 TOYO METAL and WOOD CO.

(Toyo Kinzoku Mokko K.K.)

ITAMI

(AIRCRAFT)

34° 48′ N 135° 25′ E (Approx)—Small plant, reported producing gliders and light planes.

(See map on page M-11.)

TARGET
1717 YUASA STORAGE BATTERY MFG. CO.

(Yuasa Chikudenchi Seizo K.K.)

TAKASUKI

(MACHINERY & MACHINE TOOLS)

34° 51′ N 135° 37′ E (Approx)—Storage batteries. Cap unknown.

TARGET
1723 HIRAKATA BRANCH, OSAKA ARMY ARSENAL

HIRAKATA

(ARSENALS & MILITARY STORES)

34° 50′ N 135° 40′ E (Approx)—Located on E bank of the Yodogawa R. 12 mi NE of Osaka Castle. Important branch of Arsenal. Large compound.

(See map on page M-13.)

TARGET
1744 MATSUSHITA WIRELESS CO.

(Matsushita Musen K.K.)

MORIGUCHI

(ELECTRIC EQUIPMENT)

34° 44′ N 135° 35′ E (Approx)—Medium size plant; located approx five mi NE of Osaka Castle. Produces radio equipment for aircraft.

(See map on page M-12.)

TARGET
1750 MATSUSHITA DRY BATTERY CO.

(Matsushita Kendenchi K.K.)

MORIGUCHI

(ELECTRIC EQUIPMENT)

34° 44′ N 135° 34′ E (Approx)—Small plant producing dry cells, batteries, electrical appliances and probably electrodes.

(See map on page M-12.)

TARGET
1773 OSAKA CHAIN and MACHINERY WORKS

(Osaka Seisa Zoki K.K.)

IBARIGI

(MACHINERY & MACHINE TOOLS)

34° 49′ N 135° 33′ E (Approx)—Important machine tool plant. Produces milling, drilling, gear hobbing and shaping, boring and planning machines; chains, engines & gears. Reported also making munitions.

(See map on page M-12.)

TARGET
1780 OSAKA MACHINERY CO.

(Osaka Kiko K.K.)

ITAMI

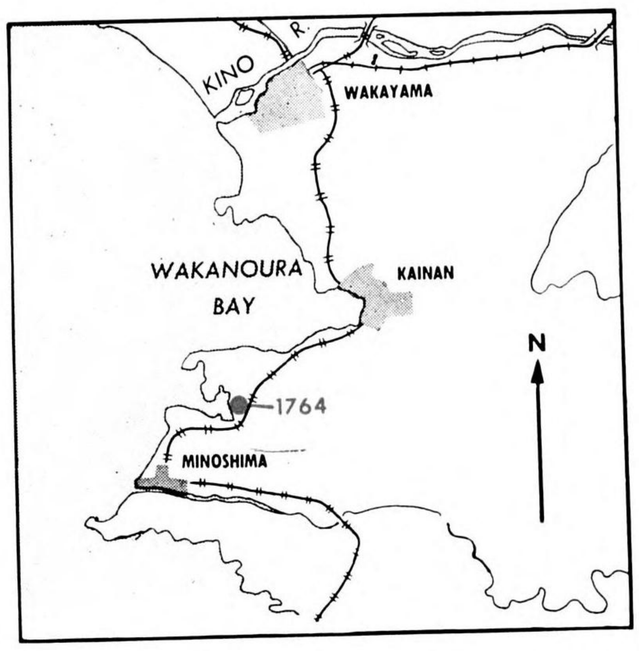
(MACHINERY & MACHINE TOOLS)

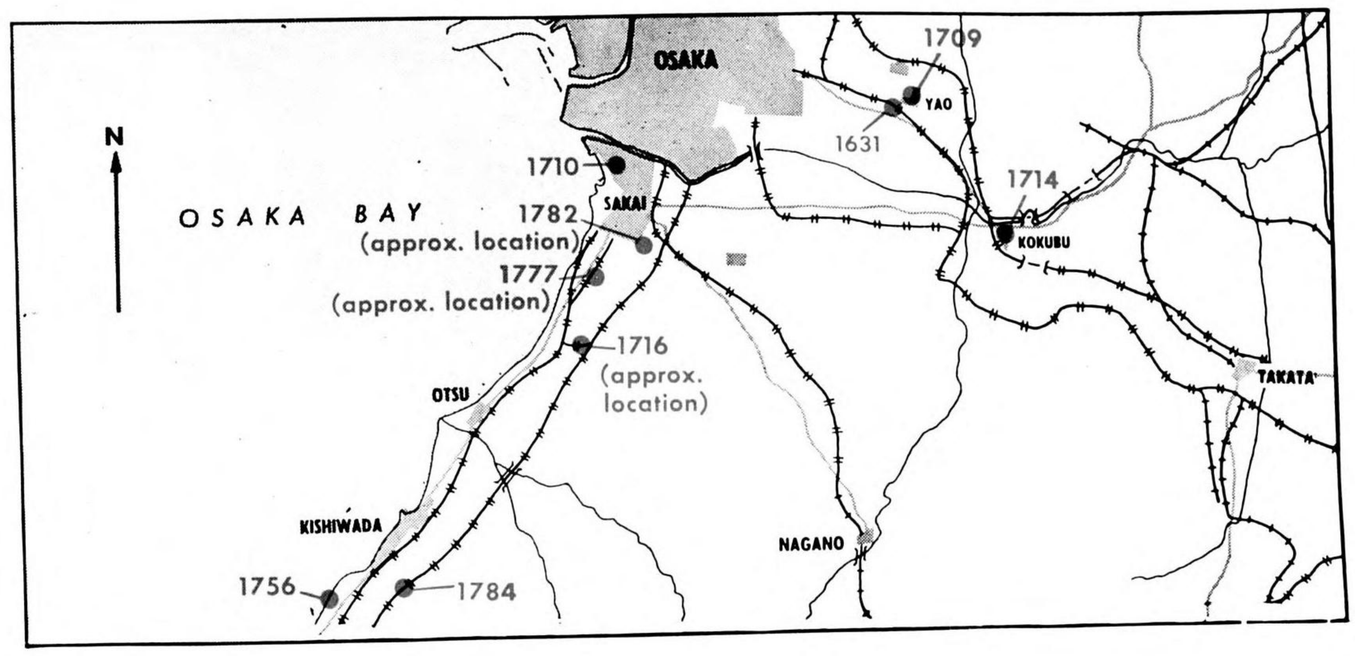
34° 47′ N 135° 25′ E (Approx)—Branch of one of Japan's leading machine tool concerns. Other plants, TARGETS 1781 and 388. New plant, reported expanded. Specially licensed for machine tools, horizontal boring mills, and precision lathes. Also produces hydraulic cylinders for aircraft.

(See map on page M-11.)

3621—63—Osaka—5-23-44—Final Proof

DESCRIPTION OF TARGETS





TARGET
1764 MARUZEN OIL REFINERY
(Maruzen Sekiyu K.K.)
SHIMOTSU
(PETROLEUM)

34° 06′ N 135° 09′ E (Approx)—Important refineries and oil storage for Japanese Navy. Combined crude cap 4600 bbls per day; iso-octane cap 25 bbls per day. Storage cap unknown but at least 15 large tanks. Products: aviation gasoline, lube oil, gasoline & fuel oil. Storage located between two refineries; one bunkering pier with floating pipe lines.

TARGET
1631 YAO TRANSFORMER STATION
YAO
(ELECTRIC POWER)

34° 37′ N 135° 37′ E (Approx)—One of four primary transformer stations controlling power from NE. Transformer yard approx 800 ft square. Substation bldg, pond, etc. Located directly SE of Yao Village along RR.
(See map on page M-4.)

TARGET
1709 SUMITOMO ALUMINUM CO.
(Sumitomo Aluminium K.K.)
YAO
(NON-FERROUS METALS)

34° 47′ N 135° 36′ E (Approx)—Aluminium foil rolling plant; largest in Japan. Estimated production 600-900 metric tons per year.

TARGET
1710 TAKADA ALUMINUM MFG. CO.
(K.K Takada Aluminium Seisakusho)
SAKAI
(NON-FERROUS METALS)

34° 35′ N 135° 28′ E (Approx)—Small aluminium plate rolling mill. Produces aircraft fuel tanks, other parts.
(See maps on pages M-5, M-6 and M-7.)

TARGET
1714 KWOYO PRECISION WORK CO.
(Kwoyo Seiko K.K.)
KOKUBU
(MACHINERY & MACHINE TOOLS)

34° 34′ N 135° 38′ E (Approx)—Reported to be main plant (of four) of Co. Produces ball bearings, roller bearings and precision gauges; rate of production: 2000 pieces per day, 600,000 per year, approx 4% of Japanese bearing production.

TARGET
1716 ASAHI PRECISION WORK CO.
(Asahi Seiko K.K.)
SAKAI
(MACHINERY & MACHINE TOOLS)

34° 31′ N 135° 27′ E (Approx)—Small plant. Makes second grade bearings. Cap unknown.
(See map on page M-5.)

TARGET
1756 ORIENTAL CABLE CO.
(Toyo Seiko K.K.)
KAJI
(ELECTRIC EQUIPMENT)

34° 26′ N 135° 20′ E (Approx)—All kinds of wire and cable.

TARGET
1777 KUBOTA IRON and MACHINERY WORKS
(K.K. Kubota Tekko Sho)
SAKAI
(MACHINERY & MACHINE TOOLS)

34° 33′ N 135° 28′ E (Approx)—Munitions, internal combustion engines. Expanded since 1939.
(See map on page M-5.)

TARGET
1782 OSAKA METAL INDUSTRY CO.
(Osaka Kinzoku Kogyo K.K.)
SAKAI
(MACHINERY & MACHINE TOOLS)

34° 34′ N 135° 29′ E (Approx)—Internal combustion engines, machinery, parts for autos and airplanes.
(See map on page M-5.)

TARGET
1784 OSAKA WAKAYAMA IRON WKS.
(K.K. Osaka Wakayama Tekko Sho)
TSUDA
(MACHINERY & MACHINE TOOLS)

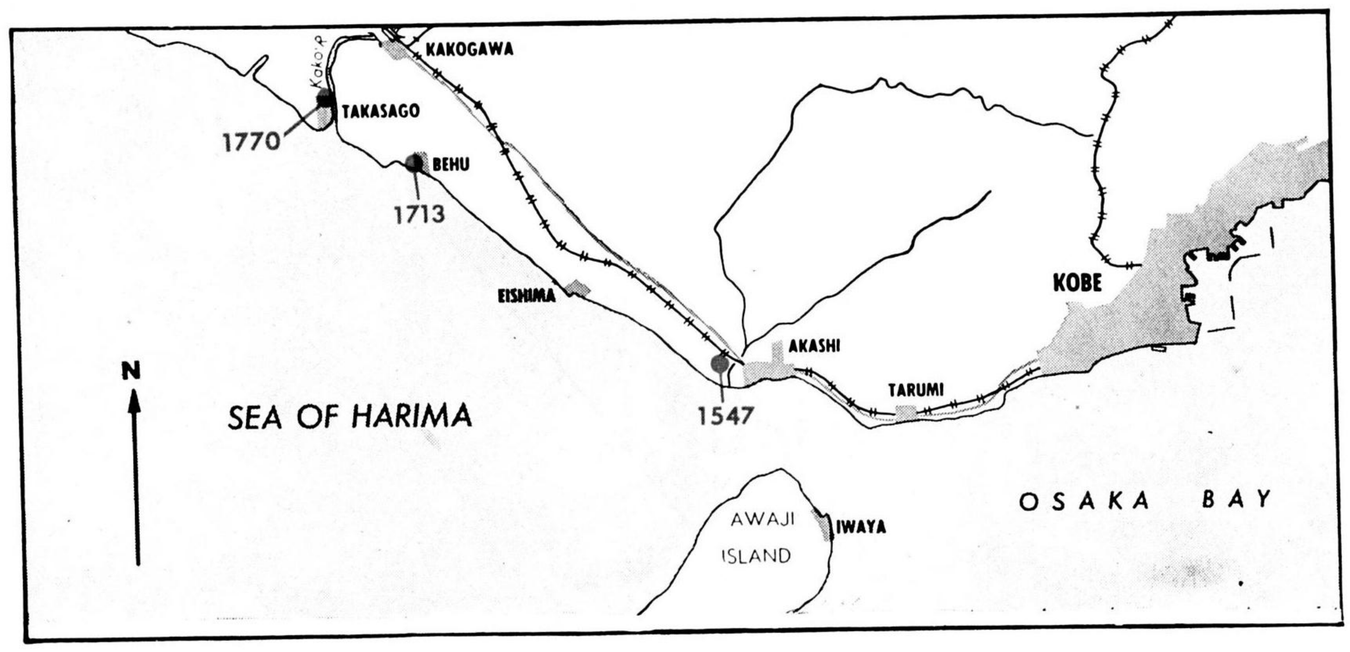
34° 22′ N 135° 26′ E (Approx)—Established machine tool plant. In 1939 imported machinery was installed for production of turret lathes and airplane parts.

OSAKA 90.25 TARGETS 1631, 1709, 1710, 1714, 1716, 1756, 1764, 1777, 1782, 1784 (OUTLYING TARGETS)
3621—64—Osaka—4-3-44—First Proof

OSAKA 90.25 TARGETS 1631, 1709, 1710, 1714, 1716, 1756, 1764, 1777, 1782, 1784 (OUTLYING TARGETS)

TARGET
1713 TAGI FERTILIZER CO.
(K.K. Tagi Seihi Sho)
BEHU
(CHEMICALS)

34° 43′ N 134° 51′ E (Approx)—Ammonia plant and only sizeable nitrogen producing plant in the Area. Estimated annual production—8500 metric tons nitrogen, 50,000 tons ammonium sulphate, 300,000 tons sulphuric acid, 270,000 tons superphosphates.



TARGET
1770 NIPPON IRON SAND INDUSTRY CO.
(Nippon Satetsu Kogyo K.K.)
TAKASAGO
(IRON & STEEL)

34° 45′ N 134° 49′ E (Approx)—Secondary. Produces special steels. Estimated cap: 30,000 metric tons before projected expansion.

TARGET
1547 KAWASAKI AIRCRAFT CO.
(Kawasaki Kokuki Kogyo K.K.)
AKASHI
(AIRCRAFT)

34° 39′ N 134° 57′ E (Approx)—Key aircraft plant. Reported to be Kawasaki's main engine plant. Planned for mass production of engines. In country between Fujie and Akashi. Sawtooth bldgs. Reported also making planes.

(See map on page M-10.)

OSAKA 90.25 TARGETS 1547, 1713, 1770 (OUTLYING TARGETS)

36231—65—Osaka—5-23-44—Final Proof

OSAKA 90.25 TARGETS 1547, 1713, 1770 (OUTLYING TARGETS)

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Col Osborn - for Hq XX air force

Issued June 15, 1944

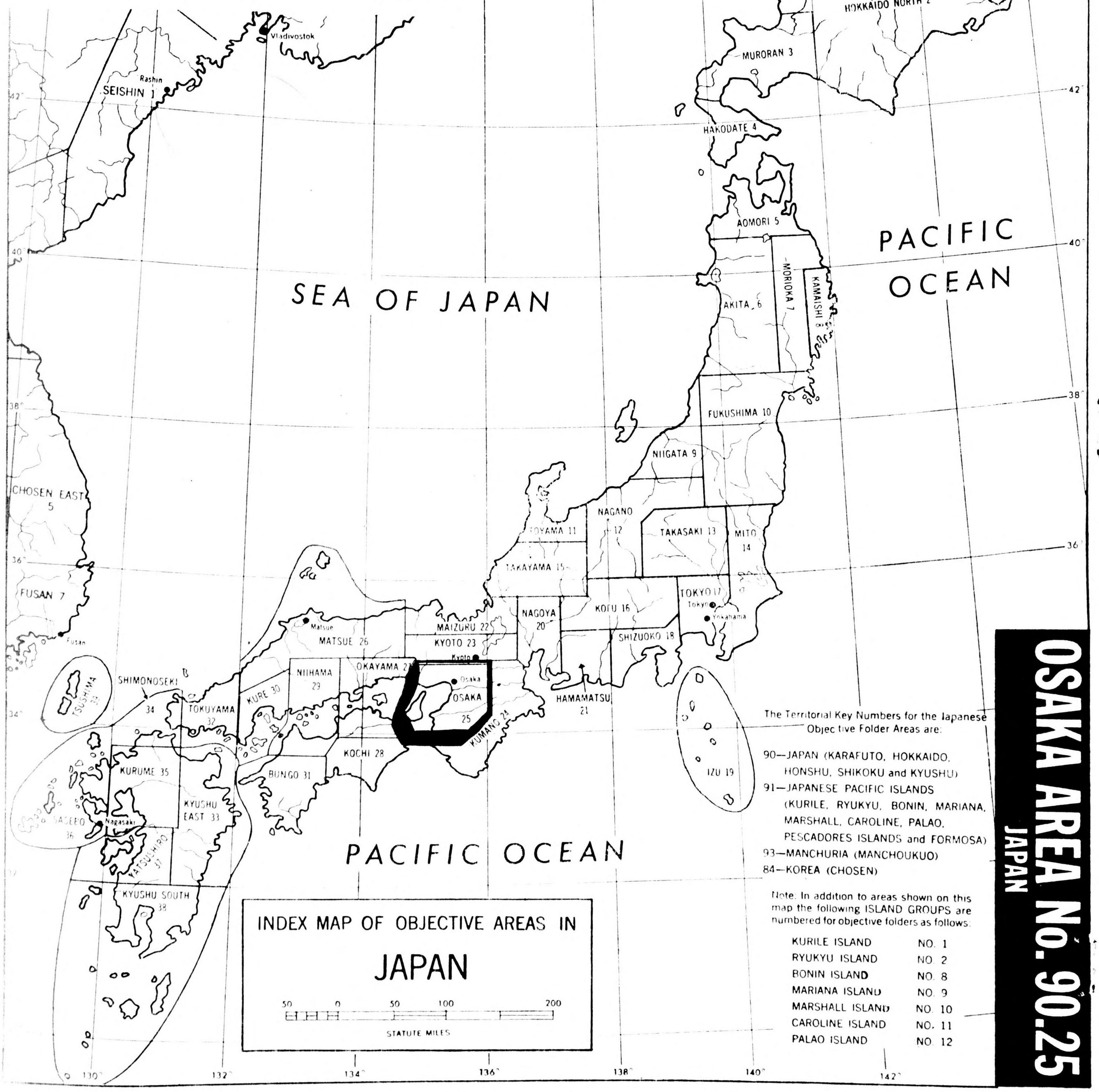
AIR OBJECTIVE FOLDER

NO. 90.25

Osaka Area

JAPAN

OFFICE OF THE
ASSISTANT CHIEF OF AIR STAFF, INTELLIGENCE
WASHINGTON, D. C.



The Territorial Key Numbers for the Japanese Objective Folder Areas are:

90—JAPAN (KARAFUTO, HOKKAIDO, HONSHU, SHIKOKU and KYUSHU)
91—JAPANESE PACIFIC ISLANDS (KURILE, RYUKYU, BONIN, MARIANA, MARSHALL, CAROLINE, PALAO, PESCADORES ISLANDS and FORMOSA)
93—MANCHURIA (MANCHOUKUO)
84—KOREA (CHOSEN)

Note: In addition to areas shown on this map the following ISLAND GROUPS are numbered for objective folders as follows:

KURILE ISLAND	NO. 1
RYUKYU ISLAND	NO. 2
BONIN ISLAND	NO. 8
MARIANA ISLAND	NO. 9
MARSHALL ISLAND	NO. 10
CAROLINE ISLAND	NO. 11
PALAO ISLAND	NO. 12

INDEX MAP OF OBJECTIVE AREAS IN

JAPAN

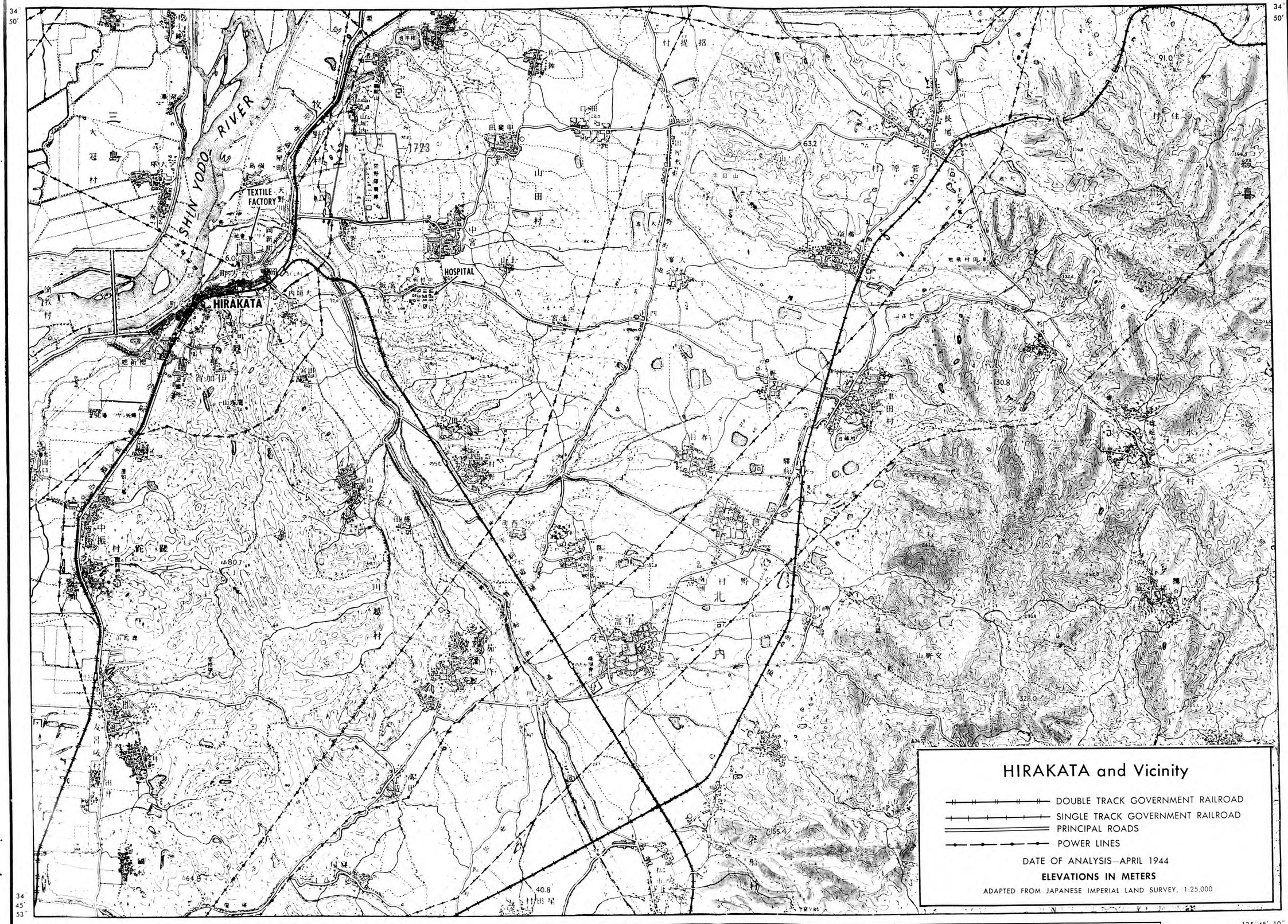
50 0 50 100 200

STATUTE MILES

OSAKA AREA No. 90.25
JAPAN

CONFIDENTIAL (equals British Confidential) not to be taken into the air on offensive missions

CONFIDENTIAL equals British Confidential



HIRAKATA and Vicinity

DOUBLE TRACK GOVERNMENT RAILROAD
SINGLE TRACK GOVERNMENT RAILROAD
PRINCIPAL ROADS
POWER LINES

DATE OF ANALYSIS—APRIL 1944

ELEVATIONS IN METERS

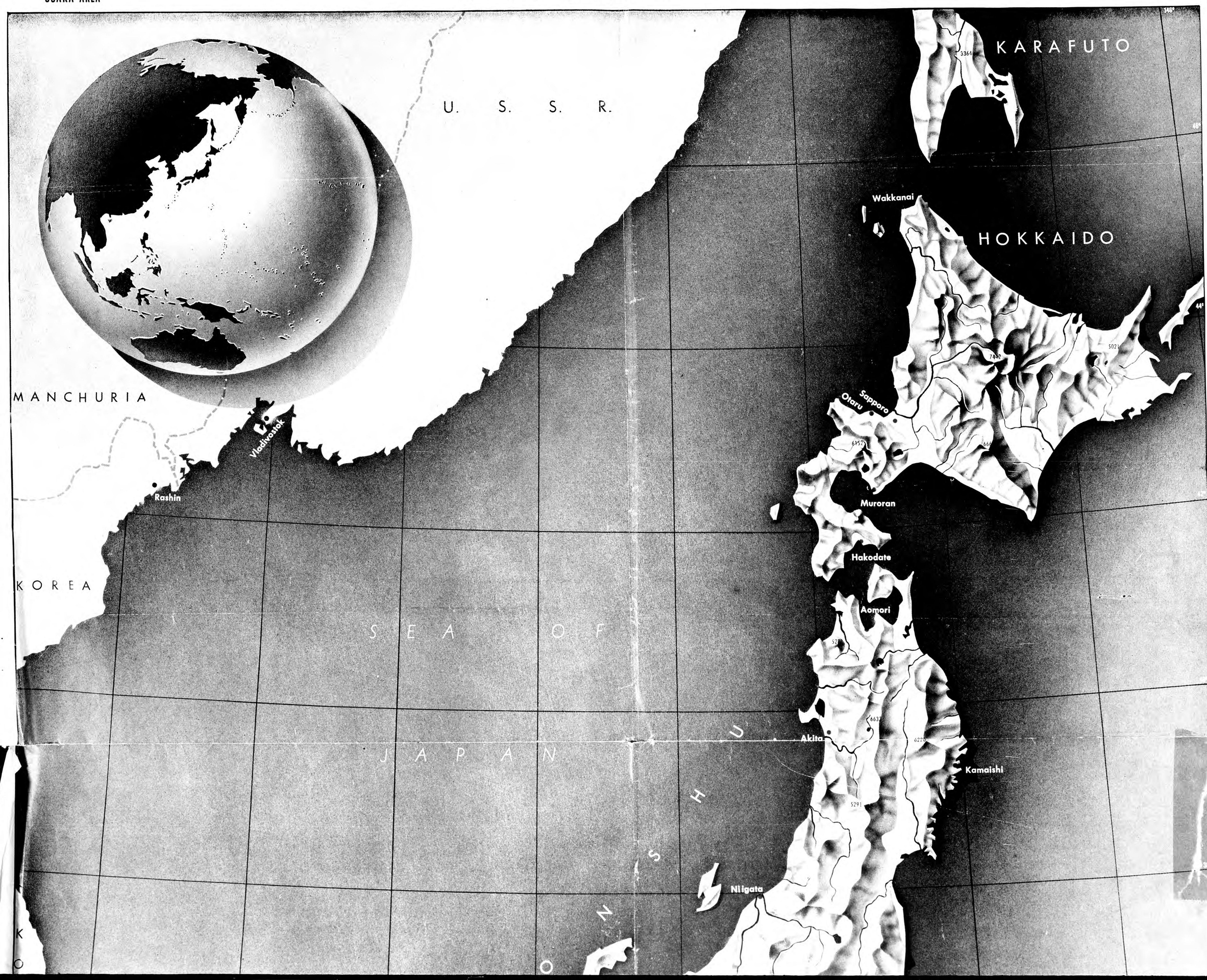
ADAPTED FROM JAPANESE IMPERIAL LAND SURVEY, 1:25,000

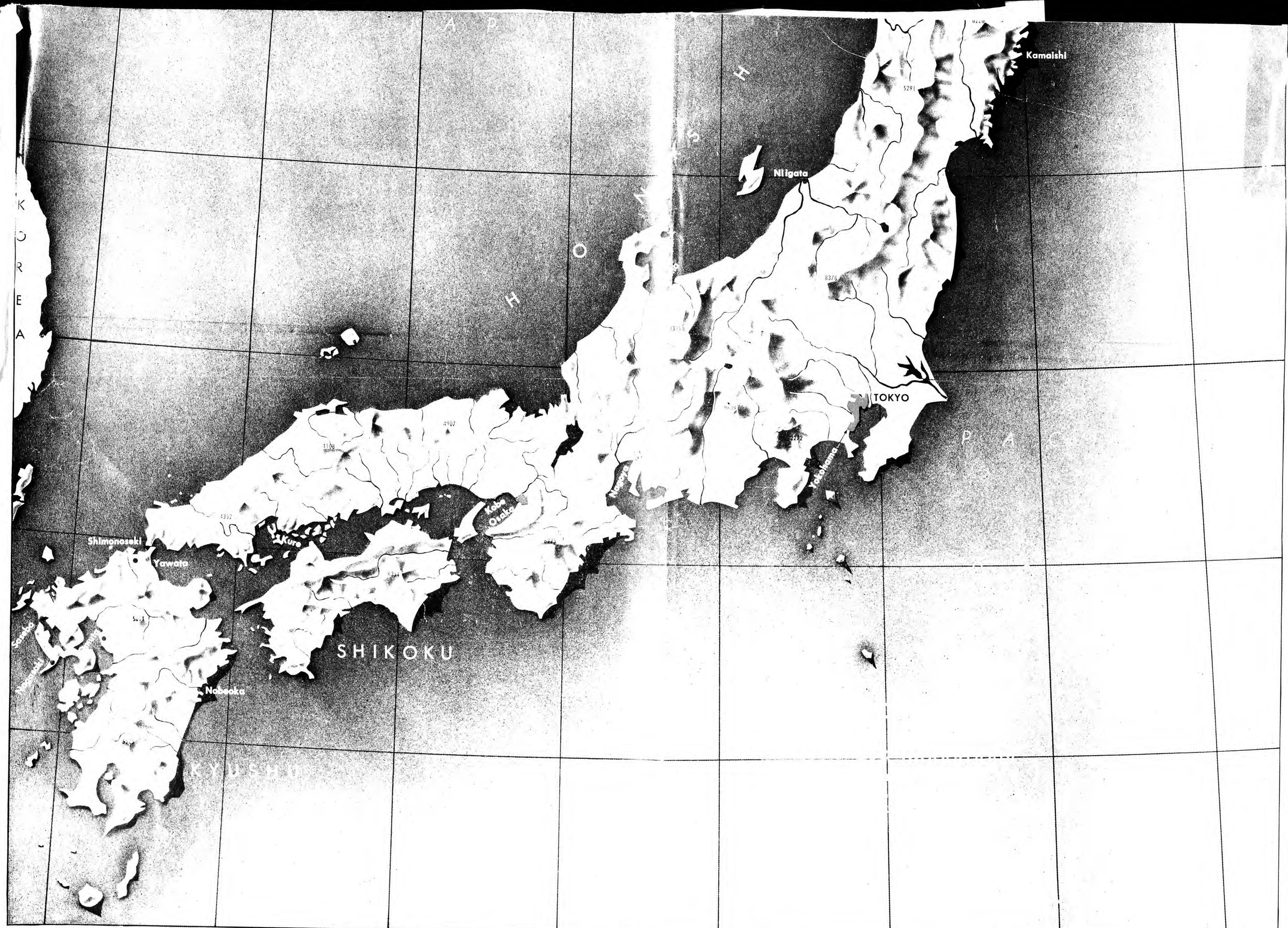
3621—M-13—Osaka—4-3-44—First Proof

CONFIDENTIAL equals British Confidential

OSAKA AREA

CONFIDENTIAL equals British Confidential





CONFIDENTIAL Security British Confidential

CONFIDENTIAL equals British Confidential

KYOTO

2228'

TAKARAZUKA

ITAMI

3058

SUITA

Shin Yodo River

AMAGASAKI

KOBE

OSAKA

AKASHI

INLAND

SEA

SAKAI

OSAKA

BAY

AWAJI

ISLAND

1799'

N

KISHIWADA

944'

OSAKA–KOBE

APPROACH AREA

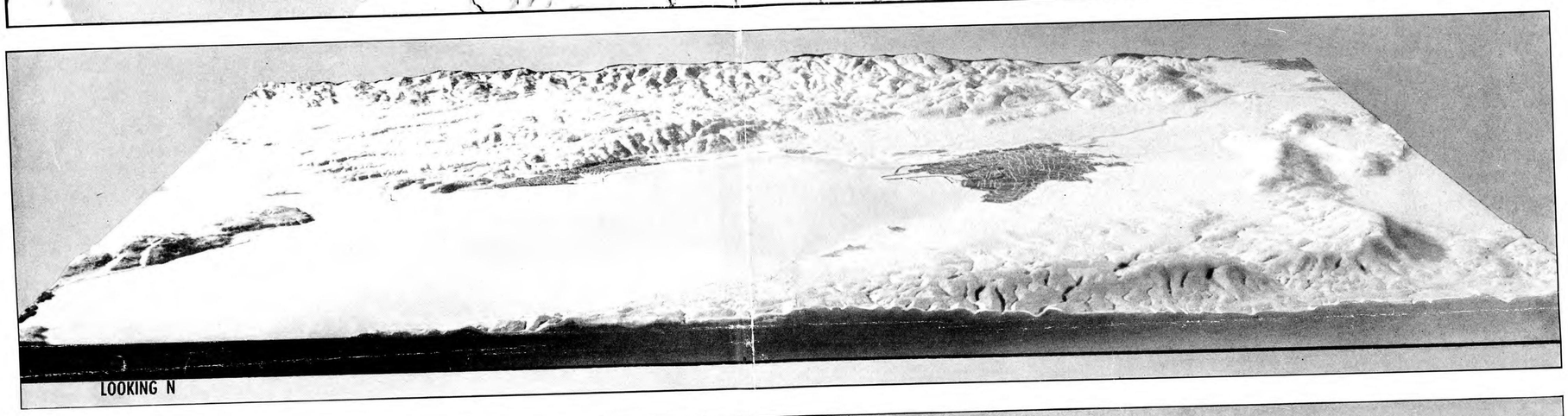
LIGHTHOUSE — RAILROADS

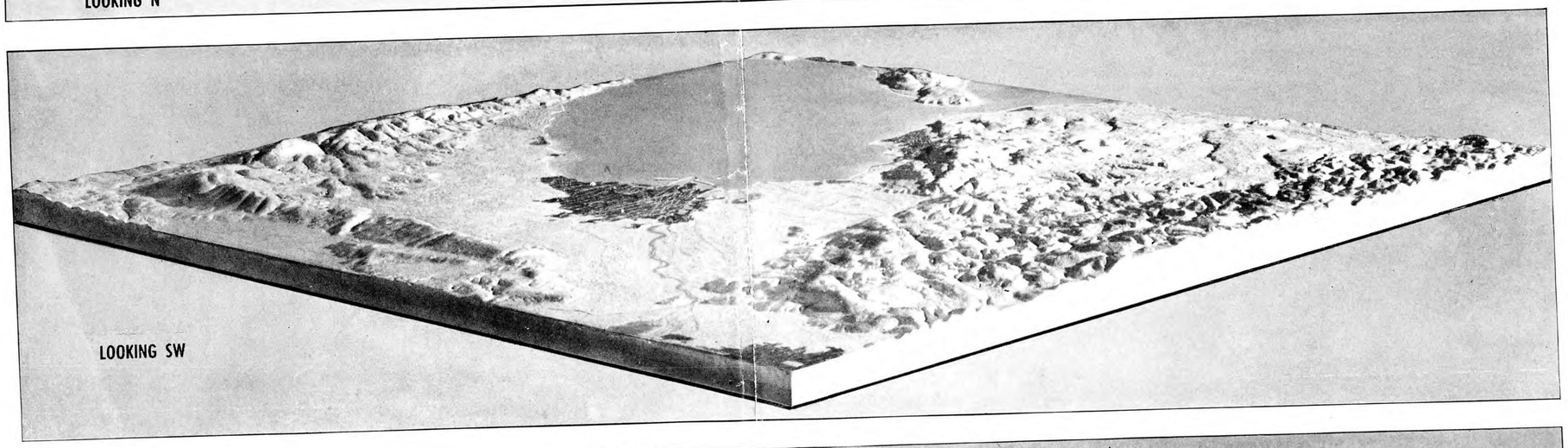
CASTLE, OSAKA — ELEVATIONS IN FEET

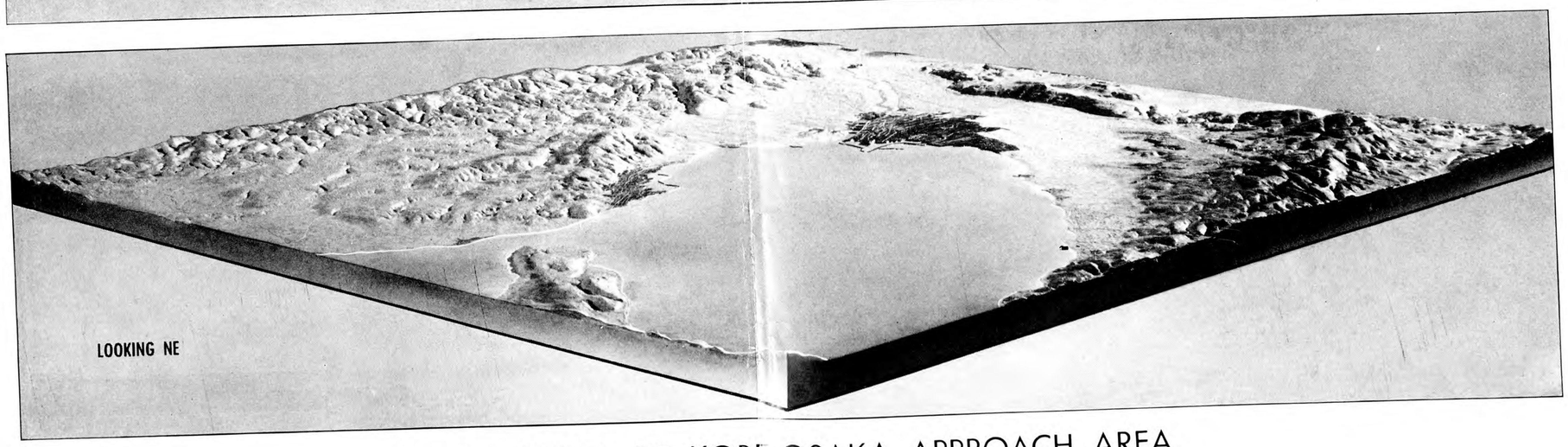
0 1 2 3 4 5 6 7 8

STATUTE MILES

DATE OF MODEL—1944







RELIEF MODEL OF KOBE-OSAKA APPROACH AREA

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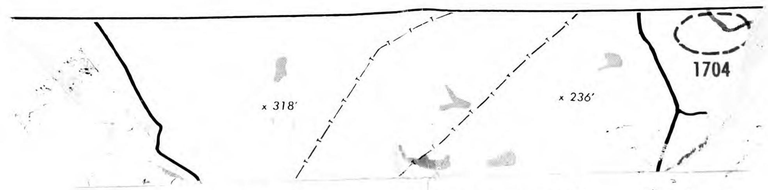
30621 M-2 Osaka 4-3-44—First Proof



CONFIDENTIAL equals British Confidential

OSAKA AREA . . . continued

TAKARAZUKA–ITAMI DISTRICT

DOUBLE TRACK GOVERNMENT RAILROAD
SINGLE TRACK GOVERNMENT RAILROAD
FEEDER RAILROAD
PRINCIPAL ROADS
POWER LINES

DATE OF ANALYSIS—APRIL 1944
ELEVATIONS IN METERS
ADAPTED FROM JAPANESE IMPERIAL LAND SURVEY

FOR TARGET 1629 ALSO SEE MAPS ON PAGES M-4 AND M-12.

34° 50'
135° 20'
135° 25'
135° 30'

MARINE ENGINE WORKS (PROBABLE LOCATION)
TEMPLE
SCHOOL
IKEDA
TEXTILE FACTORIES
1780 (EXACT LOCATION UNKNOWN)
TAKARAZUKA
CANAL
1198
1707 (EXACT LOCATION UNKNOWN)
ITAMI AIRPORT
AN AIRCRAFT PLANT WITH AN ADJOINING AIRPORT IS REPORTED SOMEWHERE BETWEEN TAKARAZUKA AND ITAMI. (UNCONFIRMED)
ITAMI
TEXTILE FACTORY
CONVENT
TEXTILE FACTORY
TEXTILE FACTORY
WATER FILTERING BEDS
SUITA & VICINITY OVERLAP
MACHINE TOOL FACTORY AND SPECIAL STEEL WORKS
TEXTILE FACTORY
MITSUBISHI ELECTRIC MFG. CO.
SCHOOL
AMAGASAKI COASTAL STRIP OVERLAP
AMAGASAKI OVERLAP
OSAKA OVERLAP
CHOCOLATE FACTORY
SMALL MACHINE TOOL PLANT
RR SHOPS
TEXTILE PLANT AND MACHINERY FACTORY
NISHINOMIYA
三島
豊能

STATUTE MILES 0 1 2 3 4 5 6 7 8

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36-21 M-11—Osaka—4-3-44—First Proof

SUITA and Vicinity

DOUBLE-TRACK RAILROADS
SINGLE-TRACK RAILROADS
PRIMARY HIGHWAYS
SECONDARY HIGHWAYS
POWER LINES

ELEVATIONS IN FEET

DATE OF ANALYSIS—APRIL 1944

FOR TARGETS 1628, 1708 AND 1751 ALSO SEE MAPS ON PAGES M-6 AND M-7
FOR TARGET 1629 ALSO SEE MAP ON PAGE M-4 AND M-11.
FOR TARGET 1630 ALSO SEE MAP ON PAGE M-4

135°30′
135° 35′
34° 45′

TO KYOTO
ponds
TONDA
IBARAKI
small factory
1773
small factory
x 223′
x 180′
x 295′
x 203′
x 82′
x 13′
x 13′
KUMANODA
TAKARAZUKA OVERLAP
x 240
radio towers
1209
Suita Railroad Yard and Shops
x 26′
textile factory
SUITA
x 26′
canals
factory
1629
textile factory
x 15′
NAKAI RIVER
OSAKA OVERLAP
AMAGASAKI OVERLAP
x 10′
x 13′
x 30′
1744
MORIGUCHI
switching station
1630
1708
SHIN YODO RIVER
embankment
1750
pond
1751
1628
factories
Osaka water filtering plant
OSAKA
SHINYODO RIVER

STATUTE MILES 1 0 1 2 3 4 5 6

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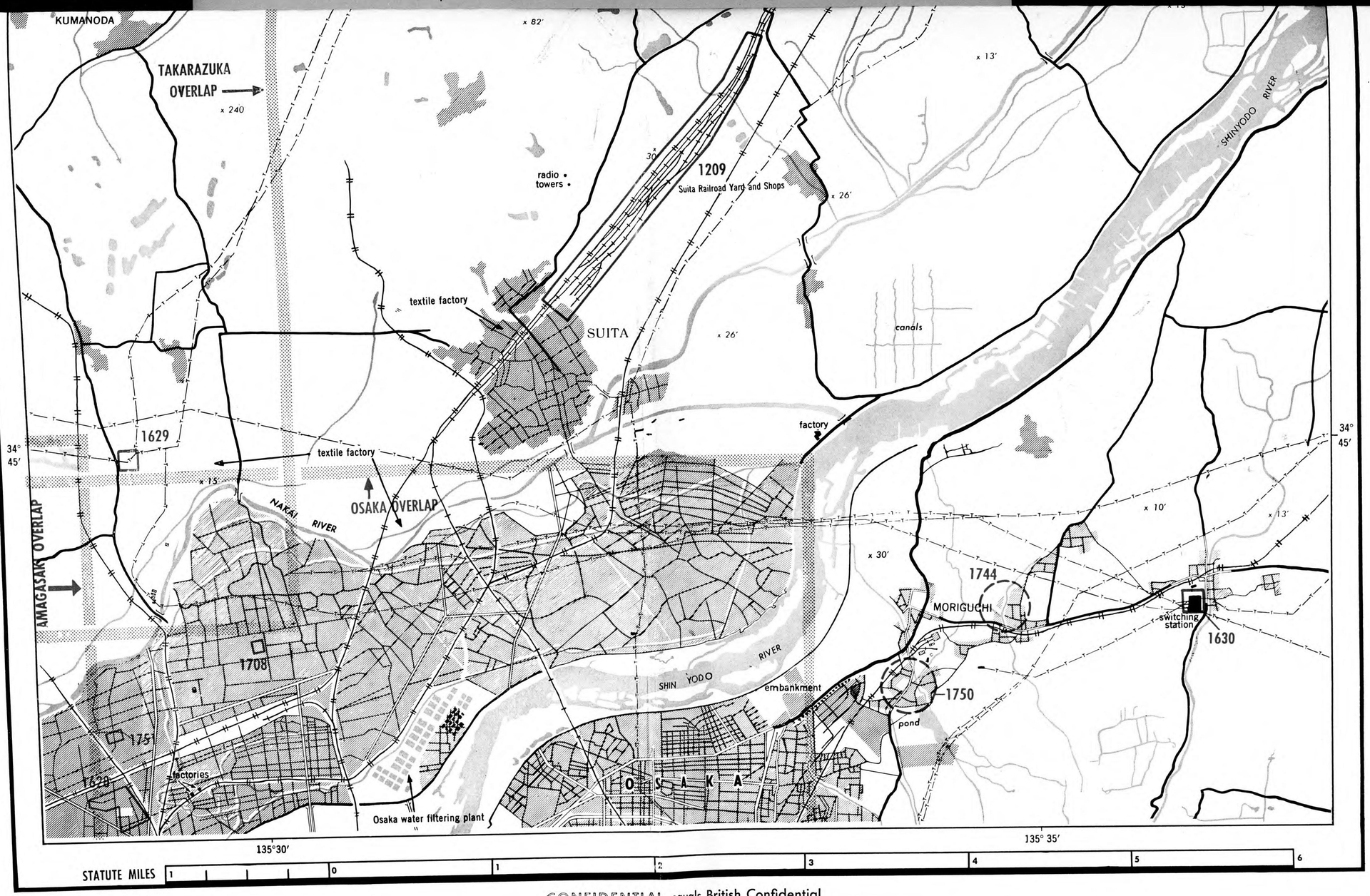

3621—M-12—Osaka—4-3-44—First Proof

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OSAKA AREA . . . continued

AIRPORT MAP OF
OSAKA 90.25

AIRPORTS
SEAPLANE BASES
DOUBLE TRACK RAILROADS
SINGLE TRACK RAILROADS
OTHER RAILROADS
PRIMARY HIGHWAYS

DATE OF ANALYSIS—APRIL 1944
ELEVATIONS IN FEET

IESHIMA GUNTŌ

SEA OF HARIMA
OSAKA BAY
AWAJI SHIMA
SETTO NAIKAI
NARUTO SUIDŌ
TOMOGASHIMA

TATSUNO HIMEJI AKASHI KOBE SUMIYOSHI OSAKA FUSHIMI IKEDA SUMOTO WAKAYAMA MINOSHIMA KAINAN SAKAI KISHIWADA NARA KORIYAMA SAKURAI TOKUSHIMA

Kobe Harbor · Osaka Harbor · Amagasaki Harbor · Nishinomiya Harbor · Wakayama Ko · Wakanoura Wan · Yuasa Wan · Osaki Wan · Sakai Ko · Yura Seto · Kitadomari Seto · Muyano Seto · Awatsu Kuchi · Bekku Kuchi · Komatsushima Wan · Kuro Shima

Yodo Gawa · Kako Gawa · Akashi Gawa · Kino Gawa · Arita Gawa · Kawa · Shimoishi Kawa · Shimobuchi Kawa · Shingwdo River · Muko Gawa

STATUTE MILES 10 5 0 10 30 40 50 60 70 80

3621—M.3—Osaka—4.3.44—First Proof

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ELECTRIC POWER MAP OF OSAKA-KOBE DISTRICT

PRINCIPAL TRANSMISSION LINES
PRIMARY TRANSFORMER STATIONS
IMPORTANT STEAM POWER PLANTS
DOUBLE TRACK RAILROADS
SINGLE TRACK RAILROADS
OTHER RAILROADS
PRIMARY HIGHWAYS

DATE OF ANALYSIS—APRIL 1944
ELEVATIONS IN FEET

FOR TARGET 4 ALSO SEE MAPS ON PAGES M-8 AND M-9.

FOR TARGETS 322, 323, 324 AND 536 ALSO SEE MAPS ON PAGES M-6, M-7 AND M-10.

FOR TARGETS 540A AND 540B ALSO SEE MAP ON PAGE M-10.

FOR TARGETS 325 AND 1616 ALSO SEE MAPS ON PAGES M-6 AND M-7.

FOR TARGET 1629 ALSO SEE MAPS ON PAGES M-11 AND M-12.

FOR TARGET 1630 ALSO SEE MAP ON PAGE M-12.

STATUTE MILES 10 5 0 10 20 30 40 50 60 70 80

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JCD M-4 Osaka 4-3-44 First Proof

OSAKA AREA . . . continued

TAKARAZUKA–ITAMI DISTRICT

DOUBLE TRACK GOVERNMENT RAILROAD
SINGLE TRACK GOVERNMENT RAILROAD
FEEDER RAILROAD
PRINCIPAL ROADS
POWER LINES

DATE OF ANALYSIS—APRIL 1944
ELEVATIONS IN METERS
ADAPTED FROM JAPANESE IMPERIAL LAND SURVEY

FOR TARGET 1629 ALSO SEE MAPS ON PAGES M-4 AND M-12.

34° 50'
135° 20'
135° 25'
135° 30'
34° 45'

MARINE ENGINE WORKS (PROBABLE LOCATION)
TEMPLE
SCHOOL
IKEDA
TEXTILE FACTORIES
1780 (EXACT LOCATION UNKNOWN)
TAKARAZUKA
CANAL
1198
CONVENT
AN AIRCRAFT PLANT WITH AN ADJOINING AIRPORT IS REPORTED SOMEWHERE BETWEEN TAKARAZUKA AND ITAMI. (UNCONFIRMED)
1707 (EXACT LOCATION UNKNOWN)
ITAMI AIRPORT
ITAMI
TEXTILE FACTORY
TEXTILE FACTORY
TEXTILE FACTORY
WATER FILTERING BEDS
SUITA & VICINITY OVERLAP
MACHINE TOOL FACTORY AND SPECIAL STEEL WORKS
TEXTILE FACTORY
MITSUBISHI ELECTRIC MFG. CO.
1629
SCHOOL
KOBE-AMAGASAKI COASTAL STRIP OVERLAP
AMAGASAKI OVERLAP
OSAKA OVERLAP
AKASHI OVERLAP
CHOCOLATE FACTORY
SMALL MACHINE TOOL PLANT
RR SHOPS
TEXTILE PLANT AND MACHINERY FACTORY
NISHINOMIYA

STATUTE MILES 0 1 2 3 4 5 6 7 8

36-21—M-11—Osaka 4-3-44—First Proof

SUITA and Vicinity

DOUBLE-TRACK RAILROADS
SINGLE-TRACK RAILROADS
PRIMARY HIGHWAYS
SECONDARY HIGHWAYS
POWER LINES

ELEVATIONS IN FEET

DATE OF ANALYSIS – APRIL 1944

FOR TARGETS 1628, 1708 AND 1751 ALSO SEE MAPS ON PAGES M-6 AND M-7
FOR TARGET 1629 ALSO SEE MAP ON PAGE M-4 AND M-11.
FOR TARGET 1630 ALSO SEE MAP ON PAGE M-4

135°30′ 135° 35′

34° 45′

x 318′ x 236′ x 223′ x 180′ x 295′ x 203′ x 82′ x 240 x 13′ x 13′ x 26′ x 26′ x 15′ x 10′ x 13′ x 30′

1704 1773 1209 1744 1750

TO KYOTO

ponds

TONDA

IBARAKI

small factory

small factory

KUMANODA

TAKARAZUKA OVERLAP

radio towers

Suita Railroad Yard and Shops

SHINYODO RIVER

textile factory

SUITA

canals

factory

1629

textile factory

NAKAI RIVER

OSAKA OVERLAP

AMAGASAKI OVERLAP

MORIGUCHI

switching station

1630

1708

SHIN YODO RIVER

embankment

pond

1751

1628

factories

OSAKA

Osaka water filtering plant

STATUTE MILES 1 0 1 2 3 4 5 6

3621—M-12—Osaka—4-3-44—First Proof

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OSAKA AREA ... continued

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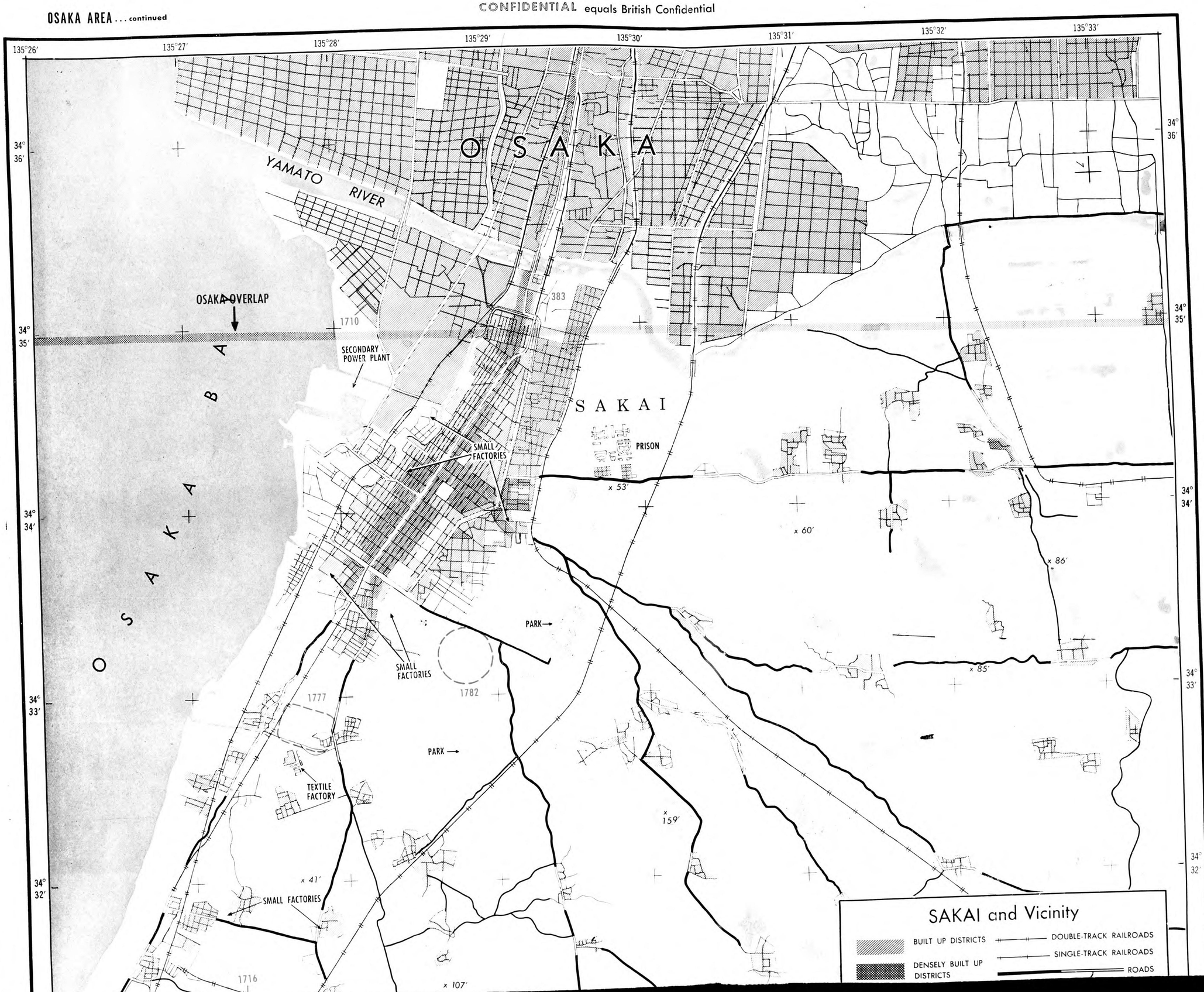


SAKAI and Vicinity

BUILT UP DISTRICTS
DENSELY BUILT UP DISTRICTS
DOUBLE-TRACK RAILROADS
SINGLE-TRACK RAILROADS
ROADS

3621—M-6—Osaka 4-3-44—First Proof

DATE OF ANALYSIS--APRIL 1944 **ELEVATIONS IN FEET**

FOR TARGETS 383 AND 1710 ALSO SEE MAPS ON PAGES M-6 AND M-7.

135°26′ 135°27′ 135°28′ 135°29′ 135°30′ 135°31′ 135°32′ 135°33′

34° 31′

STATUTE MILES 1 0 1 2 3 4 5

135° 136° 137° 138° 139° 140° 141°

37° 36° 35° 34° 33°

JAPAN SEA

PACIFIC OCEAN

Sado Niigata Akadomari Ogi Akatani Niizu Agano Yonezawa Kaketa Fukushima Matsukawa Kawamata Namie

Teradomari Sanjō Yanaizu Nakatsu Kōriyama

Rokugō-zaki Wajima Iida Kashiwazaki Nagaoka Kawaguchi Tajima Shirakawa 1917

Anamizu Naoetsu Tokamachi Takada Mujkamachi Tanakura Taira

Takahama Nanao Itoigawa TOYAMA-WAN Shinano Iiyama TOKYO NETWORK 50 CYCLE Ōtawara Kurobane Onahama

Hagui Himi Takaoka Toyama Kamiichi Kamidaki 2833 Kuma-gawa Nagano Suzaka Kusatsu Nikkō 2578 Yaita

Kanazawa Inami Jōhana Shō-gawa Ōmachi Yashiro Ashio Karasuyama

Komatsu Tone-gawa DOUBLE CYCLE ZONE Maebashi Utsumomiya Motegi

Mikuni 3180 2542 Komoro Takasaki Kiryū Ashikaga Tochigi Sawayama Kuji Mito Hiraiso

Matsumoto Karuizawa Oyama Isohama

2702 Shimajima Shimonita Ishioka

Takayama Shiojiri Koga Hokoda

Fukui Ono Kosaka CENTRAL HONSHU NETWORK 60 CYCLE Taisuno 2899 Chichibu Kumagaya Tone Kasumiga-ura

Shiratori Agano Ōmiya Kashima

2595 Kita-ura

Kobuchizawa 2966 Narita Chōshi Inubō-zaki

WAKASA-WAN Tsuruga Tsukechi Kofu Hachiōji Yakaichiba

Toyooka Tōbama Gifu Kiso Nakatsu Fuji Chiba TOKYO Tōkyō-wan

Izushi Maizuru Yoshida Katakai

Wadayama Fukuchiyama Ayabe Imazu Biwa-ko Nukuta YOKOHAMA

Hikone 3776 Kōzu Yokosuka Ōhara

Tanikawa Sasayama KYOTO Ageki NAGOYA Taguchi Fuji

Himeji Yokkaichi Okazaki Shimizu Mishima SAGAMI-WAN (BAY)

Shizuoka Ōhito Tateyamahōjō

Kakogawa Shigaraki Tokoname Okuyama Futamata SAGAMI-NADA

Tsuge Kowa Nojima-zaki

KOBE OSAKA Ao Tsu Toyohashi Yokosuka Ōshima

Iwaya ISE-KAI Matsusaka Tahara Hamamatsu Sagara SURUGA-WAN Sumoda

ŌSAKA-WAN Ujiyamada Irō-zaki

Sumoto Toba ENSHŪ-NADA

Fukura Niijima

Muya Wakayama Kōya 915 IZU-SHICHITŌ

Tokushima Kōzu

Owase

Tachibana Kinomoto

KUMANO-NADA (SEA)

Tanabe

Susami

Shionomisaki

ELECTRIC POWER

CENTRAL HONSHU AND TOKYO NETWORKS

LEGEND

Major Transmission Lines

Primary Transformer Stations

Key Steam Power Plants

Network Boundaries

ELEVATIONS IN METERS

Scale 1:2,000,000

Miles 20 0 20 40 60 80 100

Kilometers 20 0 20 40 60 80 100 140 120

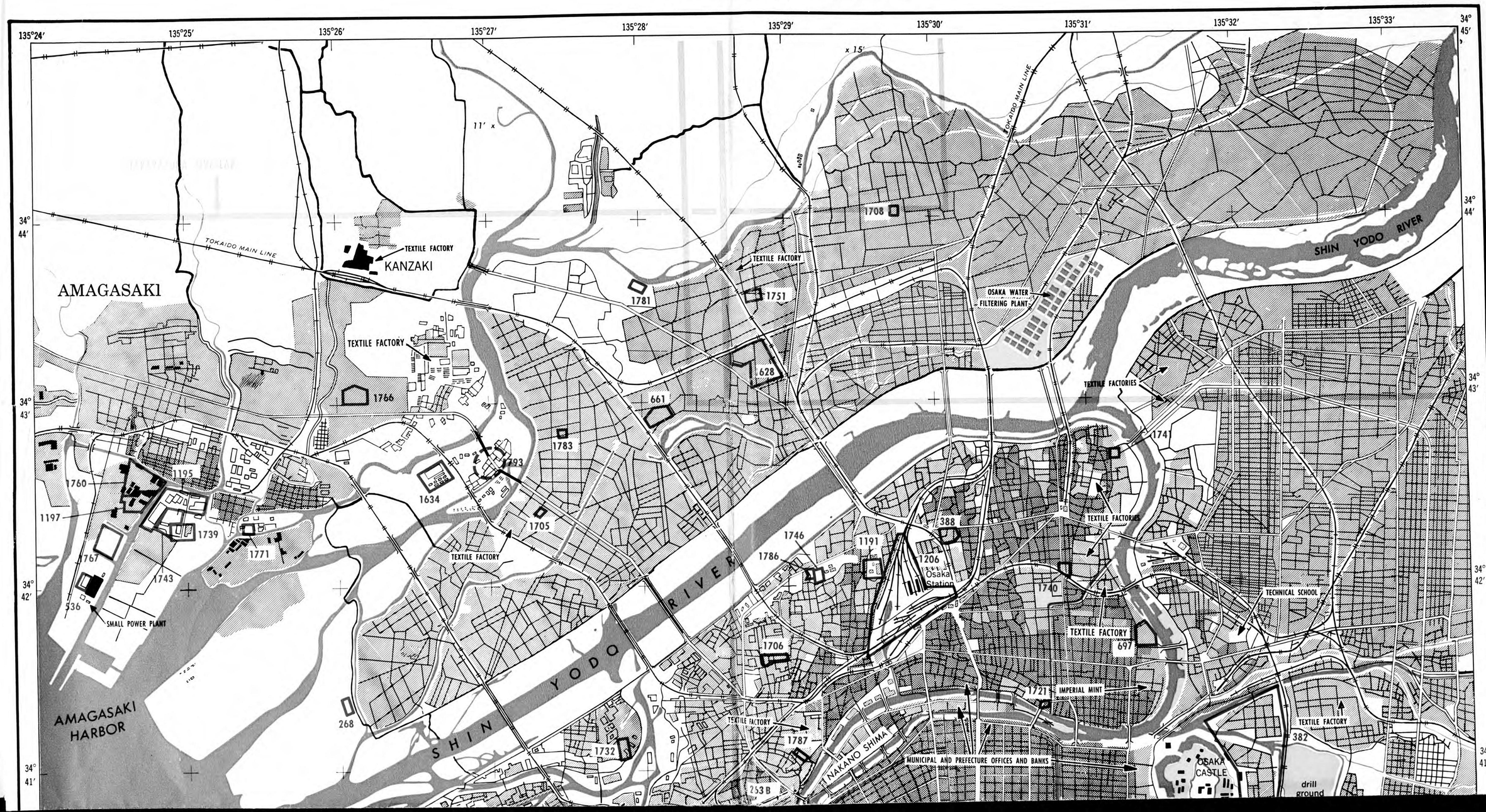
Office of the Assistant Chief of Air Staff, Intelligence, Washington, D. C.

3/21—M-5—Osaka—4-3-44—First Proof

CONFIDENTIAL equals British Confidential

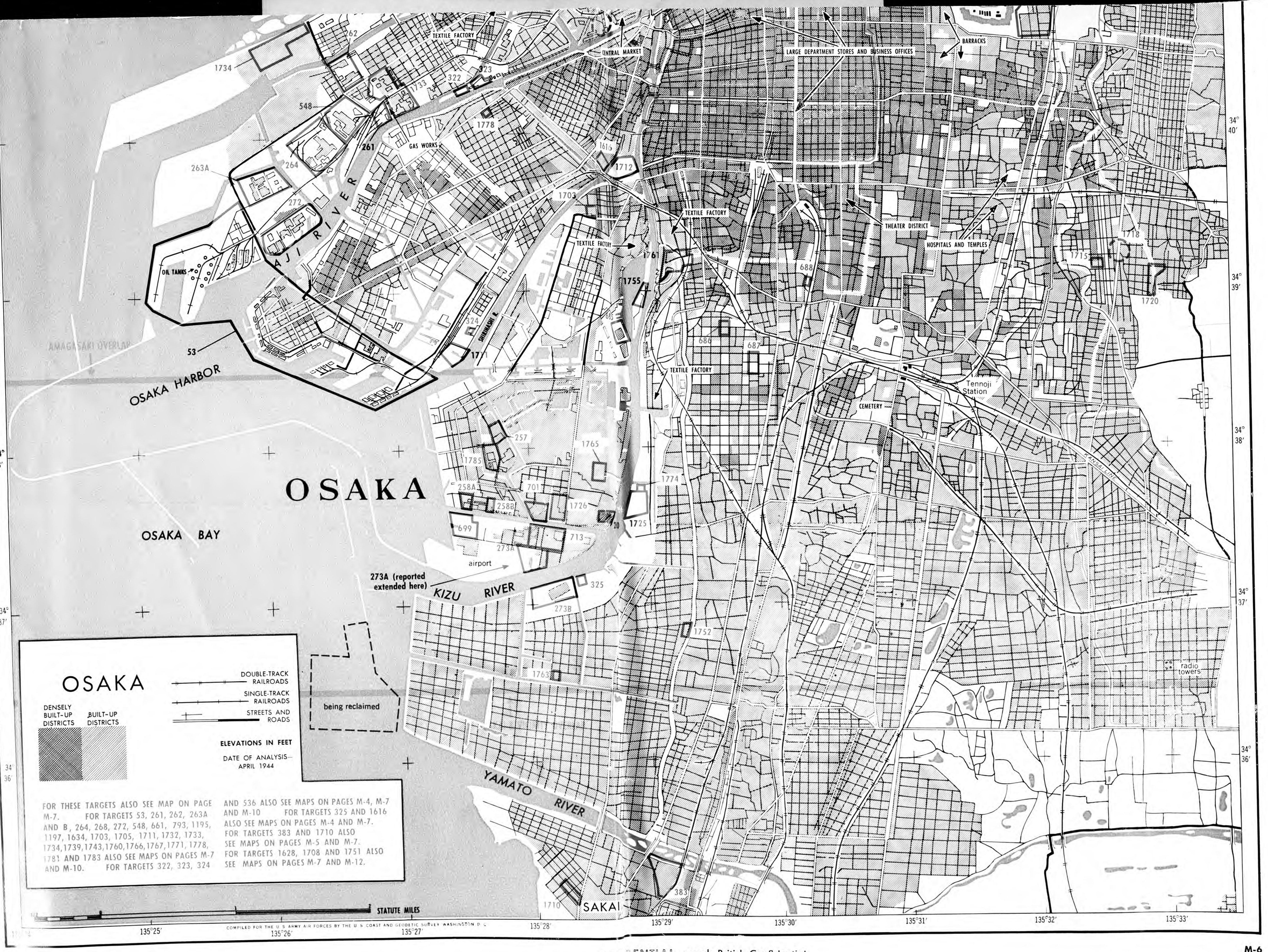
CONFIDENTIAL equals British Confidential

CONFIDENTIAL equals British Confidential



3621—M 5—Osaka—4-3-44—First Proof

OSAKA



OSAKA

DENSELY BUILT-UP DISTRICTS

BUILT-UP DISTRICTS

DOUBLE-TRACK RAILROADS

SINGLE-TRACK RAILROADS

STREETS AND ROADS

ELEVATIONS IN FEET

DATE OF ANALYSIS— APRIL 1944

FOR THESE TARGETS ALSO SEE MAP ON PAGE M-7. FOR TARGETS 53, 261, 262, 263A AND B, 264, 268, 272, 548, 661, 793, 1195, 1197, 1634, 1703, 1705, 1711, 1732, 1733, 1734, 1739, 1743, 1760, 1766, 1767, 1771, 1778, 1781 AND 1783 ALSO SEE MAPS ON PAGES M-7 AND M-10. FOR TARGETS 322, 323, 324 AND 536 ALSO SEE MAPS ON PAGES M-4, M-7 AND M-10 FOR TARGETS 325 AND 1616 ALSO SEE MAPS ON PAGES M-4 AND M-7. FOR TARGETS 383 AND 1710 ALSO SEE MAPS ON PAGES M-5 AND M-7. FOR TARGETS 1628, 1708 AND 1751 ALSO SEE MAPS ON PAGES M-7 AND M-12.

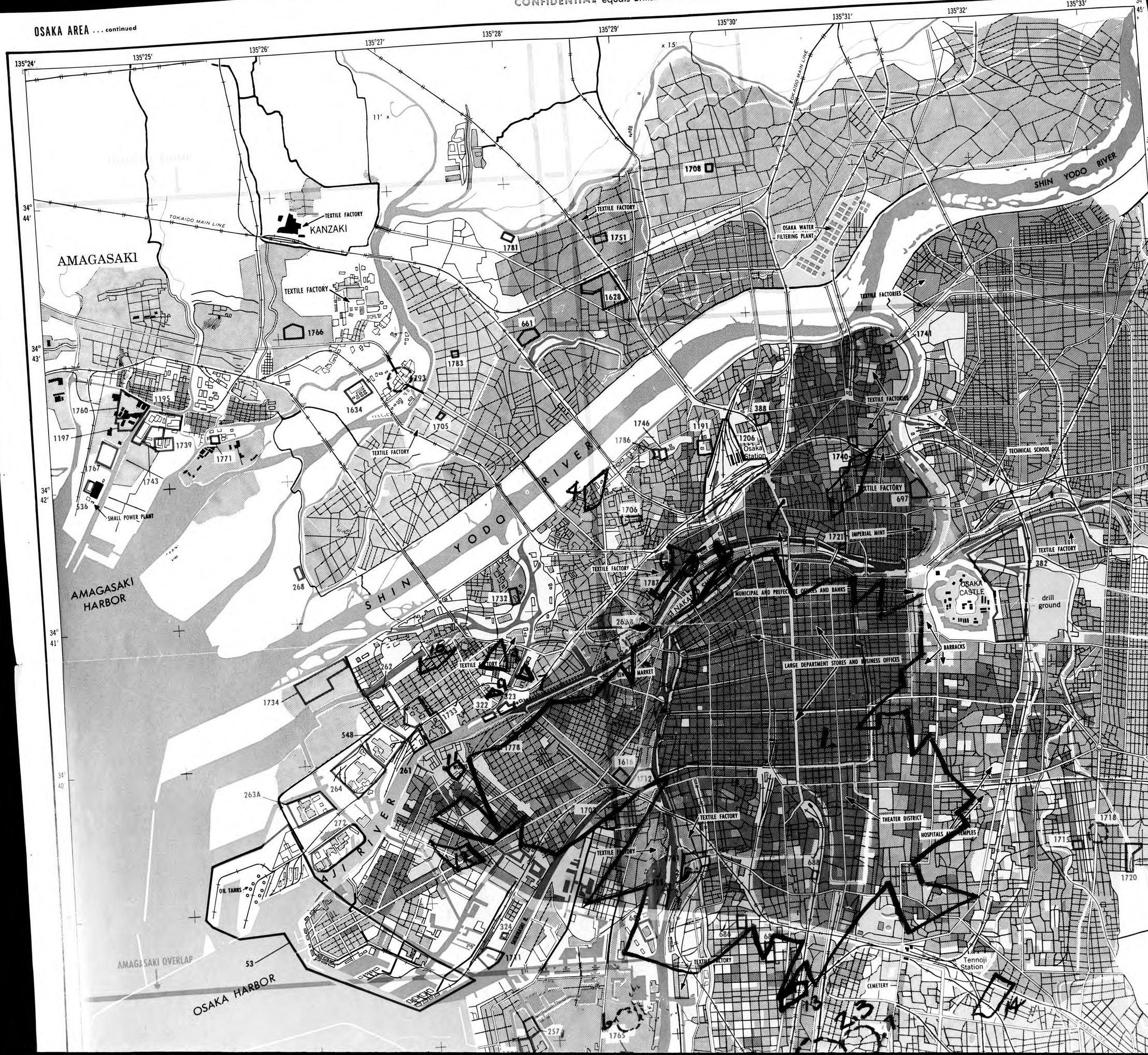
STATUTE MILES

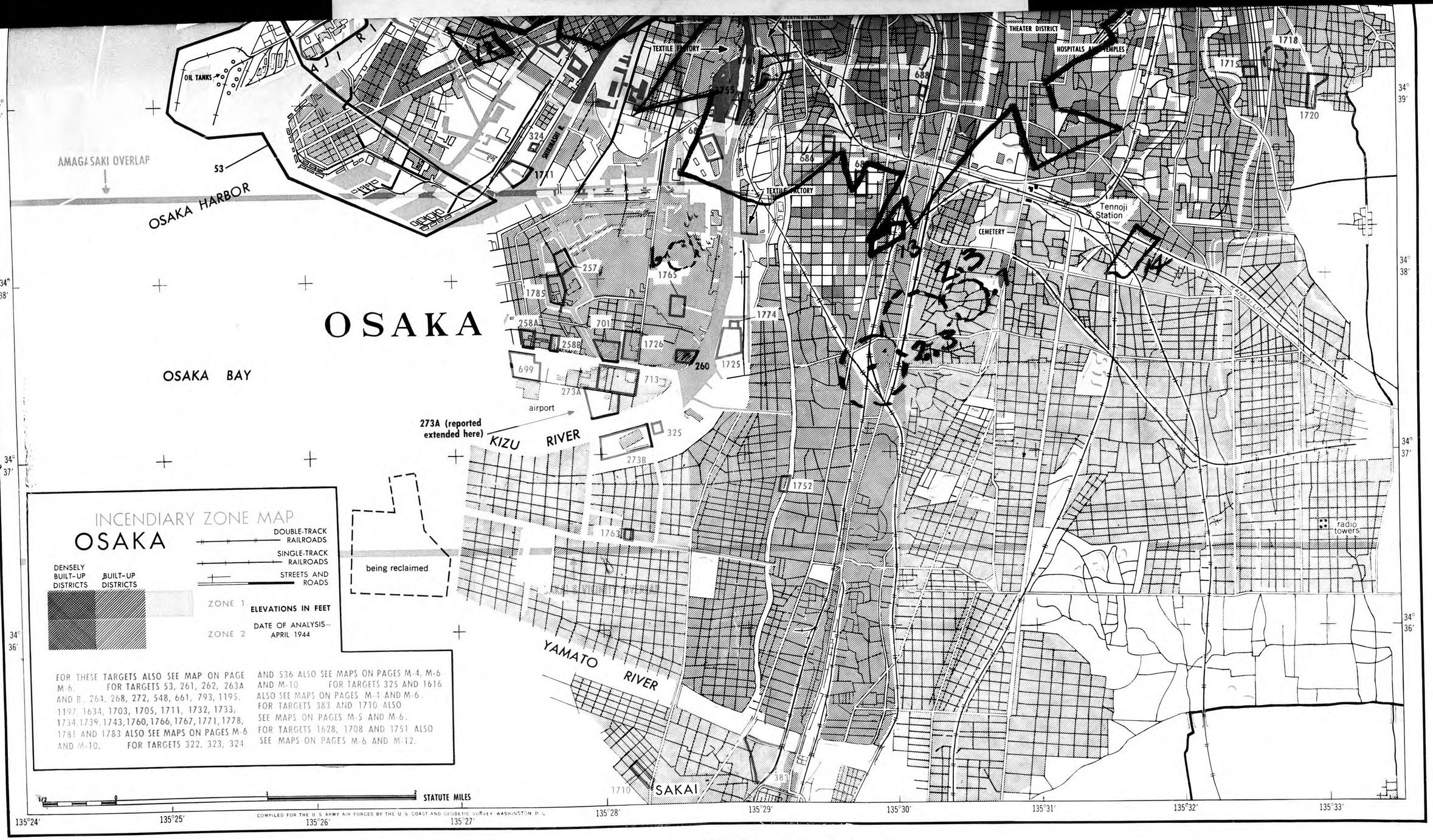
COMPILED FOR THE U.S. ARMY AIR FORCES BY THE U.S. COAST AND GEODETIC SURVEY, WASHINGTON, D.C.

303—M6 Osaka 4-3-44—First Proof

By ITS-3 NARA, Date 1/31/91

OSAKA AREA ... continued





INCENDIARY ZONE MAP

OSAKA

DENSELY BUILT-UP DISTRICTS

BUILT-UP DISTRICTS

ZONE 1

ZONE 2

DOUBLE-TRACK RAILROADS

SINGLE-TRACK RAILROADS

STREETS AND ROADS

ELEVATIONS IN FEET

DATE OF ANALYSIS—APRIL 1944

FOR THESE TARGETS ALSO SEE MAP ON PAGE M-6. FOR TARGETS 53, 261, 262, 263A AND B, 264, 268, 272, 548, 661, 793, 1195, 1197, 1634, 1703, 1705, 1711, 1732, 1733, 1734, 1739, 1743, 1760, 1766, 1767, 1771, 1778, 1781 AND 1783 ALSO SEE MAPS ON PAGES M-6 AND M-10. FOR TARGETS 322, 323, 324 AND 536 ALSO SEE MAPS ON PAGES M-4, M-6 AND M-10. FOR TARGETS 325 AND 1616 ALSO SEE MAPS ON PAGES M-4 AND M-6. FOR TARGETS 383 AND 1710 ALSO SEE MAPS ON PAGES M-5 AND M-6. FOR TARGETS 1628, 1708 AND 1751 ALSO SEE MAPS ON PAGES M-6 AND M-12.

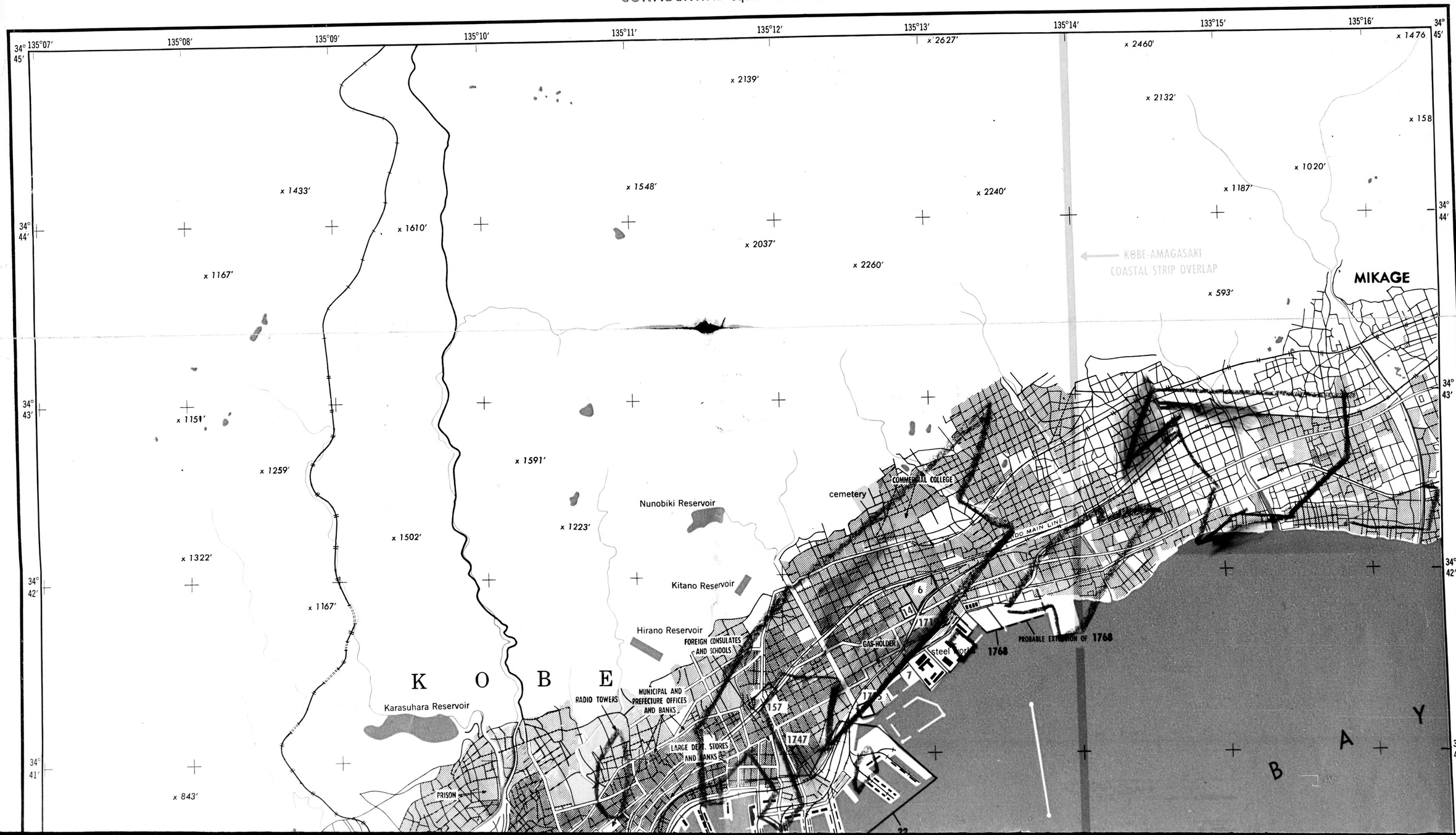
½ 0 1 2 STATUTE MILES

COMPILED FOR THE U. S. ARMY AIR FORCES BY THE U. S. COAST AND GEODETIC SURVEY WASHINGTON, D. C.

CONFIDENTIAL equals British Confidential

3621 M-7 Osaka—4-3-44—First Proof

CONFIDENTIAL equals British Confidential



3621—M 8—Osaka—4-3-44—First Proof

KOBE

BUILT–UP DISTRICTS

DENSELY BUILT–UP DISTRICTS

DOUBLE-TRACK RAILROADS

SINGLE-TRACK RAILROADS

STREETS AND ROADS

ELEVATIONS IN FEET

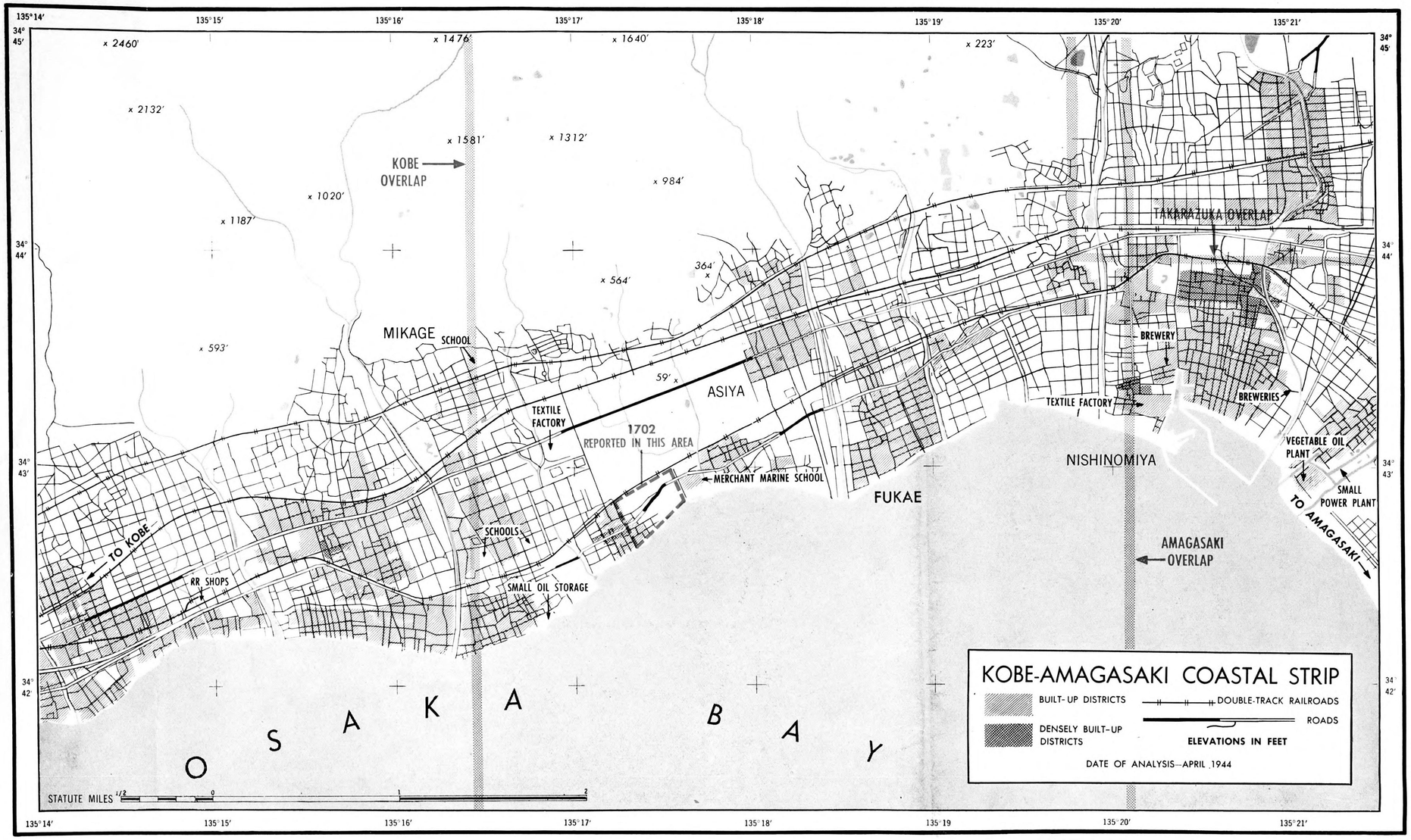
DATE OF ANALYSIS—APRIL 1944

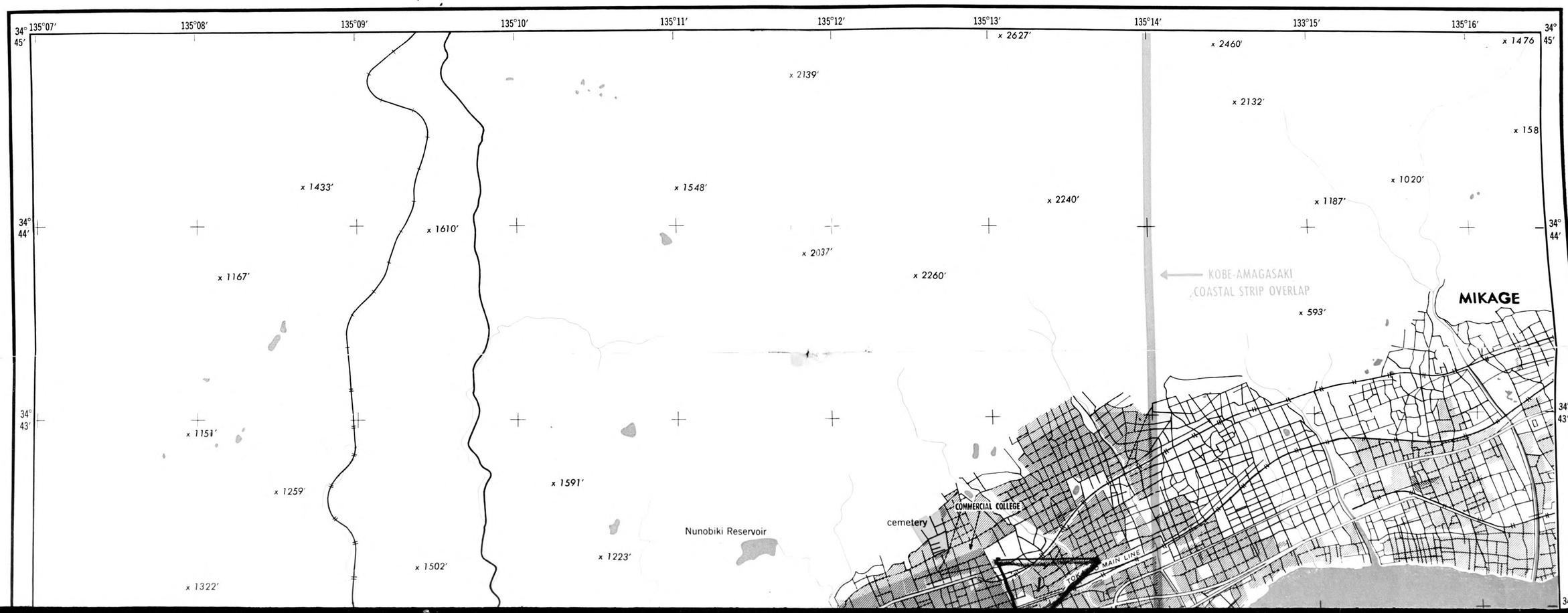
FOR THESE TARGETS ALSO SEE MAP ON PAGE M-9
FOR TARGET 4 ALSO SEE MAPS ON PAGES M-4. AND M-9

STATUTE MILES

COMPILED FOR THE U. S. ARMY AIR FORCES BY THE U. S. COAST AND GEODETIC SURVEY, WASHINGTON, D. C.

CONFIDENTIAL equals British Confidential


135°14′
135°15′
135°16′
135°17′
135°18′
135°19′
135°20′
135°21′
34° 45′
34° 44′
34° 43′
34° 42′
x 2460′
x 1476′
x 1640′
x 223′
x 2132′
x 1581′
x 1312′
KOBE OVERLAP
x 984′
x 1020′
x 1187′
TAKARAZUKA OVERLAP
364′ x
x 564′
MIKAGE SCHOOL
x 593′
59′ x
ASIYA
BREWERY
TEXTILE FACTORY
BREWERIES
TEXTILE FACTORY
1702
REPORTED IN THIS AREA
VEGETABLE OIL PLANT
NISHINOMIYA
MERCHANT MARINE SCHOOL
FUKAE
SMALL POWER PLANT
TO AMAGASAKI
TO KOBE
SCHOOLS
AMAGASAKI OVERLAP
RR SHOPS
SMALL OIL STORAGE
O S A K A B A Y
KOBE-AMAGASAKI COASTAL STRIP
BUILT-UP DISTRICTS
DOUBLE-TRACK RAILROADS
ROADS
DENSELY BUILT-UP DISTRICTS
ELEVATIONS IN FEET
DATE OF ANALYSIS—APRIL 1944
STATUTE MILES 1/2 0 1 2


34° 45′
135°07′
135°08′
135°09′
135°10′
135°11′
135°12′
135°13′
135°14′
133°15′
135°16′
x 2627′
x 2460′
x 1476
x 2139′
x 2132′
x 158
x 1433′
x 1548′
x 1020′
x 2240′
x 1187′
34° 44′
x 1610′
x 2037′
x 1167′
x 2260′
KOBE-AMAGASAKI COASTAL STRIP OVERLAP
MIKAGE
x 593′
34° 43′
x 1151′
x 1259′
x 1591′
COMMERCIAL COLLEGE
cemetery
Nunobiki Reservoir
x 1223′
x 1502′
MAIN LINE
x 1322′
34°

K O B E

Karasuhara Reservoir
Nunobiki Reservoir
Kitano Reservoir
Hirano Reservoir

x 1151′
x 1259′
x 1591′
x 1223′
x 1502′
x 1322′
x 1167′
x 843′
x 672′
x 501′

COMMERCIAL COLLEGE
cemetery
FOREIGN CONSULATES AND SCHOOLS
MUNICIPAL AND PREFECTURE OFFICES AND BANKS
RADIO TOWERS
LARGE DEPARTMENT STORES AND BANKS
PRISON
Kobe Station
THEATRE DISTRICT
GAS-HOLDER
Steel Works
PROBABLE EXTENSION OF 1768
CENTRAL FOOD MARKET
CEMETERIES
Mitsubishi Dockyard
SUGAR REFINERIES
SMALL POWER PLANT
MITSUBISHI ELECTRIC PLANT
GAS WORKS
TAKATORI
SANYO MAIN LINE
TOKAIDO MAIN LINE
SHINMINATO-GAWA R.

1719 1768 1775 1745 785 538 762 171 169 157 22 34 17 11 7 6 4

HARBOR

K O B E

O S A K A B A Y

INCENDIARY ZONE MAP
KOBE

ZONE 1
ZONE 2

BUILT-UP DISTRICTS
DENSELY BUILT-UP DISTRICTS

DOUBLE-TRACK RAILROADS
SINGLE-TRACK RAILROADS
STREETS AND ROADS

ELEVATIONS IN FEET
DATE OF ANALYSIS—APRIL 1944
FOR THESE TARGETS ALSO SEE MAP ON PAGE M-8.
FOR TARGET 4 ALSO SEE MAPS ON PAGES M-4 AND M-8.

STATUTE MILES

COMPILED FOR THE U. S. ARMY AIR FORCES BY THE U. S. COAST AND GEODETIC SURVEY, WASHINGTON, D. C.

34° 43′ 34° 42′ 34° 41′ 34° 40′ 34° 39′ 34° 38′
135°07′ 135°08′ 135°09′ 135°10′ 135°11′ 135°12′ 135°13′ 135°14′ 133°15′ 135°16′

3621—M-9—Osaka— 4-3-44—First Proof

CONFIDENTIAL equals British Confidential

134° 53′ 35″

135° 25′

TAKARAZUKA OVERLAP

OSAKA OVERLAP

SUITA & VICINITY OVERLAP

x 29′

x 14′

x 11′

TEXTILE FACTORY

TEXTILE FACTORY

Tokaido Main Line

KANZAKI

AMAGASAKI

1769

1781

1766

661

1783

793

1748

VEGETABLE OIL PLANT

small park

small park

race track

1760

1197

1767

1739

1743

1771

1634

1785

VEGETABLE OIL PLANT

MUKO RIVER

18

536

1195

x 9

x 13

small power plant

possibly reclaimed

possibly reclaimed

possibly reclaimed

possibly reclaimed

possibly reclaimed

possibly reclaimed

KOBE-AMAGASAKI COASTAL STRIP OVERLAP

1203

540A

power plant

lighthouse 32

power plant

540B

SHIN YODO RIVER

268

3732

TEXTILE FACTORY

AMAGASAKI HARBOR

breakwaters

1734

262

548

1733

323

FOR TARGETS 322, 323, 324 AND 536 ALSO SEE MAPS ON PAGES M-4, M-6, AND M-7.

FOR TARGETS 540A AND 540B ALSO SEE MAP ON PAGE M-4.

FOR TARGETS 53, 261, 262, 263A&B, 264, 268, 272, 548, 661, 793, 1195, 1197, 1634, 1703, 1705, 1711, 1732, 1733, 1734, 1739, 1743, 1760, 1766, 1767, 1771, 1778, 1781 AND 1783 ALSO SEE MAPS ON PAGES M-6 AND M-7.

OSAKA BAY

gas works

263A

264

272

OSAKA

PARK

AJI RIVER

1703

oil tanks

53

breakwaters

324

lighthouse

1711

OSAKA HARBOR

34° 40′

34° 40′

135° 25′

AMAGASAKI and Vicinity

BUILT-UP DISTRICTS

DENSELY BUILT-UP DISTRICTS

DOUBLE-TRACK RAILROADS

SINGLE-TRACK RAILROADS

STREETS AND ROADS

POWER LINES

DATE OF ANALYSIS--APRIL 1944

ELEVATIONS IN FEET

STATUTE MILES 1 0 1 2 3 4 5 6

8621 M-10 Osaka 4-3-44 First Proof

Authority NND 760124
By LHS-M NARA, Date 1/31/91

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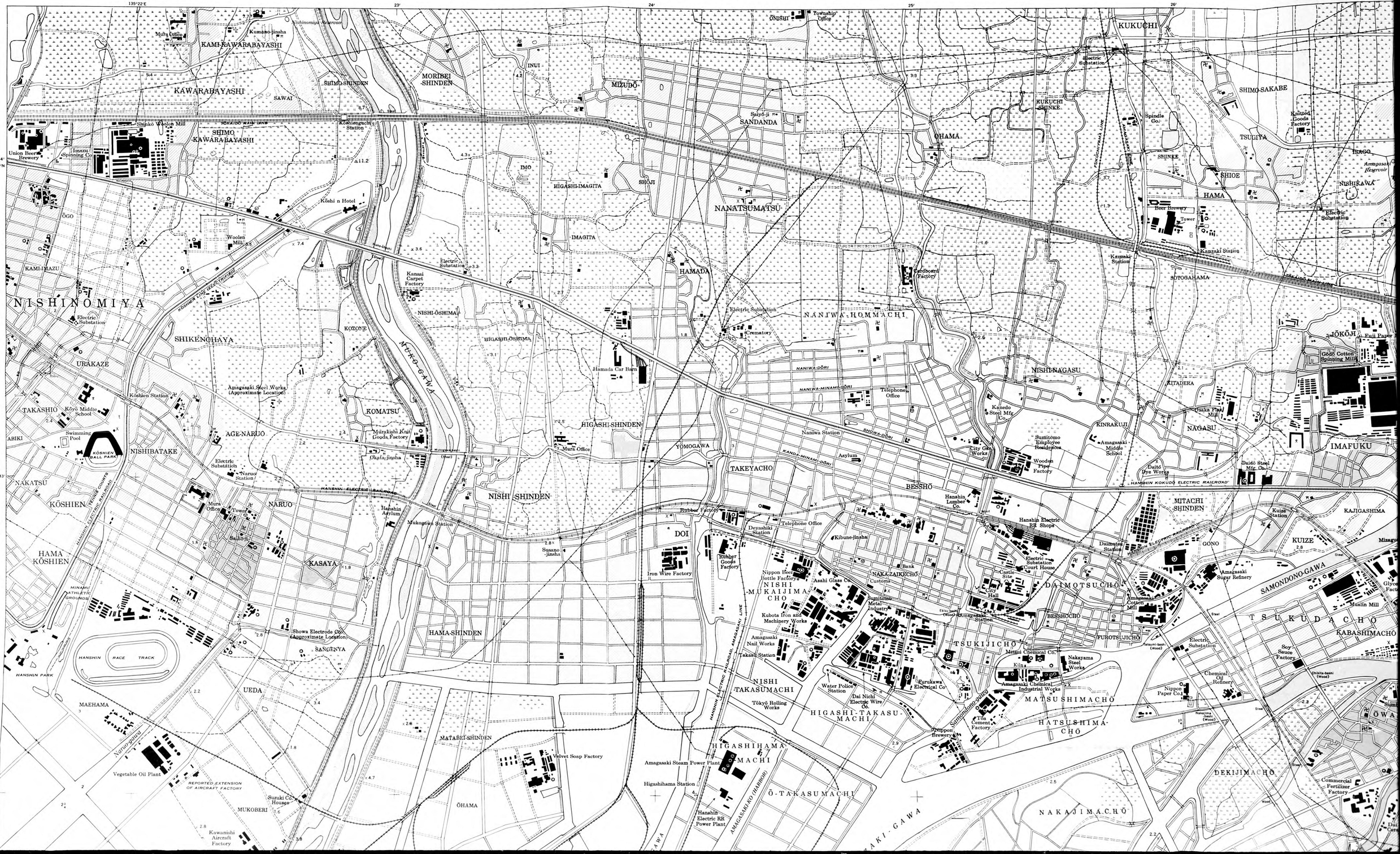
EMERGE


135°22'E
23'
24'
25'
26'
34° 44'N
43'
42'
Mura Office
Kumano-jinsha
Ushinomiya Reservoir
KAMI-KAWARABAYASHI
KAWARABAYASHI
SAWAI
SHIMO-SHINDEN
MORIBEI SHINDEN
INUI
MIZUDŌ
ŌNISHI
Township Office
KUKUCHI
Electric Substation
SHIMO-SAKABE
Knitted Goods Factory
Saiyō-ji
SANDANDA
KUKUCHI SHINKE
ŌHAMA
Spindle Co.
TSUJIYA
ISAGO
Amagasaki Reservoir
Shinkō Woolen Mill
Imazu Spinning Co.
Union Beer Brewery
Koshienguchi Station
SHIMO KAWARA-BAYASHI
TOKAIDO MAIN LINE
TOKAIDO LINE (ELECTRIFIED)
SHINKE
SHIOE
HAMA
NISHIKAWA
Electric Substation
Beer Brewery
Tower
Kanzaki Station
Koshi n Hotel
IMO
HIGASHI-IMAGITA
SHŌJI
NANATSUMATSU
ŌGO
Woolen Mill
IMAGITA
HAMADA
Cardboard Factory
SOTOGAHAMA
KAMI-IMAZU
Kansai Carpet Factory
Electric Substation
NISHINOMIYA
Electric Substation
NISHI-ŌSHIMA
NANIWA-HOMMACHI
Crematory
JŌKŌJI
Fuji Paper
Gōdo Cotton Spinning Mill
SHIKENCHAYA
KOZONE
HIGASHI-ŌSHIMA
NUKO-GAWA
URAKAZE
Hamada Car Barn
NANIWA-DŌRI
NISHI-NAGASU
KITADERA
Amagasaki Steel Works (Approximate Location)
Koshien Station
NANIWA-MINAMI-DŌRI
Telephone Office
Kanedo Steel Mfg. Co.
TAKASHIO
Kōyō Middle School
Swimming Pool
KŌSHIEN BALL PARK
ABIKI
AGE-NARUO
Murakishi Knit Goods Factory
Okata-jinsha
KOMATSU
HIGASHI-SHINDEN
Mura Office
YOMOGAWA
Naniwa Station
SHOWA-DŌRI
Asylum
Osaka Flax Mill
NAGASU
KINRAKUJI
Amagasaki Municipal Office
Sumitomo Employee Residences
Amagasaki Middle School
Daitō Dye Works
HANSHIN KOKUDŌ ELECTRIC RAILROAD
Daidō Steel Mfg. Co.
IMAFUKU
NISHIBATAKE
Electric Substation
Naruo Station
NAKATSU
KŌSHIEN
HANSHIN ELECTRIC RAILROAD
Mura Office
Town
NARUO
Hanshin Asylum
Mukogawa Station
NISHI SHINDEN
TAKEYACHO
BESSHŌ
Hanshin Lumber Co.
MITACHI SHINDEN
Kuize Station
KAJIGASHIMA
Rubber Factory
Telephone Office
Hanshin Electric RR Shops
Saibō-ji
DOI
Deyashiki Station
Kibune-jinsha
Susano-jinsha
KUIZE
GONO
Rubber Goods Factory
Iron Wire Factory
Bank
Customs
Castle Site
City Hall
Electric Substation
Court House
Daimotsu Station
DAIMOTSUCHŌ
Amagasaki Sugar Refinery
SAMONDONO-GAWA
KASAYA
NISHI-MUKAIJIMA-CHŌ
Nippon Beer Bottle Factory
Asahi Glass Co.
Sumitomo Metal Industries
Amagasaki Station
BESSHOCHŌ
Amagasaki Cotton Mill
Muslin Mill
TSUKUDACHŌ
KABASHIMACHŌ
HANSHIN ELECTRIC RAILROAD, AMAGASAKI LINE
Kubota Iron and Machinery Works
Amagasaki Nail Works
Takaoki Station
TSUKIJICHŌ
FUROTSUJICHŌ
Electric Substation
Soy Sauce Factory
Showa Electrode Co. (Approximate Location)
SANGENYA
HANSHIN RACE TRACK
HANSHIN PARK
MINAMI ATHLETIC GROUNDS
Mitsui Chemical Co.
Kilns
Nakayama Steel Works
Amagasaki Chemical Industrial Works
Chemical Oil Refinery
Nippon Paper Co.
NISHI-TAKASUMACHI
Water Police Station
Furukawa Electrical Co.
Dai Nichi Electric Wire Co.
Tōkyō Rolling Works
HIGASHI-TAKASU-MACHI
MATSUSHIMACHŌ
HATSUSHIMA-CHŌ
Sanmondono-gawa
Toa Cement Factory
Nippon Brewery
UEDA
MAEHAMA
Naru-gawa
Vegetable Oil Plant
REPORTED EXTENSION OF AIRCRAFT FACTORY
MATABEI-SHINDEN
Velvet Soap Factory
Amagasaki Steam Power Plant
HIGASHIHAMA-MACHI
Higashihama Station
Ō-TAKASUMACHI
AMAGASAKIKŌ (HARBOR)
Hanshin Electric RR Power Plant
MUKOBERI
Suzuki Co. Houses
Kawanishi Aircraft Factory
ŌHAMA
NAKAJIMACHŌ
DEKIJIMACHŌ
Commercial Fertilizer Factory
ŌWA
Nakajima Iseki (Wood)
Chūshū-Iseki (Wood)
Atsumi-Iseki (Wood)
Steel
Wood

EMERGENCY PROVISIONAL EDITION RESTRICTED

135°28'E

34°44'N

24' 25' 26' 27'

ŌNISHI
Township Office
KUKUCHI
NUKATA
SHONAI-MURA
Kuratashi Jinsha
HANSHIN ELECTRIC RAILROAD
HANKYŪ ELECTRIC RAILROAD
INUI
MIZUDŌ
Saiyō-ji
SANDANDA
Electric Substation
KUKUCHI SHINKE
OHAMA
SHIMO-SAKABE
TAKATA
TONOUCHI
SHŌMOTO
SHIMAE
TEKAUCHI
Paint Factory
Knitted Goods Factory
Spindle Co.
Celluloid Factory
Muslin Mill
Company Houses
TSUGIYA
ISAGO
Amagasaki Reservoir
SHINKE
SHIOE
HAMA
NISHIKAWA
KANZAKI
MO-KAWA
IN-GAWA
SHIMA
SUDŌSHI
IMO
HIGASHI-IMAGITA
SHŌJI
NANATSUMATSU
Beer Brewery
Tower
Electric Substation
Ōsaka Serum Institute Veterinary Dept.
KYŪ CHŪGOKU HIGHWAY
HAMANOCHŌ
KAMINOCHŌ
IMANOCHŌ
Gas Company
Chemical Plant
Ōsaka Machinery Co.
IMAGITA
Kanzaki Station
Kanzaki Station
Cardboard Factory
SOTOGAHAMA
TŌKAIDŌ MAIN LINE
NISHINOCHŌ
TSUJINOCHŌ
NAKANOCHŌ
SHIMONOCHŌ
HIGASHINOCHŌ
TAKENOMACHI
KYŪ CHŪGOKU HIGHWAY
HAMADA
Electric Substation
Crematory
NANIWA-HOMMACHI
IŌKŌJI
Fuji Paper Mill
Gōdō Cotton Spinning Mill
KANZAKI-GAWA
HIGASHI-ŌSHIMA
Hamada Car Barn
NANIWA-MINAMI-DŌRI
NISHI-NAGASU
KITADERA
Telephone Office
Kanedo Steel Mfg. Co.
Ōsaka Plant Mill
KINRAKUJI
NAGASU
IMAFUKU
KAJIMACHŌ
HIGASHI-SHINDEN
Naniwa Station
SHŌWA-DŌRI
KANDA-MINAMI-DŌRI
Asylum
Sumitomo Employee Residences
Amagasaki Middle School
City Gas Works
Wooden Pipe Factory
Daitō Dye Works
Daidō Steel Mfg. Co.
Kōbe Vinegar Works
Chemical Fertilizer Works
Ward Office
Ōsaka Wakayama Iron Works
Amatsuji Steel Ball Mfg. Co. (Approx. Location)
MITEJIMACHŌ
Mura Office
YOMOGAWA
TAKEYACHO
BESSHŌ
Hanshin Lumber Co.
HANSHIN KOKUDŌ ELECTRIC RAILROAD
MITACHI SHINDEN
Kuize Station
KAJIGASHIMA
Ozu Cotton Mill
NISHI SHINDEN
Rubber Factory
Telephone Office
Deyashiki Station
Hanshin Electric RR Shops
KUIZE
Mizaguchi Gear Works
DOI
Kibune-jinsha
Daimotsu Station
GONO
HANSHIN ELECTRIC RAILROAD
TSUKUDACHŌ
Fukuda Light Airplane Co. (Approx. Location)
Susano-jinsha
Rubber Goods Factory
Iron Wire Factory
Nippon Beer Bottle Factory
Asahi Glass Co.
NAKA-ZAIKECHŌ
Bank
Customs
Electric Substation
Court House
Castle Site
City Hall
DAIMOTSUCHŌ
Amagasaki Sugar Refinery
Amagasaki Cotton Mill
Glycerine Factory
Muslin Mill
Steel Mill
Iron Works
NISHI-MUKAIJIMA-CHŌ
Sumitomo Metal Industry
Kubota Iron and Machinery Works
BESSHOCHŌ
FUROTSUJICHŌ
TSUKUDACHŌ KABASHIMACHŌ
Chibune Station
Soy Sauce Factory
Electric Substation
KITANOCHO
OKAYA
NOZATOCHŌ
HANAKAWACHO
Strong Engineering Works Co.
Amagasaki Nail Works
Takaoki Station
Mitsui Chemical Co.
Kiln
Nakayama Steel Works
Amagasaki Chemical Industrial Works
Nippon Textile Mill
NISHI-TAKASUMACHI
Water Police Station
Dai Nichi Electric Wire Co.
Furukawa Electrical Co.
MATSUSHIMACHŌ
Chemical Oil Refinery
Nippon Paper Co.
Sumiyoshi-jinja
ŌWADACHŌ
Hanakawa-sha
Nozato Station
Tōkyō Rolling Works
HIGASHI-TAKASU-MACHI
Tōa Cement Factory
Sumiyoshi-gawa
HATSUSHIMA-CHŌ
Nippon Brewery
Velvet Soap Factory
HIGASHIHAMA-MACHI
Amagasaki Steam Power Plant
Higashihama Station
Ō-TAKASUMACHI
DEKIJIMACHŌ
Commercial Fertilizer Factory
Belt Factory
Matsuoka Textile Mill
NISHINOMIYA
HIMEJIMACHŌ
Electric Substation
Himejima Station
Tower
Dai Nippon Ceramics Factory
NAKAJIMACHŌ
HANSHIN ELECTRIC RAILROAD AMAGASAKI LINE
KAISHŌ (HARBOR)
Hanshin Electric RR

Authority NND 968033
By LLB-MT NARA, Date 1/21/01

ŌSAKA-KŌBE AREA : AMAGASAKI
HYŌGO AND ŌSAKA PREFECTURES, HONSHU, JAPAN

Scale 1:12,500

1/2 0 1/2 Miles
500 0 500 Meters
500 0 500 Yards

POLYCONIC PROJECTION

Compiled for the Commanding General, U. S. Army Air Forces, under the direction of the Aeronautical Chart Service by the U. S. Coast and Geodetic Survey, Washington, D. C. Compiled from:

1. Japan 1:25,000, Japanese Imperial Land Survey: Ōsaka Northwest and Southwest (1934),
2. Japan 1:10,000, Japanese Imperial Land Survey: Nishinomiya North, Nishinomiya South, Muko Kawaguchi (1935), Tonouchi, Amagasaki West, Nunoya, Moribe (1934); Ōsaka Southwest (1923) Amagasaki East, Ōsaka West, (1922)
3. Japanese Hydrographic Chart 1103, 1:36,395 (1934)
4. Latest Map of Greater Ōsaka, 1:20,000, ed. 1, Kusaka (1940)
5. Plan of Hanshin Area, 1:30,000, ed. 1, Kusaka (1940)
6. Amagasaki Industrial Harbor Project, 1:10,000 (c.1935)
7. Intelligence data

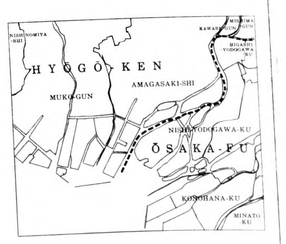
Names transcribed according to the Modified Hepburn (Romaji) System.
Sources for railroad lines on reclaimed land in Amagasaki Harbor are questionable

LEGEND

National or Prefectural Road, generally metalled, over 4 mi. wide, or streets in city area
Other Roads, 2-4 m. wide
Road, Track or Trail less than 2 m. wide
RAILROADS
3'6" Gauge, Single Track
3'6" Gauge, Double Track
Narrow Gauge, Single Track
Narrow Gauge, Double Track
4'8 1/2" Gauge, Single Track
4'8 1/2" Gauge, Double Track
Railroad Station
Car Line
streets in city area
High Tension Power Lines
Factory
Hospital
Shine
Temple
Chimney
Pagoda
Church
Monument
School
Water Mill
Post Office
Police Station
Stone Steps
Cemetery

HEIGHTS IN METERS; CONTOUR INTERVAL 10 METERS

-bashi, -hashi, -bhashi ..... bridge
chō ..... precinct
-dōri ..... street
-fu, -ken ..... prefecture
-ji ..... temple
-jinja, -jinsha, -sha ..... shrine
-kawa, -gawa ..... river
-ku ..... ward
machi ..... precinct, township
mura ..... township, town
-shi ..... city



INDEX TO SHEETS

Iron Wire Factory
Bottle Factory
Asahi Glass Co.
Customs
NISHI-MUKAIJIMA-CHO
Sumitomo Metal Industry
City Hall
DAIMOTSUCHO
Amagasaki Cotton Mill
BESSHOCHO
FUROTSUJICHO
Kubota Iron and Machinery Works
Amagasaki Nail Works
Takaoka Station
Amagasaki Station
TSUKIJICHO
Mitsui Chemical Co.
Nakayama Steel Works
Kiln
Amagasaki Chemical Industrial Works
Furukawa Electrical Co.
Water Police Station
Dai Nichi Electric Wire Co.
NISHI-TAKASUMACHI
HIGASHI-TAKASU-MACHI
Tōkyō Rolling Works
HANSHIN ELECTRIC RAILROAD, AMAGASAKI LINE
Shimodono-gawa
Tōa Cement Factory
MATSUSHIMA-CHŌ
HATSUSHIMA-CHŌ
Nippon Brewery
Electric Substation
Chemical Oil Refinery
Nippon Paper Co.
Soy-Sauce Factory
Chihaya-bashi (Wood)
Nakajima-bashi (Wood)
Musalin Mill
Steel Mill
Iron Works
Chihaya Station
TSUKUDA-CHŌ
KABASHIMACHO
Strong Engineering Works Co.
KITANOCHO
OKAYA
NOZATOCHŌ
HANAKAWACHŌ
Nippon Textile Mill
Sumiyoshi-jinja
ŌWADACHŌ
Hanakawa-ekimae
Nozato Station
Nishinomiya
HIMEJIMACHŌ
Electric Substation
Belt Factory
Matsuoka Textile Mill
Commercial Fertilizer Factory
HONDŌRI-NIYA
Himejima Station
Tower
Dai Nippon Ceramics Factory
Electric Substation
Hōya Sodium Sulfate Factory
SANNOMEN-WATASHI (FERRY)
Electric Substation
Shimada Hinas Co.
Yodogawa Station
Bleached Flour Co.
Ōsaka Artificial Fertilizer Co.
Pharmaceutical Factory
Electric Substation
Rasa Island Rock Phosphate Plant
KAMISHIMA-CHŌ
TAKAMICHŌ
Electric Substation
NEZUMI-SHIMA (ISLAND)
Paper Co.
Lead Pipe Factory
Isolation Hospital
IMPASSABLE LOCKS
Flax Mill
Osaka Bottle Factory
Fertilizer Factory
DEMPŌMACHI
Dempō-gawa
DEMPŌ LOCK GATE
Cotton Mill
Chidoribashi Station
Toyo Cotton Mill
Girls' School
TORIJIMACHŌ
Fire Station
Power
Osaka Zoki Co.
Abe Paint Co.
SHIKANJIMA
Electric Substation
Warehouse
NANKAI LINE (ELECTRIC)
NISHIKUJŌ
Ensuikō Sugar Refinery
Warehouse
Electric Substation
Lumber Yard
No. 3
AJI-KAWA
Warehouse
Nippon Aluminum Plant
Japan Dyestuff Mfg. Co. (Drugs Plant)
SHIN-YODO-GAWA
OKAJIMA MINAMINOCHŌ
KASUGADECHŌ
Sumitomo Electric Industries Co.
Gas Barns
Japan Dyestuff Mfg. Co.
Niitaka Sugar Refinery
Kasugade Steam Power Plants
No. 1
Electric Substation
Lumber Yard
Warehouse
PASSABLE LOCK
Lumber Yard
KIYAMACHI
Public Office
Foundry
Lumber Yard
Gas Works
SHIMAYACHŌ
SHIMAFUNEMACHI
Sumitomo Airplane Works (Reported)
Rolling Stock Mfg. Co.
Sumitomo Metal Industry
Ajikawaguchi Station
O. & Nippon Oil Storage
Warehouse
KŌYAHAMA-DŌRI
Lumber Yards
Lumber Yards
Jap. Govt. Bldg.
Communications Ministry Branch Office
NISHIDACHŌ
KOTOBUKI-CHŌ
BENTEN-CHŌ
Yokogawa Bridge Works
Ichioka Girls' High School
Ichioka Middle School
34° 40'N
SHORENJI-GAWA
KITAMINATO
Sumitomo Metal Industry & Aluminum Co.
Timber Basin
Warehouses
Lumber Yard
Warehouse
Lumber Yards
Lumber Yard
Warehouse
Lumber Yard
Warehouse
Lumber Yard
Warehouse

ŌSAKA-KŌBE AREA: AMAGASAKI
HYŌGO AND ŌSAKA PREFECTURES, HONSHU, JAPAN

Scale 1:12,500

LEGEND

National or Prefectural Road, generally metalled, over 4 mi. wide, or streets in city area.
Other Roads, 2-4 m. wide
Road, Track or Trail less than 2 m. wide
RAILROADS — streets in city area.
3'6" Gauge, Single Track
3'6" Gauge, Double Track
Narrow Gauge, Single Track
Narrow Gauge, Double Track
4'8 1/2" Gauge, Single Track
4'8 1/2" Gauge, Double Track
Railroad Station
Car Line
High Tension Power Lines
Factory, Hospital, Shrine, Temple, Chimney, Pagoda, Church
Monument, School, Water Mill, Post Office, Police Station, Stone Steps, Cemetery

HEIGHTS IN METERS; CONTOUR INTERVAL 10 METERS
DEPTHS IN FATHOMS AT NEARLY LOWEST LOW WATER

POLYCONIC PROJECTION

Compiled for the Commanding General, U. S. Army Air Forces, under the direction of the Aeronautical Chart Service by the U. S. Coast and Geodetic Survey, Washington, D. C. Compiled from:

1. Japan 1:25,000, Japanese Imperial Land Survey: Ōsaka Northwest and Southwest (1934), Nishinomiya (1936)
2. Japan 1:10,000, Japanese Imperial Land Survey: Nishinomiya North, Nishinomiya South, Muko Kawaguchi (1935), Tonouchi, Amagasaki West, Nunoya, Moribe (1934); Ōsaka Southwest (1923) Amagasaki East, Ōsaka West, (1922)
3. Japanese Hydrographic Chart 1103, 1:36,395 (1934)
4. Latest Map of Greater Ōsaka, 1:20,000, ed. I. Kusaka (1939-41)
5. Plan of Hanshin Area, 1:30,000. ed. I. Kusaka (1940)
6. Amagasaki Industrial Harbor Project, 1:10,000 (c.1935)
7. Intelligence data

Names transcribed according to the Modified Hepburn (Romaji) System.
Sources for railroad lines on reclaimed land in Amagasaki Harbor are questionable

INDEX TO SHEETS: KŌBE PROPER 1, NISHINOMIYA 2, AMAGASAKI 3, ŌSAKA HARBOR 4, ŌSAKA NORTH 5, ŌSAKA SOUTH 6

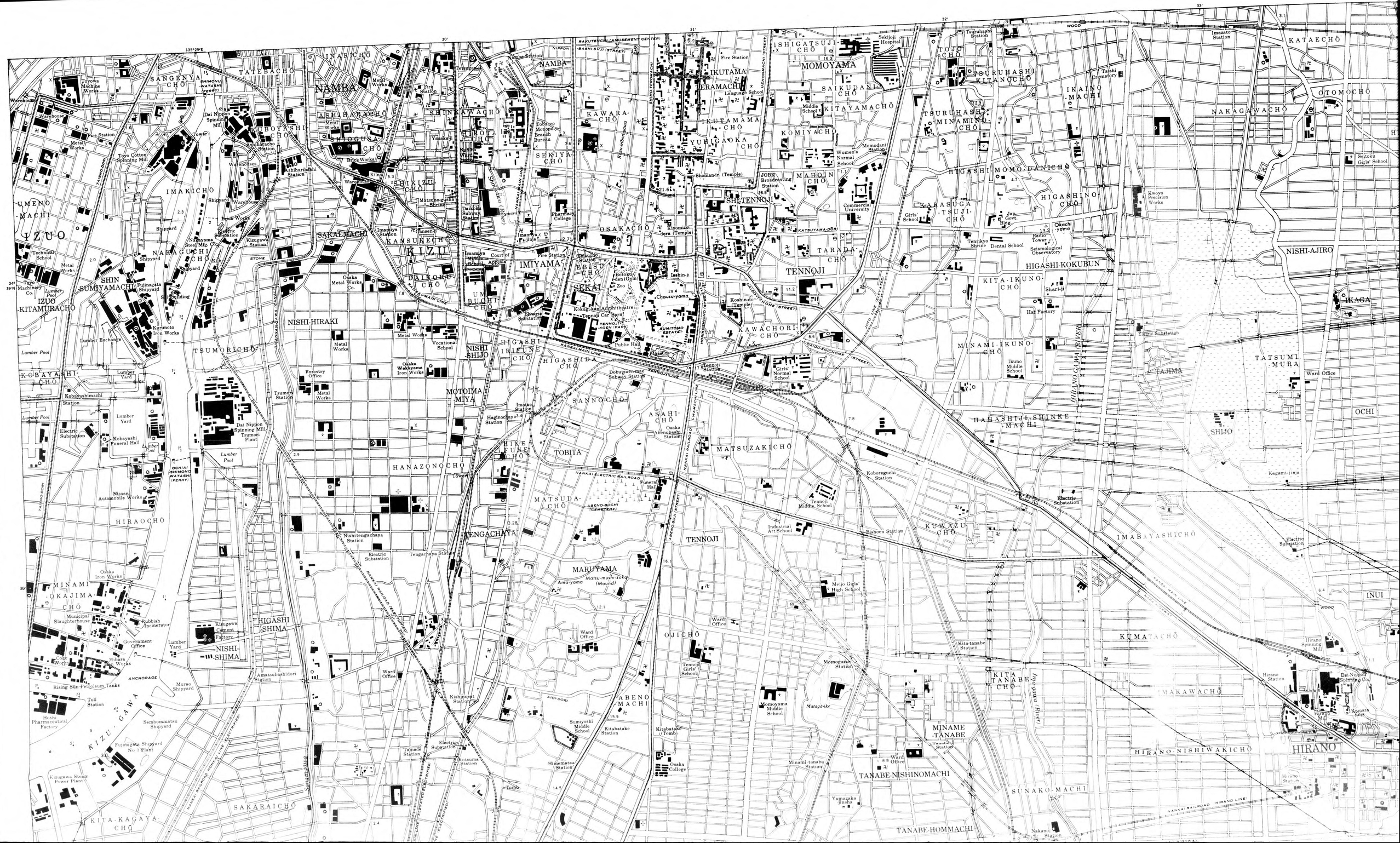
-bashi, -hashi, -ōhashi	bridge
chō	precinct
-dōri	street
-fu, -ken	prefecture
-ji	temple
-jinja, -jinsha, -sha	shrine
-kawa, -gawa	river
-ku	ward
machi	precinct, township
mura	township, town
-shi	city

OFFICE OF THE ASSISTANT CHIEF OF AIR STAFF, INTELLIGENCE
WASHINGTON, D. C.

RESTRICTED　EMERGENCY PROVISIONAL EDITION

Velvet Soap Factory
Amagasaki Steam Power Plant
Higashihama Station
Hanshin Electric RR Power Plant
Ō-TAKASUMACHI
AMAGASAKI-KŌ (HARBOR)
YOMO GAWA
SHŌGE GAWA
HIGASHI-KAIGAN-MACHI
Coal Yard
Old Plant (No. 1)
Kansai Kyōdō Steam Power Plants
New Plant (No. 2)
Coal Yard
LIGHTHOUSE
F.R. 9.7 Meters, Vis. 10 Naut. Mi.
(White Iron Framework)
Shiokai-bashi
Stone
KANZAKI-GAWA
SOTOJIMACHŌ
NAKAJIMACHŌ
Sanitarium
NUNOSATOCHŌ
KANZAKI-GAWA
Osaka Steel Mfg. Co.
NISHIJIMACHŌ
NISHIJIMA LOCK GATE
NAVIGABLE
Ō (HARBOR)
Ōsaka Harbor Limit
SHIN-YODO-GAWA
DEKIJIMACHŌ
Stone
Commercial Fertilizer Factory
Belt Factory
Matsuoka Textile Mill
Semmi-hashi (Stone)
NISHINOMIYA
HIMEJIMACHŌ
Electric Substation
HONDORI-KITA
Himejima Station
Tower
Dai Nippon Ceramics Factory
Electric Substation
Stone
Ōsaka Alkali Factory
Ōsaka Smelter, Ōno Plant
Ito Sodium Sulfate Factory
ŌNOCHŌ
SANNOMEN WATASHI (FERRY)
Electric Substation
Shimada Glass Co.
Yodogawa Station
FUKUMACHI
Ōno-gawa
HANSHIN ELECTRIC RAILROAD, OSAKA LINE
Bleached Flour Co.
Ōsaka Artificial Fertilizer
Pharmaceutical Factory
HYAKKIJIMACHŌ
Electric Substation
Russia Island Rock Phosphate Plant
KAMISHIMA-CHŌ
TAKAMICHŌ
FUKUMURA WATASHI (FERRY)
NEZUMI-SHIMA (ISLAND)
Paper Co.
Electric Substation
Lead Pipe Factory
Isolation Hospital
Flax Mill
DEMPŌMACHI
Dempō-gawa
DEMPŌ LOCK GATE
Cotton Mill
Girls' School
Chidoribashi Station
Toyo Cotton Mill
Osaka Bottle Factory
Fertilizer Factory
TORIJIMACHŌ
Nippon Aluminum Plant
Fire Station (Tower)
SHIKANJIMA
Osaka Zoki Abe Paint Co.
Electric Substation
Warehouse
NISHIKUJŌ
Japan Dyestuff Mfg. Co. (Drug Plant)
OKI-JIMA
MINAMINOCHŌ
KASUGADECHŌ
Sumitomo Electric Industries Co.
Ensuikō Sugar Refinery
Lumber Yard
SHIMAFUNEMACHI
Car Barns
Japan Dyestuff Mfg. Co.
Niitaka Sugar Refinery
Kasugade Steam Power Plants No. 1
No. 2
AJI-KAWA
Warehouse
SHIMAYACHŌ
Sumitomo Airplane Works (Reported)
Rolling Stock Mfg. Co.
Gas Works
Lumber Yard
Public Office
Foundry
KIYAMACHI
SHORENJI-GAWA
Sumitomo Metal Industry
KITAMINATO-DŌRI
Ajikawaguchi Station
S.V.O. & Nippon Oil Storage
KŌYAHAMA-DŌRI
Warehouse
Lumber Yards
Jap. Govt. Bldg.
ISHIDACHŌ
Communications Ministry Branch Office
KOTOBUKI-CHŌ
BENTEN-CHŌ
Yokogawa Bridge Works
Ichioka Girls' High School
Ichioka Middle School
KITAMINATO
Sumitomo Metal Industry & Aluminum Co.
Timber Basin
Warehouses
Lumber Yard
Warehouse
Lumber Yard
-bashi, -hashi, -ōhashi ..... bridge
chō ..... precinct
-dōri ..... street
-fu, -ken ..... prefecture
-ji ..... temple
-jinja, -jinsha, -sha ..... shrine
-kawa, -gawa ..... river
-ku ..... ward
machi ..... precinct, township
mura ..... township, town
-shi ..... city
HYŌGO-KEN
AMAGASAKI-SHI
MUKO-GUN
ŌSAKA-FU
NISHINOMIYA
KAWANISHI-MURA
TOYONAKA-SHI
NISHINARI-KU
MINATO-KU
42'
41'
40'N
34°
135°28'E
24'
25'
26'
27'
FOR USE WITH AAF AIR OBJECTIVE FOLDER OSAKA 90.25
Note: Officers using this chart will mark hereon corrections and additions which come to their attention and mail direct to "AERONAUTICAL CHART SERVICE, HEADQUARTERS ARMY AIR FORCES, WASHINGTON, D.C."
ARMY MAP SERVICE, U. S. ARMY, WASHINGTON, D. C. 340889
4-45
1945

By [illegible] NARA, Date 1/21/91


135°29'E
30'
31'
32'
33'
SANGENYA-CHŌ
TATEBACHŌ
INARICHŌ
NAMBA
NAMBA
ASHIHARACHŌ
SHIOGUSA-CHŌ
SHINKAWACHŌ
HIROKOJI-CHŌ
SEKIYA-CHŌ
SHIKIZU-CHŌ
KAWARA-CHŌ
IKUTAMA
TERAMACHI
IKUTAMAMA-CHŌ
YUHIGAOKA-CHŌ
ISHIGATSUJI-CHŌ
MOMOYAMA
SAIKUDANI-CHŌ
KITAYAMACHŌ
KOMIYACHŌ
TOJO-CHŌ
TSURUHASHI KITANCHŌ
TSURUHASHI MINAMIMACHŌ
IKAINO-MACHI
OTOMOCHŌ
NAKAGAWACHŌ
KATAECHŌ
HIGASHI-MOMODANICHŌ
HIGASHINO-CHŌ
KARASUGA TSUJI-CHŌ
MAHON-CHŌ
SHI-TENNOJI
TARADA-CHŌ
TENNOJI
OSAKACHŌ
KANSUKECHŌ
KIZU
DAIKOKU-CHŌ
SAKAEMACHI
IMIYAMA
EBISU-CHŌ
SEKAI
UMEDA-CHŌ
UMENO-MACHI
IZUO
SHIN SUMIYAMACHI
NAKAGAWACHŌ
IZUO-KITAMURACHŌ
IMAKICHŌ
NISHI-HIRAKI
TSUMORICHŌ
NISHI SHIJO
HIGASHI IRIFUNE-CHŌ
HIGASHIBA-CHŌ
SANNOCHŌ
ASAHI-CHŌ
MOTOIMA MIYA
HANAZONOCHŌ
HIKE IRIFUNE-CHŌ
TOBITA
MATSUZAKICHŌ
HAHASHIJI-SHINKE-MACHI
HIGASHI-KOKUBUN
KITA-IKUNO-CHŌ
MINAMI IKUNO-CHŌ
TATSUMI-MURA
TAJIMA
NISHI-AJIRO
IKAGA
OCHI
SHIJO
KOBAYASHI-CHŌ
HIRAOCHŌ
MINAMI-OKAJIMA-CHŌ
HIGASHI SHIMA
NISHI-SHIMA
SAKARAICHŌ
KITA-KAGAYA-CHŌ
TENGACHAYA
MARUYAMA
Matsu-mushi-zuka (Mound)
Ama-yama
OJICHŌ
ABENO-MACHI
KUWAZU-CHŌ
IMABAYASHICHŌ
KUMATACHŌ
KITA TANABE-CHŌ
MINAME TANABE
TANABE-NISHINOMACHI
TANABE-HOMMACHI
SUNAKO-MACHI
HIRANO-NISHIWAKICHŌ
HIRANO
MAKAWACHŌ
INUI
Osaka Metal Works Co.
Osaka Iron Works
Osaka Wakayama Iron Works
Kobayashi Funeral Hall
Kobayashi Spinning Mill
Dai Nippon Spinning Mill Tsumori Plant
Toyo Cotton Spinning Mill
Toyowa Machine Works
Nissan Automobile Works
Kurimoto Iron Works
Fujinagata Shipyard
Fujinagata Shipyard No. 3 Plant
Sembommatsu Shipyard
Murao Shipyard
Nakayama Steel Mfg. Co.
Hitachi Zosen Works
Rising Sun Petroleum Tanks
Kizugawa Cement Factory
Kizugawa Steam Power Plant
Hoshi Pharmaceutical Factory
Toll Station
Government Office
Municipal Slaughterhouse
Rubbish Incinerator
Coke Works
Lumber Exchange
Lumber Yard
Lumber Pool
Warehouse
Shipyard
Brick Works
Kiln
Tower
Metal Works
Fire Station
Electric Substation
Gas Holder
Dock
Pier
Ferry
Kobayashimachi Station
Shiharachō Station
Shiharibashi Station
Kizugawa Station
Amatsubashidori Station
Tsumori Station
Nishitengachaya Station
Tengachaya Station
Tanabe Station
Kitsuma Station
Kishinosei Station
Imamiya Station
Imamiya Junior High School
Imamiya Court of Appeals
Daikoku Subway Station
Ebisucho Station
Nippon Station
Namba Station
Tobacco Monopoly Branch Bureau
Pharmacist College
Imamiya-jinja
Yasaka-jinja
Shoman-in (Temple)
Kiyomizu-dera (Temple)
Ishin-ji
Botoku-den (Gym)
Zoo
Kokugikan Amphitheatre
Tennoji Car Barn
TENNOJI PARK
Public Hall
Museum
SUMITOMO ESTATE
JOBK Broadcasting Station
Commercial University
Women's Normal School
Momodani Station
Middle School
Sekijoji Hospital
Fire Station
Language School
Tsuruhashi Station
Taishi Crematory
Saitoku Girls' School
Girls' School
Jap. Govt. Bldg.
Tenrikyo Shrine
Dental School
Radio Tower
Okachi-yama
Seismological Observatory
Kwoyo Precision Works
Kwoyo Spinning Mill
Shari-ji
Hat Factory
Ikuno Middle School
Girls' Normal School
Tennoji Station
Dobutsuen-mae Subway Station
Koshin-do (Temple)
Chausu-yama
KAIDO-SHICHOME (STREET)
Osaka Abenobashi Station
Haginochaya Station
Imaike Station
Hinematsu Station
Sumiyoshi Middle School
Kitabatake Station
Kitabatake (Tomb)
Osaka College
Tennoji Middle School
Industrial Art School
Bishoen Station
Koboreguchi Station
Meijo Girls' High School
Tennoji Girls' School
Momoyama Middle School
Momogaoka Station
Kita-tanabe Station
Minami-tanabe Station
Tanabe Station
Ward Office
Yamazaka Jinsha
Nakano Station
Matsuda-chō
Abeno-bochi (Cemetery)
Funeral Hall
Mataga-ike
Inagawa (River)
Hirano Station
Hirano Spinning Mill
Dai Nippon Spinning Co.
Kagami-jinja
Kagata Jinja
Ward Office
Electric Substation
Imazato Station
Taishi Crematory
Sekijoji Hospital
Tsuruhashi Station
Tennoji Middle School
Tennoji Girls' School
Momoyama Middle School
Ikuno Middle School
Hirano Station
Nakano Station
Kita-tanabe Station
Momogaoka Station
Bishoen Station
Koboreguchi Station
Tanabe Station
Minami-tanabe Station
Kitabatake Station
Hinematsu Station
Imaike Station
Haginochaya Station
Tengachaya Station
Nishitengachaya Station
Kitsuma Station
Tsumori Station
Amatsubashidori Station
Kishinosei Station
Shiharibashi Station
Shiharachō Station
Kobayashimachi Station
Daikoku Subway Station
Ebisucho Station
Nippon Station
Namba Station
Imamiya Station
Kizugawa Station
Sakaemachi
Kansuke-chō
Kiln
Brick Works
Warehouses
Shipyard
Lumber Pool
Lumber Yard
Lumber Exchange
Electric Substation
Gas Holder
Dock
Pier
Ferry
Tower
Metal Works
Fire Station
Forestry Office
Ward Office
Court of Appeals
Imamiya Junior High School
Tobacco Monopoly Branch Bureau
Pharmacist College
Yasaka-jinja
Imamiya

EMERGENCY PROVISIONAL EDITION RESTRICTED

135°30'E

31' 32' 33' 34'

34° 39'N

38'

NAMBA
Namba Station
NIPPON
RAKUTENCHI (AMUSEMENT CENTER)
BASHI-SUJI (STREET)
Tobacco Monopoly Branch Bureau
SEKIYA-CHŌ
KAWARA-CHŌ
IKUTAMA-CHŌ
IKUTAMA-MACHI
YUHIGAOKA-CHŌ
SHINO-TERO-MACHI
Fire Station
Language School
Shoman-in (Temple)
Pharmacy College
Kiyomizu-dera (Temple)
OSAKA-CHŌ
Imamiya-jinja
Courthouse
Fire Station
IMIYAMA
Kokubucho Station
BENTEN-CHŌ
Ishin-ji
Botoku-den (Gym)
Zoo
SEKAI
Kokugikan Amphitheatre
Tennoji Car Barn
TENNOJI-KOEN (PARK)
Chausu-yama
SUMITOMO ESTATE
Electric Substation
Public Hall
Museum
HIGASHI-IRIFUNE-CHŌ
HIGASHIDA-CHŌ
KAWACHORI-CHŌ
NANKAI MAIN LINE (ELECTRIFIED)
Dobutsuen-mae Subway Station
Tennoji Station
Tennoji Girls' Normal School
SANNO-CHŌ
ASAHI-CHŌ
Imaike Station
Hagino Station
Osaka Abenobashi Station
TOBITA
MATSUZAKI-CHŌ
NANKAI ELECTRIC RAILROAD
Funeral Hall
ABENO-BOCHI (CEMETERY)
MATSUDA-CHŌ
TENNOJI
ABENO-SUJI STREET
NANKAI RAILROAD
MARUYAMA
Matsu-mushi-zuka (Mound)
Ama-yama
Ward Office
OJI-CHŌ
Tennoji Girls' High School
ABENO-MACHI
AIKI-DORI
Sumiyoshi Middle School
Kitabatake Station
Kitabatake (Tomb)
Himematsu Station
Osaka College
Tomb
ISHIGATSUJI-CHŌ
Sekijoji Hospital
MOMOYAMA
SAIKUDANI-CHŌ
KITAYAMA-CHŌ
Middle School
KOMIYA-CHŌ
Women's Normal School
Momodani Station
JOBK Broadcasting Station
MAHOIN-CHŌ
SHI-TENNOJI
Commercial University
KATSUYAMA-DŌRI
TARADA-CHŌ
Girls' School
KARASUGA-TSUJI-CHŌ
Jap. Govt. Bldg.
Tenrikyo Shrine
Dental School
Radio Tower
Seismological Observatory
Okachi-yama
HIGASHI-KOKUBUN
KITA-IKUNO-CHŌ
Shari-ji
Hat Factory
MINAMI-IKUNO-CHŌ
Ikuno Middle School
Koshin-do (Temple)
SHINDO-HOME (STREET)
HOMMACHI-NO-SUJI
HANKYU KOBE LINE (ELEVATED)
Girls' Normal School
HAHASHIJI-SHINKE-MACHI
Koboreguchi Station
Tennoji Middle School
Industrial Art School
Bishoen Station
KUWAZU-CHŌ
Meijo Girls' High School
Kita-tanabe Station
Momogaike Station
Momoyama Middle School
Mataga-ike
KITA-TANABE-CHŌ
MINAME-TANABE
Tanabe Station
Minami-tanabe Station
TANABE-NISHINOMACHI
Ward Office
Yamazaka-jinsha
SUNAKO-MACHI
TANABE-HOMMACHI
Nakano Station
NANKAI RAILROAD (HIRANO LINE)
Tsuruhashi Station
TŌJŌ-CHŌ
TSURUHASHI-KITANOCHŌ
TSURUHASHI-MINAMINO-CHŌ
IKAINO-MACHI
Taishi Crematory
HIGASHI-MOMO-DANICHŌ
HIGASHINO-CHŌ
Kwoyo Precision Works
KISHIDA-DO
NISHI-AJIRO
IKAGA
Electric Substation
TAJIMA
TATSUMI-MURA
Ward Office
OCHI
SHIJO
Kagami-jinja
Imazato Station
KATAECHŌ
NAKAGAWACHŌ
OTOMOCHŌ
HARAMICHŌ
Seitoku Girls' School
Fuse Station
Electric Substation
ARAKAWA
Ward Office
NAGANIGO
Nanto Girls' College
Tax Office
TEIHEIJI
Shuntokumichi Station
MINAMI-YOKONUMA
HANKYU KOBE LINE (ELEVATED)
Movie Studio
HIGASHI-NOSHO
KITA-HAGUSA
Nagase Station
Anyo-ji
MINAMI-HAGUSA
Ward Office
KITA-YAO HIGHWAY
YOSHIMATSU
KASHITA
KIZURI
KAMI-MURA
SHOKAKUJI
INUI
KUMATACHŌ
IMABAYASHI-CHŌ
KANSAI MAIN LINE
NARA HIGHWAY
Hirano Spinning Mill
Hirano Station
Dai-Nippon Spinning Co.
Kumata-jinja
IMAKAWA-CHŌ
Hirano Mill
Ward Office
Danchimae-dori
HIRANO-NISHIWAKI-CHŌ
HIRANO
Hirano Station
Inoue Match Factory
Ward Office
KURATSUKURI
Kami Station
Electric Substation
MINAMI-KURATSUKURI
KURATSUKURI-SHINE
NARA HIGHWAY
KAMME
HIRANO-GAWA RIVER
Fujinogawa River