

HEADQUARTERS
U.S. STRATEGIC BOMBING SURVEY
(PACIFIC)
BASIC MATERIALS DIVISION

RESTRICTED

INTERROGATION NO. 363

PLACE: Osaka Mitsubishi
Copper Refinery

DATE: 5 June 1945

Division of Origin: Basic Materials

Subject: Capacity & Production of Mitsubishi Copper Refinery.

Personnel Interrogated:

OKAMOTO, Masatune

Plant Mgr. Mitsubishi Osaka
Copper Refinery

Interrogator: Lt. BEYER, Lt. FREEDMAN, Mr. Colwell

Interpreter: Lt. BOHANNAN

Allied Officers Present: (Same as Interrogators)

Summary: The Mitsubishi Copper Refinery at Osaka had a capacity of 1800 tons per month of refined copper early in the war, but lack of maintenance lowered capacity considerably before the end of the war. Actual production reached a peak of 1600 tons per month during the first half of 1944, but shortages of coal, power, labor, and blister copper reduced production to about 400 tons per month during 1945 shortly before incendiary attack on the plant in June.

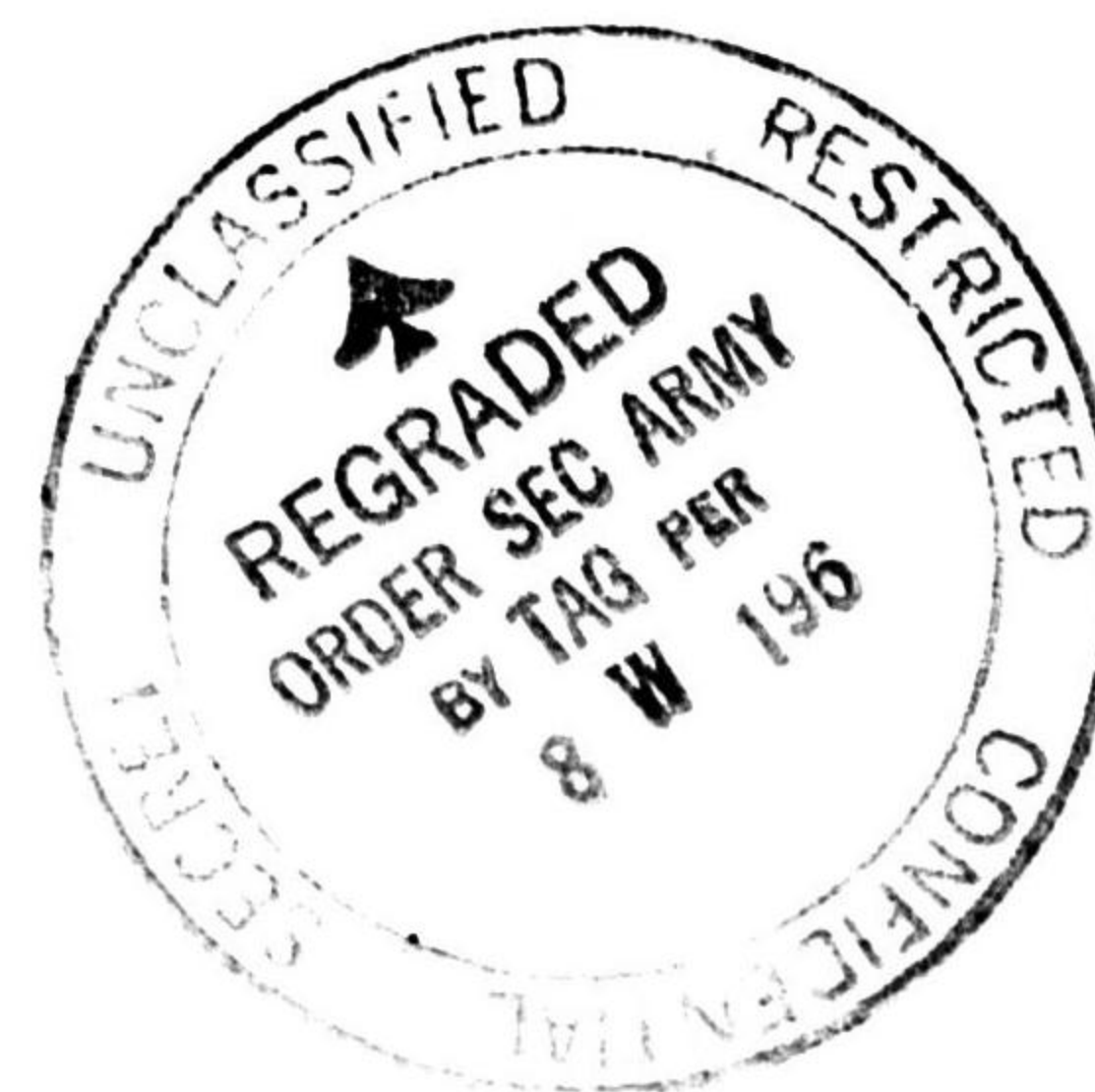
The indirect effects of strategic bombing inducing the shortages noted above were of greater effect in reducing output than direct attack on the plant.

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The interrogation of Mr. OKAMOTO occurred during an inspection of the Mitsubishi Copper Refinery by Basic Materials Field Team No. 4. Direct interrogation covered a period of three hours, with additional questions put during two hours of plant inspection. The Basic Materials Non-ferrous questionnaire was explained and submitted for execution to provide a detailed account of the operation of the plant. A more general line of interrogation revealed the following data.

The Mitsubishi Copper Refinery at Osaka is one of the oldest in Japan, built about 1900 and expanded during the first World War. Its capacity during the present war was approximately 1800 tons per month of refined copper. No expansion occurred throughout the war. The plant received blister copper of 98 percent purity from the Mitsubishi smelter at Naoshima, from which it produced electrolytic copper and by-products of the process such as copper sulphate, cuprous oxide, and the precious metals. The crude copper was received in anode form from Naoshima, and after electrolysis, shipped as cathodes after sale to the Metals Distribution Co. The plant also received crude tin from the Ikuno mines and smelter from which it produced refined tin.

The plant was hit in three attacks on 1, 7, and 15 June 1945 - all incendiary. In general, none of the electrolytic copper refining facilities was damaged, but sections of the plant producing by-products, including copper sulphate and the control laboratory were wiped out or severely damaged.

The plant attained a peak production of 1600 tons of copper per month during the first half of 1944, after which production began to fall sharply, due to various shortages, until shortly before the air raids production amounted to only about 400 or 500 tons a month. The significant shortages affecting output were given as the following: coal, sulphuric acid, power, labor, and blister copper.

Coal was stated categorically as the major shortage. It was tight at the beginning of the war, and gradually became tighter. Early in 1945 tin production at the plant ceased entirely in order to divert all coal to the production of copper. Shortage of coal was seen as the underlying factor behind most other shortages. At one point the Naoshima smelter had to cease operations for a short period because of lack of coal. The copper industry had a fairly high position in respect to receipt of available coal, but together with others followed aluminium, steel, and power, which were especially favored.

As to labor, both quantity and skills were short, since skilled workers were drafted along with others. Most of the workers at the plant were Japanese, though 200 Koreans were used, at the peak, later being reduced to about 100. No PW's were used. Toward the end, the Koreans were getting away, and the Osaka raids were resulting in workers going back to the country, or failing to report, and the company could do little to augment its labor supply. In the opinion of the plant officials the indirect effects of air raids - bombing of transportation for coal and raw materials - were considered more important in accounting for the reduced production of copper than the direct attacks on the plant.

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Some direct effects, however, were also noted. The destruction of the analysis room (100 percent) made adequate control of processes and specifications of output impossible, though some tests were made at Naoshima. Knocking out the copper sulphate plant affected capacity by reducing ability to purify solutions.

But by the date of direct attack the plant was producing at but a fraction of capacity, which had also fallen from its previous level due to failure to provide proper maintenance throughout most of the war. Attempts to get Mr. Okamoto to estimate effect of direct bomb-damage, excluding indirect effects already noted, were largely unsatisfactory. The hypothetical nature of the problem and the language barrier made results very uncertain. He did state that capacity after bombing was about 30% of the original (but this seems much too low on the basis of physical damage). Pressed on the question of time required for rehabilitation, with adequate labor supply, coal, sulphuric acid, raw materials, etc., he stated that 60% of capacity could be regained in 30 days, but due to the long period of lack of maintenance, a full year would be required for full rehabilitation.

Blister copper for the most part was not a limiting factor in production at the plant except for one period - March 1944 - which was in turn traced to transportation difficulties.

In general, Mr. Okamoto stated, the problems this particular plant experienced were general throughout the industry.