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DEPARTMENT OF JUSTICE  
WAR DIVISION  
ECONOMIC WARFARE SECTION

REPORT ON

RIKYO MOTORCYCLE COMPANY,  
SHINAGAWA-KU, TOKYO, JAPAN.

November 24, 1943.

Submitted by:  
Robert A. McGhee  
Economic Warfare Section  
Department of Justice  
Chicago, Illinois

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Re: Rikuo Motorcycle Company,  
Shinagawa-ku, Tokyo, Japan  
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INTRODUCTION

This report relates to a small but efficient motorcycle manufacturing company known as Rikuo Motorcycle Company, located in Tokyo, Japan, which until 1937, manufactured motorcycles for commercial use similar to the Harley-Davidson motorcycle. This company employed only about 75 workers, who were all well trained in the operation of machine tools.

The Rikuo machine tools are capable of being converted to almost any kind of work that can be done by a small machine shop. It would be possible to make small parts for airplanes that do not require too close limits; or small complete units such as transmissions for jeeps could be made. While it is not known definitely that this plant has been converted, the best "educated guess" is that such has happened, because of the small number of motorcycles it was capable of producing. There are other motorcycle companies in Japan whose entire production is being used by the Army, the Navy, and the police.

I. HISTORY OF THE COMPANY

Rikuo (King of the Road) Motorcycle Company was formed about 1933 through the efforts of one Nagai, representing Sankyo Company, Ltd.,<sup>1</sup> and Mr. A. R. Child, representing the Harley-Davidson Company. For about nine years prior to 1933, Mr. Child had operated a Japanese company, jointly owned by Sankyo, Takamine Corporation, and Shiohara Kusanaba, which sold the Harley-Davidson motorcycle in Japan. Harley-Davidson furnished the new company drawings, prints, and all engineering help, even supplying an engineer who was hired by Rikuo. In return, Rikuo was to pay certain royalties. This arrangement worked for about two years, when Rikuo refused to make further payments while demanding more engineering help and special parts. In January 1936 Mr. Child left Rikuo and continued as a sales agent for Harley-Davidson in Tokyo. Harley-Davidson then adopted a policy of supplying parts just for machines that had been imported

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1 See Confidential Report on Sankyo Co., Ltd. No. 3276 (Chi-130), dated November 13, 1943 by Robert A. McGhee, Economic Warfare Section, Department of Justice, Chicago, Illinois.

from Milwaukee. It was thus necessary for Rikuo to manufacture all parts necessary for new construction. Up until 1937 when Mr. Child left Japan, the company was manufacturing motorcycles which were similar to Harley-Davidson motorcycles but which were not up to the standard maintained in Milwaukee.

## II. PRODUCTION

### A. Rikuo

The Rikuo Company was in 1937, a relatively small plant having a capacity of about 75 motorcycles per month. These were built principally for commercial use and were three-wheeled motorcycles with a large box (sanrinsha) attached behind the seat over the two rear wheels. These three-wheeled motorcycles are used by the Japanese forces for the same purposes that our forces use the "Jeep". As a personnel carrier, the motorcycle can carry about ten men and the driver, since it has a carrying capacity of about 1500 pounds. Machine guns are also attached to the rear car and the machine will then carry the driver and three men to operate the gun. The machine is also used to pull heavy guns. In 1934 Rikuo was also selling about 100 motorcycles a year to the Army. These machines, however, were made in Milwaukee and imported into Japan. The annual production of Rikuo, consisting of about 900 motorcycles, mostly for commercial use, was only about 10 per cent of the total production for the country.

Exhibit 1 is a picture of the 1924 model of the three-wheeled motorcycle produced by Rikuo. The motor, front wheel, and frame were bought from Harley-Davidson and the rear car was attached after the machine reached Japan. Exhibits 2, 3 and 4 are 1934 models which were produced entirely in Japan.

### B. Other Manufacturers

Correspondence between Nagai of Rikuo and Harley-Davidson indicates that as early as 1934 the entire production of three other companies was being sold to the Army and the police. These three companies were Okamoto, Shishito, and Nihon (Nissan) Jidosha.<sup>2</sup>

Toyo Kogyo K.K. also produces a three-wheeled motorcycle similar to those shown in Exhibits 2, 3 and 4. This machine was developed under the supervision of the Army and Navy, and it is presumed that the entire production is for the armed forces. Toyo Kogyo is the leading plant in Western Japan for the production of precision machinery for the armament industry.<sup>3</sup> In 1937 the Clearing Press Company installed three presses, style F 1750-48, F 2800-132, and F 2300-96, in a new plant built by this company on reclaimed land near Hiroshima, in which 10-horsepower cars similar to the Austin car were to be built. The estimated production was to be 5000 cars per year.

<sup>2</sup> See: Confidential Report on Japanese Automobile Industry (No. 2965) dated April 27, 1943 by Hyman B. Ritchin, Economic Warfare Section, Department of Justice, New York City.

<sup>3</sup> See: Confidential Report on Japanese Machine Tool Industry - History and Development (No. 2830, Chi-80) dated April 30, 1943 by Robert A. Nitschke, Economic Warfare Section, Department of Justice, Chicago, Illinois.

Exhibit 16 is a view of the new Toyo Kogyo plant which was built on the reclaimed land. The exact location of this plant is not known.

### III. MATERIALS AND EQUIPMENT

#### A. Raw Materials and Labor

When the Rikuo company began operations in 1934, it was necessary to import most of the vital parts of the motorcycle because of the inexperience of the workmen. Steel was imported from the Bethlehem Steel Company; steel castings and crankcase castings were supplied by Harley-Davidson; roller bearings were imported from Sweden; and connecting rods, exhaust valves, alloy and high carbon steel came from Harley-Davidson. The local foundries around Tokyo were trying to perfect their methods so they could make the castings but had not succeeded up until 1936.

There were about 75 men employed in the machine shop and other buildings connected with the manufacture of motorcycles. These men were recruited from the Navy and were adept enough to soon master the operations of the machine shop. They were trained by a Japanese engineer and toolmaker who had worked in the United States for many years. This engineer was assisted by selected key men who acted as instructors.

#### B. Equipment

When Rikuo started operations in 1934, it purchased a large number of second-hand tools from Harley-Davidson. The entire machine shop was operated from small line shafts driven by overhead motors using 10 to 15 horsepower each. There were about four of these line shafts, each operating several machines by belts.

The following list is a "fairly close list of machines used in the machine shop" in 1934.

Number of Machines	Size	Type
1	4-1/4"	Single spindle Gridley automatic screw machine
3	1-1/4"	Type A Cleveland automatic screw machine
1	3"	Jones & Lamson turret lathe
12	3/4"	Drill capacity - Spindles of No. 2 Avery drill press
1	1-1/2"	Capacity sliding head drill press
1		Heald internal grinder for cylinders
1		Taft Pierce thread miller
1	10x36"	Norton external cylindrical grinder
1	No. 2	Plain Kearney & Trecker milling machine
1	No. 4	Warner & Swasey hand screw machine
1		Special surface grinder, Japanese make
4	14"	Engine lathes, Japanese make
3	1"	Capacity drill press, Japanese make

(OVER)

<u>Number of Machines</u>	<u>Size</u>	<u>Type</u>
1	36x60"	Carburizing furnace, Japanese make
1	24x36"	Heat treating furnace, Japanese make
1		Lead pot, Japanese make
1		Cyanide pot, Japanese make
1	24x36"	Drawing furnace, Japanese make
1		Frame drawing furnace, Japanese make
1		Hand sand blast booth, Japanese make
1		Small rotary sand blast machine, Japanese make
2		Enameling ovens, Japanese make
1		Parkerizing tank, Japanese make

In 1937, Rikuo purchased a number of modern machine tools from Germany. A description of these tools is not available.

Exhibit 5 is an exterior view of the machine shop, which is the most important building in the group.

Exhibits 6, 7 and 8 are interior views of the machine shop, taken in 1934, showing the type machines used, and the overhead power, and giving a good view of the construction of the building.

#### IV. DESCRIPTION OF THE PLANT

##### A. Location of the Plant

The Rikuo plant is located about one-half mile south of the Shinagawa railroad station on the main electric line between Tokyo and Yokohama. The location of the plant, together with that of Sankyo, is shown on Exhibits 9 and 10. There is a street and a canal directly in front or south, of the plant. The street connects with the Tokyo-Yokohama highway about one block east of the plant. About one-quarter of a mile north, the Tokyo suburban line branches off to the west of the town, eventually encircling it. The four tracks of the Tokyo-Yokohama railroad continue south, passing the Rikuo plant on the east. Although Rikuo is located on the railroad, there are no connections, and all deliveries, etc. are made by trucks.

##### B. Buildings

Exhibit 11 is a view taken of the Rikuo plant from the roof of the Sankyo Company, with the camera pointing north.

The plant consists of about twelve buildings, none of which is over two stories high except the machine shop. Most of the buildings are about fifty years old and were used at one time by Sankyo Drug Company. The older buildings are constructed of heavy brick walls and tile roofs. The machine shop, which was constructed in 1933, covers an area of 60 x 100 feet. It has corrugated steel sides and the roof is so built that there are several sky lights, giving it a saw-toothed effect. Exhibit 5 affords an excellent view of this building and clearly shows its type of construction. There are a number of wooden storage houses with tile roofs.

Exhibit 12 is a sketch of the locations and uses of the various buildings that go to make up the plant.

The Rikuo plant, together with the Sankyo plant, occupies an area of about 10 acres and is separated by a curving street 60 feet wide and a canal 75 feet wide.

#### C. Power

The plant was dependent on the Tokyo Electric Company for its power in 1937. There are no known alternative sources.

Steam was used for heating and for the operation of wash tanks and rust-proofing tanks. The plant had its own furnace and boilers for the generation of steam.

Exhibit 14 is a view of the smokestack attached to the power building. To the left and south, just out of the picture, is located a large water storage tank built above the surrounding buildings.

Gas, which was used in large quantities for braising, heat treating, and in enameling ovens, was supplied by the local gas company. Exhibit 13 is an interior view of the heat treating and cleaning room located in the northwest corner of the area.

#### D. Surrounding Area

Sankyo Co., Ltd. is by far the most important strategic installation in this area. It is a 300-foot square, 4-story building with a court in the center. It is located just south of and across the street and canal from Rikuo. The building, built in 1933-1934, is air conditioned, is equipped with a modern sprinkler system, and is of reinforced concrete throughout. This company is one of the largest and most up-to-date pharmaceutical houses in Japan and is thought to be engaged 24 hours a day in the production of medicines and other pharmaceutical items for the use of the armed forces. The plant is operated by electricity supplied by the city of Tokyo. There is a large transformer station located near the railroad in the northeast corner of the Sankyo area. This is the only known source of electrical power. There are also warehouses belonging to Sankyo just northeast of Rikuo, marked "A" on Exhibit 11.

About one-quarter of a mile north of Rikuo is located an important highway bridge which crosses the railroad. It is a one-span steel bridge carrying two roadways, two car lines and two footways. It carries traffic across the railroad and connects with the Tokyo-Yokohama highway.

Further north of Rikuo is located the Shinagawa station, which is an important commuters' station as well as containing a number of marshalling yards.

(OVER)

Exhibit 15 is a sketch of the area surrounding Rikuo, showing the relative positions of Rikuo, Sankyo, the highway bridge, and the Shinagawa railroad station.

#### E. Destructibility

The wooden buildings of the Rikuo plant could be destroyed by incendiary bombs. While the intense heat of a fire would have very damaging effects on the machine shop, it is believed that high explosive shells are better suited for its destruction, in view of the importance of the building and the machines therein. All of the buildings are enclosed in a small area and are built close together so that it would be very difficult to damage one building without at the same time damaging several others.

The main building of the Sankyo plant, having been built to withstand earthquakes, would not be damaged to any great extent by incendiary bombs. The sprinkler system would put out any small fires that might start. The chemicals used, with the exception of alcohol, are not very inflammable or explosive and would do very little damage to the plant. High explosive shells are about the only effective instrument of destruction that could be used to advantage in bombing this plant. Such shells would immediately disrupt the operation of the machinery and the sprinkler system. The destruction of the transformer station would deprive the plant of electricity since there is no known alternative source of power.

The one-span highway bridge forms an important link in the Tokyo-Yokohama highway. Under this bridge are eight electric railroad tracks, four of them serving the Tokyo around-the-city suburban line, and the other four serving the Tokyo-Yokohama main railroad. The destruction of this bridge by high explosives would cause considerable damage to these tracks, as well as eliminating the usefulness of the bridge as a part of the highway.

#### SOURCES

1. E. V. Gumpert, Harley-Davidson Motorcycle Company, Milwaukee, Wisconsin, formerly in charge of the Export Department. He had never been to Japan but made his files available.
2. Alfred R. Child, Vega Aircraft Corporation, Chicago, Illinois, formerly representative of Harley-Davidson in Japan for 13 years. He was instrumental in organizing the Rikuo Company and operated it until 1936.
3. Fred C. Barr, 3724 South 104th St., Milwaukee, Wisconsin, production manager for Rikuo from 1933 to 1936. He was loaned to Rikuo by Harley-Davidson and was instrumental in perfecting the machine shop.

LIST OF EXHIBITS

1. 1924 model of three-wheeled motorcycle produced by Rikuo.  
(E. V. Gumpert, Harley-Davison Co., Milwaukee, Wisconsin)
2. 1934 model of motorcycle produced entirely by Rikuo. (E. V. Gumpert)
3. 1934 model of motorcycle produced entirely by Rikuo. (E. V. Gumpert)
4. 1934 model of motorcycle produced entirely by Rikuo. (E. V. Gumpert)
5. Exterior view of machine shop at Rikuo. (F. C. Barr, 3724 S. 104th  
Street, Milwaukee, Wisconsin)
6. Interior view of machine shop at Rikuo. (F. C. Barr)
7. Interior view of machine shop at Rikuo. (F. C. Barr)
8. Interior view of machine shop at Rikuo. (F. C. Barr)
9. New Map of Great Tokyo and Yokohama.
10. Map of Tokyo.
11. View of Rikuo plant taken from roof of Sankyo. Camera pointing  
north. (F. C. Barr)
12. Sketch of the buildings of Rikuo. (F. C. Barr)
13. Interior view of the heat treating and cleaning room. (F. C. Barr)
14. View of the smokestack. (F. C. Barr)
15. Sketch of the area surrounding Rikuo.  
(A. R. Child, Vega Aircraft Corporation, Chicago, Illinois.)
16. View of Toyo Kogyo new plant near Hiroshima.