

RESTRICTED

ENCLOSURE (D)

RESTRICTED

X-38(N)-4

ENCLOSURE (D)

MITSUBISHI RESIN-OIL FACTORY

SHIMABARA, KYUSHU

ENCLOSURE (D)

TABLE OF CONTENTS

Introduction Page 185

History and Organization Page 185

Personnel Page 185

Description of Process Page 185

Products and Production Capacity Page 186

Product Applications Page 186

Conclusions Page 186

Appendix I Outline of Mitsubishi Denki (Shimabara Kojo) Page 187

Appendix II Proposed Material Flow Diagram Shimabara Resin-
Oil Factory Page 188

ENCLOSURE (D)SUMMARY

The Mitsubishi Resin-oil Factory, SHIMABARA, Kyushu, was visited by the Petroleum Team of the U. S. Naval Technical Mission to Japan on 18 October, 1945. Data obtained, including information concerning management details, equipment, details of manufacture, and type of products, are presented herewith.

This plant is typical of units set up by the Japanese government throughout Japan for the purpose of preparing pine root oil by the dry distillation of pine roots. This oil has been used as an emergency fuel substitute for various types of gasoline engines.

I. INTRODUCTION

The Mitsubishi Resin-Oil Factory is located in SHIMABARA, Nagasaki Prefecture, Kyushu. The plant is located about one mile west of SHIMABARA on the road to UNZEN. Mr. ISHIGARA, the Business Manager, was interviewed by the Petroleum Team on 18 October 1945 and assisted in supplying the information presented herewith.

II. HISTORY AND ORGANIZATION

The Mitsubishi Resin-Oil Factory at SHIMABARA was established at the request of the Japanese government in June 1945. The plant is typical of a large group of such plants which were set up throughout Japan during 1945. This factory is a unit of Mitsubishi Denki in NAGASAKI and is directly controlled by the parent organization. It was originally designed to manufacture tar paint and solvents for insulating materials.

Details concerning the evaluation of the property and equipment are presented in Appendix I.

III. PERSONNEL

The Director of the factory is Mr. Kiichi ISHIGURO. There are a total of 55 employees in the organization, 34 of whom are shop workers and the remainder comprise the office force.

IV. DESCRIPTION OF PROCESS

Pine roots are dry distilled by heating in metal retorts. After distillation the charcoal is used as fuel for heating the next batch of roots. The products of the distillation are pine tar and crude oil. The tar is collected in metal containers attached to the retort outlets and the oil is condensed by circulating in metal pipes through a large cooking tank.

The tar and the oil are then distilled in separate units. The oil is fractionated and one cut is prepared which has a boiling range of 120°C-230°C. This cut is called "Turpentine Number 1". The remaining oil is mixed with the tar and distilled off by simple retort-type, distillation. The product is called "Turpentine Number 2" and has a boiling range of 230°C - 380°C. Both oils are neutralized to a phenolphthalein end point with a 5% caustic soda solution. The residue is pitch for which there is not useful application at present.

At the time of the inspection of this plant the fractionating column was not available for inspection, since it had been corroded beyond repair. Scarcity of materials had prohibited the construction of a new unit.

ENCLOSURE (D)V. PRODUCTS AND PRODUCTION CAPACITY

The principal products are "Turpentine No. 1" and "Turpentine No. 2". Pitch is a by-product of the process. ~~Intermediates of interest are the crude oil and pine tar which are obtained during the process.~~ Pint samples of each grade of turpentine and the two intermediates, and a sample of pitch were obtained and are being sent to the Ordnance Investigating Laboratory, Indian-head, Md. for forwarding to the Naval Research Laboratory, Anacostia, Md. (NavTechJap Serial No. JE-26-0007, Items 1-5)

The normal monthly production of the plant is 40 drums of No. 1, 60 drums of No. 2, and 2 tons of pitch. At the present time none of the material has been shipped and the entire production is on hand. The stock on hand is 151 drums of No. 1, 58 drums of No. 2, and approximately 10 tons of pitch.

VI. PRODUCT APPLICATIONS

"Turpentine No. 1" is used as a solvent, or mixed with alcohol, as a fuel for gasoline engines. "Turpentine No. 2" may also be mixed with alcohol and used as an automotive gasoline engine fuel or, without mixing, it may be used as fuel oil for small craft. At the present time there is no application for the pitch formed during the distillation process.

A simplified material flow diagram, showing proposed applications of the various products is presented in Appendix II. This diagram describes proposed plans and has not yet been incorporated in the actual operation of the plant.

VII. CONCLUSIONS

This plant is typical of many similar units which have been set up by the Japanese government, altho the fractionating temperatures differ somewhat from those established by the Japanese Navy. As such it is of interest since the existence of these plants indicates the acute need for any material which could serve as a gasoline engine fuel.

ENCLOSURE (D).

APPENDIX I

OUTLINE OF MITSUBISHI DENKI (SHIMABARA KOJO)

(As submitted to the U. S. Naval Technical
Mission to Japan)

1. Name - Mitsubishi Denki (Shimabara Kojo.)
2. Director - Kuichi ISHIGURO
3. Factory Management - The plant is a branch of Mitsubishi Denki in NAGASAKI. The parent organization controls the finance, processes, raw materials, and products of subject plant.
4. Date Established - June 1945
5. Cost of Land, Buildings and Equipment - 375,000 yen
6. Products and Product Applications
 - a. Turpentine No. 1 - Fuel, Solvent
 - b. Turpentine No. 2 - Marine fuel
 - c. Pitch - (By product, no application)
7. Monthly Production Capacity

a. Turpentine No. 1	40 drums (2000 gal.)
b. Turpentine No. 2	60 drums (3000 gal.)
c. Pitch	2 tons
8. Pine Root in Stock

a. Turpentine No. 1	151 drums
b. Turpentine No. 2	58 drums
c. Pitch	10 tons
9. Intermediate Products in Stock

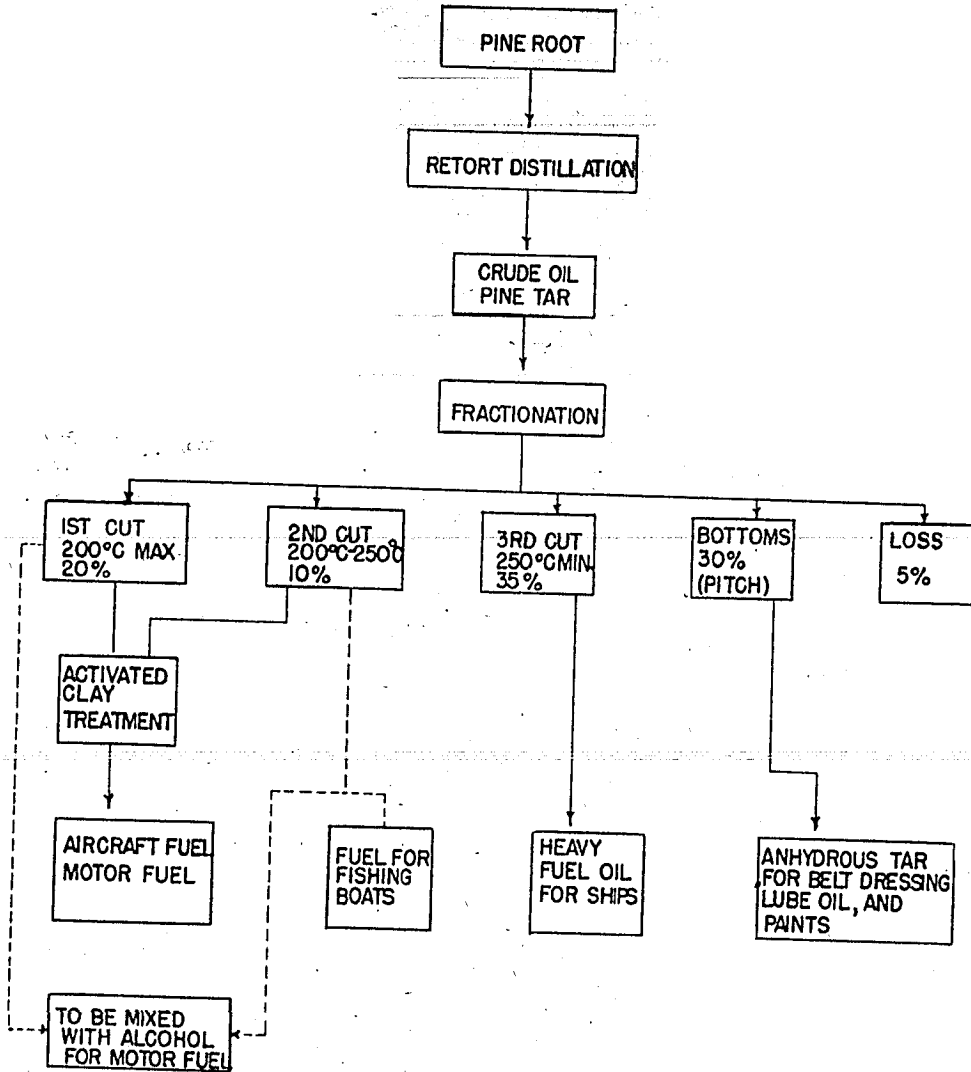
a. Crude Pine Root Oil	129 drums
b. Pine Root Tar	539 drums
10. Employees - 55

ENCLOSURE (D)

APPENDIX II

PROPOSED MATERIAL FLOW DIAGRAM

SHIMABARA RESIN-OIL FACTORY



DOTTED LINES REPRESENT ALTERNATE APPLICATIONS