DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

APPLICATION FOR MOVEMENT AND AUTHORIZED USE OF DESIGNATED REPARATION MACHINERY AND EQUIPMENT

April 25, 1950

To: Minister of Finance

From: President of Dainippon Gum K.K.
480 Higashisabarei, Hofu-shi, Yamaguchi-ken.

(1) Name (Code No.) and Location of the plant which intendeds to use designated reparation machinery and equipment.

Dainippon Gum K.K.
480 Higashisabarei, Hofu-shi, Yamaguchi-ken.

(2) Name (Code No.) and Location of the plant where designated reparation machinery and equipment to be used actually exist.

Iwakuni Ex-Army Fuel Depot (45-5)
Shozoku, Iwakuni-shi, Yamaguchi-ken.

(3) List of designated reparation machinery and equipment to be moved and used.

(A) Machinery

Inv. No.	Name of Machinery	Specification	Qt.	Remarks
45-5-1F10	Gum Roller	Diam.: 500 mm Length: 1500 mm	1	No reduction gear.
45-5-2F10	"	"	1	"
45-5-3F10	"	"	1	"
45-5-4F10	Gum Calender	Diam.: 300 mm Length: 750 mm	1	"
45-5-447	Electric Motor	20 H.P.	1	
45-5-200	Air Compressor	Pressure: 7kg/cm2 Capacity: 1.44 m3/m	1	
		Total	6	

(B) Building None

(C) Land None

(4) Necessity for movement and use of machinery and equipment.

(A) Necessity for Use.

a. Our factory needs rationalization of industry concerning production for domestic consumption. Rubber products which

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are both necessaries of life and fundamental industrial materials had been placed for long under government control in respect to production, distribution and price. But on January 1. 1950, control over designated production material, concerning crude rubber, reclaimed rubber, and scrap rubber, was abolished. Further, direction of production after the 4th quarter of 1949 have been abandoned. Therefore almost all controls have been abolished.

Consequently, we, manufacturers of rubber goods, must produce a great amount of superior and cheaper products with responsibility and the best of our ability, and contribute for the reconstruction of Japanese economy which is at present in a state of confusion.

It is, therefore, our duty to meet the present day economical situation with not only the improved quality of products to be resulted from our long accumulated experiences, but also an early rationalized enterprise achieved from various points of view.

b. Our factory needs rationalization of industry also in the line of production for exportation. The importance of the export trade in Japanese economy is beyond all questions. In view of this fact we sent our samples to Central and South America through Igawa Firm in Tokyo and Tateishi Firm in Argentina, and we have also planned to export our products to Formosa through negociation with the Chinese Merchants Association in Japan. But in spite of all these efforts of ours we could not get any contract with them, due to the high cost of production. Thus, we have recognized the necessity of hastening the rationalization of our industry not only for production of domestic consumption but also for that of export.

c. Our factory wants to reinforce our equipment for industrial rationalization. The main equipment of our factory at present is shown in the accompanying list (No. 1). Owing to the total destruction of our plant by the fire in 1940, the damage caused to our factory by a typhoon in 1942, and material shortage during and after the war, our constant efforts to equip our factory since the establishment of our factory have been so far very unsuccessful because of the following defects.

(1) Generally speaking, equipments of our factory are of small-sized and inefficient.

(2) Connection system among machines is far from satisfaction (unballanced).

(3) The low efficiency of gum rollers which are the major equipments of our plant. Therefore, if we continue production in this state, we shall have either to suspend operation of a part of the facilities, controlling the amount of production, or to prolong daily operation hours of smaller gum rollers, etc., which have low efficiency. In both cases, we shall be obliged to be content with low efficiency and high cost of production. Naturally we are very anxious to reinforce facilities in order to rationalize our enterprise.

d. It is hopeless and difficult to purchase such equipments as planned to install as supplemental equipments from private firms. Provided that we purchase necessary additional equipments, we should encounter the following inconvenience, and quick and proper rationalization will not be realized.

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(1) Impossible to acquire the above mentioned items so quickly as desired, for it takes nearly one year to manufacture them.

(2) The following construction cost is too much for us to afford, and ruins our finance.

Gum roller	3	¥ 6,000,000
Gum Calender	1	1,000,000
Electric Motor	1	50,000
Air Compressor	1	200,000
	Total:	¥7,250,000

e. To reinforce such main equipments of our factory as gum rollers, etc., we would desire to utilize the designated reparation equipments by moving and reinstalling. If we are able to move and use the above-stated reparation machineries and equipments applied for, the synthetical efficiency will increase as shown in the accompanying list (No. 2) and great influences will be exerted upon the rationalization of our enterprise as follows:

(1) Management of business will be rationalized owing to 50% increase in total amount of production, because gum rollers will become larger and more efficient.

(2) As efficiency of each machine will be well-balanced, we shall be able to stop inefficient operation, realize mass production, and improve the quality of products.

Such being the condition, we should like to be given permission to move and use the above-mentioned equipments.

(B) Necessity of Movement.

As there are no other machineries and equipments to be used for rubber goods manufacturing at Iwakuni Ex-Army Fuel Depot, where the above-stated equipments exist, independent operation for the said enterprise can not be carried on there.

In consequence, if this request is granted, we shall move the machineries and equipments to our plant in Hofu-shi and repair; and by providing such accessories as gear couplings and electric motors, we shall be able to utilize them synthetically together with the equipments of our plant.

Katsuhiko Kurokawa
President

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APPROVAL OF THE APPLICANT, CONCERNING RESPONSIBILITY OF CUSTODY FOR DESIGNATED REPARATION MACHINERY AND EQUIPMENT

480 Higashisanbarei,
Hofu-shi, Yamaguchi-ken

April 25, 1950.

Mr. Hayato Ikeda

Minister of Finance.

Sir,

In case the movement and authorized use of the designated reparation machinery and equipment applied for is granted, I shall charge them assuming the responsibility.

Yours truly,

Katsuhiko Kurokawa
President of Dainippon Gum K.K.

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YAMAGUCHI PREFECTURAL GOVERNMENT
YAMAGUCHI, HONSHU, JAPAN

May 6, 1950

SUBJECT: Application for Temporary Use of Reparations Objects

TO: Minister of Finance

Sir,

Dainippon Gum K.K., founded in 1933 at the present location, is the sole plant in this prefecture that is engaged in the manufacture of bicycle tyres and tubes. Even under the confused social conditions subsequent to the War, the plant carried on a sound business and contributed a great deal not only toward the prosperity of industry in this prefecture but also toward the economic reconstruction of own country.

With a view to meeting the current economic situation, the above mentioned plant has requested me to afford assistance in connection with the application for the temporary use of designated reparations objects such as gum rollers etc.

This application, I consider, is very timely and its contention very rational.

I shall be much oblized if you would grant their request in consideration of the above circumstances.

Yours respectfully,

For Tsutomu Hironaga

Tatsuo Tanaka,
Governor,
Yamaguchi Pref. Gov't.

FT/yt

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ENTERPRISE PLAN

Dai-Nippon Gum Co., Ltd.

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ENTERPRISE PLAN

I. Purpose of Enterprise

It was utterly inevitable measure that a strict control was placed upon rubber products not only during the war but also after it, in view of the dependence of low materials upon import from foreign markets and the importance of rubber products as the necessaries of life. Nevertheless, this control, which had been prescribed without deep consideration about peculiarity of each industrialist, caused to wither one with restrictions thereof and to deprive each of enterprise completely.

Control in the country having been removed and return to the international economic circles by means of trade by private companies having been promised today, it is absolutely impossible to continue enterprise in the state with which we have been familiar for long. In other words, the urgentest problem we producers are now confronting to solve is:

"By how rationalizing the enterprise with our own capacity and by supplying how excellent and reasonable-priced products to domestic and foreign markets, will it be possible for us to contribute to the rehabilitation of national economy?"

In response to the aforementioned fact, we have hereby launched this project of increased production, so as not only to increase the amount of production but to improve quality and to reduce cost of production by amplifying and rationalizing a portion of the facilities at an earliest possible time.

II. Installation Plan

As stated in the application, it is necessary for us to level unbalanced capacities of our existing facilities as the first step of rationalization.

A. Existing Facilities:- See attached table 1.

The capacity of the gum roller is particularly small in comparison with other installations.

B. Plan for Additional Installation

As to gum rollers and a few others, which compose the major part of additional installations and require long period of time when newly manufactured, we have decided to move and utilize reparation machines with your authorized permission. Lacking subordinate equipments for above-mentioned machines and some minor installations are included in a purchasing plan.

1. Reparation Machines Planned to Be installed:

Article	Specification	Qt.
Gum Roller	Diam. of Roller: 500 mm	3
Gum Calender	Diam. of Roller: 300 mm	1
Electric Motor	20 HP	1
Air Compressor	Pressure: 7 Kg.	1

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2. Supplementary Equipments to Reparation Machines:

Lacking equipments for machines listed above planned to be purchased from private companies are:

Article	Specification	Qt.	Price
Speed Reducer	150 HP	3	¥1,050,000
Speed Reducer	20 HP	1	150,000
Electric Motor	150 HP	3	600,000
Electric Motor	10 HP	1	30,000
		Total:	¥1,830,000

3. Equipments Unrelated to Reparation Machines:

The following equipments essential to increase capacities of cloth cutting and gum calendering are to be purchased from private companies.

Article	Specification	Qt.	Price
Bias Cutter	Width: 65"	1	¥250,000
Tuber	Diam.: 4"	1	200,000
Motor	10 HP	1	30,000
Motor	3 HP	1	10,000
		Total:	¥490,000

C. Completion Date of Additional Installations:

End of July

D. Facilities on Completion of Additional Installations:

The present hand-operated lower and upper stretching system in tire forming process is to be replaced by efficient case-making machine which is in test operation.

III. Producing Plan

A. Productive Capacity of Existing Facilities:

Article	Unit	Quantity
Bicycle Tire	ea.	18,000
Bicycle Tube	ea.	18,000
Reclaimed Rubber	kg.	9,000

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B. Actual Production during the Last Three Months (reference)

Article	Unit	Jan., 50	Feb., 50	Mar.,50
Bicycle Tire	ea.	8,030	19,900	19,114
Bicycle Tube	ea.	7,180	25,474	19,092
Reclaimed Rubber	kg.	2,000	2,422	5,200

C. Proposed Monthly Production after Completion of Additional Installations.

Article	Unit	Quantity
Bicycle Tire	ea.	27,000
Bicycle Tube	ea.	27,000
Reclaimed Rubber	kg.	15,000

IV. Plan for Raising Funds

A. Fund for Installation

1. Required Installation Fund:

a. Dismantling, Packing & Transportation Expenses for Reparation Machines	¥ 200,000
b. Purchasing Expenses for Supplemental Equipments to Reparation Machines (Refer to paragraph II-B-2)	¥1,830,000
c. Purchasing Expenses for Additional Equipments Unrelated to Reparation Machines	¥ 490,000
d. Installing Expenses	¥ 337,500
	¥2,857,500

2. Time Installation Fund is Required:

From May to July, 1950

3. Means of Raising Installation Fund:

Loaning from Bank	¥1,000,000
Reserved Fund of Company	¥1,857,500

B. Floating Capital (Monthly)

1. Necessary Working Fund:

Necessary working fund to be required in producing 27,000 bicycle tires and same number of tubes and 15,000 kg. of reclaimed rubber, as stated in the producing plan after completion of additional installation, is as follows:

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Material Expenses	¥ 7,975,815
Wages and Salaries	825,000
Cost of Production	503,500
Business Expenses	1,168,000
Total:----------	¥10,472,315

2. Means for Raising Working Fund:

Return shall be appropriated to it.

The actual transaction results in February and March in 1950 were ¥8,939,210 and ¥10,008,525 respectively; and, when we take money due for products sold on credit, stocks and increase of order into consideration, the interim expansion of working fund expected to be necessary for completion of additional installation will be, we firmly believe, amply covered.

V. Plan for Income and Expenditure

A. Income:

Article	Qt.	Unit Price	Income
Bicycle Tire	27,000	@ ¥370.00	¥ 9,990,000
Bicycle Tube	27,000	@ ¥ 80.00	¥ 2,160,000
Reclaimed Rubber	15,000 Kg.	@ ¥ 70.00	¥ 1,050,000
Loss		(—)	¥ 660,000
		Total:----------	¥12,540,000

B. Expenditure:

Article	Expenditure
Material Expenses	¥ 7,975,815
Wages & Salaries	¥ 825,000
Production Cost	¥ 503,500
Business Expenses	¥ 1,168,000
Total:--------	¥10,472,315

C. Balance: ¥2,067,685

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Attached
Table No. 1

Section	Process.	Name of Machine
Common Section	Steam generation	Boiler
		"
	Transformation	Transforme
		"
Bicycle Tire & Tube	Rubber cutting	Rubber cutt
	Mastication	Gum-rolle
Bicycle Tire	Mixing	"
	Rubber dissolving	"
	Warming (Tread)	"
	" (Insuration rubber)	"
	" (Bead)	"
	" (Bag)	
	Calendering (Tread)	Gum-calende
	" (Insuration rubber)	"
	" (Bead)	"
	Tubing (Bag)	Tuber
	Spreading	Spreader
	Cloth cutting	Bias cutter

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ocess.	Equipment			Capacity of consumption
	Name of Machinery	Size	Quantity	
generation	Boiler	5' × 20'	2.	Raw rubber
	"	5' × 15'	1.	Scrap rubber
formation	Transformer	200 K V A	3.	Amont of electrization
	"	10 K V A	1.	
r cutting	Rubber cutter	Blade 28"	1.	Raw rubber
i cation	Gum-roller	18" × 48" ①	1	"
xing	"	16" × 42" ②③	2.	Compounded rubbr
dissolving	"	16" × 42" ④	1.	"
g (Tread)	"	14" × 36" ⑤	1.	"
(Insuration rubber)	"	12" × 27" ⑥	1.	"
(Bead)	"	14" × 36" ⑦	1	"
(Bag)				
ring (Tread)	Gum-calender	12" × 23" ⑧	1.	"
(Insuration rubber)	"	12" × 30" ⑨	1.	"
(Bead)	"	8" × 20" ⑩	1.	"
r (Bag)	Tuber	Caliber 4"	1.	"
reading	Spreader	Width 65"	2.	Cordfabric Cloth
cutting	Bias cutter	Width 65"	1.	Cordfabric Cloth

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OPERATIVE CAPAC
OF EXISTING EQUIPM

ent						
Size	Quantity	Capacity of material consumption (monthly)		Producing Capacity (monthly)	
5' x 20'	2.	Raw rubber	25.000 kg	Tire	55.500
5' x 15'	1.	Scrap rubber	30.000 "	Tube	55.500 "
200 KVA	3.	Amont of electrization	84.000 KWH	Reclaimed rubber	24.000 Kg
10 KVA	1.			Tire	35.000 piec
de 28"	1.	Raw rubber	37.500 kg	Tube	35.000 "
8" x 48" ①	1	"	10.500 "	Reclaimed rubber	25.000 kg
6" x 42" ②③	2.	Compounded rubbr	18.750 "	Tire	83300 piec
6" x 42" ④	1.	"	4.000 "	Tube	83.300 "
4" x 36" ⑤	1.	"	12.500 "	Tire	23.300 "
2" x 27" ⑥	1.	"	2.250 "	Tube	23.300 "
4" x 36" ⑦	1	"	4.050 "	Tire	22.300 "
				"	24.600 "
				"	21.400 "
				"	34.600 "
				"	22.500 "
2" x 23" ⑧	1.	"	19.750 "	"	22.500 "
2" x 30" ⑨	1.	"	2.600 "	"	33.800 "
8" x 20" ⑩	1.	"	6.000 "	"	40.000 "
ber 4"	1	"	2.500 "	"	42.800 "
h 65"	2	Cordfabric	175 Rolls	"	62.500 "
		Cloth	75 "		
h 65"	1.	Cordfabric	88 "	"	45.000 "
		Cloth	37 "		

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OPERATIVE CAPACITY OF EXISTING EQUIPMENT

acity of material sumption (monthly)	Producing Capacity (monthly)	Remarks
ber 25.000 kg	Tire 55.500	
	Tube 55.500 "	
bber 30.000 "	Reclaimed rubber 24.000 kg	
of ation 84.000 KWH	Tire 35.000 piece	
	Tube 35.000 "	
	Reclaimed rubber 25.000 kg	
ber 37.500 kg	Tire 83.300 piece	
	Tube 83.300 "	
" 10.500 "	Tire 23.300 "	
	Tube 23.300 "	
ded 18.750 "	Tire 22.300 "	
" 4.000 "	" 24.600 "	
" 12.500 "	" 21.400 "	
" 2.250 "	" 34.600 "	
" 4.050 "	" 22.500 "	
	" 22.500 "	
" 19.750 "	" 33.800 "	
" 2.600 "	" 40.000 "	
" 6.000 "	" 42.800 "	
" 2.500 "	" 62.500 "	
ric 175 Rolls	" 45.000 "	
75 "		
ric 88 "	" 22.200 "	
37 "		

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Bicycle Tire	Warming (Tread)
	" (Insuration rubber)
	" (Bead)
	" (Bag)
	Calendering (Tread)
	" (Insuration rubber)
	" (Bead)
	Tubing (Bag)
	Spreading
	Cloth cutting
	Casing (Inside)
	" (Outside)
	Vulcanisation
	The others
Bicycle Tube	Mixing
	Warming
	Strainning
	Tubing
	Vulcanisation
	Finishing
	The others
Reclaimed Rubber	Washing
	Cracking
	Grinding
	Mixing
	Heating
	Refining
	Finishing

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	Warming (Tread)	"	14" × 36"	⑤	1.
	" (Insuration rubber)	"	12" × 27"	⑥	1.
	" (Bead)	"	14" × 36"	⑦	1
	" (Bag)				
	Calendering (Tread)	Gum-calender	12" × 23"	⑧	1.
	" (Insuration rubber)	"	12" × 30"	⑨	1.
	" (Bead)	"	8" × 20"	⑩	1.
e	Tubing (Bag)	Tuber	Caliber 4"		1.
	Spreading	Spreader	Width 65"		2
	Cloth cutting	Bias cutter	Width 65"		1.
	Casing (Inside)	case			12.
	" (Outside)	Case making machine			1
		case			6.
	Vulcanisation	Wrapping machine			4
		Watch case (Horizontal)			26
		" (Vertical)			4
	The others				
	Mixing	Gum-roller	18" × 48"	⑪	1.
	warming	"	12" × 30"	⑫	1.
	Strainning	Strainer	Caliber 6"		1.
e	Tubing	Tuber	Caliber 4"		1
	Vulcanisation	Vulcaniser	3' × 5'		2.
	Finishing				
	The others	Air compressor	5 kg		1.
	Washing	Washing machine			1
	Cracking	Cracker-roller	6" × 12"	⑬	1
ber	Grinding	Gum-roller	16" × 28"	⑭	1
	Mixing	Mixer	3' × 5'		1
	Heating	Autoclave	3' × 5'		5.
	Refining	Gum-roller	14" × 36"	⑮⑯	2.
	Finishing	"	14" × 36"	⑰	1

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"	14" × 36" ⑤	1.	"	12.500 "	"
"	12" × 27" ⑥	1.	"	2.250 "	"
"	14" × 36" ⑦	1	"	4.050 "	"
calender	12" × 23" ⑧	1.	"	19.750 "	"
"	12" × 30" ⑨	1.	"	2.600 "	"
"	8" × 20" ⑩	1.	"	6.000 "	"
uber	Caliber 4"	1.	"	2.500 "	"
eader	Width 65"	2	Cordfabric	175 Rolls	"
			Cloth	75 "	
cutter	Width 65"	1.	Cordfabric	88 "	"
			Cloth	37 "	
se		12.			"
king machine		1.			
se		6.			"
machine		4.			
e (Horizontal)		26.			"
(Vertical)		4.			
roller	18" × 48" ⑪	1.	Compounded rubber	7.500 kg	Tube
"	12" × 30" ⑫	1.	"	4.675 "	"
ainer	Caliber 6"	1.	"	8.750 "	"
ber	Caliber 4"	1	"	4.675 "	"
aniser	3' × 5'	2.			"
					"
mpressor	5 kg	1.			"
g machine		1	Scrap rubber	37.500 kg	Reclaimed rubber
r-roller	6" × 12" ⑬	1	"	18.750 "	"
roller	16" × 28" ⑭	1	"	15.000 "	"
xer	3' × 5'	1	Rubber powder	25.000 "	"
clave	3' × 5'	5.	"	25.000 "	"
roller	14" × 36" ⑮ ⑯	2.	"	15.000 "	"
"	14" × 36" ⑰	1	"	15.000 "	"

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1.	"	12.500 "	"	21.400 "
1.	"	2.250 "	"	34.600 "
1	"	4.050 "	"	22.500 "
			"	22.500 "
1.	"	19.750 "	"	33.800 "
1.	"	2.600 "	"	40.000 "
1.	"	6.000 "	"	42.800 "
1	"	2.500 "	"	62.500 "
2	Cordfabric	175 Rolls		
	Cloth	75 "	"	45.000 "
1.	Cordfabric	88 "		
	Cloth	37 "	"	22.200 "
12.				
1.			"	39.800 "
6.			"	33.800 "
4.				
26.			"	44.500 "
4.				
				40.000 "
1.	Compounded rubber	7.500 kg	Tube	34.000 "
1.	"	4.675 "	"	21.000 "
1.	"	8.750 "	"	39.700 "
1.	"	4.675 "	"	21.200 "
2.			"	54.000 "
			"	40.000 "
1.			"	21.200 "
1	Scrap rubber	37.500 kg	Reclaimed rubber	30.000 kg
1	"	18.750 "	"	15.000 "
1	"	15.000 "	"	12.000 "
1	Rubber powder	25.000 "	"	25.000 "
5.	"	25.000 "	"	25.000 "
2.	"	15.000 "	"	15.000 "
1	"	15.000 "	"	15.000 "

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2.500 "	"	21.400 "	
2.250 "	"	34.600 "	
4.050 "	"	22.500 "	
	"	22.500 "	
9.750 "	"	33.800 "	
2.600 "	"	40.000 "	
6.000 "	"	42.800 "	
2.500 "	"	62.500 "	
175 Rolls	"	45.000 "	
75 "			
88 "	"	22.200 "	
37 "			
	"	30.800 "	
	"	33.800 "	
	"	44.500 "	
		40.000 "	
7.500 kg	Tube	34.000 "	
4.675 "	"	21.000 "	
8.750 "	"	39.700 "	
4.675 "	"	21.200 "	
	"	54.000 "	
	"	40.000 "	
	"	21.200 "	
7.500 kg	Reclaimed rubber	30.000 kg	
8.750 "	"	15.000 "	
5.000 "	"	12.000 "	
5.000 "	"	25.000 "	
5.000 "	"	25.000 "	
5.000 "	"	15.000 "	
5.000 "	"	15.000 "	

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Attached
Table No. 2

Section	Process	Name of
Common Section	Steam generation	Bo
	Transformation	Tran
Bicycle Tire & Tube	Rubber cutting	Rubb
	Mastication	Gum
Bicycle Tire	Mixing	
	Rubber dissolving	
	Warming (Tread)	
	" (Insuration rubber)	
	" (Bead)	
	" (Bag)	
	Calendering (Tread)	Gum -
	" (Insuration rubber)	
	" (Bead)	
	Tubing (Bag)	T
	Spreading	Sp

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

2

OP
AFTER EX

	Process.	Equipment		
		Name of Machinery	Size	Quant
tion	Steam generation	Boiler	5′ × 20′	2
		"	5′ × 15′	1.
	Transformation	Transformer	200 K V A	3.
		"	10 K V A	1.
Tube	Rubber cutting	Rubber cutter	Blade 28″	1.
	Mastication	Gum-roller	20″ × 59″ ®	1.
	Mixing	"	20″ × 59″ ®	1.
		"	16″ × 42″ ②	1.
	Rubber dissolving	"	18″ × 48″ ①	1.
	Warming (Tread)	"	16″ × 42″ ③	1.
	" (Insuration rubber)	"	12″ × 27″ ⑥	1.
	" (Bead)	"	14″ × 36″ ⑦	1.
		"	12″ × 30″ ⑨	1.
	" (Bag)	"	12″ × 30″ ⑫	1.
	Calendering (Tread)	Gum-calender	12″ × 23″ ⑧	1.
	" (Insuration rubber)	"	12″ × 30″ ®	1.
	" (Bead)	"	8″ × 20″ ⑩	1.
re	Tubing (Bag)	Tuber	Caliber 4″	1.
	Spreading	Spreader	Width 65″	2.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

OPERATIVE CAPACITY AFTER EXTENSION EQUIPMENT INSTA

Equipment			Capacity of consumption	material (monthly)	Producin (mo
achinery	Size	Quantity			
er	5′ × 20′	2.	Raw rubber	25.000 kg	Tire
	5′ × 15′	1.	Scrap rubber	30.000 "	Tube
ormer	200 K V A	3.	Amont of electrization	84.000 K.W.H	Tire
	10 K V A	1.			Tube
utter	Blade 28″	1.	Raw rubber	37.500 kg	Tire
					Tube
ller	20″ × 59″ ®	1.	"	14.000 "	Tire
	20″ × 59″ ®	1.			Tube
	16″ × 42″ ②	1.	Compounded rubbr	28.125 "	Tire
	18″ × 48″ ①	1.	"	6.000 "	"
	16″ × 42″ ③	1.	"	20.000 "	"
	12″ × 27″ ⑤	1.	"	2.250 "	"
	14″ × 36″ ⑦	1.			
	12″ × 30″ ⑨	1.	"	4.875 "	"
	12″ × 30″ ⑫	1.	"	2.000 "	"
der	12″ × 23″ ⑧	1.	"	19.750 "	"
	12″ × 30″ ®	1.	"	2.600 "	"
	8″ × 20″ ⑩	1.	"	6.000 "	"
r	Caliber 4″	1.	"	2.500 "	"
r	Width 65″	2.	Cordfabric	175 Rolls	
			Cloth	75 "	"

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

OPERATIVE CAPACITY
R EXTENSION EQUIPMENT INSTALLED

	Quantity	Capacity of material consumption (monthly)		Producing Capacity (monthly)		Remarks
	2.	Raw rubber	25.000 kg.	Tire	55.500	
	1.	Scrap rubber	30.000 "	Tube	55.500 "	
					24.000 kg.	
	3.	Amont of electrization	84.000 K.W.H	Tire	35.000	
	1.			Tube	35.000 "	
					25.000 kg.	
	1.	Raw rubber	37.500 kg.	Tire	83.300	
				Tube	83.300 "	
®	1.	"	14.000 "	Tire	31.100 "	← 45-5-1F10
				Tube	31.100 "	
®	1.	Compounded rubbr	28.125 "	Tire	33.500 "	← 45-5-2F10
②	1.					
①	1.	"	6.000 "	"	37.000 "	
③	1.	"	20.000 "	"	34.300 "	
⑥	1.	"	2.250 "	"	34.000 "	
⑦	1					
⑨	1.	"	4.875 "	"	34.300 "	
⑫	1.	"	2.000 "	"	50.000 "	
⑬	1.	"	19.750 "	"	33.800 "	
⑭	1.	"	2.600 "	"	40.000 "	← 45-5-4F10
⑩	1.	"	6.000 "	"	42.800 "	
	1.	"	2.500 "	"	62.500 "	
	2.	Cordfabric	175 Rolls			
		Cloth	75 "	"	49.000 "	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

CAPACITY
EQUIPMENT INSTALLED

f material (monthly)	Producing Capacity (monthly)	Remarks.
25.000 kg	Tire 55.500	
	Tube 55.500 "	
30.000 "	24.000 kg	
	Tire 35.000	
84.000 K.W.H	Tube 35.000 "	
	25.000 kg	
37.500 kg	Tire 83.300	
	Tube 83.300 "	
14.000 "	Tire 31.100 "	← 45-5-1F10
	Tube 31.100 "	
28.125 "	Tire 33.500 "	← 45-5-2F10
6.000 "	" 37.000 "	
20.000 "	" 34.300 "	
2.250 "	" 34.000 "	
4.875 "	" 34.800 "	
2.000 "	" 50.000 "	
19.750 "	" 33.800 "	
2.600 "	" 40.000 "	← 45-5-4F10
6.000 "	" 42.800 "	
2.500 "	" 62.500 "	
175 Rolls		
75 "	" 49.000 "	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

Bicycle Tire	" (Bag)	
	Calendering (Tread)	Gum-c
	" (Insuration rubber)	
	" (Bead)	
	Tubing (Bag)	Tu
	Spreading	Spre
	Cloth cutting	Bias
	Casing (Inside)	ca
	" (Outside)	Casemak ca
	Vulcanisation	Wrapping Watchcase "
	The others	
Bicycle Tube	Mixing	Gum-
	warming	"
	Strainning	Stra
	Tubing	Tu
	Vulcanisation	Vulca
	Finishing	
	The others	Air co "
Reclaimed Rubber	Washing	Washing
	Cracking	Cracke Gum-
	Grinding	Gum-
	Mixing	Mi
	Heating	Auto
	Refining	Gum-
	Finishing	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

" (Bag)	"	12 × 30	⑨	
Calendering (Tread)	Gum-calender	12" × 23"	⑧	1.
" (Insuration rubber)	"	12" × 30"	⑦	1.
" (Bead)	"	8" × 20"	⑩	1.
Tubing (Bag)	Tuber	Caliber 4"		1.
Spreading	Spreader	Width 65"		2.
Cloth cutting	Biascutter	Width 65"		1.
	"	"		1.
Casing (Inside)	case			12.
	Casemaking machine			1
" (Outside)	case			6.
	Wrapping machine			4.
Vulcanisation	Watchcase (Horizontal)			26.
	" (Vertical)			4.
The others				
Mixing	Gum-roller	18" × 48"	⑪	1.
warming	"	14" × 36"	⑤	1.
Strainning	Strainer	Caliber 6"		1.
Tubing	Tuber	Caliber 4"		1.
	"	"		1.
Vulcanisation	Vulcaniser	3' × 5'		2.
Finishing				
The others	Air compressor	5 kg		1.
	"	17 kg	⑦	1.
Washing	Washing machine			1.
Cracking	Cracker roller	6" × 12"	⑬	1.
	Gum-roller	16" × 42"	⑭	1.
Grinding	Gum-roller	20" × 59"	⑦	1.
Mixing	Mixer	3' × 5'		1.
Heating	Autoclave	3' × 5'		5.
Refining	Gum-roller	14" × 36"	⑮⑯⑰	3.
Finishing	"	16" × 28"	④	1.

↑
⑦ Reparat

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

	12 × 30 Ⓡ	1.				
der	12" × 23" Ⓢ	1.	"	19.750 "	"	3
	12" × 30" Ⓡ	1.	"	2.600 "	"	4
	8" × 20" ⑩	1.	"	6.000 "	"	4
	Caliber 4"	1.	"	2.500 "	"	6
r	Width 65"	2.	Cordfabric	175 Rolls	"	49
			Cloth	75 "		
er	Width 65"	1.	Cordfabric	175 "	"	45
	"	1.	Cloth	75 "		
		12.			"	39
achine		1				
		6.			"	33
ine		4.				
ontal)		26.			"	44.
ical)		4.				
						40
er	18" × 48" ⑪	1.	Compounded rubber	7.500 kg	Tibe	34
	14" × 36" ⑤	1.	"	9.350 "	"	42
	Caliber 6"	1.	"	8.750 "	"	39
	Caliber 4"	1.				
	"	1.	"	9.350 "	"	42
r	3" × 5'	2.			"	54
					"	40
sor	5 kg	1.				
	7 kg Ⓡ	1.			"	40
hine		1.	Scrap rubber	37.500 kg	Reclaimed rubber	30
ler	6" × 12" ⑬	1.				
r	16" × 42" ⑭	1.	"	26.250 "	"	21
r	20" × 59" Ⓡ	1.	"	25.000 "	"	20
	3' × 5'	1.	Rubber powder	25.000 "	"	25
	3' × 5'	5.	"	25.000	"	25
r	14" × 36" ⑮⑯⑰	3.	"	22.500	"	22
	16" × 28" ④	1.	"	24.000	"	24

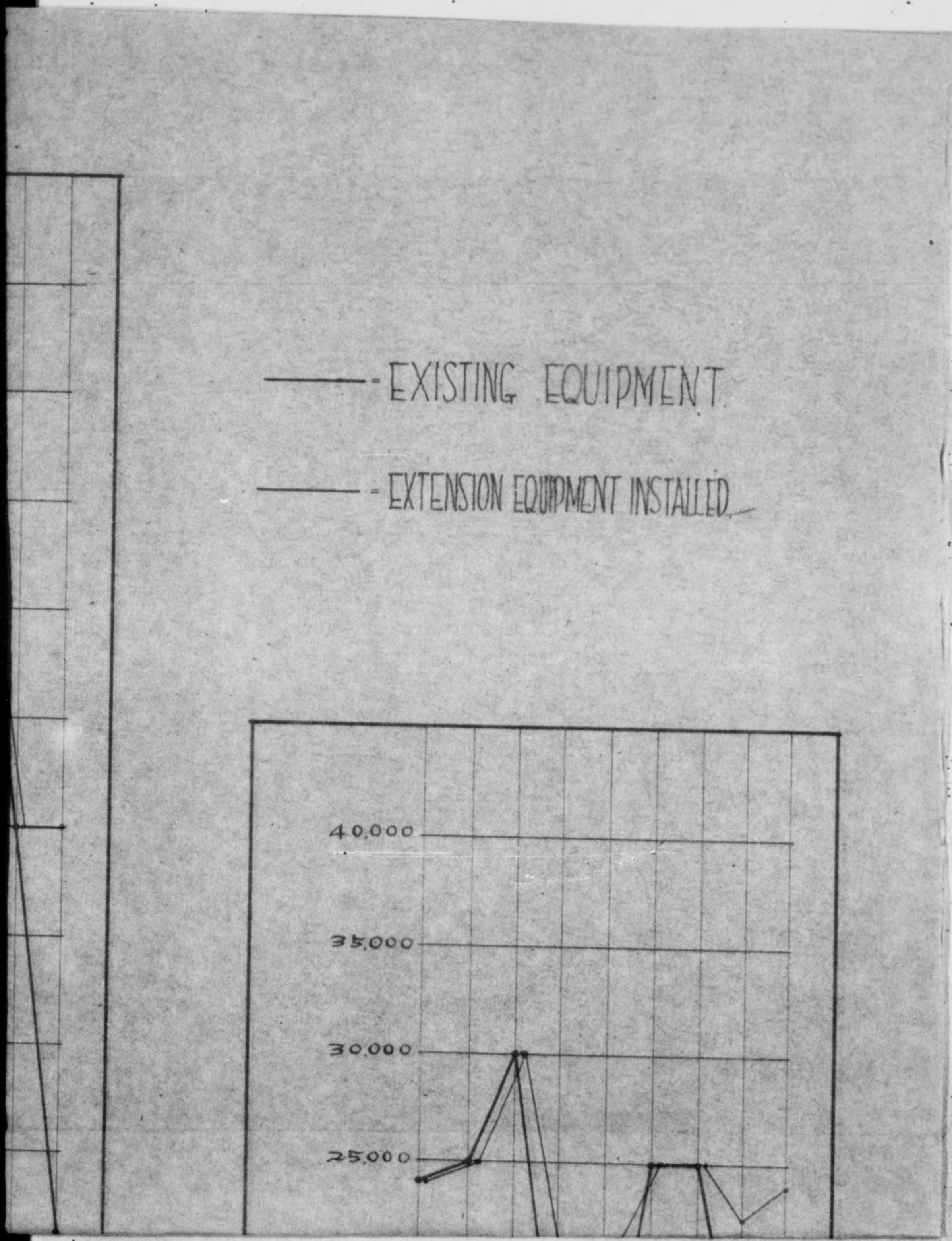
Ⓡ Reparation equipment

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

"	19.750 "	"	33.800 "	
"	2.600 "	"	40.000 "	← 45-5-4F10
"	6.000 "	"	42.800 "	
"	2.500 "	"	62.500 "	
fabric	175 Rolls	"	49.000 "	
th	75 "			
fabric	175 "	"	45.000 "	
th	75 "			
		"	39.800 "	
		"	33.800 "	
		"	44.500 "	
			40.000 "	
nded er	7.500 kg	Tibe	34.000 "	
"	9.350 "	"	42.500 "	
"	8.750 "	"	39.700 "	
"	9.350 "	"	42.500 "	
		"	54.000 "	
		"	40.000 "	
		"	40.000 "	← 45-5-200
ubber	37.500 kg	Reclaimed rubber	30.000 kg	
"	26.250 "	"	21.000 "	
"	25.000 "	"	20.000 "	← 45-5-3F10
powder	25.000 "	"	25.000 "	
"	25.000	"	25.000 "	
"	22.500	"	22.500 "	
"	24.000	"	24.000	

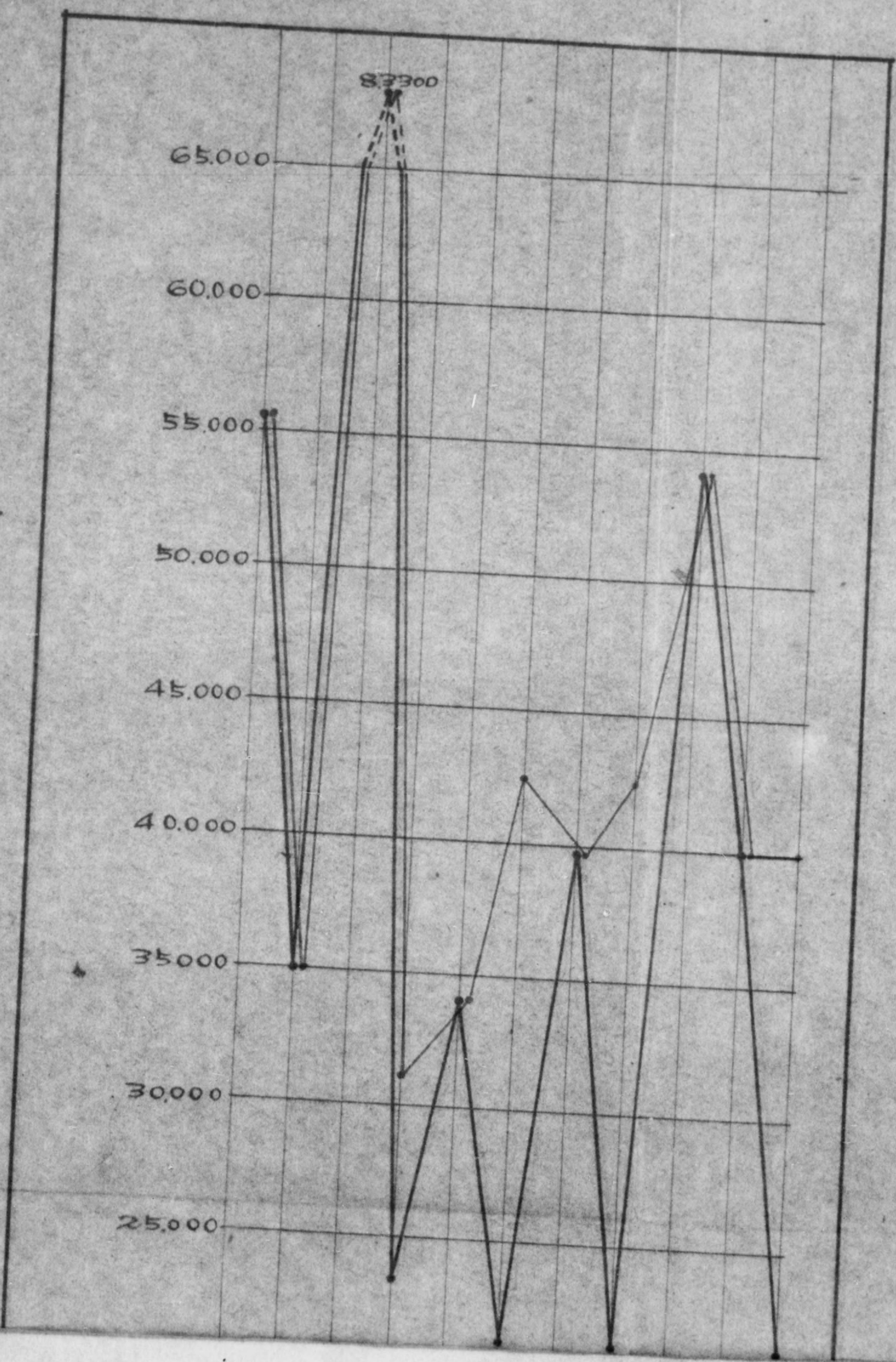
equipment

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

GRAPH OF OPERATIVE CAPACITY.



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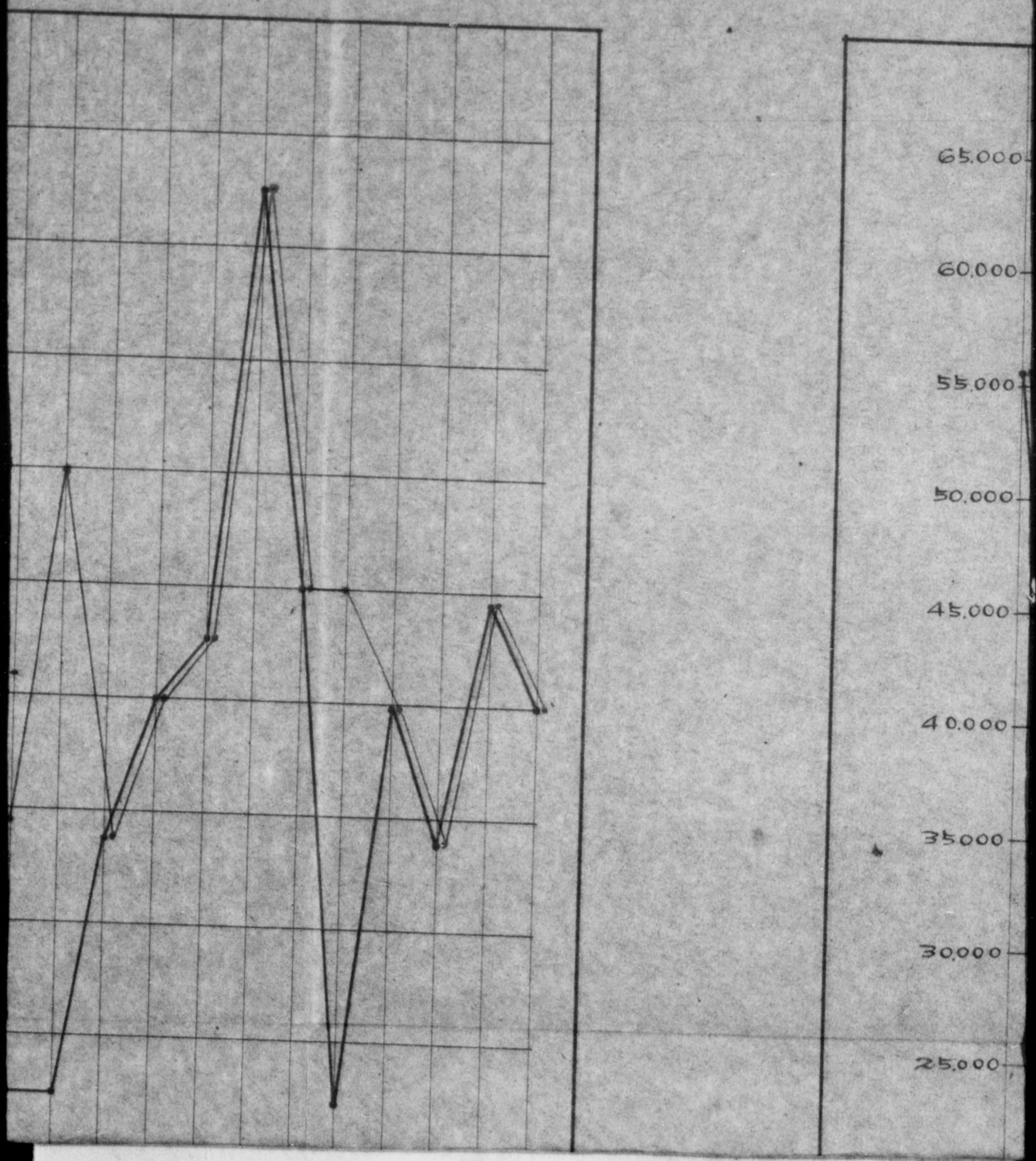
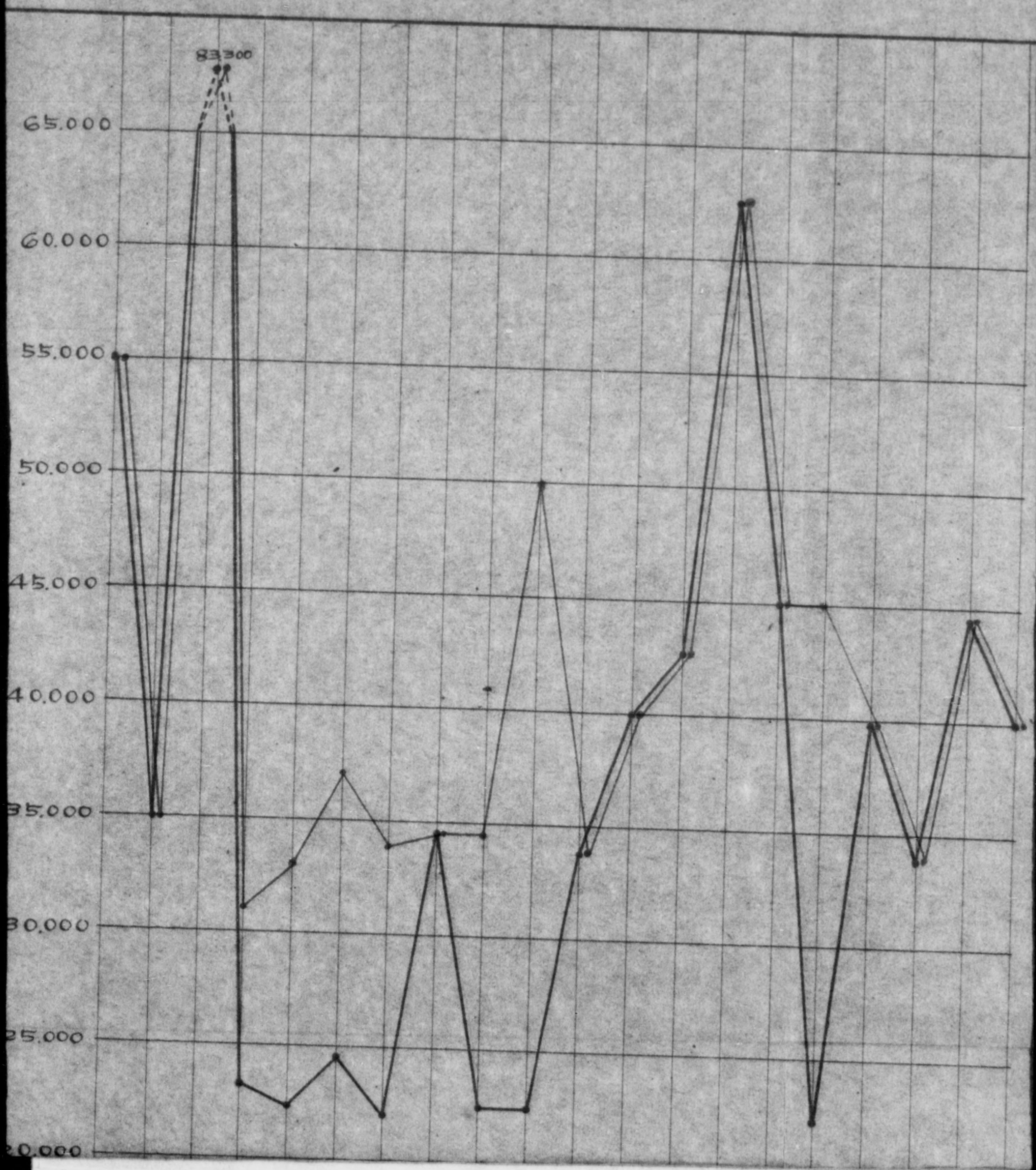
GRAPH OF OPER



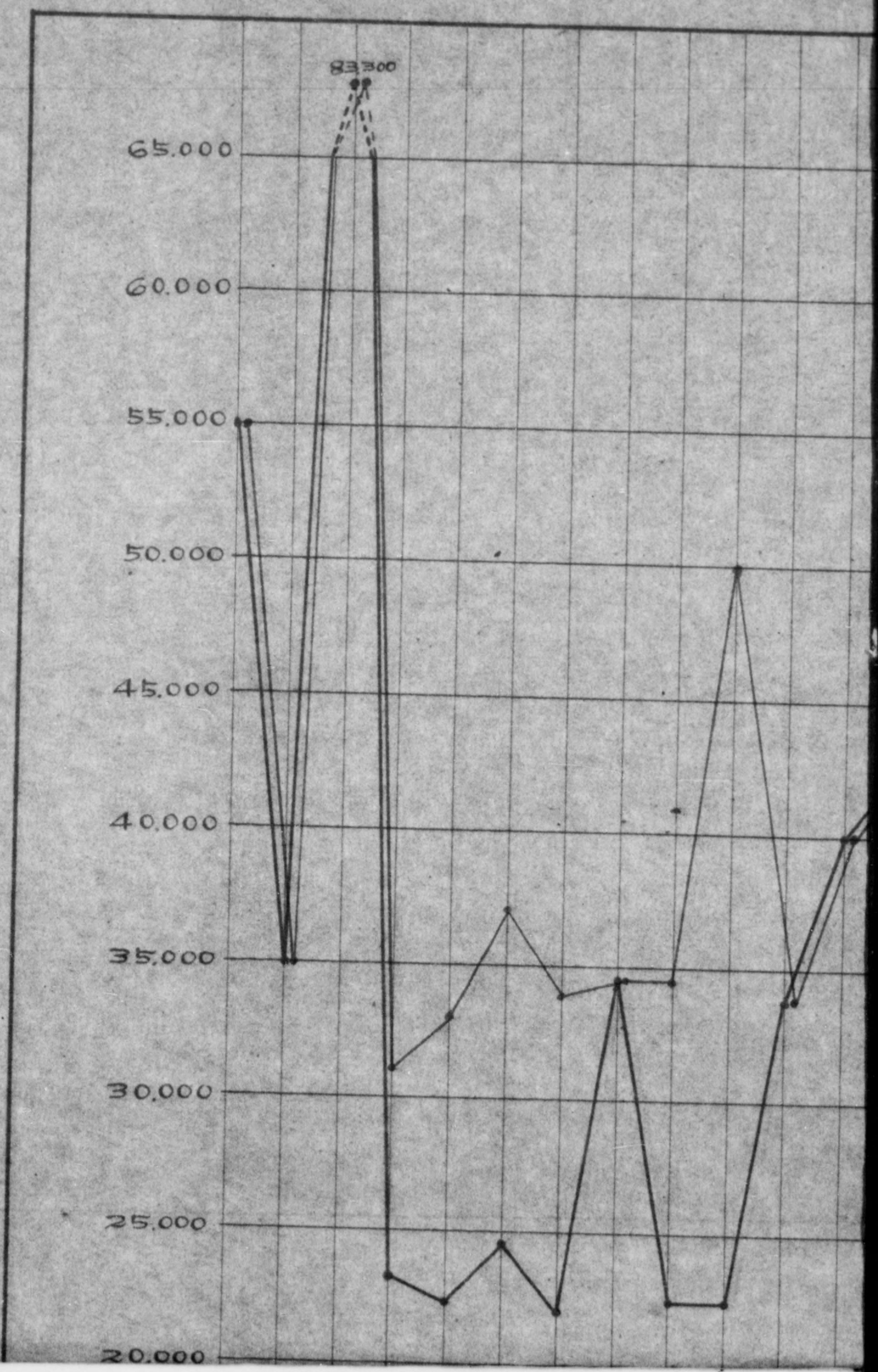
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

Attached
Table No. 3



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

Attached
Table No. 3



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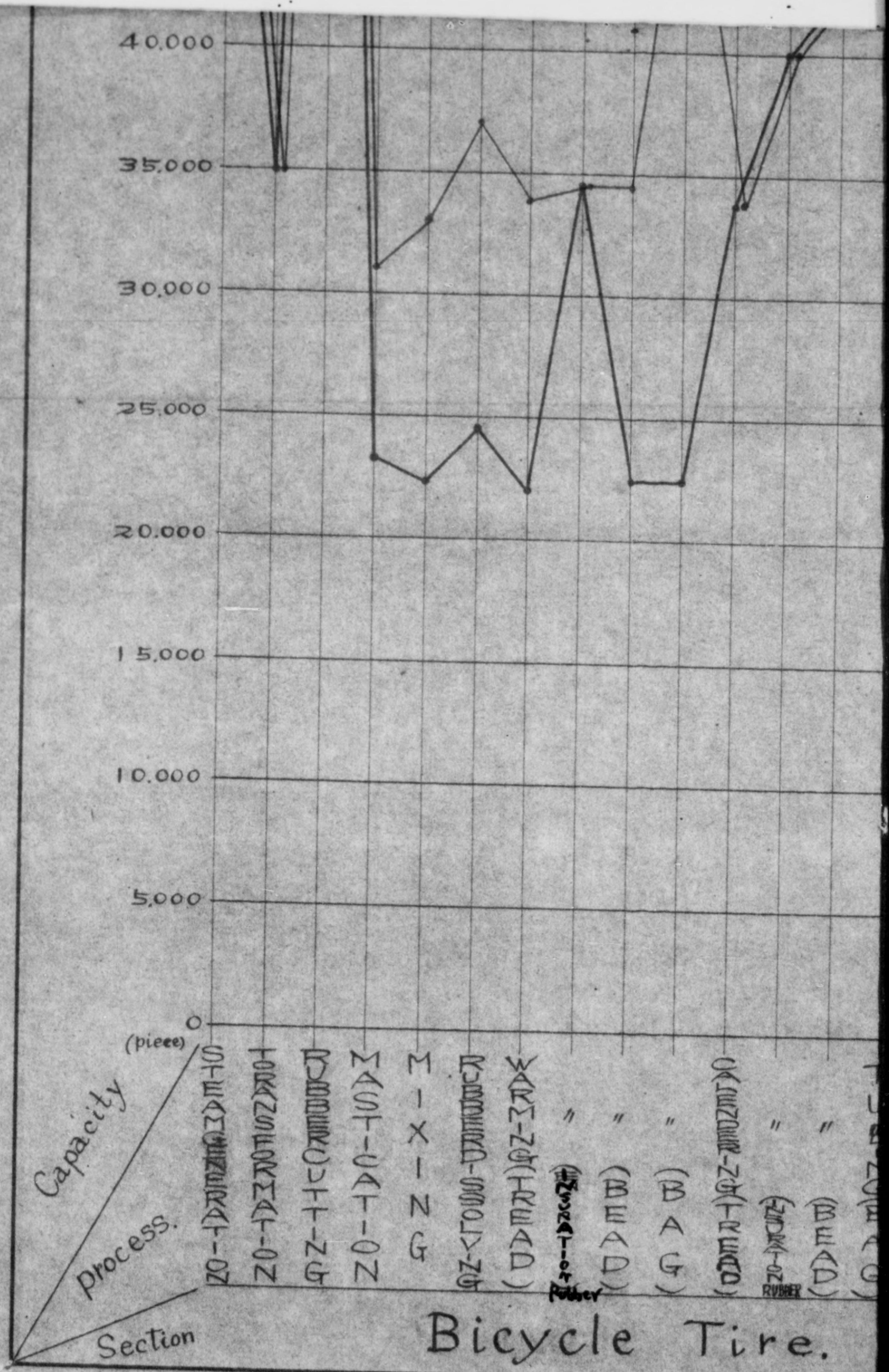

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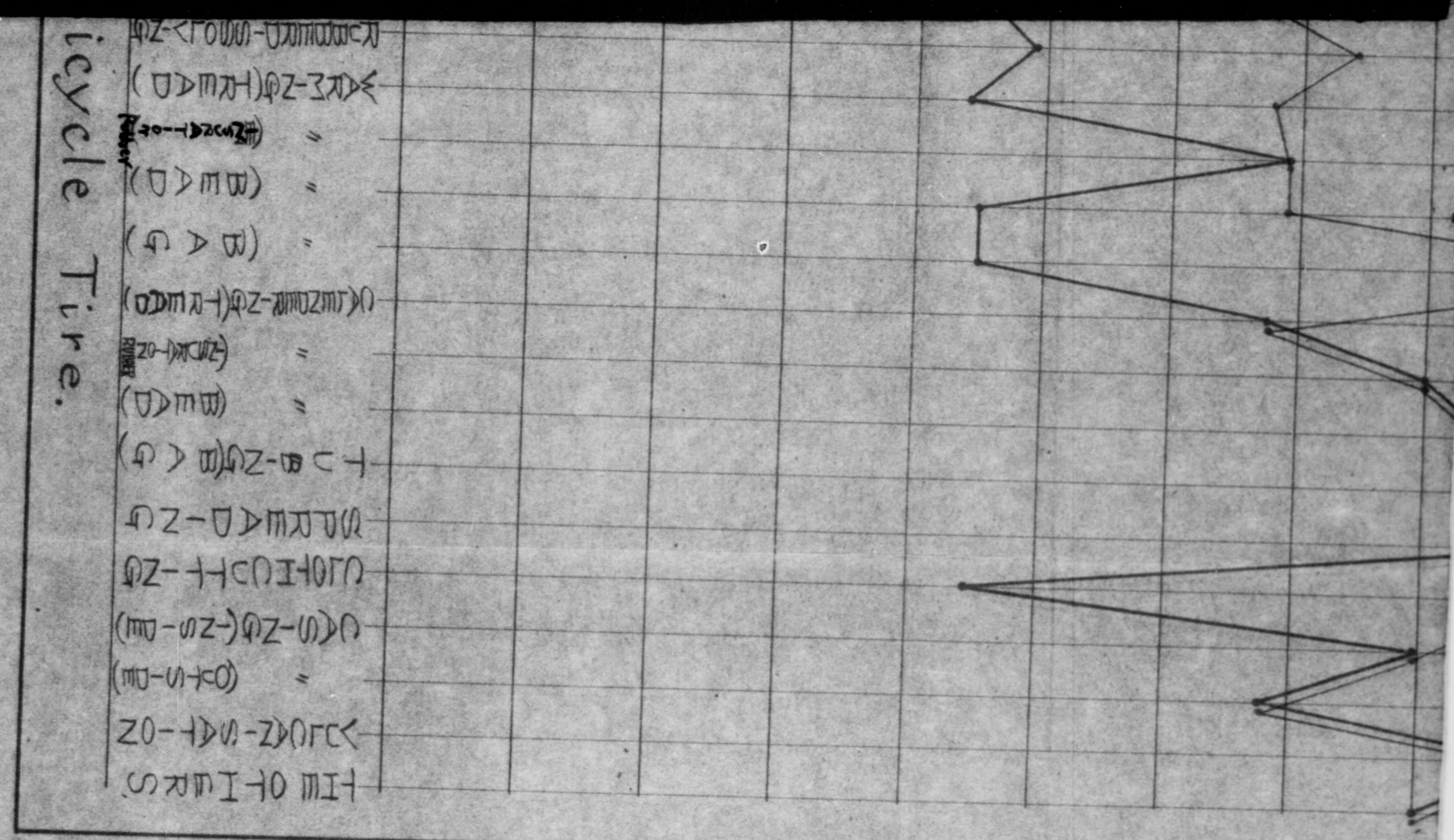
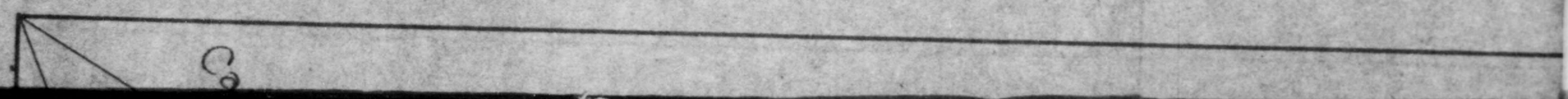


icycle Tire.



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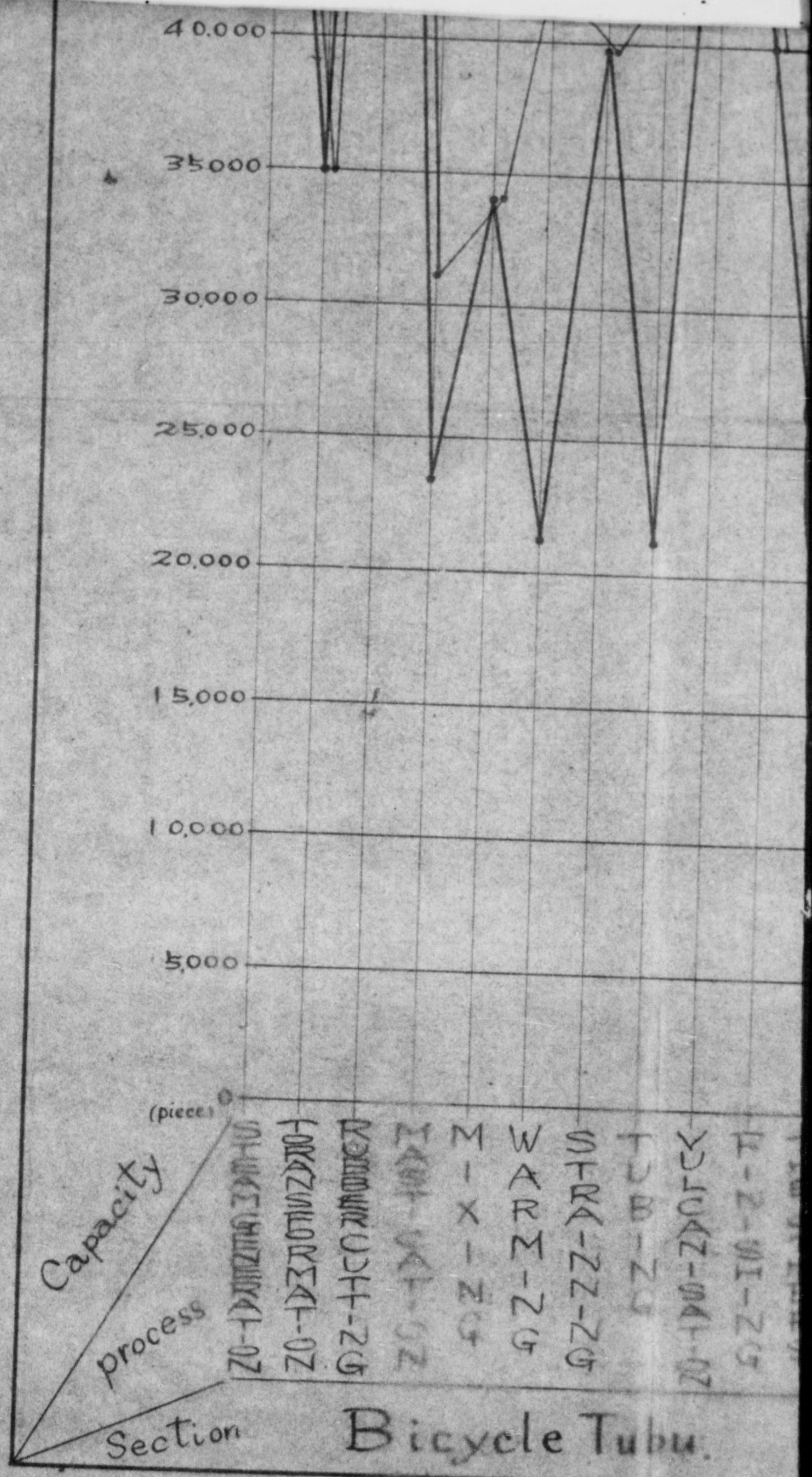
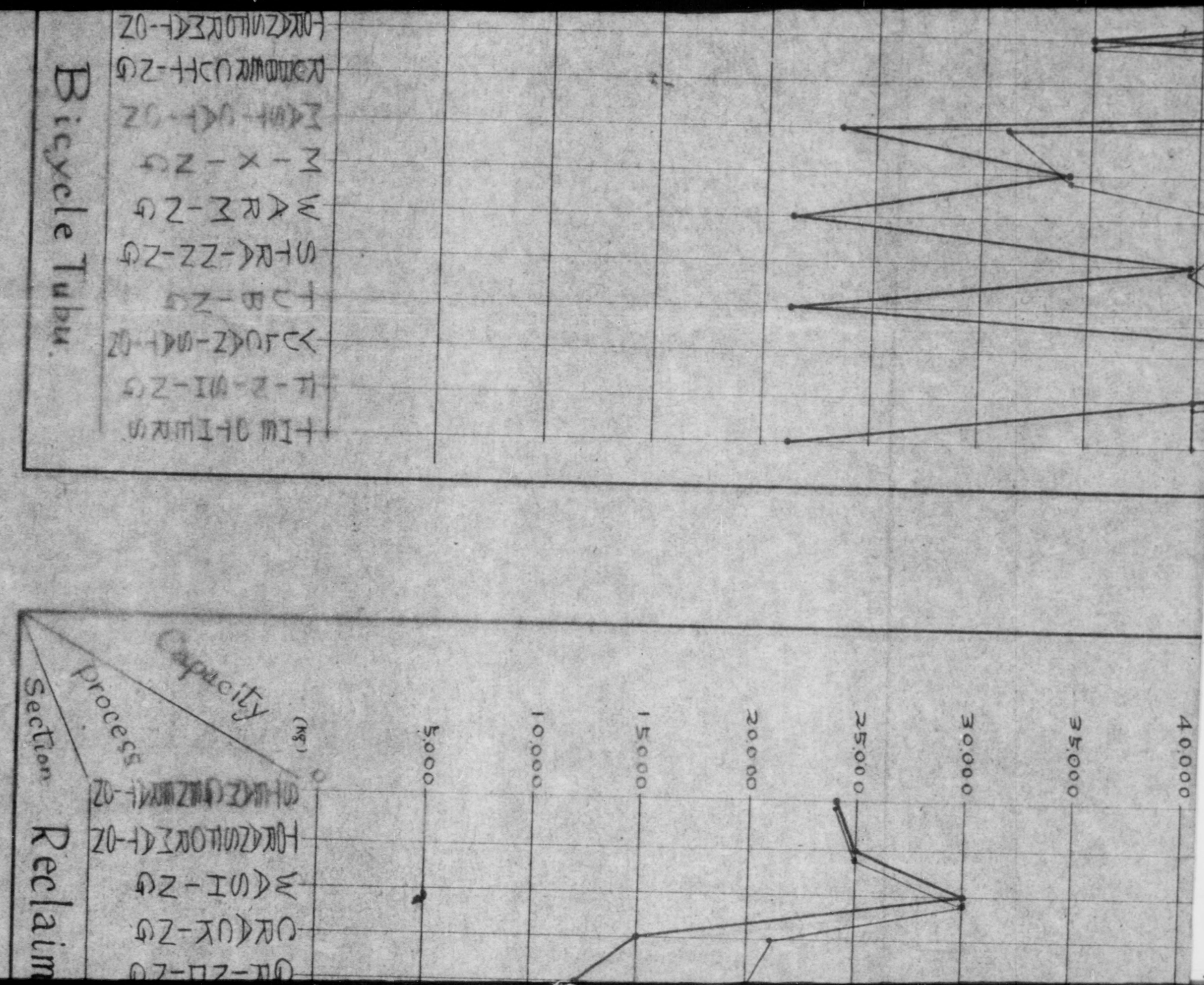


THE OTHERS.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013



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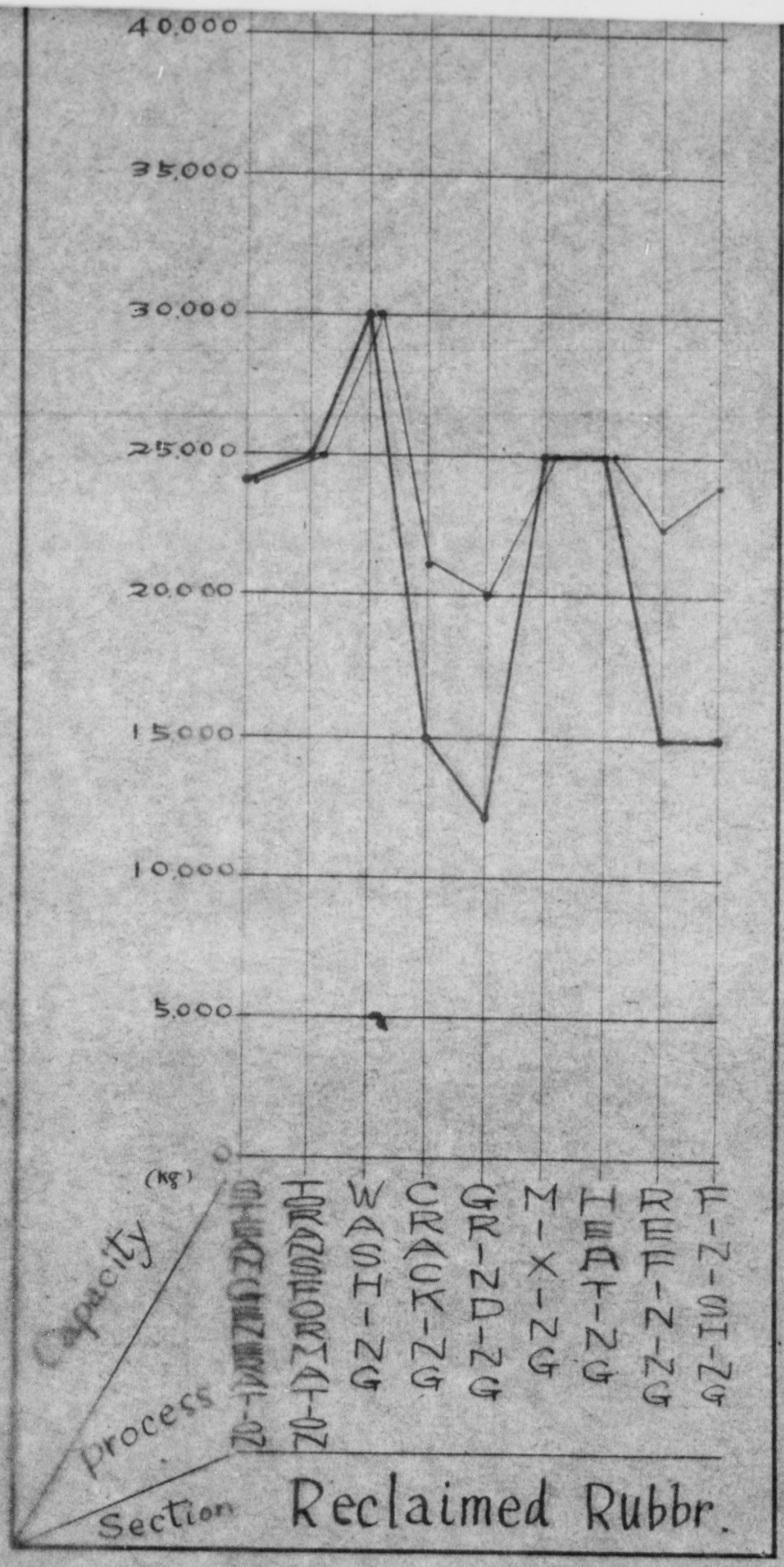

FIG. 2. WITH OTHER WORKS

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

8035

CHUGOKU

INFORMATION:
O.D. 11
JUN 22 1950

GENERAL HEADQUARTERS
SUPREME COMMANDER FOR THE ALLIED POWERS
Economic and Scientific Section
APO 500

HBO/WT/TMc/yt

387.6(15 Jun 50)ESS/IND

15 June 1950

MEMORANDUM FOR: Reparations Agency, Tokyo

SUBJECT: Application for Use of Items Listed for Reparations

1. Reference is attached R.A.R. No. 22 (MS), 23 January 1950, subject: Application of the Koa Oil Co., Ltd. for Conversion of a Part of the Reparations Facilities Located in the Former Iwakuni Army Fuel Depot (45-05).

2. The application for the authorized use of the eleven (11) items of reparations tankage and equipment listed in reference 1, above, is approved for storage of petroleum and petroleum products.

3. This permit is issued subject to any and all directives affecting reparations plants which have been issued or may hereafter be issued by the Supreme Commander for the Allied Powers. Reports will be rendered as required by current directives and instructions.

FOR THE CHIEF, ECONOMIC AND SCIENTIFIC SECTION:

MAURICE M. CLASS
Chief, Industry Division

1 Incl
as indicated.

Copies furnished:
CAS (dup.)
CPC

MANUFACTURING AND INDUSTRY FILE 45-5

Sec. II
Prev. sheet registered

ERP
SS JUN 1950
SS JUN 1950

Econ 1195

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

TO : GENERAL HEADQUARTERS, SUPREME COMMANDER FOR THE ALLIED POWERS.

FROM : Reparations Agency, Tokyo.

SUBJECT: Application of the Koa Oil Co., Ltd. for Conversion of a Part of the Reparations Facilities Located in the Former Iwakuni Army Fuel Depot (45-05).

R.A.R. No. 22 (MS)

23 January 1950.

1. References:

a. SCAPIN 629 (20 Jan 46), subject: "Custody, Control and Protective Maintenance of Japanese Aircraft Plants, Arsenals and Laboratories."

b. SCAPIN 2027 (13 July 49), subject: "Operation of Pacific Coast Refineries and Import of Crude Petroleum".

c. SCAP Informal Memorandum to Ministry of International Trade and Industry, Mining Bureau, Petroleum Administrative Section (22 Sept 49), subject: same as above.

d. SCAPIN 6983-A (28 Nov 49), subject: same as above.

2. The Reparations Agency hereby submits to your Headquarters an application of the Koa Oil Co., Ltd. for conversion of a part of the reparations facilities lying idle in the former Iwakuni Army Fuel Depot (45-05) for receiving feed stock and storing products thereof, together with an application of the Ministry of Finance and a recommendation of the Ministry of International Trade and Industry as attached hereto.

3. The subject company has been permitted to repair and rehabilitate its Marifu Refinery pursuant to SCAP Memoranda referred to in 1 b, c and d. Accordingly, the company is now carrying out its repair and rehabilitation work which is expected to be completed by 15 June 1950.

4.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

4. Since the Koa Oil Co., Ltd. lacks some tanks and their accessory equipment for its rehabilitation program, it desires to cover this deficiency by temporarily borrowing 8 sets of tanks and 3 sets of their accessory equipment (total: 11 sets) belonging to the said Fuel Depot until the time when they will be removed as reparations. The plan for using these tanks is indicated in the "Utilization Plan of Oil Tanks" attached hereto.

5. The refinery of this company is adjacent to, and has a close connection with, the Fuel Depot because the present site of the latter is the one which had been owned by the former and forcibly purchased by the Japanese Army in 1940. And, while the oil storage and their accessory equipment of the company were heavily damaged by air-raids, those of the Depot remain comparatively perfect and immediately available.

6. Attention is also called to the fact that this application is only concerned with the supplementation of insufficient facilities in a privately-owned refinery and not with the resumption of the military ones themselves.

7. In the light of the foregoing facts it is earnestly requested that your Headquarters be good enough to give a most favorable consideration to this application at the earliest practicable date.

(Y. Katsuno)
Director, Reparations Division,
Reparations Agency.

Incls:
1. Application of the Ministry of Finance.
2. Recommendation of the Ministry of I.T.& I.
3. Application of the subject company.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

Utilization Plant of Oil Tanks

(1) Cracking Capacity of Feed Stock . . . . . 3,000 bbl per day.

(2) Storing Capacity Needed.
For Feed Stock . . . . . 90 days
For Finished Products . . . . . 90 days

(3) The capacity needed is filled with the utilization of the oil tanks of the Koa Oil Co. and the Former Fuel Depot as follows:

	Capacity needed (bbl)	Capacity of tanks (bbl) Koa Oil	Fuel Depot	Total
I. For Storing of Feed Stock:	270,000 (90 days)	72,000 x 1	78,000 x 3	306,000
II. For Operations:				
Cracking Service.	21,000 (7 days)	18,000 x 2	-	36,000
Rundown.	18,000 (6 days)	30,000 (with 16 tanks)	-	30,000
Gasoline Treating	5,290 (5 days)	1,800 x 2; 500 x 4	-	5,600
Fuel Oil Blending	4,480 (4 days)	3,000 x 2	-	6,000
III. For storing of products:				
Gasoline	63,480 (60 days)	12,000 x 2	18,000 x 2	60,000
Fuel Oil	60,480 (60 days)	18,000 x 1	18,000 x 1; 12,000 x 2	60,000
Asphalt	34,200 (60 days)	300 x 2		600
Total	476,930	192,200	312,000	504,200

Note: Asphalts are directly packed into drum cans.

1. Machinery

Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-1T	Storage Tank	Vertical Cap: 13,000 KL (78,000 Bbl) D 36.6M x H 12.49 M	1	For Feed Stock Storage
45-32-2T	do.	do.	1	do.
45-32-3T	do.	do.	1	do.
45-32-4T	do.	Vertical Cap: 3,200 KL (18,000 Bbl)	1	For product
45-32-6T	do.	do.	1	do.
45-32-9T	do.	do.	1	do.
45-32-26T	do.	Vertical Cap: 2,100 KL (12,000 Bbl)	1	do.
45-32-27T	do.	do.	1	do.

Note:

	Arsenal Owned	Koa Owned	Total
Feed Stock	78,000 x 3 = 234,000 Bbl	72,000 x 1 = 72,000 Bbl	306,000 Bbl
Intermediate &	18,000 x 3 = 54,000 "	18,000 x 4 = 72,000 "	
Finished product	12,000 x 2 = 24,000 "	12,000 x 2 = 24,000 "	
		6,000 x 1 = 6,000 "	
		3,000 x 2 = 6,000 "	
	78,000 "	106,000 "	186,000 "
Rundown Tank (Small Size)		22 12,200 "	12,200 "

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45-32-8T	do.	do.	1	do.
45-32-9T	do.	do.	1	do.
45-32-26T	do.	Vertical Cap: 2,100 KL (12,000 Bbl)	1	do.
45-32-27T	do.	do.	1	do.

Note:	Arsenal Owned	Koa Owned	Total
Feed Stock	78,000 x 3 = 234,000 Bbl	72,000 x 1 = 72,000 Bbl	306,000 Bbl
Intermediate &	18,000 x 3 = 54,000 "	18,000 x 4 = 72,000 "	
Finished product	12,000 x 2 = 24,000 "	12,000 x 2 = 24,000 "	
		6,000 x 1 = 6,000 "	
		3,000 x 2 = 6,000 "	
	78,000 "	108,000 "	186,000 "
Rundown Tank (Small Size)		22 12,200 "	12,200 "
	312,000 Bbl	192,200 "	504,200 "

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-2	Turbine pump	Bore: 250 mm Head 82m Cap: 300 KL/Hr 200 H.P.	1	
45-32-3	Motor	200 H.P. 3,300 V 1170 RPM	1	
45-32-4	Compensator	For above Moter	1	
45-32-6	Switch Board	For above	1	
thru 45-32-5V 11V	Valve	Sluice: Size - 10"	7	
45-32-12V	"	" "	1	
45-32-13V	"	" "	1	
45-32-17	Turbine pimp	Bore: 4" Head 73M Cap: 80KL/Hr 20 HP	1	
45-32-23	do.	Bore: 4" Head & Cap: unknown	1	
45-32-35	Kagano pump	Bore:10" Cap:572 KL/Hr	1	
45-32-10	Motor	20 HP 3 phase 220 V 60 cycle	1	
45-32-12	do.	do.	1	
45-32-14	do.	do.	1	
45-32-16	do.	do.	1	
45-32-18	do.	do.	1	
45-32-24	do.	15 HP 3 phase 120 V 60 cycle	1	
45-32-36	do.	150 HP 3 phase 3,300 V 60 cycle	1	
45-32-30	Switch Board	(4 Oil Switch)	1	
45-32-33	Switch Board	For Low tention use 12 switches	1	

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[illegible]	Turbine pump	Bore: 4" Head 73M Cap: 80KL/Hr 20 HP	1
45-32-23	do.	Bore: 4" Head & Cap: unknown	1
45-32-35	Kagano pump	Bore: 10" Cap: 572 KL/Hr	1
45-32-10	Motor	20 HP 3 phase 220 V 60 cycle	1
45-32-12	do.	do.	1
45-32-14	do.	do.	1
45-32-16	do.	do.	1
45-32-18	do.	do.	1
45-32-24	do.	15 HP 3 phase 120 V 60 cycle	1
45-32-36	do.	150 HP 3 phase 3,300 V 60 cycle	1
45-32-30	Switch Board	(4 Oil Switch)	1
45-32-33	Switch Board	For Low tention use 12 switches mounted	1
45-32-31	Compensator	For 75 HP Motor 3,300 V 60 cycle	1
45-32-32	do.	do.	1
45-32-78	Kagano pump	Bore: 4" 15 HP Cap: $0.95m^3$/Min	1
45-32-79	do.	do.	1
45-32-80	Turbine pump	Bore: 5" 20 HP Head: 20M Cap: $1.25m^3$/min	1
45-32-81	do.	Bore: 4" 20 HP Head: 73M Cap: $1m^3$/min	1
45-32-82	Worthington pump	6 x 4 x 6 Cap 8.6 KL/Hr (Duplex)	1
45-32-83	Motor	20 HP 3 phase 220 V 60 cycle 1,740 RPM 6 poles	1
45-32-84	do.	do.	1
45-32-85	do.	do.	1

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45-32-24	do.	15 HP 3 phase 120 V 60 cycle	1
45-32-36	do.	150 HP 3 phase 3,300 V 60 cycle	1
45-32-30	Switch Board	(4 Oil Switch)	1
45-32-33	Switch Board	For Low tention use 12 switches mounted	1
45-32-31	Compensator	For 75 HP Motor 3,300 V 60 cycle	1
45-32-32	do.	do.	1
45-32-78	Kagano pump	Bore: 4" 15 HP Cap: 0.95m^3/Min	1
45-32-79	do.	do.	1
45-32-80	Turbine pump	Bore: 5" 20 HP Head: 20M Cap: 1.25m^3/min	1
45-32-81	do.	Bore: 4" 20 HP Head: 73M Cap: 1m^3/min	1
45-32-82	Worthington pump	6 x 4 x 6 Cap 8.6 KL/Hr (Duplex)	1
45-32-83	Motor	20 HP 3 phase 220 V 60 cycle 1,740 RPM 6 poles	1
45-32-84	do.	do.	1
45-32-85	do.	do.	1
45-32-86	do.	50 HP 3 phase 330V 60 cycle 865 RPM.	1

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Inventory No.	Name of Machinery	Brief Specification			Quantity	Remarks
45-32-57V 45-32-58V	Valve	Sluice:	Size:	8"	2	
thru 45-32-14V -17V	"	"	"	10"	4	
thru 45-32-21V -24V	"	"	"	"	4	
45-32-26V	do.	do.			1	
45-32-32V -33V	do.	do.			2	
45-32-34V	do.	do.			1	
thru 45-32-35V -40V	do.	do.			6	
45-32-46V	do.	do.			1	
45-32-47V	do.	do.			1	
45-32-48V	do.	do.			1	
45-32-49V	do.	do.			1	
45-32-50V	do.	do.			1	
thru 45-32-51V 54V	do.	do.			4	
45-32-55V	do.	Sluice:	Size:	8"	1	
45-32-56V	do.	do.			1	
45-32-4V	do.	Sluice:	Size:	6"	1	
45-32-30V -31V	do.	do.			2	

45-32-50V	do.	do.		1
thru 45-32-51V 54V	do.	do.		4
45-32-55V	do.	Sluice:	Size: 8"	1
45-32-56V	do.	do.		1
45-32-4V	do.	Sluice:	Size: 6"	1
45-32-30V -31V	do.	do.		2
thru 45-32-41V 45V	do.	do.		5
Nom	Pipe	Cast Iron	Dia 10 in	682 M
"	"	Gas	" 10 "	2,167 M
"	"	"	" 6 "	432 M
45-32-9	Turbine pump	Bore: 4" Head 73 M Cap: 80 KL/Hr		1
45-32-11	do.	do.		1
45-32-13	do.	do.		1
45-32-15	do.	do.		1
45-32-67V 68V	Valve	Sluice:	Size: 8"	2
45-32-76V	do.	do.		1
45-32-79V	do.	do.		1
45-32-80V 81V	do.	do.		2

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-89V 90V	Valve	Sluice: Size: 8"	2	
45-32-93V	do.	do.	1	
45-32-105V	do.	do.	1	
45-32-110V	do.	do.	1	
45-32-112V	do.	do.	1	
45-32-117V	do.	do.	1	
45-32-125V	do.	do.	1	
45-32-129V	do.	do.	1	
45-32-137V 138V	do.	do.	2	
45-32-145V	do.	do.	1	
45-32-150V	Valve	Sluice Size: 8"	1	
45-32-154V 155V	do.	do.	2	
45-32-160V	do.	do.	1	
45-32-162V 163V	do.	do.	2	
45-32-173V 174V	do.	do.	2	
45-32-180V	do.	do.	1	
thru 45-32-189V 191V	do.	do.	3	
45-32-196V	do.	do.	2	

45-32-137V 138V	do.	do.		2
45-32-145V	do.	do.		1
45-32-150V	Valve	Sluice	Size: 8"	1
45-32-154V 155V	do.	do.		2
45-32-160V	do.	do.		1
45-32-162V 163V	do.	do.		2
45-32-173V 174V	do.	do.		2
45-32-180V	do.	do.		1
thru 45-32-189V 191V	do.	do.		3
45-32-196V 197V	do.	do.		2
45-32-202V 203V	do.	do.		2
45-32-210V 211V	do.	do.		2
45-32-217V	do.	do.		1
thru 45-32-232V 238V	do.	do.		7
45-32-239V	do.	Sluice	12"	1
45-32-254V 255V	do.	Sluice	8"	2
45-32-258V	do.	"		1
45-32-59V 60V	do.	Sluice	6"	2
thru 45-32-63V 66V	do.	"		4
" 45-32-69V	do.			

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			do.	1
thru 45-32-189V 191V	do.		do.	3
45-32-196V 197V	do.		do.	2
45-32-202V 203V	do.		do.	2
45-32-210V 211V	do.		do.	2
45-32-217V	do.		do.	1
thru 45-32-232V 238V	do.		do.	7
45-32-239V	do.	Sluice	12"	1
45-32-254V 255V	do.	Sluice	8"	2
45-32-258V	do.	"		1
45-32-59V 60V	do.	Sluice	6"	2
thru 45-32-63V 66V	do.	"		4
" 45-32-69V 71V	do.	"		3

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Inventory No.	Name of Machinery	Brief Specification		Quantity	Remarks
45-32-77V	Valve	Sluice	6"	1	
thru 45-32-82V 84V	do.	"		3	
45-32-106V 107V	do.	"		2	
thru 45-32-94V 104V	do.	"		11	
45-32-111V	do.	"		1	
" 113V	do.	"		1	
" 116V	do.	"		1	
" 118V 119V	do.	"		2	
thru 45-32-122V -124V	do.	"		3	
45-32-128V	do.	"		1	
" 130V	do.	"		1	
" 131V	do.	"		1	
thru 45-32-134V 136V	do.	"		3	
45-32-139V 140V " 146V	do.	"		2	
" 144V	do.	"		1	
" 148V 149V	do.	"		2	
" 151V	do.	"		1	
" 152V					

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45-32-111V	do.	"		1
" 113V	do.	"		1
" 116V	do.	"		1
" 118V 119V	do.	"		2
thru 45-32-122V -124V	do.	"		3
45-32-128V	do.	"		1
" 130V	do.	"		1
" 131V	do.	"		1
thru 45-32-134V 136V	do.	"		3
45-32-139V 140V	do.	"		2
" 144V	do.	"		1
" 148V 149V	do.	"		2
" 151V	do.	"		1
" 158V 159V	do.	Sluice	Size 6"	2
" 161V	do.	do.		1
thru 45-32-168V 170V	do.	do.		3
45-32-172V	do.	do.		1
" 175V	do.	do.		1
" 177V	do.	do.		1
thru 45-32-181V 183V	do.	do.		3
" " 186V 188V	do.	do.		

136V				
45-32-139V 140V	do.	"		2
" 140V				
" 144V	do.	"		1
" 148V 149V	do.	"		2
" 151V	do.	"		1
" 158V 159V	do.	Sluice	Size 6"	2
" 161V	do.	do.		1
thru 45-32-168V 170V	do.	do.		3
45-32-172V	do.	do.		1
" 175V	do.	do.		1
" 177V	do.	do.		1
thru 45-32-181V 183V	do.	do.		3
" " 186V 188V	do.	do.		3
45-32-192V 193V	do.	do.		2

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Inventory No.	Name of Machinery	Brief Specification			Quantity	Remarks
45-32-198V 199V	Valve	Sluice	Size	6"	2	
45-32-206V 207V	do.	do.			2	
thru 45-32-212V 216V	do.	do.			5	
thru 45-32-218V 231V	do.	do.			14	
thru 45-32-240V 253V	do.	do.			14	
45-32-256V 257V	do.	do.			2	
thru 259V 286V	do.	do.			28	
None	do.	Sluice	Size	5"	5	
"	do.	"	"	4"	84	
"	do.	"	"	3"	47	
"	do.	"	"	"	2	
"	do.	"	"	2"	21	
"	do.			11/2"	14	
"	Pipe	Gas	Dia	2"	85 M	above ground
"	"	"	"	3"	5,327 M	"
"	"	"	"	4"	3,198 M	"
"	"	"	"	5"	228 M	"
"	"	"	"	6"	2,938 M	"

"	do.	"	"	"	2	
"	do.		"	2"	21	
"	do.			11/2"	14	
"	Pipe	Gas	Dia	2"	85 M	above ground
"	"	"	"	3"	5,327 M	"
"	"	"	"	4"	3,198 M	"
"	"	"	"	5"	228 M	"
"	"	"	"	6"	2,938 M	"
"	"	"	"	8"	955 M	"
"	"	"	"	4"	143 M	under ground
"	"	"	"	6"	50 M	"
"	"	"	"	8"	150 M	"
45-5-1F-16	Centrifugal Pump	Bore: 400 mm Pressure 5 kg/c^2 Cap: 18.5m^3/min			1	
" 2F-16	Diesel Engine	Cap: 375 HP			1	
" 3F-16	Reducer	Gear Ratio 1/3.12 for 375 HP Motor			1	
" 4F-16 5F-16	Accumulator	Vertical & Cylindrical Type Dia: 0.4M x H: 1.75M			2	
" 6F-16	Storage Tank	D: 1M x H: 1.35 M			1	
" 7F-16 8F-16	Centrifugal Pump	Pressure: 5 kg/c^2 Cap: 18.5M^3/Min			2	
" 9F-16 10F-16	Motor	Induction 320 HP 3 phase 1,170 RPM			2	
" 11F-16	Switch Board	3 ammeters & 3 switches			1	

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-5-12F-16 13F-16	Resistor	3,300 V 450 Ohm	2	
" 14F-16	Accumulator	Vertical & Cylindrical Dia: 1m x H: 1.75 m	1	
" 15F-16 16F-16	Plunger Pump	Vertical: Cap: 180 L/Min	2	
" 17F-16	Motor	Induction 220 V 1/2 HP	1	
thru 45-5-18F-16 20F-16	Valve	Sheck Size 400mm	3	
" " 21F-16 30F-16	do.	Sluice " 300mm	10	
45-5-31F-16 32F-16	do.	Foot " 400mm	2	
" 33F-16 35F-16	do.	Sluice " 300mm	2	
" 34F-16 39F-16	do.	Sluice " 200mm	2	
thru 45-5-36F-16 38F-16	do.	" " 250mm	3	
None	do.	" " 100mm	1	
"	Pipe	Dia: 400mm	1,150 M	under ground
"	"	" 300mm	800 M	"
"	"	" 100mm	100 M	"
thru 45-5-32-1V 3V	Atomos Valve	Size: 6"	3	for Storage Tanks
" " 18V 20V	"	" "	3	"

45-5-31F-16 32F-16	do.	Foot	"	400mm	2	
" 33F-16 35F-16	do.	Sluice	"	300mm	2	
" 34F-16 39F-16	do.	Sluice	"	200mm	2	
thru 45-5-36F-16 38F-16	do.	"	"	250mm	3	
None	do.	"	"	100mm	1	
"	Pipe	Dia: 400mm			1,150 M	under ground
"	"	" 300mm			800 M	"
"	"	" 100mm			100 M	"
thru 45-5-32-1V 3V	Atomos Valve	Size: 6"			3	for Storage Tanks
" " 18V 20V	"	" "			3	"
" " 27V 29V	"	" "			3	"
45-32-108V	"	" "			1	"
" 109V	"	" "			1	"
" 120V	"	" "			1	"
" 121V	"	" "			1	"
" 61V	"	" "			1	"
" 62V	"	" "			1	"
" 85V	"	" "			1	"
" 86V	"	" "			1	"

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"		"	"	800mm	800 M	"
"		"	"	100mm	100 M	"
thru 45-5-32-1V	3V	Atomos Valve	Size:	6"	3	for Storage Tanks
" "	18V 20V	"	"	"	3	"
" "	27V 29V	"	"	"	3	"
45-32-108V		"	"	"	1	"
"	109V	"	"	"	1	"
"	120V	"	"	"	1	"
"	121V	"	"	"	1	"
"	61V	"	"	"	1	"
"	62V	"	"	"	1	"
"	85V	"	"	"	1	"
"	86V	"	"	"	1	"

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Inventory No.	Name of Machinery	Brief Specification		Quantity	Remarks
45-32-156V	Atomes Valve	Size:	6"	1	for Storage Tanks
" 157V	"	"	"	1	"
" 164V	"	"	"	1	"
" 165V	"	"	"	11	"
" 178V	"	"	"	1	"
" 179V	"	"	"	1	"
" 184V	"	"	"	1	"
" 195V	"	"	"	1	"
" 204V	"	"	"	1	"
" 205V	"	"	"	1	"
" 200V	"	"	"	1	"
" 201V	"	"	"	1	"
45-32-37	Winches	Manual Operation		4	Attached to Tanks
" 40					
" 55 56	do.	"	"	2	"
" 59 60	do.	"	"	2	"
" 62 63	do.	"	"	2	"
45-32-42	do.	"	"	1	"
" 45	do.	"	"	1	"
" 50	do.	"	"	1	"
thru 45-32-66	Lightning	Height	16M	6	

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" 40					
" 55 56	do.	"	"	2	"
" 59 60	do.	"	"	2	"
" 62 63	do.	"	"	2	"
45-32-42	do.	"	"	1	"
" 45	do.	"	"	1	"
" 50	do.	"	"	1	"
thru 45-32-66 71	Lightning Arresters	Height	16M	6	
45-32-72 74 75	do.	"	50M	3	
None	Pipe	Diameter	27mm	4,370 M	above ground
"	"	"	42mm	70 M	"
"	"	"	60mm	1,555 M	"
"	"	"	34mm	1,995 M	"
"	"	"	"	400 M	under ground
"	"	"	48mm	145 M	"
"	Valve	Stop	75mm	1	
thru 45-5-70F-15 71F-15	do.	Foot	300mm	2	

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-5-72F-15	Valve	Sluice 300mm	1	
" 73F-15 74F-15	do.	" 200mm	2	
None	Air Pipe	Dia 255mm	2	
45-5-478	Turbine Pump	Bore: 50mm Head: 65m Cap: 15L/Min 10 stage	1	
" 56(2)	"	Bore: 150mm Head: 60m Cap: 2.2 m^3/min 2 stage	1	
" 460	Motor	Induction: 40 HP 3 phase 220 V 4 poles	1	
None	(Resistance Bulb)	25 Ohm	12	for Laboratory use
"	"	50 Ohm	12	
45-5-278	C.F.R. Engine	(Engine) Cylinder Inside Dia 2.85 MM Cylinder Cap.615 cc Stroke 115 MM (Meter Board) 1-Reducing Valve 1-D.C. Voltmeter 1-Lubricant Oil pressure Gauge 1-Thermometer 1-Ammeter 1-Knock Motor (A.C. Generator) Synchronous Induction, 3 phase 4 HP 1,200 R.P.M. 60 cycle, 220-444V 10-20 AMP (D.C. Generator) Closed 0.22 KW 110V.D.C. 1,800 R.P.M. V Belt Driven	1 set	with Meter Board A.C. Generator and D.C. Generator make a Complete Set

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Cylinder Cap.615 cc
Stroke 115 MM

Generator make a Complete Set

(Meter Board)

1-Reducing Valve
1-D.C. Voltmeter

1-Lubricant Oil pressure Gauge
1-Thermometer
1-Ammeter
1-Knock Meter

(A.C. Generator)
Synchronous Induction, 3 phase
4 HP
1,200 R.P.M. 60 cycle, 220-444V
10-20 AMP

(D.C. Generator)
Closed 0.22 KW 110V.D.C.
1,800 R.P.M. V Belt Driven

45-5-279	ditto	do.	1 set	"
" 280	ditto	do.	1 set	"

Total 598 Items

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Hiroshima International Trade & Industry Bureau

13 April 1950

To : Mr. Stradley,
Economic Section, Chugoku Civil Affairs Region

Subject : On conversion of hydrogeneration devices situated in former Iwakuni Military Fuel Arsenal

Tokuyama Soda Co. inc. has established a plan to yield ammonium chloride fertilizer among its by-products through rationalization of their soda industry. They planned to use the hydrogeneration devices stated above as a source of ammonia gas essential in Solvay Process.
On September 15 1949, the company made an application to Hiroshima Finance Division and Hiroshima International Trade & Industry Bureau for conversion of hydrogeneration devices stated above into synthetic ammonia industry. Another similar application was submitted again to the Bureau by Nihon Kogyo Co. inc. in december 1949.
The company expressed in the application their desire to use the devices for development of Kawayama Mine managed by the company. On December 14 1949 the applivation was forwarded to Director of Chemistry Bureau, International Trade & Industry Ministry by the Bureau with our opinion attached to it.

On December 25 1949 similar application was again submitted to our Bureau by Nippo Kagaku Kogyo Co. inc. in which they state they have planned to establish synthtic organic industry where purified gas out of oilis to be utilized. This oil is a by-product obtained in Marifu Factory, Koa Sekiyu Co. inc. adjacent to former Iwakuni Military Fuel Arsenal.
This application, However, was rejected at one time as it contained a statement on their project which was actually impossible to realize in this region.
On January 18 1950 another application was submitted to the Bureau from the same company, and yet some defects were still noticed in their plan.

Having been pressed for our opinion on the matter by the Ministry, we expressed our opinion to Director, Chemistry Bureau on February 28 1950 and a revised application was forwarded to the director on March 30 1950.

Survey has been made on those three applications and projects there in, and our bureau has arrived at the following conclusion after actual investigation on the scene.

1. As a mean of maintaining soda industry by Solvay Process, cutting down of production cost is a pertinent measure in Japan by obtaining ammonium chloride fertilizer as a by-product; and so practical measures for it have been ~~measure~~ studied from various angles. The plan that comes up into our consideration is to utilize the hydrogeneration devices as a supplier of ammonia gas and facillities of Teikoku Nenryo Kogyo Co. inc. situated in Ube, Yamaguchi Prefecture, through conversion.
2. Kawayama Mine managed by Nihon Kogyo Co. inc. has bright prospect having 10,000,000 tons of copper bearing pyrrhotite in estimation.
From the standpoint of industrial rehabilitation of Japan, it is worth while to let them have a factory of their own near the mine where crude oreswould be handled directly.
3. Synthtic organic industry planned by Nippo Kagaku Co. inc. is the most up-to-date industry in Japan and should not be overlooked. Such organic products as iso-octyl alcohol, ethylen glycol, grycerin, titanium chloride and urea are to be produced by the utilization of purified gas out of oil.

45-5
Rec II

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4. Conversion of devices into synthtic ammonia industry appears to be the best at the present step and the capacity of the devices is estimated to be 100,000 tons per year in the production of ammonium sulphate (to be 27,000 tons in the production of ammonia gas), showing amalgamation of three companies impossible.

5. On further investigation on the matter, we could safely say that the production of ammonium chloride fertilizer as a by-product is absolutely necessary for maintenance of soda industry om sound base in Japan and conversion of the devices is essential for this purpose since the devices could be used to act as supplierof ammonia and carbon dioxide gas, and present situation of ammonia-synthsis-industry in Japan signifies most clearly the possibility of its realization. The scheme established by Nippo Kagaku Kogyo Co. would see its realization only when oil refinery industry next door was founded, which, however, still remains unsettled. Though originality of the plan may deserve high estimation, we would drop it out of discussion for a while. The company, on the other hand, proposed supplying ammonia for the manufacture of ammonium chloride.

As for the development of Kawayama Mine owned by Nihon Kogyo Co. inc. the utilization of the devices by the mine is a thing to be desired considering from the standpoint of the location of the Mine; particularly when we notice the copper bearing pyrrhotite from the mine has a specific character subjecting to spontaneous combustion.

In conclusion, we expressed our opinion to the International Trade & Industry Ministry as follows :

1. Tokuyama Soda Co. inc. and Nihon Kogyo Co. inc. ought to go into council in such a way that ammonia, used in the production of ammonium chloride and ammonium sulphate, be manufactured through their close co-operation.
2. As to the scheme established by Nippo Kagaku Kogyo Co., consideration should be given only from the standpoint of firm establishment of alkali industry in Japan since refinery of oil problem at Koa Sekiyu Co. inc. next door is still unsettled.

P.S.

As for International Trade & Industry Ministry, they have been making an investigation over those three projects stated above, and appear to have got no conclusion yet, and this conclusion is still observed as confidential at the Bureau.

.....

for Y. Hara,
Director, Hiroshima International Trade & Industry Bureau

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November 30, 1949.

TO : H.E. Heitaro Inagiki, Minister of International Trade & Industry.

FROM : Eizaburo Noguchi, President & Director of Koa Oil Co., Ltd.

SUBJECT : Application for Permission to Make Authorized Use of the Facilities Designated for Reparations.

1. Name of Designated Facilities.

Oil Storage Tanks and Accessory Equipment of the former Iwakuni Army Fuel Arsenal (Code No. 45-5).

(As per Details in Exhibit and Blueprint I of Facilities to be Used).

2. Location of Designated Facilities.

No. 550, Shozoku, Iwakuni City, Yamaguchi prefecture.

3. Reasons for the Application for Permission to Use the Designated Facilities and the Purposes for the Use Thereof.

a). Reasons for Permission to Use.

This application approved Ltr. ESS/SCAP 15 June 1950

Pursuant to the Informal Memorandum dated July 13, 1949, relating to the reopening of the Pacific Coast refineries, the Marifu Refinery, in anticipation of completing rehabilitation in June 1950, is currently rushing its repairs and rehabilitation. However, it will require enormous expenditure and outlay of materials and time if our storage tanks and accessory equipment, which had been heavily damaged by bombing during the war, were to be rehabilitated. Therefore, application is hereby made for permission to use the existing idle facilities lying in the adjacent premises, as they are, to the end that such use may con

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Sec II

2. Location of Designated Facilities.

No. 550, Shozoku, Iwakuni City, Yamaguchi prefecture.

3. Reasons for the Application for Permission to Use the Designated Facilities and the Purposes for the Use Thereof.

a). Reasons for Permission to Use.

This application approved 6th. ESS/SCAP 15 June 1950

Pursuant to the Informal Memorandum dated July 13, 1949, relating to the reopening of the Pacific Coast refineries, the Marifu Refinery, in anticipation of completing rehabilitation in June 1950, is currently rushing its repairs and rehabilitation. However, it will require enormous expenditure and outlay of materials and time if our storage tanks and accessory equipment, which had been heavily damaged by bombing during the war, were to be rehabilitated. Therefore, application is hereby made for permission to use the existing idle facilities lying in the adjacent premises, as they are, to the end that such use may contribute to the rehabilitation of Japan's economy.

At the time of constructing the Marifu Refinery in 1939, Koa Oil occupied the strip of land in the southern portion of the present Arsenal site extending to the sea. When Koa Oil started its construction in 1940, the Army Fuel Arsenal decided to use this site, and Koa Oil was forced to move into the present premises, which provided no outlet. The exchange of sites was based on the following conditions:

i) That Koa Oil will be given a space to build a road within the premises for Koa's exclusive use.

ii) That Koa Oil will be allowed to lay water pipes for domestic and industrial uses, and also electric power lines. Koa Oil will be allowed to make joint use of the water pipes leading from the water source to the Army Fuel Arsenal and also of the conduit.

iii) That Koa Oil will be allowed to make joint use of the port facilities, and therefore to lay its oil pipe line through the Arsenal premises.

In conformity with the foregoing conditions Koa Oil had laid water and oil pipe lines in the Army Fuel Arsenal premises, and had since been operating its Marifu Refinery.

b). Purposes for the Use Thereof.

i) For receiving and storing charging stock (topped or reduced crude).

ii) For intermediate pumps.

iii) For delivering marine water.

4. Experience and Period of the Use to which the Designated Facilities Have Been Put by Former Army Fuel Arsenal.

a). These designated facilities have been used as crude oil and products storage tanks by the former Army Fuel Arsenal for about five years. Koa Oil intends to use these in their present site for receiving topped or reduced crude and for storing of products.

b). Business Experience of the Company.

Since 1933, Koa Oil has been manufacturing various kinds of lubricating oil, asphalt and many kinds of greases at its Yokohama Refinery. In 1941, it began the construction of the Marifu Refinery, and completed a 6,000 Bbl/Day capacity Atmospheric Distillation Plant in 1943. Soon after the over-all test operation of the Catalytic Cracking Plant in 1945, the Refinery was damaged by air raid bombing. By SCAP directive of September 1946, the operations of the refineries on the Pacific Coast were suspended.

5. Products and Amount Handled by the former Army Fuel Arsenal with the Use of the Designated Facilities from 1939 to 1949.

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these in their present site for receiving topped or reduced crude and for storing of products.

b). Business Experience of the Company.

Since 1933, Koa Oil has been manufacturing various kinds of lubricating oil, asphalt and many kinds of greases at its Yokohama Refinery. In 1941, it began the construction of the Marifu Refinery, and completed a 6,000 Bbl/Day capacity Atmospheric Distillation Plant in 1943. Soon after the over-all test operation of the Catalytic Cracking Plant in 1945, the Refinery was damaged by air raid bombing. By SCAP directive of September 1946, the operations of the refineries on the Pacific Coast were suspended.

5. Products and Amount Handled by the former Army Fuel Arsenal with the Use of the Designated Facilities from 1939 to 1949.

As the yearly productions cannot be ascertained, their capacity is listed as follows:

a). Products: Crude Oil and Petroleum products (Army Fuel Arsenal)

b). Capacity:

13,000 KL	3 sets
3,200 "	3 sets
2,100 "	2 sets

6. Period of Use After Obtaining Permission.

From date of permission to date of removal for reparations, or until such other disposal is made.

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7. Amount of Monthly Estimated Storage by Koa Oil During the Foregoing Period.

Grade	Amount Treated/Month	Normal Storage	Storage Required		
			Arsenal	Koa	Total
Feed stock	90,000 Bbl	270,000 Bbl	234,000	72,000	306,000
Product and semi-product	62,000	124,000	78,000	42,000	120,000
For operation			0	76,600	76,600

8. Name of Commodities and their Destination (Koa Oil)

To refine the imported cracking stock (topped or reduced crude oil) allocated by the Government, and to distribute the products principally to consumers in Chugoku, Kyushu and Shikoku.

9. Scale of Proposed Change in Physical Facilities.

A portion of the facilities, which form the subject of this application for authorized use, have been bombed. But these can be repaired and used in their present state so there will be no particular change brought about in the physical facilities.

10. Estimated Cost for Use of the Designated Facilities.

Expenses required for Repairing the Bombed Damaged Parts

Designated Facilities	Estimated Cost
Storage tanks	¥ 6,500,000
Sea Water Equipment	2,000,000
Buildings	2,000,000
Total	¥ 10,500,000

there will be no particular change brought about in the physical facilities.

10. Estimated Cost for Use of the Designated Facilities.

Expenses required for Repairing the Bombed Damaged Parts

Designated Facilities	Estimated Cost
Storage tanks	¥ 6,500,000
Sea Water Equipment	2,000,000
Buildings	2,000,000
Total	¥ 10,500,000

11. Plan for the Continuation of Production after Removal of the Designated Facilities for Reparations.

In case the said facilities are removed, Koa Oil will instal new installations in lieu thereof on its own premises and continue operations.

Respectfully submitted,

Koa Oil Co., Ltd.

Eizaburo Noguchi
President & Director.

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Inclosure I.

Utilization Plan of Oil Tanks

(1) Refining capacity of feed oil 3,000 Bbl per day

(2) Storing capacity needed
For feed oil 90 days
For finished product 60 days

(3) The capacity needed is filled with the utilization of the oil storage of the Koa Oil Co. and the Former Fuel Depot as follows:

	Capacity needed (Bbl)	Capacity of tanks (Bbl)		
		Koa Oil	Fuel Depot	Total
I. Feed stock storage	270,000(90 days)	72,000 x 1	78,000 x 3	306,000
II. Operation				
Cracking service	21,000(7 days)	18,000 x 2	-----	36,000
Rundown	18,000(6 days)	30,000(16 tanks)	-----	30,000
Gasoline treating	5,290(5 days)	1,800 x 2 500 x 4	-----	5,600
Fuel oil blending	4,480(4 days)	3,000 x 2	-----	6,000
III. Product storage				
Gasoline	63,480(60 days)	12,000 x 2	18,000 x 2	60,000
Fuel oil	60,480(60 days)	18,000 x 1	18,000 x 1 12,000 x 2	60,000
Asphalt	34,200(60 days)	300 x 2	-----	600
Total	476,930	192,200	312,000	504,200

Note: Asphalts are directly packed into drums.

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THE REHABILITATION PLAN OF THE MARIFU REFINERY (abstract)

Name of Company: Koa Oil Co., Ltd.

Head Office: No. 12, 2-chome, Marunouchi, Chiyoda-ku, Tokyo.

1. General Statement of Rehabilitation Plan

Briefly stated, our plan is as follows:

Stage	Main Plants	Date of the Completion	Monthly Capacity
I	5,000 BPCD Topping plant, repaired and reconditioned as deasphalting plant	Dec. 31, 1949.	150,000 Bbl(Topping) 90,000 " (Deasphalting)
II	2,500 BPCD Dubbs cracking plant	June 30, 1950	75,000 " (Cracking)

Stage I

1) Reconditioning our 5,000 BPCD Topping Unit, which was only slightly damaged, for deasphalting operation alternatively.

2) Remodelling our Gasoline Continuous Treating Plant for operation of Doctor sweetening for gasoline: Capacity 4,500 BPD.

3) Supplementing the tankage shortage.

4) Repairing one of our two boilers to supply 40,000 lb/hr. steam.

Stage II

1) Conversion our catalytic cracking plant into Dubb's thermal cracking unit with a capacity of 2,500 BPCD.

2) Repairing the second one of our two boilers to supply 40,000 lb/hr. steam.

for gasoline: Capacity 4,500 BPD.

3) Supplementing the tankage shortage.

4) Repairing one of our two boilers to supply 40,000 lb/hr. steam.

Stage II

1) Conversion our catalytic cracking plant into Dubb's thermal cracking unit with a capacity of 2,500 BPCD.

2) Repairing the second one of our two boilers to supply 40,000 lb/hr. steam.

2. Estimated Monthly Production

Arabian Topped Crude (sp. gr. 0.925 characterization factor 12) Feed Rate 3,000 BPCD.

Product	Yield %	Per Month	"Note" Selling Price Per Bbl of Feed oil
Motor gasoline	35.28	31,752(Bbl)	¥ 705.60
Fuel oil "C"	33.60	30,240	302.40
Asphalt "Blown"	19.00	17,100	703.00
Total salable products	87.88	79,092	1,711.00
Refinery burner fuel	4.00	3,600	36.00
Gas & loss	8.12	7,306	----
Grand total	100.00	90,000	1,747.00

3. Principal Materials Required

Name of Materials	Stage I	Stage II
Steel in Ton	650	380
Cement in Ton	300	160
Lumber in Koku	3,200	1,300

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4. Rehabilitation Cost

	Stage I	Stage II
Materials	¥ 29,000,000	¥ 18,470,000
New equipment & machinery	6,700,000	21,230,000
Construction cost	32,300,000	32,480,000
Transportation & others	1,000,000	820,000
Total	75,000,000	73,000,000

5. Employees

Classification	Present	Full number	Supplement required
Staff	8	8	0
Engineers	25	25	0
Clerks	15	15	0
Laborers	24	300	276
Total	72	348	276

6. Additional Equipment Required

1) Storage Facilities

	Capacity(Bbl)	No.	
For Gasoline	18,000	2	To complete the semifinished tank
do.	18,000	1	New installation
For Cracking	12,000	2	do.
For Bunder oil	18,000	3	do.
For Asphalt	12,000	1	do.

2) Refining Facilities

a). Atmospheric Distillation Plant

Receiving tanks	300 Bbl	1	To transfer from Batch Stills Pt.
do.	600 "	2	To transfer from catalyser plant
Gas holders	1,750 ft^3	4	Utilize our idle holders
20 pt. switch for temp indicator		1	Newly purchase

b) Cracking Distillation Plant

Reaction chamber	1	Newly purchase
Hot oil pumps (set)	1	do.

	Capacity(Bbl)	No.	
For Gasoline	18,000	2	To complete the semifinished tank
do.	18,000	1	New installation
For Cracking	12,000	2	do.
For Bunder oil	18,000	3	do.
For Asphalt	12,000	1	do.

2) Refining Facilities

a). Atmospheric Distillation Plant

Receiving tanks	300 Bbl	1	To transfer from Batch Stills Pt.
do.	600 "	2	To transfer from catalyser plant
Gas holders	1,750 ft^3	4	Utilize our idle holders
20 pt. switch for temp indicator		1	Newly purchase

b) Cracking Distillation Plant

Reaction chamber		1	Newly purchase
Hot oil pumps (set)		1	do.
Gray's clay tower (set)		1	New installation
Fuel oil tanks	450 Bbl	2	To transfer from our catalyser plant

c) Gasoline Continuous Treator

Product pumps		2	Newly purchase
Product tanks	300 Bbl	3	To transfer from our catalyser plant
Dissolved sulphur pump		1	To transfer from our laboratory
Waste plumbite tanks	30 Bbl	2	New installation
Plumbite tank	300 Bbl	1	To transfer from our catalyser plant
Strainers		1	New installation

d) Steam Boiler

Fuel oil tanks	450 Bbl	2	To transfer from our catalyser plant
Fuel oil pumps		2	Newly purchase

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3) Packing & Transportation Facilities

a) Drum washing and reconditioning	700 Drums/Day	1 set	New installation
b) Drum filling equipment		1 set	New installation

4) Electric Receiving & Distributing Equipment

Transformers	200 KVA	2	Newly purchase
do.	75 "	6	do.
do.	50 "	1	do.
do.	30 "	2	do.
Oil Switch		5	do.
Distributing pannel board		13	do.
Switch board		2	do.
Oil circuit breaker		39	do.

7. Refining Cost Analysis Basis: Per day (Oil Feeding Rate 3,000 BPCD)

1) Refining Expenses

Direct refining expenses	¥ 243,000
Office expenses	27,000
Labor	125,000
Equipment maintenance expenses	23,000
Welfare expense	14,000
Supplies expense	47,000
Other miscellaneous	4,000
Sub-total	483,000

2) Head Office Expenses

Interest on investment	83,000
Amostisation on equipment	83,000
Supervision expenses	50,000
Fire insurance	13,000
Other miscellaneous	20,000
Sub-total	249,000
Total refining expenses	¥ 732,000
Refining cost per Bbl of Feed	244

8. Labor for Rehabilitation

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Office expenses	21,000
Labor	125,000
Equipment maintenance expenses	23,000
Welfare expense	14,000
Supplies expense	47,000
Other miscellaneous	4,000
Sub-total	483,000

2) Head Office Expenses

Interest on investment	83,000
Amostisation on equipment	83,000
Supervision expenses	50,000
Fire insurance	13,000
Other miscellaneous	20,000
Sub-total	249,000
Total refining expenses	¥ 732,000
Refining cost per Bbl of Feed	244

8. Labor for Rehabilitation

Stage I	31,500 Man-day
Stage II	25,500 "

Yours very truly

E. Noguchi
President

KOA OIL COMPANY LIMITED

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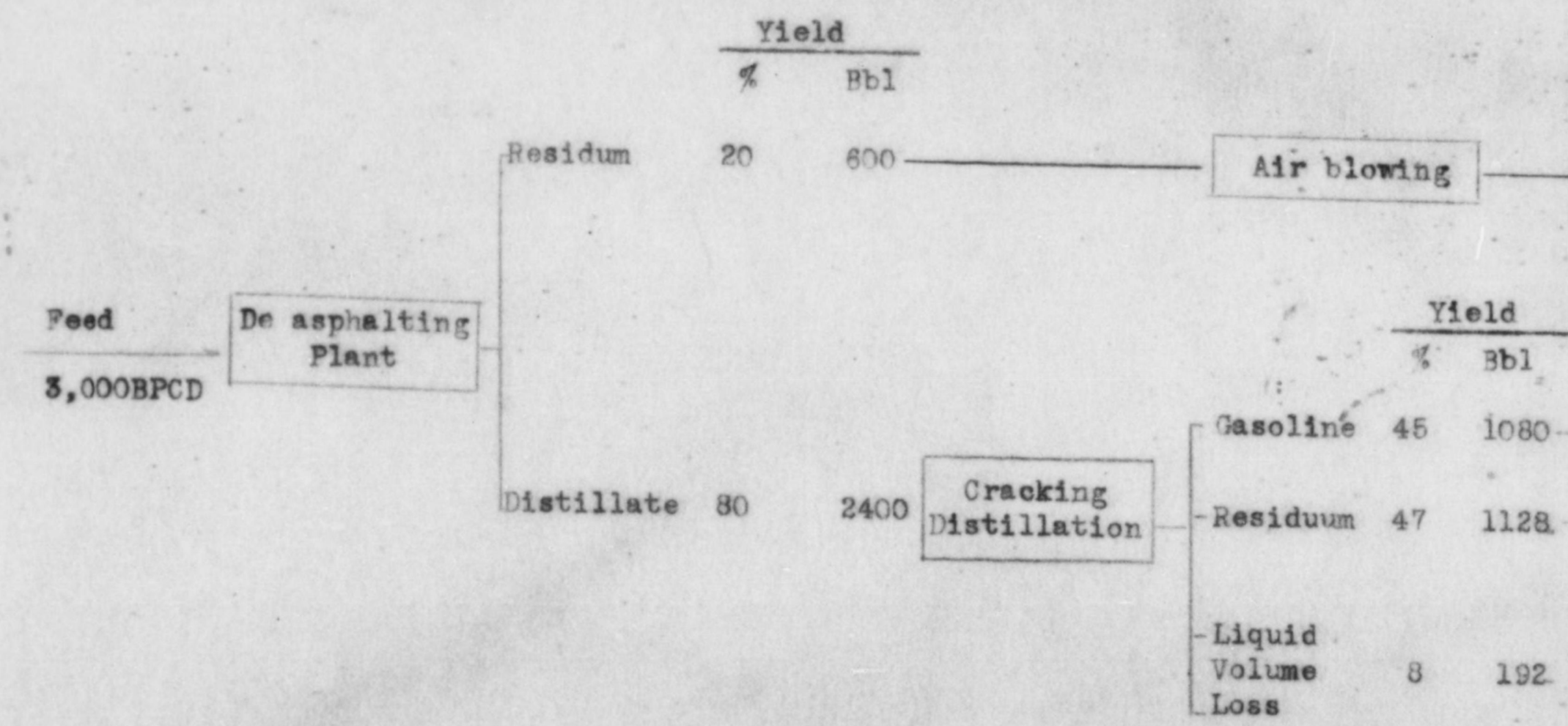
9. Refining Scheme



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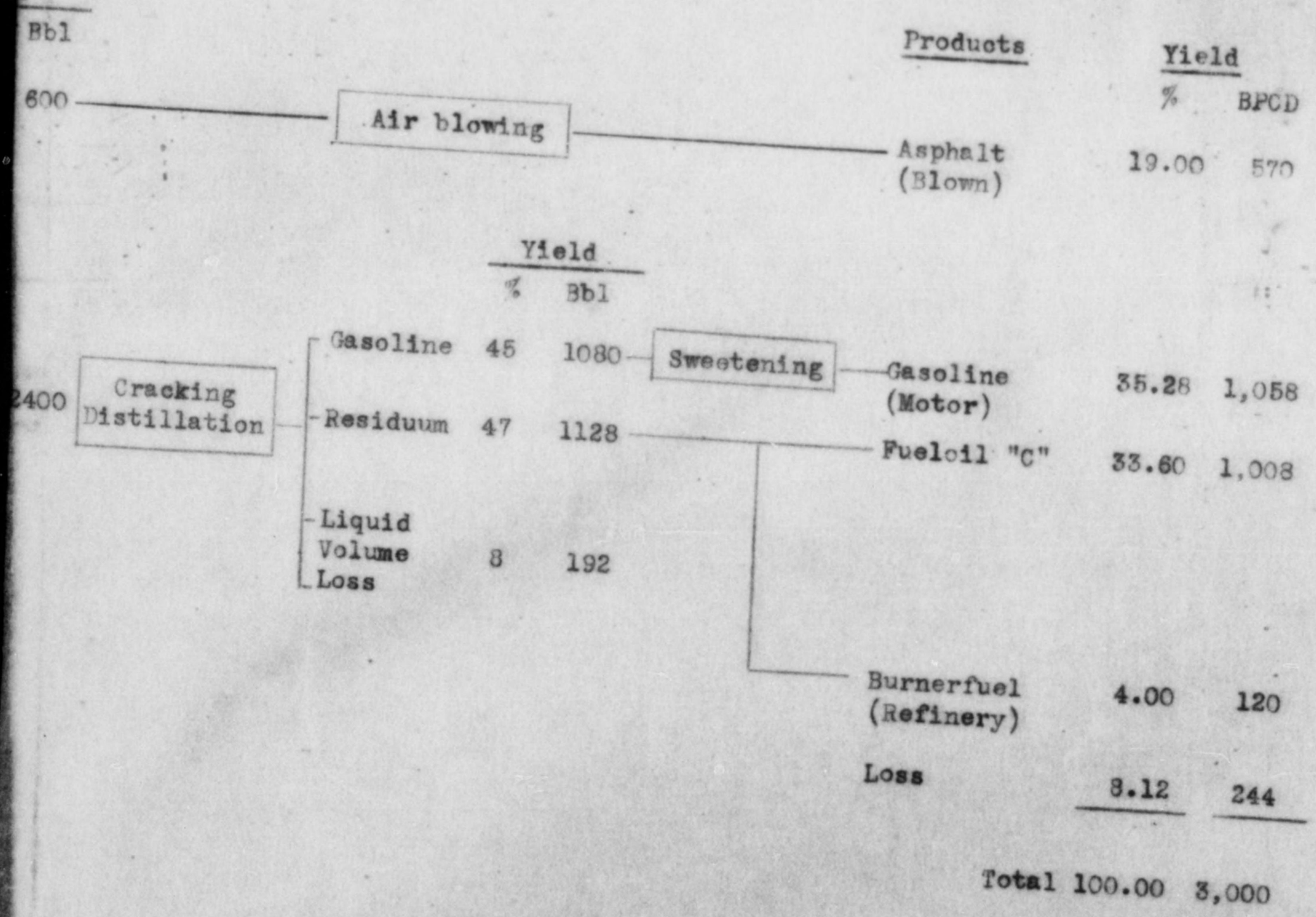

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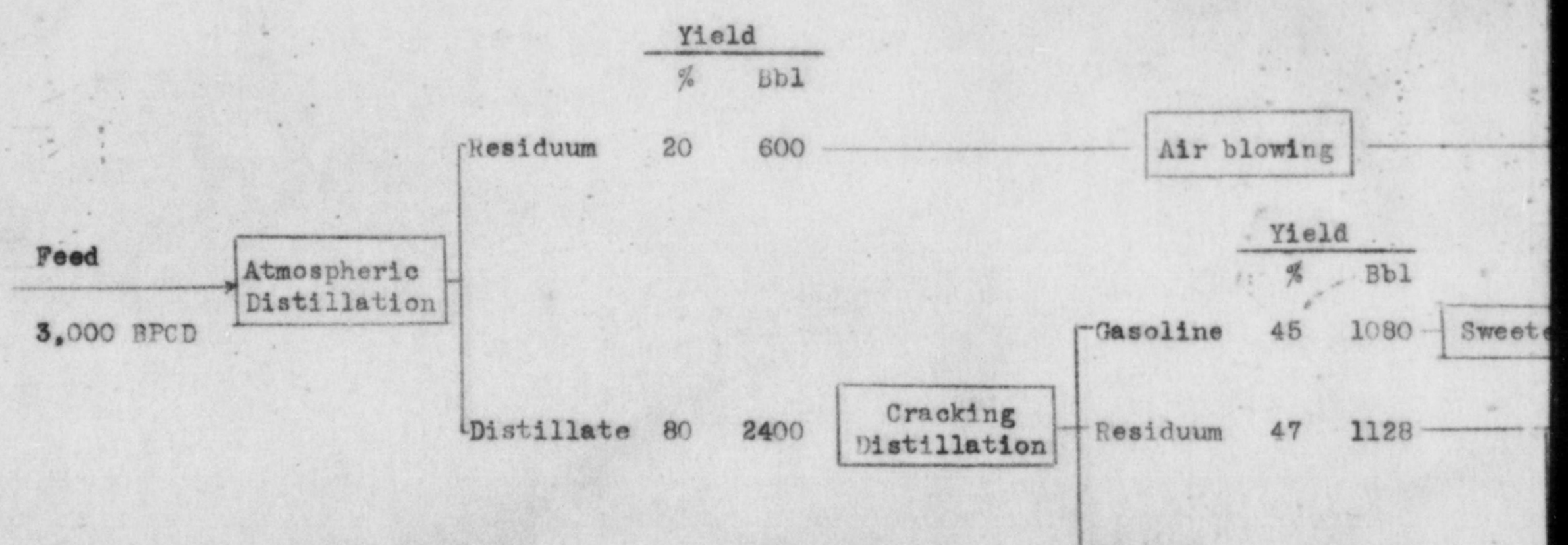
9. Refining Scheme



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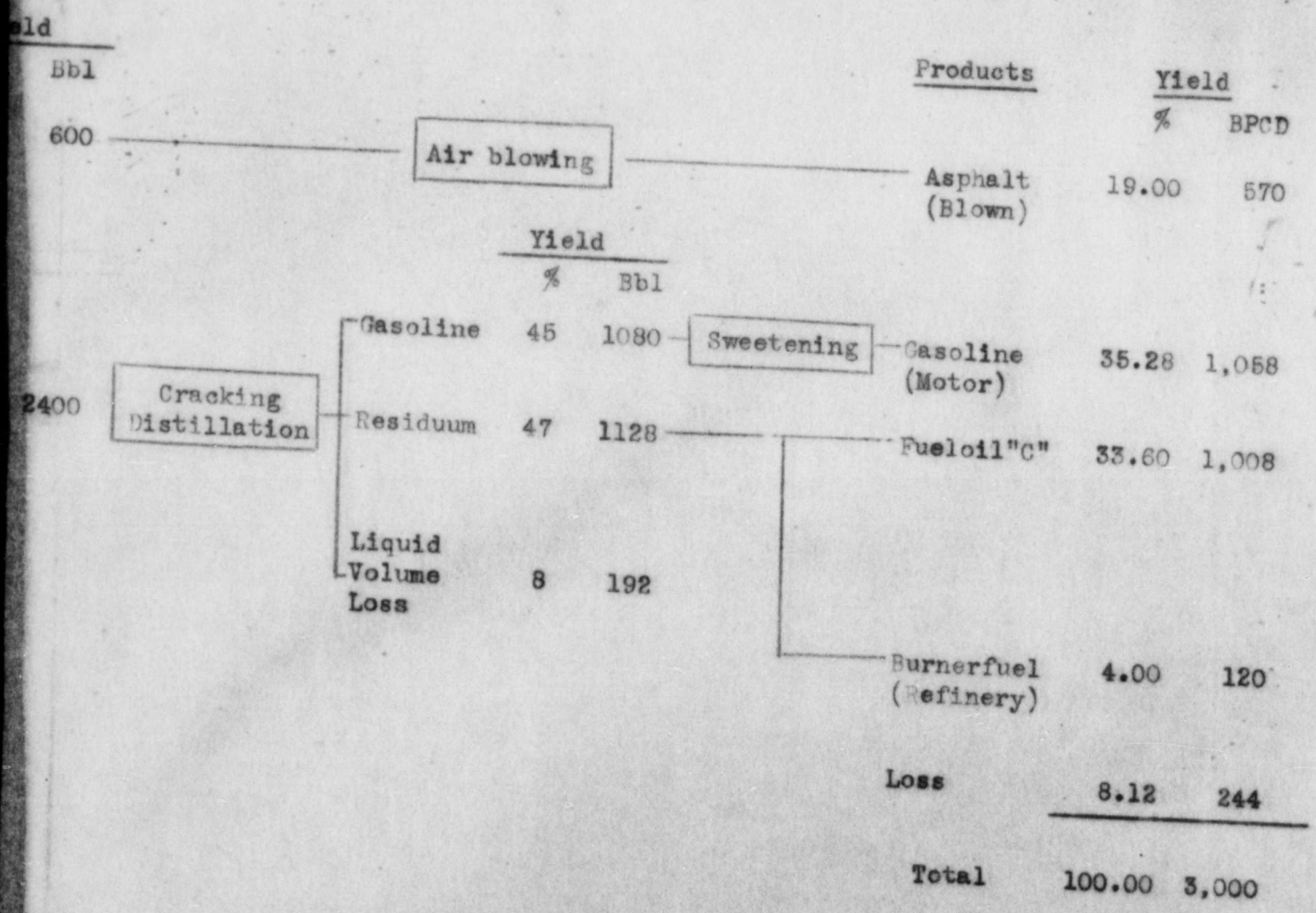

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LIST OF MACHINERIES APPLIED FOR PERMISSION TO
MAKE AUTHORIZED USE OF THE FACILITIES DESIGNATED FOR REPARATIONS

1. Machinery

Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-1T	Storage Tank	Vertical Cap; 13,000 KL (78,000 Bbl) D 36.6M x H 12.49M	1	For Feed Stock Storage
45-32-2T	do.	do.	1	do.
45-32-3T	do.	do.	1	do.
45-32-4T	do.	Vertical Cap; 3,200 KL (18,000 Bbl)	1	For Product
45-32-6T	do.	do.	1	do.
45-32-9T	do.	do.	1	do.
45-32-26T	do.	Vertical Cap; 2,100 KL (12,000 Bbl)	1	do.
45-32-27T	do.	do.	1	do.

Note:

	Arsenal Owned	Koa Owned	Total
Feed Stock	78,000 x 3 = 234,000 Bbl	72,000 x 1 = 72,000 Bbl	306,000 Bbl
Intermediate &	18,000 x 3 = 54,000 "	18,000 x 4 = 72,000 "	
Finished Product	12,000 x 2 = 24,000 "	12,000 x 2 = 24,000 "	

			1	do.
45-32-9T	do.	do.	1	do.
45-32-26T	do.	Vertical Cap; 2,100 KL (12,000 Bbl)	1	do.
45-32-27T	do.	do.	1	do.

Note:

	Arsenal Owned	Koa Owned	Total
Feed Stock	78,000 x 3 = 234,000 Bbl	72,000 x 1 = 72,000 Bbl	306,000 Bbl
Intermediate &	18,000 x 3 = 54,000 "	18,000 x 4 = 72,000 "	
Finished Product	12,000 x 2 = 24,000 "	12,000 x 2 = 24,000 "	
		6,000 x 1 = 6,000 "	
		3,000 x 2 = 6,000 "	
	78,000 "	108,000 "	186,000 "
Rundown Tank (Small Size)		22 12,200 "	12,200 "
	312,000 Bbl	192,200 Bbl	504,200 Bbl

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-2 ✓	Turbine pump	Bore: 250 mm, Head; 82 m Cap: 300 KL/Hr 200 H.P.	1	Crude Oil Pump
45-32-3 ✓	Motor	200 H.P. 3,300 V 1170 RPM	1	do.
45-32-4	Compensator	For above Motor	1	do.
45-32-6	Switch Board	For above	1	do.
thru 45-32-5V 11V	Valve	Sluice; Size - 10"	7	do.
45-32-12V	do.	" "	1	do.
45-32-13V	do.	" "	1	do.
45-32-17	Turbine pump	Bore; 4" Head 73M Cap; 60 KL/Hr 20 HP	1	Products Transfer
45-32-23	do.	Bore; 4" Head & Cap; unknown	1	do.
45-32-35	Kagano pump	Bore; 10" Cap; 572 KL/Hr	1	do.
45-32-10	Motor	20 HP 3 phase 220 V 60 cycle	1	do.
45-32-12	do.	do.	1	do.
45-32-14	do.	do.	1	do.
45-32-16	do.	do.	1	do.
45-32-18	do.	do.	1	do.
45-32-24	do.	15 HP 3 phase 120 V 60 cycle	1	do.
45-32-36	do.	150 HP 3 phase 3,300V 60 cycle	1	do.
45-32-30	Switch Board	(4 Oil Switch)	1	do.
45-32-33	Switch Board	For Low tention use 12 switches mounted	1	do.
45-32-31	Compensator	For 75 HP Motor 3,300 V 60-	1	do.

45-32-17	Turbine pump	Bore; 4" Head 73M Cap; 60 KL/Hr 20 HP	1	Products Transfer
45-32-23	do.	Bore; 4" Head & Cap; unknown	1	do.
45-32-35	Kagano pump	Bore; 10" Cap; 572 KL/Hr	1	do.
45-32-10	Motor	20 HP 3 phase 220 V 60 cycle	1	do.
45-32-12	do.	do.	1	do.
45-32-14	do.	do.	1	do.
45-32-16	do.	do.	1	do.
45-32-18	do.	do.	1	do.
45-32-24	do.	15 HP 3 phase 120 V 60 cycle	1	do.
45-32-36	do.	150 HP 3 phase 3,300V 60 cycle	1	do.
45-32-30	Switch Board	(4 Oil Switch)	1	do.
45-32-33	Switch Board	For Low tention use 12 switches mounted	1	do.
45-32-31	Compensator	For 75 HP Motor 3,300 V 60-	1	do.
45-32-32	do.	do.	1	do.
45-32-78	Kagano pump	Bore; 4" 15 HP Cap; 0.95 m^3/Min	1	do.
45-32-79	do.	do.	1	do.
45-32-60	Turbine Pump	Bore; 5" 20 HP Head; 20M Cap: 1.25 m^3/Min	1	do.
45-32-81	do.	Bore: 4" 20 HP Head: 73M Cap: 1 m^3/Min	1	do.
45-32-82	Worthington Pump	6 x 4 x 6 Cap 8.6 KL/Hr (Duplex)	1	do.
45-32-83	Motor	20 HP 3 Phase 220 V 60 cycle 1,740 RPM 6 poles	1	do.
45-32-84	do.	do.	1	do.
45-32-85	do.	do.	1	do.
45-32-86	do.	50 HP [illegible]		

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45-32-12	do.	do.	1	do.
45-32-14	do.	do.	1	do.
45-32-16	do.	do.	1	do.
45-32-18	do.	do.	1	do.
45-32-24	do.	15 HP 3 phase 120 V 60 cycle	1	do.
45-32-36	do.	150 HP 3 phase 3,300V 60 cycle	1	do.
45-32-30	Switch Board	(4 Oil Switch)	1	do.
45-32-33	Switch Board	For Low tention use 12 switches mounted	1	do.
45-32-31	Compensator	For 75 HP Motor 3,300 V 60-	1	do.
45-32-32	do.	do.	1	do.
45-32-78	Kagano pump	Bore; 4" 15 HP Cap; 0.95 m^3/Min	1	do.
45-32-79	do.	do.	1	do.
45-32-60	Turbine Pump	Bore; 5" 20 HP Head; 20M Cap: 1.25 m^3/Min	1	do.
45-32-81	do.	Bore: 4" 20 HP Head: 73M Cap: 1 m^3/Min	1	do.
45-32-82	Worthington Pump	6 x 4 x 6 Cap 8.6 KL/Hr (Duplex)	1	do.
45-32-83	Motor	20 HP 3 Phase 220 V 60 cycle 1,740 RPM 6 poles	1	do.
45-32-84	do.	do.	1	do.
45-32-85	do.	do.	1	do.
45-32-86	do.	50 HP 3 phase 330 V 60 cycle 865 RPM.	1	do.

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Inventory No.	Name of Machinery	Brief Specification		Quantity	Remarks
45-32-57V 45-32-58V	Valve	Sluice:	Size: 8"	2	Products transfer
thru 45-32-14V -17V	do.	"	" 10"	4	Crude oil unloading
thru 45-32-21V -24V	do.	"	" 10"	4	do.
45-32-26V	do.	do.		1	do.
45-32-32V -33V	do.	do.		2	do.
45-32-34V	do.	do.		1	do.
thru 45-32-35V -40V	do.	do.		6	do.
45-32-46V	do.	do.		1	do.
45-32-47V	do.	do.		1	do.
45-32-48V	do.	do.		1	do.
45-32-49V	do.	do.		1	do.
45-32-50V	do.	do.		1	do.
thru 45-32-51V -54V	do.	do.		4	do.
45-32-55V	do.	Sluice:	Size: 8"	1	do.
45-32-56V	do.	do.		1	do.
45-32-4V	do.	Sluice:	Size: 6"	1	do.
45-32-30V -31V	do.	do.		2	do.
thru 45-32-41V	do.	do.		5	do.

45-32-49V	do.	do.		1	do.
45-32-50V	do.	do.		1	do.
thru 45-32-51V -54V	do.	do.		4	do.
45-32-55V	do.	Sluice:	Size: 8"	1	do.
45-32-56V	do.	do.		1	do.
45-32-4V	do.	Sluice:	Size: 6"	1	do.
45-32-30V -31V	do.	do.		2	do.
thru 45-32-41V 45V	do.	do.		5	do.
Non	Pipe	Cast Iron	Dia 10 in	882 M	Crude unloading
"	"	Gas	" 10 "	2,167 M	do.
"	"	"	" 6 "	432 M	do.
45-32-9	Turbine pump	Bore: 4" Cap: 60 KL/Hr	Head: 73 M	1	Products transfer
45-32-11	do.	do.		1	do.
45-32-13	do.	do.		1	do.
45-32-15	do.	do.		1	do.
45-32-67V 68V	Valve	Sluice:	Size: 8"	2	do.
45-32-76V	do.	do.		1	do.
45-32-79V	do.	do.		1	do.
45-32-80V 81V	do.	do.		2	do.

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-89V 90V	Valve	Sluice: Size: 8"	2	Products transfer
45-32-93V	do.	do.	1	do.
45-32-105V	do.	do.	1	do.
45-32-110V	do.	do.	1	do.
45-32-112V	do.	do.	1	do.
45-32-117V	do.	do.	1	do.
45-32-125V	do.	do.	1	do.
45-32-129V	do.	do.	1	do.
45-32-137V 138V	do.	do.	2	do.
45-32-145V	do.	do.	1	do.
45-32-150V	Valve	Sluice: Size: 8"	1	do.
45-32-154V 155V	do.	do.	2	do.
45-32-160V	do.	do.	1	do.
45-32-162V 163V	do.	do.	2	do.
45-32-173V 174V	do.	do.	2	do.
45-32-180V	do.	do.	1	do.
thru 45-32-189V 191V	do.	do.	3	do.
45-32-196V 197V	do.	do.	2	do.

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45-32-154V 155V	do.	do.		2	do.
45-32-160V	do.	do.		1	do.
45-32-162V 163V	do.	do.		2	do.
45-32-173V 174V	do.	do.		2	do.
45-32-180V	do.	do.		1	do.
thru 45-32-189V 191V	do.	do.		3	do.
45-32-196V 197V	do.	do.		2	do.
45-32-202V 203V	do.	do.		2	do.
45-32-210V 211V	do.	do.		2	do.
45-32-217V	do.	do.		1	do.
thru 45-32-232V 238V	do.	do.		7	do.
45-32-239V	do.	Sluice:	12"	1	do.
45-32-254V 255V	do.	Sluice:	8"	2	do.
45-32-258V	do.	do.		1	do.
45-32-59V 60V	do.	Sluice:	6"	2	do.
thru 45-32-63V 66V	do.	do.		4	do.
" 45-32-69V 71V	do.	do.		3	do.

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-32-77V	Valve	Sluice: 6"	1	Products Oil Transfer
thru 45-32-82V 84V	do.	"	3	do.
45-32-106V 107V	do.	"	2	do.
thru 45-32-94V 104V	do.	"	11	do.
45-32-111V	do.	"	1	do.
" 113V	do.	"	1	do.
" 116V	do.	"	1	do.
" 118V 119V	do.	"	2	do.
thru 45-32-122V 124V	do.	"	3	do.
45-32-128V	do.	"	1	do.
" 130V	do.	"	1	do.
" 131V	do.	"	1	do.
thru 45-32-134V 136V	do.	"	3	do.
45-32-139V	do.	"	2	do.
" 140V				
" 144V	do.	"	1	do.
" 148V 149V	do.	"	2	do.
" 151V	do.	"	1	do.

" 118V	do.	"			1	do.
119V					2	do.
thru 45-32-122V	do.	"				
124V					3	do.
45-32-128V	do.	"				
" 130V	do.	"			1	do.
" 131V	do.	"			1	do.
thru 45-32-134V	do.	"			1	do.
136V					3	do.
45-32-139V	do.	"				
" 140V					2	do.
" 144V	do.	"				
" 148V	do.	"			1	do.
149V					2	do.
" 151V	do.	"				
" 158V	do.	Sluice:		Size: 6"	1	do.
159V					2	do.
" 161V	do.		do.			
thru 45-32-168V	do.		do.		1	do.
170V					3	do.
45-32-172V	do.		do.			
" 175V	do.		do.		1	do.
" 177V	do.		do.		1	do.
thru 45-32-181V	do.		do.		1	do.
183V					3	do.
" " 186V	do.		do.			
188V					3	do.
45-32-192V	do.		do.			
193V					2	do.

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" 144V	do.	"		1	
" 148V 149V	do.	"		2	
" 151V	do.	"		1	do.
" 158V 159V	do.	Sluice:	Size: 6"	2	do.
" 161V	do.	do.		1	do.
thru 45-32-168V 170V	do.	do.		3	do.
45-32-172V	do.	do.		1	do.
" 175V	do.	do.		1	do.
" 177V	do.	do.		1	do.
thru 45-32-181V 183V	do.	do.		3	do.
" " 186V 188V	do.	do.		3	do.
45-32-192V 193V	do.	do.		2	do.

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Inventory No.	Name of Machinery	Brief Specification			Quantity	Remarks
45-32-198V 199V	Valve	Sluice	Size:	6"	2	Products Oil Transfer
45-32-206V 207V	do.	do.			2	do.
thru 45-32-212V 216V	do.	do.			5	do.
thru 45-32-218V 231V	do.	do.			14	do.
thru 45-32-240V 253V	do.	do.			14	do.
45-32-256V 257V	do.	do.			2	do.
thru 45-32-259V 286V	do.	do.			28	do.
None	do.	Sluice	Size:	5"	5	do.
"	do.	"	"	4"	84	do.
"	do.	"	"	3"	47	do.
"	do.	"	"	"	2	do.
"	do.		"	2"	21	do.
"	do.			1 1/2"	14	do.
"	Pipe	Gas	Dia:	2"	85 M	Products Oil Transfer above ground
"	do.	"	"	3"	5,327 M	do.
"	do.	"	"	4"	3,198 M	do.
"	do.	"	"	5"	228 M	do.
"	do.	"	"	6"	2,938 M	do.

thru 45-32-259V 286V	do.	do.			28	do.
None	do.	Sluice	Size:	5"	5	do.
"	do.	"	"	4"	84	do.
"	do.	"	"	3"	47	do.
"	do.	"	"	"	2	do.
"	do.		"	2"	21	do.
"	do.			1 1/2"	14	do.
"	Pipe	Gas	Dia:	2"	85 M	Products Oil Transfer above ground
"	do.	"	"	3"	5,327 M	do.
"	do.	"	"	4"	3,198 M	do.
"	do.	"	"	5"	228 M	do.
"	do.	"	"	6"	2,938 M	do.
"	do.	"	"	8"	955 M	do.
"	do.	"	"	4"	145 M	Products Oil Transfer under ground
"	do.	"	"	6"	50 M	do.
"	do.	"	"	8"	150 M	do.
45-5-1F-16	Centrifugal Pump	Bore: 400 mm, Pressure: 5Kg/c^2 Cap: 18.5 m^3/Min			1	Sea water
" 2F-16	Diesel Engine	Cap: 375 HP			1	do.
" 3F-16	Reducer	Gear Ratio 1/3.12 for 375 HP Motor			1	do.
" 4F-16	Accumulator	Vertical & Cylindrical Type Dia: 0.4M x H: 1.75M			2	do.
" 6F-16	Storage Tank	D: 1 M x H: 1.35 M			1	do.
" 7F-16	Centrifugal Pump	Pressure: 5 Kg/c^2, Cap: 18.5 m^3/Min			2	do.
" 9F-16 10F-16	Motor	Induction 320 HP 3 phase 1,170 RPM			2	do.
" 11F-16						

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"	do.	"	"	3"	47	do.
"	do.	"	"	"	2	do.
"	do.		"	2"	21	do.
"	do.			1 1/2"	14	do.
"	Pipe	Gas	Dia:	2"	85 M	Products Oil Transfer above ground
"	do.	"	"	3"	5,327 M	do.
"	do.	"	"	4"	3,198 M	do.
"	do.	"	"	5"	228 M	do.
"	do.	"	"	6"	2,938 M	do.
"	do.	"	"	8"	955 M	do.
"	do.	"	"	4"	145 M	Products Oil Transfer under ground
"	do.	"	"	6"	50 M	do.
"	do.	"	"	8"	150 M	do.
45-5-1F-16	Centrifugal Pump	Bore: 400 mm, Pressure: 5Kg/c^2 Cap: 18.5 m^3/Min			1	Sea water
" 2F-16	Diesel Engine	Cap: 375 HP			1	do.
" 3F-16	Reducer	Gear Ratio 1/3.12 for 375 HP Motor			1	do.
" 4F-16	Accumulator	Vertical & Cylindrical Type Dia: 0.4M x H: 1.75M			2	do.
" 6F-16	Storage Tank	D: 1 M x H: 1.35 M			1	do.
" 7F-16	Centrifugal Pump	Pressure: 5 Kg/c^2, Cap: 18.5 m^3/Min			2	do.
" 9F-16 10F-16	Motor	Induction 320 HP 3 phase 1,170 RPM			2	do.
" 11F-16	Switch Board	3 ammeters & 3 switches			1	do.

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Inventory No.	Name of Machinery	Brief Specification	Quantity	Remarks
45-5-12F-16 13F-16	Resistor	3,300 V 450 Ohm	2	Sea water
" 14F-16	Accumulator	Vertical & Cylindrical Dia: 1m x H: 1.75m	1	do.
" 15F-16 16F-16	Plunger Pump	Vertical: Cap: 180 L/min	2	do.
" 17F-16	Motor	Induction 220 V 1/2 HP	1	do.
thru 45-5-18F-16 20F-16	Valve	Sheck Size 400 mm	3	do.
" " 21F-16 30F-16	do.	Sluice " 300 mm	10	do.
45-5-31F-16 32F-16	do.	Foot " 400 mm	2	do.
" 33F-16 35F-16	do.	Sluice " 300 mm	2	do.
" 34F-16 39F-16	do.	Sluice " 200 mm	2	do.
thru 45-5-36F-16 38F-16	do.	" " 250 mm	3	do.
None	do.	" " 100 mm	1	do.
"	Pipe	Dia: 400 mm	1,150 M	Sea water under ground
"	do.	" 300 mm	800 M	do.
"	do.	" 100 mm	100 M	do.
thru 45-5-32-1V 3V	Atomos Valve	Size: 6"	3	for Storage Tank
" " 18V 20V	do.	do.	3	do.

32F-16			" 400 mm	2	do.
" 33F-16 35F-16	do.	Sluice	" 300 mm	2	do.
" 34F-16 39F-16	do.	Sluice	" 200 mm	2	do.
thru 45-5-36F-16 38F-16	do.	"	" 250 mm	3	do.
None	do.	"	" 100 mm	1	do.
"	Pipe	Dia: 400 mm		1,150 M	Sea water under ground
"	do.	" 300 mm		800 M	do.
"	do.	" 100 mm		100 M	do.
thru 45-5-32-1V 3V	Atomos Valve	Size: 6"		3	for Storage Tank
" " 18V 20V	do.	do.		3	do.
" " 27V 29V	do.	do.		3	do.
45-32-108V	do.	do.		1	do.
" 109V	do.	do.		1	do.
" 120V	do.	do.		1	do.
" 121V	do.	do.		1	do.
" 61V	do.	do.		1	do.
" 62V	do.	do.		1	do.
" 85V	do.	do.		1	do.
" 86V	do.	do.		1	do.

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