Top Secret

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DIRECTORATE OF
INTELLIGENCE

Industrial Facilities
(Non-Military)

Basic Imagery Interpretation Report

Kuybyshev Petroleum Refinery No. 2

Novokuybyshevsk, USSR

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DATE MAY 1971
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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME		COUNTRY
Kuybyshev Petroleum Refinery No. 2		UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	25X1
39UVU265840	53-06-19N 049-54-41E	

MAP REFERENCE

8th RTS. USATC, Series 200, Sheet M0165-17HL, 5th ed. Nov 67. Scale 1:200,000

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NEGATION DATE (If required)

NA

ABSTRACT

Kuybyshev Petroleum Refinery No. 2 is the largest single refinery in the Soviet Union with respect to charge capacity. It is one of two petroleum refineries in the Kuybyshev area.

The major production facilities of the refinery include crude oil distillation units, desalting units, thermal and catalytic cracking units, gas fractionation and probable gas processing units, lubricating oil plants, blending and treating units, alkylation and probable thermal alkylation units, probable catalytic reforming-hydrotreating units, possible hydrotreating units, and possible polymerization and extraction units. Several unidentified processing units are also present. In January 1971 one processing unit was under construction.

The products include straight-run, cracked and blended gasolines with a wide range of octane ratings, kerosene, diesel and fuel oils, lubricating oils, waxes, asphaltic materials, and probably petrochemicals or petrochemical feedstocks.

The refinery was in operation on all photographic coverage from April 1962 through January 1971.

This report includes a location map, two line drawings, three photographs of the refinery, mensuration of storage tanks, and a discussion of the status of facilities.

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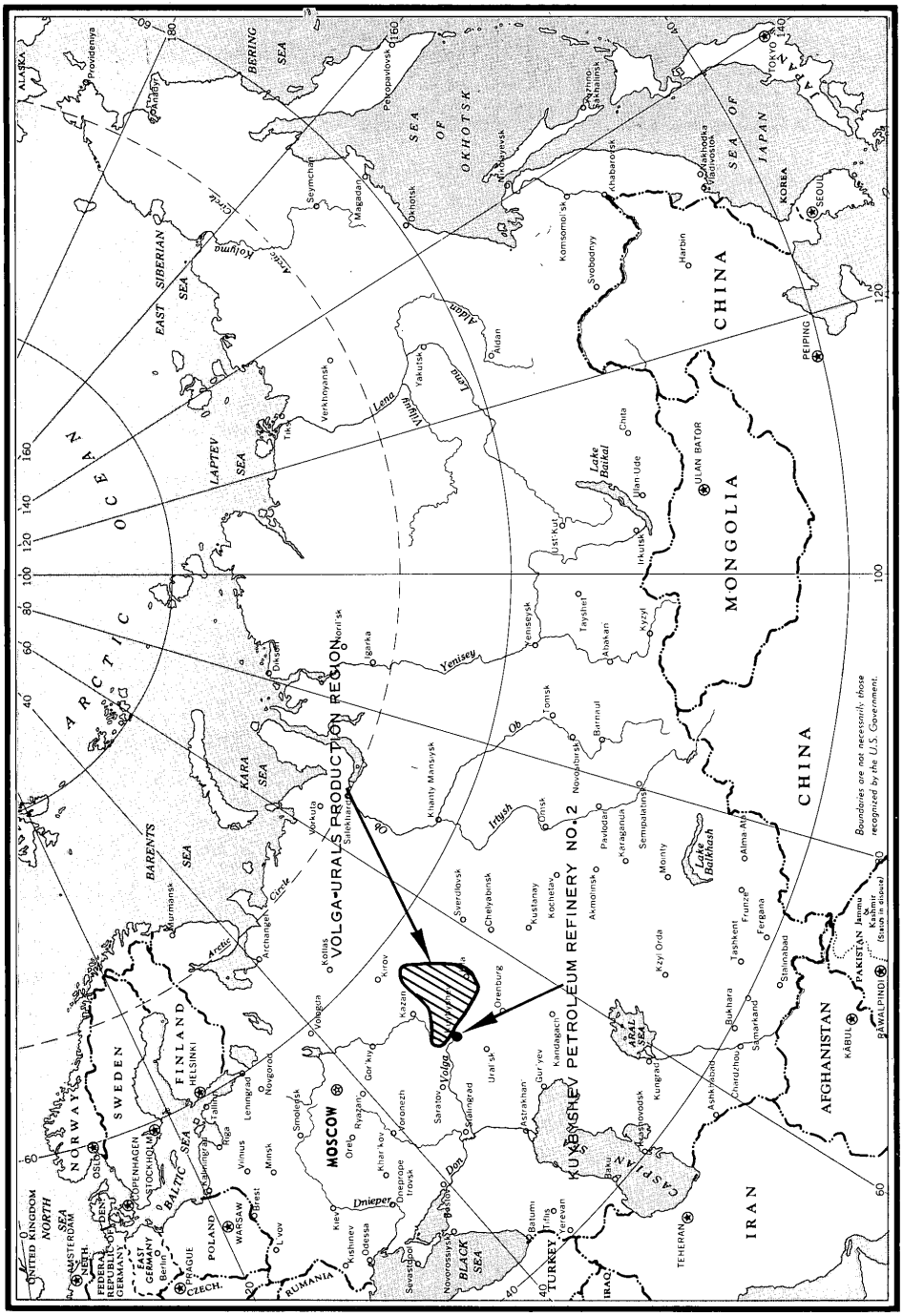

FIGURE 1. LOCATION MAP.

INTRODUCTION

Kuybyshev Petroleum Refinery No. 2 is the largest single refinery in the Soviet Union with respect to charge capacity. It is one of two petroleum refineries in the Kuybyshev Area and is situated on the southwest bank of the Volga River, about 12 nautical miles (nm) southwest of Kuybyshev (see Figure 1). The refinery reportedly was started in 1950 and began partial operation in 1952. 1/

The refinery is served by a rail spur from the main line between Kuybyshev and Syzran. Most of the crude oil to charge the refinery comes by pipeline from the Makhanovo oil field. Smaller amounts are supplied by the oil fields at Romaskino and Tuymazy. All three of these oil fields are in the Volga-Urals production region. 1/

Electric power and steam for the refinery are produced at the collocated Kuybyshev Heat and Thermal Power Plant TETS 2 [redacted] The adjacent Kuybyshev Synthetic Alcohol Plant Novokuybyshevsk [redacted] is connected to the refinery by pipelines. The Kuybyshev Petroleum Refinery Lend Lease 3 [redacted] is located 5 nm east of the refinery.

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BASIC DESCRIPTION

Physical Features

This refinery occupies an area 14,000 by 8,500 feet and covers about 2,700 acres (see Figures 2-6). It is partially secured by walls and fences.

Operational Functions

The major refining units presently in operation at this refinery include ten crude oil distillation units, ten desalting units, five thermal cracking units, three catalytic cracking units, one gas fractionation unit, one probable gas processing unit, two lubricating oil plants, several blending and treating units, one alkylation unit and one probable thermal alkylation unit, three probable catalytic reforming-hydrotreating (CR-HT) units, three possible polymerization and extraction units, and two possible hydrotreating units. Also, there are several unidentified processing units, including some which probably produce petrochemicals or petrochemical feedstocks.

Based on the identification of processing units, the products of the refinery include straight-run, cracked, and blended gasolines in a wide range of octane ratings, kerosene, diesel and fuel oils, lubricating oils, waxes, asphaltic materials, and probably petrochemicals or petrochemical feedstocks.

Construction and Operational Status

The earliest good-quality photography used in this study is from September 1962. At that time approximately 90 percent of the present processing equipment and storage tanks were in place. The only units not in place were the three probable CR-HT units, the sulfuric acid plant, a possible blending unit, and four unidentified processing units.

On photography of February 1964, the three probable CR-HT units (Area B, Figure 4) were under construction, the sulfuric acid plant was complete, and the possible blending unit (Area JJ, Figure 6) was complete. Two of the unidentified processing units (Areas II and QQ) were complete and one was under construction (Area J).

By May 1965 one of the probable CR-HT units was complete and the other two were nearly complete. Construction was continuing on the unidentified processing units.

Photography of June 1966 revealed that the other two probable CR-HT units were complete. The unidentified processing unit in Area J was nearly complete. The unidentified unit in Area C was in the early stages of construction.

By April 1970 the unidentified processing units in Areas C and J were complete. The probable thermal alkylation unit in Area CC3 was being dismantled. Construction had started on a processing unit just southeast of Area J (Figure 4).

By January 1971, little additional construction was apparent on the processing unit southeast of Area J. No other construction was noted in the refinery.

Facilities and Equipment

Tables 1 and 2 list the functional areas and equipment in the refinery, and are keyed to Figures 4 and 6 respectively. The buildings and processing equipment in the unidentified unit southeast of Area J are not listed in the tables. All measurements in the tables are rounded to the nearest half-meter.

Table 1. Equipment and Facilities at Kuybyshev Petroleum Refinery No. 2 Northeast Section (Keyed to Figure 4)

Area	Functional Description	Equipment and Facilities
A	Storage	2 Probable pump buildings 1 Support building 51 Cylindrical storage tanks 7 19.5-meter-diameter 11 15-meter-diameter 9 12-meter-diameter 8 9-meter-diameter 11 6-meter-diameter
B	Probable Catalytic Reforming-Hydrotreating	2 Units, each with 4 reactors 7 columns 4 banks of heat exchangers/cooling coils/accumulators 4 pipe furnaces 1 processing building with 4 horizontal and 1 cylindrical treating tanks 7 small processing/support buildings 2 pump buildings 11 cylindrical storage tanks (not measured) 1 Unit with 4 reactors 11 columns 1 bank of heat exchangers/cooling coils/accumulators 3 pipe furnaces 5 processing buildings 3 pump buildings 2 support buildings 2 cylindrical storage tanks 3 meters in diameter 10 Support buildings

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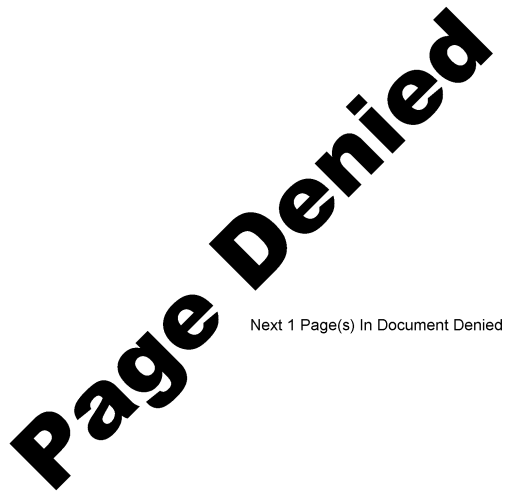

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Area	Functional Description	Equipment and Facilities
C	Unidentified Secondary Processing	1 Unit with 9 columns 1 large cluster of processing equipment 2 processing/pump buildings 1 horizontal storage tank 12 meters long 14 support buildings
D	Storage and Unidentified Secondary Processing (1) Unidentified Secondary Processing	1 Unit with 8 columns 1 processing building 3 support buildings 1 gasholder, 25X1 25X1
	(2) Storage	2 Probable pump buildings 73 Cylindrical storage tanks 4 15-meter-diameter 25X1 18 9-meter-diameter 12 6-meter-diameter 25X1 13 Horizontal storage tanks, 13.5 meters long
E	Unidentified Secondary Processing	1 Unit with 7 columns 1 cluster of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 2 cylindrical storage tanks 3 meters in diameter 1 Unit with 8 columns 1 cluster of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 processing building with 5 horizontal and 1 cylindrical treating tanks 4 processing buildings 1 pump building 1 cylindrical storage tank, 3 meters in diameter
F	Probable Gas Processing and Unidentified Secondary Processing (1) Unidentified Secondary Processing	2 Units, each with 2 columns 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 compressor building

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F (Cont)	(2) Probable Gas Processing	1 Unit with 30 columns 4 clusters of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 4 processing buildings (one with 3 horizontal tanks) 1 pump building 2 cylindrical storage tanks, 25X1
G	Probable Dewaxing and Unidentified Secondary Processing	
	(1) Probable Dewaxing	1 Unit with 3 columns 2 clusters of processing equipment 1 processing building with 12 horizontal tanks 2 processing buildings (one with 12 cylindrical tanks and 1 bank of heat exchangers/cooling coils/accumulators on the roof) 1 cylindrical storage tank, 3 meters in diameter
	(2) Unidentified Secondary Processing	1 Unit with 2 columns 1 processing building 1 support building 3 cylindrical storage tanks, 25X1
H	Water Cooling	17 Cooling towers 16 Miscellaneous buildings 27 Cylindrical storage tanks 25X1 7 12-meter-diameter 5 9-meter-diameter 9 6-meter-diameter 25X1 9 Horizontal storage tanks, 25X1 14 Water basins
I	Shipping and Probable Blending/Treating	1 Large probable blending/ treating building with 3 clusters of processing equipment 1 pipe furnace 1 cooling tower 3 cylindrical storage tanks 25X1 2 3-meter-diameter 1 Processing building 4 Shipping buildings 1 Loading rack 7 Support buildings (one under construction) 39 Cylindrical storage tanks 7 9-meter-diameter 21 6-meter-diameter 25X1 8 3-meter-diameter 4 Horizontal storage tanks 25X1 6 Water basins 25X1

25X1

Area	Functional Description	Equipment and Facilities
J	Unidentified Secondary Processing	1 Unit with 6 columns (one very large diameter) 6 banks of heat exchangers/ cooling coils/accumulators (one on top of a building) 2 pipe furnaces 1 processing building 2 pump buildings 2 support buildings 2 cylindrical storage tanks 3 meters in diameter
K	Unidentified Secondary Processing	1 Unit with 4 columns 2 clusters of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 pump building 1 support building 2 cylindrical storage tanks, 3 meters in diameter
L	Crude Oil Distillation and Desalting (1) Crude Oil Distillation	1 Unit with 1 atmospheric column 1 vacuum column 8 other columns (4 are probably recycle columns) 2 clusters of processing equipment 3 banks of heat exchangers/ cooling coils/accumulators 3 pipe furnaces 3 processing buildings (one with 6 horizontal tanks) 1 pump building 8 cylindrical storage tanks [redacted] 25X1 7 3-meter-diameter
	(2) Desalting	1 Unit with 2 dehydrating spheres 4 horizontal desalting drums 5 horizontal settling drums 1 bank of heat exchangers 2 processing buildings 1 pump building 2 cylindrical storage tanks, 3 meters in diameter
M	Storage and Shipping	2 Loading racks 24 Miscellaneous buildings 247 Cylindrical storage tanks [redacted] 25X1 13 12-meter-diameter 29 9-meter-diameter [redacted] 25X1 52 6-meter-diameter [redacted] 25X1 38 Horizontal storage tanks [redacted] 25X1

25X1

Area	Functional Description	Equipment and Facilities
N	Support and Unidentified Secondary Processing	
	(1) Support	34 Miscellaneous support buildings (two with overhead cranes)
	(2) Unidentified Secondary Processing	1 Unit with 6 columns 1 processing building 2 horizontal storage tanks, 25X1
O	Thermal Cracking	3 Units, each with 5 columns (one for vapor recovery) 4 banks of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 pump building 1 compressor building 1 support building 2 cylindrical storage tanks, 3 meters in diameter 4 horizontal storage tanks, 25X1 1 Support building
P	Possible Hydrotreating and Unidentified Secondary Processing	1 Possible hydrotreating unit with 7 columns 3 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 1 compressor building 5 processing buildings (one with 4 horizontal tanks on the roof) 2 cylindrical storage tanks, 25X1 4 horizontal storage tanks 25X1 1 U/I secondary processing unit with 4 columns 1 bank of heat exchangers/ cooling coils/accumulators 1 processing building 1 support building 1 U/I secondary processing unit with 4 columns 1 bank of heat exchangers/ cooling coils/accumulators 1 processing building 2 support buildings 3 horizontal tanks 25X1

Area	Functional Description	Equipment and Facilities
Q	Lubricating Oil Plant	
	(1) Solvent Extraction	5 Units, each with 6 columns 2 banks of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 pump building one unit has a support building 3 cylindrical storage tanks, 3 meters in diameter 4 horizontal storage tanks, 9 meters long 17 Support buildings 3 Cylindrical storage tanks, 6 meters in diameter
	(2) Deasphalting	2 Units, each with 6 columns 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 4 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks, 6 meters long 4 Support buildings
	(3) Probable Solvent Recovery	1 Unit with 2 columns 2 bank of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 1 support building 2 cylindrical storage tanks, 3 meters in diameter
	(4) Dewaxing	3 Units, each with 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 2 processing buildings 1 support building 1 overhead crane 1 cylindrical storage tank, [redacted] 25X1
	(5) Probable Dewaxing	1 Unit with 4 columns 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 3 processing buildings 2 support buildings 1 overhead crane

Area	Functional Description	Equipment and Facilities
Q (Cont)		1 Unit with 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 3 processing buildings 5 cylindrical processing/ storage tanks 1 overhead crane 1 cylindrical storage tank, [redacted] 25X1 1 Loading building with 2 cylindrical storage tanks, [redacted] 25X1 diameter 2 Support buildings 14 Cylindrical storage tanks, [redacted] 25X1
	(6) Clay Treatment	2 Units, each with 4 columns 14 cylindrical treating tanks 2 pipe furnaces 1 processing building (one has a clay receiving section) 1 support building 4 cylindrical storage tanks [redacted] 25X1 2 3-meter-diameter
R	Desalting and Storage (1) Desalting	4 Units, each with 1 bank of heat exchangers/ cooling coils/accumulators 1 processing building 4 horizontal processing/ settling tanks 1 cylindrical storage tank, 3 meters in diameter (one unit has one additional storage tank)
	(2) Storage	25 Miscellaneous buildings 271 Cylindrical storage tanks 20 33-meter-diameter 1 27-meter diameter [redacted] 25X1 36 9-meter-diameter [redacted] 25X1 84 6-meter-diameter [redacted] 25X1 65 Horizontal storage tanks [redacted] 25X1 4 24-meter-long [redacted] 25X1 15 12-meter-long 3 Spherical storage tanks, 12 meters in diameter

25X1

Area	Functional Description	Equipment and Facilities
S	Crude Oil Distillation	2 Units, each with 1 atmospheric column 1 vacuum column 8 other columns (4 are probably rerun columns) 2 banks of heat exchangers/cooling coils/accumulators 1 processing building with 7 horizontal tanks 2 pipe furnaces 1 pump building one unit has 1 support building 4 cylindrical storage tanks, 3 meters in diameter 1 Unit with 1 atmospheric column 1 vacuum column 3 other columns 3 banks of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 2 cylindrical storage tanks, 3 meters in diameter 4 horizontal storage tanks 25X1 1 Unit with 1 atmospheric column 1 vacuum column 3 other columns 4 banks of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 1 support building 2 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks 25X1 1 Unit with 1 atmospheric column 1 vacuum column 3 other columns 3 banks of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 2 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks 25X1 3 Support buildings 13 Cylindrical storage tanks 9 9-meter-diameter 25X1 3 Horizontal storage tanks, 25X1

25X1

Area	Functional Description	Equipment and Facilities
T	Blending, Treating and Shipping	1 Blending and treating unit with 1 building with 14 batch agitators/mixers 1 pipe furnace 1 processing building 1 pump building 5 cylindrical storage tanks 25X1 1 Packing and shipping building 2 Shipping buildings 2 Support buildings 6 Cylindrical storage tanks 4 9-meter diameter 25X1 2 Horizontal storage tanks 25X1
U	Unidentified Secondary Processing	1 Unit with 2 columns 1 cluster of processing equipment 3 banks of heat exchangers/ cooling coils/accumulators 1 processing building 1 pump building 1 cooling tower 2 support buildings 1 Unit with 1 column 3 processing buildings 1 support building 3 horizontal storage tanks, 25X1 10 Miscellaneous buildings 19 Cylindrical storage tanks 2 12-meter-diameter 6 6-meter-diameter 25X1 4 3-meter-diameter 12 Horizontal storage tanks 25X1
V	Water Cooling	9 Cooling towers 43 Miscellaneous buildings (3 under construction) 11 Water basins
W	Possible Blending	1 Unit with 4 columns 1 possible blending building 4 cylindrical blending/storage tanks 5 horizontal blending/storage tanks

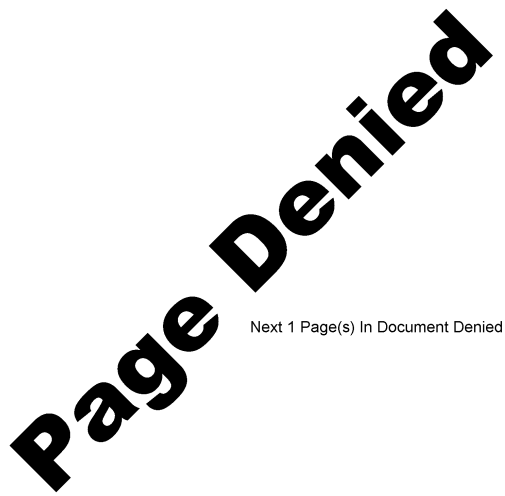
Area	Functional Description	Equipment and Facilities
X	Possible Polymerization and Extraction	
	(1) Possible Polymerization	1 Unit with 10 columns (3 are possibly re-run columns) 5 banks of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 processing building 2 pump/compressor buildings 3 support buildings 4 cylindrical storage tanks 2 3-meter-diameter 25X1
	(2) Possible Extraction	1 Unit with 5 columns 1 cluster of processing equip-ment 3 banks of heat exchangers/ cooling coils/accumulators 1 compressor building 4 horizontal storage tanks, 6 meters long
Y	Probable Blending	
	(1) Possible Blending	1 Unit with 5 processing buildings 3 support buildings 7 cylindrical storage tanks 1 6-meter-diameter 6 3-meter-diameter 11 horizontal storage tanks 25X1 10 6-meter-long
	(2) Probable Blending	1 Unit with 1 cluster of processing equip-ment 1 pipe furnace 1 probable blending building 20 cylindrical probable blend-ing tanks 2 horizontal probable blend-ing tanks 1 Support building 10 Cylindrical storage tanks 25X1 5 3-meter-diameter

25X1

Table 2. Equipment and Facilities at Kuybyshev Petroleum Refinery No. 2 Southwest Section (Keyed to Figure 6)

Area	Functional Description	Equipment and Facilities
AA	Desalting	1 Unit with 1 cluster of processing equipment 1 bank of heat exchangers/cooling coils/accumulators 1 processing building 4 cylindrical treating/storage tanks 4 horizontal treating/storage tanks 2 Units, each with 1 bank of heat exchangers/cooling coils/accumulators 1 processing building 1 cylindrical treating/storage tank 5 horizontal treating/storage tanks 1 Unit with 1 bank of heat exchangers/cooling coils/accumulators 1 processing building 5 horizontal treating/storage tanks 1 Unit with 1 bank of heat exchangers/cooling coils/accumulators 1 processing building 1 horizontal treating/storage tank 2 Support buildings
BB	Administration, Support and Unidentified Secondary Processing (1) Administration and Support	46 Miscellaneous buildings
	(2) Unidentified Secondary Processing	1 Unit with 3 columns 1 processing building
CC	Thermal Cracking and Probable Thermal Alkylation (1) Thermal Cracking	2 Units, each with 5 columns (one for vapor recovery) 4 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 1 compressor building 1 support building (one unit has 2 support buildings) 2 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks, [redacted]

25X1



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Area	Functional Description	Equipment and Facilities
CC (Cont)	(2) Probable Thermal Alkylation	1 Unit with 4 columns 2 clusters of processing equipment 1 pipe furnace 1 pump building 1 support building 2 cylindrical storage tanks, 3 meters in diameter
	(3) Probable Thermal Alkylation (Being Dismantled)	
DD	Gas Fractionation and Possible Hydrotreating (1) Gas Fractionation	1 Unit with 6 columns 4 clusters of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 2 compressor buildings 6 support buildings 2 cylindrical storage tanks, 3 meters in diameter 4 horizontal storage tanks [redacted] 25X1
	(2) Possible Hydrotreating	1 Unit with 7 columns 2 clusters of processing equipment 3 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 1 compressor building 2 support buildings 2 cylindrical storage tanks, 3 meters in diameter 12 horizontal storage tanks, [redacted] 25X1
EE	Catalytic Cracking	3 Thermofor (moving-bed) units, each with 3 columns (one unit has 4 columns) 1 cluster of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 1 blower building with 3 blowers 3 support buildings 6 cylindrical storage tanks [redacted] 25X1 4 3-meter-diameter 1 horizontal storage tank [redacted] 25X1 has an additional horizontal storage tank, 15 meters long)

25X1

25X1

Area	Functional Description	Equipment and Facilities
EE (Cont)		1 U/I processing unit with 1 cluster of processing equipment 1 compressor building 4 support buildings 1 horizontal storage tank, [redacted] 25X1 6 Support buildings (one is under construction) 3 Horizontal storage tanks [redacted] 25X1
FF	Alkylation	1 Unit with 5 columns (includes a debutanizer, deisobutanizer, depropanizer and a rerun column) 1 bank of heat exchangers/ cooling coils/accumulators 1 reactor building with 4 reactors 1 settler and acid recovery building with 8 horizontal tanks 1 caustic reclamation building with 1 horizontal tank 6 cylindrical surge, recycle and feedstock tanks 1 distillation building 1 pump building 2 horizontal acid tanks 3 mixer/storage tanks 1 support building 3 Support buildings
GG	Unidentified Secondary Processing	1 Unit with 4 columns 1 cluster of processing equipment 3 banks of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 pump building 1 support building 2 cylindrical storage tanks 1 6-meter-diameter 1 3-meter-diameter 4 horizontal storage tanks, [redacted] 25X1 1 Unit with 2 columns 1 cluster of processing equipment 1 compressor building 1 support building 1 horizontal storage tank [redacted] 25X1 2 gasholders, [redacted] 25X1 diameter

25X1

Area	Functional Description	Equipment and Facilities
HH	Possible Polymerization and Extraction	
	(1) Possible Polymerization	2 Units, each with 10 columns (3 are possibly rerun columns) 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 processing building 2 pump/compressor buildings 1 support building 2 cylindrical storage tanks, 3 meters in diameter
	(2) Possible Extraction	2 Units, each with 5 columns 1 cluster of processing equipment 3 banks of heat exchangers/ cooling coils/accumulators 1 compressor building 2 support buildings (one unit has 3 support buildings) 2 horizontal storage tanks, 6 meters long 2 Support buildings
II	Unidentified Secondary Processing	1 Unit with 5 columns 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 processing building 1 pump building 5 cylindrical storage tanks, 3 meters in diameter 2 horizontal storage tanks, 6 meters long
JJ	Possible Blending	1 Unit with 1 cluster of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 2 possible blending buildings 6 cylindrical blending/storage tanks 6 horizontal blending/storage tanks
KK	Unidentified Secondary Processing	1 Unit with 1 large processing building connected to a smaller building by a conveyor 2 other processing buildings 1 support building

Area	Functional Description	Equipment and Facilities
KK (Cont)		1 Unit with 1 processing building 1 small building with a horizontal tank 1 Unit with 1 processing building 5 horizontal storage tanks, 6 meters long 1 Unit with 1 processing building 3 cylindrical storage tanks [redacted] 25X1 2 6-meter-diameter 7 Support buildings 7 Gasholders [redacted] 25X1
LL	Storage	2 Cooling towers 9 Support buildings 78 Cylindrical storage tanks 4 27-meter-diameter [redacted] 25X1 1 15-meter-diameter [redacted] 25X1 5 12-meter-diameter 4 6-meter-diameter [redacted] 25X1 39 Horizontal storage tanks 2 15-meter-long [redacted] 25X1 21 12-meter-long 8 6-meter-long 2 Spherical storage tanks, 12 meters in diameter 1 Semiburied storage tank (not measured) 1 Water basin
MM	Crude Oil Distillation	2 Units, each with 1 atmospheric column 1 vacuum column 5 other columns 4 banks of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 2 support buildings 4 cylindrical storage tanks 2 3-meter-diameter [redacted] 25X1 4 horizontal storage tanks [redacted] 25X1 3 6-meter-long

Area	Functional Description	Equipment and Facilities
MM (Cont)		2 Units, each with 1 atmospheric column 1 vacuum column 3 other columns 4 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building (one unit has 2 pump buildings) 1 support building (one unit has 2 support buildings) 2 cylindrical storage tanks, [redacted] 25X1 (one unit has 2 additional tanks, 3 meters in diameter) 3 horizontal storage tanks 1 [redacted] 25X1 2 6-meter-long (one unit has 2 additional tanks, 6 meters long) 9 Support buildings 5 Cylindrical storage tanks 4 9-meter-diameter 1 6-meter-diameter
NN	Storage	6 Miscellaneous buildings 168 Cylindrical storage tanks 3 [redacted] 25X1 33 12-meter-diameter 16 9-meter-diameter 27 [redacted] 25X1 45 6-meter-diameter 44 [redacted] 25X1 12 Horizontal storage tanks, 18 meters long
OO	Possible Blending	1 Unit with 1 cluster of processing equipment 11 short processing columns 3 possible blending buildings 6 cylindrical storage/blending tanks 6 horizontal storage/blending tanks 1 Unit with 2 short processing columns 1 possible blending building with 6 horizontal tanks 3 support buildings 4 cylindrical storage/blending tanks 2 cylindrical storage tanks, 6 meters in diameter 4 horizontal storage tanks, [redacted] 25X1

Area	Functional Description	Equipment and Facilities
PP	Unidentified Secondary Processing	1 Unit with 2 columns 2 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 1 support building 2 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks, 6 meters long
QQ	Unidentified Secondary Processing	1 Unit with 3 clusters of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 4 horizontal processing tanks 1 pipe furnace 1 pump building 1 support building 7 cylindrical storage tanks 1 6-meter-diameter 6 3-meter-diameter 1 horizontal storage tank, [redacted] 25X1
RR	Lubricating Oil Plant (1) Solvent Extraction	3 Units, each with 6 columns 2 banks of heat exchangers/ cooling coils/accumulators 2 pipe furnaces 1 pump building 3 cylindrical storage tanks, 3 meters in diameter 4 horizontal storage tanks, 9 meters long 3 Support buildings
	(2) Probable Solvent Recovery	1 Unit with 3 columns 1 bank of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 1 support building 3 cylindrical storage tanks, 3 meters in diameter 3 Support buildings 2 Cylindrical storage tanks, 3 meters in diameter 2 Horizontal storage tanks, [redacted] 25X1
	(3) Deasphalting	2 Units, each with 6 columns 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 1 pipe furnace 1 pump building 5 cylindrical storage tanks (one unit has 6), 3 meters long 3 horizontal storage tanks, 6 meters long

25X1

Area	Functional Description	Equipment and Facilities
RR (Cont)	(4) Clay Treatment	1 Unit with 4 columns 13 cylindrical treating tanks 2 pipe furnaces 1 processing building with clay receiving section 2 support buildings 2 cylindrical storage tanks, 3 meters in diameter 5 Support buildings
	(5) Dewaxing	2 Units, each with 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 2 processing buildings 1 support building 1 overhead crane 1 cylindrical storage tank, [redacted] 25X1 5 Miscellaneous buildings
	(6) Probable Dewaxing	1 Unit with 1 cluster of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 4 processing buildings 7 cylindrical processing/storage tanks 1 shipping building 1 overhead crane 1 cylindrical storage tank, [redacted] 25X1
SS	Blending, Treating and Shipping	1 Blending and treating unit with 1 building with 11 batch agitators/mixers 1 pipe furnace 1 processing building 1 pump building 2 support buildings 4 cylindrical storage tanks [redacted] 25X1
TT	Storage, Support and Shipping	4 Loading racks 47 Miscellaneous buildings 24 Horizontal storage tanks 5 [redacted] 2 15 2 25X1

Area	Functional Description	Equipment and Facilities
UU	Shipping and Probable Blending and Treating	1 Probable blending and treating unit with 1 processing building 7 probable blending and treating tanks 34 Miscellaneous buildings (includes several processing and probable blending and treating buildings) 5 Cylindrical processing/storage tanks 9 Horizontal processing/storage tanks
VV	Water Treatment and Cooling	9 Cooling towers (one is under construction) 32 Miscellaneous buildings (3 are under construction) 12 Cylindrical storage tanks 5 15-meter-diameter 2 12-meter-diameter 5 [redacted] 25X1 35 Water basins

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25X1

REFERENCES

25X1

Map

8th RTS. US Air Target Chart, Series 200, Sheet M0165-17HL, 5th edition, November 1967, Scale 1:200,000 (SECRET

25X1
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Documents

1. Army. Report No. ID 2191426, November 1961 (CONFIDENTIAL)

Requirement

COMIREX NO2
Support Number 429222

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