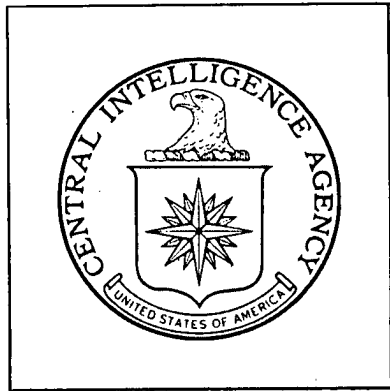


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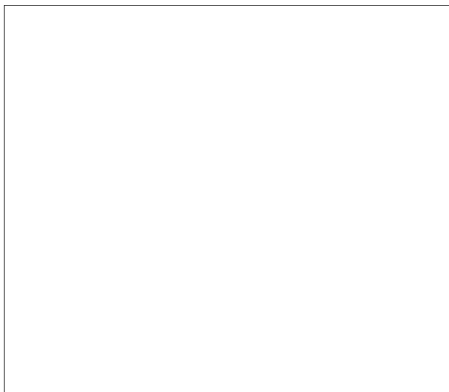
**Industrial Facilities  
(Non-Military)**

**DIRECTORATE OF  
INTELLIGENCE**

*Basic Imagery Interpretation Report*

**Lu-ta Chemical Combine Kan-ching-tzu**

**Lu-ta, China**



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RCS 13/0105/69  
DATE FEBRUARY 1969  
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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
Imagery Analysis Service

RCS-13/0105/69

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INSTALLATION OR ACTIVITY NAME

COUNTRY

Lu-ta Chemical Combine Kan-ching-tzu

CH

UTM COORDINATES

GEOGRAPHIC COORDINATES

51SUD807132

38-57-46N 121-37-24E

WAC-PIC M. 25X1  
0381-18-NI

MAP REFERENCE

15th RTS. USATC 200. Sheet M0381-10HI. 3rd edition. May 1967. Scale 1:200,000  
(SECRET)

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LATEST IMAGERY USED

NEGATION DATE (If required)

Not Required

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ABSTRACT

The Lu-ta Chemical Combine Kan-ching-tzu was originally built by the Japanese in the 1930's. Construction of all major production facilities appeared to be complete on imagery of August 1962. Since then, several plant facilities have undergone major renovation but the products have remained substantially the same. This combine produces ammonium nitrate, ammonium sulfate, sulfuric acid, nitric acid, soda ash, and caustic soda, plus numerous by-products.

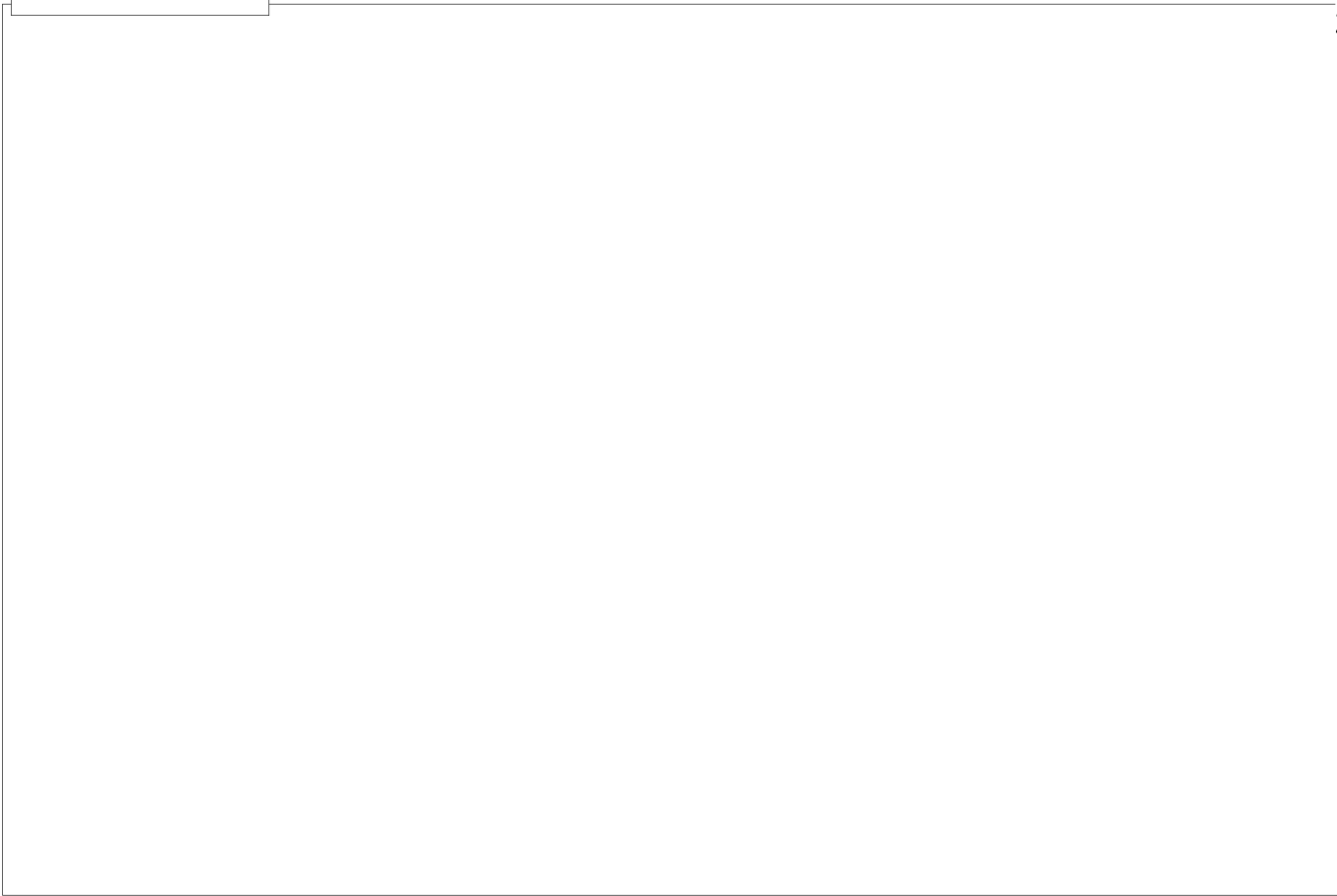
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INTRODUCTION

The Lu-ta Chemical Combine Kan-ching-tzu is located near the south end of the Liaotung Peninsula on the north edge of Lu-ta Harbor. The Lu-ta Steel Plant [redacted], the Lu-ta Thermal Power Plant No. 2, Kan-ching-tzu [redacted] the Lu-ta Railroad Station and Yards North [redacted], and the Lu-ta Port Facilities [redacted] are located adjacent to the combine. The Lu-ta (Chou-shui-tzu) Airfield lies approximately 2.7 nautical miles west of the combine.

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Although the Lu-ta Soda Plant Kan-ching-tzu [redacted] is listed in the Basic Encyclopedia as a separate target, it is an integral part of the chemical combine and will be included in this report.

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## BASIC DESCRIPTION

Physical Features

The chemical combine is nearly rectangular in shape and measures approximately 3,300 by 3,000 feet. It occupies slightly over 200 acres and is rail and road served. A large pier with raw material handling facilities extends into the harbor from the southeast corner of the combine. The combine is partially secured by a wall.

Operational Functions

Major products of this plant include ammonium nitrate (solid and possibly liquid), ammonium sulfate, sulfuric acid, nitric acid, soda ash, and caustic soda. Secondary products produced in the coke by-products section may include benzene, toluene, and creosote. The specific production areas and major facilities are depicted and annotated on the line drawing (Figure 3).

Coke is used in the two water gas retorts to obtain the necessary hydrogen and nitrogen to make ammonia. There are two generations of gas and ammonia production equipment. The first generation equipment for gas production appears at Items 3, 6, 10, and 11, while the newer equipment appears at Items 4, 5, 7, 8, and 9. Item 13 is the old compressor and synthesis building, and Item 16 is the newer one.

Liquid ammonium nitrate is possibly being produced at Item 19. This is suggested by the proximity of these production buildings and associated pipelines to the ammonia and nitric acid facilities and substantial tank car traffic in the vicinity.

The nitric acid production facilities in Areas C and D appear quite different from each other. The facilities in Area D appear to be part of the original Japanese-built plant with large, low pressure absorbers. Those in Area C are newer and more like the facilities of Russian-built plants of the late 1950's. Concentrated nitric acid is probably produced in Area F, as nitric acid and sulfuric acid pipelines can be traced on photography from their respective production areas into this concentration facility.

Sulfuric acid is presently produced from pyrite ore by the contact process. Originally, only the chamber process was used; however, later this was supplemented by contact equipment. Finally, the original chamber equipment was replaced with contact processing units. Part of the sulfuric acid produced is used to make ammonium sulfate and concentrated nitric acid, and the remainder is shipped out, or piped to the nearby steel plant.

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Soda ash is produced by the Solvay process with sodium chloride and limestone as the basic raw materials. Ammonium chloride could be produced as a by-product fertilizer from this process. However, it appears instead that, for economic reasons, the ammonium chloride is being treated to recover the ammonia. The distinctive white calcium chloride waste from this recovery process is discharged behind the breakwater at the soda ash plant. Part of the soda ash is conveyed to another production area where it is reacted with milk of lime to make caustic soda by the lime-soda process. The calcium carbonate formed and precipitated in the process is filtered out and reburned in the lime kiln to make calcium oxide for the necessary milk of lime.

### Construction Chronology

This chemical combine is one of the oldest of its kind in China. The original production facilities were built by the Japanese in the 1930's. Over half of the original equipment for ammonia production was removed after World War II by the Russians. After the Communist Chinese takeover in 1949, the Russians began to restore this equipment. Major expansion of the ammonia and nitric acid works took place in the late 1950's. 2/

When first observed on photography of 11 August 1962, all major production facilities appeared to be complete, except for one converter tower and some processing equipment adjacent to the new compressor and synthesis building. Several major modifications have taken place since 1962.

November 1964 - The ammonium nitrate production buildings had been greatly modified. Prior to these modifications, this area probably was used for purposes other than the production of ammonium nitrate fertilizer. Four large brine preparation tanks had been added to the soda ash plant.

January 1966 - Part of the chamber sulfuric acid equipment had been removed. In the ammonium nitrate production area, a gasholder had been removed, thereby completing the modifications to this area. A large gas-holder had been removed from the ammonia production area near the new compressor and synthesis building.

February 1967 - Several of the newer retorts and one large gasholder had been removed from the gas production area. The sulfur removal units at Item 6 were being dismantled. Further modifications to the sulfuric acid plant had taken place.

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November 1967 - All of the newer water gas retorts had been removed. Several sulfur removal units at Item 7 were no longer in place. The sulfuric acid plant had been completely changed over from the chamber process to the contact process.

September 1968 - Two water gas retorts had been replaced. Further dismantling of the sulfur removal units at Item 6 had taken place.

Production Activity

Initial coverage of [ ] showed the old gas production and ammonia production facilities to be in operation. However, the gasholders associated with the new retorts were down which suggested that the new retorts were not in use. Processing units next to the new compressor and synthesis building were not installed and the converter towers were not complete. Bases for seven of eight gas purification units next to the new compressor building were visible on all subsequent coverage through [ ] but the units have never been installed. This implies that they are not needed, or that this compressor and synthesis facility has never been in operation. The converter tower which was noted under construction in 1962 had not been completed as of September 1968. All other production facilities in the combine appeared to be in operation on the earliest coverage. Rail traffic on subsequent coverage has been moderately heavy.

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Since January 1966, production must have fluctuated substantially, considering the modifications made to the sulfuric acid plant and the gas production facilities. However, production probably never came to a complete halt, as one contact sulfuric acid unit and one group of gas production retorts were always on line.

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REFERENCES

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Maps

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May 1967, Scale 1:200,000 (SECRET [redacted])  
[redacted]

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Documents

1. CIA. PIR 75060, Ta-lien (Dairen) Nitrogen Fertilizer Plants, China,  
December 1966 (TOP SECRET RUFF)
2. CIA. CRS Installation No. 8015192, Lu-ta Chemical Combine  
Kan-ching-tzu, Lu-ta, China (SECRET)

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