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IMAGERY
ANALYSIS
DIVISION

PIR

PHOTOGRAPHIC INTELLIGENCE REPORT

TAI-YUAN CHEMICAL FERTILIZER PLANTS

(TAI-YUAN CHEMICAL COMBINE)

TAI-YUAN, CHINA

[redacted] 25X1

25X1

Declass Review by NIMA/DOD

CIA/PIR 75036

[redacted]

DATE SEPT. 1966

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PAGES 12

GROUP 1
Excluded from automatic downgrading and declassification

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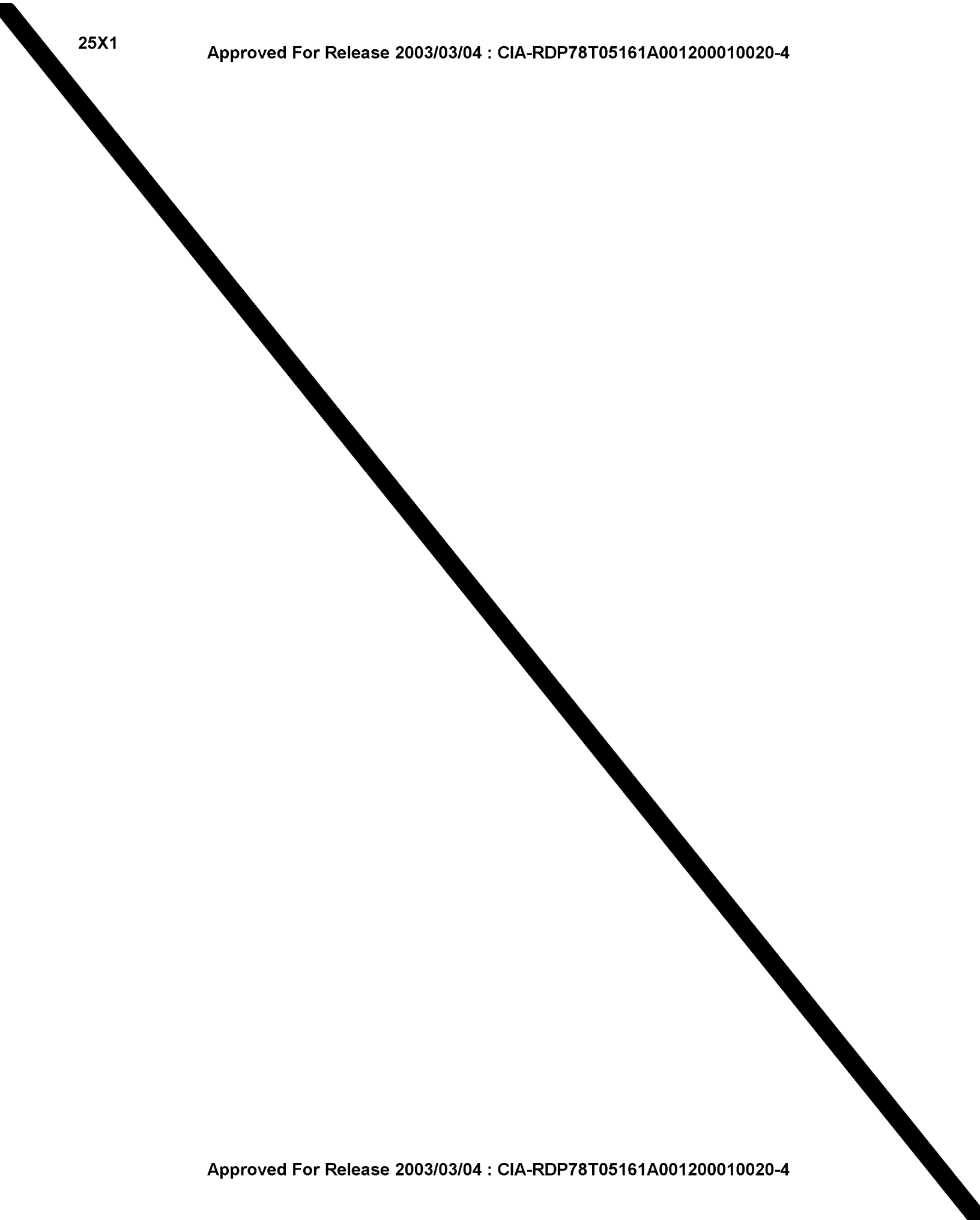

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PREPARED BY
CHEMICAL AND SCIENTIFIC SECTION
INDUSTRIAL BRANCH, IAD

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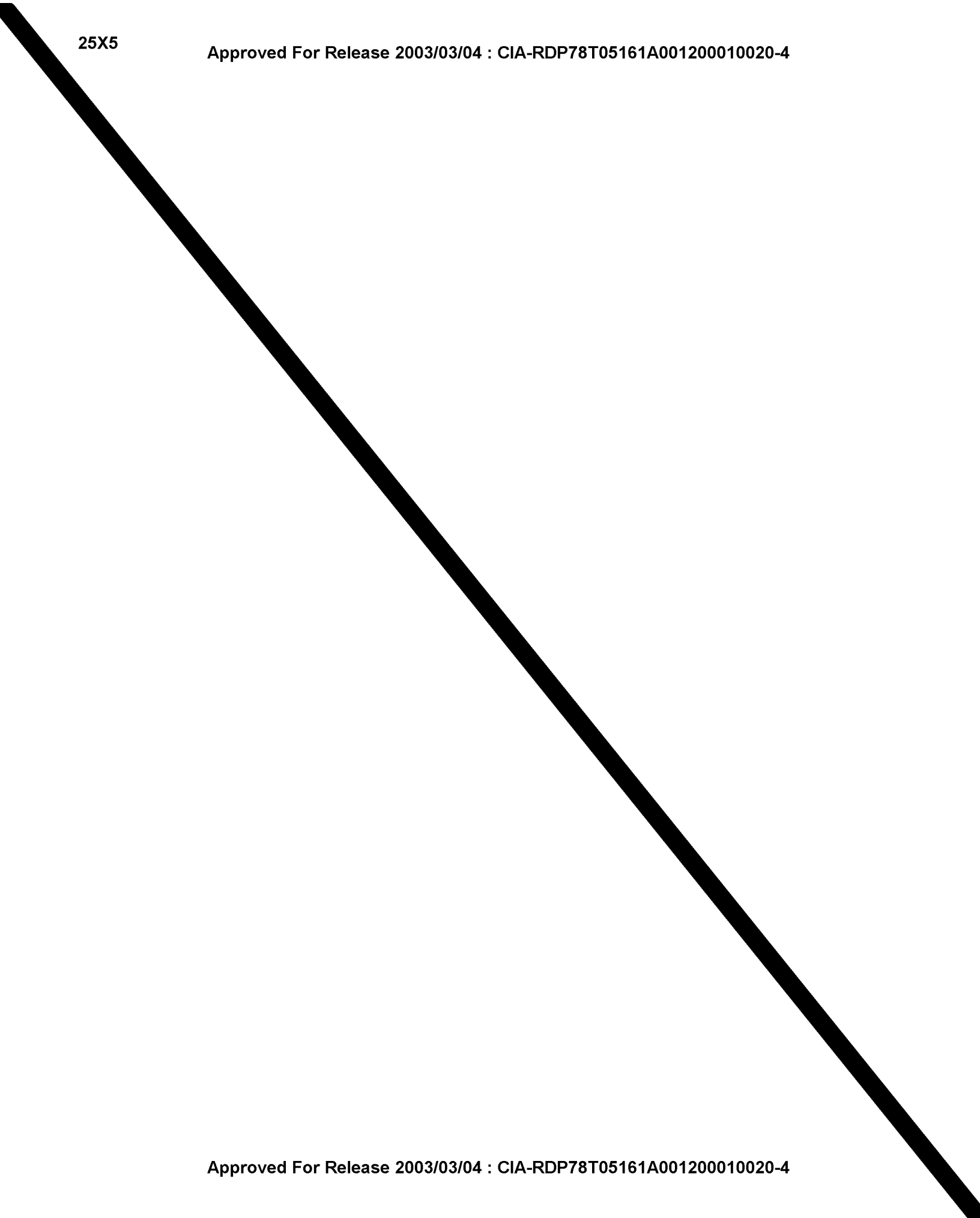
PIR 75036
FIGURE 1



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CIA IMAGERY ANALYSIS DIVISION

PIR 75036

TAI-YUAN CHEMICAL FERTILIZER PLANTS
(TAI-YUAN CHEMICAL COMBINE)
TAI-YUAN, CHINA

The Tai-yuan Chemical Combine is located approximately 6.5 nautical miles southwest of the center of Tai-yuan, and includes a large chemical plant, two fertilizer plants, a thermal power plant, and probably several other smaller plants in the surrounding area. Only those parts of the combine which are associated with the production of fertilizers will be covered in this report.

Plant details presented in this report are based on photographic interpretation of overflight and satellite coverage for the period [redacted] with emphasis on the identification of major production facilities and development within the plants [redacted]

TAI-YUAN CHEMICAL PLANT

This chemical plant compounds a wide variety of products, of which, sulfuric acid is used within the combine in the production of phosphate fertilizer. The sulfuric acid production section of the plant is outlined on Figure 3; however, no detailed readout of the other plant areas was made for this report.

TAI-YUAN FERTILIZER PLANT

A large nitrogenous fertilizer plant is the southernmost major component of the Chemical Combine. It is located approximately 8 nautical miles southwest of the center of Tai-yuan at 37 46N - 112 27E.

The following descriptions of facilities at this installation are keyed to annotations on Figure 5:

AREA 1 - Hydrogen gas used in the synthesis of ammonia is produced in this area. Gas produced from coal in the retorts (a) contains hydrogen, methane and carbon monoxide. This gas is mixed with steam and passed through the reform unit (b) where the methane is converted to hydrogen and carbon monoxide. More steam is added and the mixture is processed through the contact ovens (c) to produce hydrogen and carbon dioxide. The carbon dioxide is removed in the purification towers (d) and relatively pure hydrogen is obtained. Construction of all principal components in this area was completed prior to [redacted] and no expansion in facilities was noted from that date [redacted]

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AREA 2 - Ammonia is manufactured in this area by passing the proper ratio of hydrogen and nitrogen over a catalyst in the converter towers, following compression and heating in the adjacent buildings. The main compressor building (e), the synthesis section (f), the two converter towers (g), and the two unidentified processing buildings (possible purification/clarification buildings) (h and i) were all completed before [redacted] Only one small support building has been constructed in the area from that date on through [redacted]

AREA 3 - Nitric acid is produced in this area by the oxidization of ammonia. Photo coverage [redacted] revealed that the facility was operational with a production building and three absorbers (j). Also on this coverage, very early stages of construction activity for expansion of the facilities was noted. Construction appeared to be complete by [redacted] (see Figure 4) and included an approximate 40% enlargement of the production building and the addition of at least two and probably three new absorbers. This expansion could feasibly double the production of dilute nitric acid.

AREA 4 - Ammonia nitrate is produced in this area by the combining of ammonia and dilute nitric acid in the reactor building (k) and prilled in the adjacent towers (l). The prilled product is then conveyed to the finishing and shipping buildings (m). Facilities in this area remain unchanged [redacted]

Other processing and production facilities within the plant could not be specifically identified with respect to type of products. However, plant layout indicates that related chemicals such as methanol, coal tar derivatives, and other types of nitrogenous fertilizers might be produced here. No significant changes have been noted in these facilities [redacted] except the completion of construction on a possible acid processing building (n).

Storage and handling facilities and the presence of tank cars, especially in the southern portion of the plant indicate that at least part of the nitrogenous fertilizers are shipped in a liquid form. Also, a portion of the nitric acid and ammonia produced may be shipped to consumers rather than used in ammonium nitrate production.

Steam and power for the operation of this installation is supplied by the Tai-yuan Thermal Power Plant TETS 1 which is located immediately northeast of the plant area.

TAI-YUAN PHOSPHATE FERTILIZER PLANT

The phosphate fertilizer plant is the northernmost major component of the Tai-yuan chemical combine. It is located approximately 5 nautical miles southwest of the center of Tai-yuan at 37 49N - 112 29E.

The following descriptions of facilities at this installation are keyed to annotations on Figure 7:

AREA 1 - Fertilizer production area. Phosphate ore is unloaded and initially processed in the crushing building (a) and then conveyed to the large silos (b) for storage prior to acid treatment. Sulfuric acid for processing is shipped into this plant, probably from the Tai-yuan Chemical Plant (Figure 3) which is located approximately 2 nautical miles to the south-southeast. The acid unloading and storage area (c) is located just east of the mixing and den section (d) where raw superphosphate is formed by treating the phosphate ore with sulfuric acid. The raw superphosphate is then moved to the curing section (e) where it is cured for several days until dried. After curing, the superphosphate is conveyed into the final processing buildings (f) where it is crushed, screened, bagged and stored for shipment. Also, the product could at this point be enriched by ammoniation.

Construction in the production area of the plant was essentially complete [redacted] Photo coverage [redacted] showed construction on the ore crushing building (a) in mid-stage, and work was completed [redacted] three additional tanks were erected in the acid storage area (c) making a total of six tanks. The only other change noted [redacted] has been the construction of two small support buildings.

AREA 2 - Research and development and/or possible production area of phosphorous based compounds.

AREA 3 - Small steamplant which supplies steam to both the production area and the research and development area.

AREA 4 - Administration area.

AREA 5 - Storage area.

AREA 6 - Unidentified production/processing area.

No significant changes have been made in areas two through six.

25X1

Production capacity of the plant appears to have remained very nearly the same

25X1

25X1

25X1

25X1

25X1

REFERENCES

MAPS AND CHARTS

Locator Map, Communist China, 51543, 6-65 (Official Use Only)

ACIC, U.S. Air Target Chart, Series 200, Sheet 0382-13AL, 2nd Edition, October 1960, Scale 1:200,000 (SECRET

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REQUIREMENT

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25X1

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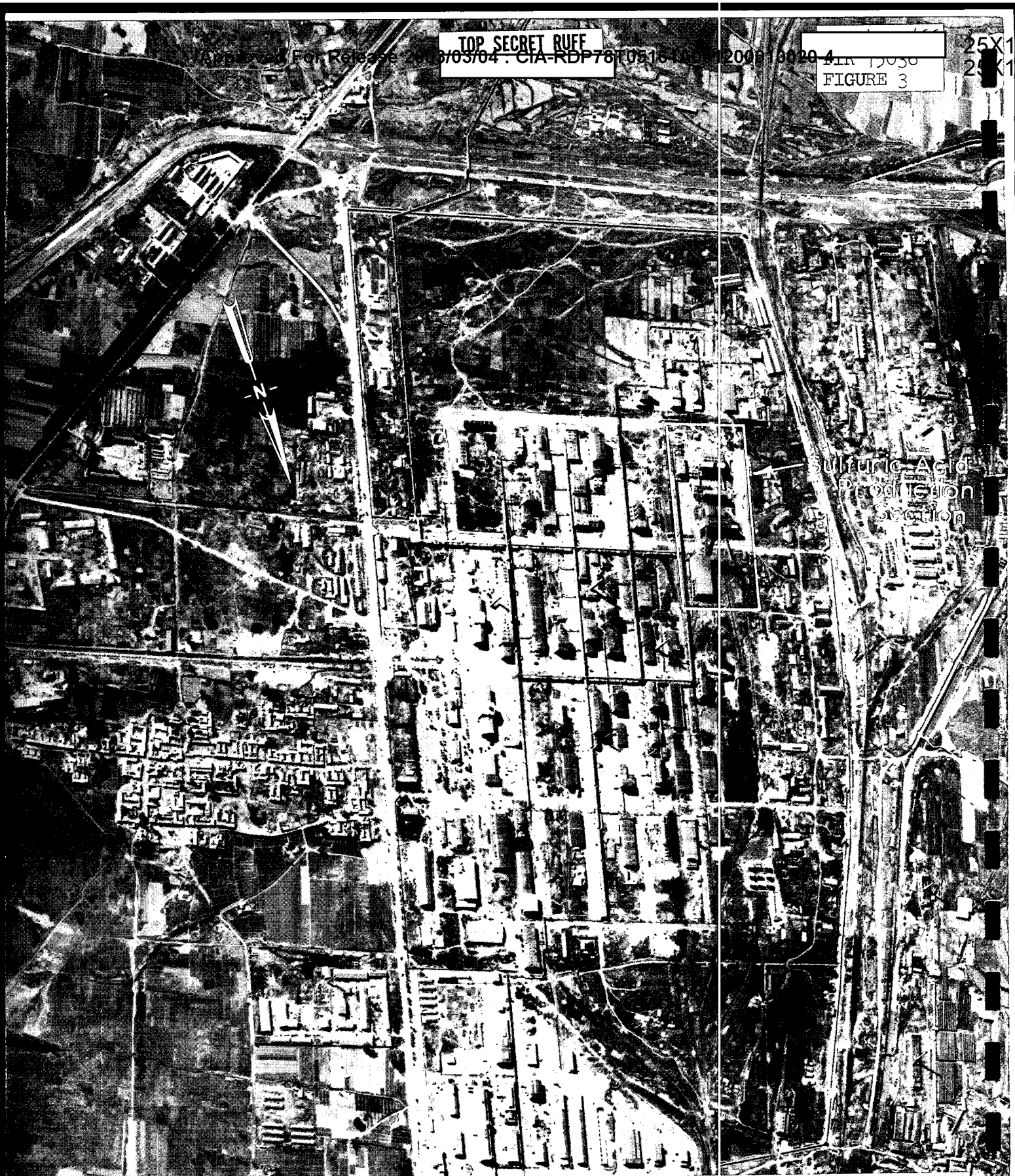
FIGURE 3



CHEMICAL PLANT
TAI-YUAN, CHINA
37 47N - 112 28E

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[redacted] 25X1
PIR 75036 25X1
FIGURE 4

CHEMICAL FERTILIZER PLANT
TAI-YUAN, CHINA
37 46N - 112 27E

25X

PIR 75036

FIGURE 5

CHEMICAL FERTILIZER PLANT
TAI-YUAN, CHINA
37 46N - 112 27E

[redacted] 25X1
PIR 75036 25X1
FIGURE 6

PHOSPHATE FERTILIZER PLANT
TAI-YUAN, CHINA
37 49N - 112 29E 25X1

25X1
25X1

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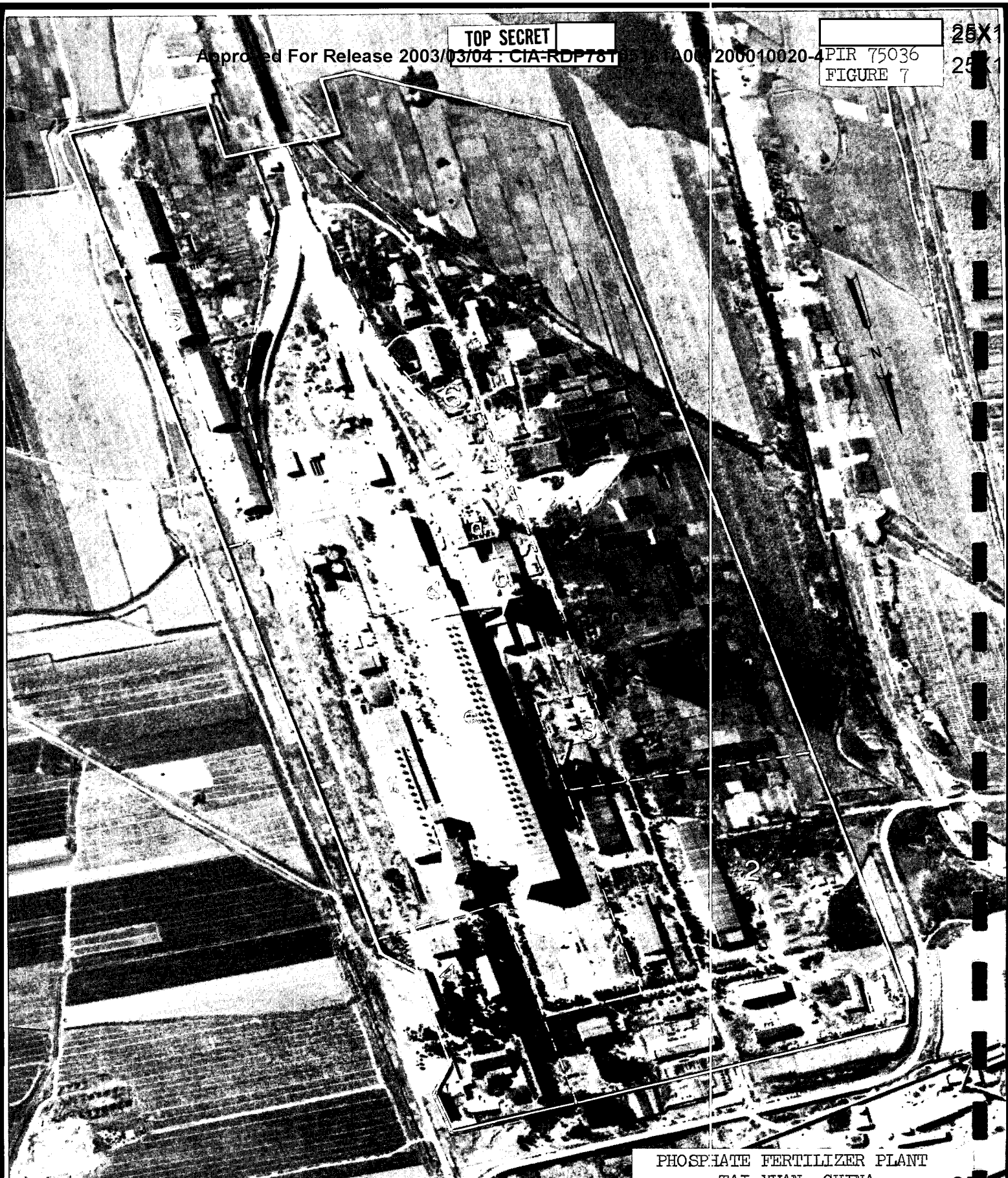
FIGURE 7

25X1



PHOSPHATE FERTILIZER PLANT
TAI-YUAN, CHINA
37 49N - 112 29E

25X1

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