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IMAGERY
ANALYSIS
DIVISION

PIR

PHOTOGRAPHIC INTELLIGENCE REPORT

[redacted]

SEARCH FOR URANIUM MINING AREAS IN CENTRAL CHINA

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CIA/PIR 63017

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DATE OCT 1965

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SEARCH FOR

URANIUM MINING AREAS

IN CENTRAL CHINA

LIST OF ILLUSTRATIONS

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CIA/PIR-63017

SEARCH FOR URANIUM MINING AREAS IN CENTRAL CHINA

INTRODUCTION

A total of 42 areas in Communist China were specified in the referenced requirements as sites of reported possible uranium mining activity. An initial photographic search within an arbitrarily assigned radius of 25 nautical miles (nm) was conducted to locate all indications of mining in an area, and if possible to determine whether such mining was for uranium. This report is issued in conjunction with a similar report, CIA/PIR-63016, Oct. '65, covering mining areas in eastern China.

GENERAL DESCRIPTION

With one exception, the search areas were located in a band from 97-00E to 110-30E longitude in central China. The exception was a single location in northwest Sinkiang Province. Figure 1 is a map showing the names and locations of the areas studied.

The search was accomplished by examining the first clear coverage found on KH-4 photography of 1963-1965. [redacted] missions (if available) were used on a limited basis, especially in areas where some activity warranted closer examination. The use of several missions was usually necessary to obtain complete, good-quality coverage of the entire search area; in a few instances complete cloud-free coverage was not obtained. Conditions and amount of coverage are noted as appropriate in the References sections for individual areas.

Only the larger mining operations are readily identifiable on KH-4 photography. Many smaller individual mines are probably not discernible. The features necessary to distinguish mining operations on small-scale (KH-4) photography in general are:

[redacted]

The geographic coordinates, a brief description, and references are listed for each area where mining activity was noted. These listings have been divided into three broad categories as follows:

Areas of Extensive Mining Operations (Section I)

Areas characterized by large or multiple mines, highly active appearance, and good location relative to roads and rail lines.

Probably Insignificant Areas of Mining Activity (Section II)

Areas characterized by remoteness, lack of improved roads or rail service, and small size.

Negative Areas (Section III)

Areas where no evidence of large-scale mining was seen.

Where possible, the type of ore being mined has been correlated with collateral information, the most useful being the comprehensive area studies compiled by the Defence Intelligence Agency. Likely individual descriptions are keyed to the map location numbers of mines referenced in these studies. 1, 2/ Because of the time limitation imposed by the large number of areas, no sustained effort was made to detect changes by comparisons or to thoroughly review information.

CONCLUSIONS

No firm uranium mines could be identified in any of the search areas from photography alone. One or more of the mining areas described might be suspected of having a uranium producing capability if other source material on follow-up requirements so indicated. The most likely candidates are the unidentified mines in the Kueiyang and Kaiyang areas (Areas 13 and 21 respectively).

Further study of those areas deemed the most likely candidates for uranium mining and milling operations is anticipated in answer to more detailed follow-up requirements based on this report and other source materials.

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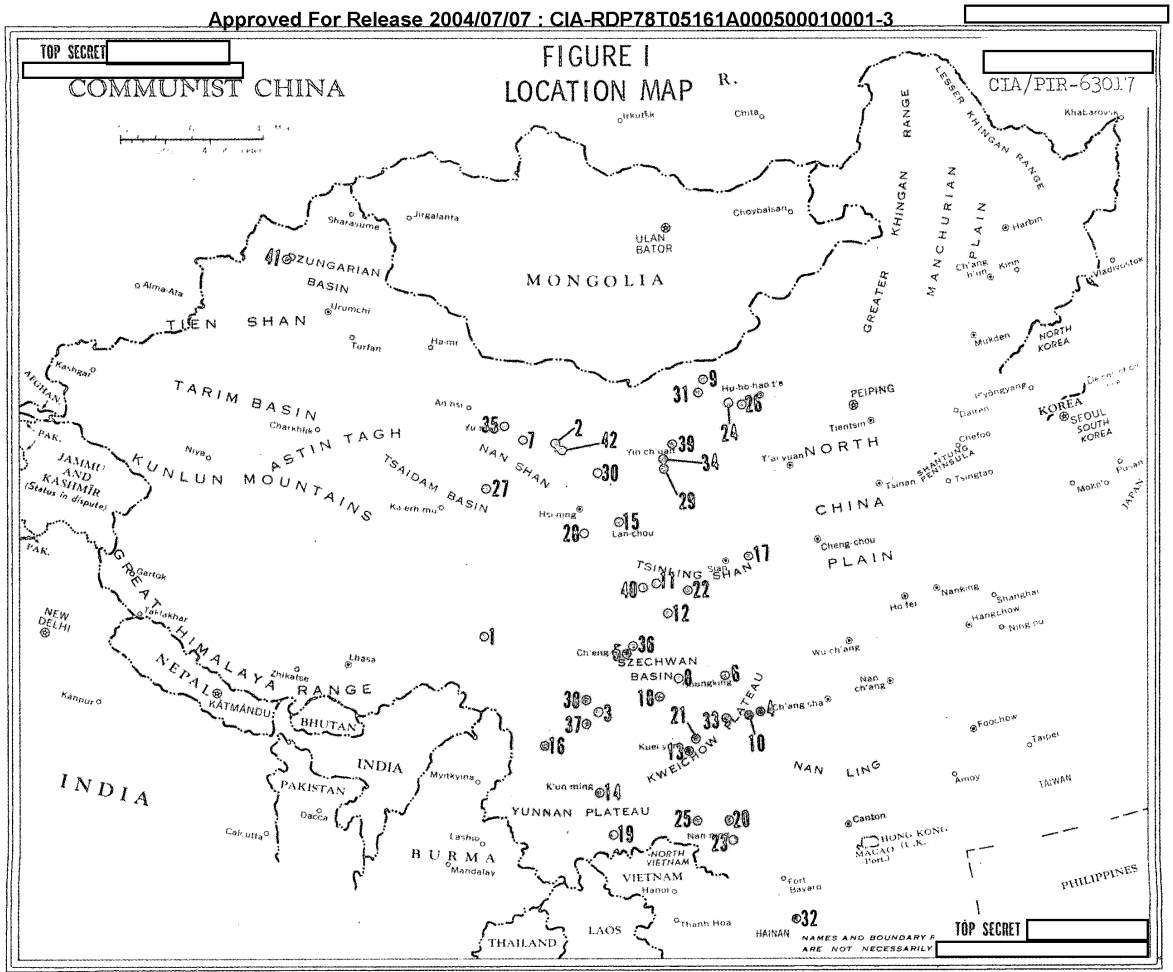
FIGURE I
LOCATION MAP

COMMUNIST CHINA

CIA/PIR-6301/7



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CIA/PIR-63017

LEGEND (for Figure 1)

AREA NO.	NAME	COORDINATES	SECTION
1	Changtu	31-10N 97-14E	III
2	Changyeh	38-56N 100-39E	II
3	Chaochiao	28-03N 102-50E	III
4	Chenchi	28-00N 110-11E	II
5	Chengtu	30-40N 104-04E	III
6	Chienchiang	29-31N 108-46E	III
7	Chilienshan (Mts)	39-10N 98-42E	III
8	Chungking	29-34N 106-35E	I
9	Chungkungchi	41-40N 108-37E	II
10	Fenghuang	27-57N 109-36E	I
11	Kanghsien	33-26N 105-37E	III
12	Kangyuan	32-26N 105-52E	II
13	Kueiyang	26-35N 106-43E	I
14	Kunming	25-04N 102-41E	I
15	Lanchou	36-03N 103-41E	I
16	Lichiang	26-53N 100-14E	III
17	Lonan	34-05N 110-09E	III
18	Luchou	28-53N 105-26E	I
19	Mengtzu	23-22N 103-24E	I
20	Lungshan	23-50N 108-15E	I
21	K'aiyang	27-04N 106-58E	I
22	Nancheng	33-05N 107-02E	III
23	Nanning	22-49N 108-19E	I
24	Paotou	40-36N 110-03E	I
25	Paise	23-54N 106-37E	III
26	Salachi	40-33N 110-30E	II
27	Telingha	37-15N 97-00E	II
28	Tungjen	35-30N 102-07E	III
29	Wuchung	37-59N 106-12E	II
30	Wuwei	37-58N 102-48E	I
31	Wuyuan	41-07N 108-15E	III
32	Yentung	19-27N 110-42E	III
33	Yinchiang	28-01N 108-28E	II
34	Yinchuan	38-28N 106-17E	III
35	Yumen	40-17N 97-08E	II
36	Hsintu	30-50N 104-10E	III
37	Hsichang	27-53N 102-18E	II
38	Mienning	28-35N 102-11E	II
39	Pinglo	38-53N 106-32E	I
40	Wutu	33-24N 104-50E	II
41	Kolamai	45-33N 84-53E	III
42	Shantan	38-47N 101-18E	I

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SECTION I

EXTENSIVE AREAS OF MINING OPERATIONS

AREA 8

Chungking, Szechwan 29-34N 106-35E WAC 495

Multiple mining activity, 29-26N to 29-38N 106-23E to 106-26E, in immediate area west of Chungking. Several different types of mining are evident from a sedimentary ridge with a general north-south strike. Both surface workings and underground methods are being employed with some appearing more active than others. There appear to be three distinct trends: a) surface trenching and probable shallow inclined shafts at 29-30N 106-23E, 29-31N 106-23E, and 29-34N 106-24E, characterized by dark-toned waste piles, small heat processing buildings, and rail connections; b) vertical shaft mines at 29-26N 106-24E and 29-29N 106-24E, containing prominent headframes, hoist houses, small transformer yards, machinery buildings, grayish-toned waste piles, and connecting roads, probably associated with ore loading and storage point on railroad at 29-27N 106-25E; c) surface diggings along outcrops at 29-27N 106-25E, 29-31N 106-25E, and 29-37N 106-26E marked by light toned appearance (Figures 2 & 3). Type - iron (siderite) and/or coal. (Map location Nos. 470 and 484 2/)

Surface scarring, 29-21N 106-24E, 15 nm SW of Chungking on both sides of Yangtze River. Excavated area on east bank of river appears associated with conveyer-connected buildings and loading facilities to hopper cars on railroad siding ( ) Type - unknown, suspect limestone. 25X

Outcrop scarring, 29-23N 106-33E, 10 nm south of Chungking, and 29-31N 106-35E, 3 nm SSE of Chungking. Two prominent areas of surface workings in apparently the same stratum on west flank of a NNE/SSW-striking sedimentary ridge; road served, but no extensive buildings are present; appear relatively inactive ( ) Type - probable aluminum clay deposits. (Map location No. 486 2/) 25X

Outcrop scarring, 29-32N 106-37E and 29-35N 106-38E, 3 nm SE and NE of Chungking. Two separate surface workings on east flank of same NNE/SSW-striking ridge ( ) Type - probable limestone quarries. (Map location No. 485 2/) X1

Probable surface mining, 29-16N 106-26E, 19 nm SSE of Chungking. A small open pit in sedimentary strata near main rail line to Chungking; no visible connection between pit area and rail line. Workings are recent since not present on earlier coverage; does not appear significant in present stage ( ) Type - unknown. X1

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Possible mining site, 29-00N 106-18E, 36 nm SSE of Chungking. Light-toned clearing at crest of hill. New appearing road terminates at site. One L-shaped building in clearing. An obstruction appears to be across the road at the approach to the site. No waste piles are discernible [redacted] Type - questionable; may be military-associated.

Scarred area, 29-05N 106-42E, 30 nm SSE of Chungking and 5 nm NE of Chichiang. Area covers approximately 2 square miles. No other pertinent features evident. Another similar area, located approximately 10 nm west at 29-04N 106-32E, is slightly larger. Both areas are road served [redacted] Type - possible oil fields. (Map location No. 547 2/)

PHOTOGRAPHY (Partial Coverage*)

[redacted]

* Extreme NE and SE portions not covered

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC H-11, scale 1:1,000,000, 2d classified ed, August 1962 (CONFIDENTIAL)

ACIC. US Air Target Chart, Series 200, Sheet 495-17HL, scale 1:200,000, 2d ed, December 1963 (SECRET)

FIGURE 2
AREA 3
29-27N 106-25E

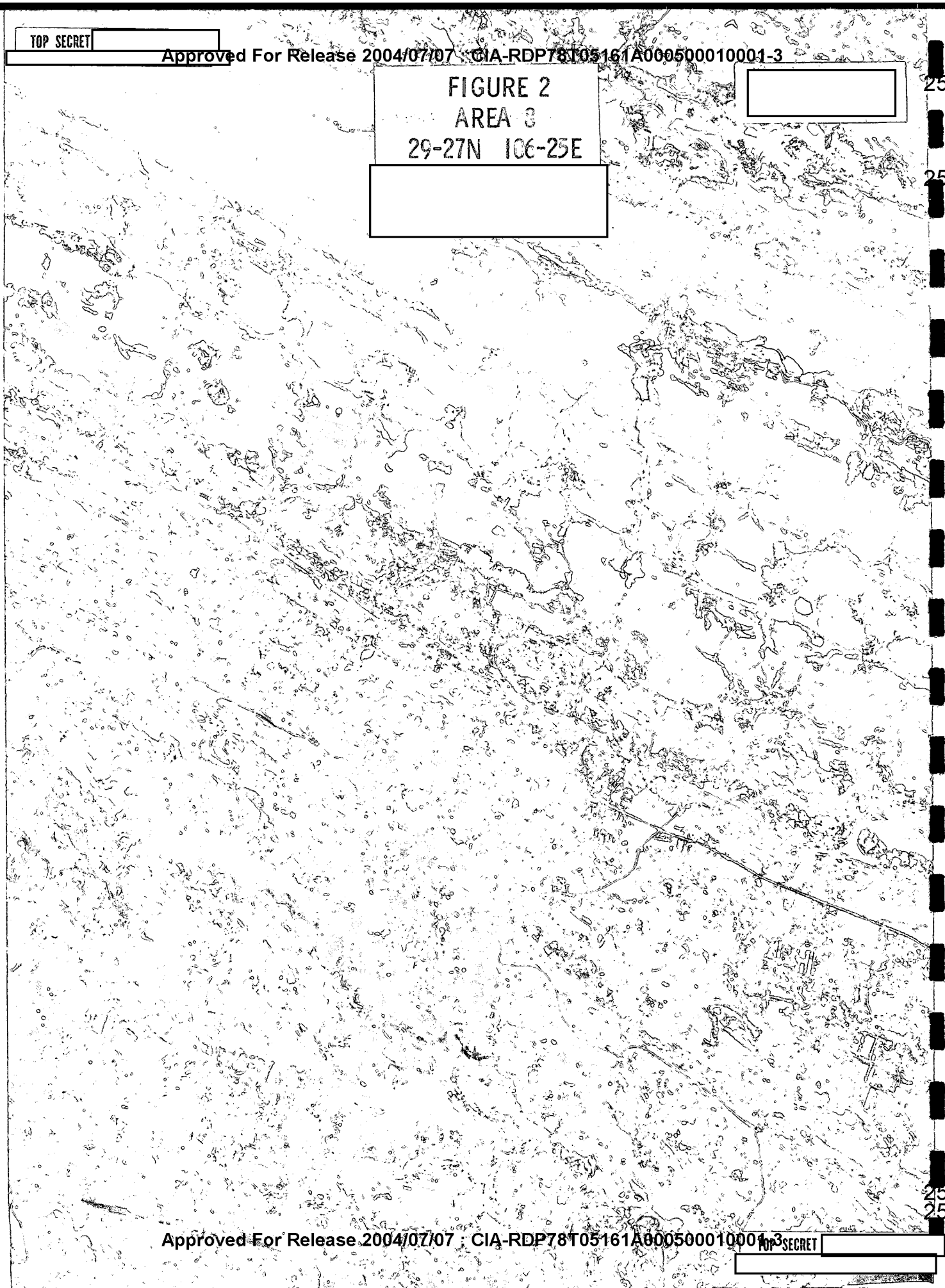


FIGURE 3
AREA 8
29-30N 106-25E

AREA 10

Fenghuang, Hunan 27-57N 109-36E WAC 497

Extensive mining district, centered at 27-32N 109-12E, 33 nm SW of Fenghuang (or 11 nm south of Tungjen, Kweichow) in area 3 nm east of Laoshankou. The road-connected mines cover approximately 2 square miles and appear old but still very active. Located on plateau of what appears to be highly eroded limestone on the surface. The mining activity is probably underground, either as adits or inclined shafts. Waste piles are usually being deposited in steep canyons surrounding the rim of the plateau; at least 11 separate waste areas can be seen, some with additional tailing dumps that indicate an onsite separation process. None of the possible processing buildings are large, and no additional larger processing plants are in the immediate area. A large number of old relatively small housing/support buildings are scattered throughout the area. The three tallest buildings are located at the road entrance and possibly serve as storage for ore. An improved road and probable powerline trace leads SW from the mining district (Figures 4-6). Type - possible mercury (cinnabar). 5/

Mining district centered at 27-45N 109-20E, 19 nm SW of Fenghuang (or 8 nm ENE of Tungjen). Numerous active mines covering approximately 1 square mile similar in appearance to those just described. Probable combination of surface and underground mining follows primary veins trending NE/SW and secondary veins trending NW/SE along fissure zones. Nine separate areas are characterized by waste piles. Two tones of waste material, but no large processing buildings are evident in the more developed areas; however, some initial grinding and/or small initial processing is indicated by the two types of waste. Housing and support buildings are grouped around each mining site. Individual areas are road connected with a single road leading west (Figures 7 & 8). Type - unknown, suspect mercury.

Probable underground mines at 27-43N 109-11E on NW edge of Tungjen, Kweichow. Peculiar arrangement of housing and support buildings suggests an old mining area. No waste piles, but several discolored areas are evident. Two elongated features possibly are subsidence areas; no large processing facilities observed [redacted] Type - unknown.

Probable mining area, 37-34N 109-52E, 27 nm SE of Fenghuang (or 5 nm west of Yu shuwan). Two light toned scarred areas containing a structure in each clearing are possible beginning of surface or underground operation near base of a hill. A small waste pile is present at the westernmost area; a small excavation is present near the easternmost area. A support area of dark-roofed buildings lies between the two clearings. Road served (Figure 9). Type - unknown.

PHOTOGRAPHY (Complete coverage)

[redacted] 25X

MAPS AND CHARTS

AMS. Series L500, Sheet NG 49-2, scale 1:250,000, 1st ed, October 1955 (UNCLASSIFIED)

AMS. Series L500, Sheet NG 49-1, scale 1:250,000, 1st ed, June 1955 (UNCLASSIFIED)

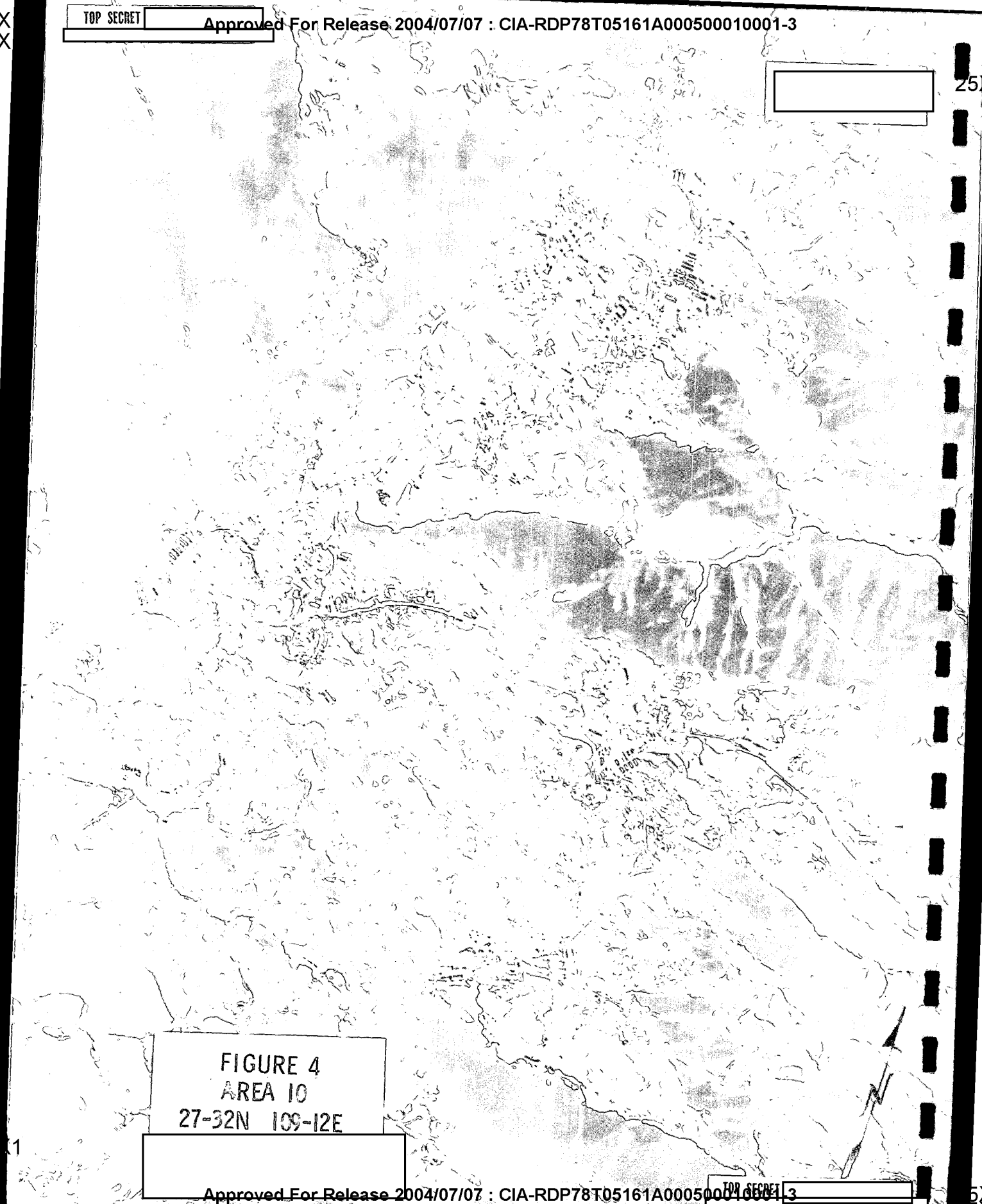


FIGURE 4
AREA 10
27-32N 109-12E

25X

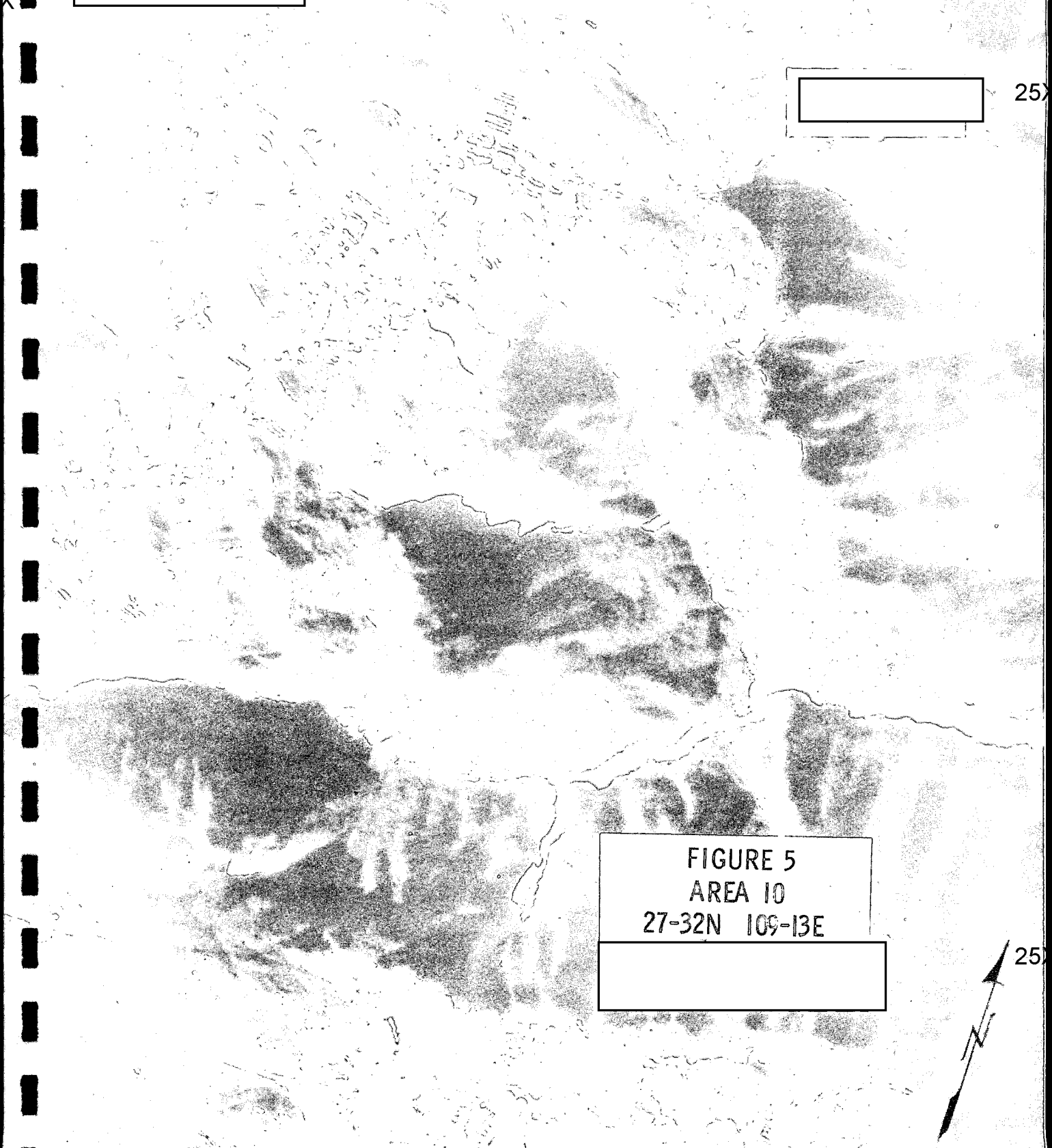


FIGURE 5
AREA 10
27-32N 109-13E

25X

25X
25X

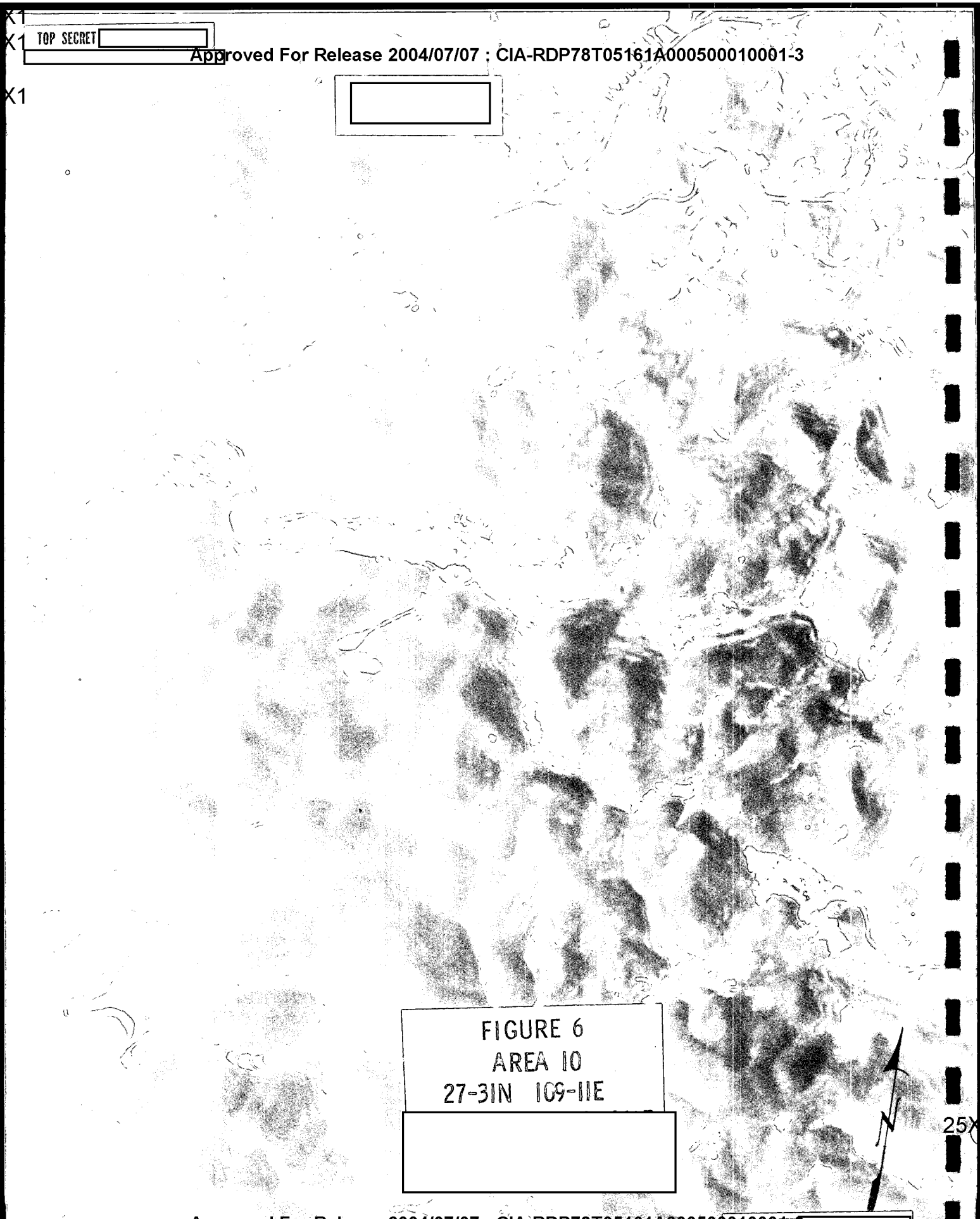
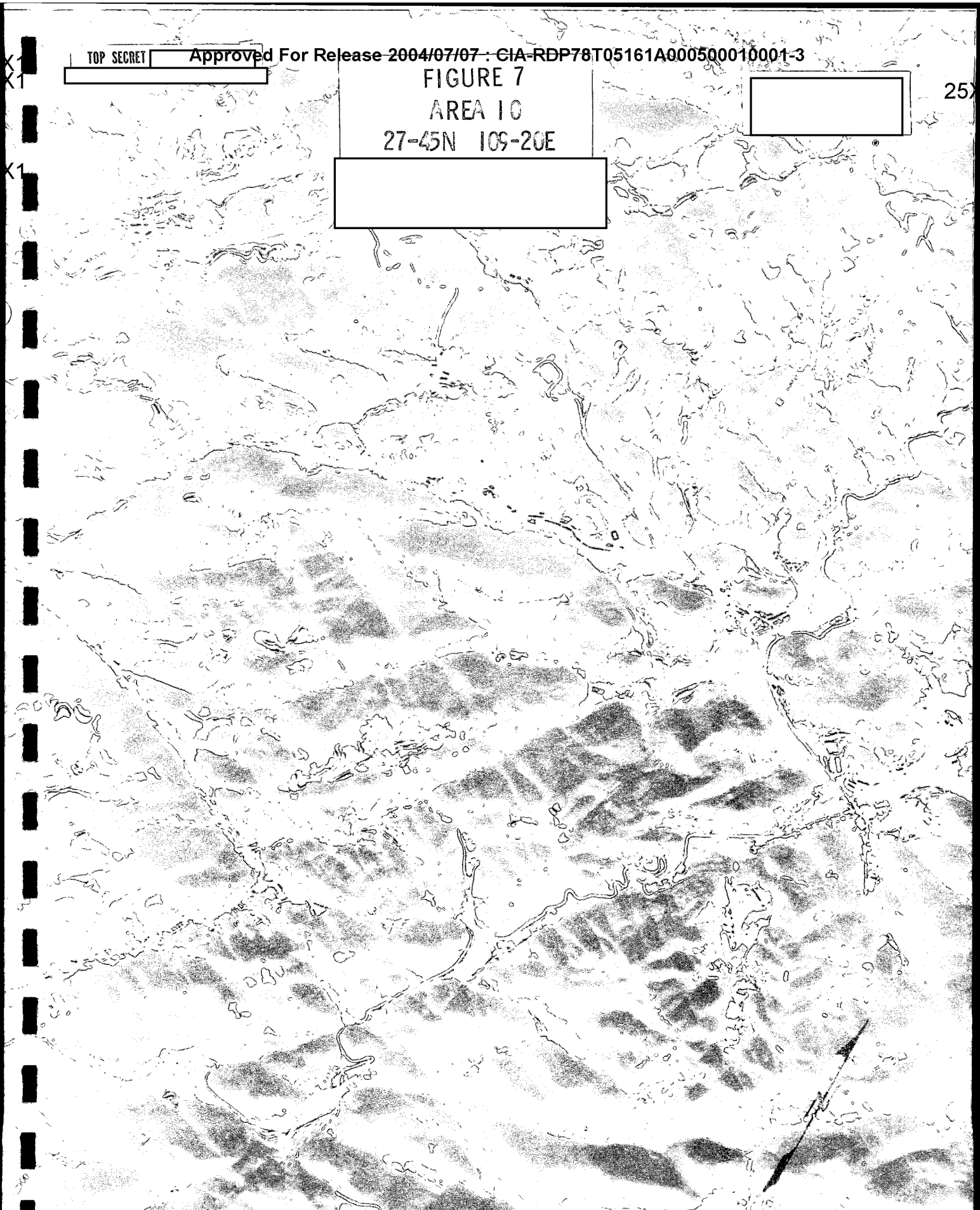


FIGURE 6
AREA 10
27-3IN 109-11E

FIGURE 7
AREA 10
27-45N 109-20E



[redacted]

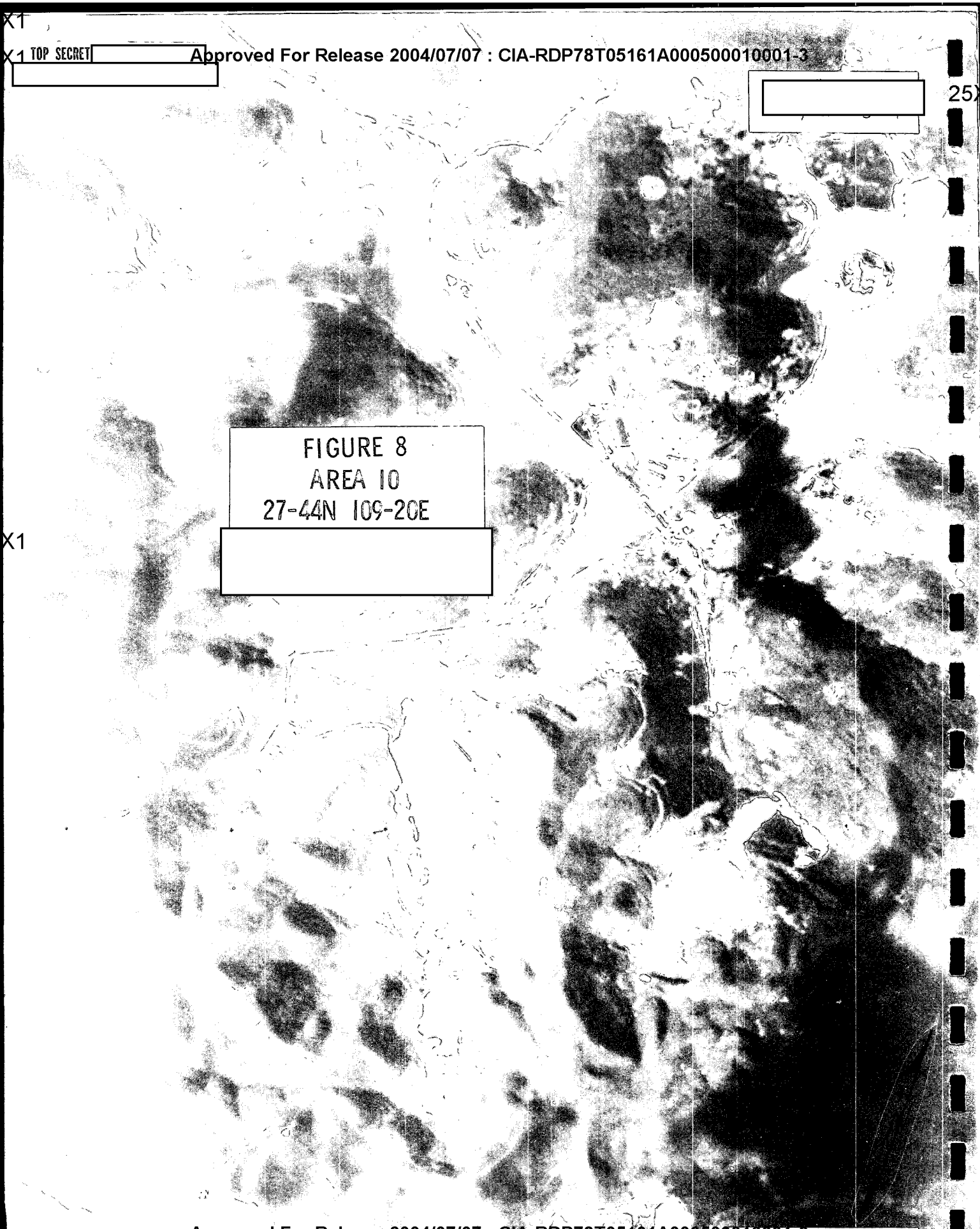
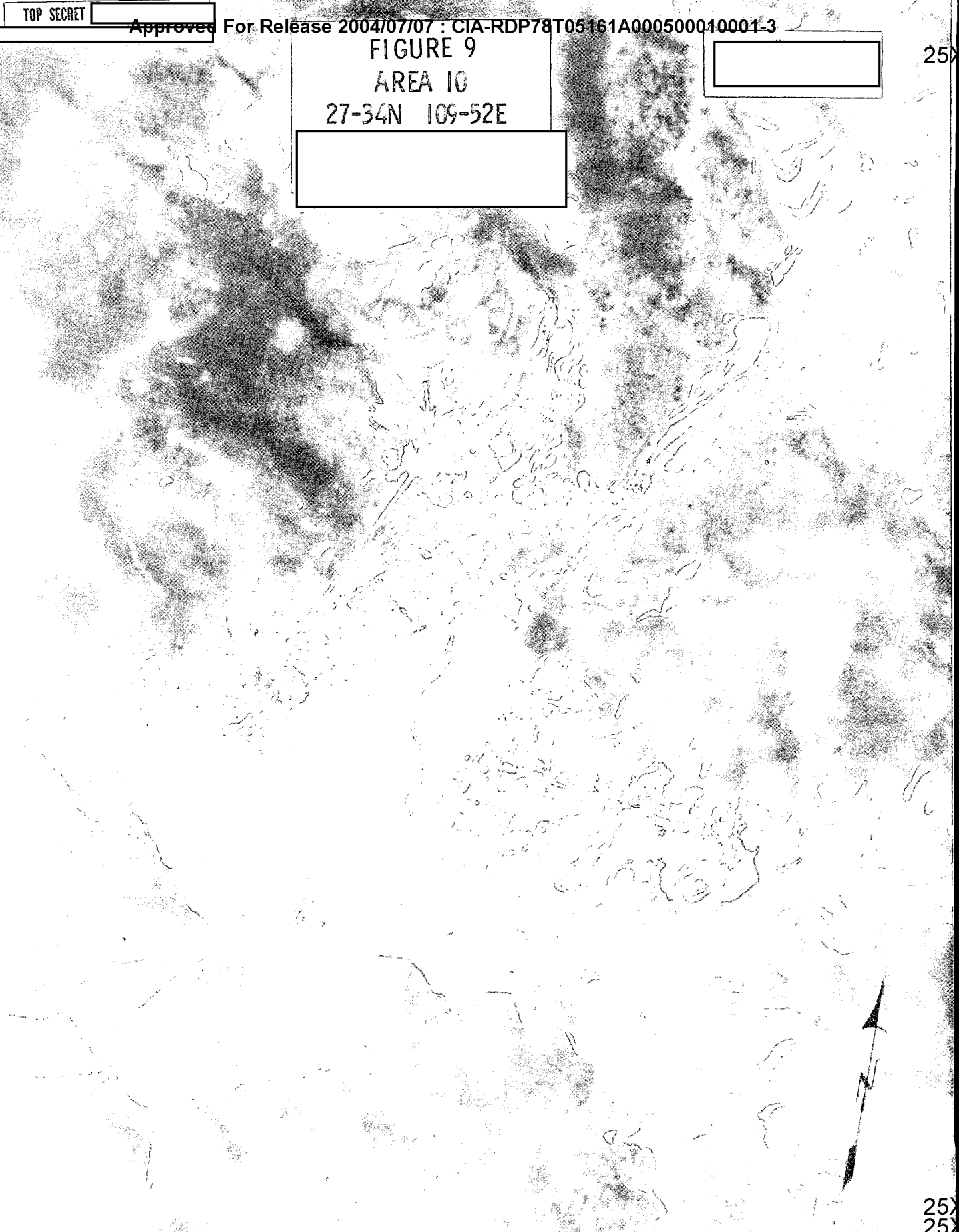


FIGURE 8
AREA 10
27-44N 109-20E

[redacted]

FIGURE 9
AREA 10
27-34N 109-52E



AREA 13

Kueiyang, Kweichow 26-35N 106-43E WAC 496

Surface and shaft mines, centered at 26-39N 106-22E, 18.5 nm WNW of Kueiyang (or 8 nm NW of Chingehen). Large active area of predominantly surface mines along a north-south trend 3 nm long. There are six major light-toned workings in apparently unconsolidated deposits. Waste piles are being formed by hauling gangue aside from the workings. A headframe for a shaft mine is located adjacent to the most northern working. Three other unidentified tower-like structures in the same area show no activity. Numerous trench cuts and small diggings for prospects extend another 5 nm north. A rail spur from the Chingchen area served the center of the mining area at a loading facility with two conveyers. A narrow-gauge track runs from the shaft mine to the base of the conveyers. A single hopper car is on the rail spur. No onsite processing is evident. Numerous support/housing buildings, some apparently new or under construction, are present (Figure 10). The two most southern workings, which are only road served have expanded considerably in $2\frac{1}{2}$ years (Figure 11). Type - unknown.

Shaft mines centered at 26-32N 106-33E, 9 nm WSW of Kueiyang (or 4.5 nm east of Chingchen). An old but partially active underground mining area associated with a 4-track railroad siding. Dark-toned waste piles are evident at probable sites for inclined or vertical shafts, some of which appear abandoned. Nine gondola cars are located on railroad siding, and approximately 20 small ore cars are located on narrow-gauge track to mining area. The narrow-gauge track is in poor condition and appears to have been replaced by a road system. The road leads to a ramp for truck unloading at the siding. A loading facility with one conveyer appears new but not in use. Five apartment buildings, one administrative building, and one probable messhall located near the railroad also appear new. Other housing/support buildings are older. A small substation is centrally located in the mining area (Figure 12). Type - coal and/or iron. (Map location Nos. 236 2/)

Possible mining area, 26-32N 106-28E, 2 nm south of Chingchen. Twelve closely grouped areas of surface scarring are located near railroad spur serving the prevously described mines. One branch rail spur and another under construction connect to two of the light-toned scarred areas which

appear to be shallow diggings in low-lying hills. Approximately 30 mostly barracks-type buildings appear newly constructed. Additional structural forms and trenches indicate further construction activity in the center of the area. Another installation near a large reservoir may be in early construction stage [redacted] 2 nm west of the scarred areas. Type - possible iron. (Map location No. 235 2/) 25X

Surface mines, 26-33N 106-41E, 2.5 nm SW of Kueiyang. The largest of many light-toned surface workings and scarred areas around Kueiyang. These mines seem to be hillside quarries and are typical of similar areas except for a probable crusher building and a long overhead conveyer from the mine to a loading point on the railroad. Small waste dumps are apparent [redacted] Type - probably Kaolin and fire clays. (Map location No. 233 2/)

X1

Probable surface mines 26-46N 106-47E, 12 nm NNE of Kueiyang. Light-toned scarred areas that appear to be surface workings in hillsides. Three separate areas are road served; one road terminates in a pronounced fishhook. Immediate area has a mottled appearance. Probably new workings as not seen on [redacted] coverage. Poor-quality coverage precludes other details (Figure 13). Type - unknown. 25X

Probable surface mine, 26-27N 106-58E, 16 nm SE of Kueiyang at NW edge of Lungli. Light-toned area with three prongs into hillside. Rail served. Poor-quality coverage (Figure 14). Type - possible gypsum. (Map location No. 240 2/)

25X

PHOTOGRAPHY (Partial coverage*)

[redacted]

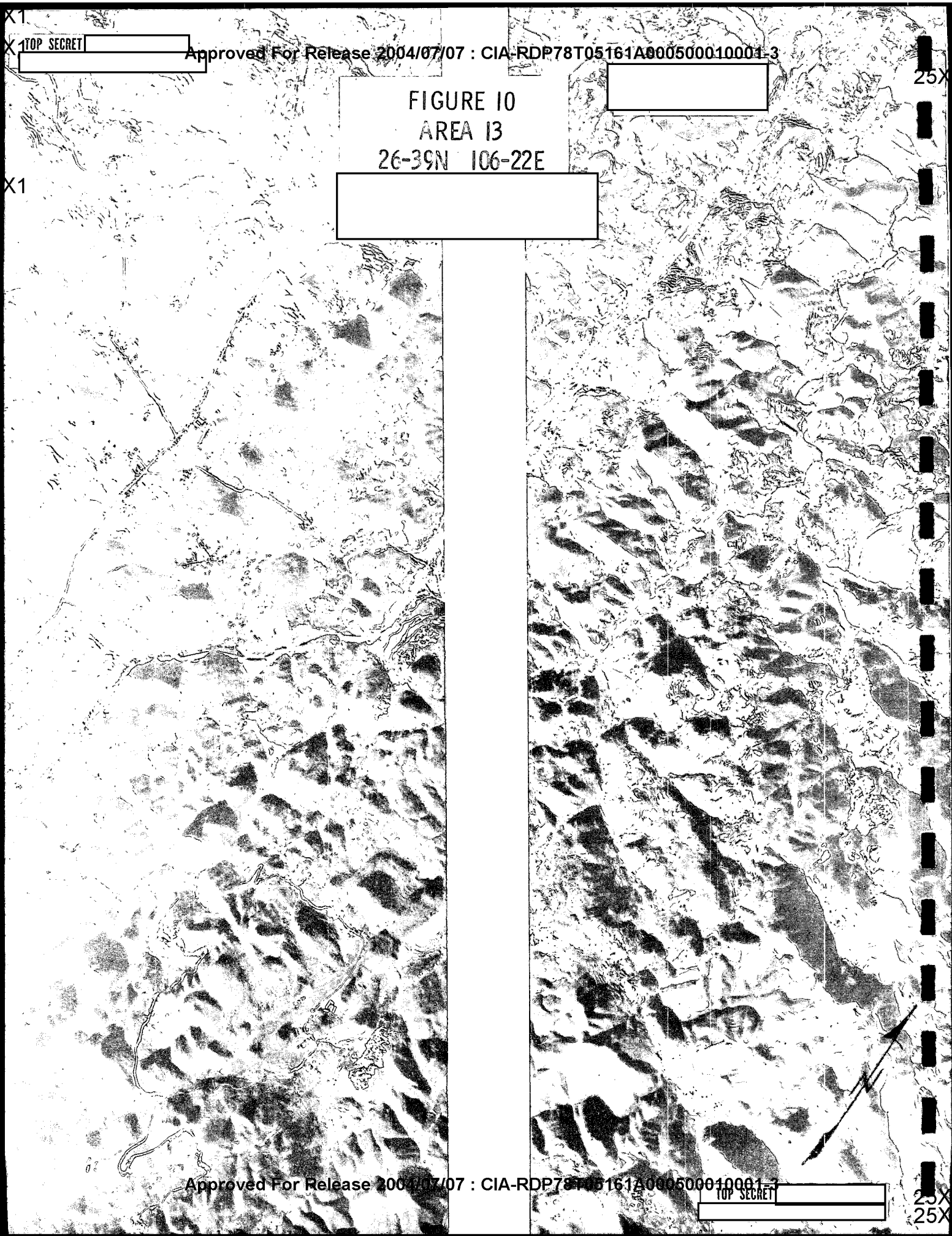
* 60% of area effectively covered by [redacted] most recent good coverage. 25X

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONE-H-11, scale 1:1,000,000, 2d classified ed, August 1962 (CONFIDENTIAL)

ACIC. US Air Target Chart, Series 200, Sheet S 0496-10A, scale 1:200,000, 1st ed, August 1959 (SECRET)

FIGURE 10
AREA 13
26-39N 106-22E



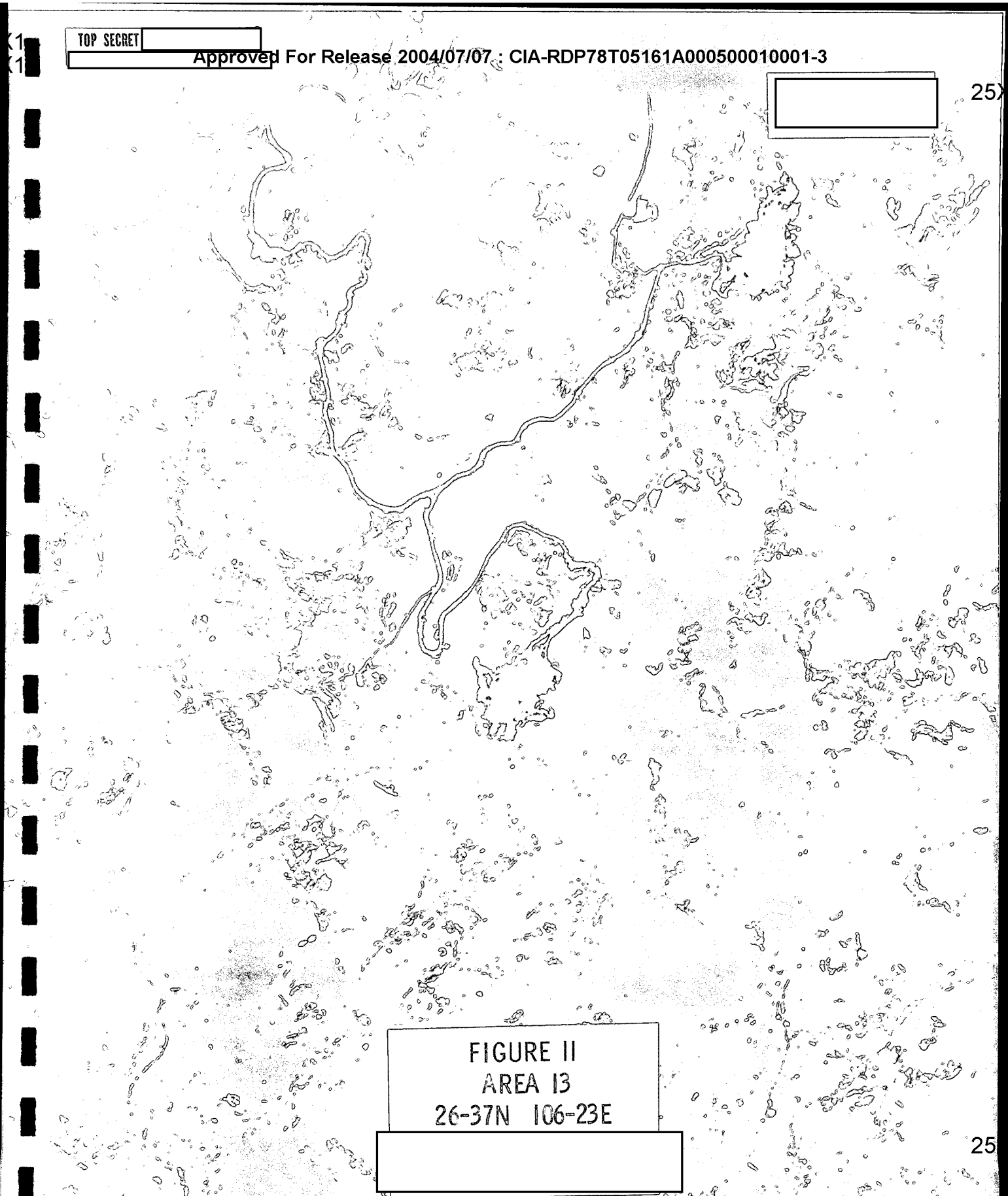


FIGURE II
AREA 13
26-37N 106-23E

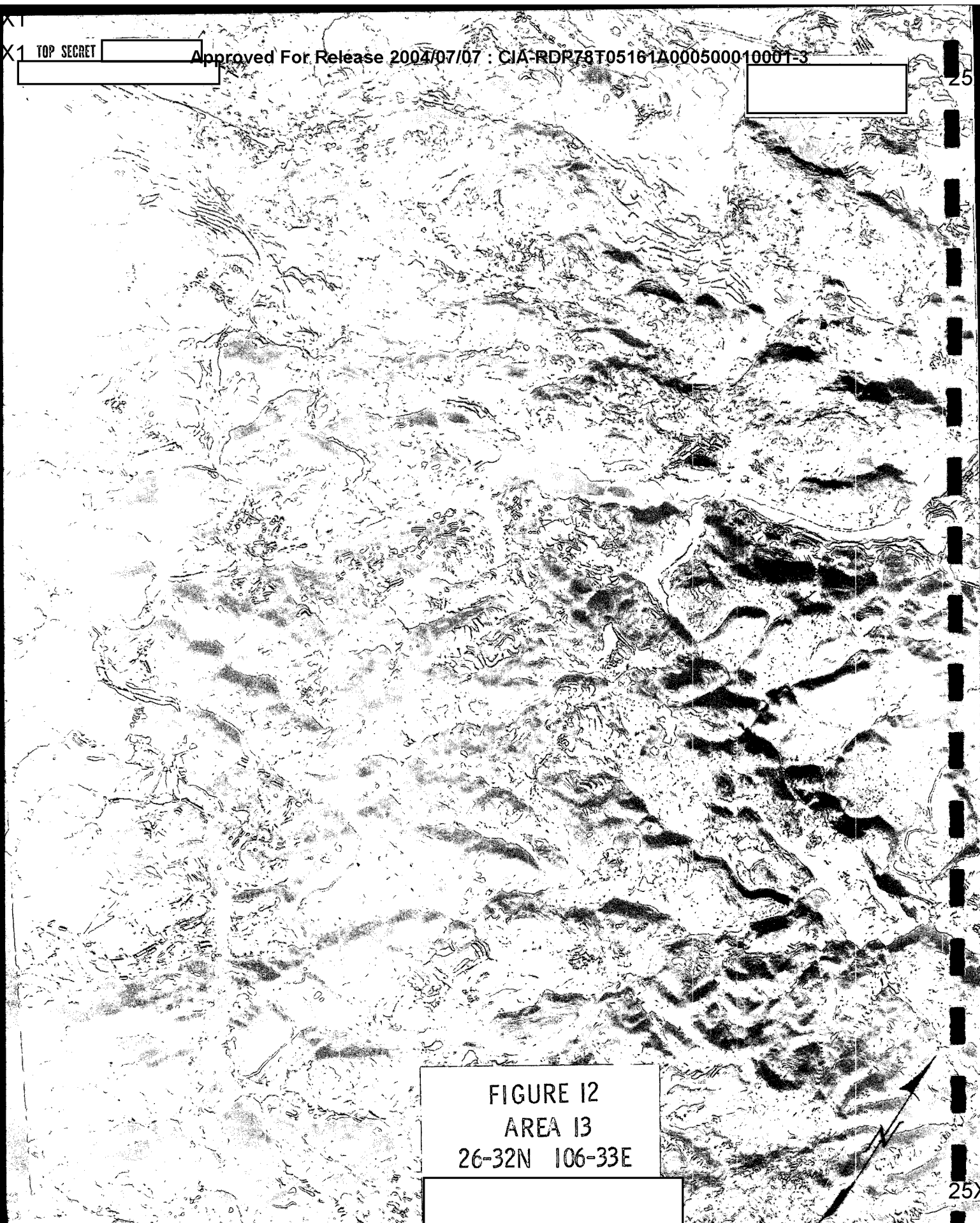


FIGURE 12
AREA 13
26-32N 106-33E

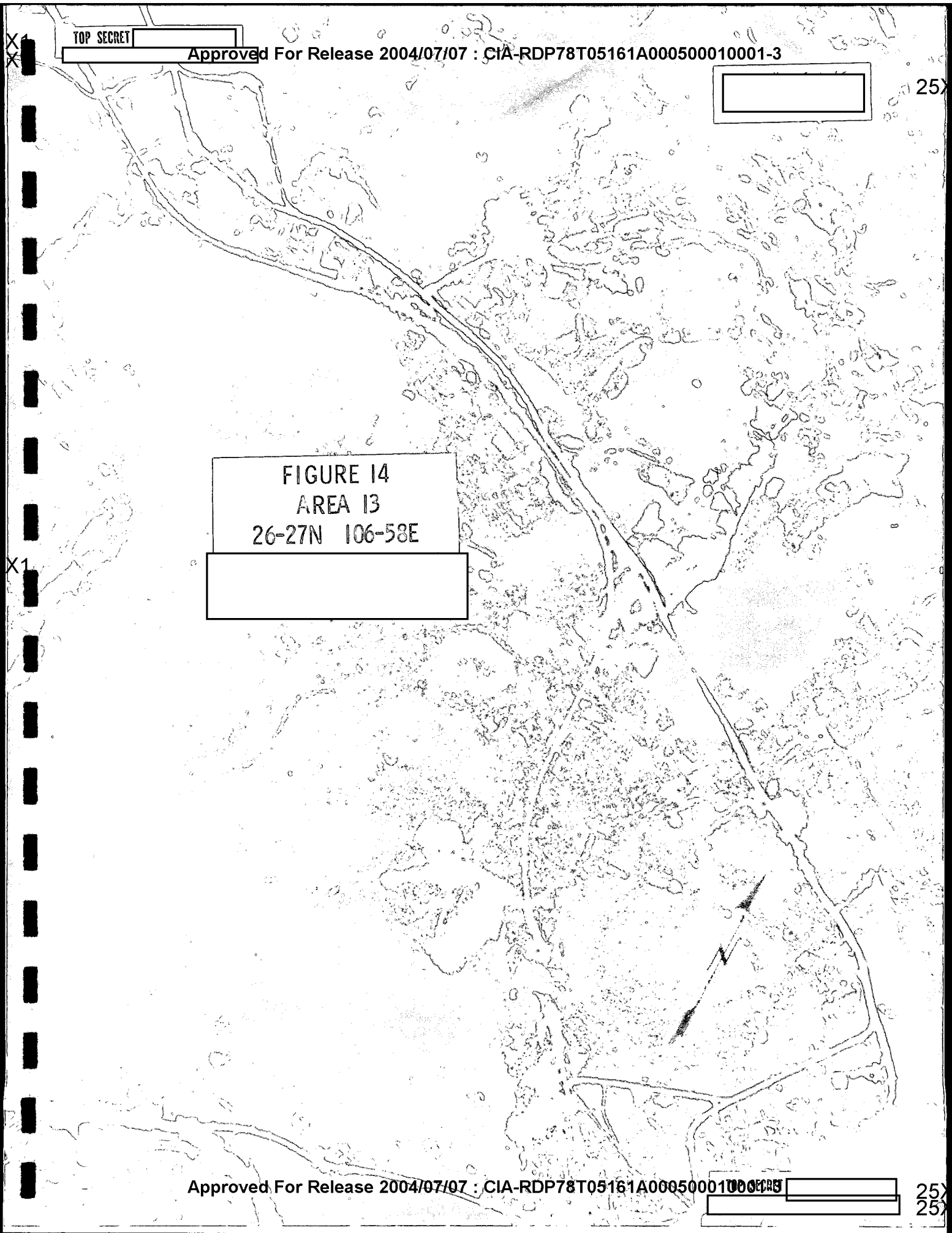
FIGURE 13
AREA 13
26-46N 106-47E

[redacted]

[redacted]

25X

25X
25X



AREA 14

Kunming, Yunnan 25-04N 102-41E WAC 496

Open-pit and bench mines, 24-39N 102-20E and 24-41N 102-18E, 30 nm SW of Kunming (or 17 nm SW of Anning). Two large active areas of surface workings are located on hilltops and along terraced benches of hillsides. Huge waste piles evident at both areas. Each area contains an inclined cableway for ore transport with an ore transloading trestle at its base. The eastern area is rail served to the trestle; an improved road extends to the western area. Rail line connects to an iron smelting plant at Anning (Figure 15). Type - iron. (Map location No. 289 2/)

Probable surface mines, 24-45N 102-14E, 31 nm SW of Kunming. Large prospecting area in hilly terrain probably associated with small surface workings or adits is visible on [redacted] Exploration pattern is very prominent. Type - probable iron. (Map location No. 284 2/) 25X1

Open-pit and shaft mines, 24-52N 102-19E, 24 nm WSW of Kunming (or 15 nm NE of Imen). One large open pit, two possible headframes, numerous small cuts, and possible adits are evident in very active road- and rail-served area. Main area contains a conveyered loading facility at rail head, probable crushers, large waste piles, small substation, and a fairly large housing and support area. Newer areas are under development in four separate road-served canyons extending 3 nm west. An extensive exploration pattern to locate other ore bodies is also evident. A probable explosives storage area is south of the main mining area (Figure 16). Type - iron and copper. (Map location No. 282 2/)

Surface mines, 24-43N 102-35E, 21 nm south of Kunming (or 3 nm north of Kunyang). Numerous small pits and waste piles intertwined with a road network are visible on [redacted] Main service road leads to small processing plant, probably chemical fertilizing. Type - probable phosphates. (Map location No. 293 2/) 25X1

Quarry, 24-56N 102-26E, 3 nm west of Anning. Small hillside excavation is road served ([redacted]). Type - probable kaolin; fire clays (Map location No. 291 2/) X1

Surface mine(s), 25-01N 102-36E, 5.5 nm SW of Kunming. Scarred mining area is associated with a rail-served processing plant enclosed by a wall. An inclined ore hoist from mining area to crusher at base of hill and an overhead conveyer to the plant from the crushers transport the

mined materials. A powerplant is located SW of the processing plant (Figure 17). Type - unknown, suspect limestone and cement plant.

Probable mining area, 25-26N 102-19E, 31 nm NW of Kunming (or 7.5 nm SW of Wuting). Area of probable adits or surface mines is shown by light-toned waste piles, earth scarring and exploration pattern of parallel trench cuts. Appears inactive due to lack of buildings and equipment. Road served. Figure-eight patterns of tracked vehicles south of the area indicate probable military activity (Figure 18). Type - possible asbestos. (Map location No. 251 2/)

Probable surface mine(s) 25-06N 102-46E, 5 nm NE of Kunming. Probably active area of shallow surface mining from side of low-lying hill is marked by light-toned scarring. Area contains typical random arrangement of small buildings and housing of a mining site; no waste piles observed. Service roads loop through the area; main improved road leads SE past two separate walled administrative-type areas which do not appear to be associated with the mining (Figure 19). Type - possible aluminum (bauxite). (Map location No. 259 2/)

Ore processing plant, 25-06N 102-40E, 5 nm NNW of Kunming. A rail-served industrial installation included because of unusual security, with walled guard towers. Smoke from single high stack indicates operation, but no slag piles are evident (Figure 20). Type - copper processing. 6/

25X

PHOTOGRAPHY (Complete coverage)

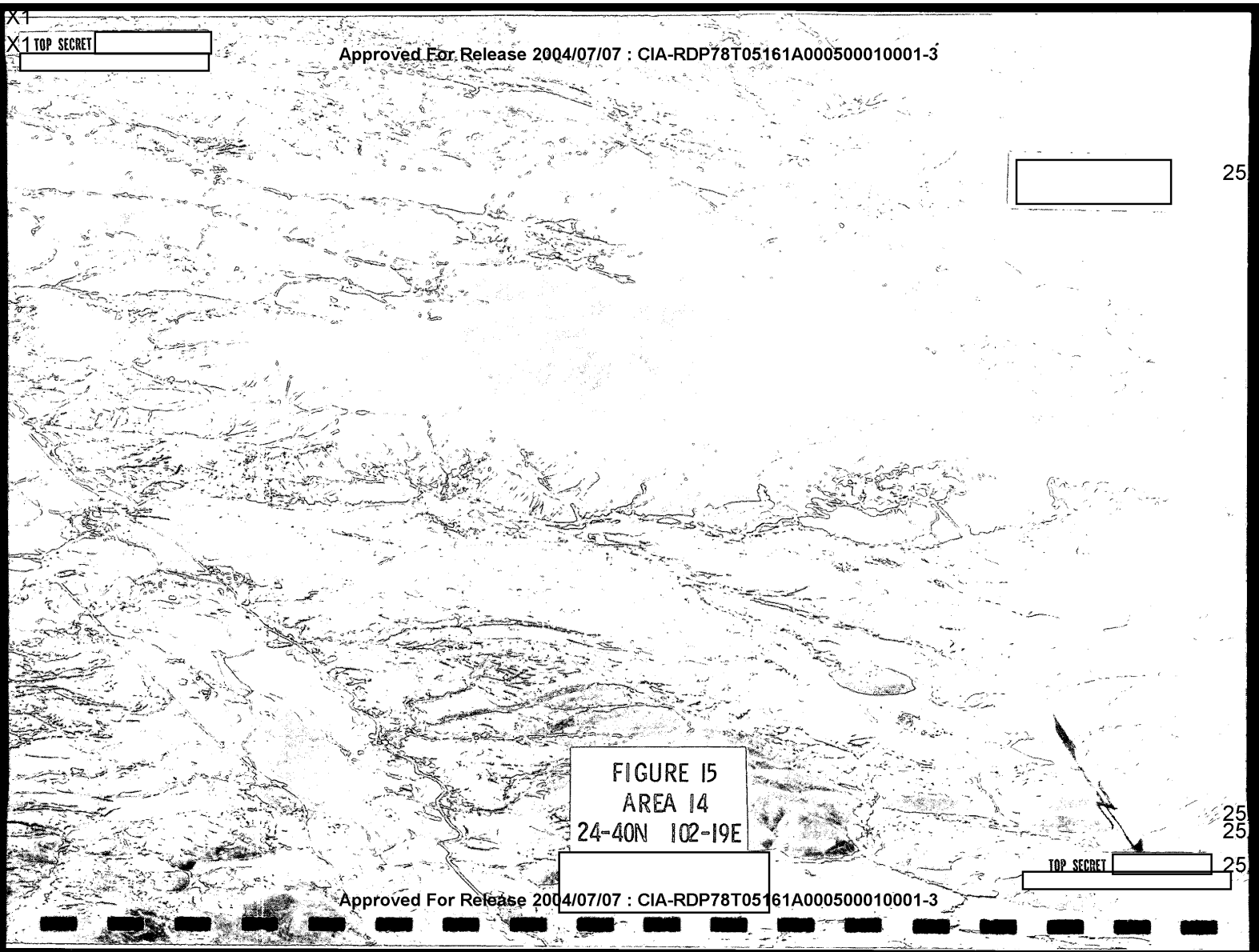
[redacted]

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1963 (CONFIDENTIAL)
ACIC. US Air Target Chart, Series 200, Sheet 0496-17A, scale 1:200,000, 1st ed, September 1959 (SECRET)
ACIC. US Air Target Chart, Series 200, Sheet 0496-22A, scale 1:200,000, 1st ed, October 1959 (CONFIDENTIAL)

X1

X1 TOP SECRET



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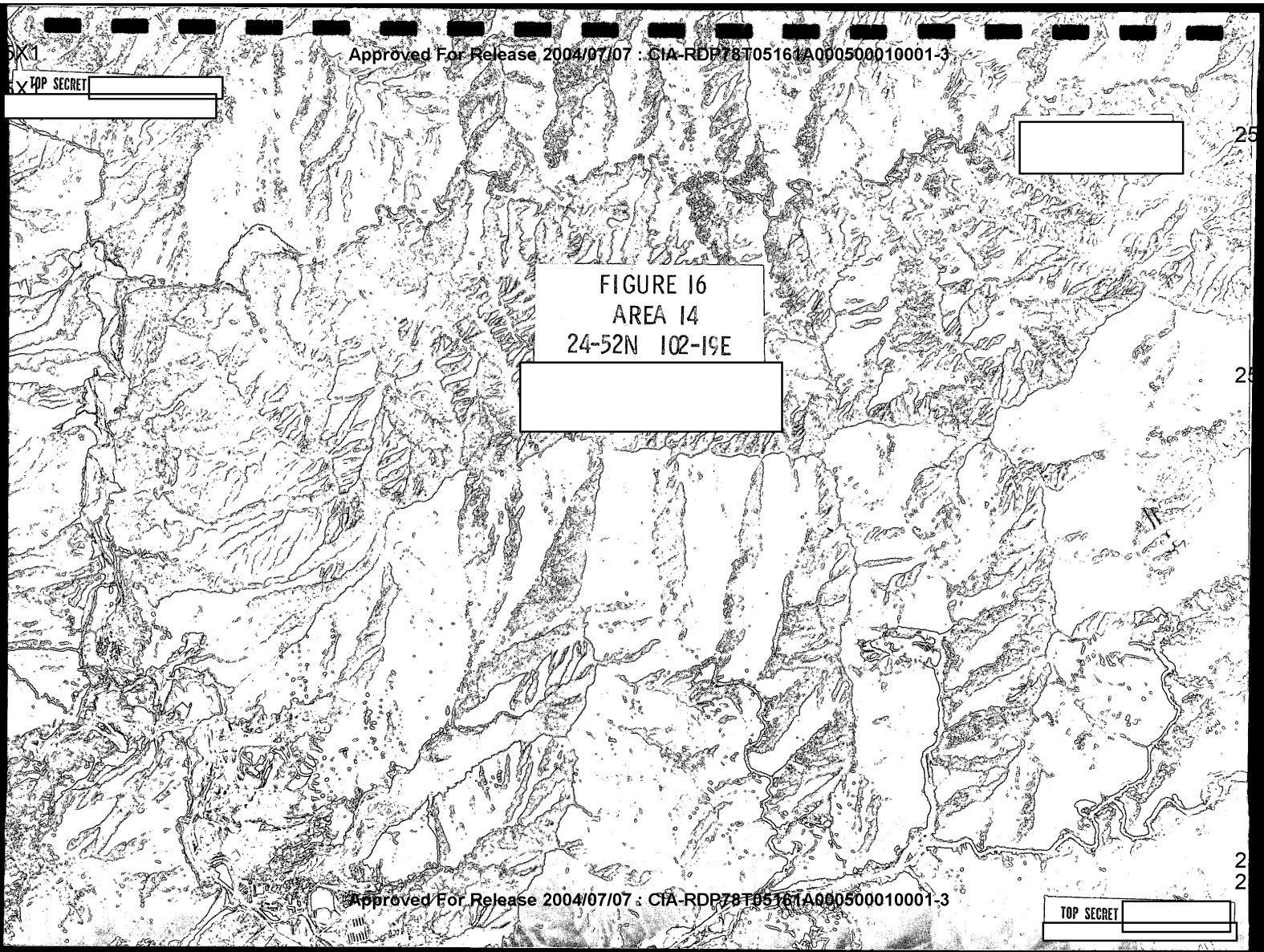
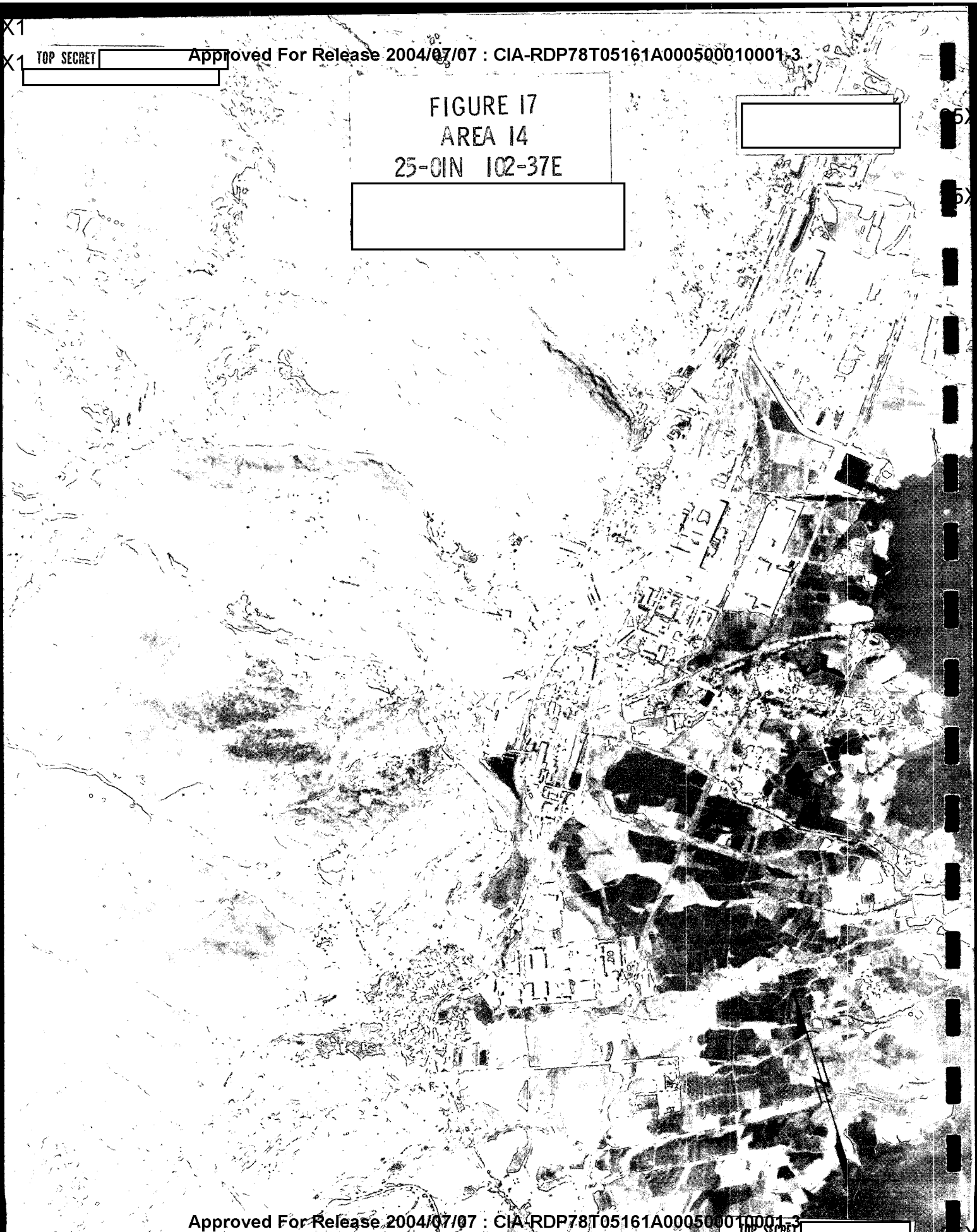


FIGURE 16
AREA 14
24-52N 102-19E

FIGURE 17
AREA 14
25-01N 102-37E



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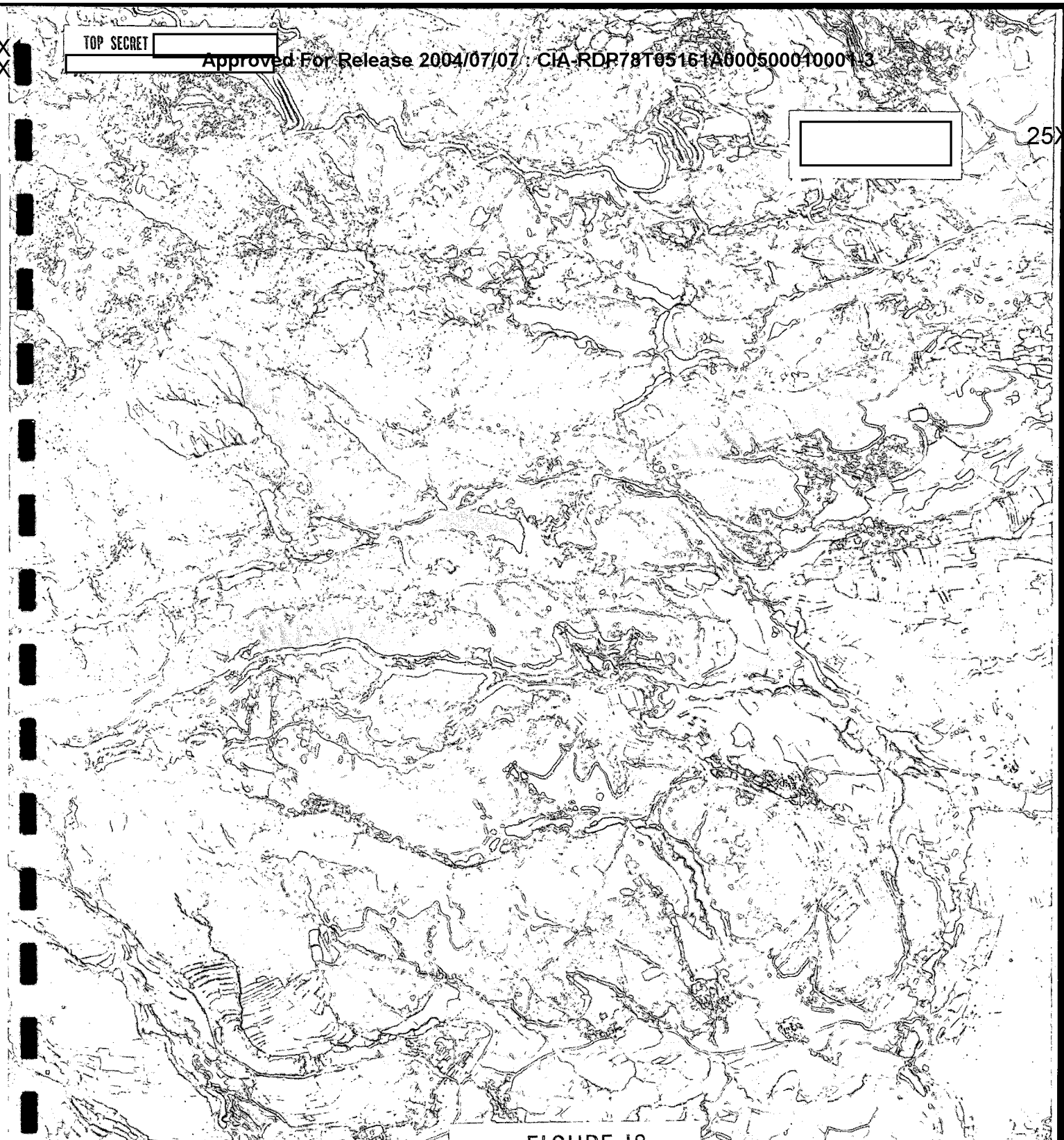


FIGURE 18
AREA 14
25-26N 102-19E

25X

25X
25X

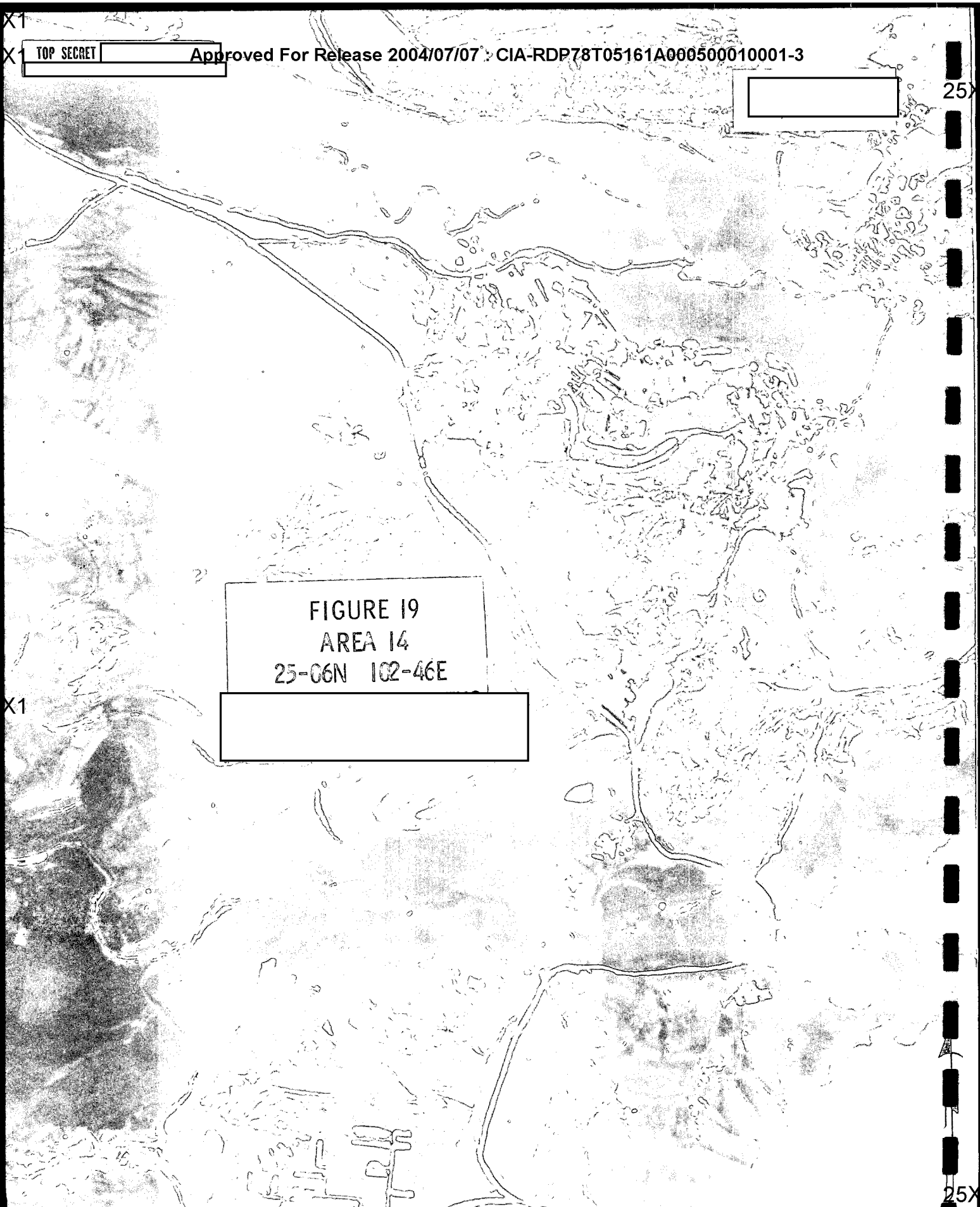
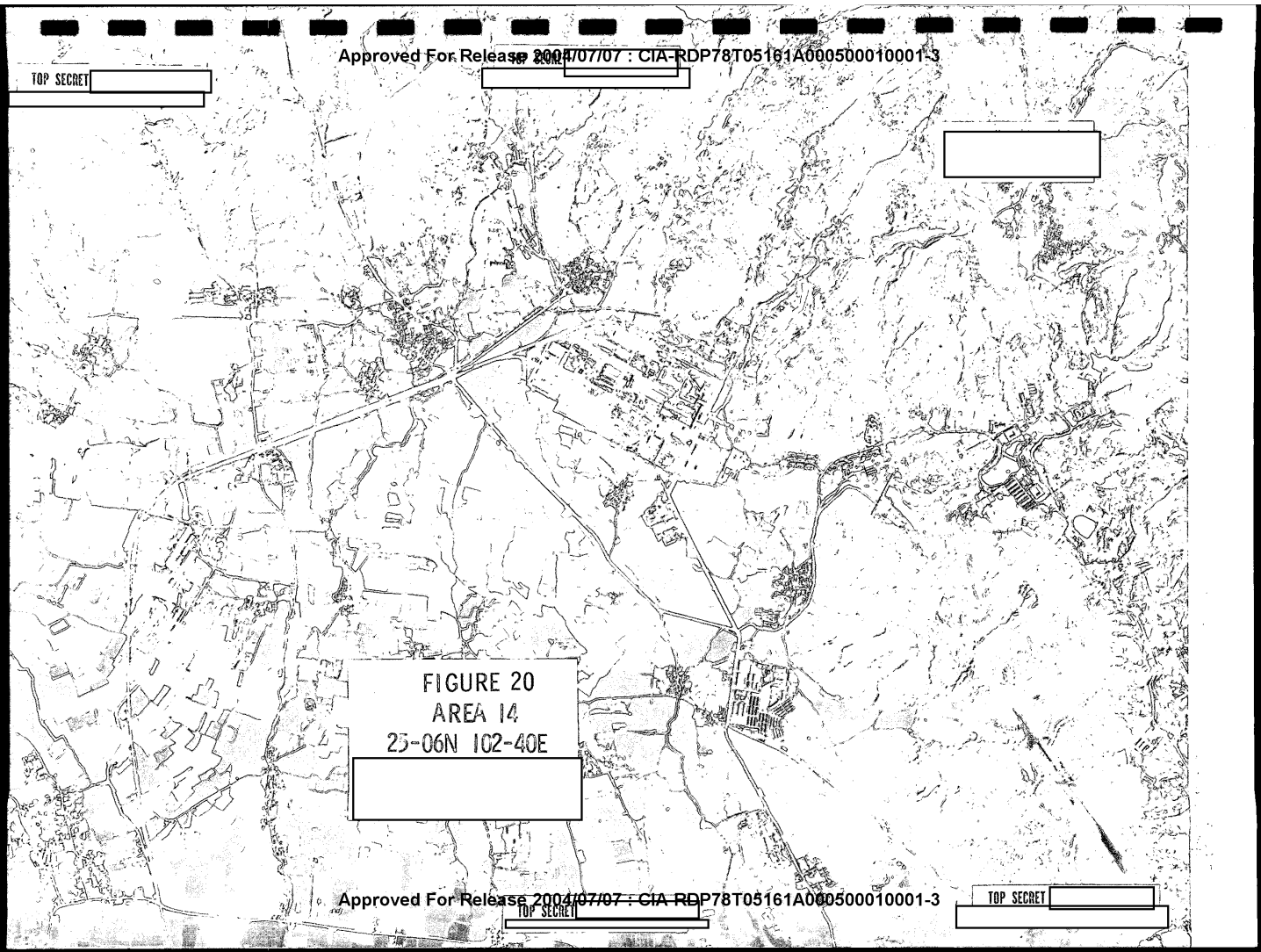


FIGURE 19
AREA 14
25-06N 102-46E

X1

TOP SECRET



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CIA IMAGERY ANALYSIS DIVISION

CIA/PIR-63017

AREA 15

Lanchou, Kansu 36-03N 103-41E WAC 383

Underground shaft mines, 35-53N 103-49E, 10 nm south of Lanchou (or 3 nm south of Akanchen). Rail-served mining area contains two probable headframes associated with two rail-loading facilities. Shafts may be inclined into bluffs along stream valley. A third mine with smaller headframe is located along tributary to the east. Dark-toned ore or waste piles are evident at the mine sites. Type - coal. (Map location No. 191 1/)

Open pit mine, 36-45N 104-12E, 46 nm NNE of Lanchow near Paiyin. Large open pit on rail spur about 10 nm north of large rail-served smelter and ore concentration area. Type - copper mine and smelter. (Map location No. 143 1/

Probable underground mines, 36-26N 102-55E, 43 nm WNW of Lanchou (or 7 nm north of Minho). Probable mining area is located in eroded hills along the east bank of Tatung Ho (river). Hills are scarred and honeycombed with trails. A number of straight trench-like traces are indicators of some means of ore transport from adits; several lead to a road near a possible loading facility adjacent to a dark-toned area (possibly coal, but no steam plant could be identified); another inclined trace intersects a road aligning with a bridge under construction. An unusual rail spur with two branches terminates in the area. A probable storage yard is adjacent to a small rail siding. A large number of housing units and support areas are evident, some of which appear to be walled (Figure 21). Type - possible gold placers. (Map location No. 119 1/)

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

FIGURE 21
AREA 15
36-26N 102-55E

AREA 18

Luchou (Luhsien), Szechwan 28-53N 105-26E WAC 495

Probable adit mine(s), 29-00N 104-56E, 28 nm WNW of Luhsien (or 11.5 nm SSW of Fushun). An old mining area that has undergone recent expansion. On coverage, a grayish-toned waste pile and various old-appearing buildings were evident. A rail line, probably narrow gauge, serves this naturally protected cove on a slope of a sedimentary ridge. coverage reveals two new long warehouse-type buildings and other smaller buildings, additional ground clearing and removal of older buildings, and a probably equipment area near the old waste dump. Several possible new adits may be located in the vicinity of the equipment area. A small tower-like object at the road entrance indicates a possible security checkpoint (Figure 22). Type - possible coal. (Map location No. 281 2/)

Possible mining area, 28-57N 104-54E, 28 nm west of Luhsien. Numerous small surface scarrings cover an area of 2 square miles; none appear of sufficient size to be significant. Small groups of dark-roofed buildings evidently support the activity. The most prominent sites are road connected (Figure 23). Type - possible gold placers. (Map location No. 529 2/)

Underground mining area, 29-18N 105-21E, 27 nm north of Luhsien (or 4 nm SE of Lungchang). Probable inclined shafts or adits are located on slope of sedimentary ridge. A large amount of gray-toned waste from the mines is evident throughout the area; a small stream has been dammed by waste material in several places. A probable narrow-gauge spur line runs between the closest mining area and a 3-track classification yard on the main rail line approximately 1 nm south of the area. A dark-toned area is apparent at the point of loading on the rail spur. Improved roads connect the rail spur to the other mining sites. Housing and support buildings are dirty; entire area appears old, but still active (Figure 24). Type - probable coal. (Map location No. 477 2/)

Shaft mining area, centered at 29-17N 105-33E, 25 nm NNE of Luhsien (or 15 nm east of Lungchang). Numerous shaft mines, probably vertical, cover approximately 9 square miles in area of sedimentary outcrops. Seven probable headframes with associated gray-toned waste piles are identifiable. Area is rail served. A central loading facility is located on a siding at the railhead. The mined ore apparently is brought to the siding by road transport, where it is conveyed to ore cars. Scattered housing/support buildings appear old (Figure 25). Type - coal. (Map location No. 476 2/)

Shaft mining area, centered at 29-23N 105-28E, 30 nm north of Luhsien (or 10 nm ENE of Lungchang). An old active mining area that covers approximately 8 square miles consists of numerous underground mining sites. Gray-toned waste piles are usually evident at the sites of probably shaft mines. Some mines are served by a branching rail spur, others by road only. The rail spur connects to a large ore loading and possible crushing facility located on a long rail siding containing hopper cars. A powerplant is situated south of the rail line near a fabrication-type facility probably not associated with the mining (Figure 26). Type - probable coal. (Map location No. 476 2/)

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1962 (CONFIDENTIAL)

ACIC. US Air Target Chart, Series 200, Sheet 0495-18A, scale 1:200,000, September 1959 (SECRET)

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25X1

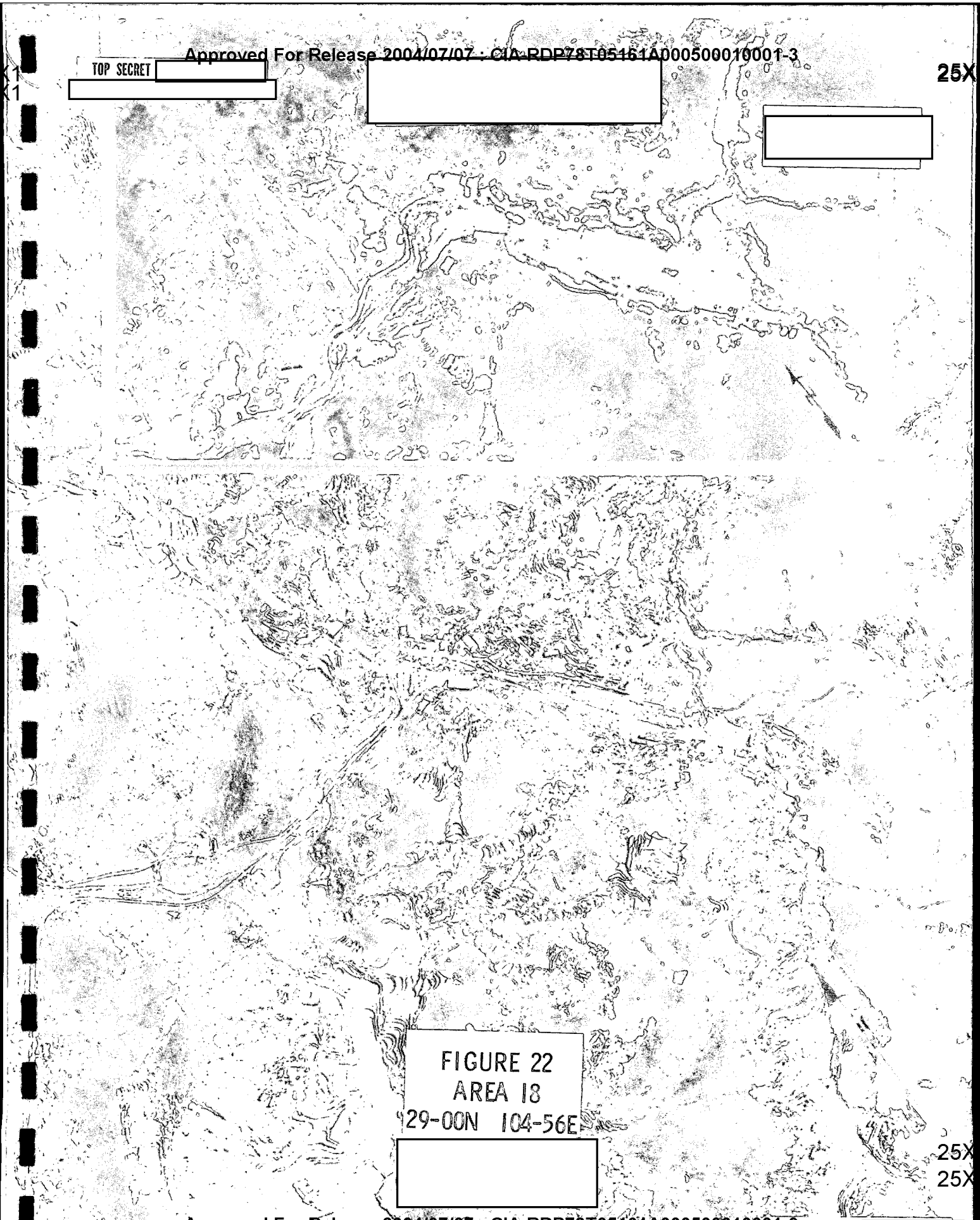

FIGURE 22
AREA 18
29-00N 104-56E

25X1
25X1

25X1

TOP SECRET

FIGURE 23
AREA 18
23-56N 104-54E

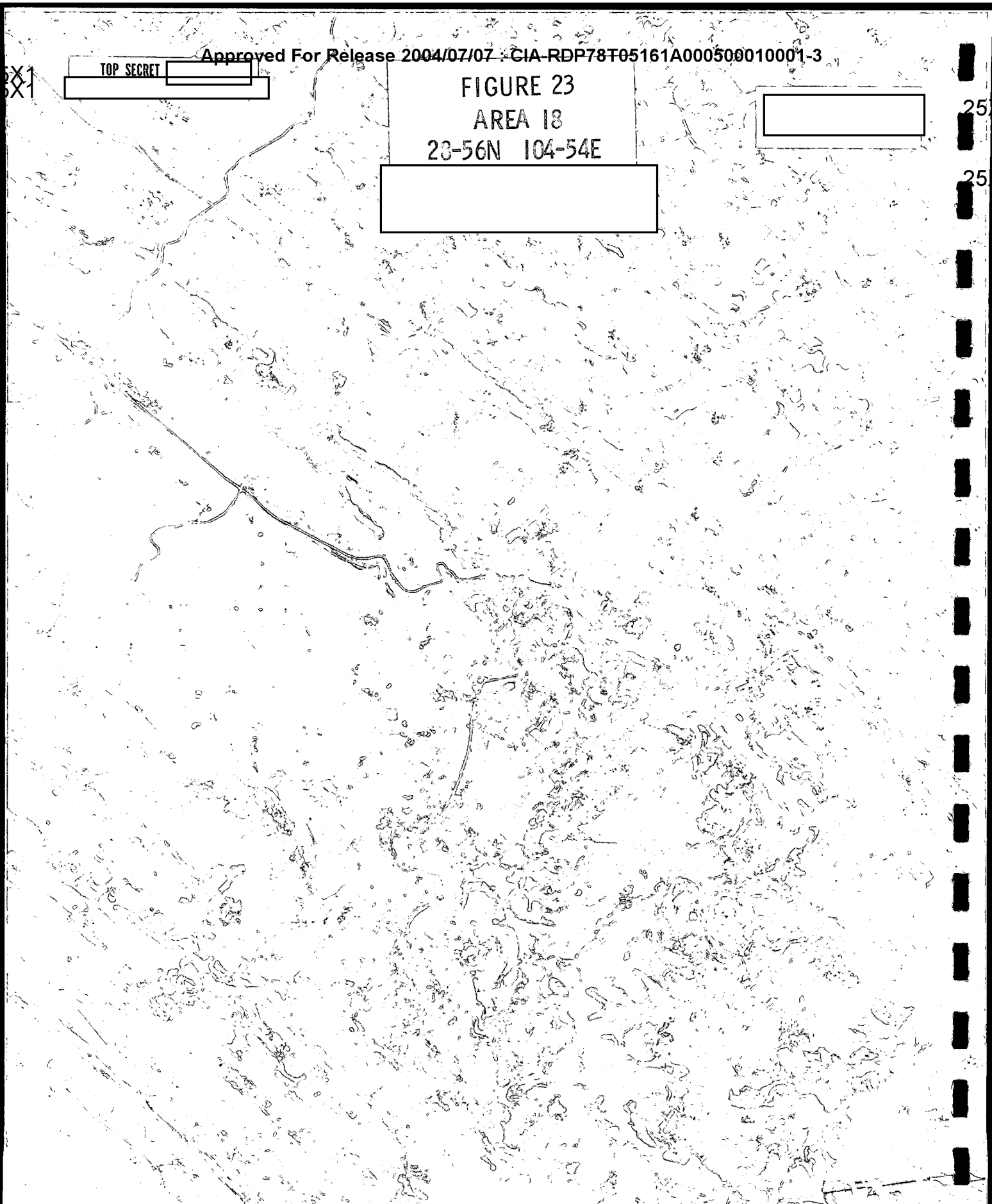

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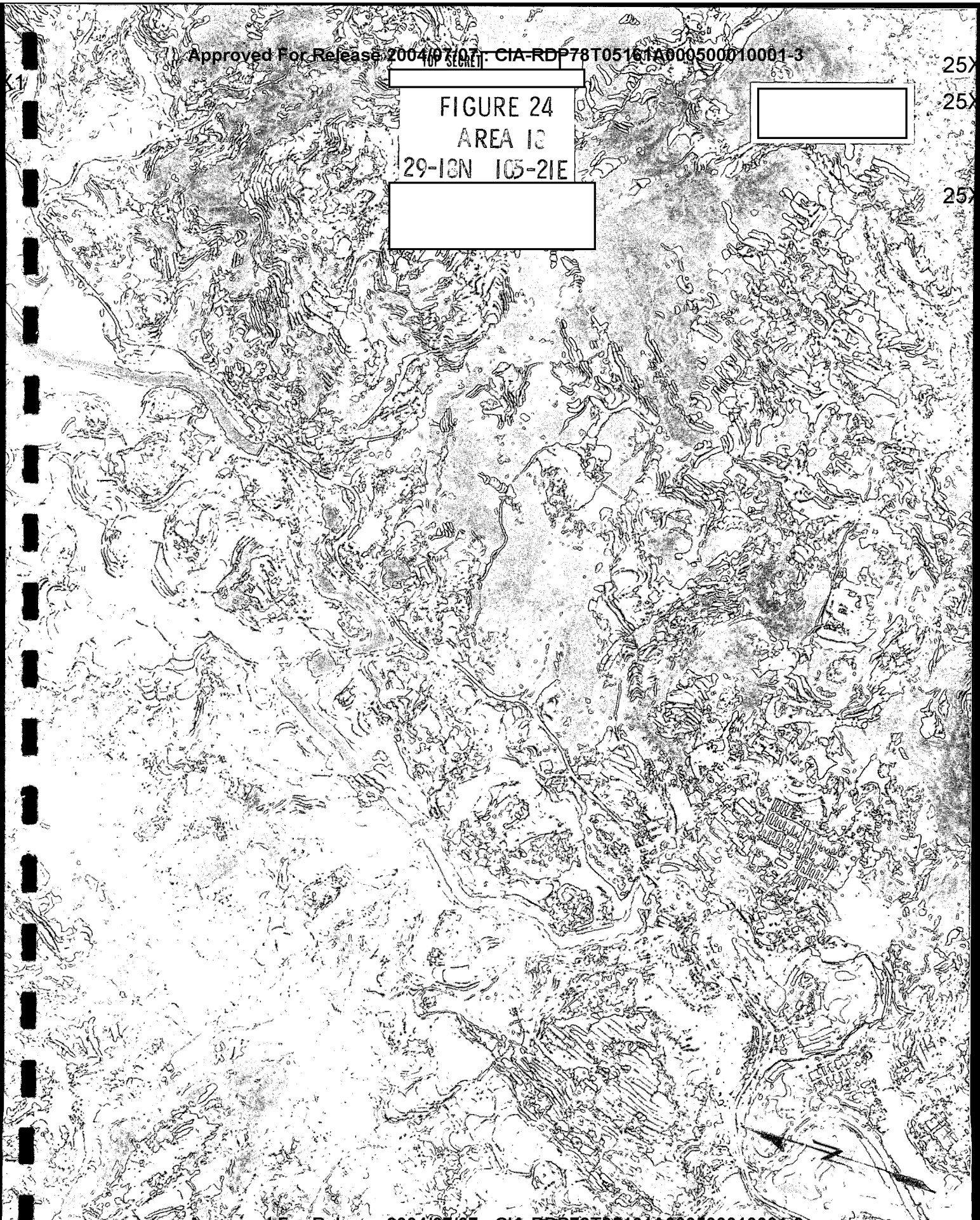
FIGURE 24
AREA 18
29-18N 105-21E



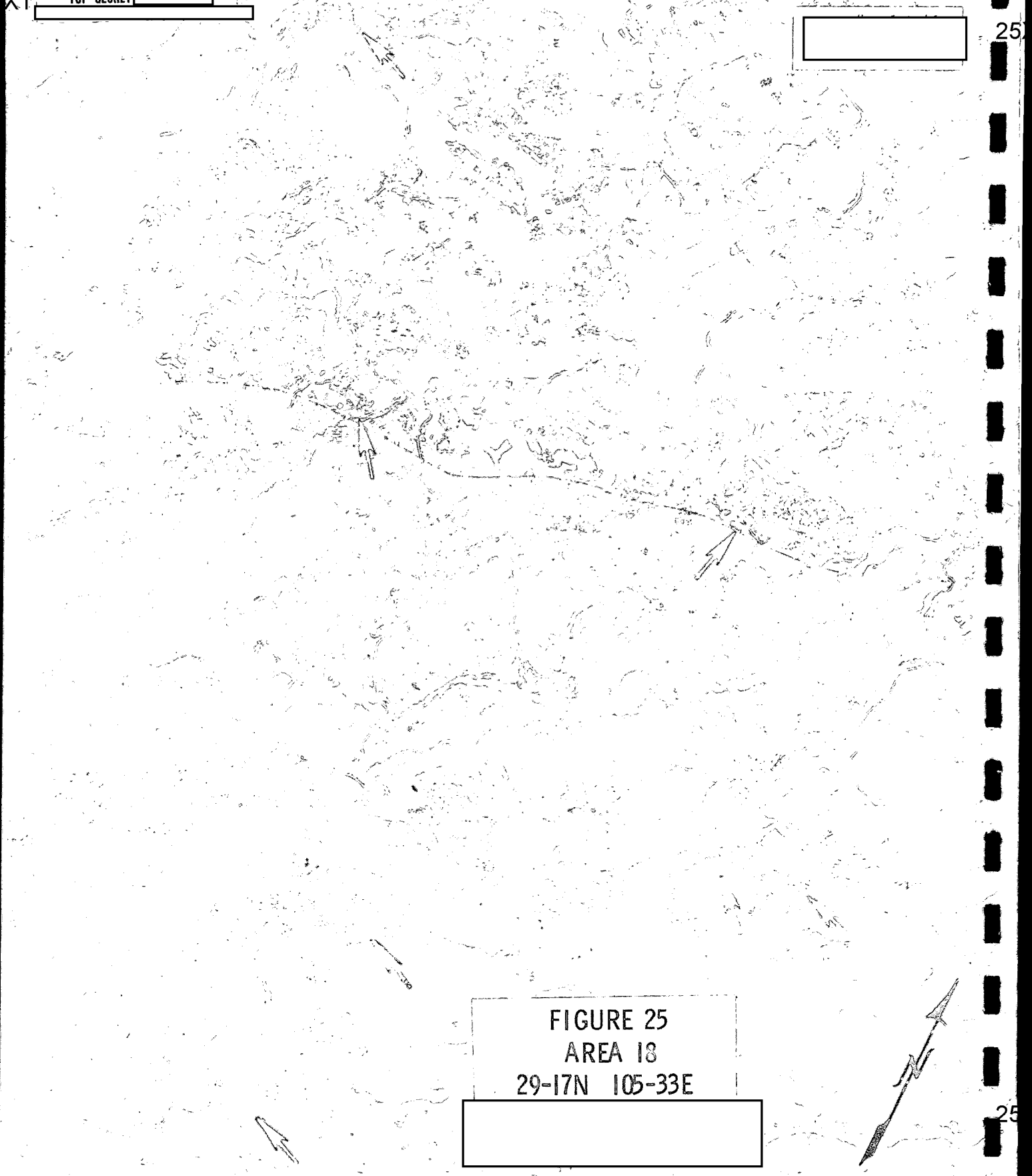


FIGURE 25
AREA 18
29-17N 105-33E

25X1

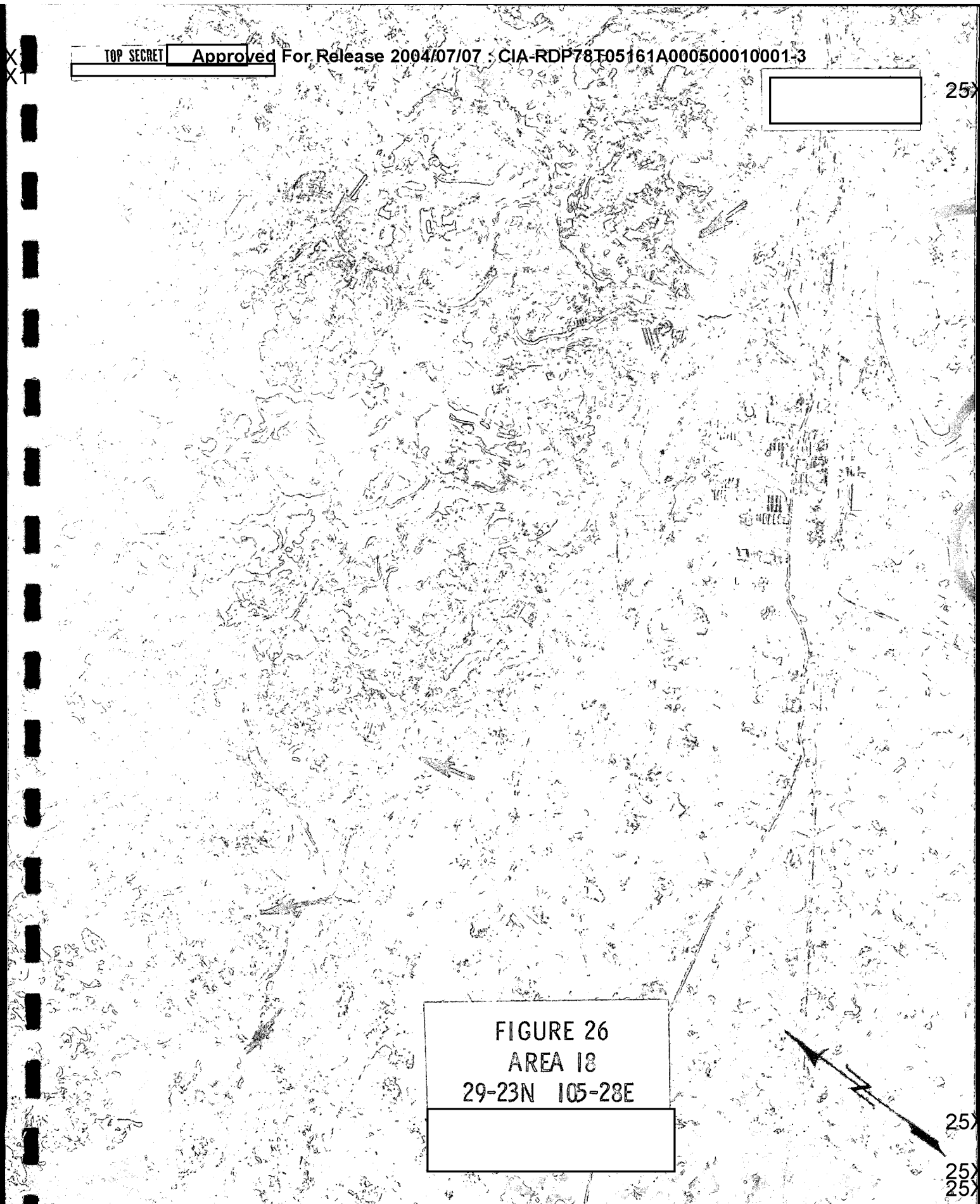


FIGURE 26
AREA 18
29-23N 105-28E

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25X1

25X1

AREA 19

Mengtzu, Yunnan 23-22N 103-24E WAC 616

Open pit mines, 23-49N 103-12E, 28 nm north at Mengtzu near Chuanghu. Two large open pit mines, one on each side of Nanpan Chiang (river), cover an area of approximately 4 square miles. Each open pit is served by a rail spur and separate ore loading facility. Large overburden piles have been hauled away from the pit area. A large support-housing area is located midway between the two mines; separate smaller housing areas are located nearer the mines. No processing is evident at the support area (Figure 27). Type - probable coal (lignite). (Map location No. 18 2/)

Probable adit mines, centered 23-22N 103-14E, 9 nm west of Mengtzu. At least five large and four small waste piles mark the position of probable adits on the slope of a massive ridge. Sites are road connected. An inclined trace at several levels on the face of the slope is a probable overhead cableway for ore transport which appears abandoned; it connects with a processing plant at the base of the slope. The plant appears old from the large amount of waste sediments and tailings nearby. None of the process buildings are modern in their outward appearance. Rail spur from the west serves the plant. Pumping stations and lines to probable waste ponds are evident (Figure 28). Type - probable tin placers. (Map location No. 33 2/)

Mining and ore processing area, 23-23N 103-18E, 5 nm west of Mengtzu (or 9 nm east of Kochiu). An installation containing two probable processing plants is associated with mines in the vicinity. Both plants appear modern and have overhead cable systems for ore supply from various mines. The large stepped-roof building probably houses a gravity-separation process with a grinding and crushing capability at the upper level. It has undergone recent changes with the addition of two large-, one medium-, and three small-diameter thickener tanks to go with two large- and three medium-diameter tanks present in [redacted] The location of the shed for receiving the overhead cableway and some identifiable trestles indicate that some ore is coming from the previously described mines 3 nm SW at 23-22N 103-14E. In addition, ore is probably being received from adjacent surface mines SE of the plant. The other plant area is characterized by three similar buildings connected to a long receiving building, which together probably house a chemical process. Approximately 20 buried or partially buried

tanks, and three rectangular sedimentation basins are associated with the buildings. Ore appears to be received via a separate overhead cable from a mining site approximately 1 nm SW and from a large open pit immediately south of the plant. An extremely large waste tailing pond is associated with the processing area. Two separate water intakes from Tatun Hai (lake) supply the area; one apparently for process use, the other for washing of ores at the surface mine sites. Various support and possible by-product buildings, a substation, ore loading facilities and housing/administrative units are present. The area is road served; however, a small rail line connects the area to the previously described older processing area 4 nm west (Figure 29). Type - probable tin and/or unknown by-products. (Map location No. 33 2/)

Mining and smelter area, 23-22N 103-10E, 13.5 nm west of Mengtzu, at Kochiu. Numerous mines within a 3 nm radius of Kochiu are associated with a large smelter. A variety of mining methods are being employed; most appear to be underground and are similar to those closer to Meng-tzu. Individual mine sites are road connected. Explosives storage sites are centrally located. An ore concentrator is located on the SW edge of Kochiu. It has two large thickeners and an associated pipeline system as a probable underground water supply. The rail-served smelter area contains two large and one small stack with flues and a 7-unit furnace building. Dark-toned slag piles are evident. A large lake in the center of Kochiu appears filled with waste products (Figure 30). Type - tin and flourite. (Map location Nos. 23, 33, 34 2/)

Mining and ore processing area, 23-17N 103-11E, 7 nm SSE of Kochiu. Northern portion of an extensive underground mining area that extends south for approximately 5 nm. The largest concentration of mines is centered around several active ore processing mills in this area. A conglomeration of support and housing buildings is scattered throughout the area. Individual small mines, many of which are probably abandoned, are located near the building clusters and where the ground surface has a mottled appearance. Most of the mines are probably adits or inclined shafts into hillsides. The largest amount of waste is around the processing mills as either piles or tailing ponds. Most of the mill buildings appear old. Some probable sites for former mills also appear abandoned. Roads and trails serve the area (Figure 31). Type - tin and tungsten. (Map location Nos. 26,36, 31 2/)

Underground mines, 23-31N 103-54E, 29 nm east of Mengtzu. Small mining site with dark-toned waste piles. Adits go into sides of hills of sedimentary rock. A possible explosives storage area is located at the southern end of the site. A few long warehouses and a shop comprise most of the support buildings. A small village for housing is nearby. Site is road served; trucks on road indicate activity (Figure 32). Type - unknown.

Probable shaft mine, 23-31N 103-15E, 12.5 nm NW of Mengtzu. A probable vertical shaft mine is indicated by two twin headframes, waste piles, and a black stockpile. Probable truck-loading equipment is placed at the edge of the stockpile for the road that serves the site. A small support area is on each side of the site. A few other buildings, a tall stack, a storage tank, an apparent pipeline, and a separate black stockpile are indications of the presence of a possible steamplant or the construction of one. None of the present buildings seem to be of sufficient size to be associated with the tall stack. There is no visible connection with the nearby rail line (Figure 33). Type - unknown, suspect coal.

PHOTOGRAPHY (Complete composite coverage)

25

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-J-11, scale 1:1,000,000, 4th ed, December 1964 (UNCLASSIFIED)

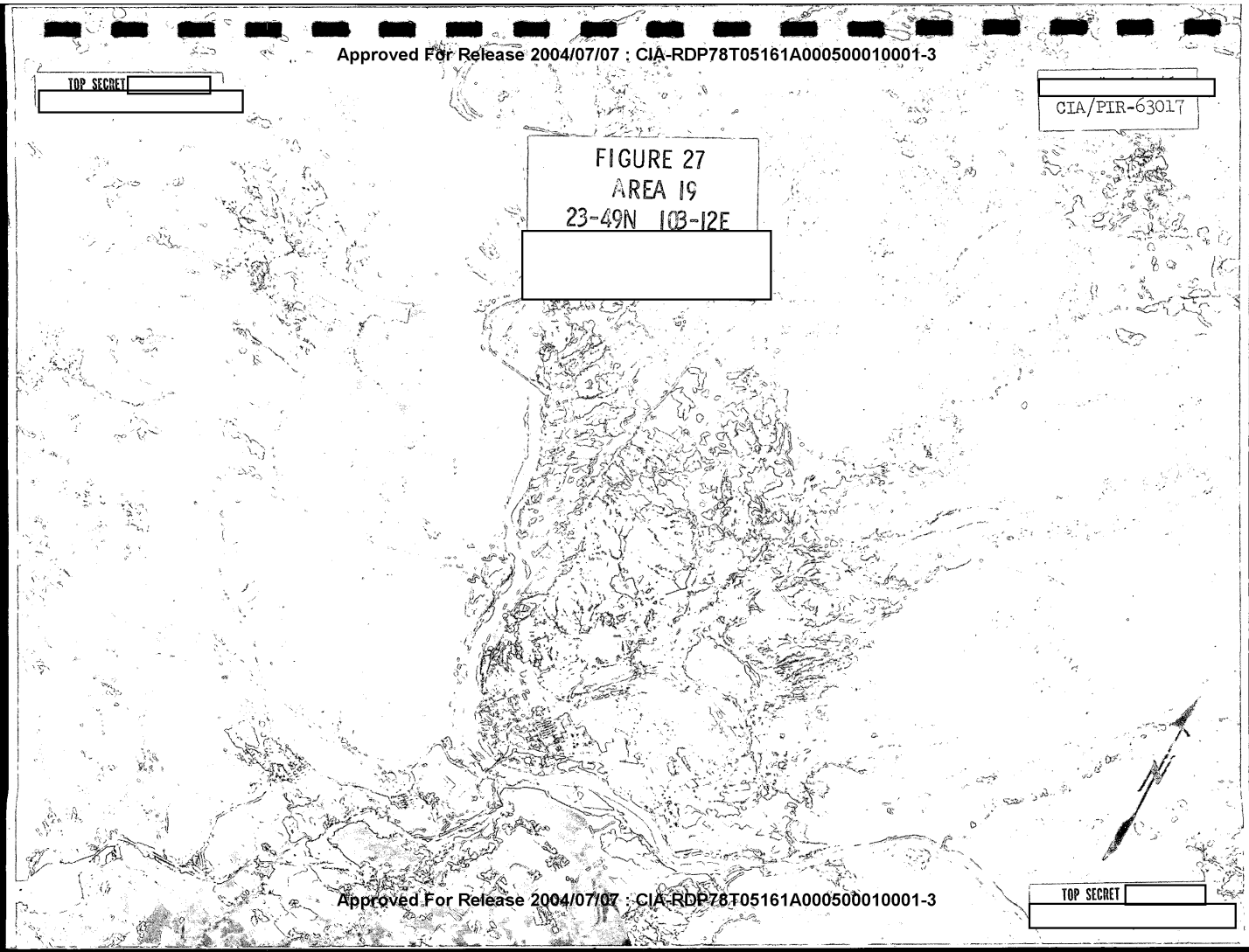
ACIC. US Air Target Chart, Series 200, Sheet 0616-2AL, scale 1:200,000, 2d ed, May 1960 (SECRET)

ACIC. US Air Target Chart, Series 200, Sheet 0616-3AL, scale 1:200,000, 1st ed, June 1960 (SECRET)

TOP SECRET

CIA/PIR-63017

FIGURE 27
AREA 19
23-49N 103-12E



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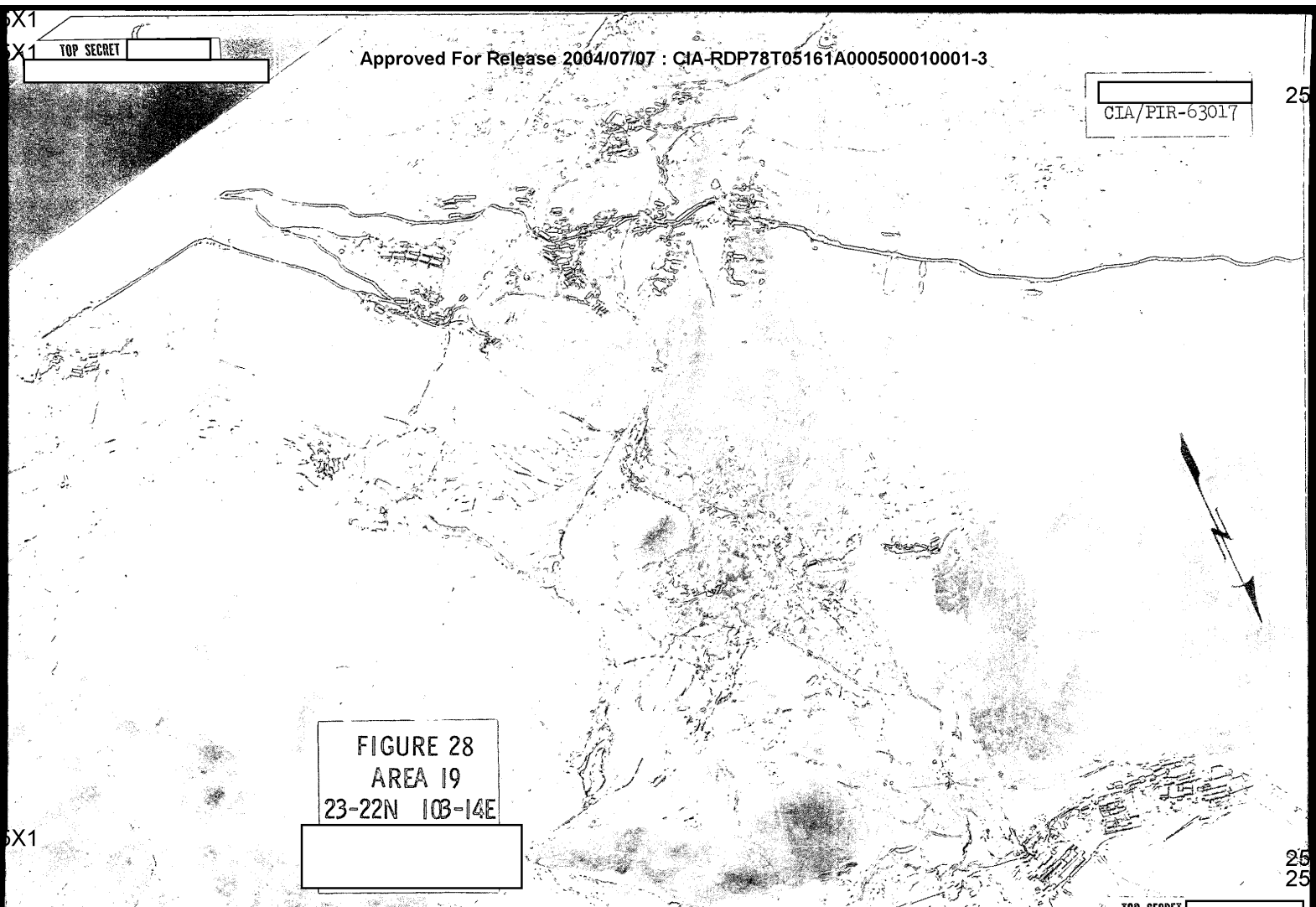
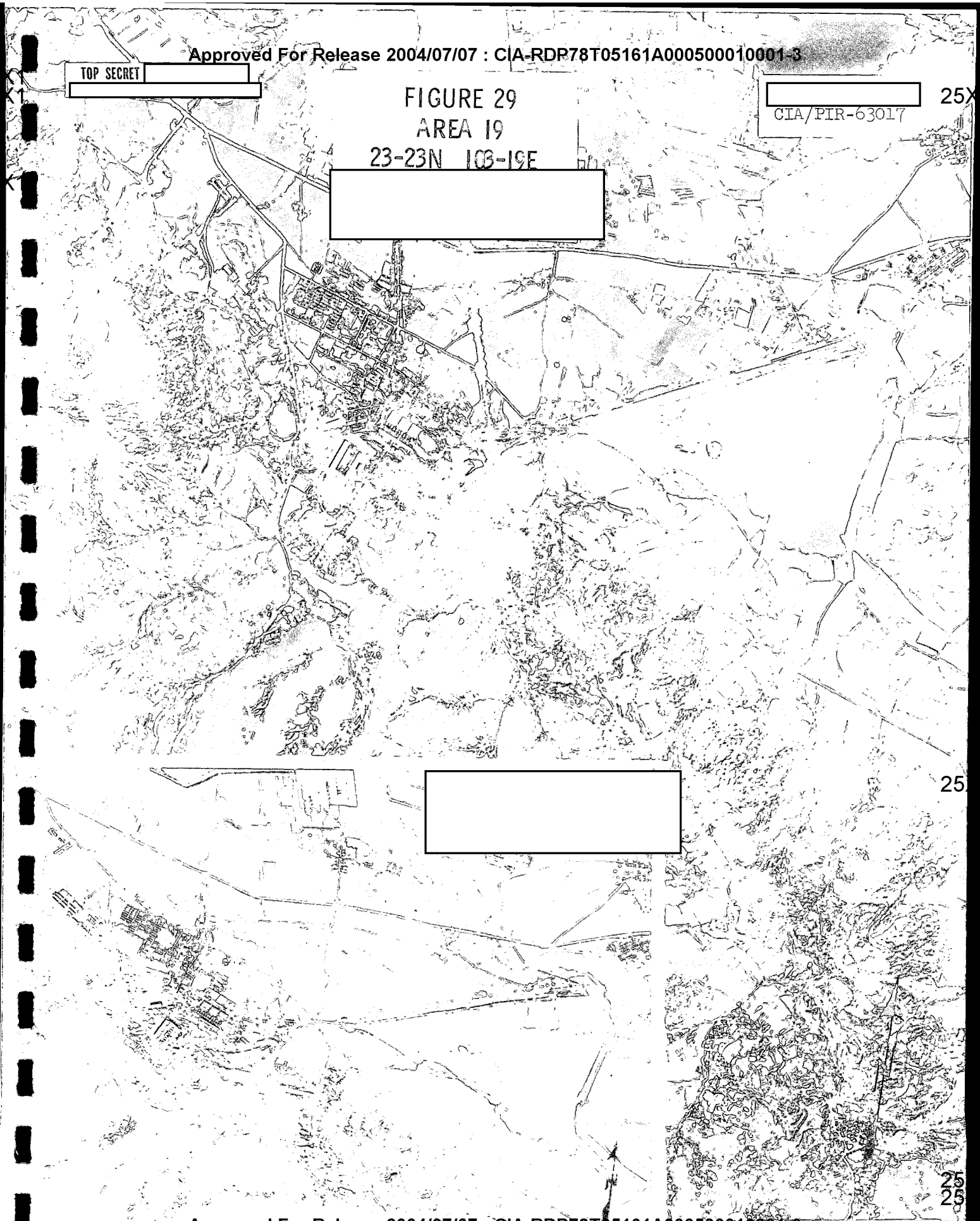


FIGURE 28
AREA 19
23-22N 103-14E

FIGURE 29
AREA 19
23-23N 103-19E



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CIA/PIR-63017

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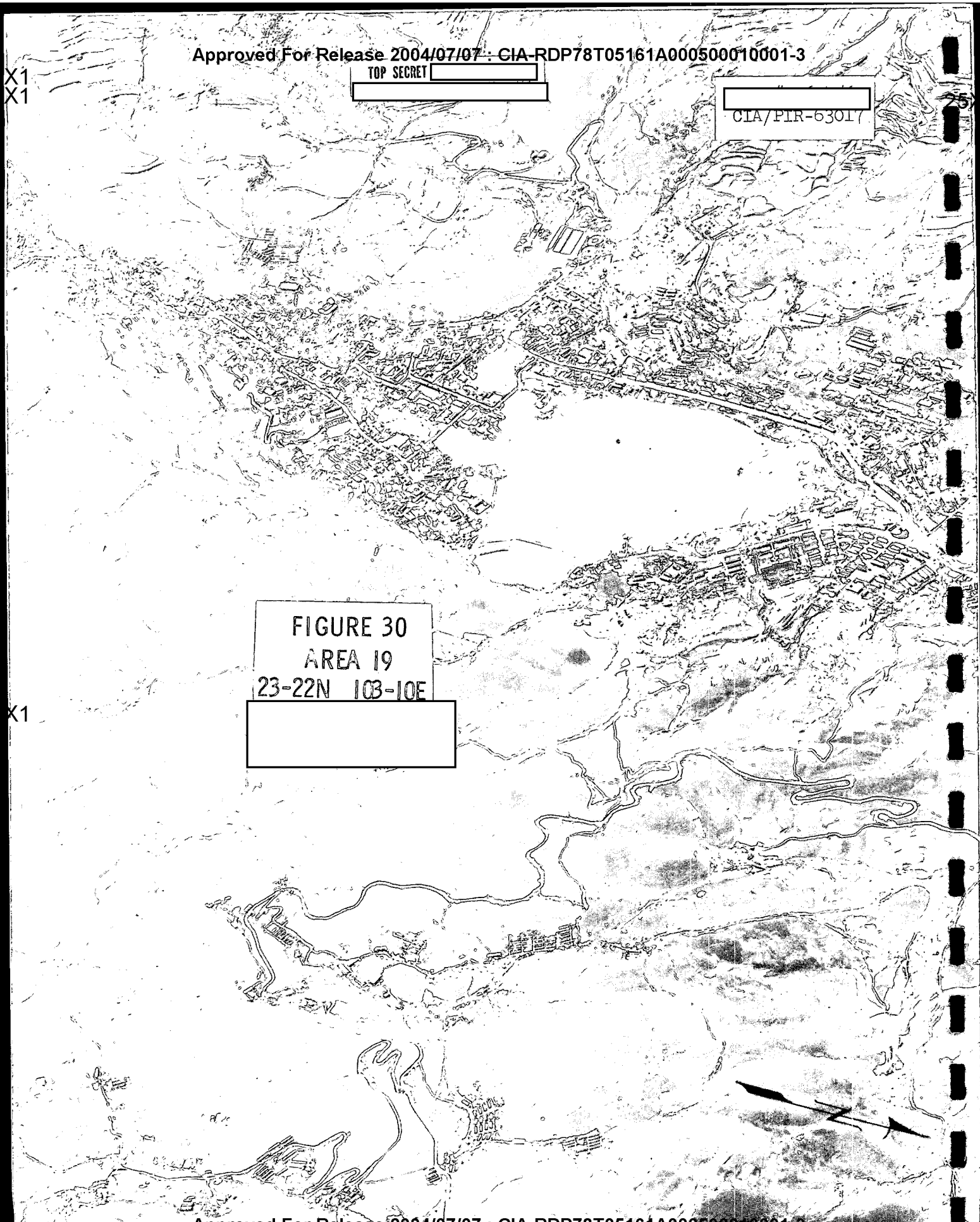

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TOP SECRET

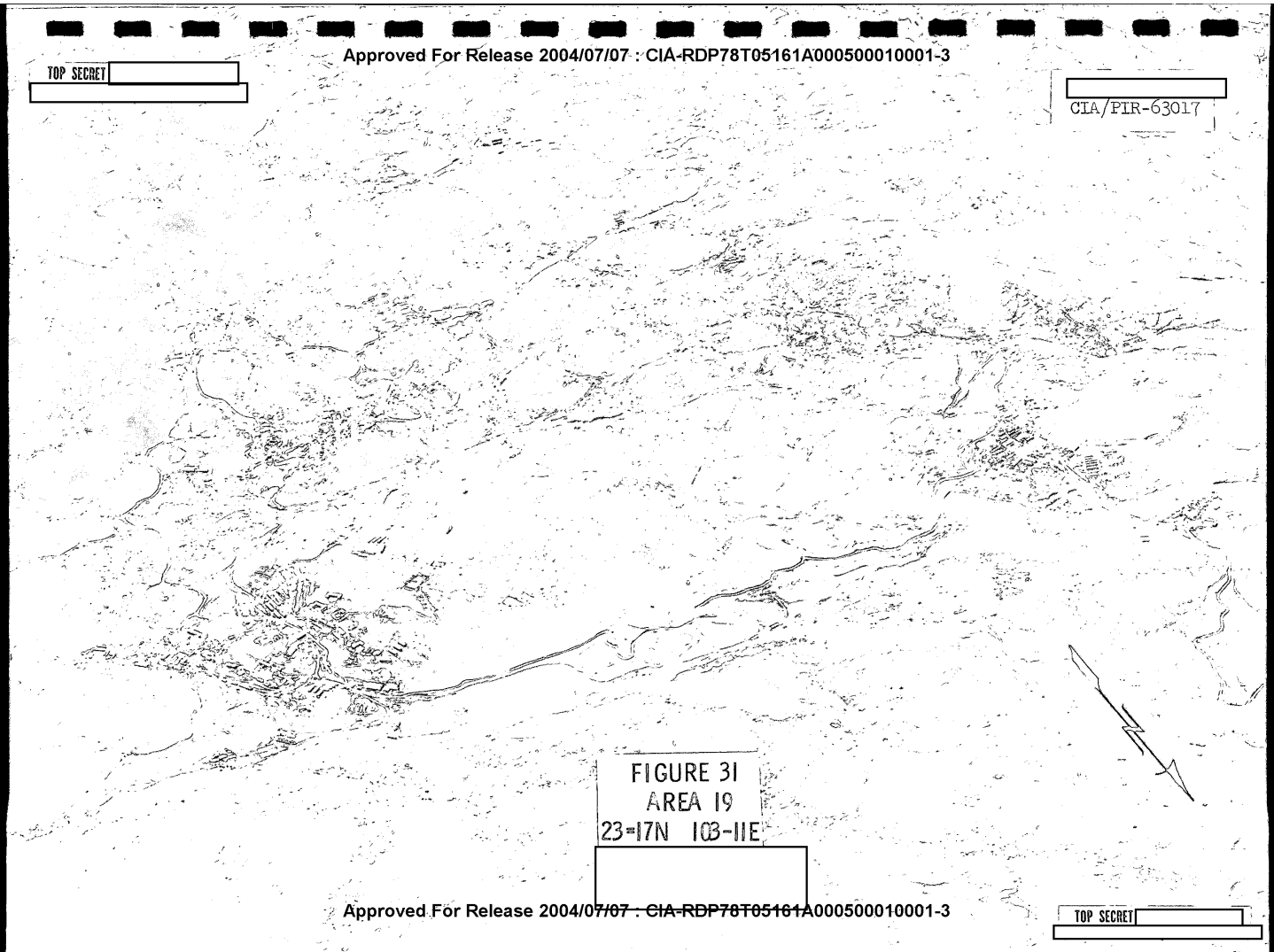

FIGURE 31
AREA 19
23-17N 103-11E

TOP SECRET

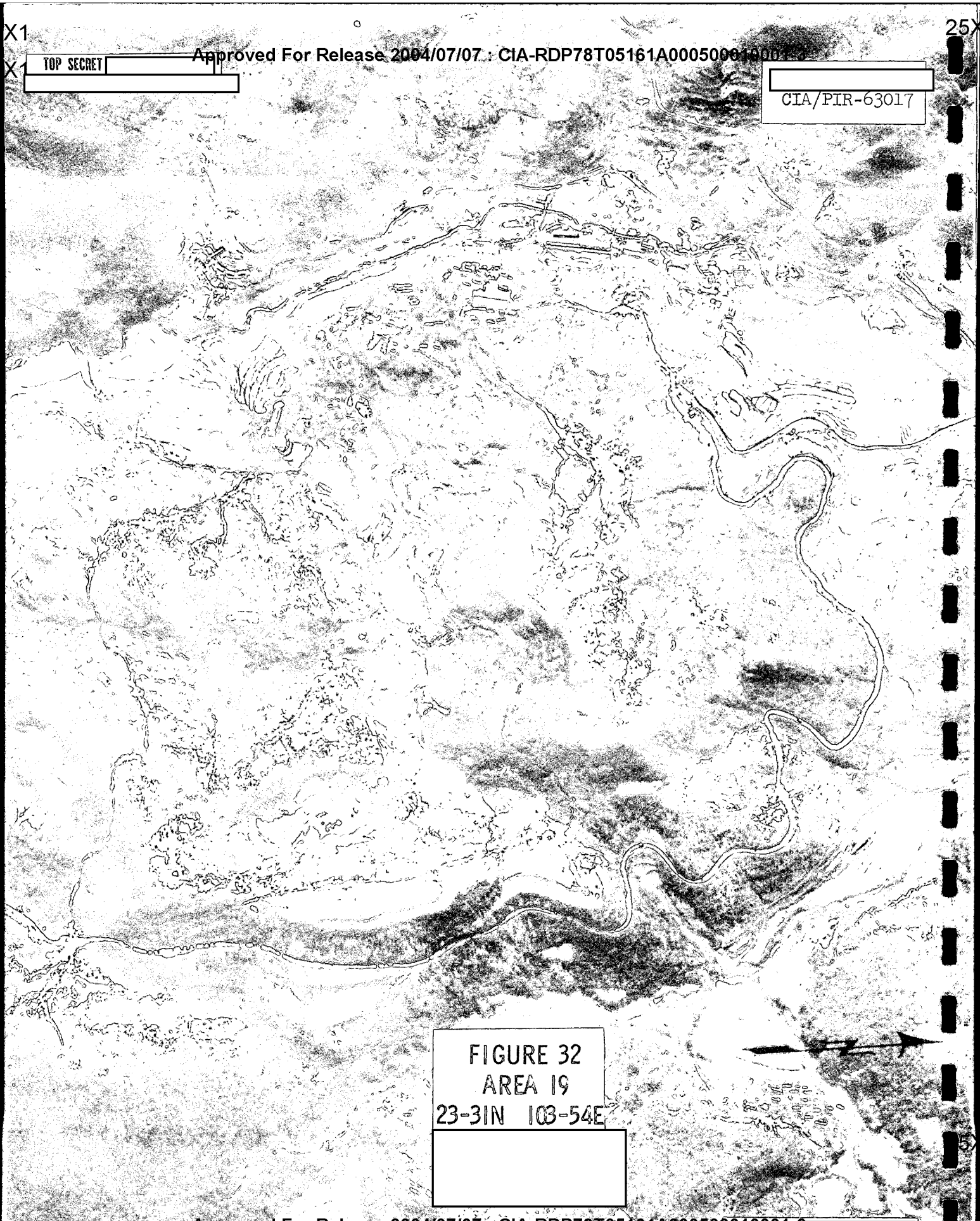

FIGURE 32
AREA 19
23-31N 103-54E

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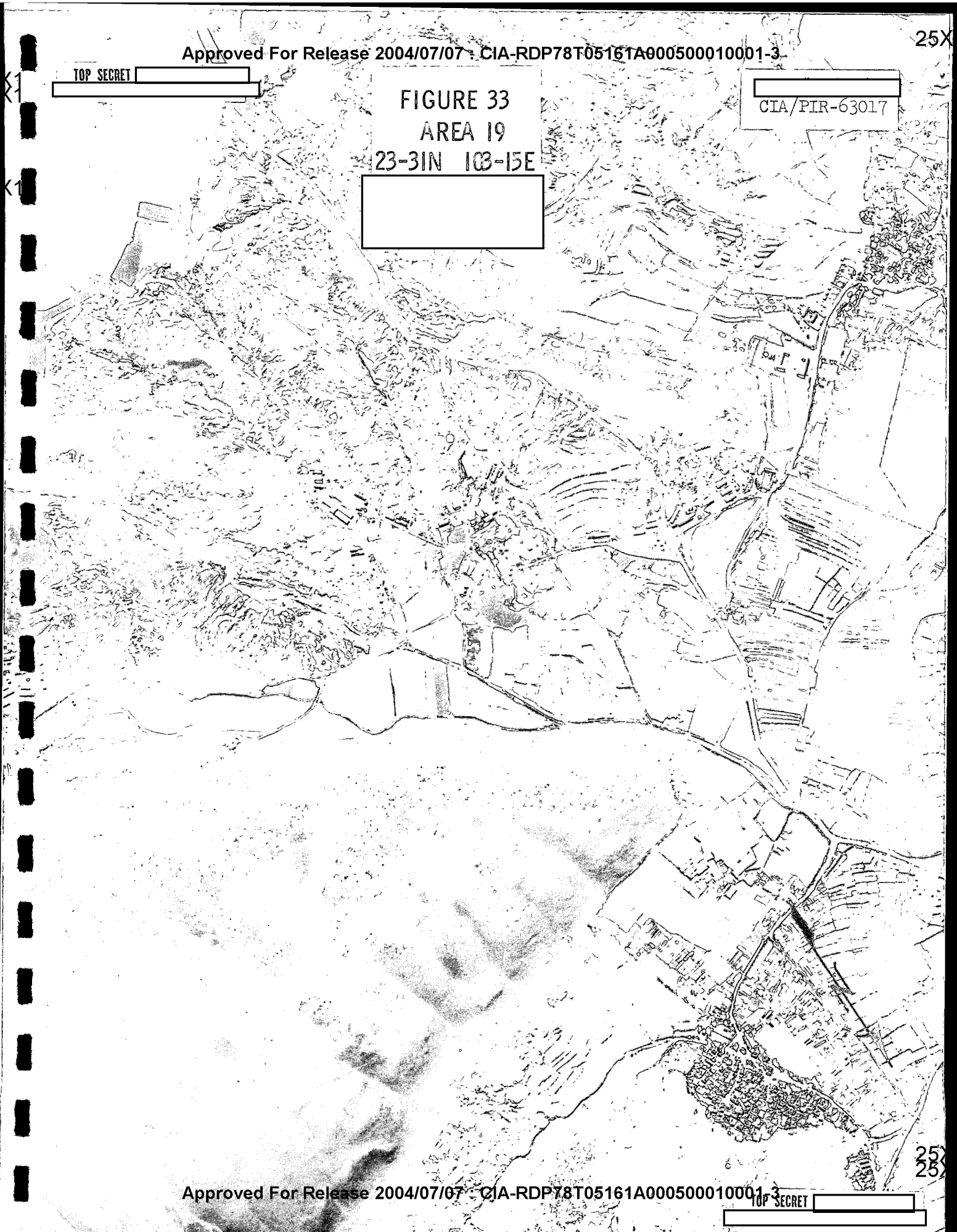
CIA/PIR-63017

FIGURE 33
AREA 19
23-31N 103-15E



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AREA 20

Lungshan, Kwangsi 23-50N 108-15E WAC 615

Possible prospecting area, 23-30N 108-21E, 18 nm SE of Lungshan near village of Holi. A possible prospecting area consisting of a series of east-west parallel lines appears to be a drill test pattern. Approximately 12 lines are visible. The pattern is superimposed over the road switchbacks, and may be associated with a road building project across the Taming Shan (mountains). The road ends abruptly and has no apparent destination. A work camp of approximately 25 huts is in the center of the area. A mottled discolored area east of the road under construction has the aspects of mining activity. A probable work support area is located at the base of the mountains near the village (Figure 34). Type - unknown.

PHOTOGRAPHY (Center of search area) (Complete coverage)

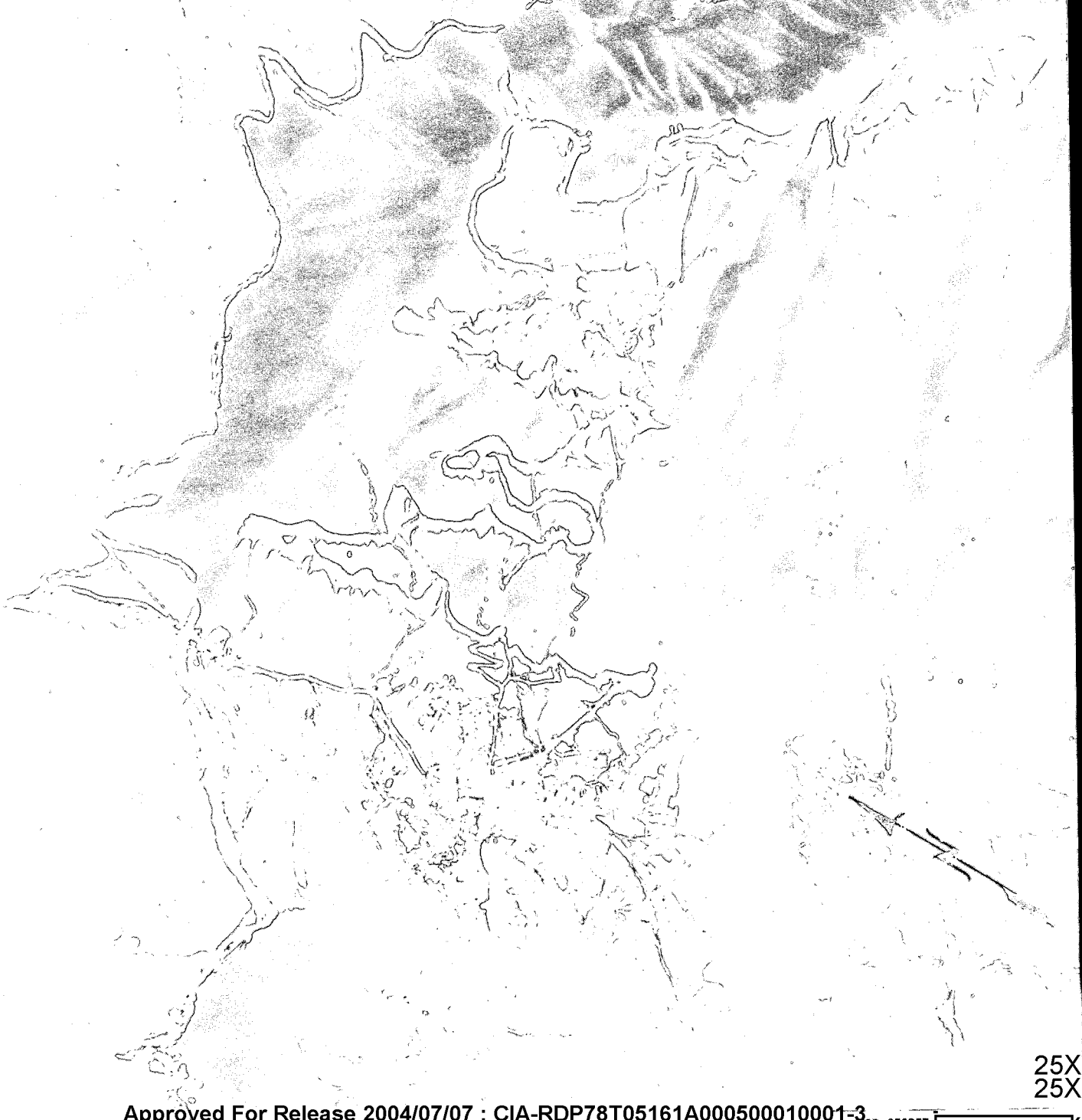
MAPS AND CHARTS

AMS. Series L500, Sheet NF-49-1, scale 1:250,000, 1st ed, January 1959 (UNCLASSIFIED)

ACIC. USAF Operational Navigation Chart, Sheet ONC-J-11, scale 1:1,000,000, 4th ed, May 1960 (UNCLASSIFIED)

TOP SECRET

FIGURE 34
AREA 20
23-30N 103-21E



TOP SECRET

CIA IMAGERY ANALYSIS DIVISION CIA/PIR-63017

AREA 21

K'aiyang, Kweichow 27-04N 106-58E WAC 496

Surface/underground mines, approximately 27-00N 106-48E, 10 nm WSW of K'aiyang. Surface diggings and probable adits are indicated by scarred areas and waste piles in an extremely hilly area. One large prominent mining area is readily apparent near a small village. Approximately 20 buildings that appear newly constructed in another cleared area to the SW might be indicative of further activity. Five of these buildings appear to be 3-story housing units. A probable steamplant with an associated tall stack is located between these two areas. A probable fault line runs through the area. Road served only (Figure 35). In [redacted] poor photographic coverage between cloud openings reveals one new building and a small waste pile in another location. The road westward leads to two new short rail spurs adjacent to a small turning wye off the main line. The distance by road to the rail line is approximately 6 nm. Type - possible mercury (cinnabar). (Map location No. 228 2/)

Possible mining area, approximately 27-14N 106-52E, 12 nm NW of Kaiyang. An area of earth scarring is evident at the top of a hill on [redacted] Small prospecting pattern across the hill appears to be parallel trench cuts. A well used road terminates at the scarred area. Few buildings are evident. Type - unknown.

Probable underground mines, approximately 27-08N 106-52E, 7 nm NW of Kaoyang. Three road-served areas in natural cove are located a short distance from a good all-weather road. The light-toned waste piles are situated on hillsides, which indicates probably adits to underground mines. The short service roads follow the contour of the hills to reach the mining level. Approximately 20 rectangular support/housing buildings are in the valley. No processing buildings are evident (Figure 36). Type - unknown.

PHOTOGRAPHY (Partial coverage*)

[redacted]

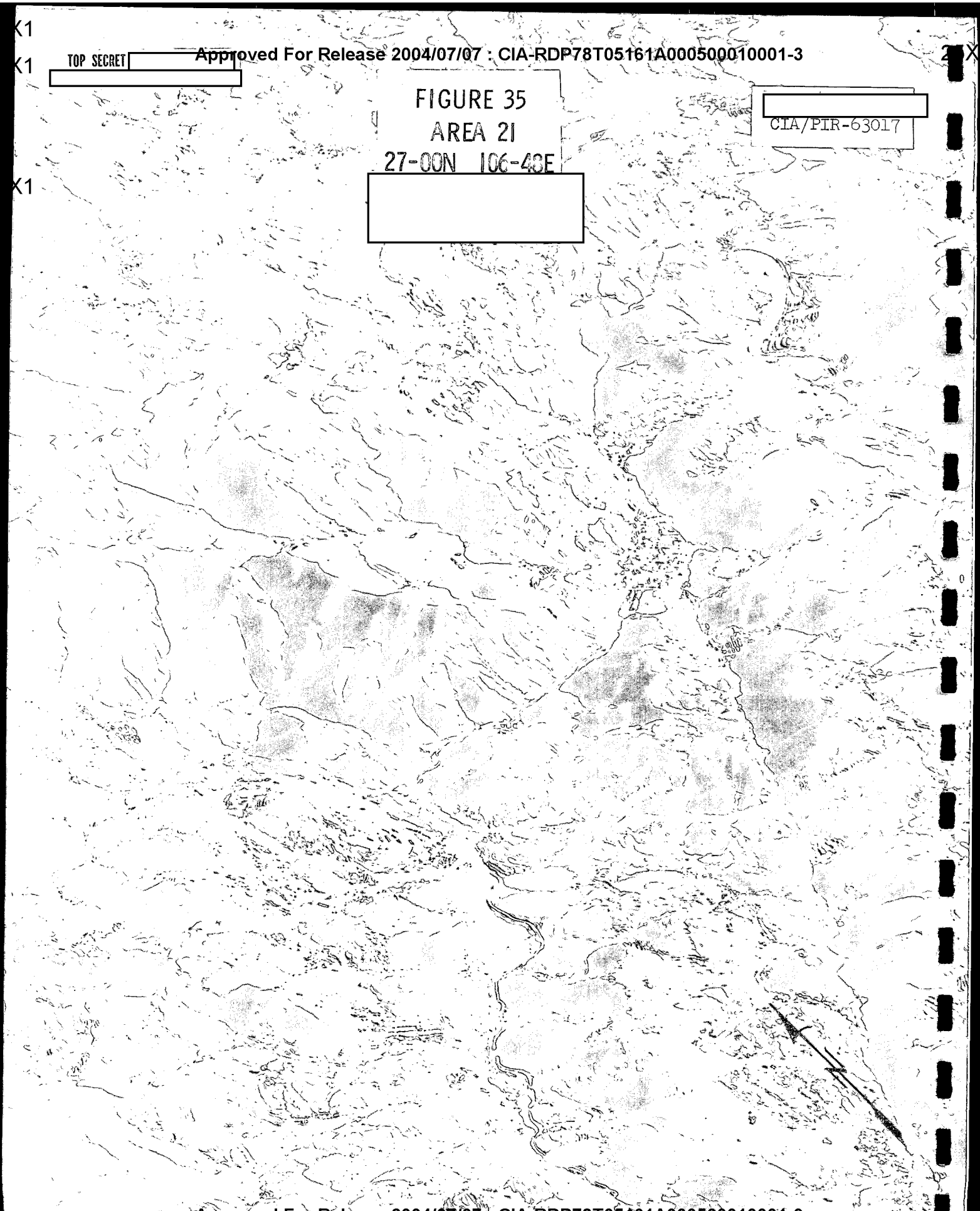
* Area is plagued by poor-quality coverage, far obliques on [redacted] and 40% clouds on [redacted] heaviest clouds in area west of Kaiyang.

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1962 (CONFIDENTIAL)

ACIC. US Air Target Chart, Series 200, Sheet S0496-10A, scale 1:200,000, 1st ed, August 1959 (SECRET)

FIGURE 35
AREA 21
27-00N 106-48E



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TOP SECRET [redacted]

[redacted]
CIA/PIR-63017

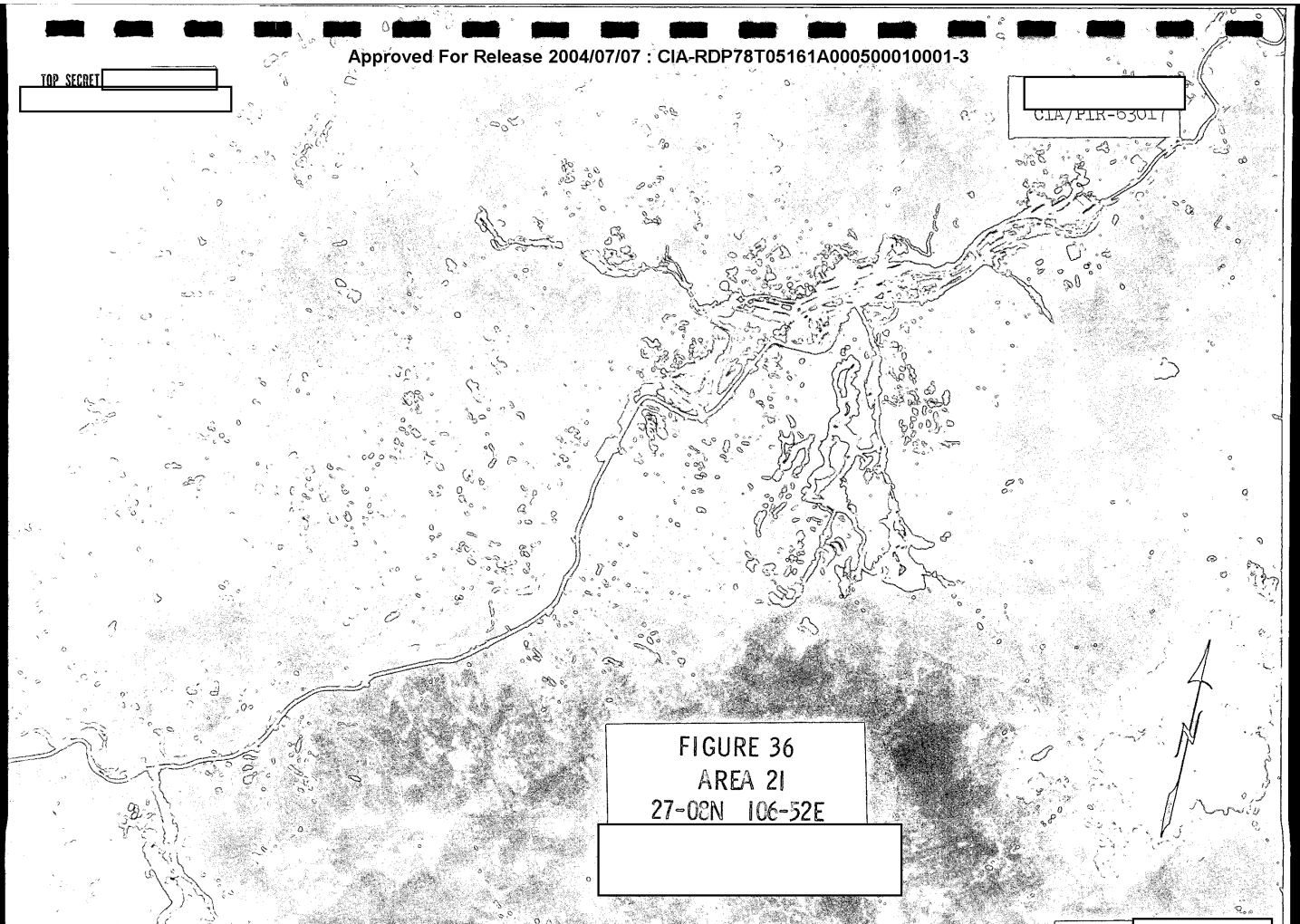

FIGURE 36
AREA 21
27-08N 106-52E
[redacted]

TOP SECRET [redacted]

AREA 23

Nanning, Kwangsi 22-49N 108-19E WAC 615

Underground mine(s) at 22-52N 108-28E, 8.5 nm ENE of Nanning. One probable inclined shaft mine is identifiable in an area served by rail spur and roads. A rail-loading facility, spoil piles, and approximately 12 support buildings are at the mining site. Site is adjacent to a small village and a fenced explosives storage area. Another rail spur terminates at a less developed site nearby, which does not appear active. A probable housing area 0.5 nm NE containing approximately 42 barracks is road-connected to both sites (Figure 37). Type - unknown, suspect coal. (Large thermal electric powerplant in Nanning is on rail line making connections with these spurs).

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-J-11, scale 1:1,000,000, 4th ed, December 1964 (UNCLASSIFIED)

AMS. Series L500, Sheet NF 49-5, scale 1:250,000, 1st ed, January 1959 (UNCLASSIFIED)

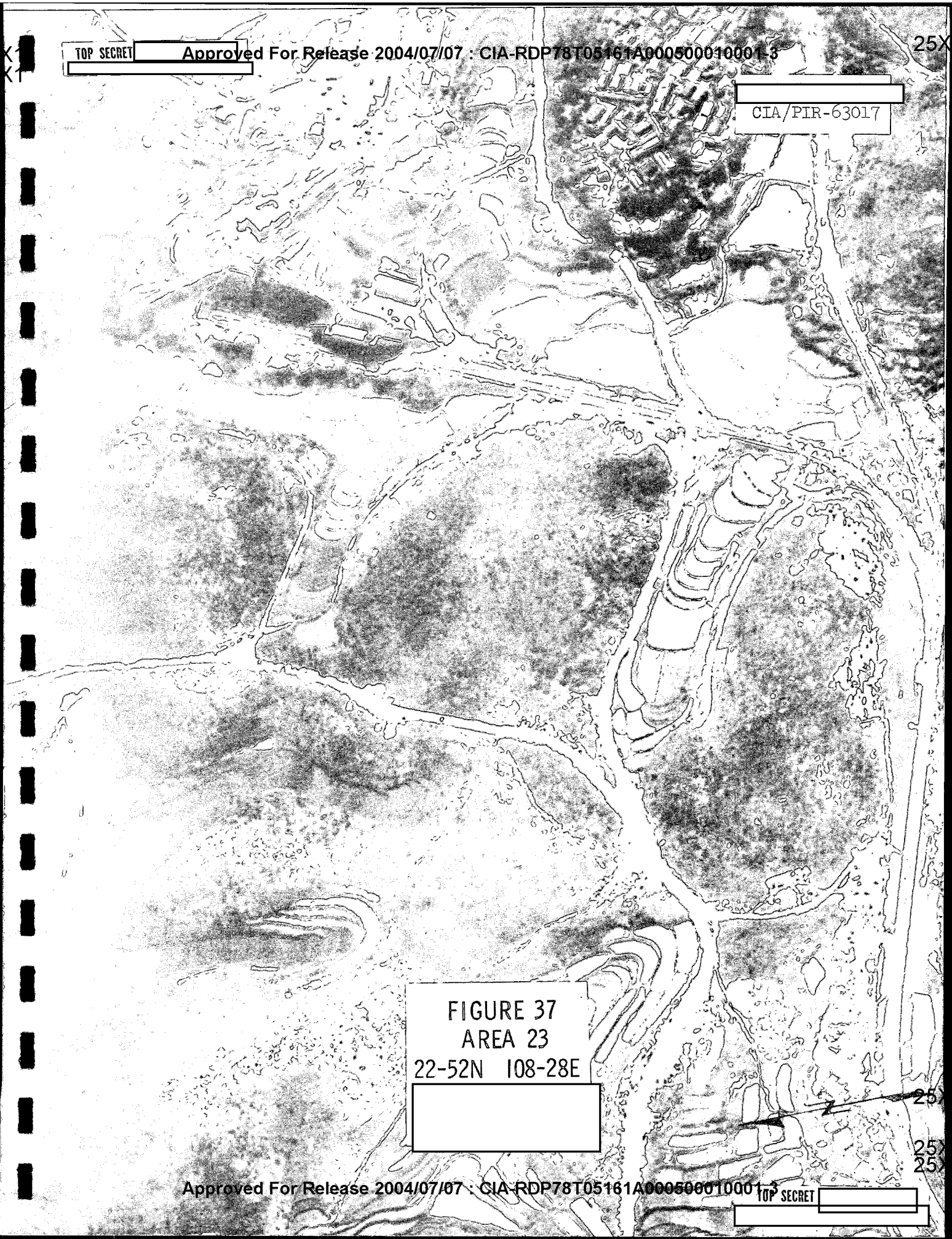

FIGURE 37
AREA 23
22-52N 108-28E

AREA 24

Paotou, Inner Mongolia 40-36N 110-03E WAC 288

Extensive mining area, centered at 40-40N 110-17E, 14 nm ENE of Paotou near Shihkauitzu. An area covering approximately 30 square miles in high eroded sedimentary hills contains innumerable mines, housing/support area, and rail-loading facilities. The rail line serving the mining area comes directly from the Paotou industrial area. Two rail spurs branch from a centrally located ore concentration and loading facility at a small classification yard; lesser loading facilities are located along the two rail spurs and are highlighted by dark-toned probable stockpiles. The mines are directly connected, usually by conveyers, to the individual loading sites. The mining appears to be underground vertical/inclined shafts. The housing/support areas are clustered around the mine workings. A large explosives storage area consisting of six revetted buildings is located on the northern edge of the area. A secured area containing at least four bunkers, a steamplant, and a small probable processing area is located north of the mining area along the major north-south stream. Although road-connected to the mining area, this area is probably not associated with it (Figure 38). Type - coal. (Map location Nos. 418, 419 1/)

Surface and/or underground mines, 40-56N 109-45E, 24 nm NNW of Paotou. Probably both surface and shaft mines in an area characterized by dark-toned scars and waste/ore dumps. Mining appears to be from sedimentary seams. Rail line enters mining area from the south; two probable loading points are located on spurs where ore spillage is apparent. A third spur leading east ends abruptly for no apparent reason. Small housing/support buildings and trails to different mining sites are scattered throughout the area. Another probable support area, also rail served, is located 5 nm south of the mining area. Connected with the wall-enclosed support area are two separately secured explosives storage areas (Figure 39). Type - possible iron. (Map location No. 415 1/)

Probable shaft mines, 41-03N 110-03E, 27 nm north of Paotou (or 2nm west of Kuyang). Two dark-toned areas of waste/ore dumps mark the position of probable shaft mines; a third possible mine lies to the west. Eleven barracks-type buildings are located at the most active-appearing mine. The lack of improved roads or rail service and relatively small size indicates this area is of little importance (Figure 40). Type - probable iron (magnetite). Map location No. 415 1/)

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-F-8, scale 1:1,000,000 2nd classified ed, November 1963 (CONFIDENTIAL)

AMS. Series 1301, Sheet NK 49, scale 1:1,000,000, 2nd ed, August 1953 (UNCLASSIFIED)

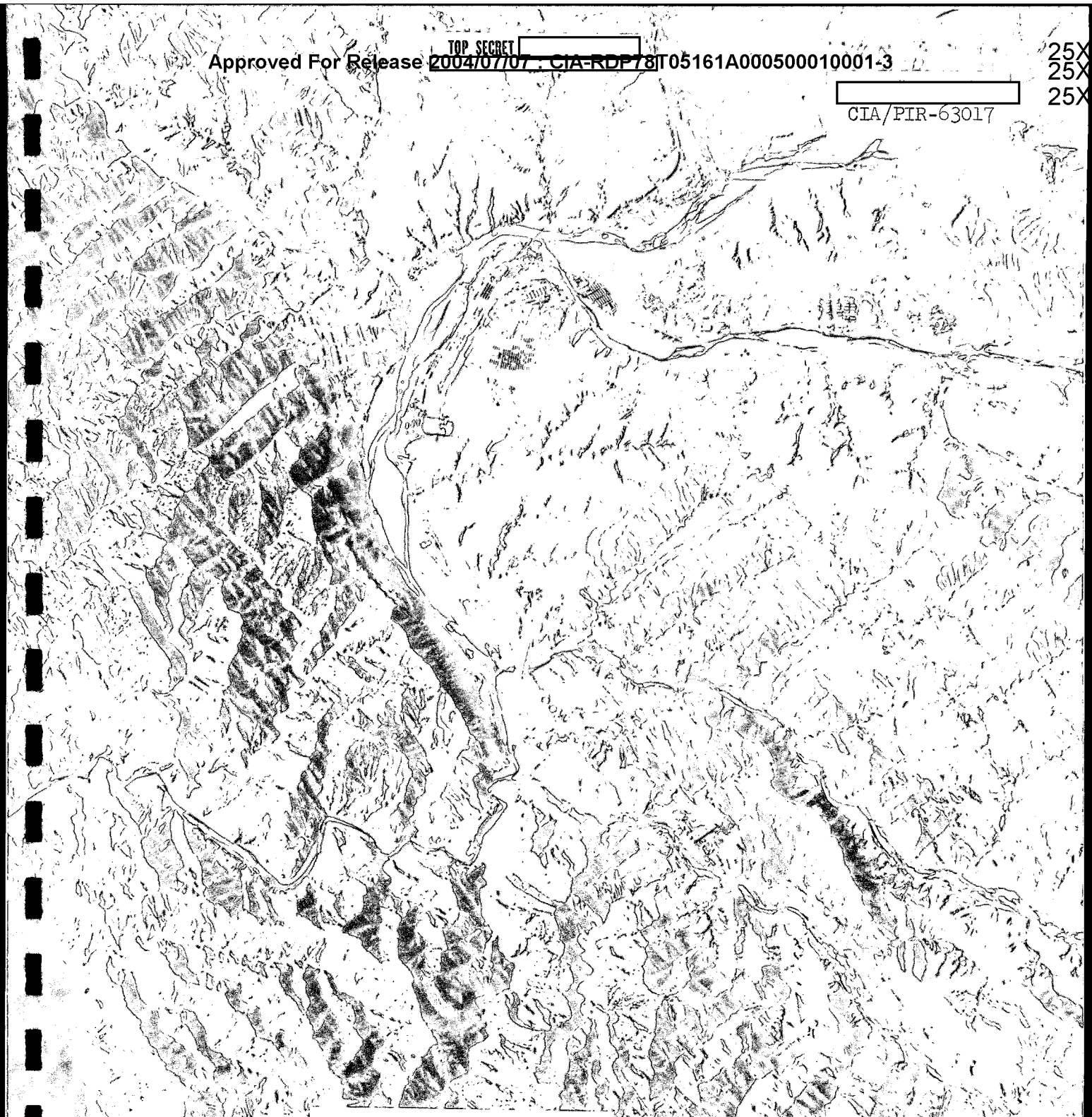

FIGURE 38
AREA 24
40-40N 110-17E

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X1 TOP SECRET

X1

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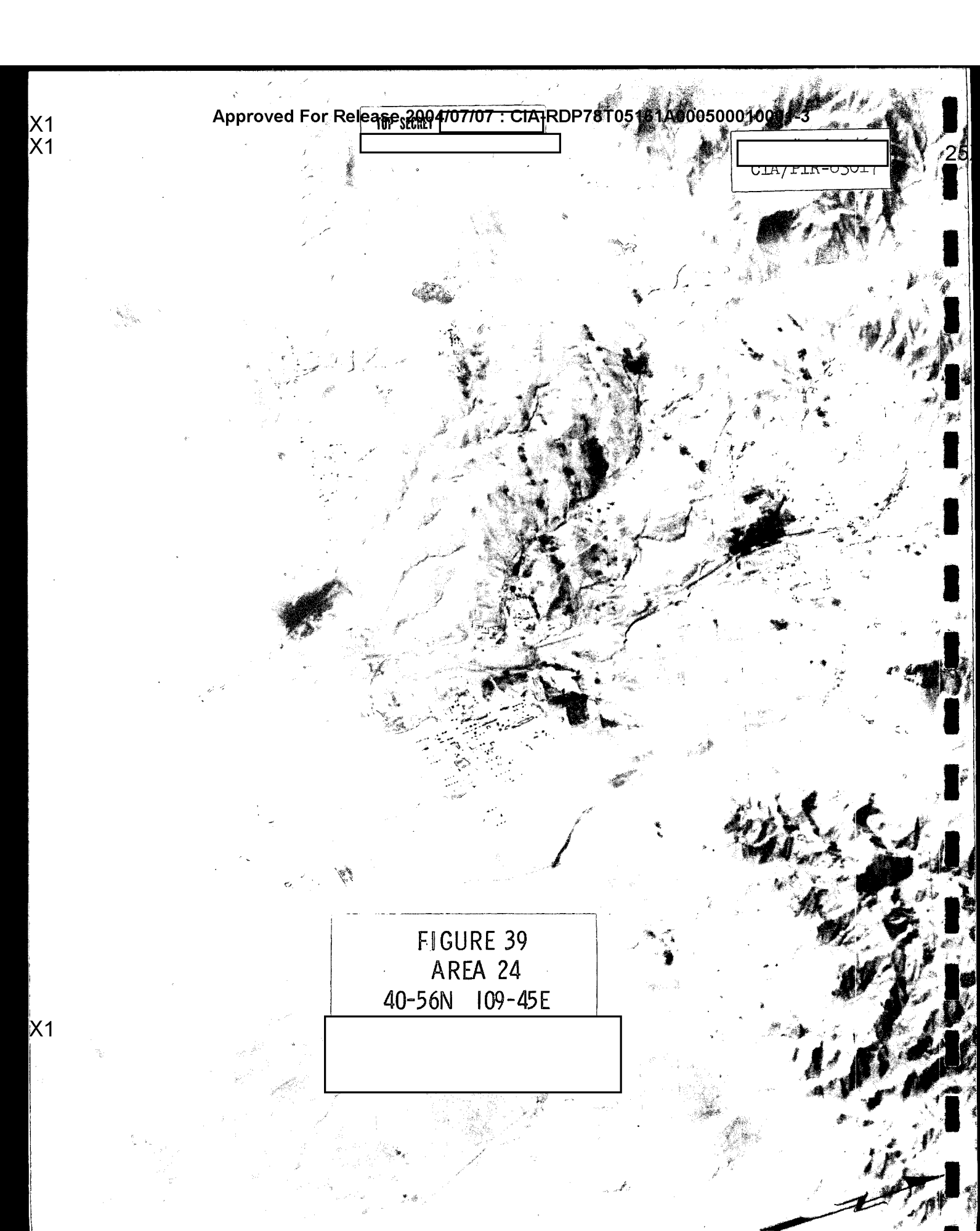

FIGURE 39
AREA 24
40-56N 109-45E

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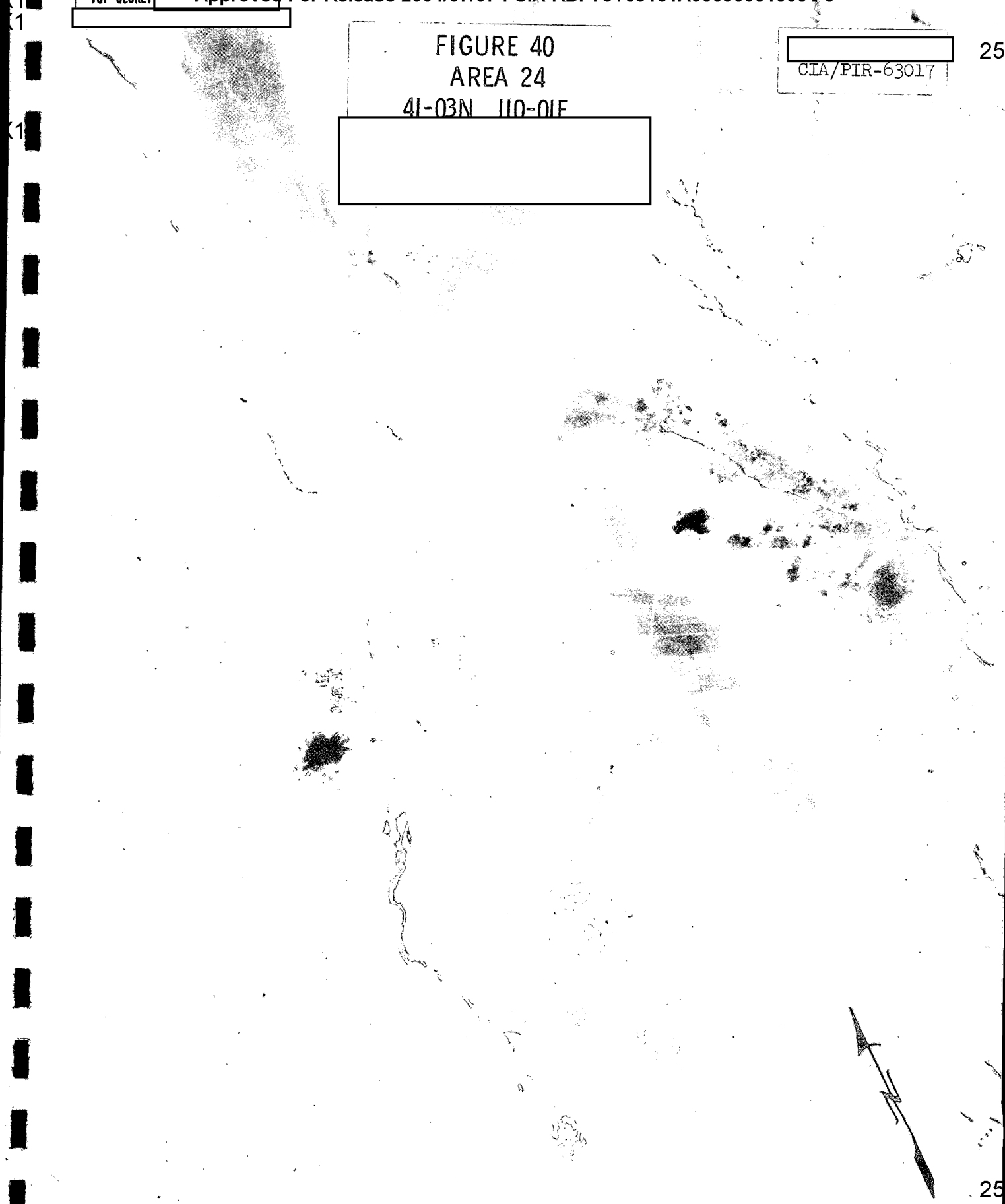
X1 TOP SECRET

25X

FIGURE 40
AREA 24
41-03N 110-01E

[redacted]



AREA 30

Wuwei, Kansu 37-58N 102-48E WAC 383

Probable mining and ore processing area, 38-30N 102-12E, 43 nm NW of Wuwei (or 13 nm NNE of Yungchang). A large rail-served complex apparently associated with a surface mining operation is located in a high elevation desert region. The mining activity is at the edge of a eroded mountain mass; various small buildings/shacks are around the mining excavations. A fairly small waste pile is also present. Ore-crushing, concentrating, and loading facilities are indicated by a series of conveyers and buildings adjacent to the mining area. A tall stack at the end of one of the buildings indicates initial heat processing of ore. A small steamplant appears to be located at the end of a separate rail line. The central portion of the complex appears cluttered with possible construction material. A high-quality apartment housing area is located on the eastern edge of the complex. An area that appears to be partially enclosed by a wall is adjacent to the railhead; it contains long rows of material, and is possibly an ore stockpile area. The complex is served by a rail spur approximately 8 nm long from the Lanchou-Urumchi railroad (Figure 41). Continued rapid expansion of the surface mining operation is shown by additional waste piles on [redacted] A new installation and rail connections are under construction and partially complete east of the complex. Smoke is rising from the tall stack in the probable processing area. Type - unknown.

PHOTOGRAPHY (Complete coverage)

[redacted]

* Referenced only for the probable mining & ore-processing area.

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2nd classified ed, April 1963 (CONFIDENTIAL)

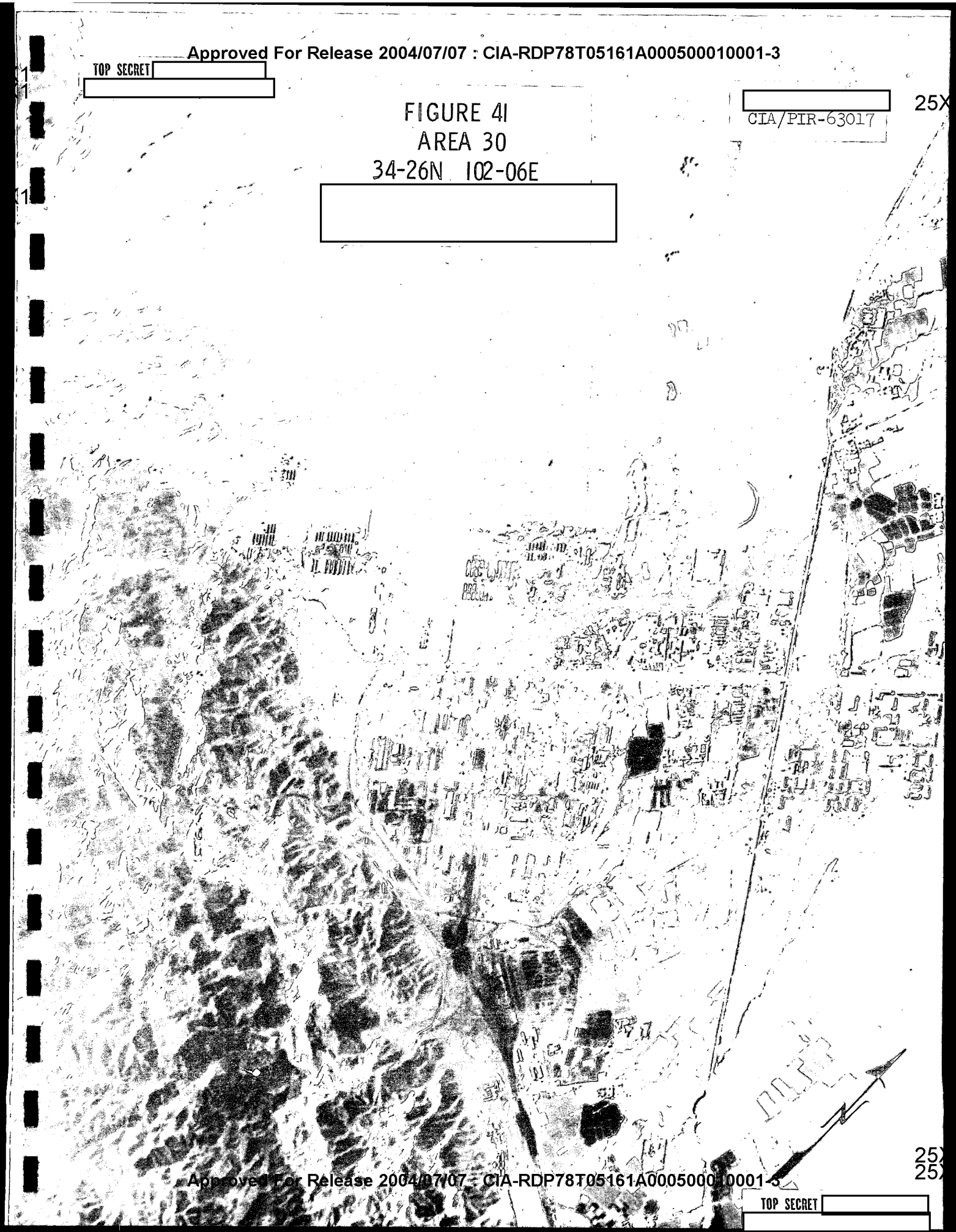
AMS. Series 1301, Sheet NJ 48, scale 1:1,000,000, 1st ed, September 1961 (UNCLASSIFIED)

TOP SECRET

25X1

CIA/PIR-63017

FIGURE 41
AREA 30
34-26N 102-06E



TOP SECRET

AREA 39

Pinglo, Ninghsia 38-53N 106-32E WAC 383

Strip mines, 39-13N 106-20E, 22 nm NNW of Pinglo. A large area of near-surface strip mines is located on the east flank of a NNW/SSE-trending anticline. The probable metomorphosed zone covers approximately five square miles. It appears that little removal of overburden is necessary to reach the ore. Numerous black-toned stockpiles are readily apparent. The ore is brought via road and rail to a central loading facility. The rail spur leads to a probable ore concentration plant 11 nm NW of Pinglo (39-01N 106-23E) and to a rail transloading facility 5 nm NW of Pinglo (38-57N 106-27E). The mining operation appears to be extending northward because of many prospecting scars perpendicular to the strike. A probable drilling rig was identified at the northern end of the active mining area. Numerous support buildings and a substation are along the rail lines. A large housing area is east of the mines (Figure 42). Type - iron and coal. (Map location No. 90 1/)

Strip/possible shaft mines, 39-02N 106-05E and 39-04N 106-08E, 22 nm WNW of Pinglo. Two mining areas in adjacent valleys are similar in appearance to the previously described strip mines. These mines in the Holan Shan (mountains) are road served only and are probably older workings of the same extensive deposits. No determination could be made of mining methods, but a combination of both narrow stripping operations and small shaft mines is probable. Dark-toned waste/stockpile areas are evident. Many of the workings may be abandoned. Type - coal and iron. (Map location Nos. 88-90 1/)

Underground shaft mines, 39-29N 106-35E, 35 nm north of Pinglo (or 17 nm NW of Shihtsuitzu). A large rail-served mining complex is located at the edge of an intrusive mass with surrounding sedimentary formations. Numerous inclined and vertical shaft mines are delineated by dark waste/stockpiles areas. Two large conveyer loading facilities are situated near the most active-appearing sites. Other sites,expecially on the south end, are probably nearly depleted or abandoned. Four separate large housing areas, numerous support buildings, powerlines, and explosives storage areas can be identified. One ore stockpile area adjacent to a rail spur is fenced. A support area of additional housing, a motor pool, and a small classification yard with a turning wye are located 8 nm SW where the rail spur joins the railroad (Figure 43). Type - probable coal. (Map location No. 91 1/)

Probable iron and steel complex, centered at 39-14N 106-47E, 25 nm NNE of Pinglo (or north edge of Shihtsuitzu). A large rail-served industrial complex with probable vertical shaft mines in the vicinity is located on the west bank of the Huang Ho (Yellow River). Area covers approximately six square miles. It contains a coking operation, small primitive blast furnaces, and an electric power-plant. At least three probable mines are associated with dark-toned waste/stockpiles. Type - coal. (Map location No. 93 1/)

Ore concentration and processing plant, 39-16N 106-52E, 27 nm NE of Pinglo (or 4 nm NE of Shihtsuitzu). A small processing plant is located on the east bank of the Huang Ho. Dark waste piles and light-toned tailings from heat-processing buildings are evident. A probable surface mine east and a probable adit mine north of the processing area have rail connections to the plant that are in poor condition; roads have replaced them. Housing units are present at each location. Area appears old, but still active (Figure 44). Type - probable coal and coal-dressing plant. (Map location Nos. 92-94 1/)

Probable underground mines, 39-37N 106-56E, 46 nm NNE of Pinglo (or 23 nm north of Shihtsuitzu). Two probable underground shaft and possible surface mining areas with separate rail spurs are located in sedimentary hills east of the Huang Ho. Appears relatively new and still undeveloped in comparison with other mining districts to the south. The most southern area has ore concentration and loading facilities and a larger housing area (Figure 45). Type - coal. (Map location No. 91 1/)

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2nd classified ed, April 1963 (CONFIDENTIAL)

ACIC. US Air Target Chart, Series 200, Sheet 0838-4HL, scale 1:200,000, 1st ed, October 1962 (CONFIDENTIAL)

FIGURE 42
AREA 39
39-13N 106-20E

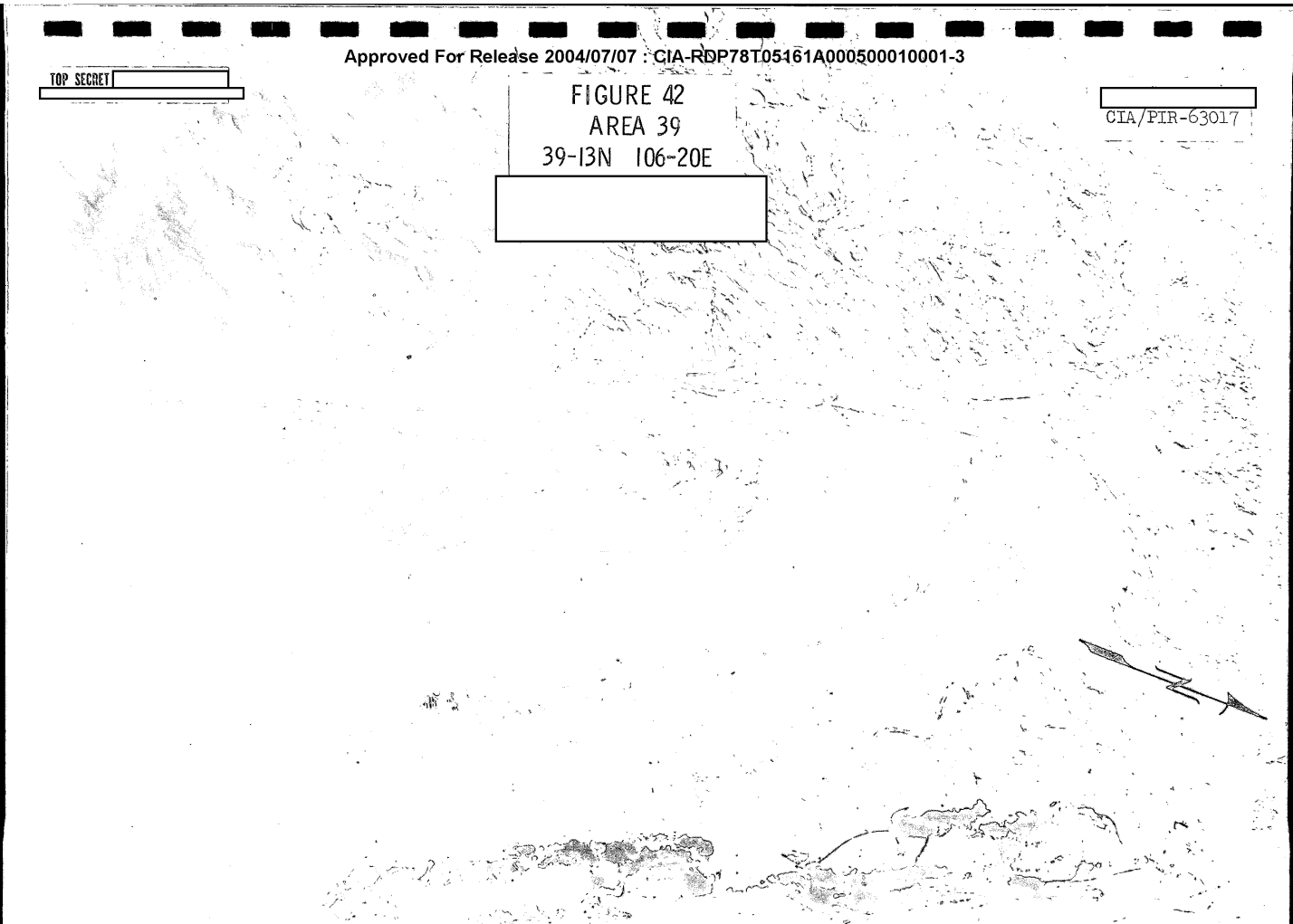
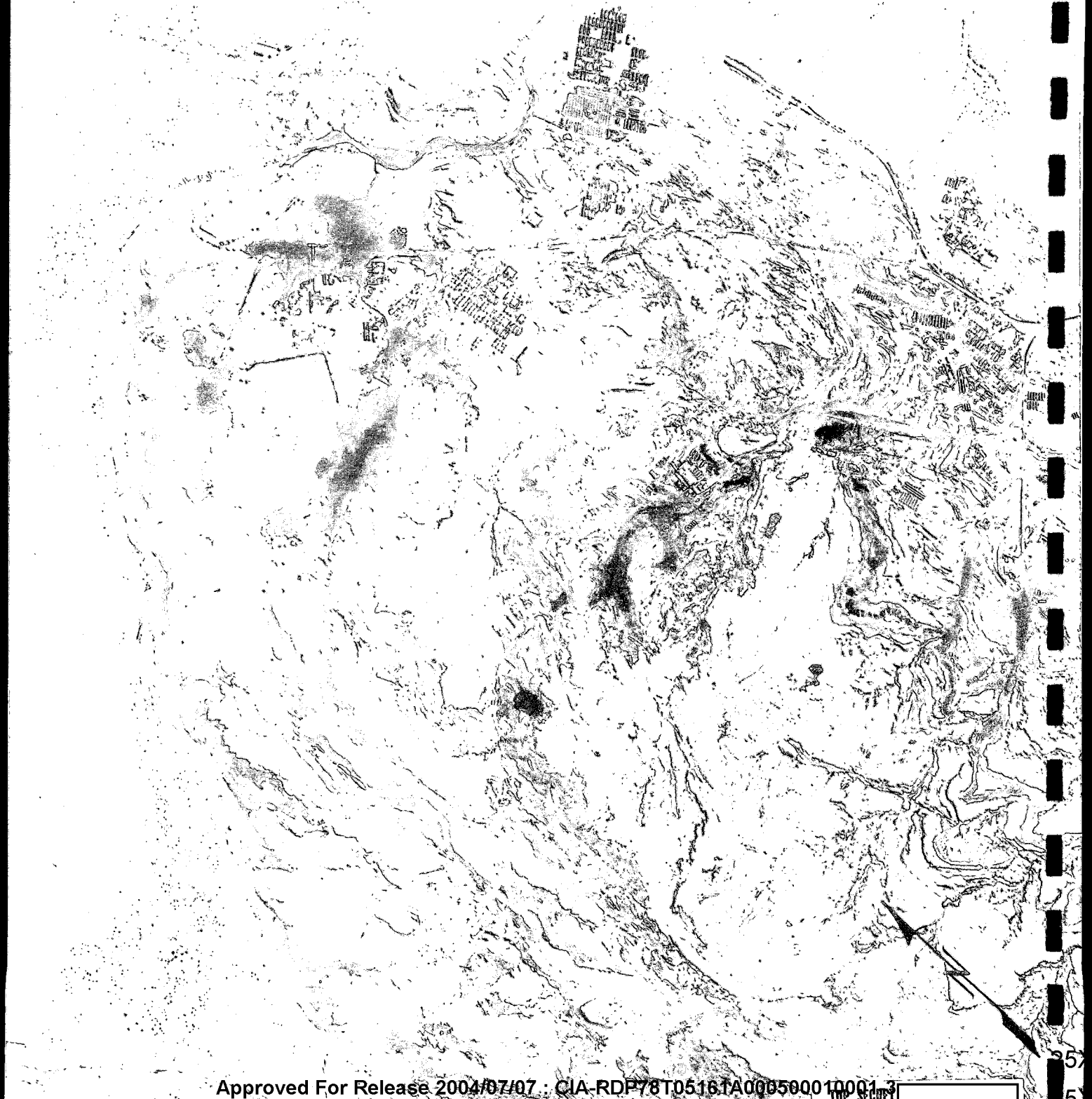


FIGURE 43
AREA 39
39-29N 106-35E

[redacted]



TOP SECRET

CIA/PIR-63017

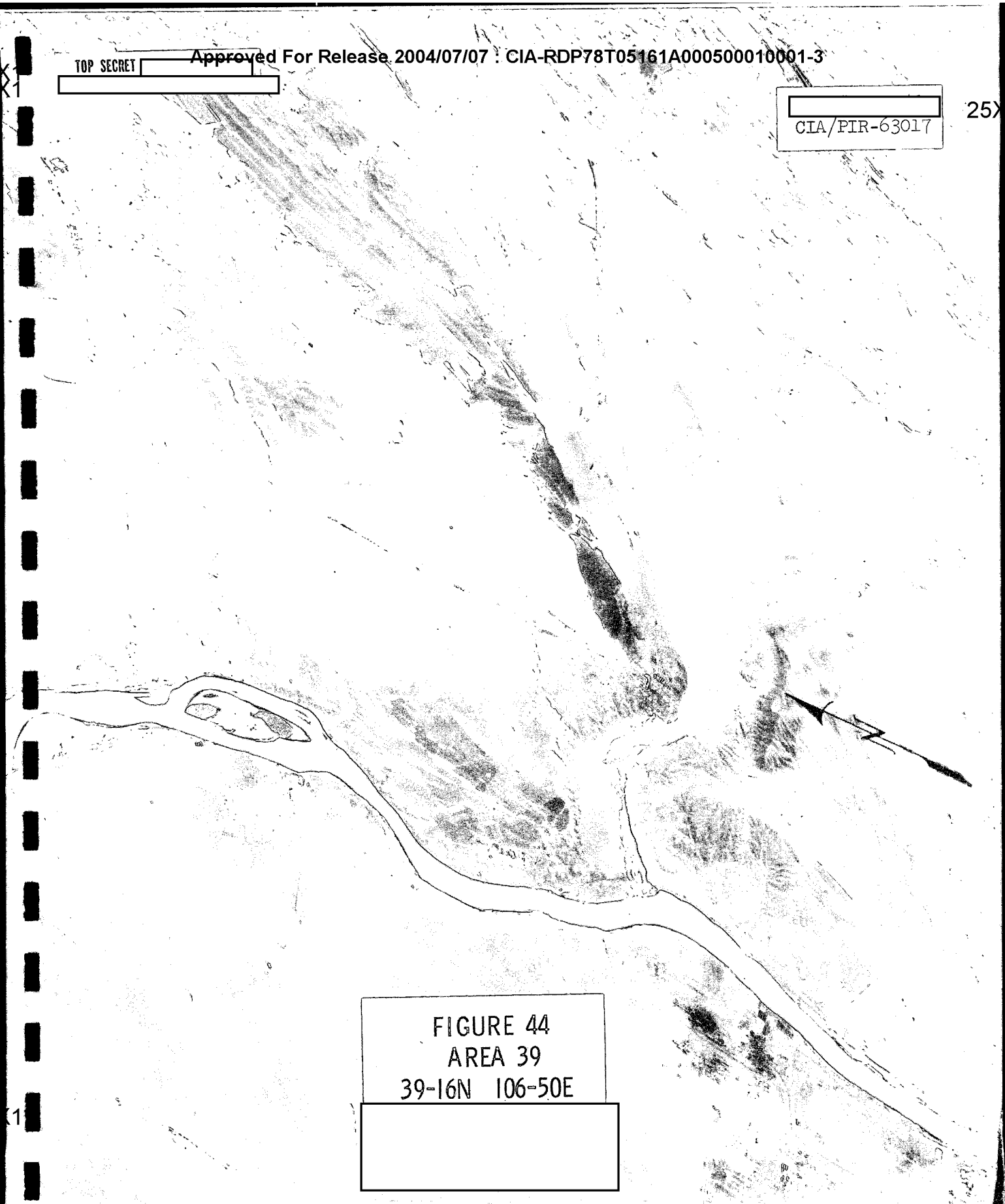
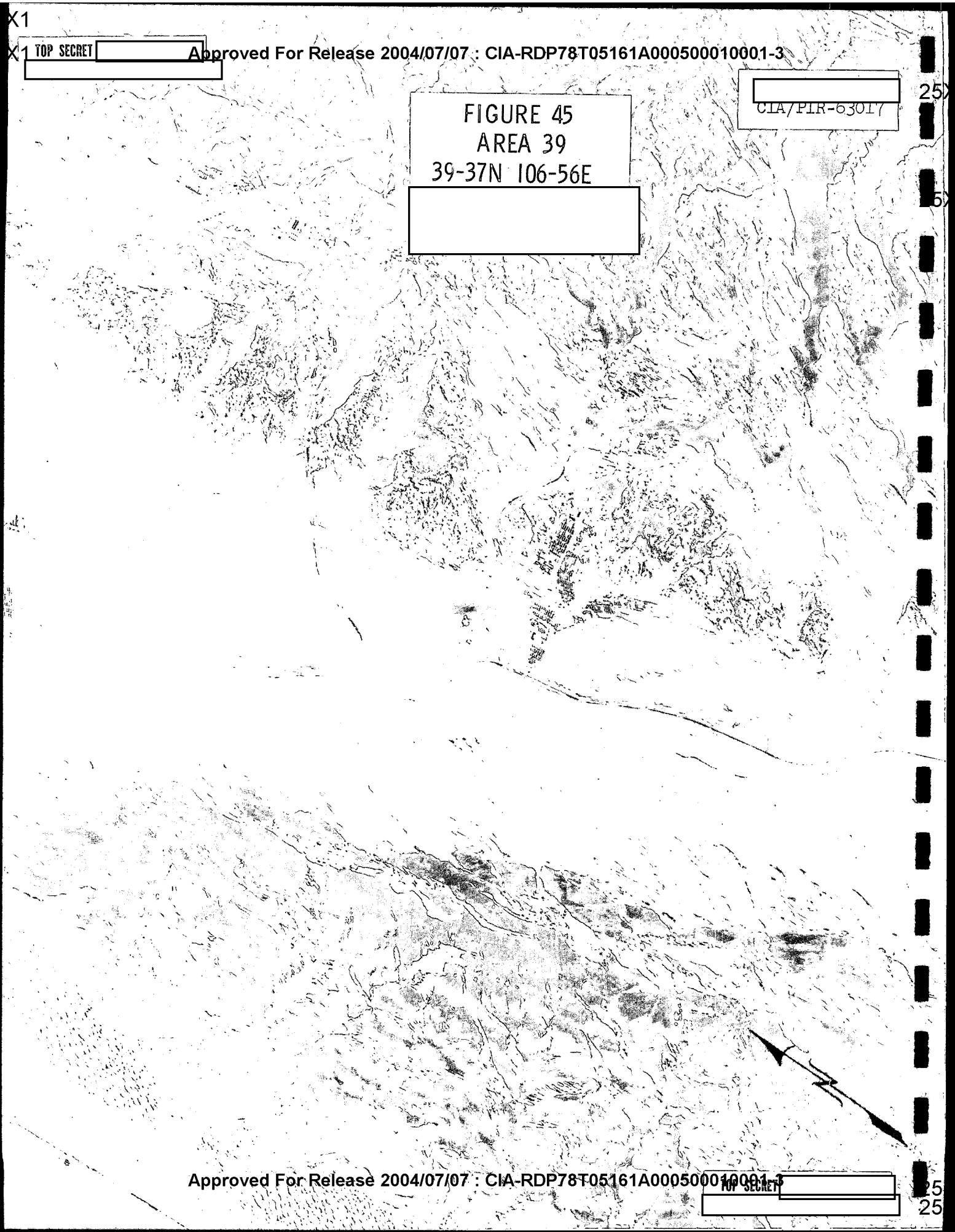


FIGURE 44
AREA 39
39-16N 106-50E

TOP SECRET

FIGURE 45
AREA 39
39-37N 106-56E



AREA 42

Shantan, Kansu 38-47N 101-18E WAC 332

Extensive mining area centered at 38-43N 101-11E, 7 nm SW of Shantan. Very modern mostly underground operation consisting of at least five active sites with vertical and/or inclined shafts and conveyer loading onto rail lines. Another five smaller mines may be partially surface workings that are road connected to the nearest rail-loading facility. Large dark-colored piles at each mine. Entire area in sedimentary region and covers approximately 12 square miles in an inverted L-shaped configuration. Three large modern housing/administration areas and a centrally located explosives storage area are evident. Figure 46 - central portion; Figure 47 - southern extension; Figure 48 - northern extension; Figure 49 - eastern portion. Type - coal. (Map location No. 40 1/)

PHOTOGRAPHY (Center of area) (Complete coverage)

[redacted] 25X

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-8, scale 1:1,000,000, 1st classified ed, April 1962 (CONFIDENTIAL)

FIGURE 46
AREA 42
38-43N 101-10E

X1

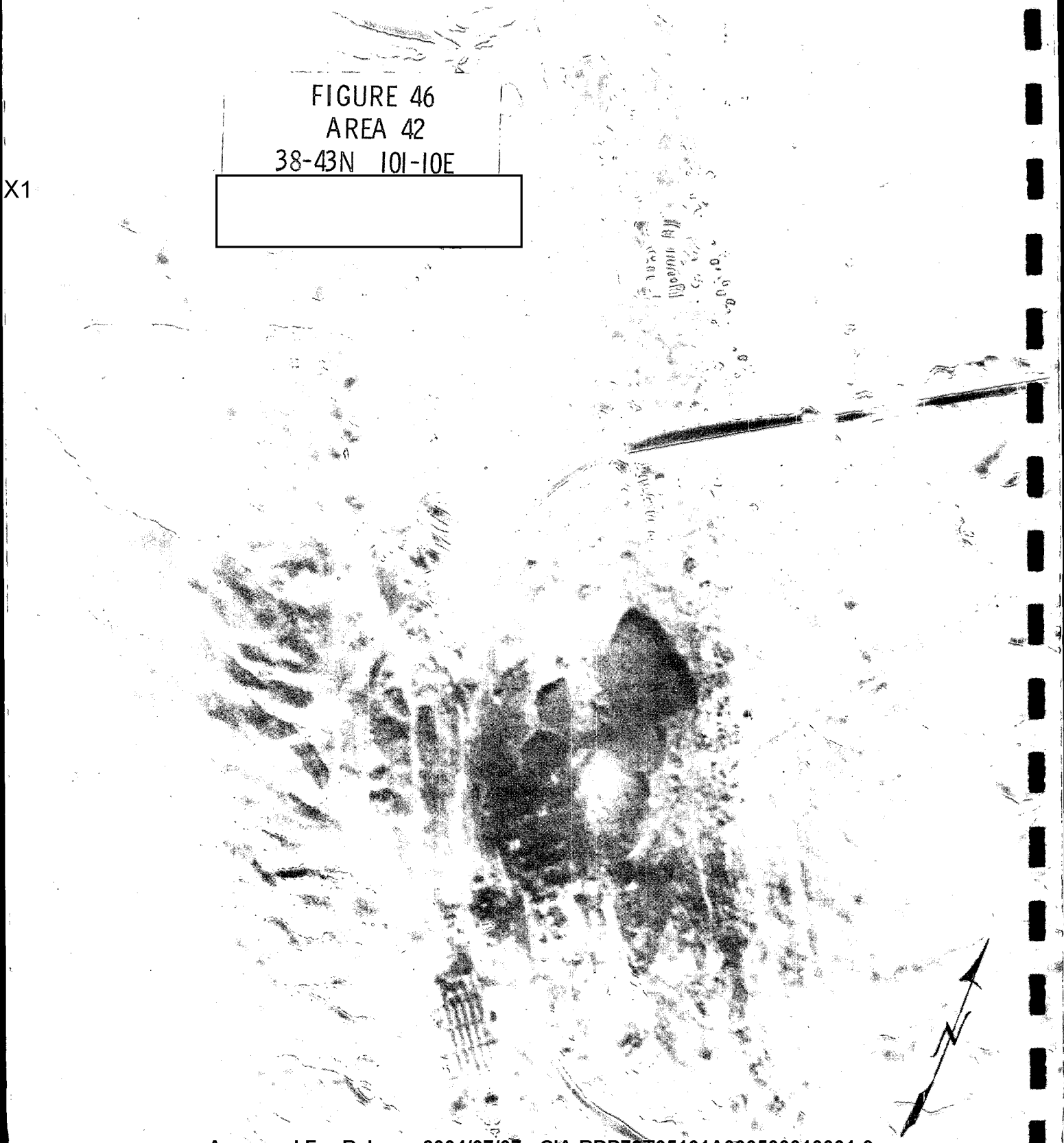
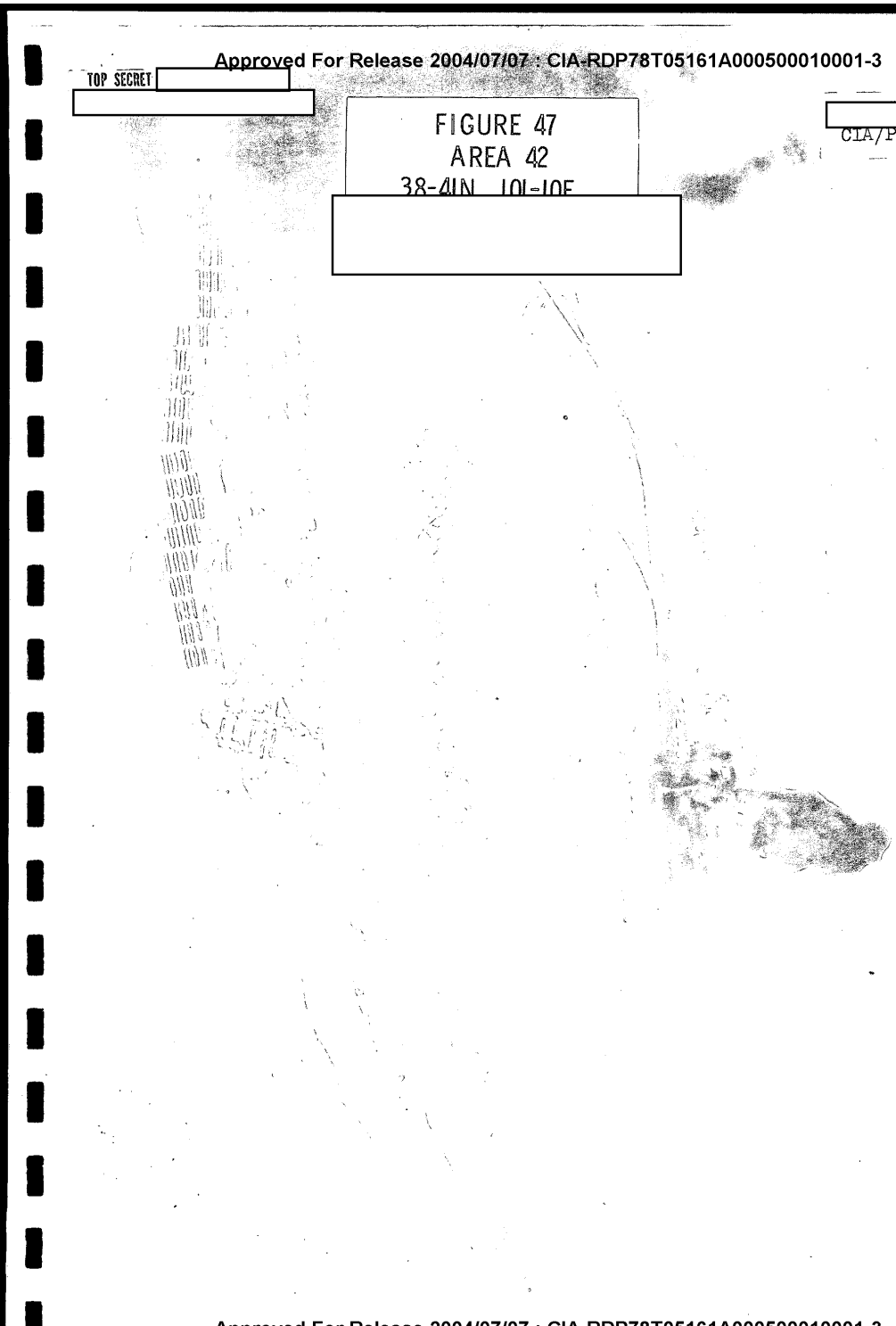


FIGURE 47
AREA 42
38-41N 101-10E



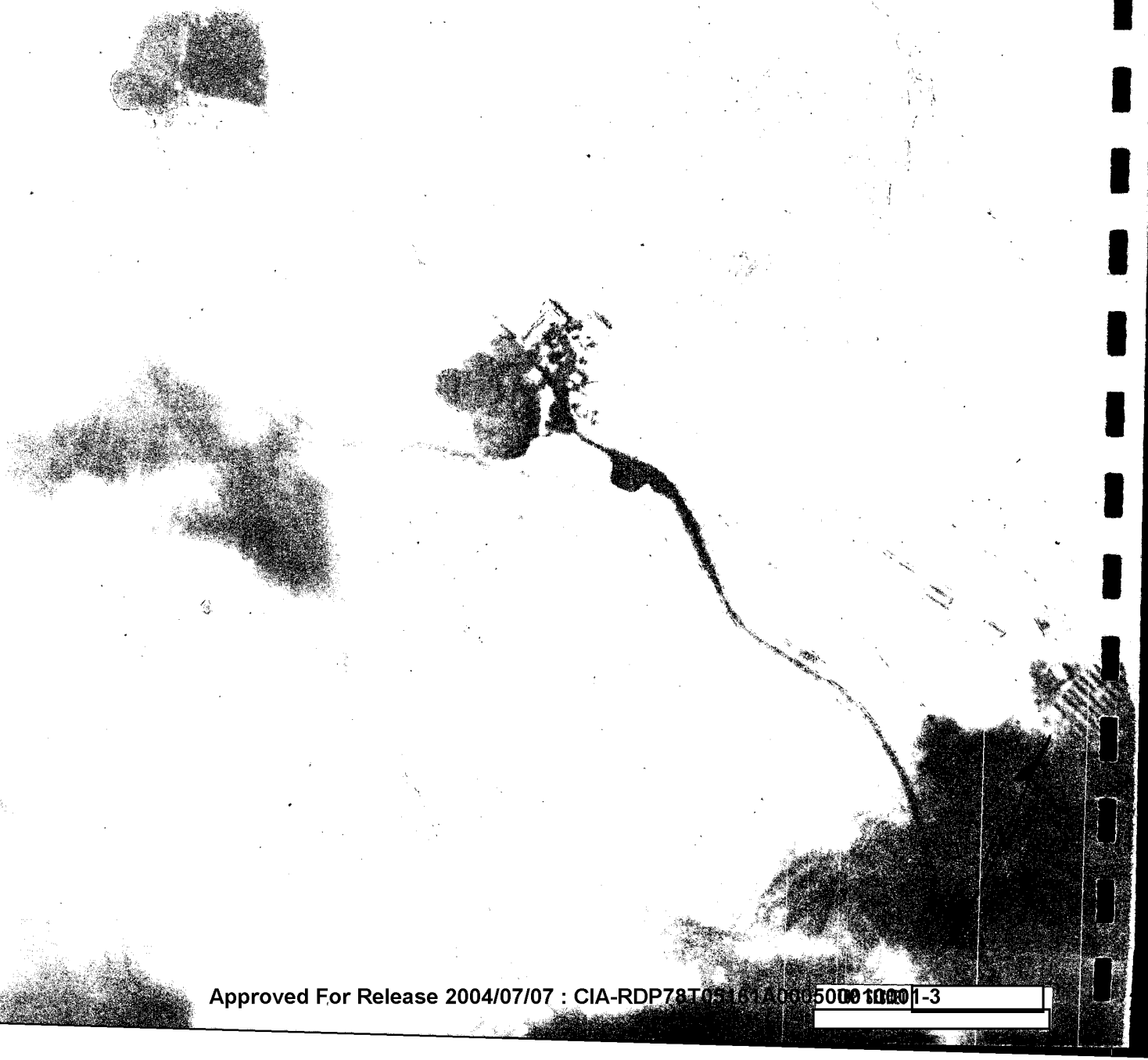
25X
25X

TOP SECRET

FIGURE 48
AREA 42
38-46N 101-10E

25X

25X



X1
X1

TOP SECRET [redacted]

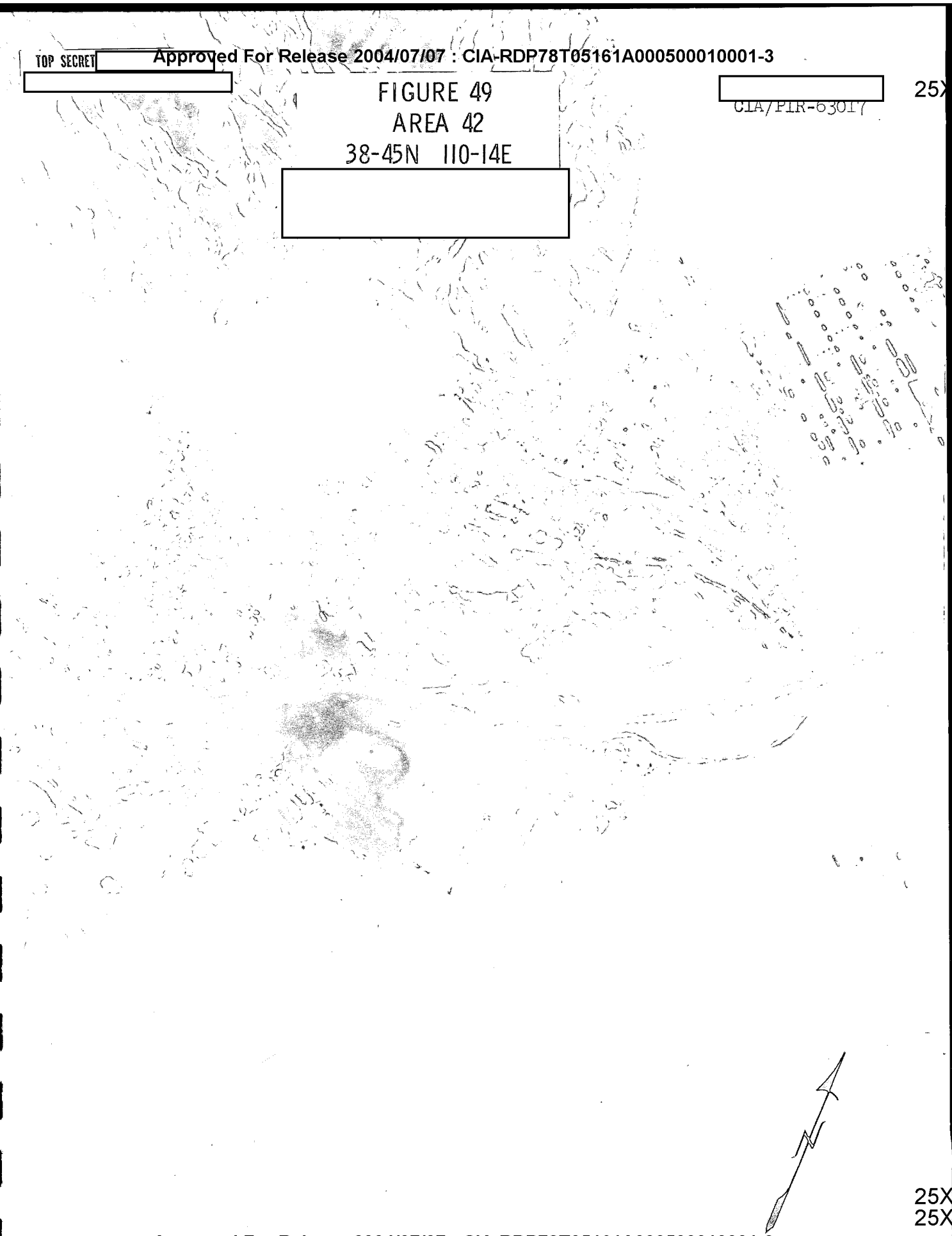
[redacted]

25X

CIA/PIR-63017

FIGURE 49
AREA 42
38-45N 110-14E

[redacted]



25X
25X

TOP SECRET [redacted]

SECTION II

PROBABLE INSIGNIFICANT AREAS OF MINING ACTIVITY

AREA 2

Changyeh, Kansu 38-56N 100-39E WAC 332

Indications of old mining site, 38-57N 100-08E, 24 nm west of Changyeh. Possible surface mines from sedimentary formations. Waste rock appears to have been deposited into Liyuan Ho (river). Few buildings; one with medium-sized stack. Site very small and insignificant. Type - probably part of coal field. (Map location No. 35 1/)

Surface mining, 39-07N 99-55E, 34 nm WNW of Chang-yeh. Mining of dark-toned material from sedimentary outcrops on west slope of mountain ridge. Appears old; few buildings at site in an isolated area. Poor road network from the south. Type - probably coal. (Map location No. 33 1/)

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-8, scale 1:1,000,000, 1st classified ed, April 1962 (CONFIDENTIAL)

AREA 4

Chenchi, Hunan 28-00N 110-11E WAC 495/497

[redacted] 25X

Probable quarry, 28-04N 110-01E, 9 nm WNW of Chenchi and 4.5 nm WSW of Pushih. A large excavation located near bank of small stream. No facilities associated with this cut into side of a ridge. Winding road along stream does not appear well used (Figure 51). Type - unknown.

25X

PHOTOGRAPHY (Complete coverage)

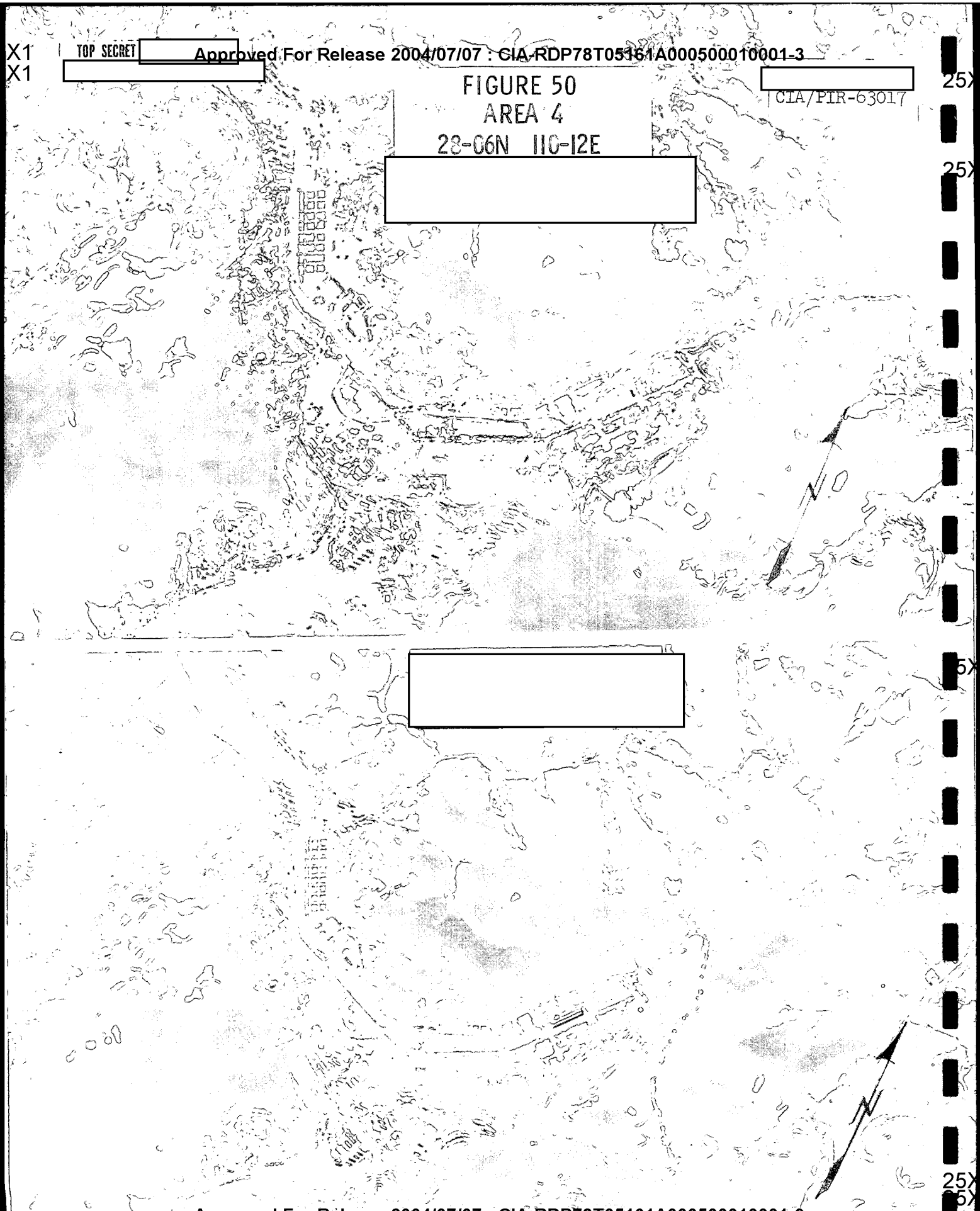
[redacted]

MAPS AND CHARTS

ACIC. US Air Target Chart, Series 200, Sheet 497-3A, scale 1:200,000, 1st ed, April 1960 (SECRET)

ACIC. US Air Target Chart, Series 200, Sheet 494-22AL, scale 1:200,000, 1st ed, August 1961 (CONFIDENTIAL)

FIGURE 50
AREA 4
28-06N 110-12E



25X

TOP SECRET

25X

25X

CIA/PIR-63017

FIGURE 51
AREA 4
20-04N 110-01E

25X

TOP SECRET

25X

25X

AREA 9

Chungkungchi, Inner Mongolia 41-40N 108-37E* WAC 288

Prospecting area, approximately 41-53N 108-43E, 13 nm north of coordinates given for Chungkungchi (or 50 nm NNE of Wuyuan). Two prominent areas of parallel trench cuts in highly eroded sedimentary rock. A support camp of approximately 25 barracks-type buildings is located 1 nm south of the prospecting; trails to support camp and surrounding area (Figure 52). Type - unknown.

Probable open-pit mine, approximately 41-47N 108-06E, 38 nm north of Wuyuan. A large excavation seemingly undeveloped; very few support buildings and those observed are small. Banks of removal material from excavation and trails leading to area are evident. Appears inactive [redacted] Type - unknown.

X1

PHOTOGRAPHY (Complete composite coverage)

[redacted] 25X

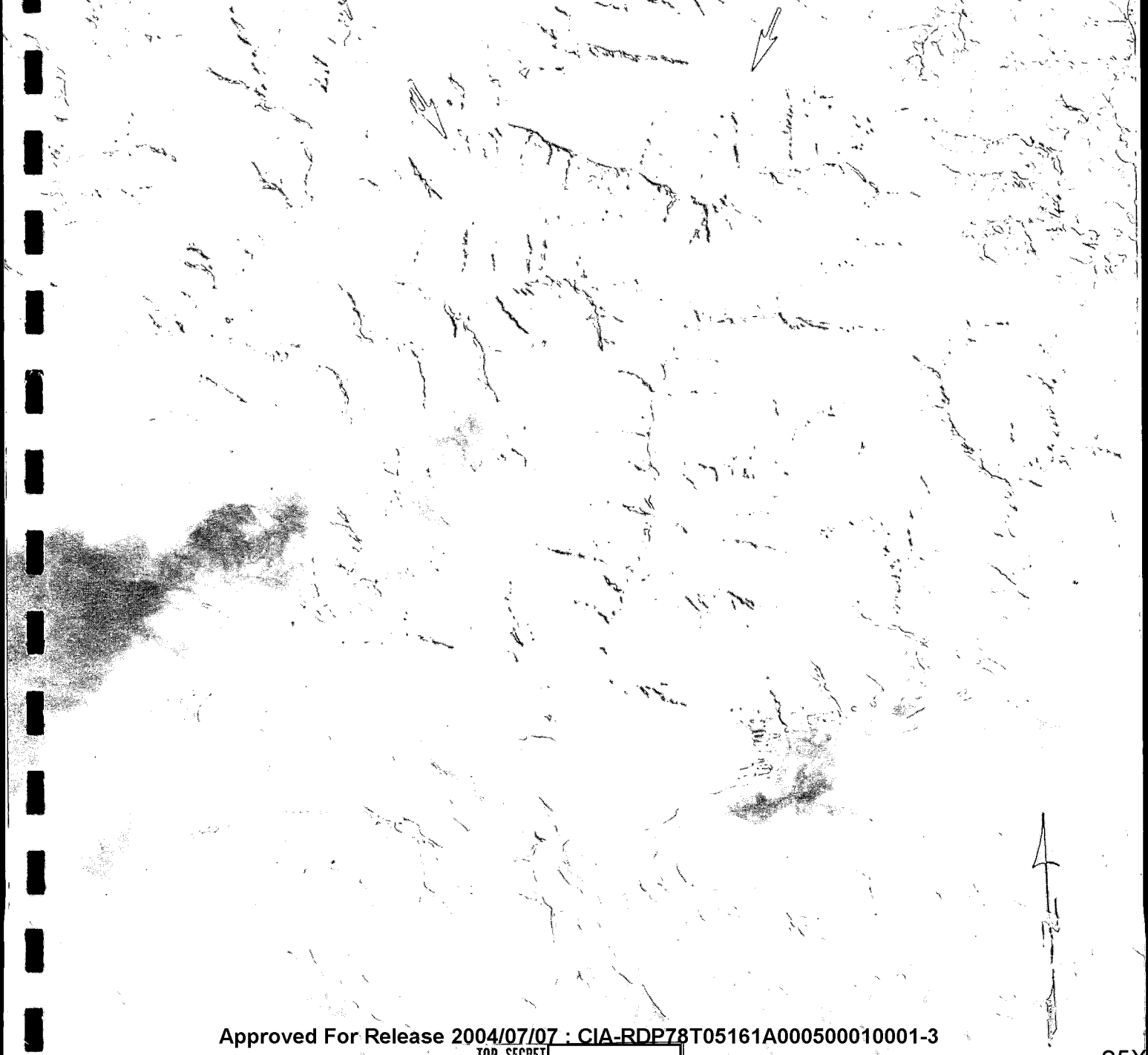
MAPS AND CHARTS

ACIC. USAF Pilotage Chart, Sheet PC 288D, scale 1:500,000, 1st classified ed, February 1962 (CONFIDENTIAL)

AMS. Series 1301, Sheet NK 49, scale 1:1,000,000, 2d ed, August 1953 (UNCLASSIFIED)

* Exact location questionable; not listed on any of the referenced maps. Center of search area based on drainage pattern near coordinates listed in NIS Gazetteer. Nearest observed town is on Muleng Ho (river) at 41-35N 106-29E.

FIGURE 52
AREA 9
41-53N 108-43E



AREA 12

Kuangyuan, Szechwan 32-26N 105-52E WAC 384

Probable mining area, 32-19N 106-00E, 12 nm ESE of Kuangyuan. Probable surface diggings in rough hilly terrain for vein deposits form three scarred areas and two parallel cuts east of support camp. Support camp consists of approximately 20 buildings. Well used road with hairpin curves leads to area 2 nm from main road along the Kuangyuan-Wangtsang rail line. Rail line appears to be in poor condition (Figure 53). Type - possible coal. (Map location Nos. 610, 611 2/)

Possible mine(s) approximately 32-33N 105-23E, 24 nm WNW of Kuangyuan (or 12 nm east of Chingchuan). Large light-toned area appears to be waste rock from possible adits on slope of low mountain. Appears abandoned due to lack of manmade features (Figure 54). Type - possible gold placers. (Map location No. 606 2/)

PHOTOGRAPHY (Partial coverage*)

25X1

* NE portion of search area cloud covered or not covered.

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

TOP SECRET [redacted]

X1
X1

FIGURE 53
AREA 12
32-19N 106-00E

[redacted]

[redacted]
CIA/PIR-63017

25X

25X

25X
25X

TOP SECRET [redacted]

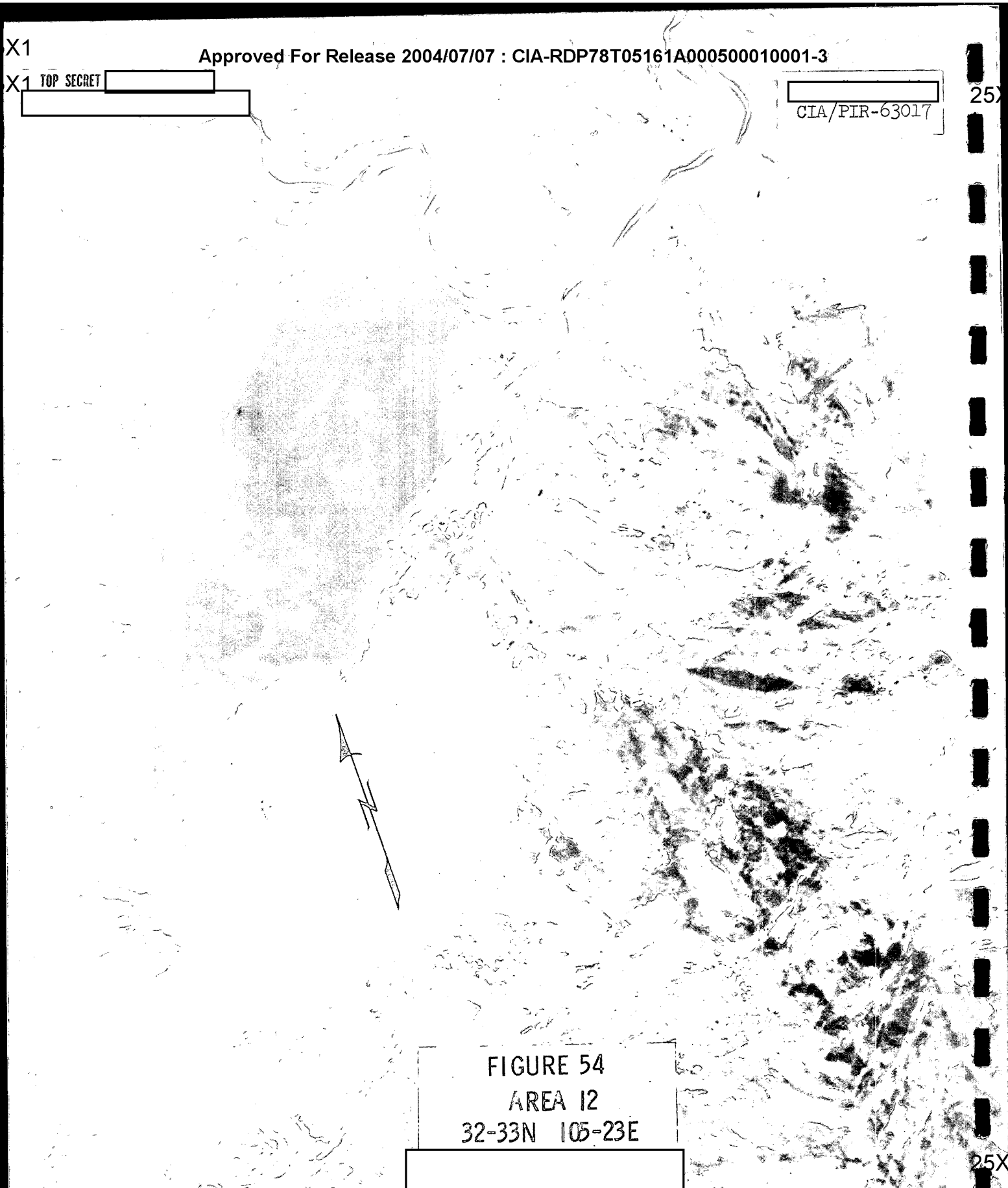


FIGURE 54
AREA 12
32-33N 105-23E

AREA 26

Salachi, Inner Mongolia 40-33N 110-30E WAC 288

Probable surface mines, 40-43N 111-06E, 30 nm ENE of Salachi (or 29 nm west of Kueisui). An area of probable surface mines is located on the south flank of the Taching Shan (mountains). Workings appear as light-toned scarrings. In two cases an ore hoist of some type is indicated by a straight inclined trace from a scarred area to a small stream valley below. Two old rail spurs lead to one of the areas; they appear abandoned. A housing area of approximately 50 barracks-type buildings is located at the base of the mountains. Adjacent to the housing area is a small walled processing area of approximately 15 assorted buildings including possible kilns and a stack; the roofs and grounds are covered with a whitish dust, indicating that the processing area is a cement plant (Figure 55). Type - unknown; suspect limestone.

Possible adit mines, 40-45N 111-03E, 27 nm ENE of Salachi. Possible adits of underground mines are indicated by a considerable amount of light-toned waste rock. Several similar areas are evident in the immediate area. The most prominent area is physically located in an isolated region of what appears to be crystalline rock. No roads or even trails appear to lead to these areas (Figure 56). Type - unknown; suspect asbestos.

Possible mining area, centered at 40-50N 110-52E, 25 nm NE of Salachi. Possible mining from veins in crystalline rock. Small light-toned scarrings are scattered throughout the area. None of the areas seem to be greatly exploited. Type - possible asbestos. (Map location No. 430 1/)

Possible mine(s), 40-35N 110-30E, 3 nm north of Salachi. Light-toned ground scarrings indicate possible mining activity on the south flank of the Taching Shan (mountains). Appears insignificant due to lack of improved roads to the area and the absence of nearby buildings. Type - possible asbestos. (Map location No. 421 1/)

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-F-8, scale 1:1,000,000, 2d classified ed, November 1963 (CONFIDENTIAL)

AMS. Series 1301, Sheet NK 49, scale 1:1,000,000, 2d ed, August 1953 (UNCLASSIFIED)

TOP SECRET

X1
X1

25X

CIA/PIR-63017

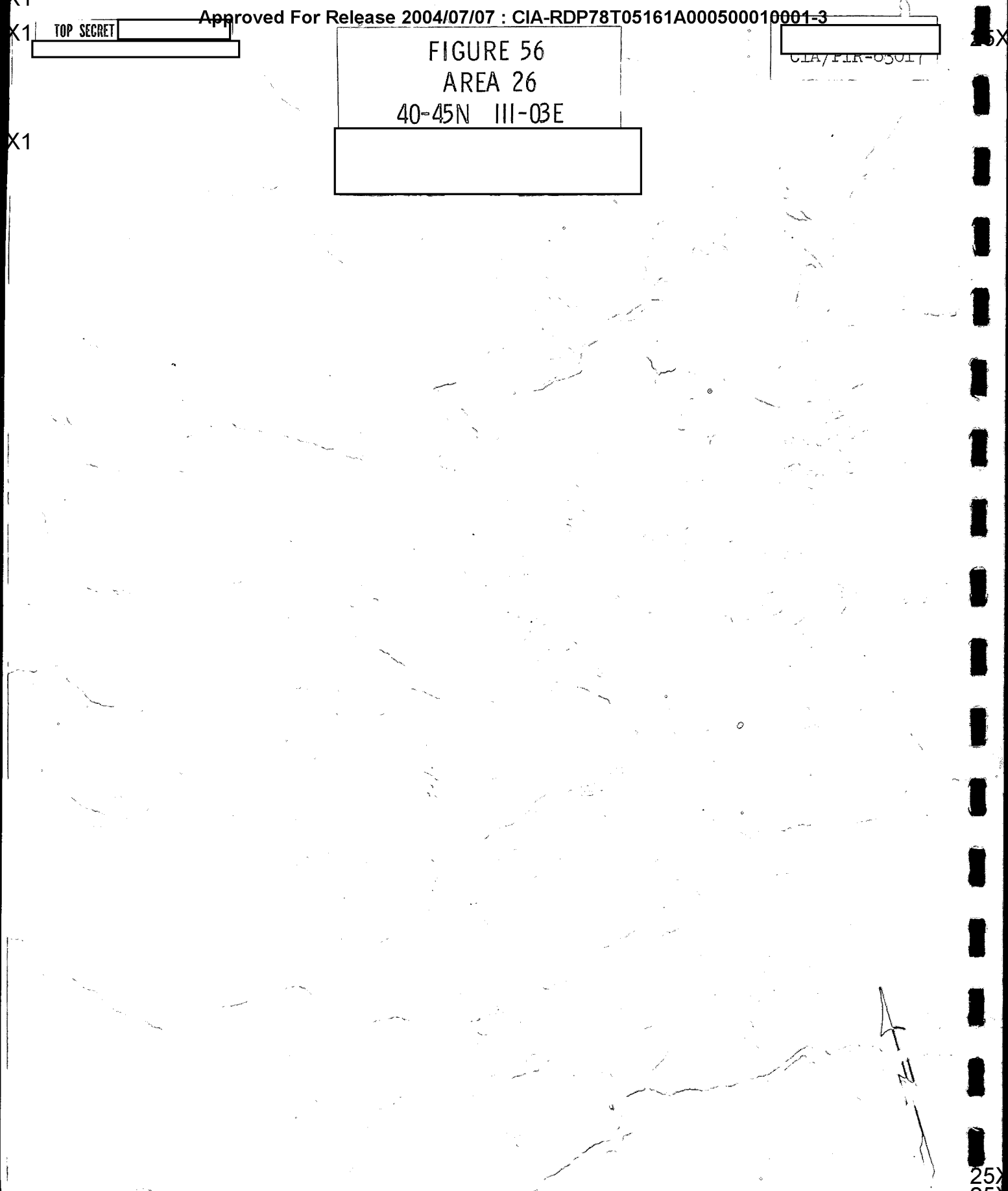
FIGURE 55
AREA 26
40-43N III-06E

X1

25X
25X

TOP SECRET

FIGURE 56
AREA 26
40-45N III-03E



AREA 27

Telingha, Tsinghai 37-15N 97-00E WAC 332

Probable surface mines at 37-24N 97-12E, 13 nm NE of Telingha. Small surface diggings and dark-toned scarrings are located in an isolated area at the base of a mountain range. A small work camp of approximately 17 buildings/huts supports the activity. Poorly conditioned trails serve the area. Does not appear to be very active (Figure 57). Type - possible lead. (Map location No. 69C 1/)

Possible surface mining area, 37-09N 97-00E, 7 nm south of Telingha. An unusual type of earth scarring on alkaline-appearing flats. The scarring has a pattern of surface striations. Shed-type buildings are located immediately south of the area. Trails serve the area. Appears inactive (Figure 58). Type - unknown; suspect borox or niter.

[redacted] 25X

PHOTOGRAPHY (Complete coverage)

[redacted] 25X

MAPS AND CHARTS

AMS. Series 1106, Sheet 7, scale 1:5,000,000, 1st ed, March 1962 (UNCLASSIFIED)

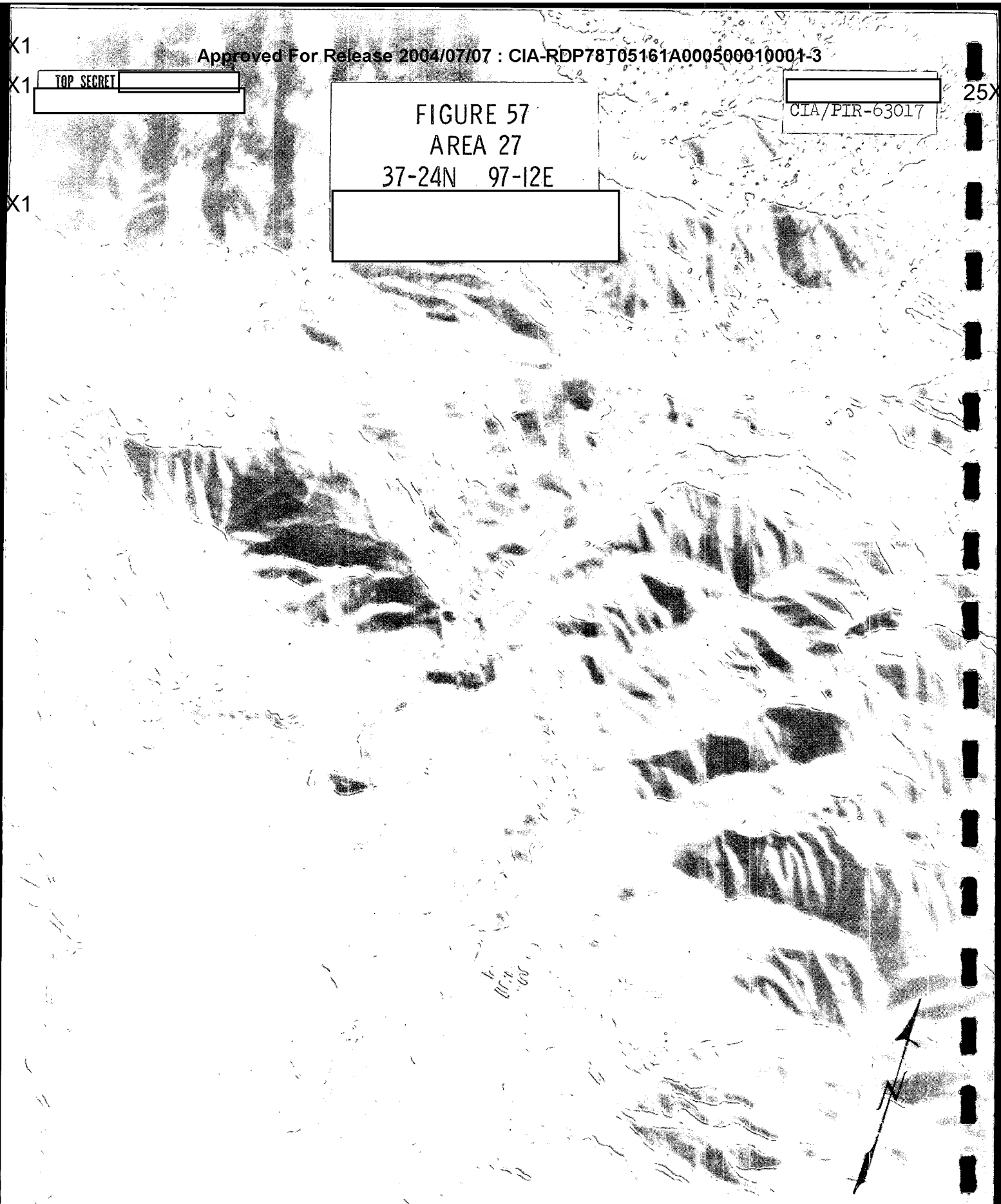
ACIC. USAF Operational Navigation Chart, Sheet ONC-G-8, scale 1:1,000,000, 1st classified ed, April 1962 (CONFIDENTIAL)

[redacted] 25X

CIA/PIR-63017

FIGURE 57
AREA 27
37-24N 97-12E

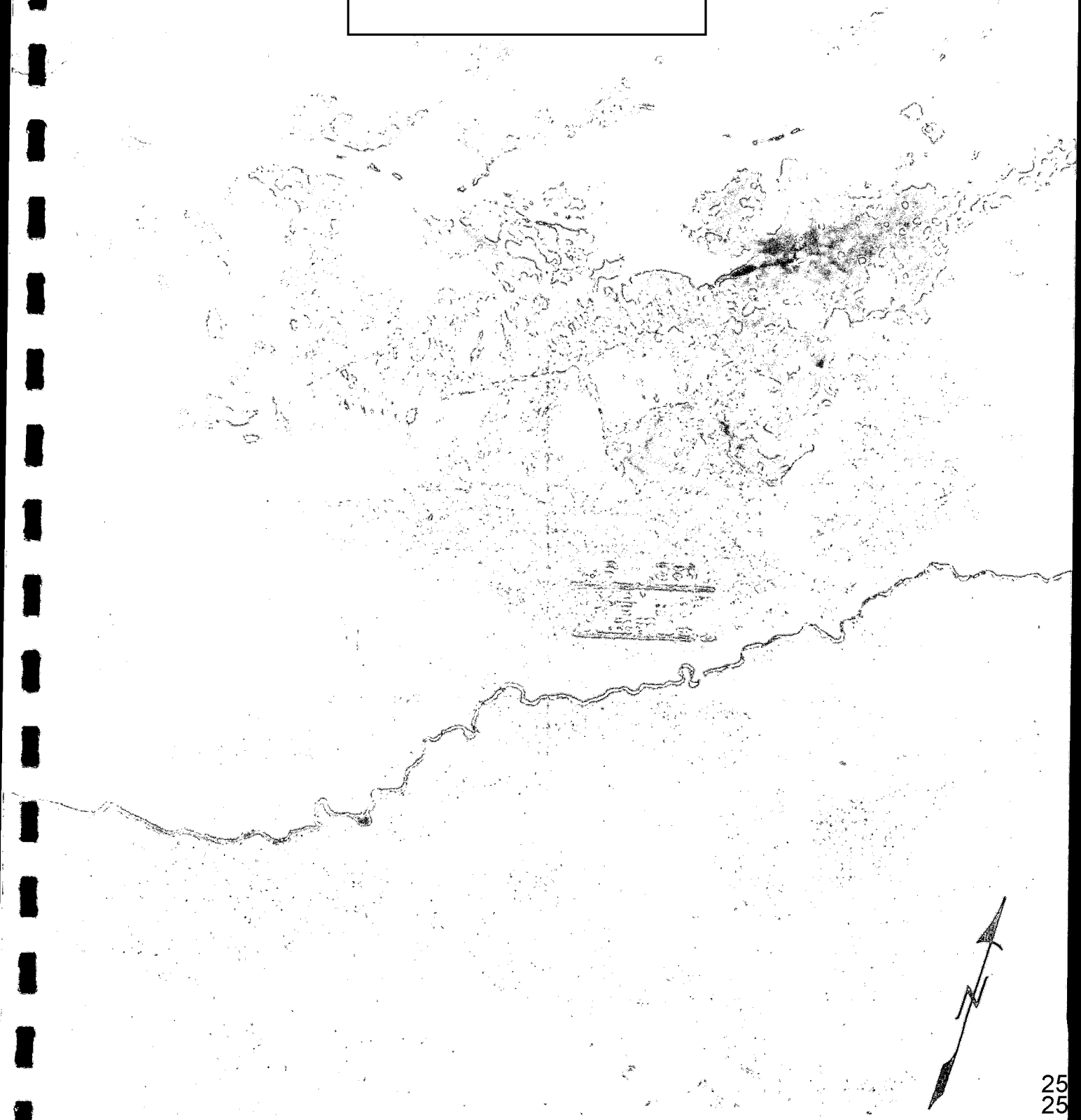
X1 [redacted]



25X

TOP SECRET

FIGURE 58
AREA 27
37-09N 97-00E



25
25

TOP SECRET

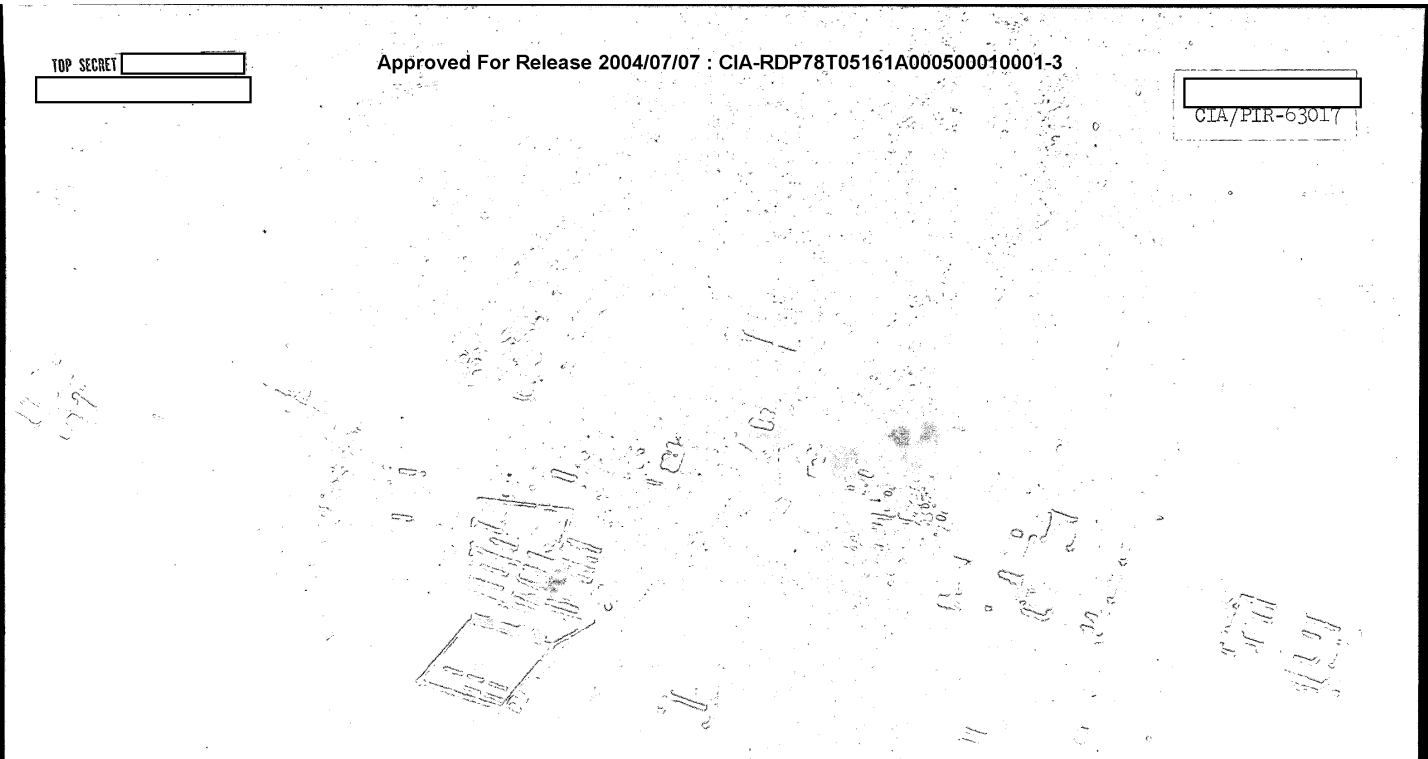


FIGURE 59
AREA 27
37-11N 97-18E

[redacted]

AREA 29

Wuchung, Ninghsia 37-59N 106-12E WAC 383

Vertical shaft mine at 38-02N 106-40E, 23 nm east of Wuchung (or 13 nm west of Tsaichialing). An active underground vertical shaft mine is evident by the dark-toned waste/ore dump. A single headframe, probable crushing and waste separation buildings, a steamplant, and housing and other support buildings are identifiable. A small amount of waste tailings is probably being deposited into the stream from a buried pipeline. The site is located in a desert region and is road served (Figure 60). Ten new buildings are evident on [redacted] indicating continuing activity. Type - coal. (Map location No. 164 1/)

X1

Vertical shaft mine at 37-44N 106-28E, 20 nm SE of Wuchung. A similar mine is located 21 nm SSW of the shaft mine described above; however, fewer buildings are constructed around the shaft at this site. The mine may be under development (Figure 61). Five new support buildings and an extended waste dump can be identified on [redacted]

X1

PHOTOGRAPHY (Complete coverage)

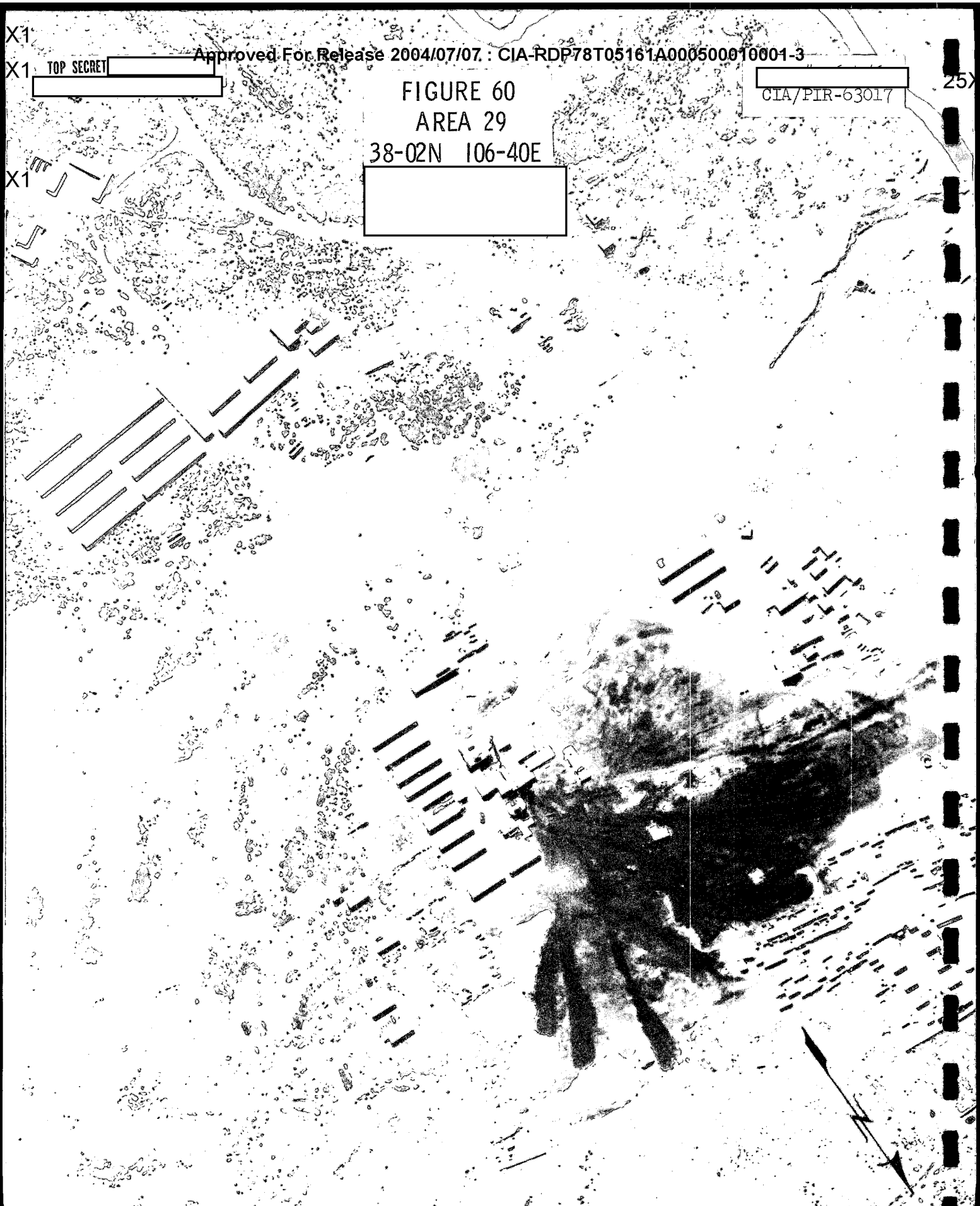
[redacted] 25X

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

AMS. Series 1301, Sheet NJ 48, scale 1:1,000,000, 1st ed, September 1961 (UNCLASSIFIED)

FIGURE 60
AREA 29
38-02N 106-40E



TOP SECRET

X1
X1

CIA/PIR-63017

X1

FIGURE 61
AREA 29
37-44N 106-28E

TOP SECRET

AREA 33

Yinchiang, Kweichow 28-01N 108-24E WAC 497

Possible mining area, centered at 28-17N 108-28E, 18 nm north of Yinchiang. Area of possible small surface workings extends approximately 5 nm along a NE/SW-trending sedimentary ridge. Light-toned waste materials from trench-like cuts identify this as mining activity. The lack of well used roads and housing/ support buildings indicates area is of minor importance (Figure 62).

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1963 (CONFIDENTIAL)

TOP SECRET [redacted]

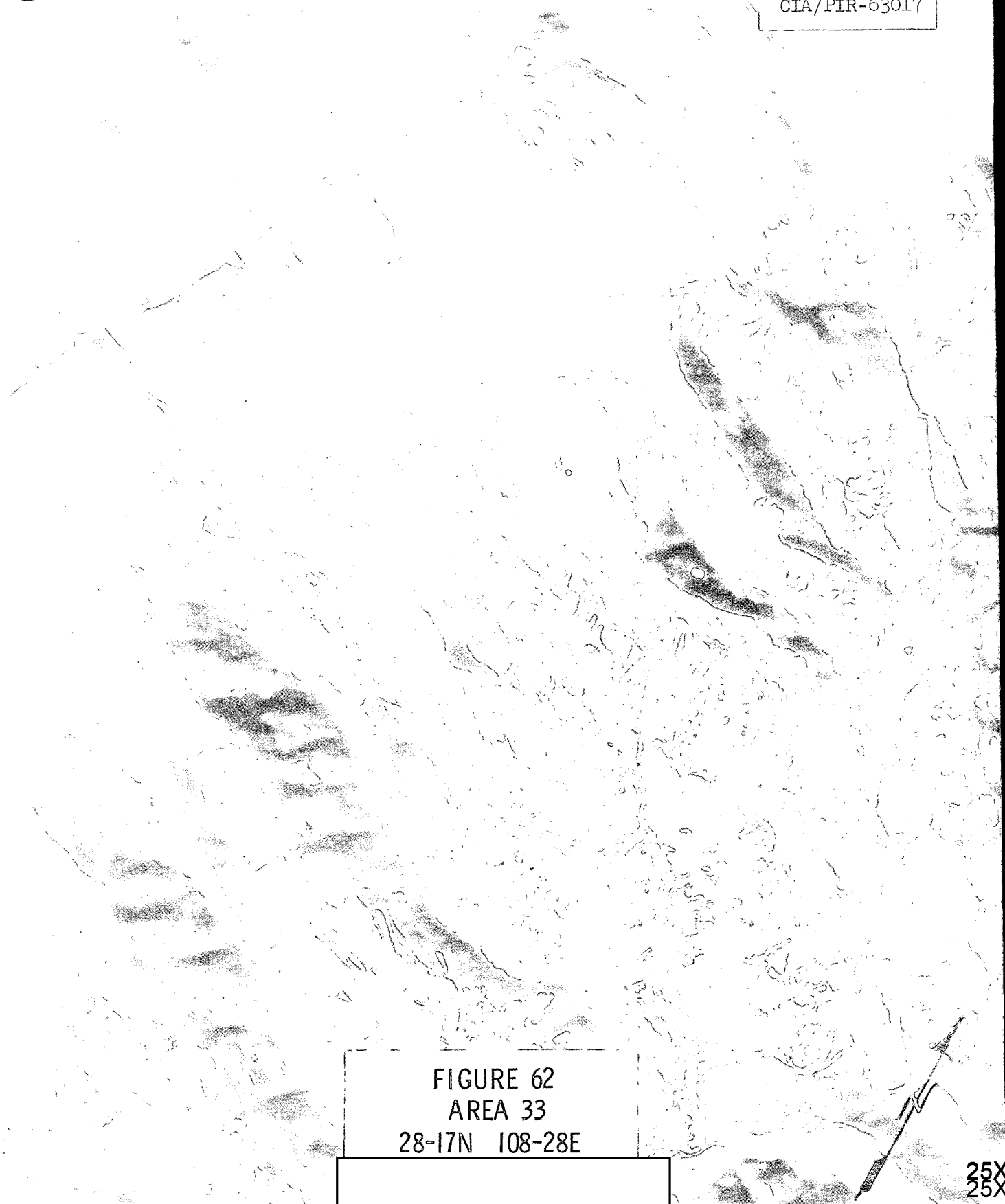


FIGURE 62
AREA 33
28-17N 108-28E

[redacted]

TOP SECRET [redacted]

AREA 35

Yumen, Kansu 40-17N 97-08E WAC 331

Probable mining area at 39-48N 97-18E, 29 nm SSE of Yumen. A small mining area appears to be essentially surface diggings from seams in almost vertically dipping formations. Inclined shafts are also possible, as evidenced by several structures capable of housing hoisting equipment. Dark-toned staining of the ground around the probable mine locations is very prominent. A small housing/support area is present. The area is served by a winding road from the east; a possible weighing station is along the road. Area is active as evidenced by vehicle tracks in snow during winter coverage (Figure 63). Type - unknown; suspect coal.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-8, scale 1:1,000,000, 1st classified ed, April 1962 (CONFIDENTIAL)

X1
X1

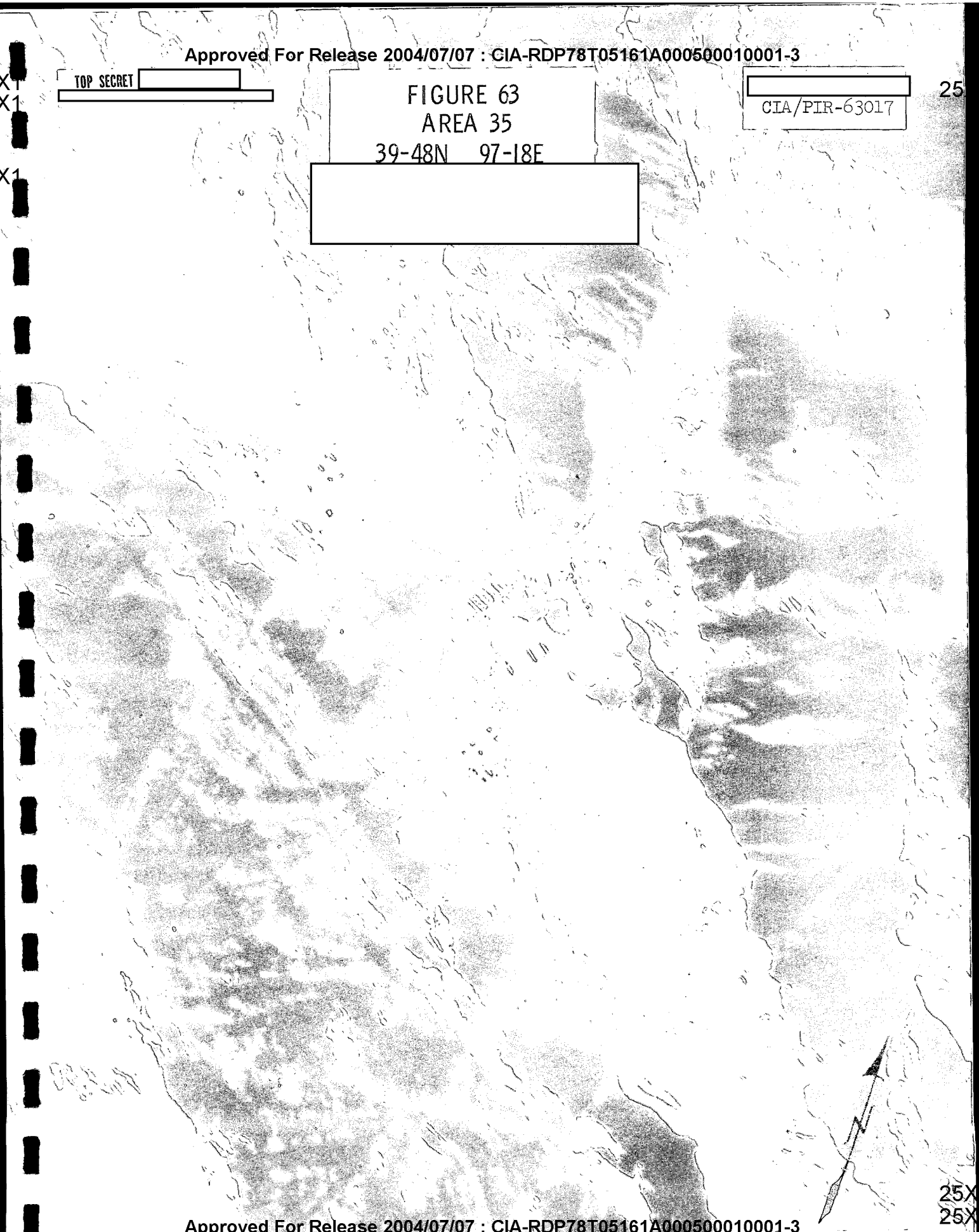
TOP SECRET

FIGURE 63
AREA 35
39-48N 97-18E

X1

CIA/PIR-63017

25



25X
25X

TOP SECRET

AREA 37

Hsichang, Szechwan 27-53N 102-18E WAC 496

Probable surface mining area, 27-48N 102-17E, 6 nm south of Hsichang. Two large light-toned ground scars are located at the base of a mountain probably composed of crystalline rock. Grooves aligned with the scars indicate surface mining of shallow veins; a waste rock zone below the scarring appears to have been reworked. A few support buildings are adjacent to the scarred area; possible temporary housing area lies to the east. An improved road serves the area. Area appears old (Figure 64). Type - possible copper. (Map location No. 157A 2/)

Ground scarring, 27-30N 102-10E, 25 nm south of Hsichang (or 5 nm north of Techang). Roads lead to two small areas of ground scarring. No other unusual activity or related mining features could be noted.

PHOTOGRAPHY (Partial coverage*)

* Complete cloud-free coverage not obtained in mountainous area.

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1963 (CONFIDENTIAL)

25X
25X

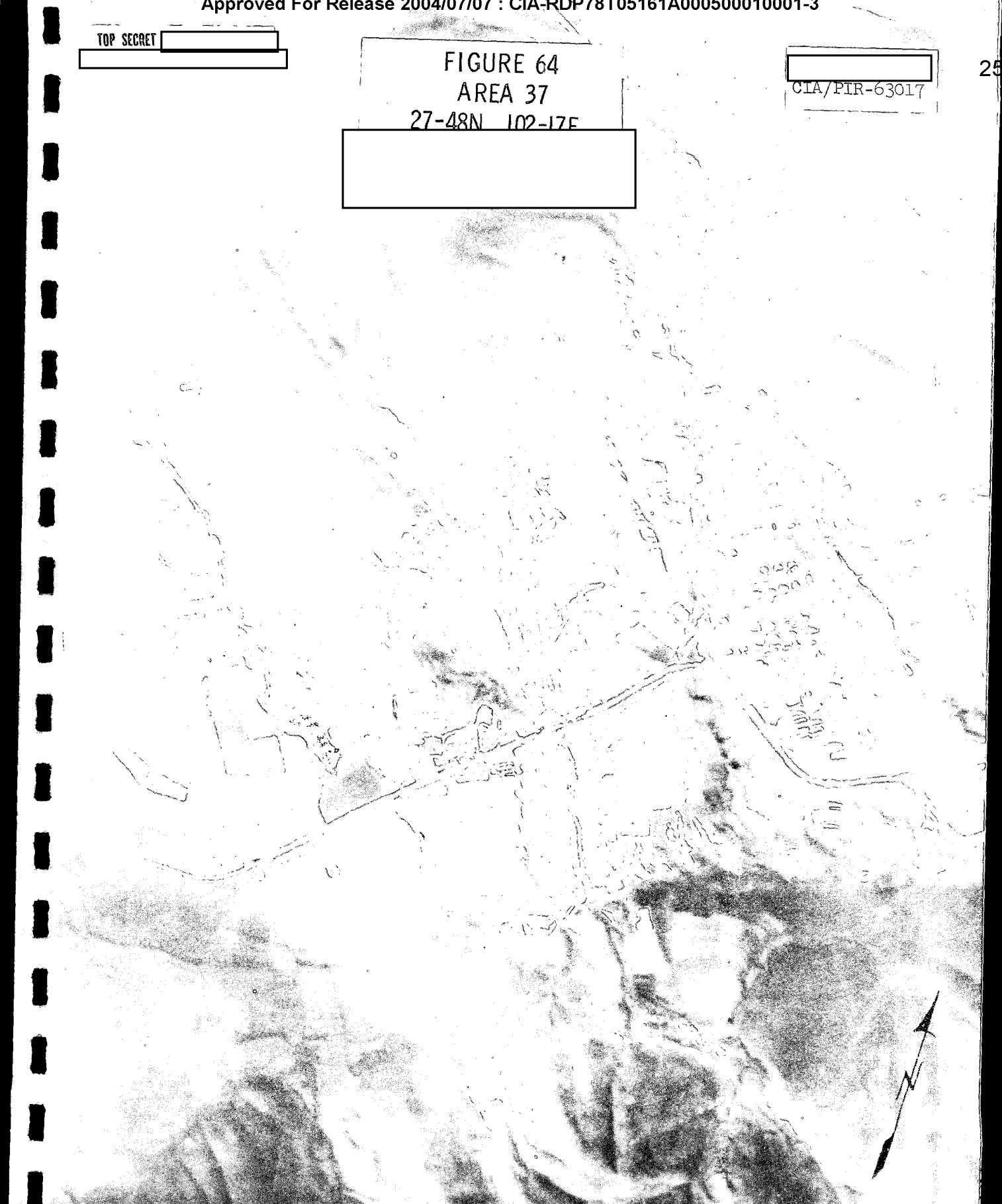
TOP SECRET

FIGURE 64
AREA 37
27-48N 102-17E

25X

CIA/PIR-63017

25



X1
X1

TOP SECRET

AREA 38

Mienning, Szechwan 28-35N 102-11E WAC 495

Possible mining area, 28-15N 102-14E and 102-15E, 21 nm south of Mienning. Two adjoining areas of possible mining activity are located in a rough mountainous region. The easternmost area is served by a well used road which branches into a number of trails at the possible mining site. The activity appears as surface diggings, trenchings, and scarrings on an arete. Small huts are the only buildings evident (Figure 65). Approximately one mile SE across a steep canyon is a possible adit mine on another mountainside. A large light-toned waste pile is evident. Tortuous trails connect the two areas. Transport of large quantities of ore appears impossible (Figure 66). Type - possible iron. (Map location No. 521 2/)

PHOTOGRAPHY (Partial coverage*)

* No complete good-quality coverage exists.

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1963 (CONFIDENTIAL)

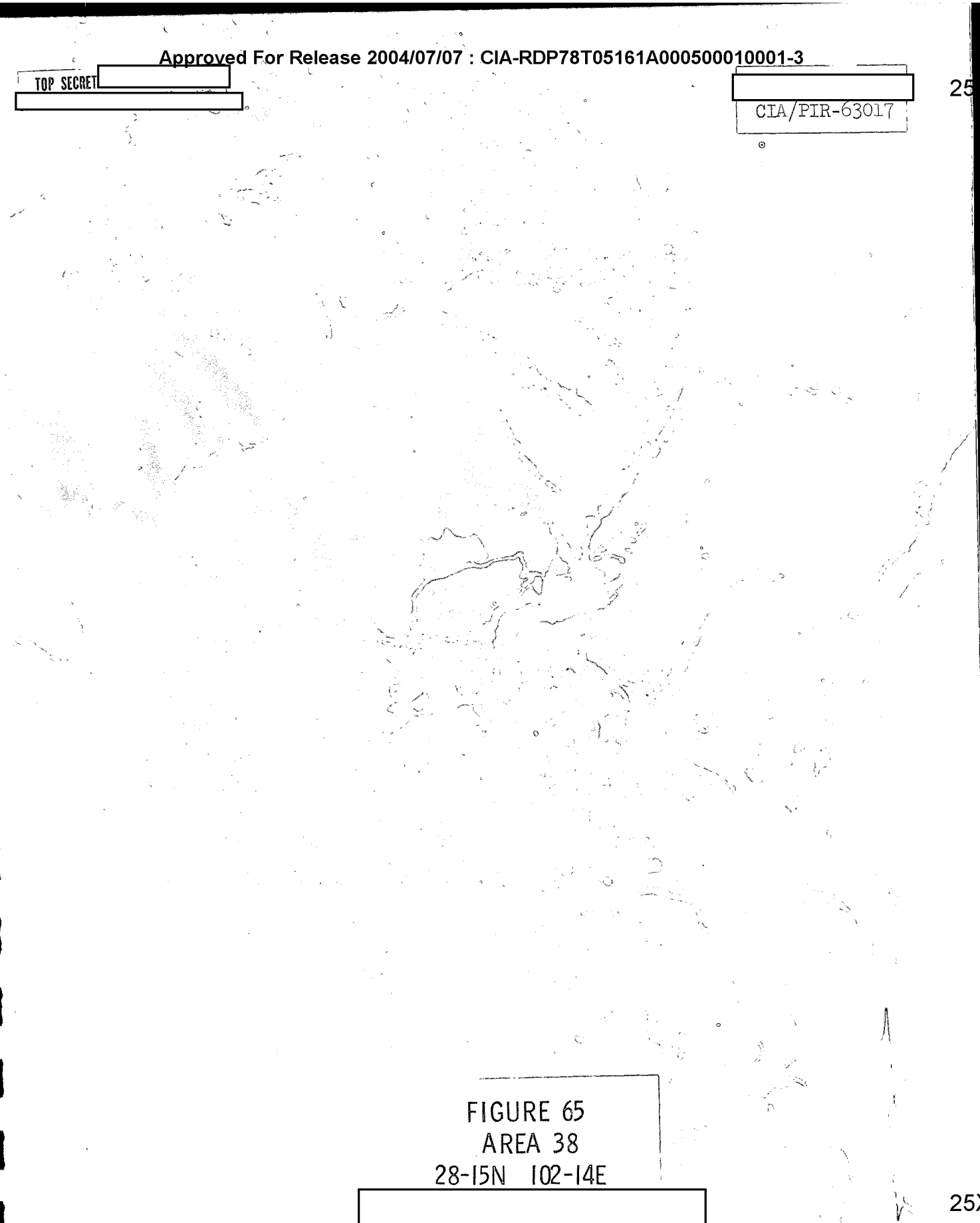


FIGURE 65
AREA 38
28-15N 102-14E

FIGURE 66
AREA 38
28-15N 102-15E

AREA 40

Wutu, Kansu 33-24N 104-50E WAC 384

Possible surface mine at 33-26N 104-50E, on west edge of Wutu. A large excavation is located on a bluff over the Paishui Chiang (river). Approximately 15 support buildings in a random pattern and a network of trails are around the excavated area. A low bridge affords access to the area across a tributary stream. No processing areas are evident in Wutu (Figure 67). Type - unknown.

Possible placer mines, approximately 33-21N 104-44E, 8 nm SW of Wutu. Possible mining is indicated by three small scarred areas located in drainage pattern off mountain peaks. Each is served by roads leading from canyon floor. Some fanning of alluvial material rather than waste is evident. No buildings can be seen at the site; road through canyon leads back to a wall-enclosed barracks area approximately 7 nm north (Figure 68). Type - possible gold. (Map location No. 586 2/)

PHOTOGRAPHY (Complete coverage)

25X1

MAPS AND CHARTS

ACIC. USAF Pilotage Chart, Sheet PC384D, scale 1:500,000, 2d ed, February 1962 (UNCLASSIFIED)

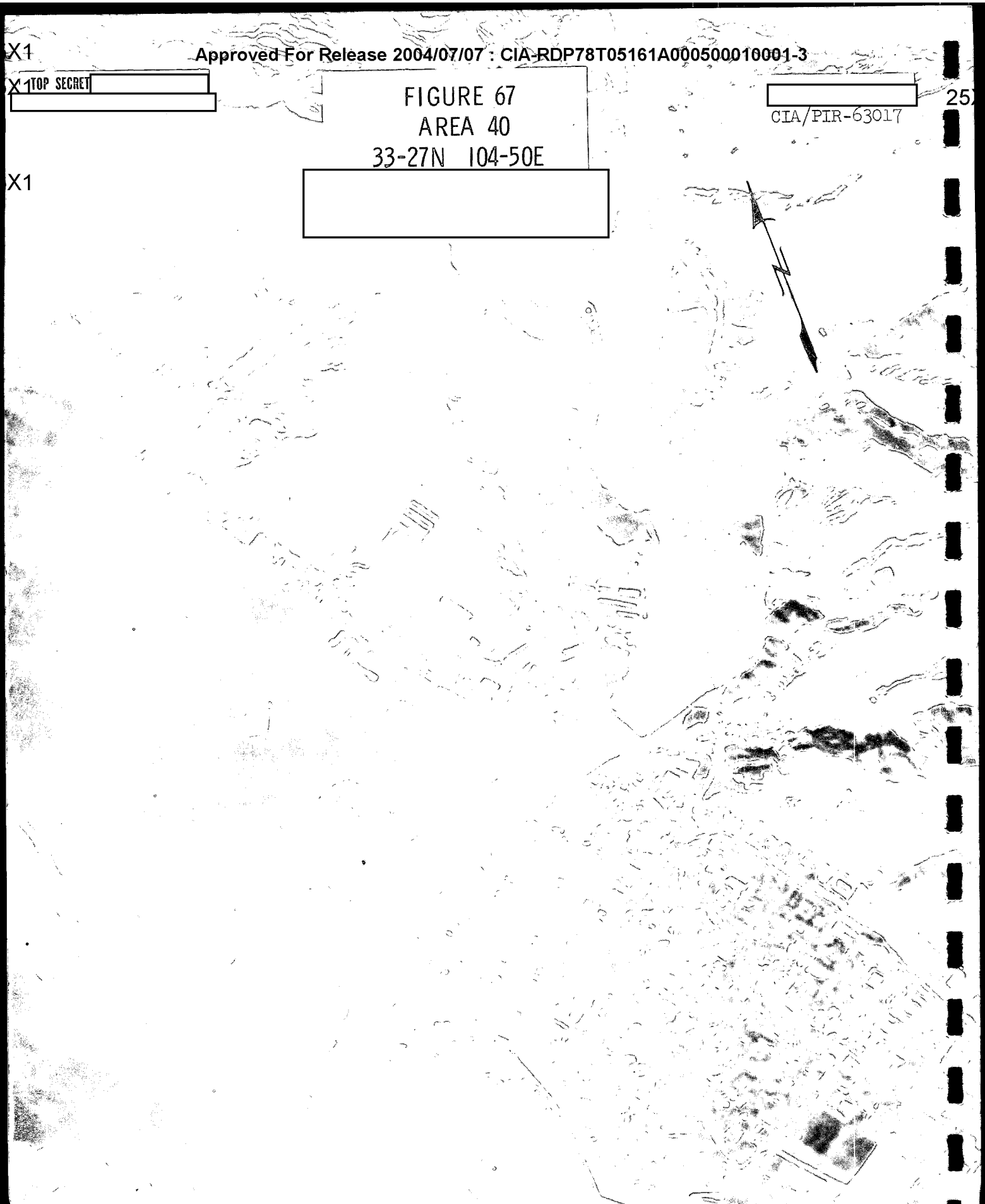
X1 TOP SECRET

FIGURE 67
AREA 40
33-27N 104-50E

CIA/PIR-63017

25X

X1



TOP SECRET

25X
25X

25X
25X

TOP SECRET

CIA/PIR-63017

25

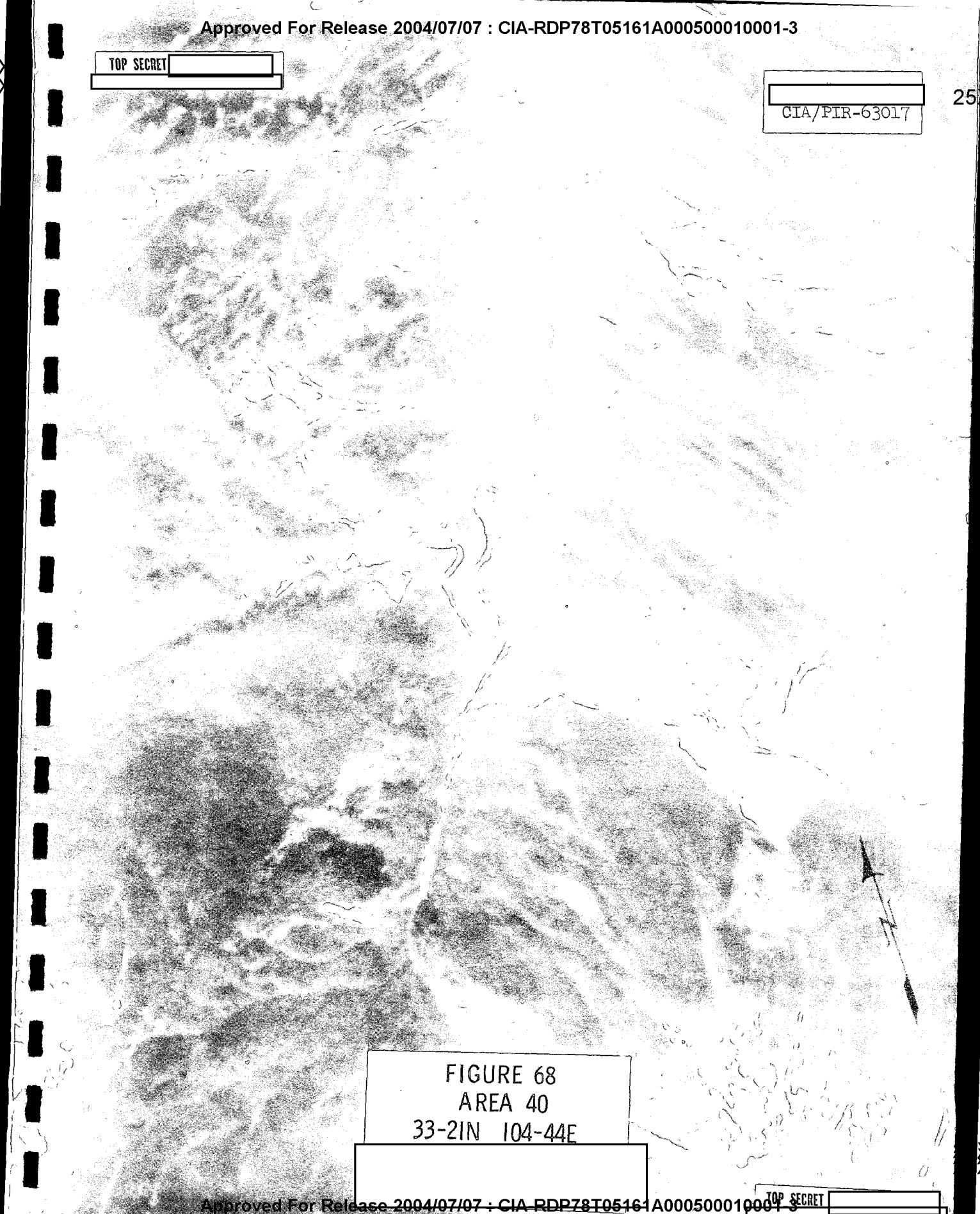


FIGURE 68
AREA 40
33-2IN 104-44E

X1
X1

TOP SECRET

SECTION III

NEGATIVE AREAS

TOP SECRET

Approved For Release 2004/07/07 : CIA-RDP78T05161A000500010001-3

CIA IMAGERY ANALYSIS DIVISION

CIA/PIR-63017

AREA 1

Chang-tu (Chamdo), Sikang 31-10N 97-14E WAC 436

Possible small mine, 31-10N 97-09E, 5 nm west of Chang-tu. Appears to be a quarry in mountainous terrain served by single road. No buildings evident. No apparent change since . Type - unknown.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-10, scale 1:1,000,000, 1st ed, September 1961 (UNCLASSIFIED)

AMS Series 1301, Sheet NH 47, scale 1:1,000,000, 1st ed, December 1962, (UNCLASSIFIED)

AREA 3

Chaochiao, Szechwan 28-03N 102-50E* WAC 495

No large mining activity seen in extremely mountainous terrain.

* Exact location questionable. Map references plot at 28-13N 102-56E. Center of search based on largest town in the general area.

PHOTOGRAPHY (Partial coverage)*

* No complete cloud-free coverage.

MAPS AND CHARTS

ACIC. USAF Pilotage Chart, Sheet PC 495-D, scale 1:500,000, 2d ed, January 1959 (UNCLASSIFIED)

AMS. Series 1301, Sheet NH 48, scale 1:,000,000, 4th ed, May 1961 (UNCLASSIFIED)

AREA 5

Chengtu, Szechwan 30-40N 104-04E WAC 495

No mining activity seen in agricultural plains surrounding this highly industrial city.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1963 (CONFIDENTIAL)

CIA IMAGERY ANALYSIS DIVISION

CIA/PIR-63017

AREA 6

Chiehchiang, Szechwan 29-31N 108-46E WAC 494

No large mining activity seen in region of rough terrain. Several small scarred areas did not appear significant.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1962 (CONFIDENTIAL)

AMS. Series L500, Sheet NH 49-9, scale 1:250,000, 1st ed, December 1957 (UNCLASSIFIED)

CIA IMAGERY ANALYSIS DIVISION

CIA/PIR-63017

AREA 7

Chilienshan (Mountains), Kansu 39-10N 98-42E WAC 332

Unpopulated mountainous area is negated for mining activity.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-8, scale 1:1,000,000, 1st classified ed, April 1962 (CONFIDENTIAL)

AMS. Series 1301, Sheet NJ 47, scale 1:1,000,000, 2d ed, July 1957 (UNCLASSIFIED)

AREA 11

Kanghsien, Kansu 33-26N 105-37E* WAC 384

Nothing seen to indicate mining. Area located in remote mountainous region of small villages.

* Kanghsien not positively identified on photography. Geographical coordinates vary; the referenced maps give a location of 33-20N 105-37E.

PHOTOGRAPHY (Partial coverage)*

* Eastern edge not covered.

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

AMS. Series L500, Sheet NI-48-11, scale 1:250,000, 1st ed, September 1957 (UNCLASSIFIED)

AREA 16

Lichiang, Yunnan 26-53N 100-14E WAC 555

Several scarred areas on SW edge of Lichiang appear to be borrow pits and/or quarries for building material/stone.

PHOTOGRAPHY (Complete composite coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-10, scale 1:1,000,000, 1st ed, September 1961 (UNCLASSIFIED)

ACIC. US Air Target Chart, series 200, Sheet 0555-10AL, scale 1:200,000, 1st ed, May 1961 (CONFIDENTIAL)

CIA IMAGERY ANALYSIS DIVISION

CIA/PIR-63017

AREA 17

Lonan, Shensi 34-05N 110-09E WAC 385

No significant mining areas seen. Two possible old mines at 34-03N 109-52E, 15 nm west of Lonan, appear abandoned. These sites consist of dark-toned scarring at crest of two small hills connected by a deep road cut. No waste piles could be seen.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

AREA 22

Nancheng, Shensi 33-05N 107-02E WAC 384

No mining activity observed.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

AMS. Series L500, Sheet NH-48-12, scale 1:250,000, 1st ed, February 1962 (UNCLASSIFIED)

AREA 25

Paise, Kwangsi 23-54N 106-37E WAC 616

No significant mining areas observed. Numerous earth scarrings in hills north of Paise are probable excavations for earth fill at a reservoir dam.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-J-11, scale 1:1,000,000, 4th ed, December 1964 (UNCLASSIFIED)

AREA 28

Tungjen, Tsinghai 35-30N 102-07E WAC 384

No suspect mining areas are evident in mountainous region with terraced slopes along valleys.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, series 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

AREA 31

Wuyuan, Inner Mongolia 41-07N 108-15E WAC 288

No area suspected of mining activity was observed. Wuyuan is located in an agricultural valley between the Huang Ho and Wuchia Ho (rivers).

PHOTOGRAPHY (Complete coverage)

Mission	Cam/Pass	Frames	Date	Condition	Classification

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-F-8, scale 1:1,000,000, 2d classified ed, November 1963 (CONFIDENTIAL)

AREA 32

Yentung (Yentunshih), Hainan Island 19-25N 110-42E WAC 618

No mining activity could be identified in this hilly coastal region.

PHOTOGRAPHY (Partial coverage)*

* Clouds covered extreme western portion of search area; coast line and 15-20 miles inland was clear.

MAPS AND CHARTS

AMS. Series L500, Sheet NE 49-2, scale 1:250,000, 2d ed, September 1963 (UNCLASSIFIED)

AREA 34

Yinchuan, Ninghsia 38-28N 106-17E WAC 383

No mining activity was seen in this area. Large mining operations approximately 40 nm north are located closer to Pinglo (see Area 39).

PHOTOGRAPHY (Complete coverage)

Mission	Cam/Pass	Frames	Date	Condition	Classification

PHOTOGRAPHY con't.

[redacted]

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-G-9, scale 1:1,000,000, 2d classified ed, April 1963 (CONFIDENTIAL)

AMS. Series 1301, Sheet NJ 48, scale 1:1,000,000, 1st ed, September 1961 (UNCLASSIFIED)

AREA 36

Hsintu, Szechwan 30-50N 104-10E WAC 495

Area is negated for large-scale mining activity. A probable chemical fertilizer plant is located approximately 5 nm NE of Hsintu. Search area overlaps another centered at Chengtu (Area 5).

PHOTOGRAPHY (Complete coverage)

[redacted]

MAPS AND CHARTS

ACIC. USAF Operational Navigation Chart, Sheet ONC-H-11, scale 1:1,000,000, 2d classified ed, August 1963 (CONFIDENTIAL)

AMS. Series L500, Sheet NH 48-6, scale 1:250,000, 1st ed, August 1963 (UNCLASSIFIED)

AREA 41

Kolomai (Karamai), Sinkiang 45-33N 84-53E WAC 243

At least three extensive well-developed oil fields trending NE-SW from approximately 45-15N to 46-00N and 84-50E to 85-45E are located in this desert region. Seismic exploration pattern is located at 46-00N 85-00E. All scarring in the area is attributable to this activity.

PHOTOGRAPHY (Complete coverage)

MAPS AND CHARTS

AMS. Series 1301, Sheet NL 45, scale 1:1,000,000, 1st ed, September 1961 (UNCLASSIFIED)

AREA 43

Moho, Tsinghai - Reportedly at 37-30N 98-30E

This search area was deleted from the requirement list by the requester after the location could not be established by map or gazetteer. No search was conducted.

REFERENCES

DOCUMENTS/REPORTS

1. DIA. SAO/PC-305/2-11-63, Mines and Minerals Section, Special Area Analyses, Area II, North Central China, November 1963 (TOP SECRET

2. DIA. SAO/AP-305/2-4-65, Mines and Mineral Deposits, Special Area Analyses, Area V, Southwest China, April 1965 (TOP SECRET

3. NSA. 3/0/CCAE/R23-64, Further Information on Uranium Mining Activity in Communist China, 6 November 1964 (TOP SECRET

4. NSA. 3/0/CCAE/T56-64, Uranium Prospecting Unit Probably Active Near Yungchang, 16 September 1964 (TOP SECRET

5. NSA. 3/ACC-E/C60, Numbered Geology Units in Communist China, May 1959 (TOP SECRET

6. DOD. 1 531 060 7 65, Industrial Installations in Kunming and Vicinity and Mineral Resources of Yunan Province, January 1965 (CONFIDENTIAL)

REQUIREMENT NUMBERS

1. C-SI4-82,082
2. C-SI4-82,082, Supplement I
3. C-SI5-82,150, Supplement II
4. C-SI5-82,221

IAD PROJECT NUMBERS

1. 30059-5
2. 30789-5
3. 30029-6
4. 30184-5