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## ECONOMIC INTELLIGENCE REPORT

# THE CONSTRUCTION OF NEW RAILROAD LINES IN COMMUNIST CHINA 1949-57



CIA/RR 123  
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ECONOMIC INTELLIGENCE REPORT

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CIA/RR 123

(ORR Project 47.1581)

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[Line Nos.:]

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2. Ch'eng-tu - Chungking
3. T'ien-shui - Lan-chou

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[Line Nos.:]

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[Line Nos.:]

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[Line Nos.:]

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[Line Nos.:]

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[Line Nos.:]

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[Line Nos.:]

- 20. Kan-shui-ch'ang - Kuei-yang
- 24. Nei-chiang - K'un-ming
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- 42. Kuei-yang - Jung-feng (or Kuei-yang -  
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[Line Nos.:]

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- 39. Sian - Wu-wei
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√Line No.:√

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√Line Nos.:√

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√Line Nos.:√

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31. Lan-chou - Te-ling-k'a

36. Lan-chou - Liu chia Gorge

37. Tu-shan-tzu - Sharasume (A-lo-t'ai)

38. Turfan - Kucha (K'u-ch'e)

41. Hsi-ning - Ta-t'ung

48. Ka-erh-mu (Golmo) - Lhasa

51. Te-ling-k'a - Erh-ch'iang  
(Charklik)

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- 52. Kucha (K'u-ch'e) - Kashgar
- 53. Erh-ch'iang (Charklik) - Kashgar
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THE CONSTRUCTION OF NEW RAILROAD LINES  
IN COMMUNIST CHINA\*  
1949-57

Summary

The construction of new railroad lines in Communist China has been based on Nationalist plans which were largely unimplemented before 1949.\*\* Most of the lines constructed before 1949 were built in the north and northeast to connect ports with inland markets and sources of raw materials. In 1946, 38 percent of the total trackage was in Manchuria. On coming to power in 1949 the Chinese Communists sought to rectify this disproportionate distribution. The existing network had sustained much war damage, however, which first had to be repaired. Accordingly, during 1949-52 the major effort in railroad construction was devoted to the rehabilitation of the existing network. Three new lines completed during this period were the following: (1) the Lai-pin - Mu-nan Kuan line, built primarily to support the Vietnamese Communists in their struggle for power; (2) the Ch'eng-tu - Chungking line; and (3) the T'ien-shui - Lan-chou line,\*\*\* an extension westward of the vital Lung-Hai Railroad.\*\*

The First Five Year Plan (1953-57) called for the construction of 4,084 kilometers (km) of new railroad lines.\*\*\*\* The general scheme of the program was (1) to expand the established net into peripheral areas for the purpose of exploiting natural resources; (2) to connect new industrial centers with one another, with natural resources, and with the sea; (3) to provide overland links with partners in the Sino-Soviet Bloc for the purpose of economic and military assistance; and (4) to construct lines in the east and south predominantly for military reasons. In order to fulfill this program, the construction effort was centralized under the control of regional engineering bureaus and design

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\* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 November 1957.

\*\* See Appendix A; the accompanying map, Figure 1, following p. 4; and also the map, Figure 19, inside back cover.

\*\*\* For data and an appraisal of the significance of each of 56 new railroad lines, see Appendix D. Also see the map, Figure 6, following p. 44.

\*\*\*\* See Table 1, p. 15, below, and Appendix B, Table 2, p. 29, below.

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institutes of the Ministry of Railroads and the Railroad Engineering Corps of the Peoples Liberation Army. By the end of 1956 a total of 4,389 km of new lines had been constructed, thus overfulfilling the First Five Year Plan goal of 4,084 km, 1 year ahead of schedule. In 1956 an upward revision of the goal for the 5-year period, from 4,084 km to 7,592 km, was announced.

This grandiose program was canceled by announcement of the 1957 Plan, which called for the construction of only 535 km of new lines during the year (in 1956, 1,747 km had been constructed). The drastic reduction in the construction of new lines in 1957 was the result of materials shortages, financial difficulties, and traffic congestion on existing lines. The reduction indicates that the Chinese Communists have renounced their option of a large overfulfillment of kilometrage in favor of increasing the capacity of existing lines.

The First Five Year Plan of Communist China stated that the Ministry of Railroads was to invest 41.7 percent (2.36 billion yuan\*) of its total investment in the construction of new lines, or 5.5 percent of the total planned capital investment of 42.744 billion yuan. It is estimated that about 2.76 billion yuan, or 5.8 percent of total capital investment, actually were expended for the construction of new lines in the 5-year period. The construction of new lines not only involved substantial investment but also consumed large amounts of construction materials, chiefly steel, cement, and lumber. Because domestic supply was inadequate, some of the steel materials for the construction of new lines had to be imported. Cement and lumber, although also in short supply, were made available in adequate amounts to the railroad constructors for them to meet kilometrage goals -- a fact which indicates the high priority given the construction of new lines by the Chinese planners.

A large part of the successful performance in the construction of new lines in Communist China can be ascribed to the concentration of labor involved. Although the permanent labor force engaged in the construction of new lines is estimated to be only between 125,000 and 150,000 persons, hundreds of thousands more in the form of troops of the Peoples Liberation Army and recruited peasants took part in the construction. Skilled labor, although still in short supply, is being trained at work and in schools, and the fact that the labor productivity

\* Equivalent to US \$959 million at an exchange rate of 2.46 yuan to US \$1.

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of railroad construction workers has increased indicates that the training is proving of value to the sector.

Although Soviet technical assistance has been evident in the construction of new lines, the Chinese Communists themselves appear to have developed a capability to design, schedule, and implement a realistic railroad construction program creditably. A faster rate of tracklaying, standardized planning and survey methods, and better organization are but a few of the factors contributing to the quantity and quality of the constructors' performance. Although improvement of existing lines and increasing the rolling stock park are scheduled to be favored over the construction of new lines from the point of view of railroad investment in the Second Five Year Plan (1958-62), 8,000 km of new lines (nearly double the kilometrage originally planned in the First Five Year Plan) are scheduled to be constructed. Much of the construction will be through rugged mountainous terrain in the southwest. Lines already projected by the Chinese indicate that the rate of construction of new lines will remain high until at least 1970.

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I. Introduction.

This report on construction of new railroad lines in Communist China covers only trunk and branch lines of more than 35 km in length. Reconstruction, rehabilitation, double tracking, electrification, and the construction of industrial spurs, all of which fall under a separate category of railroad investment in China, are excluded.\* Because the construction of railroads in forestry areas has been chiefly in the form of narrow-gauge lines constructed by units of the Ministry of the Timber Industry, a discussion of this aspect of railroad construction appears in Appendix C rather than in the body of the report. In the cases where a line once existed but was dismantled and has since been reconstructed, the extent of the construction undertaken to make the line operational has determined its designation as new construction or reconstruction. If considerable construction representing heavy investments was required, then the line probably has been considered new construction by the

\* For a breakdown of performance in all types of railroad construction during the First Five Year Plan (1953-57), see Appendix B, Table 3, p. 30, below.

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Chinese and is so treated in this report.\* The body of this report has been geared to an analysis of the aggregative aspects of the construction of new lines. For detailed descriptions of individual new lines, see Appendix D.

II. Construction of Railroads to 1949.\*\*

The history of railroad construction in pre-Communist China is one of optimistic plans followed by little implementation. Its earliest phase, from 1895 to 1931, was marked by foreign powers battling for concessions in this sphere. In 1907 a Railroad Administration was established under the Board of Posts and Communications, and a plan was drawn up for four trunk systems radiating from Peking as follows: (1) to Han-k'ou and Canton in the south; (2) to Kalgan and Urga in the north; (3) to Mukden (Shen-yang) and Aigun in the east and north-east; and (4) to T'ai-yuan, Lan-chou, and Ili in Sinkiang in the west. 1/\*\*\* This plan reflected the desire of the central government to link up the various parts of China into one organic unit through modern communications. In 1909 a 9-year schedule of railroad construction was enunciated, but little came of the plan, mainly because of the decentralized, rural nature of the traditional economic structure. Such a structure prohibited large capital accumulations and a concerted long-range railroad construction program. Native entrepreneurs were too eager to reap immediate profits on their investments. The Szechwan Railroad Company went bankrupt and lost nearly US \$2 million during this period before it was even able to begin construction. 2/

For this reason, foreign interests were looked to for construction of railroads. As early as 1907, railroad materials imported from abroad were exempt from duty. Long-term lease concessions were granted to Russia, France, and Germany, and these and other nations performed contract construction for the Chinese Railroad Administration. 3/ Until 1931 the concessions were all long-term agreements of 20 to 50 years' redemption. After 1931, agreements were for 6 to 9 years and were for materials alone, and Chinese engineers under the Ministry of Railroads acted as contractors. Besides the nations previously mentioned, Great Britain, Japan, and the US were also active in railroad development.

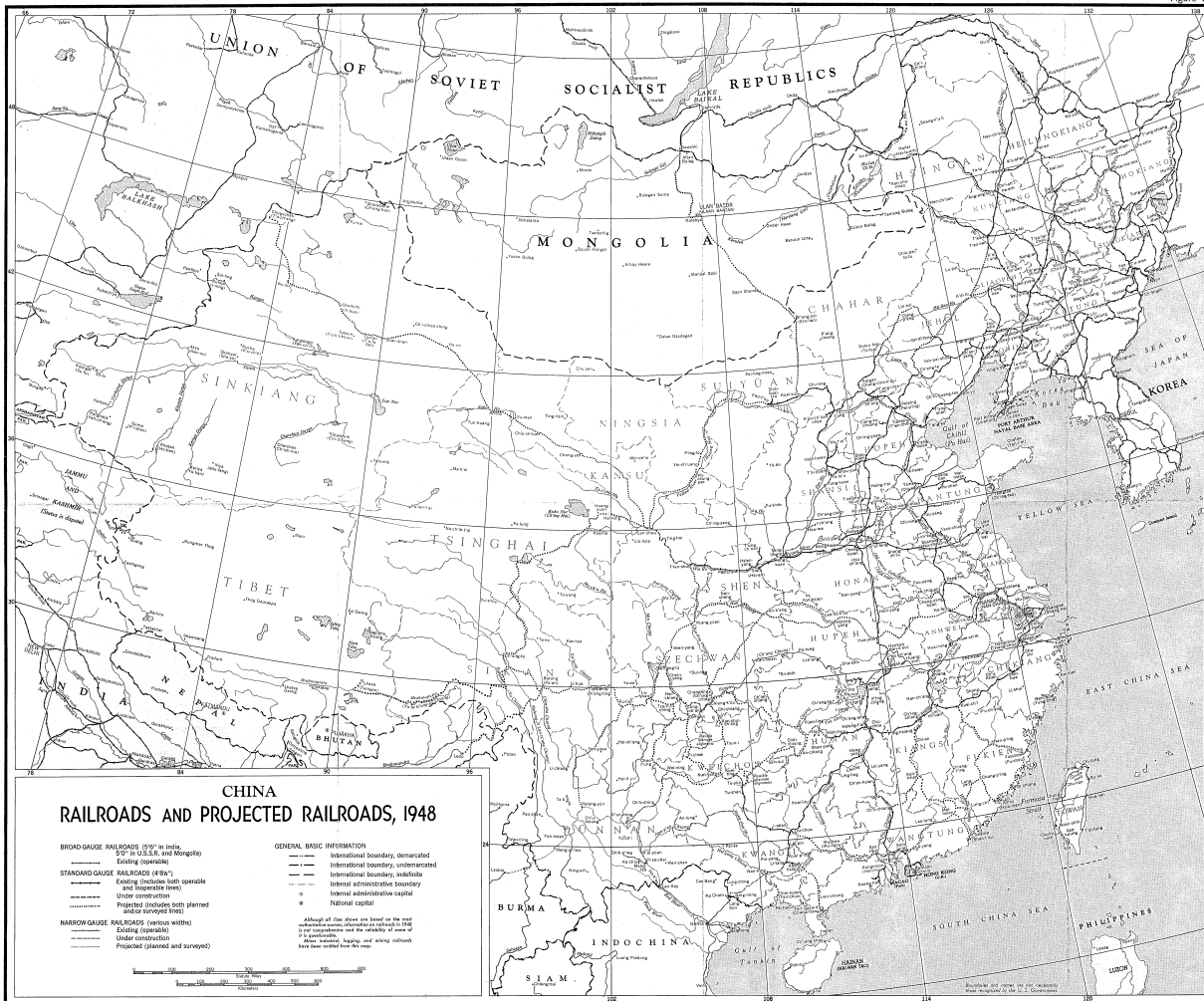
\* Two examples of lines in this category are the Ho-k'ou - Pi-se-chai (which, because of its importance, is treated herein, even though it is believed to be narrow gauge) and the Ho-ch'ih - Kuei-yang lines.

\*\* See the map, Figure 1, following p. 4.

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PROVISIONAL

Figure 1



PROVISIONAL



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During 1881-1927 the increase in railroads in China, excluding Manchuria, averaged about 150 km per year. During the decade of the Ministry of Railroads at Nanking (1928-37) an average of 356 km of new railroads was completed each year, and in 1937 the net of the Chinese railroads was 10,610 km, of which 700 km were private lines. 4/

The First Five Year Plan of the Chinese Nationalist Ministry of Railroads was drawn up in 1936 by order of Chiang Kai-shek and called for the construction of 8,139 km, or 1,628 km per year. 5/ It was an ambitious plan and was modeled on the "100,000-Mile Program" promulgated by Sun Yat-sen during his brief period as Minister of Chinese Railroads in 1912. Sun realized that one of the leading causes of the backwardness of China was its lack of communications. Although he was not an engineer, and trained technicians laughed at his crude paper plans, his plans reflected a feeling among intellectuals of that period that China needed railroads in order to emerge as a world power. In the political strife of the time, however, Sun was forced from office, and his plans remained without implementation. 6/ Construction in Chiang's First Five Year Plan, beginning in 1936, was suspended in July 1937 because of the Sino-Japanese War but was resumed in 1939.

During 1937-45 a total of 3,382 km of new lines, or 423 km per year, was constructed. 7/ Most of the railroads built before 1949 were constructed to connect ports with inland markets and sources of raw materials. After 1937, under pressure of the Japanese advance, some track was dismantled and transported westward to be reused in unoccupied China. During World War II the Japanese repaired and kept in operation the most important lines in the occupied areas, although aerial bombardment reduced total traffic capacity significantly by 1945.

In 1947, two other plans for railroad construction were proposed. Because 6 of the 36 provinces of China had no railroads, the former Minister of Communications, Chang Chia-ao, recommended a 10-year program embracing the construction of 23,000 km of new lines, to be carried out in 2 phases. This plan, which was based on Sun Yat-sen's original scheme, was not aligned with the economic capability of China, especially in view of the fact that the entire railroad net was in need of overhaul because of war damage. Another program was the Nationalist Second Five Plan, published by the Ministry of Communications. It called for the construction of 13,923 km of new lines, or 2,785 km per year. 8/ Included in this total were about 5,500 km which represented that portion of the Nationalist First Five Year Plan not constructed because of the war. The civil war which followed prevented implementation of

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either of these plans. On seizing power in 1949 the surveys and plans prepared by the Nationalists were immediately put to use by the Chinese Communists (see Figure 1\*). These surveys and plans have greatly facilitated the progress made by the Chinese Communists in the construction of new lines.

III. Construction of New Lines, 1949-57.\*\*

In order to achieve a balanced distribution of productive economic activity, Communist China has had to place a high priority on the construction of new railroad lines. Before 1949 the distribution of railroads was heavily oriented toward the northeast. In 1946, 11,506 km, or 38 percent of a total net of about 30,000 km,\*\*\* were in Manchuria. 9/ The northwest had only one line, the Lung-Hai Railroad, and its rail-head was only at T'ien-shui. In Inner Mongolia, the southwest, and the coastal southeast the kilometrage was extremely meager and was poorly connected with the main network. The industrial construction and general economic development of the country would have been seriously hampered without an adequate program of construction of new lines.

A. Pre-Plan Period (1949-52).

On coming to power in 1949 the Communists were not able to launch a full-scale program of construction of new lines in China. Nearly one-half of the existing network of 21,715 km at the end of 1949 was in a state of disrepair (see Appendix B, Table 4\*\*\*\*). Consequently, during 1949-52 the major effort in railroad construction was directed to the rehabilitation of the existing network. The program called for the immediate improvement of traditional railroad connections with the USSR in Manchuria and of the main axis of supply to south China, the Peking - Han-k'ou - Canton line. Tracklaying for new as well as reconstruction and double-track projects in this period was as follows 10/:

\* Following p. 4, above.

\*\* See the maps, Figure 6, following p. 44, and Figure 19, inside back cover.

\*\*\* Including nearly 4,000 km on Taiwan.

\*\*\*\* P. 31, below.

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<u>Year</u>	<u>Kilometers</u>	
	<u>Total Track Laid</u>	<u>New Track Laid</u>
1950	523	223
1951	1,054	771
1952	1,224	482
Total	<u>2,801</u>	<u>1,476</u>

Major efforts were concentrated in the construction of three new lines (all of which were completed before the end of 1952), as follows: (1) the Lai-pin - Mu-nan Kuan line, built primarily to support the Vietnamese Communists in their struggle for power; (2) the Ch'eng-tu - Chungking line, construction of which had been begun by the Nationalists; and (3) the T'ien-shui - Lan-chou line, an extension westward of the vital Lung-Hai Railroad.

B. First Five Year Plan (1953-57).

The general scheme of the program for construction of new lines in the First Five Year Plan (1953-57) in Communist China was as follows: (1) to expand the established net into peripheral, previously isolated areas for the purpose of exploiting natural resources; (2) to connect new industrial centers with one another and with natural resources; (3) to connect and integrate regional systems with the national network; (4) to provide overland links with Sino-Soviet Bloc partners for the purpose of economic and military assistance; (5) to connect inland centers with outlets on the sea; (6) to permit railroad construction to act as a control arm in bringing diverse subject nationalities under tighter control by Peking; and (7) to construct lines in the east and south, predominantly for military reasons. Inland rail hubs at Lan-chou, Ch'eng-tu, Kuei-yang, K'un-ming, and Sian were to be developed, thus providing a more efficient railroad network from both the economic and the military points of view. 11/ To carry out such a large-scale program, it was necessary that the construction effort be organized efficiently.

1. Organization of the Construction Effort.

As early as 1949 the Ministry of Railroads established 15 central staff and regional administrative bureaus (called railroad

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bureaus) in Communist China. By the end of 1955, concomitant with increased operational trackage, this number doubled. 12/ Since then, centralization and increased efficiency have resulted in a tightening of the organizational structure, causing the abolition of superfluous units in some areas. 13/ Construction into new areas, however, has resulted in a general increase in the number of organizations involved in railroad construction. Although the ambiguity of Chinese Communist announcements precludes a precise charting of the organization of railroad construction activity, a tentative attempt to outline the effort is made in the accompanying chart, Figure 2.\*

In early 1956, at the height of construction activity, all railroad bureaus (chu) were made railroad control bureaus (kuan-li chu)\*\* and were accorded greater control and responsibility than previously. 14/ The railroad control bureaus are the administrative arms of the Ministry of Railroads in the various regions. Besides administrative and planning staffs, they have functional construction units which perform maintenance work on roadbeds and construction of new ancillary structures on existing lines but which do not construct new lines. 15/

Within the central government organizational framework, construction of new lines is represented under two heads, as follows: (a) regional engineering bureaus and specialized engineering or construction companies under the Central Engineering Bureau, and (b) regional design institutes (yuan) and a Special Institute under the Central Design Bureau. 16/ The six regional engineering bureaus perform construction of new lines in all parts of Communist China based on plans, designs, and surveys (including aerial) made by the Central Design Bureau and its components.

The Railroad Engineering Corps of the Peoples Liberation Army has played a leading role in the construction of new lines. Its importance is shown in the fact that, of 2,969 km of new lines constructed in 1955 and 1956, the Corps constructed 1,480 km, or nearly half of the total length of new lines. 17/ The Corps was established on 26 May 1949 and was placed under the direct control of the Ministry of Railroads. 18/ Under its aegis much of the rehabilitation of the

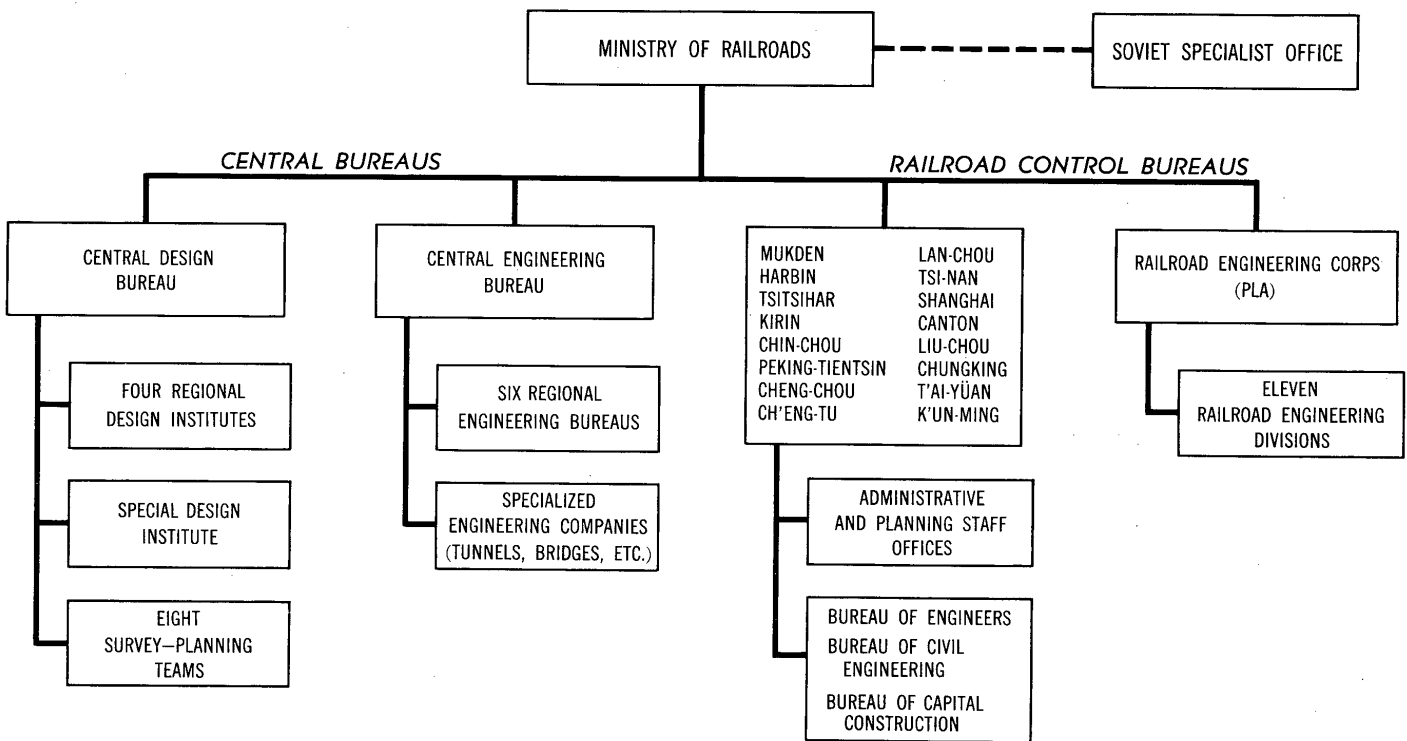
\* Following p. 8.

\*\* Railroad control bureaus are assigned jurisdiction over various trunk and branch lines regardless of actual regional boundaries.

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Figure 2

COMMUNIST CHINA  
PRINCIPAL ORGANIZATIONS ENGAGED  
IN RAILROAD CONSTRUCTION, NOVEMBER 1957



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war-damaged railroad net was carried out after 1949. Currently there are 11 divisions (more than 100,000 men) in the Corps engaged in railroad construction, and they represent a highly disciplined, relatively well-trained, and mobile construction force. 19/

The Railroad Engineering Corps has been augmented by the recruitment of skilled technicians and by the use of surplus farm laborers. As a military force, the Corps is able to exert control over large groups of unskilled laborers. Its "combat" approach to large-scale projects such as the Li-t'ang - Fort Bayard (Chan-chiang) and the Ying-t'an - Amoy (Hsia-men) lines resulted in these projects being completed well in advance of target dates. Not only was the Corps created on the Soviet model, but experts from the USSR have provided it with continuing technical guidance. As a mobile elite, the Corps will continue as a bulwark of railroad construction for the indefinite future.

2. Performance in Construction of New Lines.

a. 1953-56.

Under the First Five Year Plan in Communist China the original goal for construction of new lines was 4,084 km. 20/ By the end of 1956 the Chinese Communists had surpassed most of the aggregate annual goals as well as the goal of the First Five Year Plan. This is also true of goals for individual lines. In terms of original goals, construction of new lines has been and probably will continue to be one of the strongest areas of the construction sector. This is because of (1) the high priority given railroad construction by the Chinese Communists and (2) the high return on the funds invested in railroad construction compared with most industrial construction projects.\* Annual performance during 1953-56 was as follows 21/:

\* The required mixture of construction machinery and labor (both skilled and unskilled) is more easily achieved in railroad construction than in most industrial construction.

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<u>Year</u>	<u>Completion of Tracklaying (Kilometers)</u>	<u>Increase Above the Level of the Preceding Year (Percent)</u>
1953	589	22
1954	831	41
1955	1,222	47
1956	1,747	43
Total	<u>4,389</u>	

Although they have been successful in fulfilling earlier goals, the Chinese Communists have lagged considerably in meeting revised goals. In early 1956 the original First Five Year Plan goal of 4,084 km was revised upward to 7,592 km. Several revisions of the 1956 Plan, however, reduced the planned length of lines totaling 2,136 km to "about 1,800 km" (1,747 km were actually completed) and indicated that construction of new lines was not proceeding according to the revised plan. 22/

b. 1957 Plan.

The 1957 Plan in Communist China demonstrates that the revised First Five Year Plan goal, established in early 1956, has been canceled. Originally calling for only 600 km, even this meager figure has since been reduced to 535 km. 23/ This significant reduction, occurring concurrently with a shift in emphasis to construction to improve existing lines,\* was prompted by the need to alleviate congestion on several key lines, by the need to raise the freight-carrying capacity of existing lines, and by a nationwide shortage of critical construction materials. In the first 6 months of 1957, about 295 km of new track were laid, and if construction conforms to the practice of previous years (in which the bulk of construction is performed in the last 6 months of the year), it appears that the modest goal may be overfulfilled. 24/ If, however, construction in 1957 is kept in the range of the two announced goals, the construction of new lines during the period of the First Five Year Plan will total between 4,900 km and 5,000 km in contrast to the original planned total of 4,084 km and the revised planned total of 7,592 km.

\* For the extent to which construction to improve existing lines has been slighted by the Chinese Communists in the First Five Year Plan, see Appendix B, Table 3, p. 30, below.

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3. Significance of the Construction of New Lines.\*

Railroads are the leading form of modern transportation in Communist China. In 1956 they accounted for about 83 percent of all freight (measured in ton-kilometers) carried by modern means of transportation. 25/ Concurrent with general industrial progress, new railroad lines having both economic and strategic implications have been added to the 24,232-km railroad network existing at the end of 1952. Economically, the construction of new lines is intended to achieve a better balance in the regional distribution of railroad kilometrage. Before 1950, north and northeast China, which represented only 15 percent of the total land area, had about 70 percent of the total railroad kilometrage, whereas the northwest and southwest, which represented 60 percent of the total land area, had only 6 percent of the total railroad kilometrage. 26/ While carrying out construction of individual lines in support of industry and for other specific purposes, the Chinese hoped at the same time to correct this disproportion and to connect all provinces and regions by railroads.

More specifically, newly constructed railroads have facilitated the following:

a. The exploration and exploitation of natural resources in remote areas. The most notable examples under this head occurred relatively late in the First Five Year Plan and include the Pao-chi - Ch'eng-tu, Pao-t'ou - Shih-kuai-kou, and Pao-t'ou - Pai-yun-o-po lines. Construction of new lines for this purpose is increasing: the Ho-k'ou - Pi-se-chai, Huai-jou - Shang-pan-ch'eng, and Wu-han - Sha-ho lines, all currently under construction, are motivated largely in this direction.

b. Direct access routes to the sea for inland industrial centers. The completed Li-t'ang - Fort Bayard, Lan-ts'un - Chefoo, and Ying-t'an - Amoy lines and the Nan-p'ing - Kuan-t'ou and Hsiao-shan - Ch'uan-shan lines, which are under construction and which provide inland areas with access to the sea, are strategic as well as economic assets added since 1952.

c. Additional railroad links with Sino-Soviet Bloc partners. Of considerable economic and strategic significance are

\* This section represents a broad appraisal of the significance of the aggregate effort in construction of new lines, with selected examples. See Appendix D, in which each line is assessed individually with respect to its significance.

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those lines constructed or under construction which will provide overland connections for Communist China with the USSR and with North Vietnam. The Chi-ning - Erh-lien line, completed in December 1955, not only gave the Chinese Communists a third junction with the USSR (the other junctions are at Man-chou-li and Sui-fen-ho) but also may forecast increased Chinese influence in Mongolia, a Soviet sphere of interest since the 1920's. Two other lines currently under construction have international junctions. The Trans-Sinkiang (Lan-chou - Ngo-ho-erh-li-li\*) Railroad will extend the Lung-Hai Railroad westward and will link Lan-chou with Aktogay in Kazakh SSR. This line, which should be completed in 1959, will reduce the rail distance from Moscow to Peking by more than 1,100 km and thus will facilitate the transport of industrial and agricultural products between the USSR, the European Satellites, and Communist China. By mid-1956, tracklaying had reached Yu-men, the most important domestic source of crude oil for the Chinese. Other oilfields near Wu-su and Karamai will be connected by the line and its branches. Lastly, the Ho-k'ou - Pi-se-chai line, scheduled for completion in late 1957, will link isolated Yunnan Province with the railroad system of North Vietnam and the port of Haiphong.

In transport-poor Communist China, every new line constructed since 1949 represents a strategic as well as an economic asset. The construction of some lines, however, was obviously motivated more by immediate military needs than by economic needs.\*\* The 337-km Chi-ning - Erh-lien line was the first leg of a projected 3,200-km north-south trunk system located nearly 1,000 km from the nearest coast, which probably will be completed by 1961. This axis will be connected with lateral east-west routes and will provide a flexibility of railroad movement never before available in China. Completion of this system to its southern terminus in North Vietnam will also greatly increase Communist military and logistic capabilities along the periphery of Southeast Asia. The Trans-Sinkiang Railroad, which will reduce the distance from Moscow to Peking by about 1,100 km, has obvious strategic as well as economic significance. The Ying-t'an - Amoy line, completed in December 1956, and the Nan-p'ing - Kuan-t'ou line, currently under construction, were motivated by the Chinese

\* Also known as Nohorlol, or O-ho-erh-li-li. See Appendix D, Line No. 25, p. 93, below.

\*\* It is no coincidence that the only five projects which were kept secret during the initial phases of construction were also projects having a strong military-strategic motivation. They were the Chi-ning - Erh-lien, Li-t'ang - Fort Bayard, Lan-ts'un - Chefoo, Ying-t'an - Amoy, and Hsiao-shan - Ch'uan-shan lines.

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desire for better logistic support on the mainland adjacent to the Taiwan Strait. The Li-t'ang - Fort Bayard, Lan-ts'un - Chefoo, and Hsiao-shan - Ch'u'an-shan lines, although important economically, were motivated initially by strategic considerations.

Railroad bridges constructed since 1949 have had considerable significance. The largest such project, a 1,760-meter (m) double-deck rail-highway bridge across the Yangtze River at Wu-han, was completed on 25 September 1957 27/ (see the photograph, Figure 3\*). This bridge will improve north-south communications by eliminating the need for train ferries at this point. It also will divert traffic from the coastal route by way of Nanking and Shanghai to the Han-k'ou route, which is more than 1,000 km shorter than the coastal line from Peking to Canton. Among other important bridges under construction are the Fu-ch'i and Min River bridges on the Nei-chiang - K'un-ming line, the Wu River bridge on the Kan-shui-ch'ang - Kuei-yang line, and the combination rail and highway bridge across the Hsiang River at Heng-yang. 28/ Projected are large bridges across the Yellow River at Cheng-chou,\*\* across the Yangtze River near Chungking, and across the Kan River at Nan-ch'ang. 29/ These bridges under construction or projected will link separated segments of existing lines, will replace older low-capacity structures, or will be constructed as parts of new lines. They will significantly increase the traffic capacity of the railroad network and the economic capability of the Chinese Communist government.

4. Costs of Constructing New Lines.

The First Five Year Plan of Communist China stated that the Ministry of Railroads was to invest 41.7 percent (2.36 billion yuan) of its total investment in the construction of new lines, or 5.5 percent of the total planned capital investment of 42.744 billion yuan.\*\*\* 30/ The actual portion of investment in railroads going to

\* Following p. 14.

\*\* The construction of this project was scheduled to start in August 1957 and to be completed in 1960.

\*\*\* Investment in the construction of new lines, although never defined by the Chinese Communists, is believed to include expenditures for stations, fueling installations, and workers' housing as well as actual roadbed preparation, bridging, tunneling, and tracklaying.

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the construction of new lines in 1953-55 was 47.8 percent.\* 31/ In March 1956, Teng Tai-yuan, the Minister of Railroads, stated that total investment in capital construction for the railroad industry would be increased 38.3 percent above the original goal of 5.67 billion yuan to a total of 7.84 billion yuan.\*\* He estimated that the original planned investment of 5.67 billion yuan would be expended by 31 March 1957. 32/ Subsequently the announcement was made of the 1957 Plan for railroads which drastically reduced the construction of new lines.\*\*\* Currently it is estimated that the total capital investment in railroads planned in the First Five Year Plan will be overfulfilled by only about 10 percent rather than by the 38.3 percent envisaged in the 1956 Revised Plan. If the 1957 Revised Plan is fulfilled, the percentage of total capital investment in the First Five Year Plan going to the construction of new lines will be 5.8 percent. Planned and actual investments and costs in the construction of new railroad lines in Communist China in 1953-57 are shown in Table 1.\*\*\*\*

Although data on costs of constructing new railroads are insufficient, it is clear that cost reductions have been made in the First Five Year Plan. Analysis before the announcement of the 1957 Revised Plan indicated that feasible reductions in costs would not be sufficient to permit the achievement of the goal of 7,592 km (under the 1956 Revised Plan) within the limits of the 38.3-percent increase in total capital investment in railroads -- the kilometrage goal of the 1956 Revised Plan would have to be underfulfilled or could be achieved only at the cost of increasing the investment for construction of new lines.

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\* This portion amounted to 6.6 percent of total capital investment during these 3 years. The percentage of investment in railroads is assumed to be an average of the 3 years rather than the level reached at the end of 1955. Investment in improving existing lines and in increasing the rolling stock park, which was planned initially to absorb 54.2 percent of the total investment in railroads during the First Five Year Plan, probably amounted to no more than 48.1 percent during 1953-55.

\*\* This revision is designated hereafter as the 1956 Revised Plan and refers to the First Five Year Plan for railroads as revised in 1956, not to the plan for the single year 1956.

\*\*\* This revision is designated hereafter as the 1957 Revised Plan and refers to the First Five Year Plan for railroads as revised in 1957, not to the plan for the single year 1957.

\*\*\*\* Table 1 follows on p. 15.

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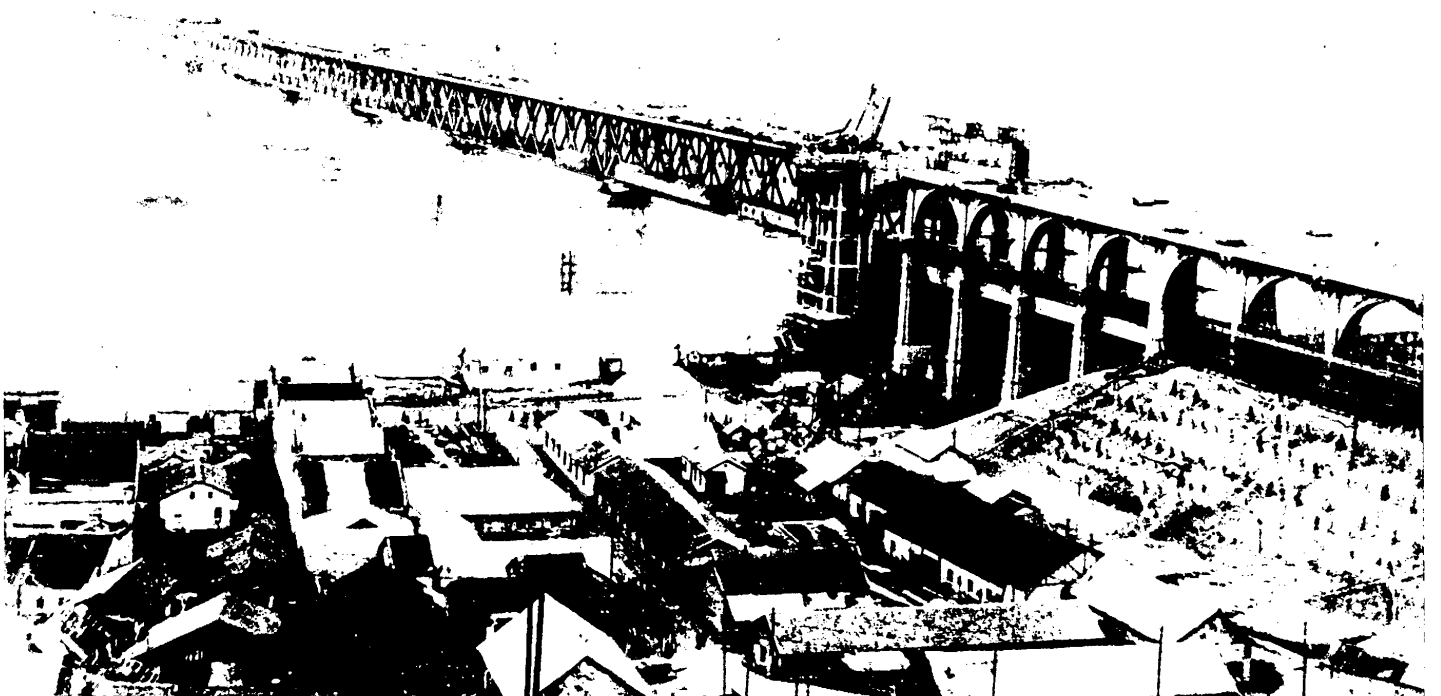


Figure 3. Communist China: Rail-Highway Bridge Across the Yangtze at Wu-han

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Table 1

Planned and Actual Investments and Costs in the Construction  
of New Railroad Lines in Communist China  
During the First Five Year Plan a/  
1953-57

Period	Total Capital Investment under the Ministry of Railroads (Billion Yuan)	Percentage of Total Capital Investment for Construction of New Lines <u>b/</u>	Investment in Construction of New Lines (Billion Yuan)	Completion of Tracklaying (Kilometers)	Estimated Average Cost of Construction per Kilometer of Track (Thousand Yuan)
Original First Five Year Plan, 1953-57	5.67	41.7	2.36	4,084	578
Actual, 1953-55	3.11 <u>c/</u>	47.8	1.49	2,642	564
1956 Revised Plan, 1953-57	7.84	47.8 <u>d/</u>	3.75	7,592	494
1957 Revised Plan, 1953-57	6.24 <u>e/</u>	44.3 <u>f/</u>	2.76	4,924	561

- a. 33/  
b. These relationships are presumed to be averages for the given periods.  
c. 34/  
d. This figure was obtained by applying the percentage of total capital investment going to construction of new lines in 1953-55 to the entire 5-year period.  
e. This figure is based on an estimated overfulfillment of 10 percent of the original plan.  
f. This figure assumes that 47.8 percent obtained during 1953-56 and was reduced to a planned 30.1 percent in 1957. 35/

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The estimated actual cost per kilometer for construction of new lines\* in 1953-55 was 564,000 yuan, which is a reduction of about 2 percent from the estimated average cost of 578,000 yuan originally planned for the 5-year period. 36/ The attainment of the estimated average cost of 494,000 yuan necessary to achieve the goals of the 1956 Revised Plan, however, would have required a 15-percent reduction from the estimated average cost set forth in the original plan. In view of performance during the first 3 years, such a reduction over the 5-year period appeared improbable. This was borne out by the following two factors: (a) the average cost during 1956-57 would have to be reduced 19 percent compared with the estimated average cost in 1953-55 if the average cost over the 5-year period was to be reduced to 494,000 yuan per kilometer,\*\* 37/ and (b) the 2,642 km constructed in 1953-55 were achieved at an estimated cost per kilometer of 564,000 yuan rather than the 494,000 yuan planned. This is shown by the fact that the originally planned portion of total capital investment in railroads going to construction of new lines, 41.7 percent, had to be raised to 47.8 percent in order to achieve the kilometrage goal. 38/

The drastic cutback in the construction of new lines in 1957 indicates that the planned 38.3-percent increase in capital investment for the railroad industry has itself been revised downward.\*\*\* Because the average cost would have been less than 578,000 yuan per kilometer, more than 2,150 km of new lines could have been

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\* The cost per kilometer of new lines is referred to hereafter as simply cost.

\*\* According to the 1956 Revised Plan, estimated investment in the construction of new lines is to be 3.75 billion yuan. During the first 3 years a sum estimated to be 1.49 billion yuan was invested, leaving 2.26 billion yuan to be expended in 1956-57. Of the revised kilometrage goal of 7,592 km, 4,950 km remained for completion in 1956-57. The achievement of this kilometrage with an investment of 2.26 billion yuan would require an average cost of 457,000 yuan per kilometer in 1956-57, which would represent a reduction of 19 percent from the actual average cost established in 1953-55.

\*\*\* An announcement in April 1957 stated that 30.1 percent of total capital investment would be allocated to the construction of new lines. The building of only 535 km of new lines with this portion strongly suggests that substantial reduction in total capital investment in railroads in 1957 has been made.

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built in 1957 within the limits of the 38.3-percent increase in capital investment in railroads.\* Thus about 6,500 km (contrasted with the 4,924 km presently planned) could have been built in the First Five Year Plan. The fact that construction of new lines has been reduced indicates that the Chinese Communists have renounced their option of a large overfulfillment of kilometrage in favor of improving existing lines. The apparent cut in the total investment in railroads follows the nationwide move to cut 1957 investment as a result of materials shortages and financial difficulties.

5. Materials Inputs.

The major input requirements of railroad construction are as follows 39/:

<u>Materials</u>	<u>Average Amount Per Kilometer</u>
Steel	120 metric tons
Cement	80 metric tons
Lumber	300 cubic meters

If these average inputs are applied to the total 4,924 km now planned for 1953-57, the derivations indicate that the construction of the new lines will consume roughly 12 percent of the steel, 2 percent of the cement, and 5 percent of the lumber required in capital construction during the First Five Year Plan. 40/ The use of these materials in the construction of new railroad lines in 1956 can be compared with their use in general construction work performed by the Ministry of Construction and Engineering as follows\*\* 41/:

<u>Construction</u>	<u>Steel (Metric Tons)</u>	<u>Cement (Metric Tons)</u>	<u>Lumber (Cubic Meters)</u>
General	200,000	680,000	800,000
New Railroad Lines	209,640	139,760	524,000

\* Assuming that the 47.8-percent portion of total investment actually allocated to construction of new lines in 1953-55 remained unchanged through 1956 and 1957 -- which it has not (see Table 1, p. 15, above).

\*\* These figures are derivations based on Chinese Communist announcements.

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If construction of industrial spur lines were included in the above figures, the materials input in railroad construction would be considerably greater. Ties alone required about 10 percent of the national production of lumber in 1956, but ties for new lines represented only one-third of this figure and replacement of old ties, two-thirds. 42/

Available evidence strongly suggests that the priority enjoyed by the builders of new railroad lines in respect to construction materials is as high as, if not higher than, that of the Ministry of Construction and Engineering. In the present period of intensive construction in all sectors of the Chinese Communist economy, with a resultant scarcity of construction materials, this high priority is in itself a significant indication of the emphasis placed on the construction of new lines by the top economic planners.

a. Steel.

Railroad construction probably is second only to the machine building industry as the largest user of steel materials in the Chinese Communist economy. 43/ Rails, bridging, and other materials have consumed increasing amounts of steel. The demand has been too large for domestic producers to supply. Substantial imports were required in 1954 and 1955, when 25 percent and 54 percent, respectively, of all railroad construction materials had to be imported.\* 45/ Even during the Second Five Year Plan, China will need to look to imports for some of the materials required in railroad construction. 46/

Steel rails constitute the bulk of steel inputs in railroad construction. The weight of rails varies from 60 to 120 pounds per yard and the length from 30 to 39 feet per rail. Currently most mainline and branch trackage is laid in rail weighing 86 pounds per yard except on steep grades, sharp curves, and high-capacity routes, where rail weighing 100 pounds per yard is used. Some rail of heavier weight (120 pounds per yard) is used in the northeast, but the amount is believed to be minimal at present.

Only An-shan and Chungking are currently producing rails for use on major trunklines (see the photograph, Figure 4\*\*).

\* Even in late 1956, rails and other steel materials for use on the Ho-ch'ih (Chin-ch'eng-chiang) - Kuei-yang line were imported through Fort Bayard. 44/

\*\* Following p. 18.



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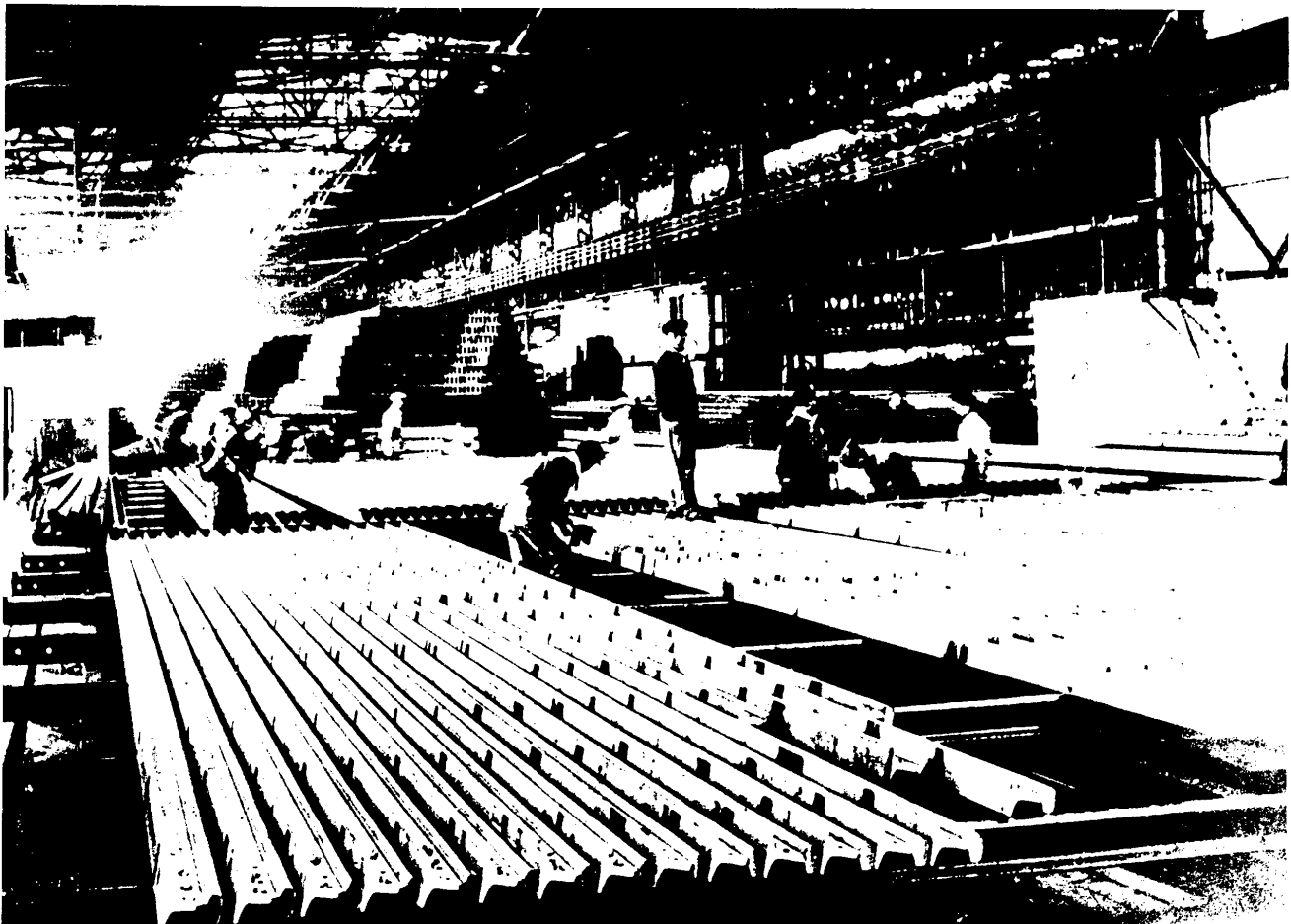


Figure 4. Communist China: Interior of Rail-Structural Mill at An-shan

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Their combined output is believed to be sufficient to meet current demands levied by the construction of new lines. In 1950-52, however, during the concurrent construction of the Ch'eng-tu - Chungking and T'ien-shui - Lan-chou lines, only the former could be supplied by the plant at Chungking -- the latter had to be supplied from An-shan and from imports. <sup>47/</sup> Domestic inability to meet fully these requirements has caused the Chinese Communists to import some rails from the Soviet Bloc and to request rails from Japan.

b. Cement.

The first 190 km constructed on the Trans-Sinkiang Railroad required an average of 224 metric tons\* of cement per kilometer. <sup>48/</sup> The extremely heavy construction involved in cutting through the Wu-ch'iao Mountains, however, makes this stretch unrepresentative of most of the construction of new lines. Based on Chinese Communist and Soviet standards, the average amount of cement required in the construction of new lines has been estimated to be 80 tons per kilometer. <sup>49/</sup> Although cement has been in short supply, and the railroad builders have sought ways to pare the amount used, the shortage has not affected the construction of new lines to the same degree as have shortages of steel and lumber.

c. Lumber.

Large quantities of lumber, chiefly in the form of ties, are necessary if the rate of construction of new lines in Communist China is to be increased. The Chinese have stated that an average of 10 million ties, costing more than 100 million yuan, are required annually. <sup>50/</sup> The replacement of ties on existing lines consumes the largest part of this total, but the requirements for construction of new lines are also substantial. For example, it is estimated that the 1,747 km of new lines constructed in 1956 required more than 3.3 million ties.\*\* Large quantities of lumber for bridging, culverts, tunnels, stations, and other construction are necessary. The acute shortage of lumber which has confronted the Chinese since 1949, besides causing them to increase the output of available timber resources and to open up new resources, has led them to undertake the

\* Tonnages are given in metric tons throughout this report.

\*\* See 6, p. 20, below.

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following expedients: (1) begin construction of several tie treatment plants (at Harbin, Liu-chou, Wu-han, and Ch'eng-tu) so as to preclude replacement of untreated ties every 3 to 5 years\* 51/; (2) chemically treat ties while in place, thus extending their life 1 to 3 years; (3) experiment with reinforced concrete ties\*\*; and (4) conserve lumber in the construction of yard and station facilities.

6. Standards. 53/

Railroad construction in China has been traditionally light compared with US practice. Standards established by the Nationalist government with the substantial aid of such US construction firms as Morrison-Knudsen, were sound, but they were neither adhered to by contractors nor enforced by the government. Consequently, on most lines constructed before 1949, ballast was not crushed and screened, tie plates were not used, ties were not treated (except on some Manchurian lines), and the profusion of weights and lengths of rails and types of rolling stock precluded efficient operation. 54/ Since 1949 the Chinese Communists have followed the standards not implemented by their predecessors and have supplemented them with advice from the USSR. In 1955, T'eng Tai-yuan, Minister of Railroads, even berated the constructors for rigorously insisting on established standards such as 1,840 ties per kilometer and heavy rails on lines which would not immediately require such standards. His advice was to construct lighter lines and, as traffic increased, to supplement the construction with heavier materials. 55/ Although, in the short run, constructing to too high a standard may have been economically irrational, such rigid standardization has resulted in the quality of construction being considerably better than that done before 1949. In the long run, this practice permits speedy construction, increased traffic, and safer operation.

Standard gauge (4 feet 8-1/2 inches) is the prevailing gauge of railroads constructed in Communist China. The only mainline routes in narrow gauge (3 feet 3-3/8 inches and below) are the K'un-ming - Chan-i and K'un-ming - Ho-k'ou lines, both of which may

\* Only 3.47 million ties were chemically treated in 1956. See also Appendix B, Table 5, p. 32, below.

\*\* The Chinese Communists have stated that a concrete tie costs 20 yuan and lasts for 35 years, whereas an untreated wood tie costs 11 yuan but lasts only 3 to 5 years. 52/

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be converted to standard gauge in the future.\* Only the 337-km Chi-ning - Erh-lien section was constructed in broad gauge (5 feet 0 inches), and this was done to facilitate traffic on the Trans-Mongolian Railroad. It is not yet clear whether the Russians laying broad-gauge track from Aktogay, in the USSR, will continue beyond the Sino-Soviet border to Wu-su or Urumchi on the Trans-Sinkiang Railroad. Current information suggests a transloading point either at the border or at Wu-su. A study of Chinese railroads by a foreign expert, H.J. von Lochow, advocated that the majority of new lines be constructed in narrow gauge because the construction cost per kilometer of narrow-gauge line averaged 30 percent of the cost of standard gauge (currently it is estimated that this percentage is in the range 40 to 45 percent) and because the capacity of a narrow-gauge line reached 80 percent of the standard-gauge line. 56/ The Chinese government, however, intends to standardize this aspect of its rail transport system to accommodate heavier traffic demands. Other than some coal mining, logging, and industrial spurs, all new construction of main lines in the future will probably be in standard gauge.

7. Labor Force.

A large part of the successful performance in the construction of new lines in Communist China can be ascribed to the concentration of labor involved. With the engineering bureaus of the Ministry of Railroads and the Railroad Engineering Corps of the Peoples Liberation Army supervising construction, laborers by the thousands were recruited for work on specific lines. The bulk of labor needed for railroad construction requires little skill: thus the unskilled masses used were able to exert a powerful influence in meeting target dates for completion of various lines. Recruitment was in two forms: (a) direct recruitment, in which surplus farm laborers were taken from farms along the alignment (thus avoiding transport costs), and (b) indirect recruitment, in which surplus laborers were first inducted into the Peoples Liberation Army as noncombat troops and then dispatched to construction sites as military personnel in the Railroad Engineering

\* The K'un-ming - Chan-i line, which will be a section of the Nei-chiang - K'un-ming line, is scheduled for conversion to standard gauge. The Ho-k'ou - Pi-se-chai line, however, may be retained as narrow gauge for an indefinite period.

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Corps. 57/ These laborers were paid a basic wage based on a daily earth-moving norm and were expected to supply their own food and many of the hand tools used.\*

The Chinese Communists have not announced the number of construction workers employed in the railroad industry. In early 1957 they stated that the total number of railroad workers had increased from about 400,000 in the early reconstruction period (1949-52) to 1.3 million, presumably at the end of 1956. 58/ Based on representation at a railroad workers' conference in early 1956, it is estimated that 22 percent of the total number of workers are employed in construction. 59/ Thus it is estimated that at the end of 1956 China had between 250,000 and 300,000 railroad construction workers. This number does not include the temporary workers recruited for work on specific lines and excludes soldiers of the Railroad Engineering Corps. Although the proportion of the total railroad construction workers who are engaged in the construction of new lines cannot be estimated precisely, it is probably more than 50 percent.

The Chinese Communists have placed great emphasis on training unskilled laborers for jobs requiring technical proficiency such as drafting, surveying, tunneling, bridging, and mechanized earth moving. In January 1956 it was announced that 700 engineers and graduates of higher educational institutes had been assigned to the construction design organs of the railroad industry. 60/ In April 1957 the Chinese Communists stated that between 1953 and the end of 1956 more than 120,000 workers in the railroad industry (exclusive of enginemen) had been trained and that 74,000 in addition would be trained in 1957. 61/ Although these figures include maintenance personnel, a large proportion of the total probably represents construction workers. Some have been trained at special schools, but the bulk of these workers were trained while engaged in actual construction.

Although skilled workers are still in short supply -- for example, at the end of 1956 there were only 30 engineers specializing in railroad electrification -- there are some beneficial results of the training program. According to the Chinese Communist press, the labor productivity of railroad construction personnel increased 44 percent during 1955-56. 62/ Current and projected construction of lines

\* For the number of workers employed in the construction of specific lines, see Appendix D.

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through rugged terrain, particularly in the southwest, will require continued training of unskilled workers if completion dates are to be successfully attained.

8. Technique and Quality of Construction.

In adapting, supplementing, and extending the Nationalists' plans on specific projects, the Chinese Communists have demonstrated an ability to complete new lines which had been delayed indefinitely before 1949 by financial and technical difficulties. Moreover, as prior construction goals have been attained, new projects have been initiated with foresight and skill. Although Soviet technical assistance has been evident in the construction of new lines, the Chinese themselves appear to have developed a capability to design, schedule, and implement a realistic railroad construction program in a creditable manner.

Unlike the Soviet practice, which uses a 2-stage construction system (the second stage of which involves an average of 15 months of temporary operation and ancillary construction before a line is considered officially completed), the Chinese Communists construct in 1 stage. Speed in officially opening a new line is prized more highly by the Chinese than by their counterparts in the USSR.

The best rate of tracklaying achieved before 1949 was 1 km per day, which was the average attained on the 361-km Heng-yang - Kwei-lin section of the Hunan-Kwangsi line. <sup>63/</sup> The best rate of tracklaying before this record was about 0.20 km per day on the Shanghai-Nanking line. <sup>64/</sup> On comparable sections the Chinese Communists have considerably exceeded this rate. Three major factors contributing to the speed of construction are the following: (a) the Chinese Communist practice of constructing bridges and other structures to a temporary, minimal-operating condition and later constructing these projects to a permanent condition; (b) the practice, currently in wide use in the southwest, of sending out tunnel and bridge crews well in advance of the railhead to work on specialized projects (when these projects are completed, tracklaying to link them can be done rapidly); and (c) the use of mechanical tracklayers and cranes, which lay prefabricated track sections considerably faster than tracklaying that is done manually (see the photograph, Figure 5\*).

\* Following p. 24.

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Sometimes, however, in their efforts to achieve speed so as to meet completion dates, the Chinese Communists have committed serious errors. The 678-km Pao-chi - Ch'eng-tu line, nominally completed in 1956, is still undergoing general repairs to correct defects caused by accelerated construction and landslides. Similar mistakes have occurred on other lines which have resulted in considerable delay and more expenditure than would have been necessary had the projects been constructed correctly in the first place.

Many of the faults of the railroad construction program in Communist China can be ascribed to insufficient technical cadres to perform survey and design work. Consequently, in the first 4 years of the First Five Year Plan, most survey and design work was performed concurrently with actual construction on a given line. Only recently have the Chinese been able to survey and design lines preparatory to actual construction. Assistance from Soviet surveyors and designers has enabled them to expedite the survey-design phase of the construction of new lines. Especially valuable has been the assistance given by Soviet specialists in aerial survey. Of a total of 17,000 km of alignment surveyed in the 4-year period 1953-56, more than 2,000 km were done by aerial means. 65/ About 93 Soviet specialists assisted in aerial surveying which, in 1957, was scheduled to be used on an additional 4,000 km of alignment. 66/

Because of material aid from the USSR, plans and designs have become more standardized; construction work is better organized at sites; and the excavation, blasting, and tracklaying operations are more mechanized. 67/ All of these factors indicate that the construction force has a much greater capability than that which existed in 1953.

IV. Outlook for the Second Five Year Plan (1958-62).

Although the scope of the targets for the Second Five Year Plan (1958-62) announced in 1956-57 may change considerably before 1958, they do provide indicators of the direction in which the Chinese Communist economy is moving. In September 1956 it was announced that new railroad lines totaling between 8,000 and 9,000 km would be constructed during the Second Five Year Plan. 68/ Recently the Chinese stated that during the Second Five Year Plan they would construct 8,000 km of new lines (nearly twice the kilometrage planned in the First

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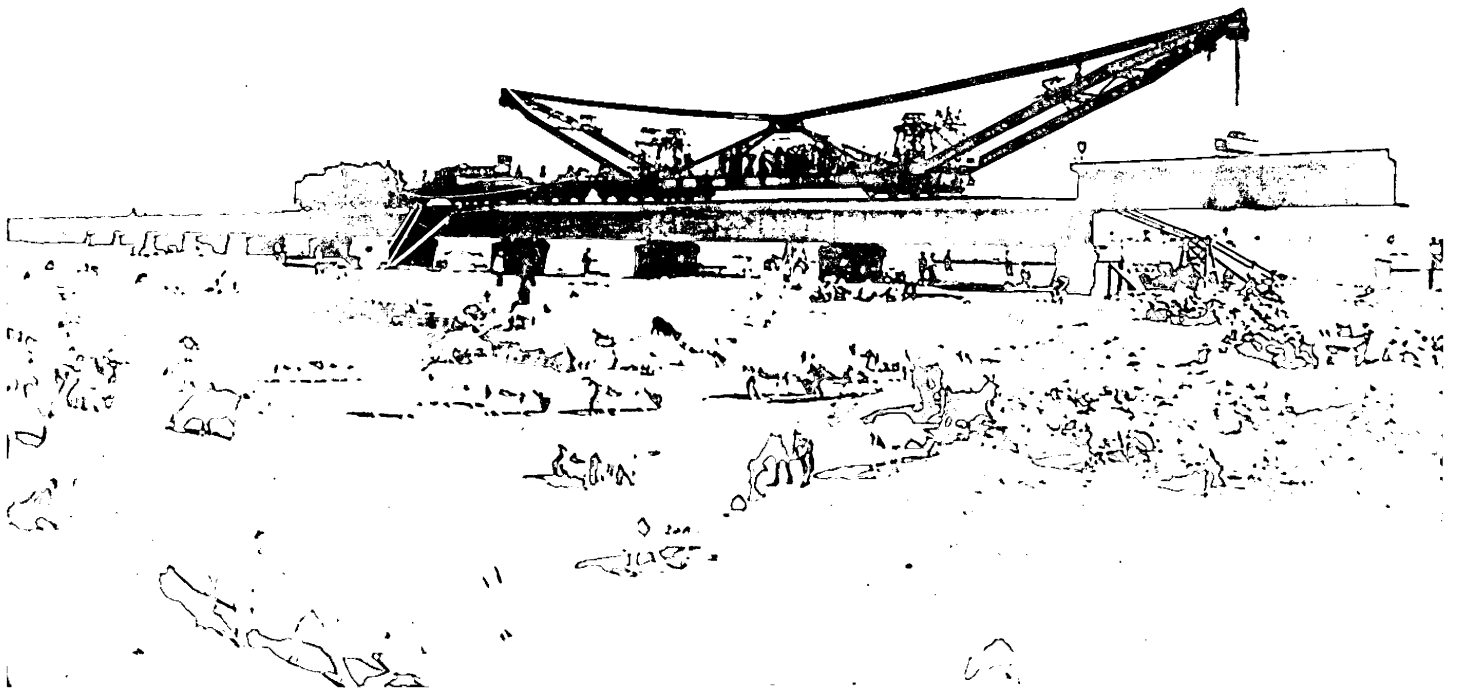


Figure 5. Communist China: Heavy Crane Placing Bridge Members on the Pao-t'ou-Lan-chou Line

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Five Year Plan); restore and expand 2,000 km; construct 500 to 1,200 km of electrified railroads; and build 3 major bridges at Cheng-chou, at Nan-ch'ang, and near Chungking. 69/ Major projects scheduled for completion in the 5-year period are the Trans-Sinkiang, Pao-t'ou - Lan-chou, Nei-chiang - K'un-ming, and Kan-shui-ch'ang - Kuei-yang lines.\* 70/

Improvement of existing lines together with increases in the rolling stock park is scheduled to receive 57 percent of total investments in the railroad industry during the Second Five Year Plan compared with an amount estimated to be 51.6 percent during the First Five Year Plan.\*\* 71/ This implies that the portion going to the construction of new lines will be less than 39 percent compared with an amount estimated to be 44.3 percent in the First Five Year Plan.\*\*\* This decrease in the proportion going to the construction of new lines is consonant with announcements that the first phase of a thorough overhaul of the entire railroad network will take place during the Second Five Year Plan. The construction of 8,000 km of new lines with a reduced portion of total investment in railroads, however, argues that total investment in railroads must increase substantially above the level achieved during 1953-57. Because many of the new lines to be constructed will be through rugged terrain, precluding any major reductions in cost below that planned for the end of the First Five Year Plan, it is estimated that more than 4.2 billion yuan will be expended in constructing the 8,000 km of line planned for the Second Five Year Plan. Moreover, lines projected in the southwest and northwest for the Third Five Year Plan (1963-67\*\*\*\*) represent enough kilometrage to indicate that the construction of new lines will continue at a high rate at least until 1970.

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\* For estimated completion dates of specific lines, see Appendix D.

\*\* See Table 1, p. 15, above.

\*\*\* Assuming that the planned portion of total investment in railroads going to design and miscellaneous activities during the First Five Year Plan, 4.1 percent, remains unchanged.

\*\*\*\* See Appendix D.

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APPENDIX A

MAJOR RAILROAD LINES IN COMMUNIST CHINA\*

1949

<u>Name</u>	<u>Terminal Points</u>
Canton - Han-k'ou	Canton - Wu-ch'ang
Canton-Kowloon	Canton-Kowloon
Chekiang-Kiangsi	Hangchow - Chu-chou
Chi-lung - Kao-hsiung	Chi-lung - Kao-hsiung
Dairen-Harbin	Dairen-Harbin
Hunan-Kwangsi	Heng-yang - Lai-pin
Lung-Hai	Lien-yun - T'ien-shui
Lu-pin - Sui-fen-ho	Lu-pin - Sui-fen-ho
Mukden - An-tung	Su-chia-t'un - An-tung
Peking - Han-k'ou	Peking - Han-k'ou
Peking-Liaoning	Peking-Mukden
Peking - Sui-yuan	Peking - Pao-t'ou
Shanghai-Hangchow	Shanghai-Hangchow
Shanghai-Nanking	Shanghai-Nanking
Tientsin - P'u-k'ou	Tientsin - P'u-k'ou
Tsingtao-Tsinan	Tsingtao-Tsinan

\* See the map, Figure 1, following p. 4, above.

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APPENDIX B

STATISTICAL TABLES

Table 2

Comparison of Performance in the Construction  
of New Railroad Lines in China a/  
1895-1945 and 1949-57

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<u>Period</u>	<u>Kilometers Constructed Per Year</u>	<u>Political Situation</u>
1895-1914	469	Period of Foreign Concessions
1928-37	356	Ministry of Railroads, Nanking
1937-45	{ 165	Occupied China
	{ 260	Free China
1949-57 <u>b/</u>	800	Communist China

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a. 72/  
b. 73/

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Table 3

Railroad Construction of All Types in Communist China  
During the First Five Year Plan a/  
1953-57

Type of Construction	Kilometers				
	1953-55 (Actual)	1956 (Actual)	1957 (Plan)	1953-57 (Estimated Actual)	Original First Five Year Plan
New lines	2,642	1,747	535	4,924	4,084
Reconstructed lines	39	285	152	476	692
New and reconstructed double track	566	210	533	1,309	1,514
Industrial spur lines	1,179	866	640	2,685	2,500
Total	<u>4,426</u>	<u>3,108</u>	<u>1,860</u>	<u>9,394</u>	<u>8,790</u>

a. 74/

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Table 4  
Construction of New Railroad Lines  
and Growth of the Railroad Network in Communist China a/  
1949-57

Kilometers		
<u>Year</u>	<u>Completion of Tracklaying</u>	<u>Total Railroad Network</u>
1949	Negligible	21,715
1950	223	22,238
1951	771	23,063
1952	482	24,232
1953	589	24,690
1954	831	25,447
1955	1,222	26,917
1956	1,747	29,071
1957 (Plan)	535	N.A.
Total	<u>6,400</u>	

a. 75/

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Table 5

Construction of Railroad Tie Treatment Plants in Communist China  
During the First Five Year Plan a/  
1953-57

---

<u>Location</u>	<u>Annual Capacity (Million Ties)</u>	<u>Status of Construction</u>
Ch'eng-tu	1.2	Under way February 1957 b/
Han-yang	} 5.1	Completed 1954 b/
Liu-chou		Under way December 1956 c/
San-k'o-shu		Completed 1956 d/

---

a. Before 1949, there were two tie treatment plants at Su-chia-t'un and Ta-ch'ang-t'un in the northeast with relatively low capacities which may have been expanded by the Chinese Communists. 76/ Since 1949, construction of tie treatment plants has been performed with investments of the Ministry of the Timber Industry. In June 1957 the Chinese press stated that construction of two other plants would be started soon at Peking and Ying-t'an. 77/

- b. 78/
- c. 79/
- d. 80/

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APPENDIX C

CONSTRUCTION OF FORESTRY RAILROADS IN COMMUNIST CHINA

Most of the railroad construction in forestry areas in Communist China has been in the form of narrow-gauge lines constructed by units of the Ministry of the Timber Industry and involving minimal investment. Most of the new tracklaying has been concentrated in the northeast in the Greater Khingan, Lesser Khingan, and Ch'ang-pai Mountain regions (see the map, Figure 19\*). The First Five Year Plan called for the construction and restoration of 3,049 km of forestry railroads. 81/ Actual and planned performance to date is as follows 82/:

<u>Years</u>	<u>Completion of Tracklaying (Kilometers)</u>
1953-56 (Actual)	1,800
1957 (Plan)	814
Total	<u>2,614</u>

It is not known whether these figures include restoration projects as well as new construction. If they show only new construction, this is a substantial achievement, because in early 1955 in all Communist China there were only 2,600 km of forestry railroads. 83/

Although most of the lines have been constructed in narrow gauge, some standard-gauge lines have been constructed in forestry areas since 1950. In the First Five Year Plan, provision was made for 800 km of branch lines "to meet the needs of industrial and logging construction operations."\*\* 85/ Lines known to have been constructed in standard gauge in forestry areas since 1953 are as follows 86/:

\* Inside back cover.

\*\* The minor role played by the construction of standard-gauge lines in forestry areas may be seen in the announcement that in 1953 in the Greater Khingan Mountains only 26 km out of a total of 340 km of track were laid in standard gauge. 84/

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<u>Terminals</u>	<u>Length (Kilometers)</u>	<u>Construction Completed</u>
I-ch'un - Wu-ying	77	December 1954
Ku-tu-lu-erh - T'u-li-ho	73	May 1954
T'u-li-ho - Ken-ho	50	October 1955
T'u-li-ho - Ying-ho	62	October 1955 (Plan)

In late 1956 in the Greater Khingans a line was being constructed 57 km from Ying-ho to K'e-i-ho (K'o-i), from which point another section approximately 160 km long to a point on the Nen-chiang - Ch'i-ch'i-ha-erh trunkline was planned. <sup>87/</sup> Construction was also planned for an extension north from Ken-ho. <sup>88/</sup> In the Lesser Khingans, there was evidence that a line was being constructed north from Wu-ying toward the Amur River. <sup>89/</sup> Lastly, in the Ch'ang-pai Mountains, survey of a 250-km line was completed between Lin-chiang and An-tu and construction completed on one small section by June 1957. <sup>90/</sup> Because a shortage of lumber continues to plague the Chinese Communists, construction of railroads in these and other forestry areas may be expected to continue during the period of the Second Five Year Plan.



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APPENDIX D

CONSTRUCTION OF INDIVIDUAL NEW RAILROAD LINES IN COMMUNIST CHINA

The construction of individual new railroad lines in Communist China is considered under three categories: (1) Completed Lines; (2) Lines Under Construction, November 1957; and (3) Projected Lines.\* The sequence number assigned a line is governed in the first two categories by its completion or probable completion date and in the third category by its probable starting date. Survey dates are believed to embrace preliminary as well as final survey. Under Engineering Details, estimates are sometimes made, in the absence of official announcements, on the basis of terrain features and analogy with other lines. In some instances, however, an estimate was not possible. In Chinese parlance a large bridge is one measuring more than 100 m in length, a medium bridge is from 20 to 100 m in length, and a small bridge is less than 20 m in length.

Under Inputs the officially announced national average of steel, cement, and lumber per kilometer is used regardless of terrain considerations.\*\* Tracklaying Progress includes preparatory construction and thus understates the actual speed of tracklaying. All of the 56 lines covered are represented on the map, Figure 19.\*\*\* Many of them are also shown in maps which accompany the text. Many alignments shown are at best approximate and are subject to later revision. Because of the unexplored nature of much of western China, some locations and coordinates may be found to be erroneous as better geographical information comes to hand.

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\* For purposes of this report, a line is not considered to be under construction until actual tracklaying has begun. Lines in the survey or design stage are considered to be projected.

\*\* See III, B, 5, p. 17, above.

\*\*\* Inside back cover.

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**I. Completed Lines**

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**S-E-C-R-E-T**

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Number: 1\*

Terminals: Lai-pin - Mu-nan Kuan  
Coordinates: 23°42' N - 109°16' E; 21°59' N - 106°42' E  
Province: Kwangsi

Length (kilometers): 418  
Construction organization: Railroad Engineering Corps,  
Peoples Liberation Army (PLA)

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: October 1950 Completed: October 1951

Engineering details:

Amount of excavation and fill (cubic meters): 4 million  
Number of tunnels: one, 260 meters in length  
Number of bridges and culverts: 2 large, 20 medium, 50 small  
bridges; more than 100 culverts

Inputs:

Steel (metric tons): 50,160  
Cement (metric tons): 33,440  
Lumber (cubic meters): 125,400  
Labor: 7,000 PLA, 4,000 railroad cadres, and 100,000 civilians

Tracklaying progress (kilometers per day): Average: 1.16 Best: 1.37  
(Lai-pin -  
Nan-ning  
section)

Comments:

This line is a section of the 1,026-km Hunan-Kwangsi line between Heng-yang in Hunan Province and Dong Dang in North Vietnam. In 939 the Hunan-Kwangsi line was completed to Li-t'ang, about 660 km from Heng-yang. In the same year, French engineers laid 61 km of track northward from Dong Dang, but this was dismantled during World War II. 91/ Construction of the Lai-pin - Mu-nan Kuan section did not start until October 1950. 92/

\* See the map, Figure 6, following p. 44.

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The terrain was relatively level, had been previously surveyed, and offered few obstacles. Speed was achieved by using more than 100,000 peasants supervised by key elements of the Railroad Engineering Corps, by using rails from the San-shui - Canton and Kwangsi-Kweichow lines, and by permitting peasants to pay their land tax with ties instead of grain. 93/ This line was constructed in standard gauge, whereas the connecting 167-km line from Hanoi to the border was laid in narrow gauge. The transloading point was established at P'ing-hsiang, approximately 16 km inside Communist China. 94/ Even though the Vietnamese Communists were in charge of the reconstruction of their existing narrow-gauge line from Hanoi, the Chinese actually played the major role in its reconstruction. 95/ One of the two large bridges constructed on the Chinese line was being converted into a permanent structure in February 1957 at Nan-ning. 96/

Although the Chinese Communists speak of the line as enlivening the economy of Kwangsi Province, the immediate reason for its construction was strategic. Using the line, the Chinese provided substantial logistic support to the Vietnamese Communists in the subsequent war in Indochina. 97/ Currently the line provides an overland route between North Vietnam and China, the USSR, and the European Satellites and thus is a continuing strategic as well as economic asset.

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Number: 2\*

Terminals: Ch'eng-tu - Chungking  
Coordinates: 30°40' N - 104°04' E; 29°34' N - 106°35' E  
Province: Szechwan

Length (kilometers): 530  
Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: 15 June 1950 Completed: June 1952

Engineering details:

Amount of excavation and fill (cubic meters): 14.6 million  
Number of tunnels: 40  
Number of bridges and culverts: 28 large, 189 small bridges;  
446 culverts

Inputs:

Steel (metric tons): 63,600  
Cement (metric tons): 42,400  
Lumber (cubic meters): 159,000  
Labor: 28,000 PLA; 100,000 civilians

Tracklaying progress (kilometers per day): Average: 0.752 Best: 6.5  
(April 1952)

Comments:

One Chinese and two US surveys of this line were made before 1937. Actual construction began in June 1937, but the Sino-Japanese War and World War II interrupted work before more than one-third of the line had been completed. 98/ Leaning heavily on technical assistance from the USSR, the Chinese Communists made rapid progress after construction started in June 1950. Official Chinese announcements stated that it was the best constructed railroad in the history of China. 99/ [ ] the quality of construction was generally poor, ties were of untreated soft pine, bridges were of stone bound with concrete, and the roadbed and bridge foundations were weak. 100/ There were

50X1  
50X1

\* See the map, Figure 6, following p. 44.

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numerous instances of bridges and culverts collapsing after they were completed. 101/

The line linked the two largest cities in Szechwan Province, brought the southwest into closer contact with the northwest, and served as a springboard for subsequent railroad construction in the area. As a vital internal net in Communist China, it represents a considerable strategic and economic asset for the Communists.

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Number: 3\*

Terminals: T'ien-shui - Lan-chou  
Coordinates: 34°36' N - 105°28' E; 36°03' N - 103°41' E  
Province: Kansu

Length (kilometers): 346  
Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: May 1950 Completed: August 1952

Engineering details:

Amount of excavation and fill (cubic meters): 13.8 million  
(estimated)

Number of tunnels: more than 72

Number of bridges and culverts: 7 large, 450 small bridges;  
more than 500 culverts

Inputs:

Steel (metric tons): 41,520  
Cement (metric tons): 27,680  
Lumber (cubic meters): 103,800  
Labor: 104,000 civilians; 109,000 PLA

Tracklaying progress (kilometers per day): Average: 0.427 Best: 3.3

Comments:

In May 1950, construction of this westernmost extension of the Lung-Hai Railroad (previously surveyed by the Nationalists) was begun. Stretching along the base of the Ch'in Ling Mountains and the banks of the Wei River, construction proved extremely difficult. Originally the target date for completion was June 1953; however, it was completed well ahead of schedule in August 1952 and was opened to traffic in October of the same year. 102/ Subsequently, several sections were reconstructed with heavier rails, permanent bridges, and other structures. 103/

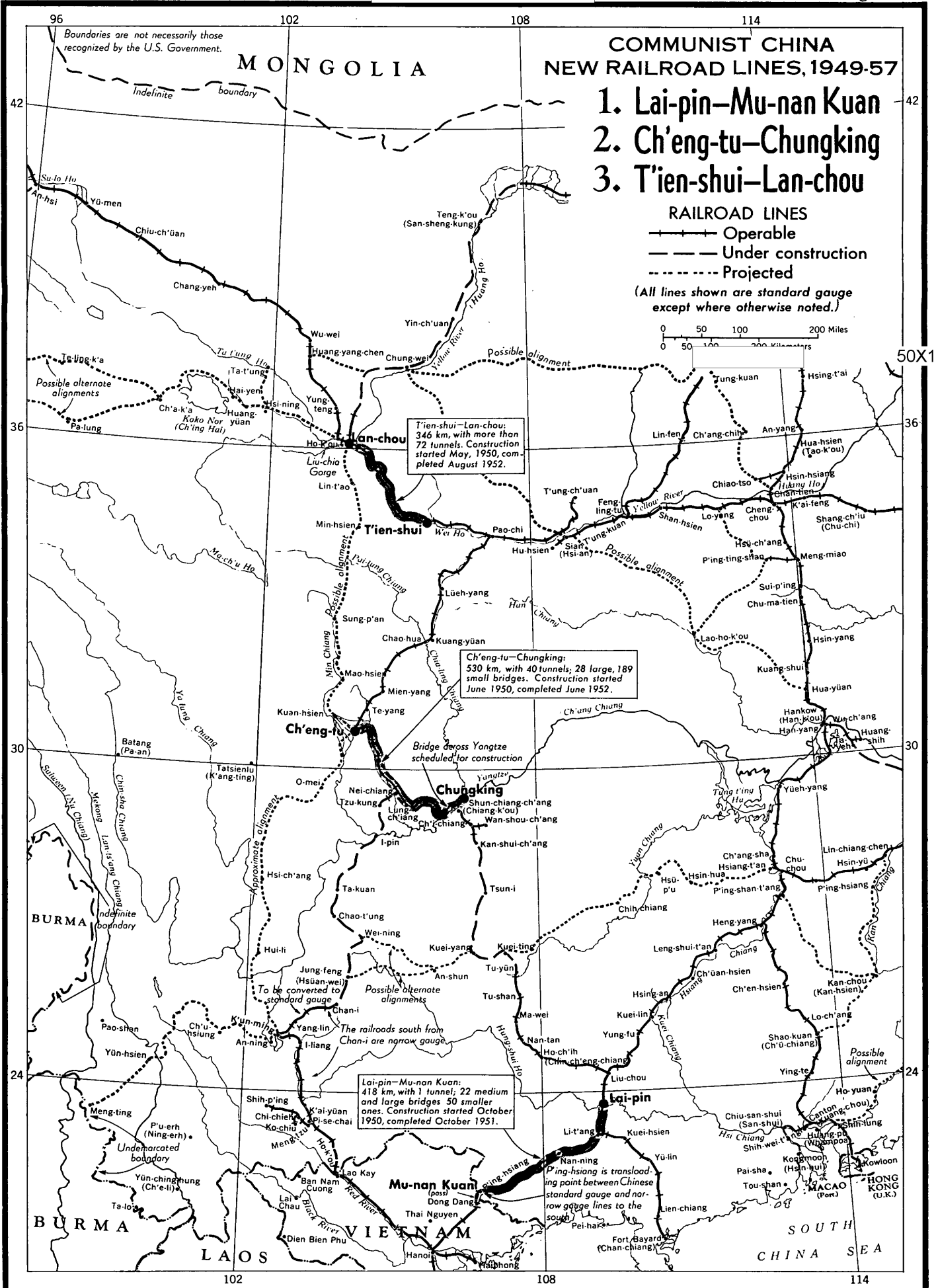
\* See the map, Figure 6, following p. 44.

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This line extended the railhead of the vital Lung-Hai Railroad to Lan-chou, thus providing a base on which the Lan-chou area developed in the subsequent Five Year Plan. It opened up the Kansu resources of petroleum, copper, coal, and nonferrous metals for more efficient exploitation by the national economy. It also set the stage for the construction of the Trans-Sinkiang Railroad on which its labor force was subsequently employed. 104/



Figure 6



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Number: 4\*

Terminals: Chia-mu-ssu - Shuang-ya-shan  
Coordinates: 46°50' N - 130°21' E; 46°37' N - 131°10' E  
Province: Heilungkiang

Length (kilometers): 80  
Construction organization: N.A.

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: N.A. Completed: Before 1953

Engineering details:

Amount of excavation and fill (cubic meters): 1.6 million  
(estimated)

Number of tunnels: N.A.  
Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 9,600  
Cement (metric tons): 6,400  
Lumber (cubic meters): 24,000  
Labor: N.A.

Tracklaying progress (kilometers per day): Average: N.A. Best: N.A.

Comments:

A line from Chia-mu-ssu to Fu-chin on the Sungari River was planned to be constructed by the Nationalists before 1949. 105/ H.J. von Lochow's study (1948) showed the line only to be planned and surveyed. Another note in his work  however, imply that at least a portion of the line from Chia-mu-ssu to Fu-chin was constructed before 1949. Regardless of this consideration, the present route from Chia-mu-ssu to Shuang-ya-shan is an entirely new alignment and was constructed after 1949 by the Chinese Communists. The Chinese Communist atlas in 1950 did not show the line. It appeared in the 1952 and 1953 atlases, but in the latter had a different alignment from the former, which implies that the line was under construction during this period. The Chinese have given no

50X1

\* See the map, Figure 19, inside back cover.

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construction details. The industrial demands of Chia-mu-ssu, where a new paper plant (one of the original 156 Soviet aid projects) went into production in May 1957, probably motivated construction of the line to the coal resources of Shuang-ya-shan and the nearby agricultural products of the San-tao-kang State Farm. 106/ Although only of regional significance currently, the line will become more important as Chia-mu-ssu grows.

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Number: 5\*

Terminals: Chi-ning - Erh-lien  
Coordinates: 40°57' N - 113°02' E; 43°45' N - 112°02' E  
Province: Inner Mongolian Autonomous Region

Length (kilometers): 337  
Construction organization: No. 3 Engineering Bureau  
Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: May 1953 Completed: December 1954

Engineering details:

Amount of excavation and fill (cubic meters): 5.1 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 40,440  
Cement (metric tons): 26,960  
Lumber (cubic meters): 101,100  
Labor: 50,000 (estimated)

Tracklaying progress (kilometers per day): Average: 0.591 Best: 4  
(November 1954)

Comments:

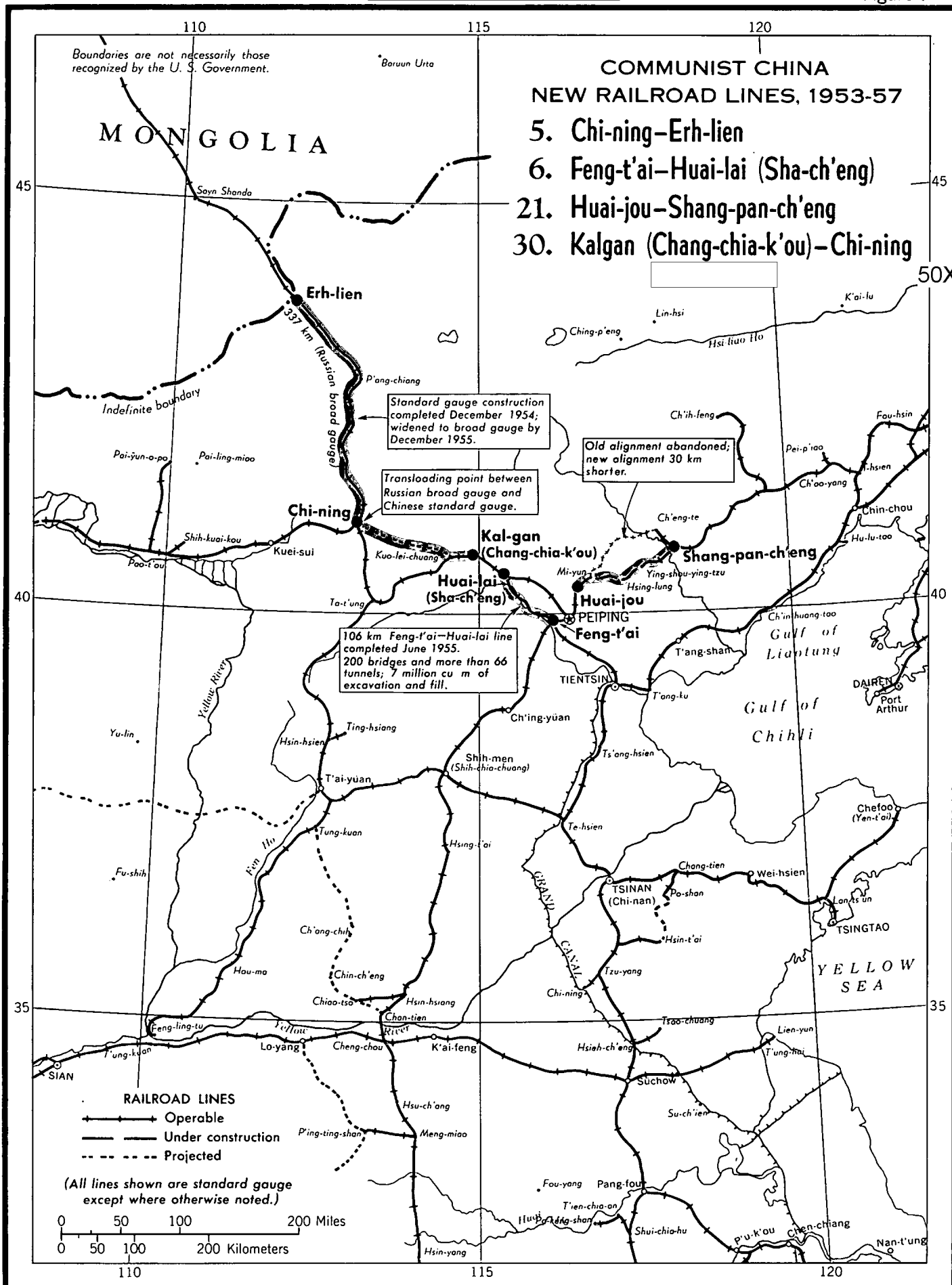
This line was planned before 1949, with the Chinese terminus at Kuei-sui rather than Chi-ning. 107/ In September 1952 an agreement was signed between Communist China, the USSR, and Mongolia which formalized subsequent construction. 108/ The Chinese section was 337 km and the Mongolian section to Ulan Bator roughly 713 km long, for a total length of about 1,050 km. In 1949 the USSR had completed construction of a 400-km line linking the Trans-Siberian Railroad to Ulan Bator. 109/

\* See the map, Figure 7, following p. 48.

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Construction of the 337-km Chi-ning - Erh-lien line received high priority. The route traverses generally open terrain, with flat to rolling plains merging with desert plains near the Mongolian border. The lack of terrain difficulties coupled with the large labor force led by the Railroad Engineering Corps working on a round-the-clock schedule permitted early completion. The line was first laid in standard gauge and in 1955 was widened to broad gauge. 110/ Chi-ning was made the transloading point between Chinese Communist standard gauge and Soviet broad gauge. Tolerance by the Chinese Communists of the Soviet broad-gauge line extending more than 300 km inside Chinese territory is indicative of their desire (1) to obtain more efficiency from existing facilities and (2) to permit savings in Chinese rolling stock to be employed elsewhere. Technical aid teams from the USSR worked on both the Chinese and Mongolian sections of the railroad, and much of the equipment used was of Soviet manufacture. Although construction was completed in December 1954, through traffic between Peking and Ulan Bator was not started until January 1956. 111/ The intervening 12 months were used in widening the gauge and on auxiliary construction projects. Because of the arid desert area through which the route passes, diesel engines are in use on the Mongolian section and were being tested on the Chi-ning - Erh-lien line in early 1957. 112/

This additional international link is important both militarily and economically. Besides reducing the rail distance from Peking to Moscow by 1,150 km, it is also strategically less vulnerable than the existing line to Man-chou-li.



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Number: 6\*

Terminals: Feng-t'ai - Huai-lai (Sha-ch'eng)  
Coordinates: 39°51' N - 116°17' E; 40°24' N - 115°44' E  
Province: Hopeh

Length (kilometers): 106

Construction organizations: No. 4 Engineering Bureau  
Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: September 1952 Completed: June 1955

Engineering details:

Amount of excavation and fill (cubic meters): 7 million  
Number of tunnels: more than 66  
Number of bridges and culverts: 13 large bridges and more than  
250 other bridges and culverts

Inputs:

Steel (metric tons): 12,720  
Cement (metric tons): 8,480  
Lumber (cubic meters): 31,800  
Labor: 30,000

Tracklaying progress (kilometers per day): Average: 0.107 Best: N.A.

Comments:

One survey of this route was completed in 1905 and another undertaken in 1936. 113/ During their occupation of the area the Japanese reportedly completed 20 percent of the construction involved on this line. Construction was extremely difficult: more than 66 tunnels aggregating more than 28 km in length, 13 large bridges, and more than 250 other bridges and culverts were constructed. 114/ The survey-design work alone took 12 months and required 460 technicians. 115/ The new line was built to bypass the 30-km section in the T'ai-hsing Mountains from K'ang-chuang to Nan-k'ou which, because of its grades and curves, seriously limited traffic from Peking west to Ta-t'ung,

\* See the map, Figure 7, following p. 48, above.

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Chi-ning, and Pao-t'ou. The line reportedly has tripled traffic. As a section of a major east-west trunkline, it will facilitate through traffic from Peking to Moscow by way of the Chi-ning - Erh-lien line.

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Number: 7\*

Terminals: Li-t'ang - Fort Bayard (Chan-chiang)  
Coordinates: 23°12' N - 109°08' E; 21°12' N - 110°23' E  
Provinces: Kwangsi, Kwangtung

Length (kilometers): 314  
Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: October 1954 Completed: June 1955

Engineering details:

Amount of excavation and fill (cubic meters): 4.7 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 37,680  
Cement (metric tons): 25,120  
Lumber (cubic meters): 94,200  
Labor: 100,000

Tracklaying progress (kilometers per day): Average: 1.31 Best: 6.6

Comments:

This line, with Lai-pin rather than Li-t'ang as the northern terminus, was under construction in 1947. 116/ The subsequent political upheaval brought construction to an end. In late 1954 the Chinese Communists began tracklaying from both ends. 117/ Using a large military and civilian labor force, the Chinese completed the line 6 months ahead of schedule. 118/ The terrain, about equally divided between gently sloping plains, low hills, and interconnected open valleys, presented few difficulties. The bridge across the Yu River was the most troublesome project. 119/ The line's immediate function was strategic; it provided logistic support for the military forces on the Leichow Peninsula and Hainan Island. Economically, it will relieve the strain on the port of Whampoa (Canton), will give a direct-access outlet to the entire southwest, and will boost the regional economy.

\* See the map, Figure 16, following p. 106.

S-E-C-R-E-T

Number: 8\*

Terminals: Lan-ts'un - Chefoo (Yen-t'ai)  
Coordinates: 36°24' N - 120°10' E; 37°32' N - 121°24' E  
Province: Shantung

Length (kilometers): 183

Construction organizations: No. 5 Engineering Bureau  
No. 6 Engineering Bureau

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: September 1953 Completed: December 1955

Engineering details:

Amount of excavation and fill (cubic meters): 4.6 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

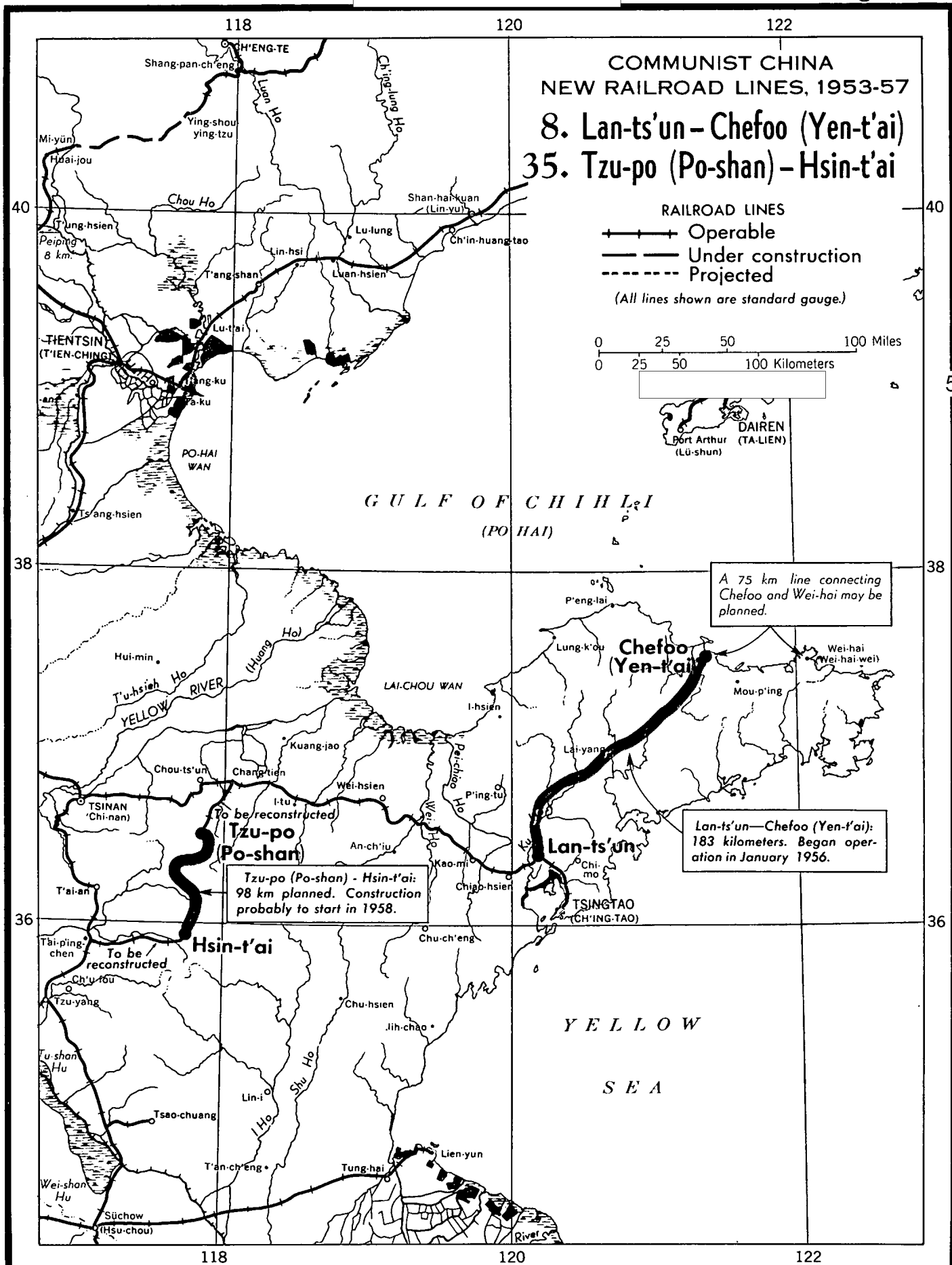
Steel (metric tons): 21,960  
Cement (metric tons): 14,640  
Lumber (cubic meters): 54,900  
Labor: N.A.

Tracklaying progress (kilometers per day): Average: 0.226 Best: N.A.

Comments:

This line, a northeastward branch of the Tsi-nan - Tsingtao line in Shantung Province, is unique in that it was not planned before 1949. Construction began in September 1953 but was conducted in such secrecy that an official announcement was not made concerning it until January 1956, when it began operation. 120/ In the future the line will probably be extended approximately 75 km to Wei-hai, thus providing the Chinese Communists with another rail-serviced port. The line will facilitate the transportation of agricultural products and the import of manufactured goods. It is primarily of strategic significance because it connects an important airfield at Chefoo, situated opposite Dairen and Port Arthur across the Gulf of Chihli, with the established railroad net.

\* See the map, Figure 8, following p. 54.



50X1

50X1

S-E-C-R-E-T

Number: 9\*

Terminals: Sian - Hu-hsien  
Coordinates: 34°16' N - 108°54' E; 34°06' N - 108°40' E  
Province: Shensi

Length (kilometers): 40  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: N.A. Completed: 1955

Engineering details:

Amount of excavation and fill (cubic meters): 1 million  
(estimated)

Number of tunnels: N.A.  
Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 4,800  
Cement (metric tons): 3,200  
Lumber (cubic meters): 12,000  
Labor: N.A.

Tracklaying progress (kilometers per day): Average: N.A. Best: N.A.

Comments:

Beyond announcing its completion in 1955, the Chinese Communists have said little concerning construction of this branch line. 121/ It has obvious strategic significance in that Hu-hsien, the site of an airfield constructed by US military forces during World War II, is believed to be currently in use as a joint civilian and military airfield. 122/

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\* See the map, Figure 19, inside back cover.

S-E-C-R-E-T

Number: 10\*

Terminals: Pao-chi - Ch'eng-tu  
Coordinates: 34°14' N - 106°57' E; 30°40' N - 104°04' E  
Provinces: Shensi, Szechwan

Length (kilometers): 678  
Construction organizations: No. 2 Engineering Bureau  
No. 4 Engineering Bureau  
No. 6 Engineering Bureau

Survey: Begun: June 1950 Completed: December 1953  
Construction: Begun: 1 July 1952 Completed: 13 July 1956

Engineering details:

Amount of excavation and fill (cubic meters): 60 million  
Number of tunnels: 286  
Number of bridges and culverts: 961 bridges, 999 culverts

Inputs:

Steel (metric tons): 81,360  
Cement (metric tons): 54,240  
Lumber (cubic meters): 203,400  
Labor: 150,000

Tracklaying progress (kilometers per day): Average: 0.467 Best: 3  
(December 1954)

Comments:

Construction of this railroad has caused the Chinese Communists more distress than any single construction project in the First Five Year Plan. Several surveys were conducted before the northern terminus was changed from T'ien-shui (from which point the Nationalists had also surveyed the route) to Pao-chi. The alignment is across some of the most formidable terrain in China, particularly the northern section, which breaches the steep and rugged northern flanks of the Chin-ling Mountains. 123/ A total of 286 tunnels aggregating 81 km in length and 961 bridges aggregating 22 km in length was constructed. 124/

\* See the map, Figure 9, following p. 58.

S-E-C-R-E-T

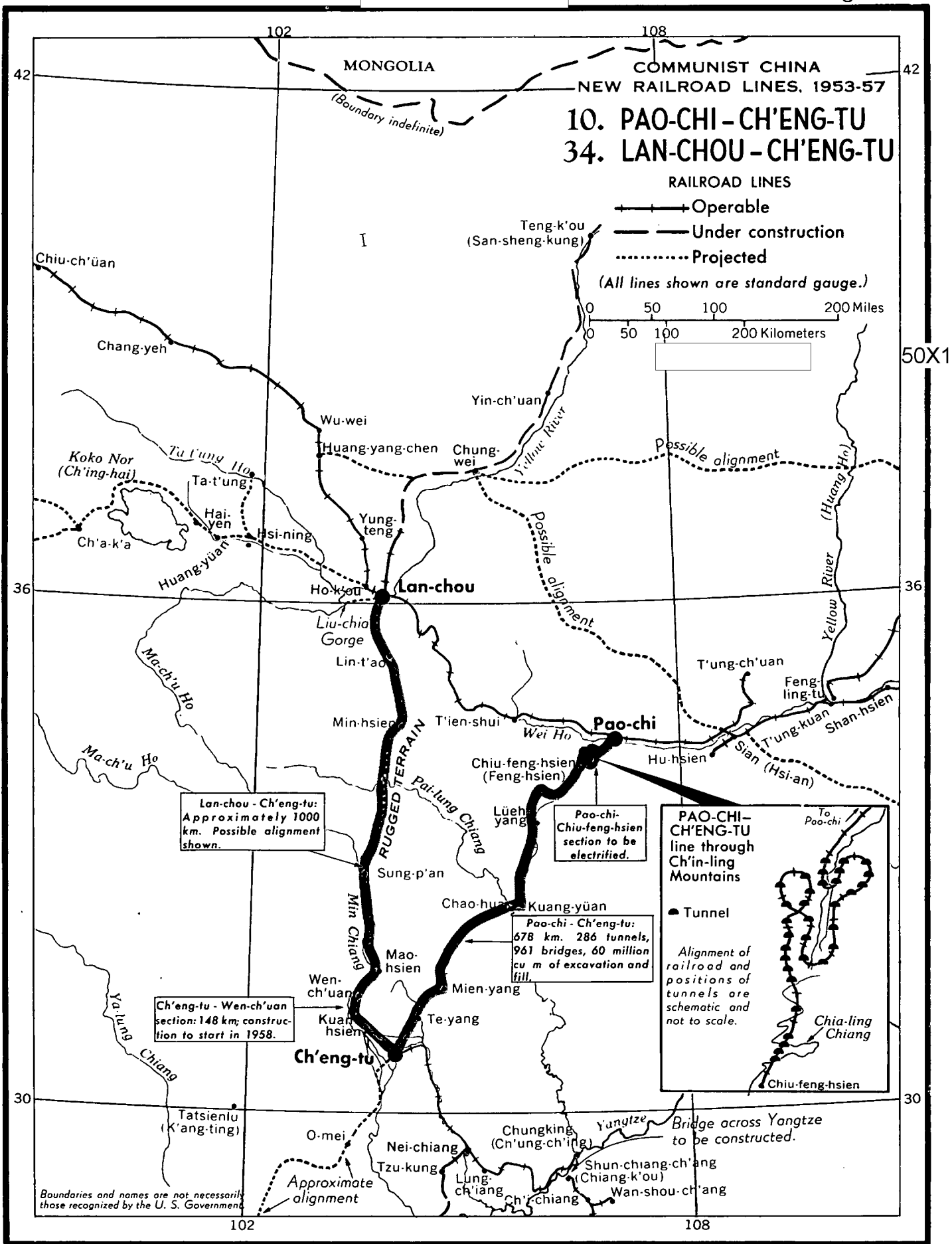
On the 42-km section from Pao-chi to Ch'in-ling Station, there are 41 tunnels, and the maximum grade is 30 m for every 1,000 m of track. 125/ About 60 percent of the work on the 225-km section from Pao-chi to Lueh-yang was concentrated in tunneling through the summit of the Ch'in-ling Mountains. 126/ The enormous size of the project is shown in the fact that three engineering bureaus of the Ministry of Railroads, employing half of the Chinese Communist labor force engaged in construction of new lines, participated in the project. 127/ The entire complement of the Ministry's Tunnel Construction Company, more than 14,000 technicians, worked on the line. 128/ For the first time in Chinese history, relatively large numbers of equipment,\* such as generators, air compressors, bulldozers, pneumatic drills, and heavy-duty cranes from the USSR, East Germany, and Czechoslovakia, were used on a railroad construction project. 130/ Many stone-arch bridges were constructed at the suggestion of Soviet technicians, thus reducing the need for reinforcing steel rods and cement. 131/

The mountainous 92-km section from Pao-chi to Feng-hsien, because of its steep grades, has been selected as the first stretch of Chinese Communist railroads to be electrified, and this specialized construction is to start in 1958. 132/ More recent Chinese announcements state that 500 to 1,200 km of railroads will be electrified during the Second Five Year Plan and mention the Pao-chi - Ch'eng-tu line and two others in this context. 133/ This may imply that more than the Pao-chi - Feng-hsien section on this line will be electrified.

The high priority with respect to labor, equipment, and materials\*\* given this line insured that a rapid tracklaying rate would be achieved. The urgency to meet the July 1956 target date for completion, however, caused hundreds of defects in the form of landslides, tunnels and bridges collapsing, and washouts which have resulted in more than 30,000 laborers continuing work to the present time. 135/ By January 1957, about 240,000 tons of supplies had been shipped over the line, which was still undergoing correction of construction defects. 136/ Although the Chinese Communists seldom give cost figures for new lines, a derived cost for a 30-km section of this line which was eliminated by realignment came to 4 million yuan per kilometer, the highest unit cost encountered for any new line in China. 137/

\* Roughly 80 percent of the total Chinese stock of heavy road construction equipment. 129/

\*\* Twenty-five percent of the total freight volume of the Ch'eng-tu - Chungking line (presumably during 1952-53) consisted of construction materials for use on the Pao-chi - Ch'eng-tu line. 134/



50X1

50X1

S-E-C-R-E-T

The Pao-chi - Ch'eng-tu line has considerable economic and strategic significance. It provides a north-south transport route, 1,000 km from the east coast, linking the USSR with western China and North Vietnam. Economically, it will lower the cost and facilitate the movement of some 500,000 tons of food crops annually from rice-producing Szechwan Province to other parts of China. Forests and minerals in the area can be exploited and the regional economy benefited. Petroleum from the northwest can be transported over the line. In short, the Pao-chi - Ch'eng-tu line will provide a base for industrial development and for the construction of new railroad lines in the southwest.



S-E-C-R-E-T

Number: 11\*

Terminals: Pao-t'ou - Shih-kuai-kou  
Coordinates: 40°26' N - 110°03' E; 40°41' N - 110°17' E  
Province: Inner Mongolian Autonomous Region

Length (kilometers): 37  
Construction organization: No. 3 Engineering Bureau

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: January 1956 Completed: November 1956

Engineering details:

Amount of excavation and fill (cubic meters): 370,000  
Number of tunnels: N.A.  
Number of bridges and culverts: 4 large, 6 other bridges;  
120 culverts

Inputs:

Steel (metric tons): 4,440  
Cement (metric tons): 2,960  
Lumber (cubic meters): 11,100  
Labor: N.A.

Tracklaying progress (kilometers per day): Average: 0.123 Best: N.A.

Comments:

This line was originally constructed as a 41-km branch of the Peking - Sui-yuan line by the North China Railroad Company during 1939-45. 138/ [ ] it was a narrow-gauge line, later dismantled. Now, as a standard-gauge branch line, it will provide the metallurgical combine at Pao-t'ou with access to the coal resources in the Shih-kuai-kou area, where 3 new shafts were started in February 1957 and 7 others are scheduled to be constructed before 1962. 139/

50X1

\* See the map, Figure 13, following p. 88.

S-E-C-R-E-T

Number: 12\*

Terminals: Pao-t'ou - Pai-yun-o-po  
Coordinates: 40°36' N - 110°03' E; 41°58' N - 110°04' E (approximate)  
Province: Inner Mongolian Autonomous Region

Length (kilometers): 148  
Construction organization: No. 3 Engineering Bureau

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: January 1956 Completed: 4 December 1956

Engineering details:

Amount of excavation and fill (cubic meters): 5.5 million  
Number of tunnels: 2 large tunnels  
Number of bridges and culverts: 53 bridges, 120 culverts

Inputs:

Steel (metric tons): 17,760  
Cement (metric tons): 11,840  
Lumber (cubic meters): 44,400  
Labor: 10,000

Tracklaying progress (kilometers per day): Average: 0.444 Best: N.A.

Comments:

The rate of tracklaying per day (above) is overstated, because much of the roadbed was reportedly completed by the end of 1953. 140/ Actual tracklaying did not start, however, until 2-1/2 years later. The No. 3 Engineering Bureau constructed both this branch and the Pao-t'ou - Shih-kwai-kou branch simultaneously. 141/ This line skirts the foothills of the Wu-la mountain range and crosses a plateau 1,500 feet above sea level. Iron ore from Pai-yun-o-po and coal from Ying-pan-liang will be carried over this line to Pao-t'ou. 142/ Construction materials, mining equipment, and supplies are being transported from Pao-t'ou to the mining areas currently so as to aid the development of mining. 143/

\* See the map, Figure 13, following p. 88.

S-E-C-R-E-T

Number: 13\*

Terminals: Ying-t'an - Amoy  
Coordinates: 28°14' N - 117°00' E; 24°27' N - 118°05' E  
Provinces: Kiangsi, Fukien

Length (kilometers): 698  
Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: 1953 Completed: November 1955  
Construction: Begun: October 1954 Completed: 9 December 1956

Engineering details:

Amount of excavation and fill (cubic meters): 65 million  
Number of tunnels: 46  
Number of bridges and culverts: 155 bridges, 1,818 culverts

Inputs:

Steel (metric tons): 83,760  
Cement (metric tons): 55,840  
Lumber (cubic meters): 209,400  
Labor: More than 147,000 civilians

Tracklaying progress (kilometers per day): Average: 0.886 Best: 5.3  
(May 1956)

Comments:

This line and the Pao-chi - Ch'eng-tu line were the foremost accomplishments in construction of new lines during the First Five Year Plan. The alignment had been planned by the Nationalists, but no construction was undertaken before 1949. The Chinese Communists began surveying the route in 1953, and final designs were completed in November 1955. <sup>144/</sup> Although the Chinese claimed that the construction period lasted 22 months, it actually lasted more than 24 months, and even longer if construction is figured from the time that the Kao-ch'i - Chi-mei causeway came under construction in June 1953. <sup>145/</sup> The line is 698 km in length and includes 2 causeways totaling 5,032 m in length connecting Hsia-men Island and the city of Amoy with the mainland, 23 km of

\* See the map, Figure 10, following p. 66.

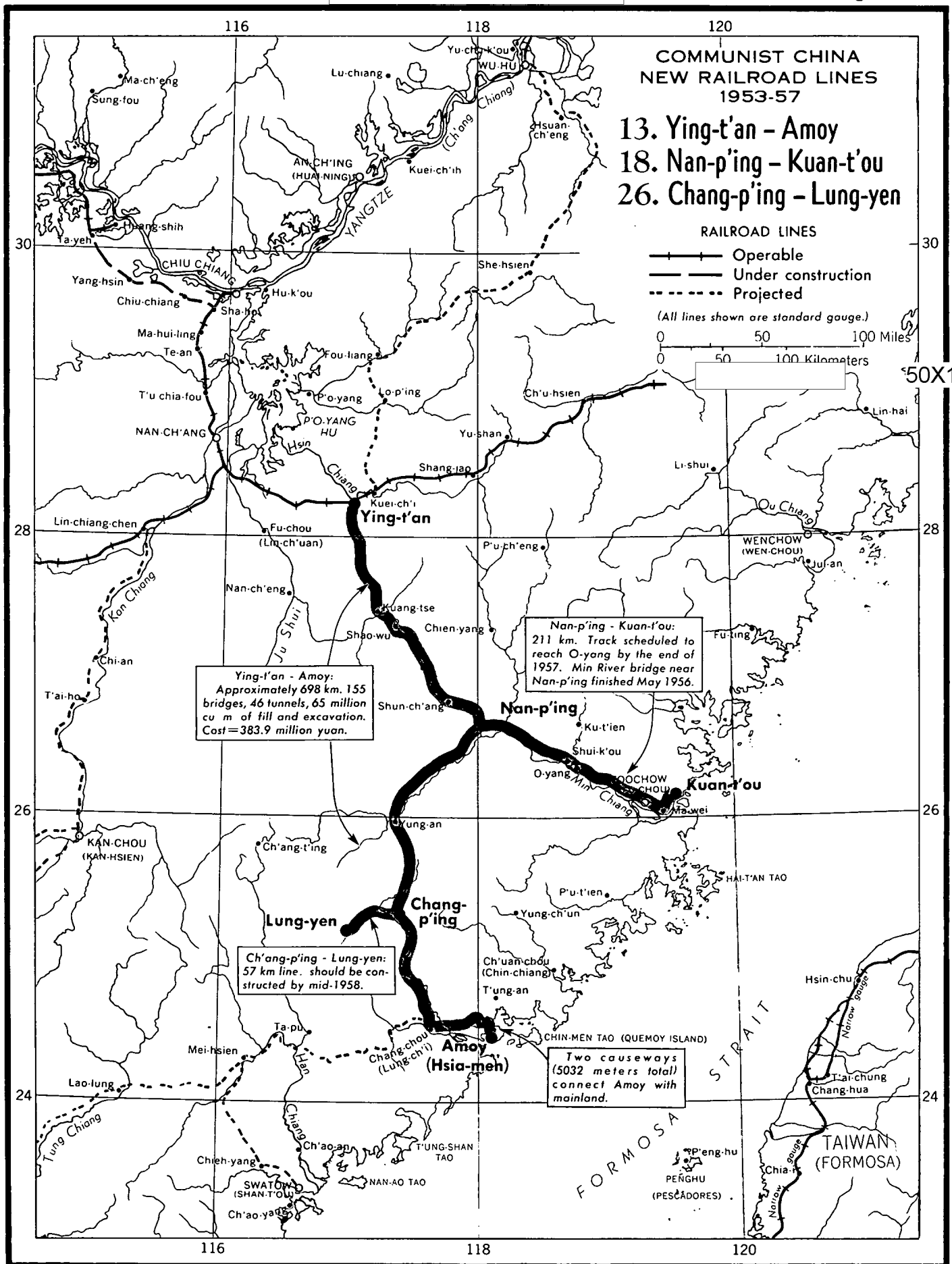
S-E-C-R-E-T

tunnels, and 27 km of bridges and culverts. 146/ The alignment crosses extremely rugged terrain. It starts at Ying-t'an, a station on the Chekiang-Kiangsi line, and crosses the Wu-i Mountains forming the border of Kiangsi and Fukien, the formidable terrain of the Tai-yun Mountains, and such rivers as the Fu-t'un Ch'i, and Sha Ch'i, and the Chiu-lung Chiang before it finally crosses the Hsia-men Strait to the deepwater port of Amoy.

The Railroad Engineering Corps supervised construction which saw workers and military engineering units from the Li-t'ang - Fort Bayard, Lan-chou - Aktogay, Pao-chi - Ch'eng-tu, Feng-t'ai - Huai-lai, and Chi-ning - Erh-lien lines brought into the area to speed construction. 147/ The daily rate of tracklaying was extremely good and reflects the high priority given the line in respect to construction materials, labor, and equipment. Whereas the First Five Year Plan called for construction to reach only a point near Yung-an by the end of 1957, developments in the Taiwan Strait led the Chinese Communists to step up the pace of construction so as to complete the line well over 1 year ahead of the original schedule. 148/ As was the case on most other lines newly constructed during the First Five Year Plan, work continued on this line some months after construction was announced to be completed. Temporary bridges were being replaced by permanent reinforced-concrete bridges over the entire route, and ballast was being laid on the 275-km Yung-an - Amoy section in February 1957. 149/ These projects were completed before the end of March 1957. On 12 April 1957 the entire line was officially opened to traffic. 150/

The Ying-t'an - Amoy line is one of the few lines constructed by the Chinese Communists for which they have announced the cost of construction. The total cost was planned to be 620 million yuan (888,252 yuan per kilometer), but on completion the actual cost was announced to be 550,000 yuan per kilometer, or 383.9 million yuan. 151/ In view of the terrain and the engineering difficulties encountered, this figure is quite low, and it indicates that the Chinese are currently able to perform complex construction more inexpensively than previously.

Strategically, the line will greatly enhance the logistic capabilities of the Communists in the coastal area opposite the offshore islands and Taiwan. Economically, the line will connect this previously isolated region with the established railroad net, forest and mineral resources can be exploited, Amoy may be expected to grow as a commercial port, and transport costs in general will be reportedly



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30 to 50 percent lower. 152/ The best indicator of the regional economic value of the line may be seen in the recent announcement that industrial investment in Fukien Province in 1957 will equal the total investment for the 4 years 1953-56. 153/

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S-E-C-R-E-T

S-E-C-R-E-T

Number: 14\*

Terminals: Meng-miao - P'ing-ting-shan  
Coordinates: 33°38' N - 114°02' E; 33°45' N - 113°20' E  
Province: Honan

Length (kilometers): 81  
Construction organization: No. 6 Engineering Bureau

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: Under way 1957 Completed: 1 July 1957

Engineering details:

Amount of excavation and fill (cubic meters): 1.2 million  
(estimated)

Number of tunnels: N.A.  
Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 9,720  
Cement (metric tons): 6,480  
Lumber (cubic meters): 24,300  
Labor: More than 10,000 civilians

Tracklaying progress (kilometers per day): Average: N.A. Best: N.A.

Comments:

This is a branch line running from Meng-miao on the Peking - Han-kou line to the large new coal mining area of P'ing-ting-shan. The Chinese Communists have not announced the date on which construction started, but earlier plans placed completion "by the end of the year" (1957). 154/ The early completion of the line in July 1957 should permit transport of construction materials and equipment so as to accelerate construction of 10 pairs of vertical shafts scheduled to be in operation by 1962 155/ as well as speed the transport of coal to Wu-han and other industrial centers.

\* See the map, Figure 19, inside back cover.

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II. Lines Under Construction, November 1957

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S-E-C-R-E-T



S-E-C-R-E-T

Number: 15\*

Terminals: Ho-k'ou - Pi-se-chai  
Coordinates: 22°36' N - 103°58' E; 23°28' N - 103°24' E  
Province: Yunnan

Length (kilometers): 177  
Construction organizations: No. 2 Design Institute  
Railroad Engineering Corps (PLA)

Survey: Begun: September 1955 Completed: August 1956  
Construction: Begun: August 1956  
To be completed (estimated) 1957

Engineering details:

Amount of excavation and fill (cubic meters): 6.2 million  
(estimated)

Number of tunnels: more than 19

Number of bridges and culverts: more than 80 bridges

Inputs:

Steel (metric tons): 21,240  
Cement (metric tons): 14,160  
Lumber (cubic meters): 53,100  
Labor: 20,000 (estimated)

Comments:

During the Sino-Japanese War, most of the bridges, stations, and electrical communications of this narrow-gauge line linking Yunnan and North Vietnam were destroyed by the Nationalists to thwart the Japanese advance from Indochina. Rails and ties were removed and laid on the K'un-ming - Chan-i and K'un-ming - An-ning lines. 156/ The Morrison-Knudsen Consulting Group's study of 1946 urged that rails from the K'un-ming - Chan-i line be relaid here so that the line could be made immediately operational, but its recommendations were based on minimal reconstruction, and apparently the Chinese Communists are carrying out a much more thorough overhaul than that envisaged by this study. 157/ This construction is believed to be sufficiently extensive to be considered in this report under construction of new lines.

\* See the map, Figure 18, following p.148.

S-E-C-R-E-T

Renovation was reported under way on the line as early as 1950, and by 1952 much of the roadbed and most of the bridges were reportedly repaired to a point about 50 km from Ho-k'ou. 158/ In the light of subsequent development, however, it is believed that construction during 1950-52 was for a highway built on the existing roadbed. Although restoration was officially begun on 2 August 1956, 159/ preparatory construction was obviously going on early in 1956, because the Chinese Communists had announced at that time that restoration was proceeding at such a rate as to make completion feasible by the end of 1956. 160/

On 18-19 July 1957 it was announced that 79 km of track had been laid and that the international railroad bridge at Ho-k'ou had been restored to a condition enabling work trains to pass across it. 161/ The famous 122-m steel-truss, continuous-span bridge which crossed the Nan-ch'i Gorge at Pai-chai and was destroyed during the war is being reconstructed -- apparently as a completely new structure. Four of the five piers were completed by the end of February 1957. 162/

The 177-km line is planned to be in operation in late 1957 or early 1958. 163/ The line was probably reconstructed in narrow gauge. The recent completion of an aerial survey south from K'un-ming makes it appear likely that conversion to standard gauge or other construction over realigned sections may take place in the future. 164/

Completion of this line will provide a valuable outlet through the port of Haiphong for the mineral resources of Yunnan, including the rich tin deposits of Ko-chiu. The line will also make connection between Yunnan and south China easier and will contribute to an expansion of Chinese Communist economic relations with North Vietnam. It will enable the Vietnamese rail system to draw on the narrow-gauge locomotive and rolling-stock parks of the K'un-ming Railroad Administration. The line will also facilitate distribution of cement from the new plant at K'un-ming (annual production, 300,000 tons) to construction sites in both North Vietnam and Communist China. Lastly, reconstruction of this line will appreciably increase Chinese logistic capabilities to support North Vietnam.

S-E-C-R-E-T

Number: 16\*

Terminals: Lan-ch'i - T'ung-kuan  
Coordinates: 29°13' N - 119°28' E; 29°33' N - 119°30' E (approximate)  
Province: Chekiang

Length (kilometers): 70  
Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: February 1957  
To be completed (estimated) September 1957

Engineering details:

Amount of excavation and fill (cubic meters): 1.1 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

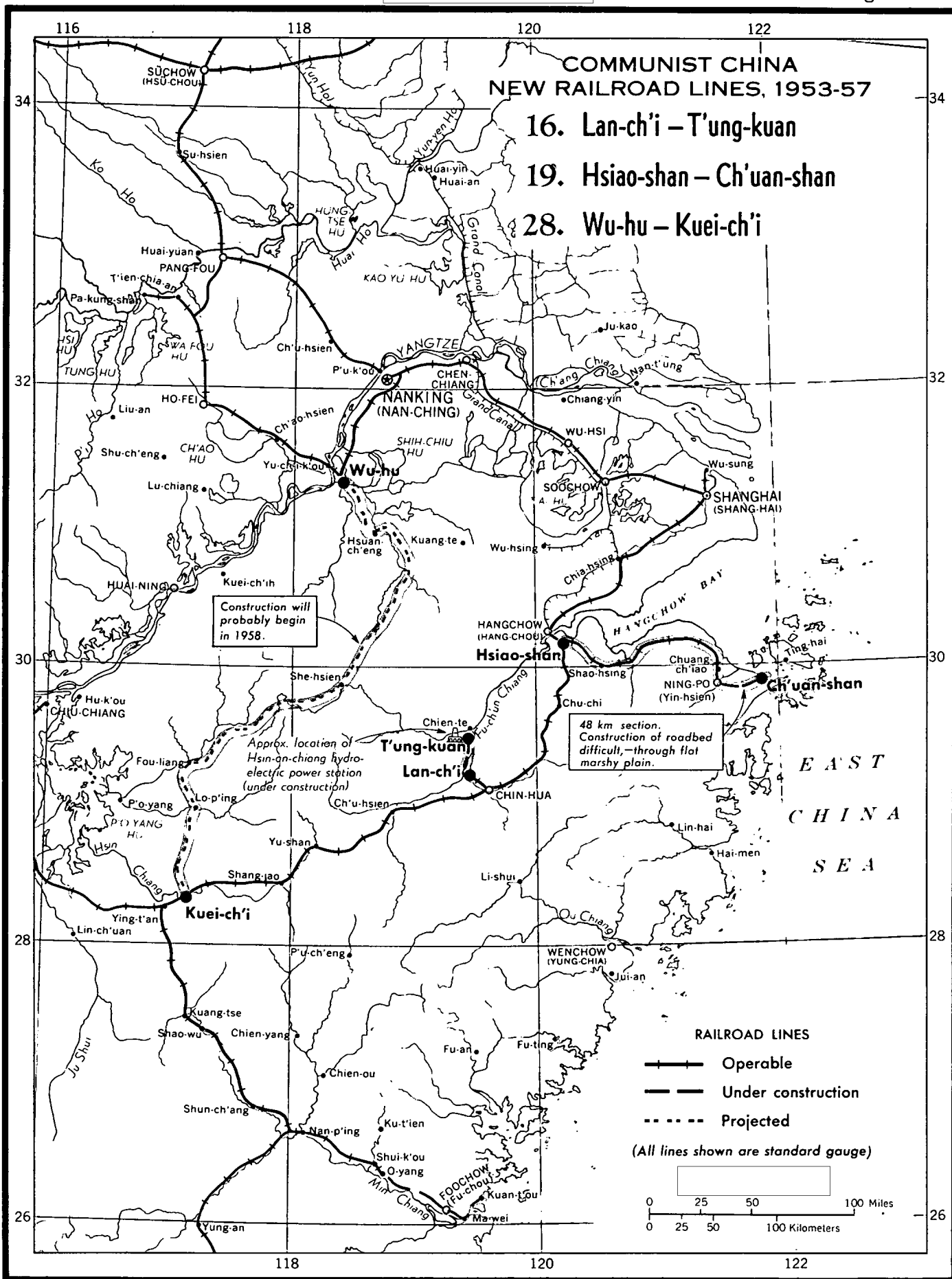
Inputs:

Steel (metric tons): 8,400  
Cement (metric tons): 5,600  
Lumber (cubic meters): 21,000  
Labor: N.A.

Comments:

This line is an extension of the existing line from Chin-hua (on the Chekiang-Kiangsi line) to Lan-ch'i. The immediate function of the line on completion of construction will be to provide speedy transmission of construction materials and equipment to the site of the Hsin-an-chiang hydroelectric station. Construction of this power project started in late 1956 and is scheduled for completion in 1961. 165/ It will have a rated annual capacity of 576,000 kw, second only to the 1.1 million-kw station at San-men Gorge, which is also under construction. 166/ The alignment of the line crosses 2 rivers and more than 100 streams. 167/ The key project, a bridge across the Lan River, was begun in December 1956 and was completed in July 1957. The line was scheduled for completion in mid-September 1957. 168/

\* See the map, Figure 11, following p. 76.



## S-E-C-R-E-T

Number: 17\*

Terminals: Ho-ch'ih (Chin-ch'eng-chiang) - Kuei-yang  
 Coordinates: 24°42' N - 107°50' E; 26°35' N - 106°43' E  
 Provinces: Kwangsi, Kweichow

Length (kilometers): 440

Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: Before 1949

Construction: September 1955  
 To be completed (estimated) 1958

## Engineering details:

Amount of excavation and fill (cubic meters): 8.8 million  
 (estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

## Inputs:

Steel (metric tons): 52,800  
 Cement (metric tons): 35,200  
 Lumber (cubic meters): 132,000  
 Labor: 10,000 (estimated)

## Comments:

The Nationalists constructed this line, often called the Kweichow-Kwangsi line, from Liu-chou as far as Tu-yun in 1941. When the Morrison-Knudsen Consulting Group inspected the line in 1946, it was operable from Nan-tan to Tu-yun but in need of complete overhaul. Most of the bridges had been demolished, and the roadbed and drainage system were in extremely poor condition. <sup>169/</sup> When the Chinese Communists came to power in 1949, the entire 440-km section was inoperable. The 306-km section from Ho-ch'ih to Tu-yun, completed in December 1956, <sup>170/</sup> was relatively easy construction because it was performed on an existing roadbed.

\* See the map, Figure 16, following p. 106.

## S-E-C-R-E-T

The 140-km stretch from Tu-yun to Kuei-yang, however, is new construction over comparatively low but rugged hills and mountains having very steep slopes. Originally set for construction after 1958, this section was moved forward in the Chinese Communist timetable to begin in 1956. Excavation and fill for this section are estimated by the Chinese to average 100,000 cu m per kilometer.\* 171/ More than 20 tunnels are planned on the section, 3 of which were started in October 1956. 172/ Another indication of the terrain difficulties confronting the builders is seen in the announcement of a realignment eliminating 3.5 km of the route which would save more than 6 million yuan, or roughly 1.7 million yuan per km. 173/ The 1957 railroad construction plan stated that it was most important to complete this section in 1957. 174/ Terrain difficulties, however, will probably prevent completion of construction before 1958. Aerial surveys during 1957 included the operable section from Liu-chou to Tu-yun, and this may indicate future realignment or further construction on this section. This line is strategically and economically important because it connects the entire southwest with North Vietnam by way of the Lai-pin - Mu-nan Kuan line and the port facilities of Fort Bayard by way of the Li-t'ang - Fort Bayard line.

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\* The above estimate for excavation and fill is considerably below that announced by the Chinese Communists. It is based on the minor amount of work involved from Ho-ch'ih to Tu-yun and a consideration of the terrain from Tu-yun to Kuei-yang. Some projects in this section will involve 100,000 cu m of excavation and fill per kilometer, but it is doubtful that this amount will be an average over the 140-km section.

S-E-C-R-E-T

S-E-C-R-E-T

Number: 18\*

Terminals: Nan-p'ing - Kuan-t'ou  
Coordinates: 26°38' N - 118°10' E; 26°09' N - 119°34' E  
Province: Fukien

Length (kilometers): 211  
Construction organization: Railroad Engineering Corps (PLA)

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: 28 April 1956  
To be completed (estimated) 1958

Engineering details:

Amount of excavation and fill (cubic meters): 7.4 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 25,320  
Cement (metric tons): 16,880  
Lumber (cubic meters): 63,300  
Labor: 10,000 (estimated)

Comments:

Even before the completion of construction on the Ying-t'an - Amoy line in December 1956, construction of a branch line from Nan-p'ing through Fu-chou to Kuan-t'ou was started. 175 Nan-p'ing is connected with the Ying-t'an - Amoy line by way of the 23-km Wai-yang branch line. With the completion of the Ying-t'an - Amoy line and the transfer of a part of its labor force to this line, construction was speeded. By the end of December 1956, about half of the excavation and 40 percent of the bridge and culvert work were completed for the entire line. 176/

Although completion was originally projected for the first half of 1957, the subsequent reduction in total construction of new lines

\* See the map, Figure 10, following p. 66, above.

S-E-C-R-E-T

in 1957 slowed progress of the project. Track is now scheduled to extend only to O-yang, roughly 70 km from Nan-p'ing, by the end of 1957. 177/ The 482-m bridge spanning the Min River, 8 km from Nan-p'ing, was completed in May 1956. 178/ This project and the blasting of rock in the Mo-t'ien-ling Mountains were the chief engineering obstacles encountered thus far, and it is believed that from Ku-tien Hsien and Shui-k'ou to Kuan-t'ou construction will be decidedly less difficult than was the first 70 km of the line. It is possible that the line may terminate at Ma-wei instead of Kuan-t'ou, **although** Chinese Communist announcements indicate the latter. Based on a planning cost announced by the Chinese, the line will cost about 85 million yuan (402,843 yuan per km) -- which appears rather low in view of the mountainous terrain over which the alignment runs. 179/ The line will accomplish the following: (1) afford the Ying-t'an - Amoy trunkline another port, (2) enhance the regional economy, (3) improve the Communist military potential in relation to Taiwan, and (4) possibly herald a future coastal line from Fu-chou to Amoy.



S-E-C-R-E-T

Number: 19\*

Terminals: Hsiao-shan - Ch'uan-shan  
Coordinates: 30°10' N - 120°15' E; 29°53' N - 121°53' E  
Province: Chekiang

Length (kilometers): 188  
Construction organizations: No. 4 Design Institute  
No. 5 Engineering Bureau

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: Fourth quarter 1954  
To be completed (estimated) 1958

Engineering details:

Amount of excavation and fill (cubic meters): 2.8 million  
(estimated)  
Number of tunnels: N.A.  
Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 22,560  
Cement (metric tons): 15,040  
Lumber (cubic meters): 56,400  
Labor: 2,500 (estimated)

Comments:

Some track was laid on this line before 1949, but it was later dismantled. Only one team of the No. 5 Engineering Bureau has been mentioned as working on the line since late 1954, thus indicating a low labor input in comparison with other projects. 180/ In view of the fact that most of the survey and a part of the roadbed formation were performed before 1949, construction to Chuang-ch'iao, a suburb of Ning-po, was not difficult. This section was completed in April 1956. 181/ Currently the Chinese Communists are studying ways of constructing a roadbed on the low marshy plain between Ning-po and Ch'uan-shan, approximately 48 km to the east. Technicians from the USSR are assisting in the project, but little progress on this ex-

\* See the map, Figure 11, following p. 76, above.

S-E-C-R-E-T

extension has been made in more than 1 year. 182/ If the line is extended to Ch'uan-shan, that city could develop as a port if the problem of silting is surmounted. Although the line will have the effect of opening up a new port and improving the regional economy, its main function is strategic. It provides logistical support for military bases in the area, which was formerly without communications of any but the most rudimentary type.

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S-E-C-R-E-T

S-E-C-R-E-T

Number: 20\*

Terminals: Kan-shui-ch'ang - Kuei-yang  
Coordinates: 28°45' N - 106°43' E; 26°35' N - 106°43' E  
Provinces: Szechwan, Kweichow

Length (kilometers): 320

Construction organizations: No. 2 Design Institute  
No. 3 Engineering Bureau

Survey: Begun: January 1956 Completed: December 1956  
Construction: Begun: April 1956  
To be completed (estimated) 1958

Engineering details:

Amount of excavation and fill (cubic meters): 11.2 million  
(estimated)

Number of tunnels: 120

Number of bridges and culverts: 56 large and medium bridges  
925 small bridges and culverts

Inputs:

Steel (metric tons): 38,400  
Cement (metric tons): 25,600  
Lumber (cubic meters): 96,000  
Labor: N.A.

Comments:

This line, often called the Szechwan-Kweichow line, was originally a project in the Second Five Year Plan but was begun ahead of schedule in 1956 and scheduled for completion in October 1957. <sup>183/</sup> The drastic cut in the construction of new lines in 1957, coupled with engineering difficulties being encountered on the route, however, will probably delay completion until 1958. A recent realignment reduced the overall length from nearly 340 km to 320 km. The Chinese Communists claim that this realignment saved them 17 million yuan, or an exceptionally high unit cost of more than 850,000 yuan per km, which reflects the terrain difficulties on the line. <sup>184/</sup>

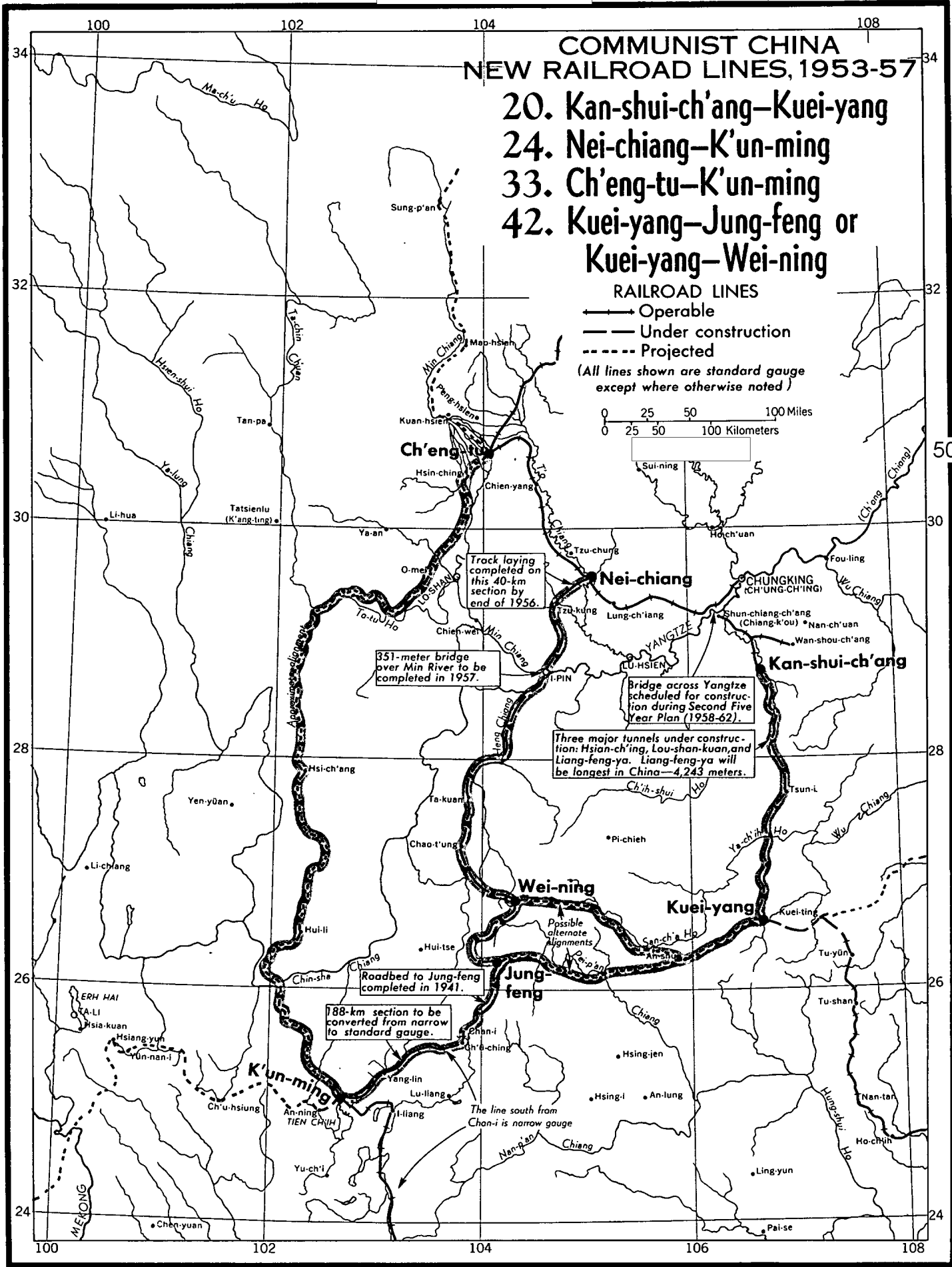
\* See the map, Figure 12, following p. 84.

## S-E-C-R-E-T

Kan-shui-ch'ang was the southern terminus of the line from Ch'i-chiang begun in 1942 by the Nationalists and completed by the Chinese Communists. 185/ The northern section of this route, from Kan-shui-ch'ang to Tsun-i, passes through terrain characterized by comparatively low (below 2,000 m) but extremely rugged mountains, deeply entrenched streams, and areas of limestone. The worst terrain is in the mountains near the Szechwan-Kweichow border, where roadbed formation will be difficult because of extensive caverns and sinkholes permeating the limestone as well as steep valley walls requiring numerous tunnels and bridges. The southern sector from Tsun-i to Kuei-yang crosses areas of plains and low hills and will be less difficult to construct.

Tracklaying began from Kan-shui-ch'ang on 28 December 1956, but only 6 km were laid to Ch'a-t'ou, from which a temporary railroad, already constructed, was used for transporting construction materials to forward construction sites. 186/ The technique employed on this line is the same as that used on many other lines, in that construction teams are sent forward to intermediate points on the alignment where they work on major projects. After completion of these projects, they can be linked rather rapidly. For example, as early as July 1956, preparatory construction was centered 40 km south of Kan-shui-ch'ang, in which general area the Hsiao-ch'ing tunnel was begun. 187/ At the same time, preparatory work was started on the large Wu River bridge project. 188/ In June 1957, construction was well under way on the Lou-shan-kuan and Liang-feng-ya tunnels, the latter of which will be the longest tunnel in Communist China, 4,243 m. 189/

The line will enable exploitation of Kuei-yang minerals and will provide the southwest with direct access to the port facilities at Fort Bayard and to the railroad network of North Vietnam. Besides completion of the line itself, however, the Yangtze River must be bridged if the Chinese Communists hope to reap the full benefit of the line. By November 1956 a survey was completed near Chungking (possibly at Mao-erh-t'o), and preparations for construction of the bridge are presumably under way.



50X1

S-E-C-R-E-T

Number: 21\*

Terminals: Huai-jou - Shang-pan-ch'eng  
Coordinates: 40°20' N - 116°37' E; 40°50' N - 118°00' E  
Province: Hopeh

Length (kilometers): 170  
Construction organization: N.A.

Survey: Begun: N.A. Completed: Before 1949  
Construction: Begun: July 1955  
To be completed (estimated) 1958

Engineering details:

Amount of excavation and fill (cubic meters): 6 million  
(estimated)

Number of tunnels: N.A.  
Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 20,400  
Cement (metric tons): 13,600  
Lumber (cubic meters): 51,000  
Labor: More than 7,000

Comments:

This line, often called the Peking - Ch'eng-te line, is a project with a partly new alignment. The old route was constructed by the Japanese but was partly destroyed during the civil war. Because of the steep gradients and terrain obstacles which limited traffic on the old route, the section from Mi-yun to Ch'eng-te was not rebuilt. Instead, a new alignment, 30 km shorter, was selected through better terrain, and preliminary construction was started in July 1955. 190/ The new route through Hsin-lung and Ying-shou-ying-tzu was chosen not only because of the terrain but also because it will facilitate exploitation of coal, copper, and other minerals reportedly in good supply along its new alignment. 191/

\* See the map, Figure 7, following p. 48, above.

S-E-C-R-E-T

Construction has been surprisingly dilatory on the line, especially in view of the fact that it is only the second railroad connection between Manchuria and north China. The First Five Year Plan called for 72 km to be constructed by the end of 1957. 192/ Later announcements stated that the entire line would be operational by the end of 1956. 193/ Actually, little more than 20 km of track had been laid at that time. 194/ The lack of real progress indicates a relatively low priority assigned to the line. It is probable that this priority will improve so that construction can be completed in 1958.

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S-E-C-R-E-T

S-E-C-R-E-T

Number: 22\*

Terminals: Pao-t'ou - Lan-chou  
Coordinates: 40°36' N - 110°03' E; 36°03' N - 103°41' E  
Provinces: Inner Mongolian Autonomous Region, Kansu

Length (kilometers): 1,007

Construction organizations: No. 1 Engineering Bureau  
Railroad Engineering Corps (PLA)

Survey: Begun: April 1953 Completed: July 1956  
Construction: Begun: October 1954 Completed: 1958 (plan)

Engineering details:

Amount of excavation and fill (cubic meters): 30.2 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 120,840  
Cement (metric tons): 80,560  
Lumber (cubic meters): 302,100  
Labor: 40,000 (estimated)

Comments:

The Chinese Communists probably have used the planning data which were prepared by the Nationalists for this line in 1947. 195/ The First Five Year Plan of the Communists scheduled 82 km for completion by the end of 1957. 196/ The projected route runs through a variety of types of terrain, including alluvial plains, loess tablelands, sandy deserts, and occasionally rocky mountains. Mountains and loess areas are located principally on the southern section, whereas the northern section is aligned mainly across alluvial plains. Construction was started north from Lan-chou in October 1954 and south from Pao-t'ou in October 1955. 197/ At the end of 1956, tracklaying on the southern section from Lan-chou to Yin-ch'uan had progressed 82 km through very rugged terrain to Ti'chia-t'ai, and about the same

\* See the map, Figure 13, following p. 88.



S-E-C-R-E-T

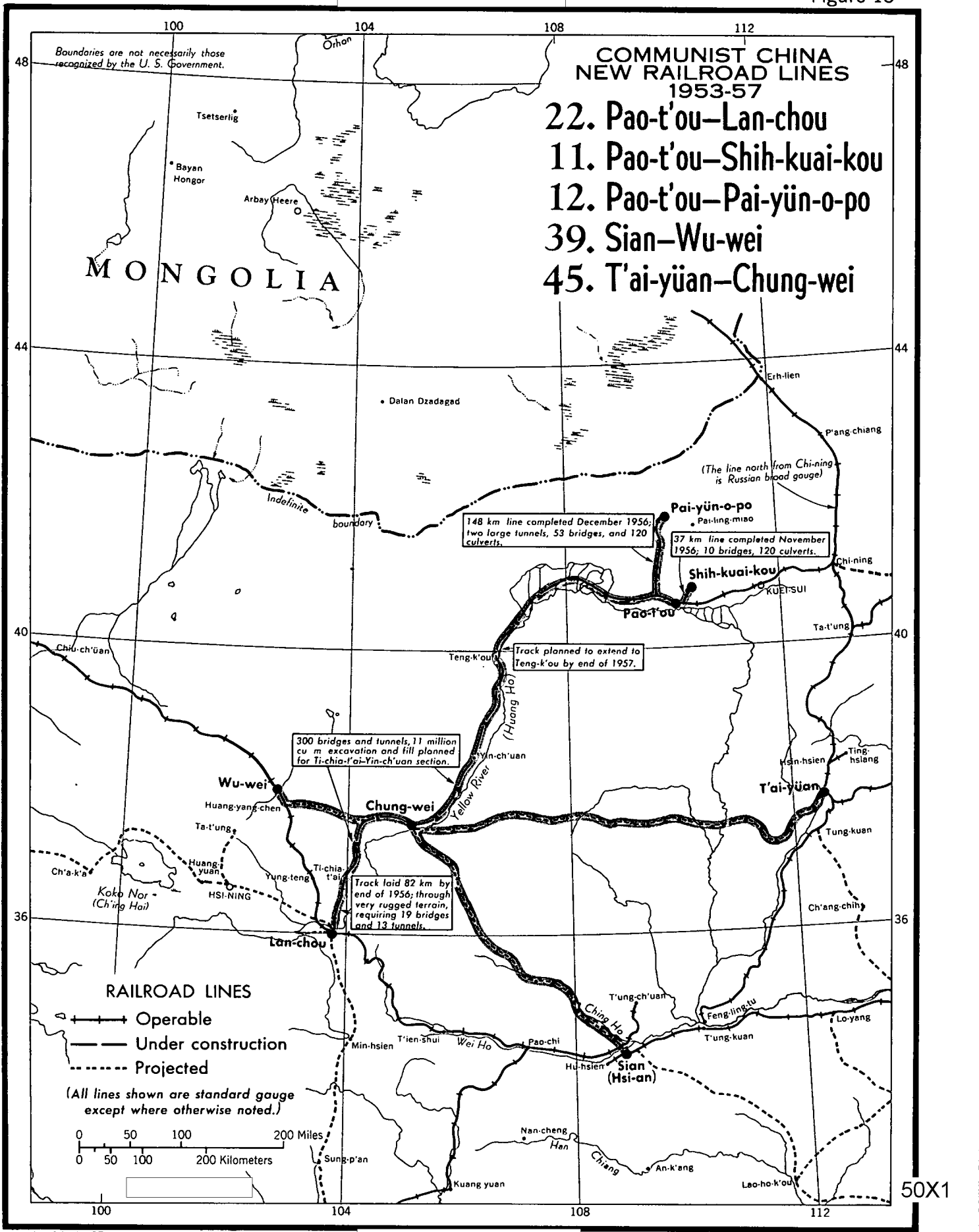
kilometrage had been laid west from Pao-t'ou. 198/ Tracklaying performance, actual and planned, is as follows 199/:

<u>Year</u>	<u>Completion of Tracklaying (Kilometers)</u>
1955	41
1956	123
1957 (plan)	329
1958 (plan)	514
Total	<u>1,007</u>

The high priority currently given the line is seen in the fact that, out of a total of 535 km of new lines planned to be constructed for 1957 for the whole of Communist China, 329 km were allocated to this line. 200/ In early 1957, thousands of workers from the Trans-Sinkiang line arrived in the T'eng-ko-li desert of the southern section to speed construction. 201/ Construction of the northern section, although begun in October 1955, had been stalled when a part of its labor force was shifted to work on the nearby Pao-t'ou - Pai-yun-o-po line. A shortage of rails also impeded progress until November 1956, when tracklaying was resumed. By June 1957, tracks had been laid 119 km west of Pao-t'ou. 202/ In view of the present priority of the project and the fact that the most difficult construction has already been performed,\* the projected completion date of 1958 is entirely feasible.

This line will link north China with the southwest, will reduce the distance from Lan-chou to Chi-ning by 1,000 km, and will boost the regional economy and provide tighter Chinese Communist control in the area. Also it will be an initial leg in the 3,200-km north-south trunk system, 1,000 km inland from the nearest coast, which will connect the USSR, China, and North Vietnam by 1961.

\* In the Cha-lan-shan Mountains on the southern section, more than 20 million cu m of excavation were required. 203/



S-E-C-R-E-T

Number: 23\*

Terminals: Wu-han - Sha-ho  
Coordinates: 30°34' N - 114°13' E; 29°37' N - 115°53' E  
Provinces: Hupeh, Kiangsi

Length (kilometers): 236  
Construction organizations: No. 4 Design Institute  
No. 5 Engineering Bureau

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: 13 September 1956  
To be completed (estimated) 1959

Engineering details:

Amount of excavation and fill (cubic meters): 7.1 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 28,320  
Cement (metric tons): 18,880  
Lumber (cubic meters): 70,800  
Labor: N.A.

Comments:

This line, which will be known as the Hupeh-Kiangsi line, is one of the few lines which were not planned by the Nationalists but on which construction has been undertaken by the Chinese Communists. It links the triple cities of Wu-han (Han-kou, Han-yang, and Wu-ch'ang) with the important iron mines at Ta-yeh and with Sha-ho, the latter of which is a station on the Nan-ch'ang - Chiu-chiang line.

Huang-shih, about 19 km northeast of Ta-yeh, was linked to Ta-yeh before 1949. In September 1956, construction of the 81-km section from Wu-han to Ta-yeh was begun and was completed on 5 October 1957. 204/ This section, which will involve some electrification construction

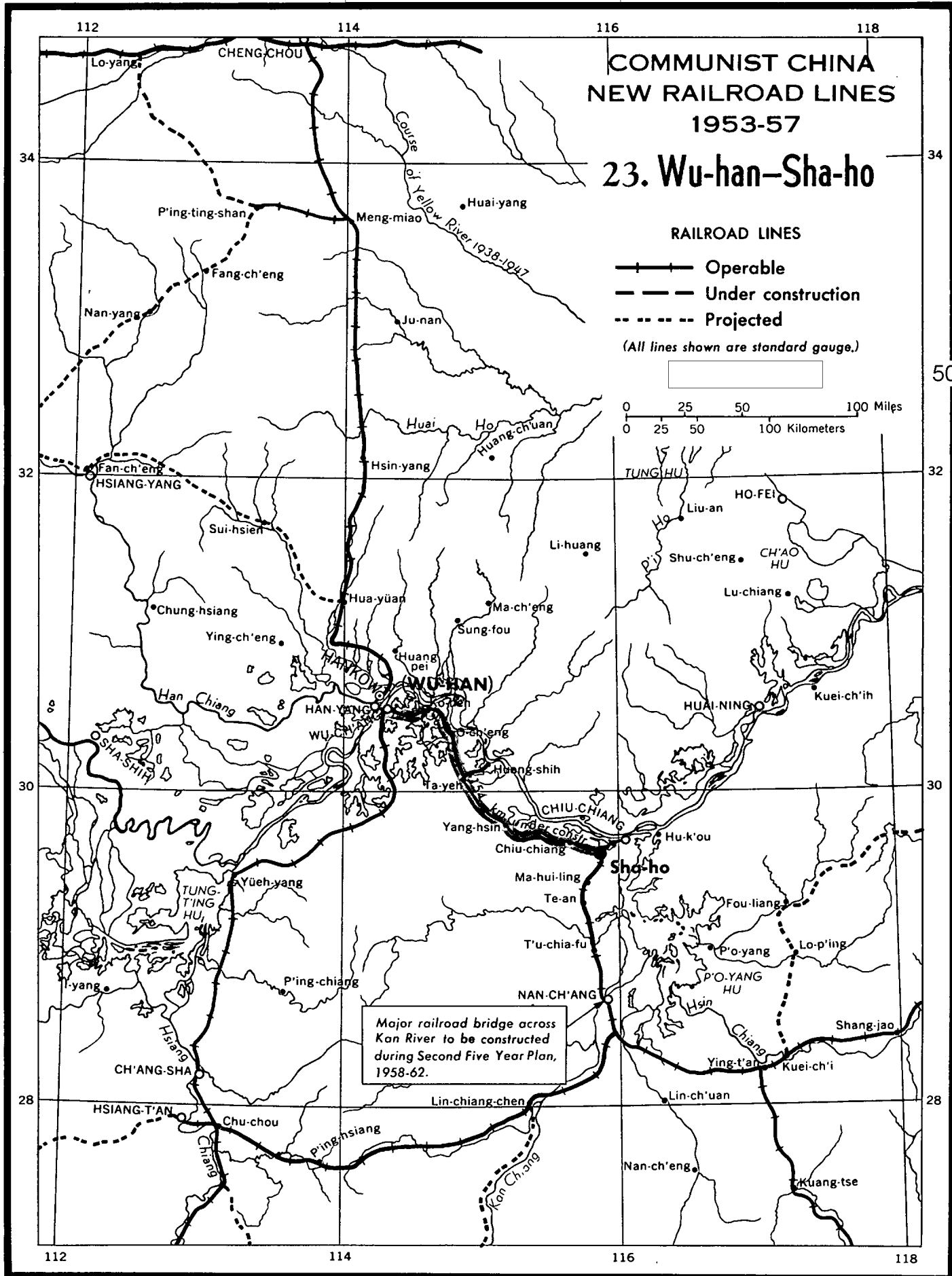
\* See the map, Figure 14, following p. 90.

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in the Ta-yeh area, was scheduled for completion in October 1957. 205/ On 13 July 1957 the Communists announced that designing was under way on the 154-km section from Ta-yeh to Sha-ho. 206/ Whereas the main function of this section was to provide Ta-yeh iron ores to the burgeoning metallurgical complex at Wu-han, the extension to Sha-ho contains further implications. Completion of the line will accomplish the following:

1. Shorten the distance between Wu-han and the railroads serving the east coast ports (the Chekiang-Kiangsi, the Ying-t'an - Amoy, and Nan-p'ing - Kuan-t'ou lines) by about 250 km.
2. Along with the Yangtze River bridge at Wu-han, opened to traffic on 15 October 1957, the Wu-han - Sha-ho line will add another link to an integrated rail system connecting Peking, Shanghai, Canton, and other points with the developing rail hub at Wu-han.
3. With the linking up of Lung-yen (Fukien) to the Ying-t'an - Amoy line, 207/ the Wu-han - Sha-ho line will permit shipment of iron ores from the reportedly rich Lung-yen fields to Wu-han.

Because only a recently renovated 1,077-m highway bridge spans the Kan River at Nan-ch'ang, 208/ however, a railroad bridge is required if Wu-han is to be linked with the southeast. The Minister of Railroads, T'eng Tai-yuan, recently stated that such a bridge would be constructed during the Second Five Year Plan. 209/



50X1

S-E-C-R-E-T

Number: 24\*

Terminals: Nei-chiang - K'un-ming  
Coordinates: 29°35' N - 105°03' E; 25°04' N - 102°41' E  
Provinces: Szechwan, Yunnan

Length (kilometers): 763  
Construction organization: No. 2 Engineering Bureau

Survey: Begun: 1953 Completed: September 1956  
Construction: Begun: February 1956  
To be completed (estimated) 1959

Engineering details:

Amount of excavation and fill (cubic meters): 26.7 million  
(estimated)

Number of tunnels: N.A.

Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 91,560  
Cement (metric tons): 61,040  
Lumber (cubic meters): 228,900  
Labor: 30,000 (estimated)

Comments:

The alignment chosen for this line is essentially the same as that planned before 1949 by the Nationalists. The northern section from Nei-chiang to I-pin passes through terrain characterized by low hills of generally uniform elevation but with numerous interconnected valleys and many areas of gentle slope. South of I-pin the terrain changes as the alignment passes through edges of the Yunnan-Kweichow plateau, an area of winding valleys and gorges in which very short tangents and short-radius curves will be necessary. Grades will be moderate to steep. Within Kweichow and continuing to near Chan-i the terrain is mostly rolling plateau but is rough in places, particularly in the Yunnan-Kweichow border area south of Wei-ning, with some deeply entrenched streams. Some areas of limestone northwest of Wei-ning may make the finding of suitable foundations for roadbeds difficult.

\* See the map, Figure 12, following p. 84, above.

## S-E-C-R-E-T

Construction of the line was originally part of the Second Five Year Plan, but in early 1956 the Chinese Communists decided to begin construction ahead of schedule so as to complete the line by the end of 1958. 210/ Workers who had constructed the Ch'eng-tu - Chungking and Pao-chi - Ch'eng-tu lines were mobilized for construction, and tracklaying was scheduled to extend 115 km to I-pin by the end of 1956. 211/ Difficulties on the Pao-chi - Ch'eng-tu line, however, led to a revision of this plan, and track was laid only 40 km to Tzu-kung, an important salt center, by the end of 1956. 212/ The 184-m Fu-ch'i River bridge at Tzu-kung was planned to be completed in June 1956. A still longer bridge, the 351-m Min River bridge at I-pin, was begun in January 1957 and was scheduled to have been completed during 1957. 213/ Workers from the famous Yangtze River bridge project at Wu-han are currently engaged in this construction. Because of the nationwide cutback in construction of new lines in 1957, it is likely that work on bridge and tunnel projects has been emphasized in 1957 and that concerted tracklaying will be delayed until 1958.

The 188-km section from Chan-i to K'un-ming will be converted from narrow gauge to standard gauge, and certain stretches may be realigned. This section and a 91-km stretch further northward to Jung-feng, for which the roadbed was completed in 1941, will provide fairly easy construction.

This line is an intermediate link on the projected strategic north-south trunkline from the USSR through Communist China to North Vietnam, which line should be completed by 1961. It will link previously isolated K'un-ming and other points in the southwest with the national network and thus will benefit the regional\* and national economy.

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\* The Chinese Communists estimate that more than 4 million yuan annually can be saved by shipping the salt from Tzu-kung to other parts of China over this line. 214/

S-E-C-R-E-T

Number: 25\*

Terminals: Lan-chou - Ngo-ho-erh-li-li (Trans-Sinkiang)  
Coordinates: 36°03' N - 103°41' E; 45°11' N - 82°30' E  
Provinces: Kansu, Sinkiang

Length (kilometers): 2,470  
Construction organization: No. 1 Engineering Bureau

Survey: Begun: N.A. Completed: N.A.  
Construction: Begun: October 1952  
To be completed (estimated) 1959

Engineering details:

Amount of excavation and fill (cubic meters): 61.8 million  
(estimated)  
Number of tunnels: N.A.  
Number of bridges and culverts: N.A.

Inputs:

Steel (metric tons): 296,400  
Cement (metric tons): 197,600  
Lumber (cubic meters): 741,000  
Labor: N.A.

Comments:

A Trans-Sinkiang line was planned by the Nationalists, but construction was never undertaken. The present line will extend an additional 308 km beyond the Chinese Communist border to Aktogay in Kazakh SSR, where it will join the Turkestan-Siberian Railroad. The Chinese terminus is Ngo-ho-erh-li-li (O-ho-erh-li-li), a Chinese transliteration of the Mongolian word Nohorlol, meaning "friendship."

Although the Sino-Soviet Agreement which provided for the construction of this line was not signed until 11 October 1954, construction was begun in October 1952 with the official opening of the T'ien-shui - Lan-chou line. 215/ The First Five Year Plan stated that the line would be constructed to a point 830 km from Lan-chou

\* See the map, Figure 17, following p. 110, and Figure 19, inside back cover.



## S-E-C-R-E-T

by the end of 1957. 216/ Performance to the end of 1956 far exceeded earlier expectations. The important petroleum center of Yu-men, 792 km from Lan-chou, was reached in 1956, and a 34-km branch line was constructed to the oilfields. The length of line constructed was as follows, by year 217/:

<u>Year</u>	<u>Completion of Tracklaying (Kilometers)</u>
1952	18
1953	180
1954	159
1955	317
1956	350
Total	<u>1,024</u>

The 1957 Plan for construction of new lines drastically reduced the tracklaying goals for this line: only 36 km of track were scheduled to be laid during the year. 218/ Much-needed service facilities such as water stations, locomotive yards, and workers' housing will be constructed instead. Also, a part of the labor force and some of the equipment have been shifted to the expedited construction of the Pao-t'ou - Lan-chou line. 219/ The cutback in 1957 has disturbed the momentum of tracklaying enough to negate the completion date of mid-1958 given by a Soviet construction engineer in the Soviet publication Gudok on 23 August 1956. 220/ If the line is given a reasonably high priority in 1958, it is feasible for the Chinese Communists to construct an average of 750 km a year in 1958-59, thus making completion possible in 1959, 1 year ahead of the original target date. The 308-km Soviet section from Aktogay to the border, for which surveys started in 1954, is scheduled for completion in 1958. By 19 September 1957, 90 km of track were completed, and 44 km in addition were scheduled to be laid by 7 November 1957. 221/

Terrain features of the northwest pose problems of considerable size. Thus far the most difficult work on the line was encountered in the winter of 1953-54 in the Wu-ch'iao Mountains. Track laid in 1955 and 1956 was over relatively level ground, and little trouble was experienced. Hereafter the problems of grade and roadbed will be subordinate to problems of bridging desert streams prone to sudden

S-E-C-R-E-T

floods; to problems arising from dust, cold, and wind, which will impede construction in winter and spring; and to intense heat, which is likely to hamper the summer work. Grades will be a minor problem, and straight alignments will be possible even in the two areas where elevations of 3,000 to 4,000 feet must be surmounted. In most areas the line can closely parallel the existing highway without grade difficulties. The highway has already been located to take advantage of the best stream crossings.

From An-hsi to Urumchi, water will be a major problem. The major sources for fresh water will be the An-hsi, Ha-mi, and Turfan areas. This problem would be reduced in winter by melting ice formed from salt or brackish water, a practice which has provided potable water to caravans for years. Weather problems must also be faced. Intense cold will be aggravated by winter winds. In the spring, especially in the central sector, thunderstorms and dust storms, frequently lasting for several days, can delay construction. Construction supplies should be sufficient. Sand, gravel, and stone will be available locally. Timber will be available in sufficient quantities in the Tien-shan Mountains, although it will have to be transported for considerable distances in the eastern sector. Urumchi has an expanded cement plant (estimated annual output, 36,000 tons) and should have a new one by 1958 (estimated annual output, 150,000 tons), so that cement supply should be adequate.

Because the line goes through arid desert areas where the shortage of water is a continuing problem, a large portion of the line will probably be dieselized. The USSR has stated that its entire section of the line will be dieselized. The Chinese Communists have announced that the 390-km San-tao-kou - Ha-mi section will be dieselized, and it is likely that other sections will be operated in the same manner, eliminating the need for intermediate coal and water supply depots along the route. The change-of-gauge transloading point between Soviet broad-gauge and Chinese standard-gauge track may be at Ngo-ho-erh-li-li on the border, at Wu-su, or as far inside China as Urumchi.

The Trans-Sinkiang line is of considerable strategic and economic importance. It will provide the shortest rail route from the central and southern part of the European USSR to the Chinese Communist east coast and Southeast Asia and will shorten rail transport between Moscow and Peking by more than 1,000 km. 222/ Moreover, it will be less affected by severe climatic conditions than are the routes through Manchuria and Mongolia. It will provide another overland rail

S-E-C-R-E-T

link to help offset the effects of any sea blockade applied to the east coast of China. Established oilfields at Yu-men and the newly found fields at Karamai and Wu-erh-ho will be serviced by the line, as will the refinery, "the largest of its type in China," which recently came under construction in the Karamai region. 223/ China could import over this line Dzhezkazgan and Kounrad iron ores and Karaganda coal as well as ordnance and heavy industrial equipment from the USSR.\* In return, the USSR could receive agricultural products and certain mineral products from China.

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\* A 650-km railroad from Karaganda direct to Aktogay is planned by the USSR for future construction. Kounrad may also be linked with Aktogay by a projected 400-km line.

S-E-C-R-E-T

III. Projected Lines

S-E-C-R-E-T

S-E-C-R-E-T

Number: 26\*

Terminals: Chang-p'ing - Lung-yen  
Coordinates: 25°18' N - 117°24' E; 25°11' N - 117°00' E  
Province: Fukien

Length (kilometers): 57  
Construction organization: No. 2 Design Institute

Survey: Begun: July 1956 Completed: 1957 (estimated)

Comments:

This is a branch of the Ying-t'an - Amoy line which will connect that line with iron and coal deposits in southwest Fukien Province. The Lung-yen reserves, reportedly quite large, could be transported to the metallurgical center of Wu-han by way of this branch line and the existing railroad system. Exploiting the coal resources would prove beneficial, in that the timber resources of Fukien could be diverted to other than fuel uses. At the Party Congress held in Peking in July 1957, an Overseas Chinese leader, Tan Kah-kee, criticized the delay in constructing the line, 224/ and T'eng Tai-yuan, Minister of Railroads, responded that construction could not be started immediately because surveys were still under way. 225/ Because of its national and regional importance, the line will probably be completed by mid-1958.

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\* See the map, Figure 10, following p. 66, above.

S-E-C-R-E-T

Number: 27\*

Terminals: Chan-tien - Tung-kuan  
Coordinates: 35°01' N - 113°33' E; 37°21' N - 112°28' E  
Provinces: Honan, Shansi

Length (kilometers): 364  
Construction organizations: No. 4 Engineering Bureau  
No. 3 Design Institute

Survey: Begun: 1954 Completed: June 1957  
(plan)

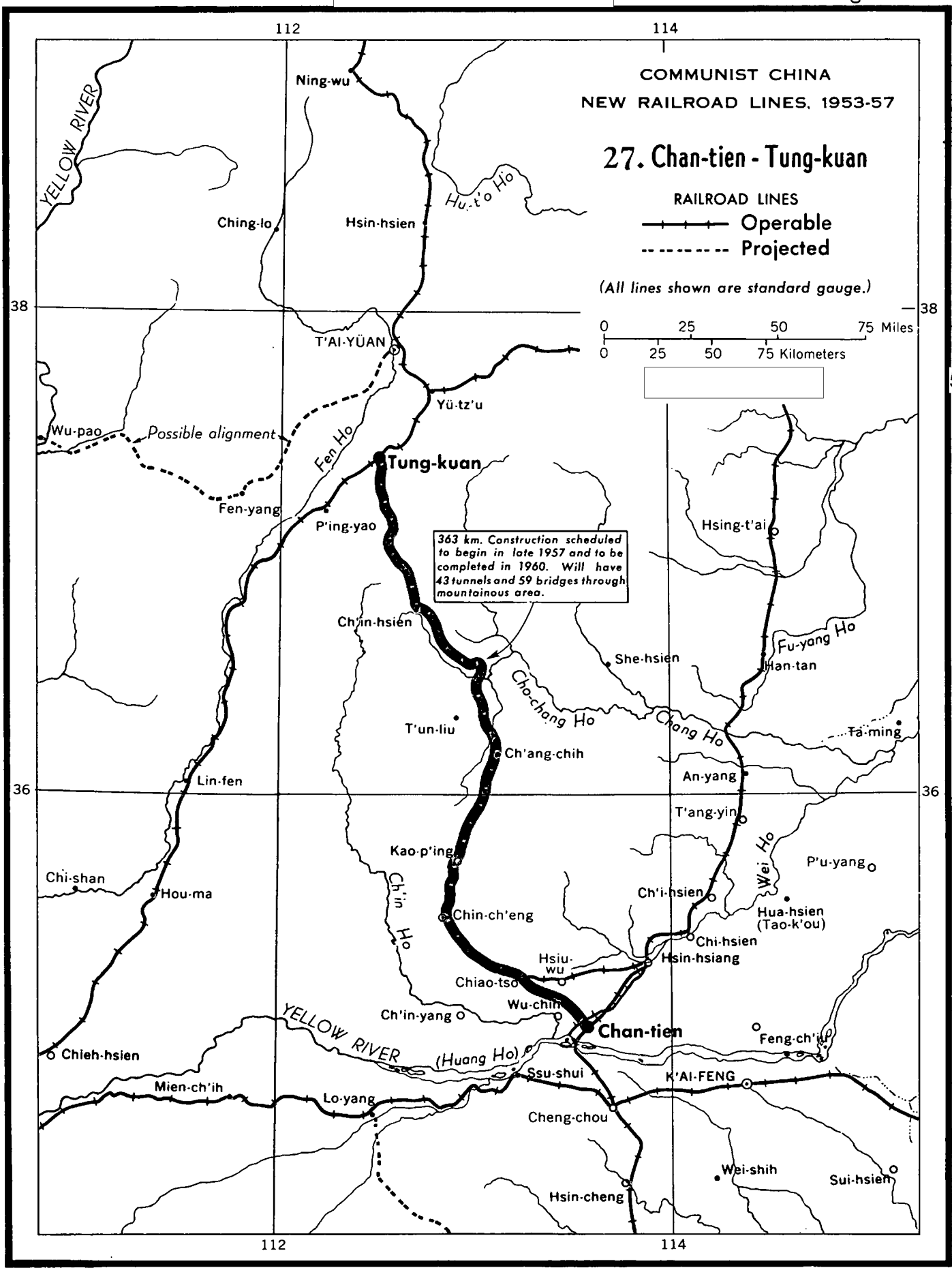
Comments:

Construction of this line was scheduled to begin late in 1957 and to be completed 2-1/2 years from the start of construction. 226/ The line, which will connect the Peking - Han-kou and Ta-t'ung - Feng-ling-tu lines, will pass through considerable stretches of rolling, dissected plateaus and uplands in which grading will be difficult because of steep slopes. The most difficult construction on the line, which will have a total of 43 tunnels and 59 bridges, will be centered in the T'ai-hsing Mountains. 227/

The line will permit exploitation of the reportedly rich coking coal reserves in the area, will provide more direct connections to points such as T'ai-yuan and Chi-ning, and will alleviate congestion at Shih-chia-chuang and other railroad centers.

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\* See the map, Figure 15, following p. 102.



S-E-C-R-E-T

Number: 28\*

Terminals: Wu-hu - Kuei-ch'i  
Coordinates: 31°21' N - 118°22' E; 28°17' N - 117°11' E  
Provinces: Anhwei, Kiangsi

Length (kilometers): 570 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

This line was conceived by the Nationalists, and track was laid to the vicinity of She-hsien. Subsequently, the track was dismantled and laid elsewhere. During the high tide of acceleration in railroad construction in early 1956 it was decided to begin construction of this line in the third quarter of 1956. 228/ The subsequent cutback in construction of new lines in 1957 will probably cause the initiation of construction to be delayed until 1958. On completion, probably before 1962, this line will link the Nanking - Wu-hu line in the north with the Chekiang-Kiangsi line at Kuei-ch'i in the south.

\* See the map, Figure 11, following p. 76, above.



S-E-C-R-E-T

Number: 29\*

Terminals: Hsiang-t'an - Kuei-ting  
Coordinates: 27°51' N - 112°54' E; 26°34' N - 107°14' E  
Provinces: Hunan, Kweichow

Length (kilometers): 855 (approximate)  
Construction organization: N.A.

Survey: Begun: September 1956 Completed: N.A.

Comments:

The survey for this, the Hunan-Kweichow line, was completed by the Nationalists, and about 200 km were constructed to Hsin-hua. The war probably caused the subsequent destruction and/or dismantling of this section, as it has not been operational since 1949. During the speedup campaign in early 1956, construction was scheduled to begin between Hsiang-t'an and Hsin-hua before the end of the year. 229/ Subsequently, the schedule was slowed. In September 1956, ground survey teams were sent out, and survey continues at the present time. 230/

On the eastern section from Hsiang-t'an to Hsin-hua the terrain offers few obstacles, and, utilizing the old roadbed, the Chinese Communists should make rapid progress. From Hsin-hua west to the border of Kweichow, there are limited areas of rough hills which will require moderate excavation. In Kweichow the route crosses a dissected plateau area, with the alignment confined to valleys, sometimes narrow, where moderate blasting and excavation will be required. The Nationalist survey had the line joining the Liu-chou - Kuei-yang line at Tu-yun. However, the most recent Chinese atlas   suggest a junction at or near Kuei-ting. In sum, over most of the route, few engineering difficulties are anticipated, and the line could be constructed in 24 to 30 months.

50X1  
50X1

On completion, probably before 1962, this line will considerably shorten the distance from all cities south of the Lung-Hai Railroad and north of Ying-t'an to Kuei-yang, Chungking, and K'un-ming.

\* See the map, Figure 16, following p. 106.



S-E-C-R-E-T

Number: 30\*

Terminals: Kalgan (Chang-chia-k'ou) - Chi-ning  
Coordinates: 40°50' N - 114°56' E; 40°57' N - 113°02' E  
Provinces: Hopeh, Inner Mongolian Autonomous Region

Length (kilometers): 166  
Construction organization: No. 3 Design Institute

Survey: Begun: 1957 Completed: 1958  
(estimated)

Comments:

On 18 July 1957 the Chinese Communists announced that the initial stage of designing for this line had been completed. The eastern terminus will be the Chi-ning South Station; the western, at Kuo-lei-chuang, near Kalgan. The distance of the present route through Ta-t'ung will be reduced by 111 km through construction of this cutoff line, which is scheduled to be built as a first-class mainline railroad. The alignment will be through broken terrain necessitating 18 tunnels and 38 medium and large bridges. 231/ Because of its importance to the east-west flow of traffic, the line will probably be started in 1958-59.

\* See the map, Figure 7, following p. 48, above.

S-E-C-R-E-T

Number: 31\*

Terminals: Lan-chou - Te-ling-k'a  
Coordinates: 36°03' N - 103°41' E; 37°15' N - 97°00' E (approximate)  
Provinces: Kansu, Tsinghai

Length (kilometers): 810 (approximate)  
Construction organizations: No. 1 Design Institute  
No. 1 Engineering Bureau

Survey: Begun: December 1955 Completed: 1957 (estimated)

Comments:

The Nationalists planned this line to extend only a little beyond Hsi-ning before it was to go southwestward to Lhasa. In May 1956 the Chinese Communists announced that construction on the 176-km section from Ho-k'ou (the actual eastern terminus) to Hsi-ning would start in the fourth quarter of 1956. 232/ Subsequently, however, the cut-back in construction of new lines resulted in construction on this line being delayed. The 1957 work plan for the line envisages only the same amount of work as performed in 1956, and this to be done with fewer workers. 233/ This statement indicates (1) that survey will continue this year and no actual construction will be started and (2) that some workers may have been transferred to construction sites along the Pao-t'ou - Lan-chou line, currently under construction. Further ground and aerial surveys will therefore constitute the bulk of the work on this line in 1957.

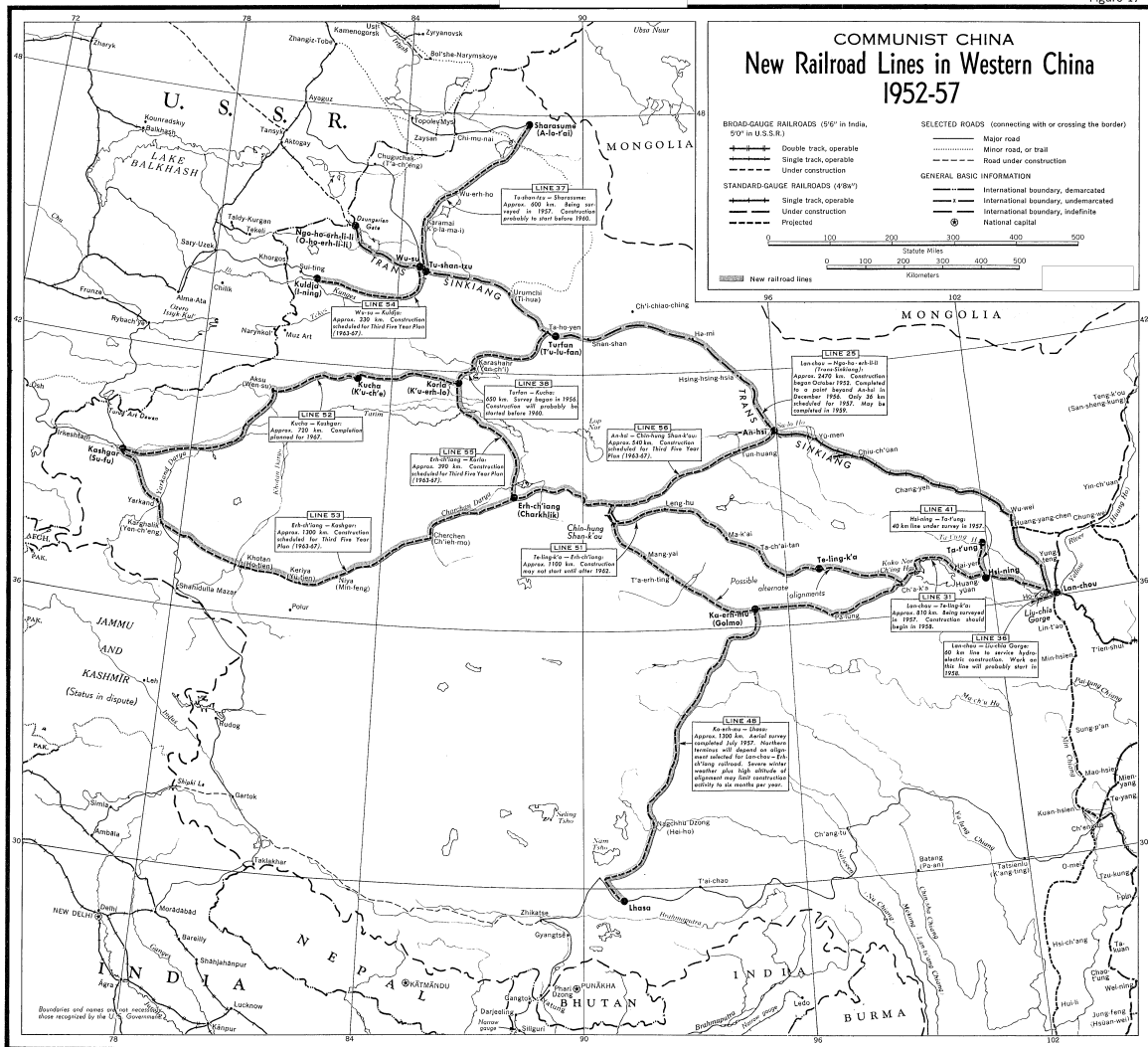
From Ho-k'ou to Hsi-ning the projected alignment follows gradually rising river valleys. One 13-km gorge at the border between Kansu and Tsinghai and two shorter gorges will cause some engineering difficulties. There will be 4 tunnels and 8 large bridges constructed on this section. From Hsi-ning to Ch'a-k'a the alignment goes around the north side of Koko Nor by way of Huang-yuan and Hai-yen and crosses the South Koko Nor Mountains. The route from Ch'a-k'a westward is uncertain. The Chinese Communists themselves apparently have not settled on a definite alignment. Previously it was thought that the line would run south of Koko Nor through Ka-erh-mu and T'a-erh-ting and terminate at Mang-yai, thus paralleling the Tibet-Tsinghai and Tsinghai-Sinkiang highways. Recently, however, the Chinese announced that the terminus

\* See the map, Figure 17, following p. 110.

## S-E-C-R-E-T

would be Te-ling-k'a near Wo-p'eng, to the north of the previous alignment. <sup>234/</sup> Beyond Te-ling-k'a the projected Tsinghai-Sinkiang line is scheduled to continue north to Ma-k'ai, Leng-hu, and Erh-ch'iang. Unless a branch of the line is constructed south from Ch'a-k'a or Te-ling-k'a, Ka-erh-mu (announced as the northern terminus of the projected Tsinghai-Tibet line), T'a-erh-ting, and Mang-yai will be bypassed. If the northern alignment is retained and no branch line constructed, Ka-erh-mu will probably be replaced as the northern terminus of the Tsinghai-Tibet line by a point on the northern alignment. Extended supply lines, sandy areas lacking water, and severe winter conditions of low temperatures and strong winds -- these factors will reduce the tracklaying rate substantially during the winter months.

Construction of this line, which will permit exploration and exploitation of petroleum, iron, coal, and other natural resources of the Tsaidam Basin, will probably begin in 1958 and should be completed by the end of 1962. This trunkline in the future will connect such distant points as Kashgar in the extreme west and Lhasa in Tibet with the national railroad network.



S-E-C-R-E-T

Number: 32\*

Terminals: Chu-chou - Kan-chou (Kan-hsien)  
Coordinates: 27°49' N - 113°09' E; 25°52' N - 114°56' E  
Provinces: Hunan, Kiangsi

Length (kilometers): 380 (approximate)  
Construction organization: N.A.

Survey: Begun: April 1956 Completed: 1957 (estimated)

Comments:

Although the northern terminus of this line is given as Chu-chou, construction will actually start from P'ing-shan-t'ang, a point on the Canton - Han-kou railroad 52 km south of Chu-chou. 235/ From April to September 1956 a preliminary survey was carried out and designing begun on the line. 236/ Further planning and designing was scheduled to continue in 1957. 237/ A further extension to Lung-yen on the Chang-p'ing - Lung-yen branch line, which would shorten considerably the distance between Han-kou and Amoy, may be envisaged by the Chinese Communists.

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\* See the map, Figure 19, inside back cover.

S-E-C-R-E-T

Number: 33\*

Terminals: Ch'eng-tu - K'un-ming  
Coordinates: 30°40' N - 104°04' E; 25°04' N - 102°41' E  
Provinces: Szechwan, Yunnan

Length (kilometers): 930  
Construction organization: No. 2 Design Institute

Survey: Begun: June 1956 Completed: 1957 (estimated)

Comments:

A preliminary survey of this line was completed in February 1957 and an aerial survey in June 1957. 238/ Designing is scheduled to continue during 1957. 239/ On the basis of the preliminary survey an alignment 120 km shorter than the originally planned 1,050-km route was selected. 240/ The terrain varies from limited areas of flat land to gently sloping plains and unrestricted alignments near both terminals to rugged mountains, particularly in the Hsi-ch'ang - O-mei area, in which alignments are severely restricted by steep slopes and narrow valleys. In Yunnan, some rugged plateaus will be encountered which will necessitate moderate rock excavation.

Although the Chinese Communists stated in June 1956 that "active work" would begin on this line before the end of 1957, the cutback in construction of new lines in 1957 doubtless will delay the initiation of construction. 241/ The Chinese have said that construction equipment currently in use on the Nei-chiang - K'un-ming line will be reused on this line. 242/ It is doubtful whether much of this equipment could be made available before 1958. The status of designing indicates that construction of this line probably will begin earlier than its northward extension from Ch'eng-tu to Lan-chou. It is estimated that preliminary construction will begin in 1958, and tracklaying will be completed in 1962. The line will provide China with another north-south arterial line west of the Nei-chiang - K'un-ming line; will enable exploitation of reportedly abundant reserves of iron, coal, and nonferrous metals in the area; and will improve economic relations and administrative control in the area.

\* See the map, Figure 12, following p. 84, above.



## S-E-C-R-E-T

Number: 34\*

Terminals: Lan-chou - Ch'eng-tu  
 Coordinates: 36°03' N - 103°41' E; 30°40' N - 104°04' E  
 Provinces: Kansu, Szechwan

Length (kilometers): 1,000  
 Construction organizations: No. 1 Design Institute  
 No. 2 Design Institute

Survey: Begun: June 1956 Completed: 1958 (estimated)

Comments:

Surveying was carried out from both ends of this line in 1956, and designing was scheduled to begin in 1957. 243/ The 1957 plan for designing, however, contains no mention of the line, and it may be presumed that the schedule has been slowed. Actual construction will probably start in 1958 on the 148-km Ch'eng-tu - Wen-ch'uan section, which will permit immediate exploitation of the timber and minerals in the Wen-ch'uan area. 244/ A lone Chinese Communist announcement in June 1956 stated that a survey was under way on a 600-km line from Lan-chou to Chao-hua, a point just below Kuang-yuan on the Pao-chi - Ch'eng-tu line. 245/ Nothing has been said since regarding this line, and subsequent remarks on points of alignment between Lan-chou and Ch'eng-tu suggest that the plan for a Chao-hua line may have been canceled. 246/ Although the terrain between Lan-chou and Chao-hua is less rugged than that on the projected Lan-chou - Ch'eng-tu route, it is so formidable that the Chinese would probably not construct the line merely as an alternative route to the Pao-chi - Lan-chou line and the northern section of the Pao-chi - Ch'eng-tu line, both of which have been subject to blockages. Such a line would not appear economically justifiable in the immediate future.

The Lan-chou - Ch'eng-tu line will traverse rugged mountains along the Szechwan-Kansu border, in which extremely steep slopes and narrow, winding river valleys will be encountered. The narrowness of the river valleys will require excessive rock excavations, and landslides will be a continual hazard. This will be the second trunkline connecting the northwest with the southwest; the first

\* See the map, Figure 9, following p. 58, above.

S-E-C-R-E-T

is the Pao-chi - Ch'eng-tu line. Joined with the Ch'eng-tu - K'un-ming line, the railroad from Lan-chou to Ch'eng-tu will be the middle section of a north-south international system more than 1,000 km from the nearest coast. Petroleum can be transported from the northwest to Szechwan Province and timber and agricultural products from Szechwan Province to the northwest over this line. It will also enable the Chinese Communists to exploit the water sources in the area of the Min River and will help them to extend and exert administrative control over peoples in these areas.

S-E-C-R-E-T

Number: 35\*

Terminals: Tzu-po (Po-shan) - Hsin-t'ai  
Coordinates: 36°29' N - 117°50' E; 35°54' N - 117°44' E  
Province: Shantung

Length (kilometers): 98  
Construction organization: No. 3 Design Institute

Survey: Begun: Under way Completed: 1957 (plan)  
January 1957

Comments:

This line is to be constructed to enable the Chinese Communists to exploit more fully the rich coal reserves of central Shantung Province. The line is the central section of a planned three-part project under the No. 3 Design Institute. 247/ The northern section (Chang-tien - Tzu-po) and the southern section (Tz'u-yao - Hsin-t'ai) are to be reconstructed. 248/ Construction will probably start in 1958, and the line should be operational in 1959.

\* See the map, Figure 8, following p. 54, above.

S-E-C-R-E-T

Number: 36\*

Terminals: Lan-chou - Liu-chia Gorge  
Coordinates: 36°03' N - 103°41' E; 35°57' N - 103°15' E  
Province: Kansu

Length (kilometers): 60  
Construction organization: N.A.

Survey: Begun: May 1956 Completed: 1957 (estimated)

Comments:

The immediate purpose of this line will be to transport construction materials to the site of the Liu-chia Gorge hydroelectric power station on the Yellow River above Lan-chou, the second of 2 hydroelectric projects of 1 million kw each (the first is San-men Gorge) on the Yellow River in Honan Province. 249/ Preparations were being made for construction of the line in late 1956, but this schedule may have been revised, as the Chinese Communists did not mention the line in 1957. 250/ Construction will probably start in 1958, and the line should be operational in the same year.

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\* See the map, Figure 19, inside back cover.

## S-E-C-R-E-T

Number: 37\*

Terminals: Tu-shan-tzu - Sharasume (A-lo-t'ai)  
 Coordinates: 44°20' N - 84°51' E; 47°52' N - 88°07' E  
 Province: Sinkiang

Length (kilometers): 600 (approximate)  
 Construction organization: No. 1 Design Institute

Survey: Begun: September 1956 Completed: N.A.

Comments:

This line is one of the major projected branches of the Trans-Sinkiang (Lan-chou - Ngo-ho-erh-li-li) trunkline. It will start at either Tu-shan-tzu or Wu-su, will run through the K'o-la-ma-i (Karamai) and Wu-erh-ho oilfields, and will terminate at Sharasume (A-lo-t'ai) in the Altai Mountains. Much of the presumed alignment will cross flat to rolling plains, and in only a few areas will steeper slopes be encountered. Construction will be relatively easy, and only poor subsurface drainage and flooding will present engineering problems. The preliminary investigation of the route, lasting only a little more than 1 month, will be followed by preliminary and final surveys, and designing can be expected to begin shortly thereafter. 251 Construction will probably begin before 1960. The line will enable the Chinese Communists to exploit the petroleum reserves of K'o-la-ma-i and Wu-erh-ho and the natural resources in the Altai Mountains.

\* See the map, Figure 17, following p. 110, above.

## S-E-C-R-E-T

Number: 38\*

Terminals: Turfan - Kucha (K'u-ch'e)  
 Coordinates: 42°56' N - 89°10' E; 41°43' N - 82°55' E  
 Province: Sinkiang

Length (kilometers): 650  
 Construction organization: No. 1 Design Institute

Survey: Begun: September 1956 Completed: N.A.

Comments:

Since surveys were announced to be starting on this line in September 1956 the Chinese Communists have stated that it would be extended beyond Kucha, more than 720 km, to Kashgar by 1967.\*\* 252/ This line will start at Ta-ho-yen, a point 30 km northwest of Turfan on the Trans-Sinkiang (Lan-chou - Ngo-ho-erh-li-li) line, and will follow the existing road through Korla to Kucha. In the eastern section from Ta-ho-yen to Korla the most difficult construction problems will be in the mountains, narrow valleys, and gorges along the southern margin of the Turfan Depression and in the mountains north of Korla. Considerable blasting and excavation will be required, and landslides will be a problem. The remainder of the alignment on the eastern section will cross well-drained, level plains. The western section (Korla-Kucha) is generally level to gently sloping, and no major construction problems are foreseen. This railroad, which probably will come under construction before 1960, will play an important role in the economic development of this remote region. 253/ Minerals, cotton, grain, and other agricultural products are reportedly abundant in the area. Administratively, the line would permit the Chinese to implement their control in the area more fully.

\* See the map, Figure 17, following p. 110, above.

\*\* See the Kucha-Kashgar line, No. 52, p. 151, below.

S-E-C-R-E-T

Number: 39\*

Terminals: Sian - Wu-wei  
Coordinates: 34°16' N - 108°54' E; 37°58' N - 102°48' E  
Provinces: Shensi, Kansu

Length (kilometers): 850  
Construction organization: N.A.

Survey: Begun: August 1956 Completed: July 1957

Comments:

An aerial survey was completed on this line in November 1956, and in July 1957 an over-all survey was completed. 254/ Construction will probably start before 1960. The northern terminus will actually be at Huang-yang-chen, approximately 34 km south of Wu-wei. From Sian to Chung-wei the alignment for the most part will follow stream valleys, many of them steep sided, requiring considerable cut and fill. Many high bridges will have to be constructed across deep gullies on the loess tablelands. From Chung-wei to Huang-yang-chen the alignment will pass through sandy desert areas in which the major engineering problem will be the construction of suitable roadbeds. This line will help the development of the regional economy, will ease the heavy traffic on the western end of the Lung-Hai Railroad, and will set the stage for Sian to become a major transportation hub. 255/

\* See the map, Figure 13, following p. 88, above.

S-E-C-R-E-T

Number: 40\*

Terminals: Sian - Hua-yuan  
Coordinates: 34°16' N - 108°54' E; 31°15' N - 113°58' E  
Provinces: Shensi, Hupeh

Length (kilometers): 750 (approximate)  
Construction organization: N.A.

Survey: Begun: August 1956 Completed: N.A.

Comments:

This line was planned by the Nationalists, but no construction was undertaken. In November 1956, aerial survey of the line was being concluded. 256/ Construction will probably start before 1960. From Sian to the Shensi-Honan-Hupeh border area, about 20 percent of the alignment passes through rolling, dissected plateaus. Some rugged mountains with narrow, gorge-like valleys will require substantial blasting and excavation. The terrain from Lao-ho-k'ou to Hua-yuan is made up of gently sloping to level plains, and little excavation will be required on this section. This line will considerably shorten railroad distances in the central part of Communist China and will give Wu-han and the southeast a direct access route to the northwest. At the same time, it will relieve the congestion on the Lung-Hai Railroad from Cheng-chou to the west.

\* See the map, Figure 19, inside back cover.



S-E-C-R-E-T

Number: 41\*

Terminals: Hsi-ning - Ta-t'ung

Coordinates: 36°37' N - 101°46' E; 37°05' N - 101°35' E

Province: Tsinghai

Length (kilometers): 40

Construction organization: No. 1 Design Institute

Survey: Begun: 1957 Completed: 1958 (estimated)

Comments:

This line, which will connect Hsi-ning on the Lan-chou - Te-ling-k'a line with neighboring coalfields, was under survey in 1957. Construction probably will not begin until the Lan-chou - Te-ling-k'a line reaches Hsi-ning during the Second Five Year Plan.

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\* See the map, Figure 17, following p. 110, above.

S-E-C-R-E-T

Number: 42\*

Terminals: Kuei-yang - Jung-feng (or Kuei-yang - Wei-ning)  
Coordinates: 26°35' N - 106°43' E; 26°52' N - 105°12' E  
Provinces: Kweichow, Yunnan

Length (kilometers): 470 (approximate)  
Construction organization: No. 2 Design Institute

Survey: Begun: 7 May 1957 Completed: 1958 (estimated)

Comments:

This line, known in the Chinese Communist press as the Yunnan-Kweichow line, was previously projected to connect with the Nei-chiang - K'un-ming line at Wei-ning. Even in the Nationalist plans, Wei-ning was the planned junction. The most recent information indicates that two alternative junctions, Wei-ning and Jung-feng, are being considered. 257/ Surveying on the Kuei-yang - An-shun section was scheduled to be completed by August 1957. 258/ Construction will probably start before 1960. The route passes through dissected plateau country which will require considerable blasting and excavation. Areas of limestone will impede the preparation of suitable foundations for roadbed. On completion, this line will connect K'un-ming and Kuei-yang and will boost the regional economy.

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\* See the map, Figure 12, following p. 84, above.

S-E-C-R-E-T

Number: 43\*

Terminals: P'ing-ting-shan - Lo-yang  
Coordinates: 33°45' N - 113°20' E; 34°41' N - 112°28' E  
Province: Honan

Length (kilometers): 200 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

This line will permit exploitation of the reportedly abundant coal resources of Honan Province. Although it has been mentioned only cursorily in the Chinese Communist press, 259/ it will possibly come under construction during the Second Five Year Plan. Near P'ing-ting-shan on the eastern section of the route, numerous deep ravines will impede construction, but beyond Pao-feng the alignment will pass through favorable terrain requiring much cut and fill but otherwise presenting no great obstacles to the constructors.

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\* See the map, Figure 19, inside back cover.

S-E-C-R-E-T

Number: 44\*

Terminals: P'ing-ting-shan - Lao-ho-k'ou

Coordinates: 33°45' N - 113°20' E; 32°22' N - 111°40' E

Provinces: Honan, Hupeh

Length (kilometers): 230 (approximate)

Construction organization: N.A.

Survey: Begun: N.A.

Completed: N.A.

Comments:

This line, which will link the coal area of P'ing-ting-shan with the projected Sian - Wu-wei line, has received little publicity in the Chinese Communist press. 260/ In view of the importance of coal to the economy, it could come under construction before 1962. The alignment will cross some ravines to Nan-yang, but southwest of that point construction problems will be minor.

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\* See the map, Figure 19, inside back cover.

S-E-C-R-E-T

Number: 45\*

Terminals: T'ai-yuan - Chung-wei  
Coordinates: 37°51' N - 112°33' E; 37°30' N - 105°09' E  
Province: Shansi

Length (kilometers): 900 (approximate)  
Construction organization: No. 1 Design Institute

Survey: Begun: September 1957 Completed: N.A.

Comments:

This line will link the important industrial center of T'ai-yuan with Chung-wei, a point on the Pao-t'ou - Lan-chou line, currently under construction. 261/ It is estimated that surveying and designing for the line will take 2 years. At the conclusion of this phase, even if the line is given a sufficiently high priority, construction will probably not be completed in less than 3-1/2 years, or until the start of the Third Five Year Plan (1963-67). The alignment will pass through sparsely populated hilly uplands characterized by numerous steep-walled ravines. At least two major river crossings will have to be constructed.

The line will link northwest and north China. It will be the western leg of an east-west artery parallel to the vital Lung-Hai Railroad and will help ease the strain on the latter. It will thus be nationally important both from an economic and a strategic standpoint.

\* See the map, Figure 13, following p. 88, above.

## S-E-C-R-E-T

Number: 46\*

Terminals: Amoy-Canton

Coordinates: 24°27' N - 118°05' E; 23°07' N - 113°15' E

Provinces: Fukien, Kwangtung

Length (kilometers): 850 (approximate)

Construction organization: N.A.

Survey: Begun: N.A.

Completed: Before 1949

## Comments:

Although the Chinese Communist press has said little concerning this line, its alignment is shown in the 1953 Chinese atlas, and it is presumed that construction will commence before 1962. Several alignments are possible, but, on the basis of the Chinese atlas of 1953, pre-1949 Nationalist plans,  and terrain considerations, it is believed that an inland alignment by way of Ho-yan, Mei-hsien, and Lung-ch'i will be followed from Canton to Amoy. 262/ This alignment will cross rough hills and low mountains requiring much blasting in Fukien Province. In Kwangtung the alignment will follow open valleys and bases of low hills, for the most part, where some blasting will be required. A coastal alignment would require less blasting and excavation, but low-lying rice fields would make the finding of suitable foundations difficult. A coastal alignment would connect Canton, Swatow, and Amoy but would not service the inland area of Kwangtung Province. The inland route, on the other hand, will not only service the relatively isolated interior area but will probably have a branch line, approximately 120 km long, from Mei-hsien to Swatow.

50X1

Strategically, the line will give the port of Amoy, opposite Taiwan, a second railroad supply line. Economically, it will improve communications in the area and boost the regional economy. In the future it is possible that the line may be linked with Fort Bayard.

\* See the map, Figure 19, inside back cover.

S-E-C-R-E-T

Number: 47\*

Terminals: Mei-hsien - Swatow

Coordinates: 24°18' N - 116°07' E; 23°22' N - 116°40' E

Province: Kwangtung

Length (kilometers): 120 (approximate)

Construction organization: N.A.

Survey: Begun: N.A.

Completed: Before 1949

Comments:

The entire route was surveyed by the Nationalists, but only the 41-km section from Chao-an to Swatow was operable before 1949, and it was dismantled in 1938. This branch of the projected Amoy-Canton line will link the inland area of Kwangtung with the port of Swatow. For this reason, it is both economically and strategically important.

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\* See the map, Figure 19, inside back cover.

## S-E-C-R-E-T

Number: 48\*

Terminals: Ka-erh-mu (Golmo) - Lhasa  
 Coordinates: 36°23' N - 44°55' E; 28°40' N - 91°08' E  
 Provinces: Tsinghai, Tibet

Length (kilometers): 1,300 (approximate)  
 Construction organization: No. 1 Design Institute

Survey: Begun: November 1956 Completed: N.A.

Comments:

This line was planned by the Nationalists, but surveys were not undertaken. An aerial survey, begun in November 1956, was completed in July 1957. 263/ The surface alignment survey was planned to start on completion of the aerial survey. The alignment will start at Ka-erh-mu or a point on the Lan-chou - Tsinghai line (recently an unlocated place named Ch'uan-chi was mentioned as the northern terminus) and will probably follow the Tsinghai-Tibet highway passing through Hei-ho and Yang-pa-ching. Most of the route is across a very high plateau with an average elevation of 4,600 m. Marsh and bog areas and numerous mountain ranges bisecting the plateau will make construction difficult. The Chinese Communist builders will experience their most difficult terrain conditions in crossing the T'ang-ku-la Mountains. Severe climatic conditions with low temperatures (to -40° F) and extremely strong and persistent westerly winds will handicap, if not halt, construction for 6 months each year. The high altitude, necessitating oxygen masks, will reduce the efficiency of workers. The area is called by the Chinese "the roof of the world," and in early 1957 they were selecting "robust and otherwise qualified young men" for the task of ground survey. 264/ The difficult conditions enumerated above make doubtful the completion of the line before the Third Five Year Plan.

The Chinese Communist press has given several reasons for the construction of the line, as follows: (1) to exploit natural resources, (2) to develop agriculture and animal husbandry, (3) to strengthen national defense, (4) to facilitate construction in peripheral areas, and (5) to improve living conditions of racial minorities in this remote territory. 265/ Initially, it is doubtful that the line would

\* See the map, Figure 17, following p. 110, above.



S-E-C-R-E-T

be economically justified. To bring Tibet, like Sinkiang, under closer control of Peking is probably the overriding reason for construction of the line.

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S-E-C-R-E-T

S-E-C-R-E-T

Number: 49\*

Terminals: Lin-chiang-chen - Shao-kuan (Ch'u-chiang)  
Coordinates: 28°02' N - 115°23' E; 24°48' N - 113°35' E  
Provinces: Kiangsi, Kwangtung

Length (kilometers): 625 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: Before 1949

Comments:

This line was planned and surveyed by the Nationalists before 1949, but no construction was undertaken. It will link Ch'u-chiang on the Canton - Han-k'ou line with Lin-chiang-chen on the Chekiang-Kiangsi line. One report states that there are indications that surveying may be in progress on the line. 266/ On completion it will reduce the distance from Canton to Hangchou, Shanghai, and Nanking and will boost the economic activities in the area of Kiangsi and Kwangtung Provinces, which it traverses.

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\* See the map, Figure 19, inside back cover.

S-E-C-R-E-T

Number: 50\*

Terminals: K'un-ming - Meng-ting  
Coordinates: 25°04' N - 102°41' E; 23°33' N - 99°05' E  
Province: Yunnan

Length (kilometers): 880 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: Before 1949

Comments:

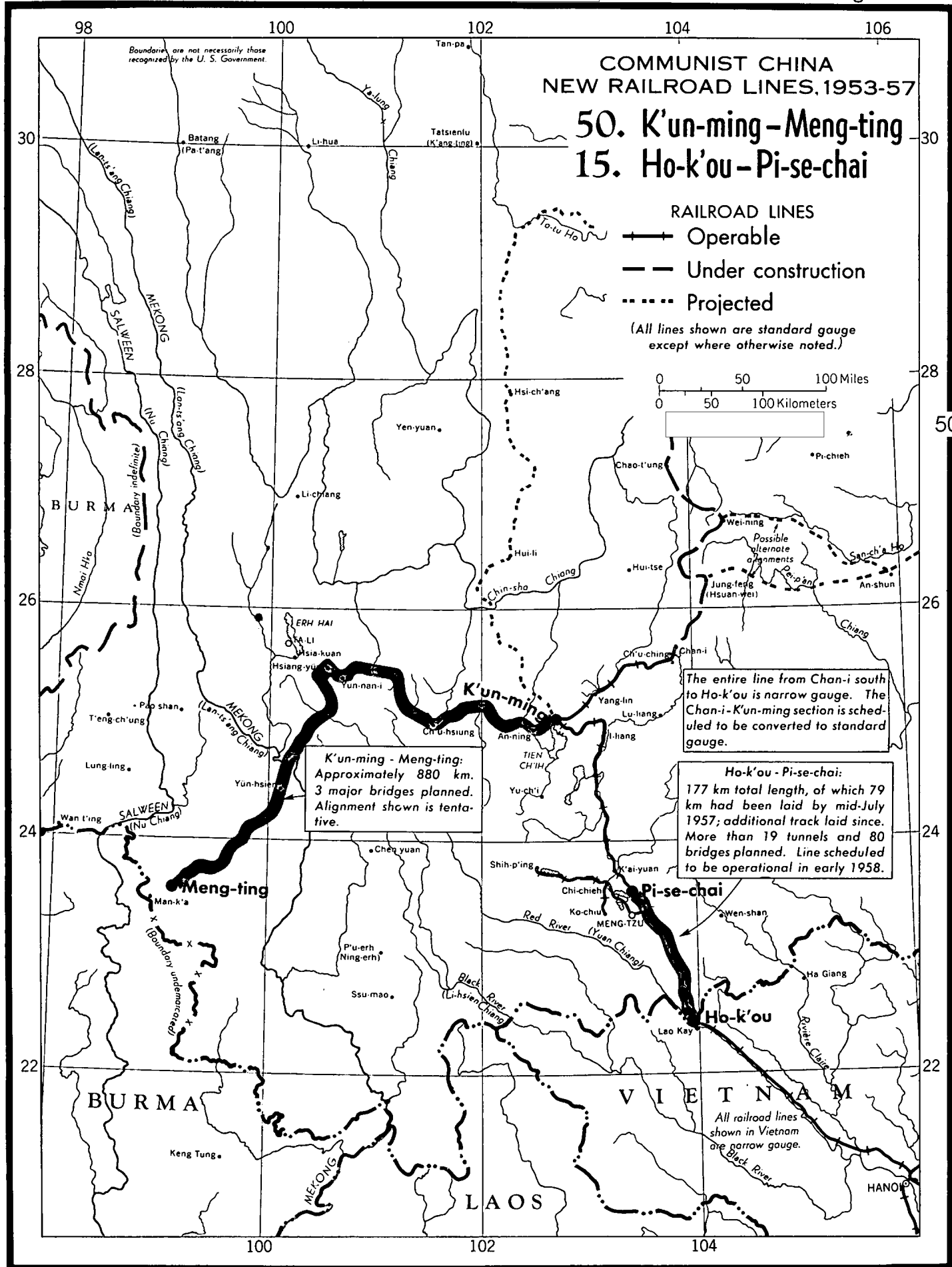
This line, stretching to the border of Burma, was planned and surveyed by the Nationalists. Construction was started in November 1938. 267/ Only the 36-km section from K'un-ming to An-ning was completed before the war forced a suspension of activity. 268/\*\* The Nationalists planned to lay the line in narrow gauge. The most recent Chinese atlas carries the line as projected, [redacted] construction has already begun. 269/ A statement by a Soviet railroad official in early 1957 that railroad connections "will be increased considerably" in 1957 between the USSR and Burma (as well as North Vietnam, Mongolia, and Communist China) suggests that planning in connection with the line may be under way. 270/ If, as seems likely, the Chinese undertake actual construction, the terrain problems will be formidable. Rugged hills and mountains characterize most of the projected route. Considerable blasting will be required, and landslides will present a serious maintenance problem in certain areas. If the Communists retain the alignment projected by the Nationalists, tunnels aggregating more than 1,700 m in length and 3 major bridges across the Yang-p'i, Nan-ting, and Mekong Rivers will be required. 271/ Whereas the Nationalists undertook the project intending to use it as a main international supply route, there appears to be little immediate economic justification for the Communists to construct the line in the near future other than to facilitate the exploration of underground resources. Probably its most important function will be to permit the Communists to extend their political influence into this remote area.

50X1  
50X1

\* See the map, Figure 18, following p. 148.

\*\* Although the existing section is in narrow gauge, it is presumed that the entire line, including this section, will be constructed in standard gauge.

Figure 18



50X1

S-E-C-R-E-T

Number: 51\*

Terminals: Te-ling-k'a - Erh-ch'iang (Charklik)  
Coordinates: 37°15' N - 97°00' E (approximate); 39°02' N - 88°00' E  
Provinces: Tsinghai, Sinkiang

Length (kilometers): 1,100 km (approximate)  
Construction organization: No. 1 Design Institute

Survey: Begun: January 1957 Completed: N.A.

Comments:

Early in 1957 the Chinese Communists announced long-range plans for a railroad network in Sinkiang and Tsinghai. They stated that construction would be started during the Third Five Year Plan on a line eastward from Kashgar through Erh-ch'iang to Chin-hung Shan-k'ou, a distance of approximately 1,640 km. 272/ More recent announcements, however, indicate that on completion of the Lan-chou - Te-ling-k'a line a new trunkline extension will be constructed westward from Te-ling-k'a about 1,100 km to Erh-ch'iang. 273/ This line, which probably will not come under construction until after 1962, will pass through the oil-rich Tsaidam Basin, traverse a sparsely populated sandy desert area, and cross the Ta-k'en-ta-pan and the Ch'i-lien Mountains. The climate and terrain will prove obstacles to speedy construction. On completion, the line's immediate function will be the transportation of petroleum from the Tsaidam Basin.

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\* See the map, Figure 17, following p. 110, above.

S-E-C-R-E-T

Number: 52\*

Terminals: Kucha (K'u-ch'e) - Kashgar  
Coordinates: 41°43' N - 82°55' E; 39°25' N - 75°58' E  
Province: Sinkiang

Length (kilometers): 720 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

This line will link Kashgar with the Turfan-Kucha branch of the Trans-Sinkiang (Lan-chou - Ngo-ho-erh-li-li) line. The Chinese Communists have announced that the line will be in operation in 1967. <sup>274/</sup> The alignment will cross primarily level terrain involving little construction difficulty. This line will tie the westernmost part of the country to the established railroad network, will improve administrative control in this remote area, and will facilitate exploration of underground resources.

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\* See the map, Figure 17, following p. 110, above.

S-E-C-R-E-T

Number: 53\*

Terminals: Erh-ch'iang (Charklik) - Kashgar  
Coordinates: 39°02' N - 88°00' E; 39°25' N - 75°58' E  
Province: Sinkiang

Length (kilometers): 1,300 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

Construction on this line is scheduled to begin during the Third Five Year Plan. 275 It will be a vital east-west trunkline in the integrated railroad system projected for Sinkiang. The alignment will probably run parallel with the highway between Kashgar and Niya. More than one-half of the route as far east as Khotan -- roughly one-third of the distance from Kashgar to Erh-ch'iang -- lies in or near oases, requiring much bridging. The largest bridge required will span the Yarkand River. The line is important because it will facilitate an extension of administrative control, improvement of the local economy, and exploitation and exploration of underground resources in the area.

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\* See the map, Figure 17, following p. 110, above.

S-E-C-R-E-T

Number: 54\*

Terminals: Wu-su - Kuldja (I-ning)  
Coordinates: 44°26' N - 84°42' E; 43°55' N - 81°18' E  
Province: Sinkiang

Length (kilometers): 330 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

This route was one of the alignments considered for the Trans-Sinkiang Railroad, which was to extend to Alma-Ata in the USSR. Subsequently, the present low-level route by way of Ngo-ho-erh-li-li in the Dzungarian Gate to Aktogay in the USSR was selected. The rugged descent from the Sayram Nuur Basin to the Ili Valley will present the most difficult grading problems of any line west of Urumchi. Construction is scheduled to begin during 1963-67. 276/

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\* See the map, Figure 17, following p. 110, above.



S-E-C-R-E-T

Number: 55\*

Terminals: Erh-ch'iang (Charklik) - Korla  
Coordinates: 39°02' N - 88°00' E; 41°46' N - 85°55' E  
Province: Sinkiang

Length (kilometers): 390 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

Another line scheduled to come under construction during the Third Five Year Plan, 277/ this route is a north-south trunkline connecting the Te-ling-k'a - Erh-ch'iang - Kashgar line with the Turfan-Kucha-Kashgar line. Construction will be impeded by severe climatic conditions and an extended supply line, but the terrain will offer few obstacles.

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\* See the map, Figure 17, following p. 110, above.

S-E-C-R-E-T

Number: 56\*

Terminals: An-hsi - Chin-hung Shan-k'ou  
Coordinates: 40°31' N - 95°50' E; 38°45' N - 91°05' E (approximate)  
Provinces: Kansu, Tsinghai

Length (kilometers): 540 (approximate)  
Construction organization: N.A.

Survey: Begun: N.A. Completed: N.A.

Comments:

This line is another project of the Third Five Year Plan. 278/  
On completion it will connect the Trans-Sinkiang (Lan-chou -  
Ngo-ho-erh-li-li) line with the Te-ling-k'a - Erh-ch'iang line.  
Because of the high elevations and rugged terrain on the border  
of Tsinghai and Sinkiang, the rate of construction may be slow,  
especially during the winter months.

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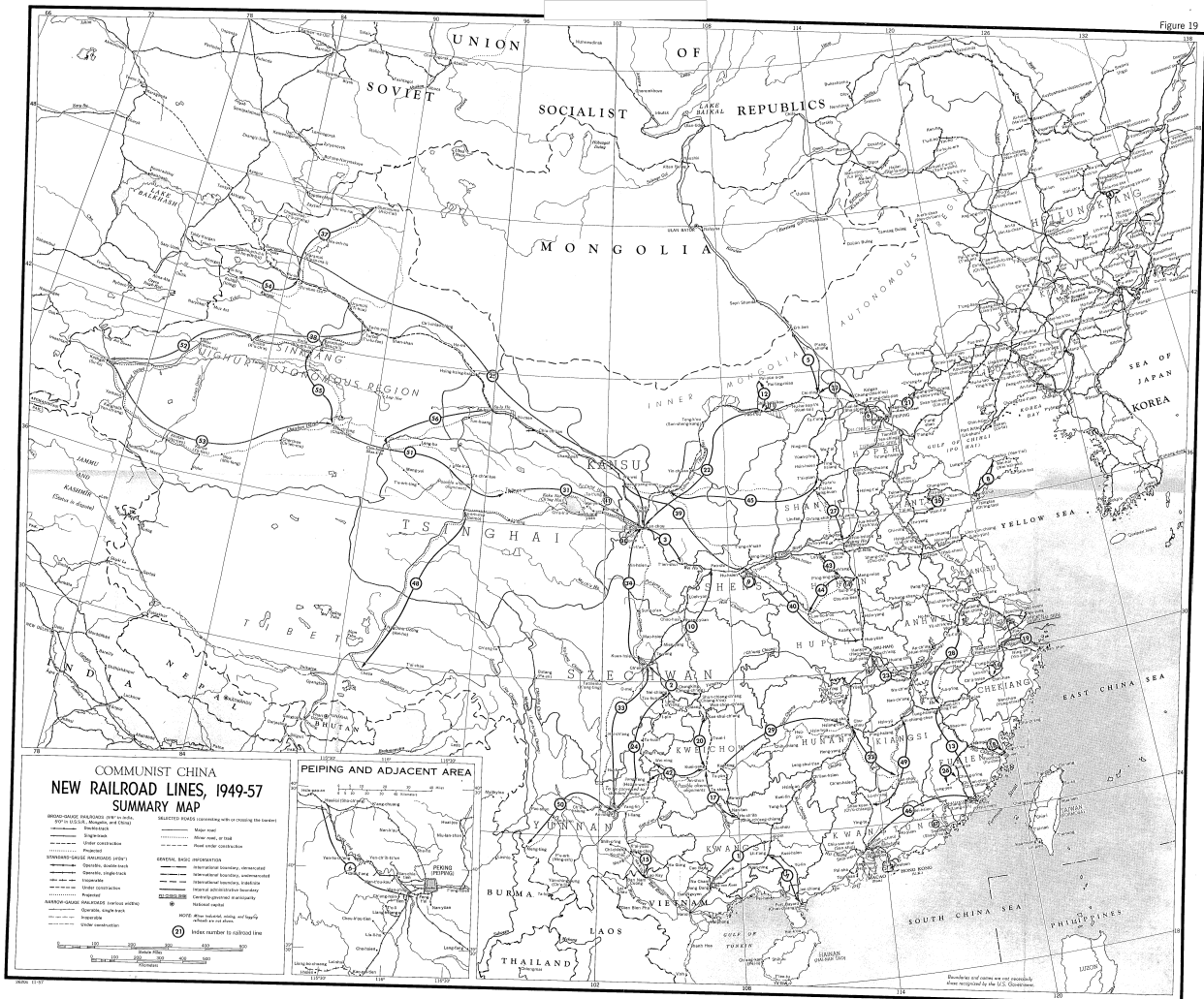
\* See the map, Figure 17, following p. 110, above.

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Figure 19

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