Approved For Release 2004/07/08 : CIA-RDP80-00926A003800030010-8

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CLASSIFICATION CONFIDENTIAL

CENTRAL INTELLIGENCE AGENCY

REPORT

INFORMATION REPORT

CD NO.

COUNTRY Taiwan

DATE DISTR. 30 Aug 51

SUBJECT Taiwan Railway - Plans for Improvement

NO. OF PAGES 4

PLACE ACQUIRED

NO. OF ENCLS. (LISTED BELOW)

25X1

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SUPPLEMENT TO REPORT NO.

DATE OF INFORMATION

25X1

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1. The Taiwan Railway in 1951 approaches the point where rehabilitation is nearing completion. There has been a gradual increase in the freight traffic but any effort to increase the economy through industrial expansion must be accompanied by further improvement in transportation facilities.

2. It seems that recently the decision has been made to concentrate money and effort on a large scale expansion of industry to the point of possible sacrifice of everything else. Unless there is a parallel increase in transportation facilities, the products of the expanded industry will require stockpiling. Another important factor that will affect the future traffic volume is the sudden increase of military traffic. It is a great possibility but no military traffic other than normal quantity is included in the proposed program.

3. PRODUCTION VOLUME OF PRINCIPAL COMMODITIES

Item	Quantity 1945	1948	1949	1950	1951*	1952*	
1. Sugar	320	365	631	612	340	800	(NOTE: Add
2. Rice	585	1,068	1,214	1,413	1,520	1,600	(000 to all fig-
3. Sweet Potato	1,165	2,003	1,975	2,209	**	**	(ures to get
4. Salt	132	398	241	175	300	300	(correct amount)
5. Timber	87	301	300	337	570	600	
6. Cement	79	236	291	332	450	600	
7. Banana	32	110	128	128	--	--	
8. Coal	795	1,629	1,164	1,400	1,500	1,500	
9. Fertilizer	--	118	178	318	400	450***	

NOTES: * These figures are estimates
** Dry potato sticks in weight = 1/3 of sweet potatoes
*** Production and import
All figures are MTs with the exception of Timber which is given in CuMs

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4. TRAFFIC VOLUME

Commodity	1949 Year	1949 Peak Mts Ts	1950 Year	1950 Peak Mts Ts	1951 Year	1951 Peak Mts Ts	1952 Year	1952 Peak Mts Ts	1953 Year	1953 Peak Mts Ts
Sugar	581	62	786	91	420	63	1,000	150	1,200	180
Rice	216	12	266	19	1,320	21	400	28	400	28
Coal	888	90	709	71	700	70	800	80	850	85
Salt	190	15	168	35	200	35	200	38	350	38
Timber	290	26	244	29	300	30	350	35	400	40
Fertilizer	318	20	411	56	500	70	600	80	600	80
Sand & Stone	228	21	294	41	300	40	300	40	300	40
Milit Cargo	767	86	974	57	1,000	60	1,000	60	1,200	75
Ry Materials	495	32	566	43	600	50	600	50	600	50
Cement	163	12	182	15	200	20	200	20	200	20
Bricks	112	12	47	7	50	5	60	6	60	6
Charcoal	60	5	58	7	60	8	60	8	60	8
Live stock	44	3	44	3	50	4	50	4	50	4
Banana	37	3	30	2	40	3	40	3	40	3
Others	1,016	98	1,090	95	1,100	115	1,200	130	1,250	160
LCL	206	16	225	24	250	25	280	30	280	30
Total	5,610	515	6,096	595	5,690	619	7,140	762	7,790	847

(NOTE: Add 000 to all figures to get correct amount. All figures are MTs with the exception of Timber which is given in CuMs.)

NOTES:

Sugar

(a) Total traffic volume is usually 20% more than total production due to back and forth shipments. During Japanese occupation, sugar movement was evenly distributed over twelve months of the year because of steady market in Japan. Now sugar has to be rushed for exportation whenever a contract is signed.

Rice

(b) Only about 20% of rice produced is moved by railway. However, rapid increase of rice and sweet potato production will provide greater volume of export rice.

Coal

(c) Coal used to be the biggest item of railway freight. Due to decrease of bunker coal and export, there will be no appreciable increase of coal traffic in the near future except some increase, mainly for sugar refineries in Southern Taiwan

Salt

(d) Salt traffic is expected to increase since the Production Board has decided to increase its production and has obtained a market in Japan.

Timber

(e) Timber traffic will be increased from 1951 because of (1) a 70% increase of production according to the Forestry Bureau's plan and (2) large import of Douglas fir and Lauan timber by ECA.

Military Cargo

(f) Military cargo is the most difficult to estimate.

5. TRAIN DENSITY

(a) Increase of trains to meet heavier traffic volume is possible with increase of rolling stock in all but one section, Changhua to Hsin Shih

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(b) Changhua to Hsin Shih is the "bottleneck" because:

(1) It carries the heaviest freight traffic

(2) It is the only single track section of the trunk line

(3) The bridges of this section have the lowest load carrying capacity.

(c) Starting from 1948, the Railway has been strengthening and repairing bridges of the whole system especially in the "bottleneck." The loading capacity of all bridges in this section will be raised to standard E-33 before June 1951 and enable operation of heavy locomotives.

(d) Hauling limit of heavy locomotives is 950 gross tons. Deducting empty cars and tare weights, the pay load of each train will be raised to 356 tons.

(e) Train Densities (Changhua to Hsin Shih)

(1) It is estimated that from 62 to 68 trains per day will be necessary in 1953 to carry the traffic (passenger and freight) in the four sections of the "bottleneck," in contrast to 40 to 48 trains in 1950.

(2) To solve the traffic congestion, two steps can be taken, (1) double track, and (2) signalling installation.

(3) Changhua to Linnei Section - On this 27.7 km section, no double tracking had been started by the Japanese previous to the war.

(4) Linnei to Chia-I Section - Only double tracking of 8.5 km is necessary.

(5) Chia-I to Hsin Shih Section - All earthwork and substructures of bridges to double track this 29.3 km section had been completed by the Japanese. (For recommended improvement, see Summary.)

6. ROLLING STOCK

The number of freight cars required is based upon the estimate of 25,000 MTs per day in the peak month of 1952. It is assumed that 50 of the 119 covered wagons now used as passenger cars can be returned to freight use if 20 new passenger cars can be procured in 1951-52.

The number of locomotives required is computed from actual train operating necessity with assumed increase of repair necessity.

New freight cars required	--	229
New passenger cars required	--	22
New locomotives required	--	7

7. TSEN-WEN-SI BRIDGE

The Tsen-wen-si bridge has been a constant menace to the safety of operation. The shifting of the main channel in 1928 from under Piers #2 - #12 (spanned by trusses) to Piers #12 - #20 (spanned by shorter plate girders) has produced serious scouring upon the foundations of the latter piers which, due to errors in Japanese design, were built much smaller than the former ones. Protection work has been done each year since 1928 which has only partly checked the further tipping of the piers. The steel trusses of this bridge, fabricated in 1903, are near the end of their service life under heavy traffic, corrosive weathering and deferred maintenance. Construction of a new double track bridge was started by the Japanese in 1940. Work was suspended in 1941 with 30% completed.

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8. SIGNAL SYSTEM

The present method of train operation is the staff block system. The engineman receives a tablet at a station which indicates that he has a clear block to the next station. It is believed that Central Traffic Control (CTC) will raise the capacity of a single track to 80% the capacity of a double track.

9. SUMMARY OF RECOMMENDED IMPROVEMENT

The most economical manner of raising the capacity of the Taipeh - Kaohsiung trunk line railroad appears to be:

(1) Keelung-Taipeh - Install automatic block signals

(2) Changhua to Linnei - Install CTC operation

(3) Linnei to Hsin Shih - Complete double tracking

(4) Improvement of interlocking plants

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