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JPRS: 3447

29 June 1960

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- Communist China -

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F O R E W O R D

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JPRS: 3447
CSO: 3895-D

ANTI-FLOOD PREPARATION WORK IN ANHWEI PROVINCE IN 1959
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Following is a translation of an unsigned article in the Chinese-language periodical, Shui-li Yu Tien-li (Water Conservancy and Electric Power), Anhwei, No 9, 5 May 1959.

At the All-province Water Conservancy Conference held in February it was decided that the controlled use of large water conservation projects is to be strengthened and medium and small projects are to be put to united use according to the river valley or area concerned. The main tasks and requirements of anti-flood measures were determined and concrete suggestions put forward as to the work of preparation. Work has already commenced and preparatory work is as below.

1. The Organization and Leadership Aspect

T. N. deals with the organization of cadres and work force.

2. The Project Quality Inspection Aspect

Seven project quality inspection teams were organized in the first decade of March and sent to key points in the areas of the Yangtse and Huai rivers to inspect dykes, sluice gates and medium and small water conservancy projects; pre-flood-period inspections of large water conservation projects at present under construction are to be carried out by the Provincial Construction Department. All special districts and hsien have thoroughly planned the work of project inspection and at present most of the units concerned have finished the task whilst some are still engaged with its execution. Party committees at all levels are paying extremely close attention to this work. In the Pang-fou and Fou-yang Special Districts north of the Huai river there are many medium and small sluice gates and each hsien established a sluice gate inspection team equipped with the necessary tools to carry out the inspection and make any repairs necessary and solve any problems, on the spot. The inspection and repair where necessary of large reservoirs is at present being carried out, the overall inspection of the Fo-tzu-ling Reservoir is expected to be completed in the first decade of April.

Several important problems which have become apparent during the inspections and the way with which they have been dealt:

a. The problem of strengthening the main dykes. It was pointed out at the All-province Water Conservancy Conference that the height of the dykes along the main courses of the Yangtse River and Huai Ho were upwards of 2 decimeters lower than designed standards and that the slopes of the dykes were insufficient, this must be put to rights. At present the dykes along the Yangtse at Ma-an-shan are being raised to a height of 1.8 meters above the flood water level of 1954; it is planned to raise the height of the dykes along the

Yangtze in Wu-hu and Tang-t'u hsiens one meter above the 1954 flood level. Dykes along the tributaries of the main streams must be heightened accordingly.

b. The problems of guarding against the collapse of dykes and the protection of banks. There are some places where there has been a comparatively serious collapse of the river banks, such places as Ma-chia-wo on the Kuang-chi Yu dyke, An-ch'ing city; Kuan-ti-miao in Wang-chiang hsien; San-pai-chang in Ts'ung-yang hsien; the Kuang-huang yu dyke, T'ung-ling city; Heng-hsing chou island, Maan-shan city. At these points the edge of the water is an average of 70 meters from the foot of the dykes, being 20 meters in the closest places. Steps are being taken to remedy this situation and find out the causes and speed of the collapses.

c. Problems associated with seepage through dykes. Heavy seepage was apparent through 33 kilometers of dyke in Ts'ung-yang Hsien due to the preponderance of sand-like materials in the dyke foundations. It has been decided to dig out a strip at the foot of the outside edge of the dyke and replace it with earth. It is planned to put in a strip of earth 3,500 meters long, 3 meters deep, 9 meters broad at the face and 3 meters wide at the bottom, this year. A work force of 3,600 civil workers will be used on the project.

d. The problem of breaches in dykes. Three breaches in the dykes were discovered in the Fou-yang Special District; preparatory work to repair the breaches has already been carried out. The T'ung-ho embankment in Wu-ho Hsien was breached last winter to facilitate the transport of iron and steel materials and this avenue is now being used for the transport of stone materials for the Pei-tien-tzu lock project; every preparation has been made, however, for the restoration of the embankment in May.

e. Problems associated with bore testing the dykes. This method of testing has been used on the dykes along the Yangtse and has uncovered many hidden shortcomings; personnel are mobilized to continue this work along the Yangtse but shortages of work force and bore testing equipment have prevented the use of this method of testing on the main dykes along the Huai. It is planned, however, to make use of this method to test key places in the Huai dykes before the coming of the flood period.

f. The problem of heightening and consolidating the sluice gates. The average height of the Hua-yang, Pai-tang, Shu-chuang-t'ai and Fen-chuang gates along the Yangtse is lower than the water level of the 1954 flood. It is planned to heighten the gates, if only in a temporary manner, if necessary, and to take measures to protect the anti-flood gates which are also used for irrigation there are many anti-flood and irrigation gates in Fou-yang and Pang-fou Special Districts. Poor quality work in the Pa-li Ho gate, Ying-shang hsien, has resulted in its being unserviceable, however, the units responsible for the original work have accepted the task of setting the gate to rights and now every effort is being made to complete the task before the advent of the floods.

g. Problems encountered with the mechanism for opening and closing the flood overflow gate[s] of the Fo-tzu-ling reservoir. After the gate[s] and control mechanism had been installed it was found that the weight of the gate[s] was 14%-40% heavier under conditions of no water pressure than the original designed weight. Tests had to be carried out to see whether the gates would operate under conditions of water pressure. After inspection and improvement by personnel of the Fo-tzu-ling Hydro-electric Station, concerned units of the Water Conservancy Machine Research Room of the No 1 Machine Industry Ministry joined in and carried out tests with the operation of the gates, weight was also measured with the aid of an electric resistance strain measuring device. The two series of tests proved that the gate[s] would operate satisfactorily under water pressure, furthermore research was carried out on improving the quality of the automatic equipment.

h. Small reservoir projects. An inspection of small reservoir projects everywhere has revealed that on the average progress is slow and there is still much to be done in a very short space of time, especially with regard to the sluice gate sections of the reservoirs, if both aspects of spring production and flood waters are to be dealt with. In order to speed up the development of small reservoirs and permit their safely storing water at an early date, inspection personnel made several suggestions for improvements to the appropriate designing or works sections of the Ts'ung-yang, Ho-shang-ch'iao [at Ma-an-shan], Ch'ing-k'ou-fan and the Kun-yu-fei and Ching-wang-miao [latter two at T'ung-ch'eng] reservoir control bodies. Improvements suggested included revision of project design standards, work reductions, shortened lines of transport for dam materials, improved labor organization and definite ideas concerning water conductance, also anti-flood measures during the works period and work lay-out and means of ensuring project quality.

3. The Controlled Use Aspect

Concerned personnel of large integrated use reservoirs such as the Fo-tzu-ling, Mei-shan and Hsiang-hung-tien reservoirs have drawn up a plan for controlled use the year around and have laid down a reasonably rigid policy as regards water level limitation during floods and water storage. Moreover a reservoir anti-flood regulation scheme has been drawn up to control the operation of the reservoirs in accordance with hydrology and weather forecasting works, thus the function of the reservoirs may be developed to the full while still safeguarding against floods.

The large numbers of projects to be controlled and the numbers under construction and not yet to the construction stage render it impracticable to draw up a rigid control use plan for those areas serviced by river networks. Instead several small river network use plans are to be drawn up before the advent of the flood period, such will be applicable to such areas as the Ch'eng-chi area in Fou-yang hsien, the Shuang-kou area in Po Hsien, Wo-lung-hu in Sui-ch'i Hsien and Tzu-lu-hu in Su Hsien. The principle of use is as follows:

- May : Store as much water as possible for irrigation
- June : River network to store a set quantity of water for irrigation of the paddy fields, at the same time a certain reservoir capacity must be emptied as a preparation against flood.
- July- : Flood period - emphasis on storage but water must be released when necessary; attention must be paid to hydrology and weather forecasts, crop requirements and underground water conditions.
- Sept

Similarly the above relevant factors must be applied when drawing up control use plans for feeder rivers such as the Sui Ho and T'io Ho.

4. The Work of Determining the Water Position

The work of determining the water position is an important link in ensuring a victory in the struggle against the floods. In order to meet the extensive requirements of the river network areas as regards the determination of the water position, the Anhwei Water Conservancy and Electric Power Department edited and printed practical use hydrology forecasts; all stations were required to submit forecasts for this purpose in order to meet the requirements of national hydrology stations. At the same time the Department edited and printed hydrology forecasting methods for the masses and area forecasting handbooks. Information concerning the water position from the masses will be used to supplement that of national stations.

The Anhwei Chamber of Water Conservancy and Electric Power has made use of long range weather forecasts issued by the Ho-fei Weather Bureau and has put out a flood waters forecast for Anhwei Province over the April - October flood period.

Personnel engaged in hydrology work being carried out by the masses are responsible for the following.

- a. Irrigation - Calculate the amounts of water stored in definite areas each day and the area which could be irrigated by same. This will yield the number of days on which water will be available for irrigation.
- b. Anti-flood - Calculate the maximum water storage capacity of the area less the actual amount of water stored. This will yield storage capacity.
- c. Calculate what rainfall could be stored.
- d. Report the water position on fine days.
- e. Report storage increases on rainy days.

5. The Anti-Flood Equipment Aspect

Anti-flood equipment should be locally supplied where possible but the State will assist with such materials as lumber, bamboo, oiled materials, etc.

Existing flood fighting equipment should be thoroughly cleaned and serviced and stored at key points. All equipment which was borrowed in the all out effort for iron and steel in 1958 (such as water pumps) should be recovered for use against the floods.

Every effort must be made to organize large quantities of straw bags, etc. in the time remaining before the flood period so that they will be readily available when required.

6. Pumping Machinery Repair Aspect

Industrial, agricultural, capital construction, water conservancy and electric power and machine industry units are to combine to set up irrigation and drainage equipment repair offices. The function of this type of equipment must be developed to the full. According to statistics, there were 3,234 water pumps totalling 71,515 H.P. throughout the province on the 6th of April; of these, 2,111 pumps were unserviceable, a total of 51,998 H.P. or 65.5 percent of the total pumps throughout the provinces. 1,104 pumps totalling 30,063 horsepower have now been repaired.

7. Personnel Training Aspect

There is a shortage of trained technical personnel to take part in anti-flood measures throughout Anhwei, such measures include sluice gate repair, hydrology works carried out by the masses, etc. Training classes are being run where possible to improve this situation.

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