

U.S. and China strengthen scientific, economic ties

by William Jones and Marsha Freeman

During the last week in October, Dr. Song Jian, the People's Republic of China minister in charge of the State Science and Technology Commission, visited the United States to attend the seventh meeting of the Sino-U.S. Joint Commission on Science and Technology. The commission had been established by Deng Xiaoping and President Jimmy Carter during Deng's visit to the United States in 1979. Dr. Song arrived with a high-powered delegation of more than 20 top Chinese government officials from a variety of ministries and the Academy of Sciences, to discuss with their American counterparts, various areas of U.S.-Chinese scientific cooperation.

On Oct. 25, protocols were signed between the Chinese government and the Environmental Protection Agency, the departments of Transportation and Energy, and the Geological Survey of the U.S. Interior Department, covering a variety of fields ranging from transportation and environmental technologies to nuclear energy, high-energy physics, and magnetic fusion research. On the same day, Chinese Minister Counselor for Science and Technology Wang Zengrong signed a framework agreement with the Department of Commerce's Technology Administration on "cooperation in civil industrial technology."

During his trip to the United States, Minister Song visited Houston, Texas, where he was given a VIP tour of the NASA Johnson Space Center, visited the University of Houston's Center for Superconductivity, and received a Doctor of Humane Letters degree from the university on Oct. 30, in recognition of this "outstanding academic and scientific accomplishments and his untiring efforts to promote science and technology in the P.R.C. and abroad."

Speaking at a forum of the U.S.-China Business Council in Washington on Oct. 24, Dr. Song described in detail one area of U.S.-China cooperation he considers essential. He explained that China is faced with the necessity of increasing its electrical generating capacity tenfold in the few coming years. "We have abundant coal reserves," Song explained, "but coal generates CO₂, and China is second only to the U.S. in coal burning." The only solution, he said, is the rapid increase of electricity generation by the use of nuclear energy.

"Therefore, we are seeking assistance from industry to develop nuclear and other sources of energy," Song said. "We have very good cooperation with your country in a variety of areas," he told his audience of American businessmen, "but

the only problem now existing is the issue of nuclear power generation. . . . We must rapidly increase the electrical generation capacity."

China is already purchasing a nuclear reactor, a Candu, from Canada, and is also negotiating with the French and the Russians on nuclear technology, Song said. The Chinese were nevertheless concerned after Chernobyl, he added, about the problems surrounding the Russian nuclear technology. "I told some people from your government today that we would very much like to buy GE's reactors," Song said. "You mean Westinghouse's," the U.S.-China Business Council's official corrected him. "Oh, yes, Westinghouse," said Song. The minor correction reflected the political situation at present, in which only Westinghouse, of the U.S. nuclear suppliers, has an exemption from the ban on the sale of commercial nuclear technology to China.

TVA assistance for China's dams

Since the late 1930s, officials from the U.S. government-run Tennessee Valley Authority and experts from China have together planned the development of the huge resources of China's Chang, or Yangtze River, modeled on the TVA's reshaping of the Tennessee River Valley. Thousands of people have died in the periodic flooding of the Yangtze, but the Chinese want to build not just a dam to control flooding, but a water management system that provides flood control, improved navigation, hydroelectric power, and water for agriculture and industry—the integrated development approach of the TVA.

During World War II, TVA Chairman David Lilienthal maintained a close working relationship with Hu Shih, the Chinese ambassador to the United States. Engineers from the National Resource Commission of China visited the TVA, and an electrical engineer from the TVA was an adviser to the Chinese War Production Board during the war.

Lilienthal reports in his diaries that, in 1939, Hu Shih suggested to Lilienthal that the TVA help rebuild China after the war. In December 1944, a delegation of 26 Chinese visitors, who were planning the industrial development of China, came to the TVA to study its development approach for 10 days.

On Feb. 6, 1945, Lilienthal met with Don Nelson, whom he describes as President Franklin Roosevelt's personal representative to China. They discussed the Yangtze Three Gorges

project, which was described as the Chinese TVA, and Nelson said that the President wanted Lilienthal to be one of seven industrial leaders to go to China to help them work out their industrialization. Although Lilienthal begged off, on April 8, 1945, Nelson sent his assistant, Edwin Locke, to confer with Lilienthal about the next steps needed in the Yangtze River development projects, because apparently there were some differences on how the project should be designed. After the death of President Roosevelt, this project was not carried to fruition.

Over the past few years, the Chinese government has begun construction of the massive Three Gorges River dam system on the Yangtze, but flood control is also required on the tributary rivers that feed into the Yangtze. The Chinese government is still very interested in having the TVA's experts apply their expertise and experience to taming one of the world's largest river systems.

Economic opportunities

To that end, the TVA and the state of Tennessee sponsored a conference in Beijing on Sept. 3-6, titled "Economic Opportunities Through Water and Energy." The conference featured presentations on the Ninth Five-Year Plan of the Ministry of Water Resources of China, a talk by U.S. Ambassador James Sasser (former U.S. senator from the state of Tennessee), and by TVA Chairman Craven Crowell. Sixty-five representatives from industrial companies in Tennessee and out-of-region company representatives with experience and interest in economic relations with China participated in the conference.

During the conference, the Chinese government and the TVA signed three memoranda of understanding (MOUs) that provide the framework for technical assistance from the TVA to the development of the Han and Li rivers, to increase the efficiency of China's hydroelectric plants, and to exchange information that could lead to TVA input into improving Chinese coal-fired power plants.

On Sept. 2, the TVA and the Ministry of Electric Power signed an MOU for an exchange of information on power plant operation and maintenance, and visits, exchanges of personnel, and training seminars.

The following day, the minister of water resources and the TVA, in the Great Hall of the People, signed an MOU for the TVA to review the master plan for the development of the Han River, and the training of Chinese hydropower project managers at TVA facilities. The Han River is the largest tributary of the Yangtze River, and is located in Hubei and Shaanxi provinces. It has many similarities to the Tennessee River. The Chinese plan calls for the construction of 12 or more hydroelectric projects, and a water-diversion project that would bring water to the dry Beijing area.

A third agreement, signed by the TVA with the Lishui Hydro and Power Corp., provides for the TVA to assist that firm in the development of the Li River Basin. The Li is one of four rivers that flow into the expansive Dongting Lake in

Hunan province, in south-central China. The Lishui firm is a government corporation, similar to the TVA. Assistance the TVA hopes to provide could include development of river basin management systems, planning and operating multiple reservoirs and power plants, flood forecasting, and implementing a basin environmental plan. The TVA may also perform technical studies in power production, flood control, and water supply.

During the conference, TVA Chairman Crowell stated, "China has the greatest hydropower potential in the world and is planning dramatic improvements to its river systems. TVA can play a unique role in China as we pursue an international strategy." Referring to a presentation on China's Five-Year Plan, Crowell said that the plan is "ambitious and offers dramatic improvements for the people of this great nation. It is impressive that the leaders of China welcome the cooperation and involvement of business interests from outside the nation in the achievement of that plan."

The need for cooperation

As Dr. Song said in his comments to the U.S.-China Business Council, "Recent experience has shown that international cooperation in the area of science and technology is the most effective way to disseminate modern knowledge, science, and civilization, and promote social progress." President Clinton has said on numerous occasions that the relationship his administration can establish with China will be a determining factor for the duration of the century.

According to a participant from the nuclear industry at the conference in Beijing, industry is optimistic that the sanctions against China will be lifted by President Clinton to allow increased commercial activity in the nuclear area. The TVA had invited the participant to the conference, because the Chinese wanted to discuss nuclear technology development with American firms.

Another U.S. industry participant joked that the "national bird of China is the construction crane." Material distributed at the Beijing conference on the Ninth Five-Year Plan of China, outlines the plan to quadruple the 1980 per-capita gross national product by the year 2000, "basically eliminating poverty." Electric power output is projected to increase by 7% per year, a ten-year doubling rate.

The Five-Year Plan states that "great attention will be paid to taming major rivers and lakes in order to enhance capabilities to prevent flooding, combat drought, and discharge floodwater. By the year 2000, various major rivers will have the capacity to control flooding on levels considered the heaviest encountered since the founding of the People's Republic in 1949."

Because economic development and the elimination of poverty and starvation is a Chinese government goal, the means of cementing a strong relationship will be precisely the assistance the United States is able to provide China in developing its tremendous economic potential.