

August 15, 2000

MEMORANDUM TO: Chairman Meserve  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan  
Commissioner Merrifield

FROM: Janice Dunn Lee, Director */RA/*  
Office of International Programs

SUBJECT: VISIT OF VICE MINISTER SONG, CHINA STATE  
ENVIRONMENTAL PROTECTION ADMINISTRATION,  
AUGUST 18, 2000

Mr. Song, Ruixiang, Vice Minister of the China State Environmental Protection Administration (SEPA), will meet with the Commission on Friday, August 18, 2000. Attached are the meeting schedule, biographical information, country summary, and talking points for use during the visit.

Attachments: 1. Commission Schedule  
2. Biographical Information  
3. Country Summary  
4. Background Information and Talking Points

cc: SECY  
OGC  
EDO  
OPA  
NRR  
RES  
NMSS

CONTACT: Kevin Burke, OIP  
415-2317

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VISIT TO NRC OF  
MR. SONG, RUIXIANG  
VICE MINISTER  
CHINA STATE ENVIRONMENTAL PROTECTION ADMINISTRATION  
AUGUST 18, 2000

SCHEDULE

9:30 a.m. Meeting with Chairman Meserve  
10:00 a.m. Meeting with Commissioner Diaz  
10:30 a.m. Meeting with EDO Travers  
11:00 a.m. Tour of Emergency Operations Center (EDO will accompany)  
12:00 noon Chairman-hosted lunch  
1:15 p.m. Depart NRC

BIOGRAPHICAL INFORMATION:

Vice Minister Song, Ruixiang (Attachment 2)

PREVIOUS CONTACT WITH THE COMMISSION

This is the Vice Minister's first meeting with the Commission.

ACCOMPANYING PERSONS

Mr. Zhang, Shigang Deputy Director General of Department of International Cooperation,  
State Environmental Protection Administration (SEPA)  
Dr. Jiang, Wei Division Director of Department of International Cooperation,  
SEPA  
(Will also serve as the interpreter)  
Mr. Xiong, Yuehui Minister's Secretary  
Mr. Huang, Wei Second Secretary (Science and Technology) PRC Embassy, Washington

DISCUSSION TOPICS TO BE RAISED

Vice Minister Song has requested the appointments at NRC to introduce himself to the Commission and express appreciation for the strong program of bilateral collaboration.

BIOGRAPHICAL INFORMATION

Date of Birth: October 1939  
Place of Birth: Jintan, Jiangsu Province, China  
  
Present Post: April, 1998 Vice Minister, State Environmental Protection Administration

Career:  
1957 to 1964 Technician for the 403 Geological Prospecting Team under Hunan Provincial Geology Bureau  
1964 to 1980 Worked in Hunan Provincial Geology Bureau as an engineer and Deputy Director for Division of Mineral Resources successively  
1980 to 1985 Deputy Director General and Director General of Qinghai Provincial Bureau for Geology and Mineral Resources  
1985 to 1989 Governor of Qinghai Province  
1989 to 1994 Vice Minister, Ministry of Geology and Mineral Resources  
1994 to 1998 Minister, Ministry of Geology and Mineral Resources

Mr. Song was elected as a representative to the 7<sup>th</sup> National People's Congress, and representative to the 13<sup>th</sup> and 15<sup>th</sup> Session of the Central Committee of the Communist Party of China.

## **CHINA**

### **Nuclear Program**

#### *Nuclear Power*

China's nuclear power program is based on a mix of indigenously designed and imported pressurized water reactors. Currently, there are three operating power reactors (2,120MWe, 1% national production), but this will rapidly expand in the next ten years when eight reactor units under construction are completed. China's energy plans project 20,000MWe of nuclear power installed by 2010.

There are 17 operating research reactors (some constructed in the 1950s).

#### *Nuclear Fuel Cycle*

The Chinese operate a complete fuel cycle, including the manufacture of fuel assemblies for its domestic reactors. Their fuels program was built with technical assistance from France.

The China National Nuclear Corporation (CNNC) is responsible for nuclear waste management including the siting, construction, and operation of repositories, under the supervision of the regulatory authority, the National Nuclear Safety Administration (NNSA), that is under the State Environmental Protection Administration (SEPA). SEPA also reviews and approves environmental impact studies. Local environmental authorities will be responsible for the environmental monitoring of the repositories.

#### *HLW*

The Lanzhou Nuclear Fuel Complex is the agency responsible for spent fuel management in China. Their ultimate plan calls for the LWR waste to be reprocessed, vitrified, and then deposited in deep geological formations.

The current disposal program includes on-site pool storage for ten years. Then the elements are transferred to a central pool storage facility before being reprocessed and final disposal of the waste. China's first repository, located in the northwest, began operation in 1999.

#### *LLW*

The principle of "regional disposal" is followed in China for LLW. The China National Nuclear Corporation (CNNC) is responsible for site selection, construction, and operation of each repository site, and the NNSA for its regulation. There are 21 LLW storage facilities for solid waste in China. Germany has assisted China with LLW technology.

#### *Research and Development*

Although China has opened many doors to the outside world, there is still a strong emphasis on

self-reliance, coupled with incorporating international advances and experience. The nuclear program is supported by more than 80 technical design and manufacturing organizations located all over China. The principal players include: Beijing Institute for Nuclear Energy (BINE), China Institute for Atomic Energy (CIAE), Shanghai Institute for Nuclear Research and Engineering, and the Nuclear Power Institute of China. The hardware facilities at many of these institutes is outdated (e.g., old Russian equipment).

### **Nuclear Regulatory Structure**

National Nuclear Safety Authority (NNSA) is responsible for the licensing of research, power reactors, fuel cycle, and waste facilities.

When the People's Congress approved the reorganization of the Central Government, NNSA was removed from the administration of the State Science and Technological Commission and reorganized under the State Environmental Protection Administration (SEPA). They still operate with independence (the Director General can report directly to the Premier on safety matters). The SEPA is a powerful organization with vast resources.

- Nuclear Safety Center (NSC) is a separate organization which provides technical support to the NNSA.

### **Non-Proliferation**

China is a nuclear weapons state and not subject to full-scope IAEA safeguards requirements. However, China is a signatory to the NPT (1992) and has placed some of its nuclear facilities under voluntary safeguards.

The U.S. Government has not visited China within the past decade to evaluate the implementation of physical protection in China nor has it received a statement from China declaring that physical security measures are being provided in accordance with INFCIRC/225.

### **Relations with the NRC**

#### *Bilateral Arrangements and Agreements*

Protocol between the Nuclear Regulatory Commission of The United States of America and the State Scientific and Technological Commission of the People's Republic of China on Cooperation in Nuclear Safety Matters was originally signed in 1981 and renewed two times. With the implementation of the US-China Agreement on the Peaceful Cooperation of the Use of Nuclear Energy on March 19, 1998, the NRC and its Chinese counterpart, the National Nuclear Safety Administration (NNSA), signed an expanded Protocol on Cooperation in Nuclear Safety Matters in September 1998.

#### Goals:

Continue to assist China strengthen its regulatory program  
Continue to stress the importance of a strong, independent regulator, clear legal authority, sufficient resources, and personnel

#### *Bilateral Objectives*

Within the limits and availability of resources, and consistent with U.S. Government policies and NRC priorities, the NRC will:

- Foster an understanding of the U.S. approach to nuclear safety.
- Assist in the development of sound regulatory and safety practices in China's civil nuclear power reactor program, and areas including radiation protection and nuclear material safety.
- Exchange publicly available information on nuclear power reactor safety, radiation protection, nuclear material and waste handling and storage.
- Share lessons learned from the US nuclear power program.
- Offer the regulator training opportunities.

#### *Commission Visits*

Chairman Jackson: August 1996, April 1998

Chairman Selin: January 1993, July 1994, April 1995

Commissioner De Planque: April 1994

Commissioner Remick: April 1993

Chairman Zech: August 1987

#### *Foreign Assignees*

In the past 15 years, more than 25 Chinese regulators from the NNSA have been placed at NRC on temporary assignment to learn NRC's rules and regulations from hands-on experience. Currently Mr. Wang, Jun from the National Nuclear Safety Administration (NNSA) is on a 12-month assignment in NRR working in the area of events assessment. Mr. Wang will depart in October 2000. NNSA has submitted a request for assignee placement for Mr. Xu Zhiqiang, in the field of nuclear power plant inspection.

#### *NRC Licensed Exports*

On July 21, 2000, NRC issued an export license for two pusher-type furnaces plus spare parts, with a total contract value of \$1,220,000 and an overall value including spare and replacement parts of \$1,320,000 for sintering of uranium dioxide fuel pellets. The China Atomic Energy Authority (CAEA) has provided assurances that the items will be subject to the terms of the US-China bilateral agreement on peaceful uses of nuclear technology.

## **BACKGROUND AND TALKING POINTS**

### **VICE MINISTER SONG'S TRIP**

The Vice Minister's two-week trip includes official stops in Brazil, Chile, and Peru, before arriving in Washington to meet with the NRC and the Environmental Protection Agency. After leaving Washington, the itinerary will include a stop in Las Vegas and Honolulu before returning to Beijing.

#### Suggested Talking Point:

The Commissioners may wish to:

- welcome the Vice Minister to NRC and acknowledge the opportunity to meet with the Commission and discuss the importance of a strong and independent regulatory regime

### **NRC-NATIONAL NUCLEAR SAFETY ADMINISTRATION BILATERAL COOPERATION**

China's nuclear power program is growing very fast. They have three operating PWR reactors and eight more units under construction, including two VVER reactors from Russia and two CANDU units from Canada. The 10<sup>th</sup> Five-Year Plan, to begin in 2001, is expected to approve for construction at least six more units. The regulatory authority, the National Nuclear Safety Administration (NNSA), is a small licensing and inspection body of 100 professional staff. The NNSA closely follows NRC's regulatory program and adapts our rules and regulations for their regulatory program.

### **COMPUTER CODES**

Many organizations in China's nuclear industry have requested NRC's computer codes. The NRC's practice, under the terms of the NRC-NNSA Protocol, is to provide only publicly available codes (codes usually available to our regulatory partners) to the NNSA for use in their domestic program. Early versions of the RELAP code were provided to the NNSA. Each code requested by the NNSA is carefully considered and the Executive Branch is consulted as necessary.

The staff has pending a request from the NNSA to obtain a copy of the source code "MELCOR" for its power reactor licensees. The purpose is to support their planned requirement that the three operating power reactors perform a Level 2 PRA. The request is currently under review.

The OIP staff is also reviewing a request from the Office of Research to invite the NNSA to join NRC's international Thermal-Hydraulic Code Applications and Maintenance Program (CAMP).

### Suggested Talking Points:

The Commissioners may wish to:

- acknowledge the history of the NRC-NNSA bilateral program and interest in strengthening the collaboration
- inquire about the operating performance of China's three power reactors
- inquire about the status of the units under construction
- inquire how the NNSA is meeting the demands (staffing and budget) of an expanding regulatory program
- inquire about the regulatory challenges of including VVER and CANDU units in their program mix

### **NNSA UNDER SEPA**

The NNSA was created in the 1970s as an independent regulatory body. For administrative purposes (budget and staff housing, health and education), it was under the wing of the State Science and Technological Commission (SSTC). The Director General of the NNSA was also a Vice Commissioner of the SSTC, and could report as necessary directly to the Premier on nuclear safety matters. Following a reorganization in 1998, the NNSA staff was cut by 50% and placed under the Chinese SEPA.

### Suggested Talking Points:

The Commissioners may wish to:

- comment on the differences between the role of the NRC and EPA in the U.S.
- inquire whether there are philosophical differences on matters between the NNSA and SEPA