# 11-2 Exchange of Remote Monitoring Information for Transparent Nuclear Materials Utilization

## — Development of Remote Monitoring Technology for Nuclear Nonproliferation and Transparency —

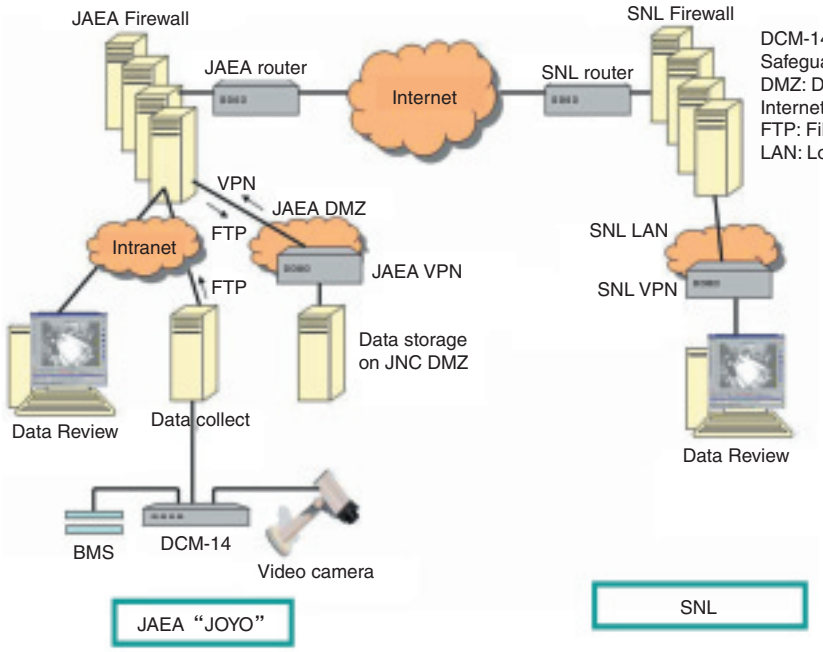


**Fig.11-4 Configuration of Joyo Remote Monitoring System**
A video camera in the Fresh Fuel Storage room takes pictures at intervals if the Balanced Magnetic Sensor (BMS) detects the door opening. Also, when the camera detects image changes, it takes pictures. Image data stored in the Data Collection Computer are transferred to the Data Storage Computer over the local Intranet, then to the Data Server at the remote site via a VPN (Virtual Private Network) over the Internet. Data are reviewed by the Data Review Stations.

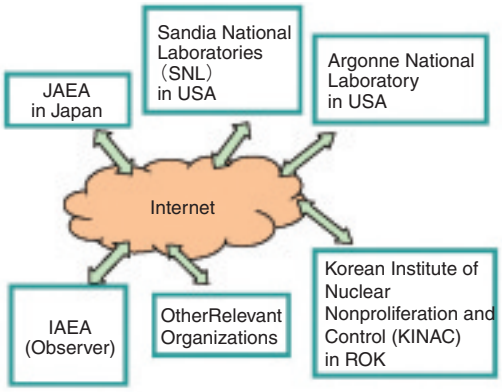


**Fig.11-5 Remote Monitoring Network Plan**
JAEA continues discussions with related laboratories utilizing the remote monitoring technology for information exchange among nuclear facilities to develop transparency and confidence building.

Recent concerns in nuclear nonproliferation include nuclear weapon development in India and Pakistan, and nuclear programs in North Korea and Iran. Nonproliferation discussion and negotiation are continuing among relevant countries. Therefore, improvement of transparency and confidence building concerning nuclear activities are more important than ever for developing the peaceful use of nuclear energy, and nuclear R&D activities. In addition, these improvements will help maintain compliance with domestic regulations and the international nonproliferation regime.

In 1995, we started a study for a prototype remote monitoring system, which consists of motion sensors (microwave, optical), neutron/$\gamma$-ray detectors, surveillance cameras, and data collection computers in the fresh fuel storage area and the spent fuel pond of the Fast Experimental Rector "JOYO". Since then, development and testing a remote monitoring system to monitor the transfer and storage of nuclear materials, human activities, etc. has been conducted

In the software development area, we developed a decision support system which has the capability to properly analyze and evaluate data, and make proper responses, such as giving an alarm upon unexpected events.

To utilize these technologies for improvement of regional transparency and confidence building, we are studying bilateral and multi-lateral exchange of information on nuclear facilities.

At present, we are promoting technical cooperation for transparency and confidence building with relevant organizations of the USA and Republic of Korea (ROK), and is considering future regional information exchange on a lab-to-lab basis among these countries.

**Reference**

Olsen, J., Hori, M., Hashimoto, Y. et al., Regional Cooperation in Remote Monitoring for Nuclear Nonproliferation and Transparency, Proceedings of the 46th Annual Meeting of the Institute of Nuclear Materials Management (INMM), Phoenix, USA, 2005.