Japanese scientists learn at ZPPR site

Two Japanese scientists will soon complete a two-year assignment at the Zero Power Plutonium Reactor (ZPPR) facility operated at ANL-W.

Keisho Shirakata and Tetsuo Ikegami have been at ANL-W since August 1978 as visiting scientists from Japan's Power Reactor and Nuclear Fuel Development Corporation (PNC).

This is the first time Japanese scientists have participated in the ZPPR program. Their participation is through a DOE-PNC agreement on the Joint Physics Large Core Critical Experiments Program, presently called Jupiter Program.

In the past at ANL-W, two groups of Japanese scientists completed a breeder reactor operator training program at the Experimental Breeder Reactor-II facility. The ZPPR office at ANL-W says that, while no further agreement has been reached for the future, a continuation of this or similar programs is possible.

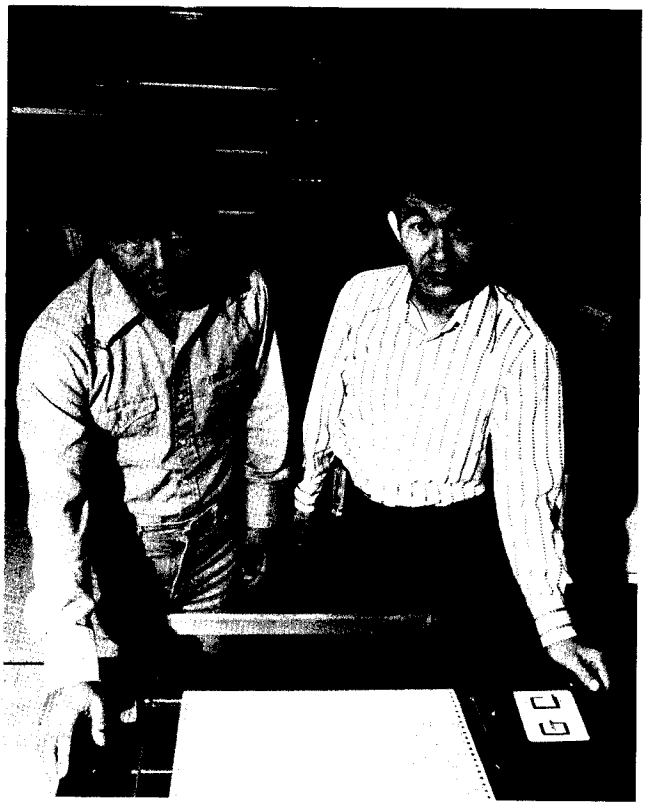
Shirakata says Japan is now beginning construction of a prototype fast breeder reactor. The reactor physics information from ZPPR will be used for the development of data and methods to design the next step, which may be a full-scale breeder reactor power plant. Japan, he added, does not have a fast critical facility as large as ZPPR. Therefore, participation in the ZPPR program enables Japan to gain reactor physics data which cannot be provided by its domestic nuclear program.

"Argonne has played a brilliant role in the development of the fast breeder reactor program in the past forty years," Shirakata said. "We are very interested in present and future cooperation with Argonne in every area of the fast breeder program, including safety and power reactor operation. My only fear for the breeder reactor program in the United States is that it will not continue as in the past and many of the Argonne contributions would not continue."

Shirakata says the breeder reactor program in Japan is relatively well accepted by the populace as a viable and hopeful option of the nation's future energy strategy. "However, because of the very limited land area and environmental reasons, site selection and getting approval of local governments are the biggest problems. There still remains in Japanese people's minds the special feeling against nuclear radiation, derived from the past unhappy experiences of atomic bombs and the accident of fishermen's irradiation in the South Pacific Ocean. For the construction of a nuclear power plant in Japan, the social aspect is a more severe difficulty than the technical and financial aspect."

Both scientists have made their homes in Idaho Falls during their stay at ANL-W, and Ikegami's only child was born here. Shirakata has three children, all who attend elementary school or kindergarten. Both men and their families traveled throughout the West in their two years here, and Ikegami and his family visited Mexico. Both agree population density is the most visible difference between America and Japan.

Before coming to the United State, Ikegami worked for seven years for PNC at the experimental fast breeder reactor JOYO, and Shirakata worked for 11 years for the Japan Atomic Energy Research Institute. Both men will probably continue to work for PNC in the fast breeder reactor research and development area when they return.



TWO VISITING Japanese scientists, Tetsuo Ikegami (left) and Keisho Shirakata, examine a computer printout at the Zero Power Plutonium Reactor (ZPPR) facility at ANL-W. The men soon will complete a two-year assignment at the facility where they gathered data on reactor physics. (ANL-W photo by Ed Hahn)

Berreth appointed to review board

Julius Berreth of Exxon Nuclear Idaho Co. Inc. has been appointed a member of the Materials Review Board (MRB).

It was established by the Department of Energy Office of Nuclear Waste Management to provide independent review and approval of standardized testing methods for potential solidified nuclear waste products for final repository disposal. These standardized tests include leaching of waste products, physical and thermal stability, and interactions of the waste with its surroundings.

The testing methods to be reviewed are originated by the Materials Characterization Center (MCC). The MRB will also review the programs of the center to assure that the testing data obtained is scientifically valid. The board reports to the Office of Nuclear Waste Management Materials Steering Committee and works with an independent measurements laboratory and other organizations having responsibility in nuclear waste management.

Berreth has worked in high-level nuclear waste solidification for final disposal at the ICPP for the past seven years. He and his colleagues have developed several potentially suitable waste forms to dispose of high-level nuclear waste. Much of the development work at the ICPP has been converting the waste to glass, but several other potentially suitable forms such as pellets, metal matrix, or ceramic forms have also been examined.

LOFT conducts TMI type test

The fifth in a series of nuclear experiments at LOFT was conducted May 29.

The experiment simulated events which would follow a loss-of-feedwater to all of the steam generators of a large commercial nuclear reactor system. This type of problem was the initiating event in the Three Mile Island accident.

The experiment began with the closing of the feedwater valve. The safety systems quickly stopped the nuclear chain reaction. The system then stabilized at a new equilibrium condition and then was returned to a controlled standby condition.

The test lasted about 45 minutes and data was taken on water levels, system pressures, fuel rod and coolant temperatures and coolant flow rates. The initial results from these measurements indicate that all significant events occurred in the expected sequence with about the expected ranges. Analysis of the data, including detailed comparisons with computer predictions, will continue for several months.

This experiment was the first of a series of "anticipated transient" tests with the LOFT reactor at power. Anticipated transients are those which are expected to occur at least once in the life of a nuclear plant. These experiments were moved up in the original sequence of experiments at LOFT in response to the TMI accident and the successful results of the LOFT large break experiments performed in 1979.

The 50 megawatt thermal LOFT reactor is the largest facility in the Nuclear Regulatory Commission's program of confirmatory research designed to study the effectiveness of safety systems for light water cooled reactors. Information to aid understanding of instrumentation and operation of commercial reactors also will be obtained.