

# F. ON-SITE TOUR REPORT

October 19 (Sat), 2002

**Ohtsu Auxiliary Conduit**

Some eight rivers flow through the megalopolis of densely concentrated population south of Ohtsu City. Water flow is directed via a tunnel set under the urban areas directly to an outlet provided by the Seta River. This auxiliary water supply conduit is a tunnel system 4,700 meters long built using conventional NATM tunnel construction standards and the Shield Method. The internal flow area provides an extensive 170 m<sup>2</sup> of space. After the briefing, the group inspected the internal area of the conduit tunnel. There was notable interest with several questions on filtering of the converged waters, environmental impact, and the financial benefit of the system.

**Seta River Weir (Outlet Flow Control)**

The Seta River Weir controls the outflow from Lake Biwa. Rain limited the tour group to a view of the site from the office. System construction began in 1900, and numerous repairs effected in the ensuing years gave rise to the current structure. One former problem was that manual opening of all the locks on the old weir took a full day, and closing took two full days. Today, closing the locks requires a simple half hour, prompting questions from the group on what systems were used to modernize and upgrade the weir and how it is maintained and managed.

**Amagase Dam**

Rain forced the site tour to be conducted from inside the bus. The Amagase Dam is a multi-purpose dam providing flood control, power generation, and water supplies. The group asked about operating multi-purpose dams, and areas of service. A shared view was that hydropower generation should be emphasized as a way to preserve the quality of the environment.

October 20 (Sun), 2002

**Drainage of Lake Biwa and the Incline**

The ancient capital of Kyoto has a history going back some 1,200 years. Its water source is Lake Biwa, where during the Meiji Era, the commitment of and the hardship endured by the people led to establishment of the water system. The Lake supplies Kyoto with two million cubic meters of water each day. While use of the water has changed along with the era, the canals and aqueducts efficiently provide not only potable water, but water for hydropower generation, navigable canals for freight transport, irrigation, fire fighting, and industrial consumption. Of these, particularly significant is the volume of drinking or potable water provided. The group were enthralled by the flow of water in the Nanzenji Aqueduct and showed great interest in the construction methods used.

October 21 (Mon), 2002

**Legacy of Sayama Pond**

The Sayama Pond levee is the oldest dam levee in Japan, having been created around the 7th Century. Repairs and renovations of the reservoir system have been successively carried out by the greatest engineers of each era. With a history going back some 1,400 years, the Museum preserves some of the wooden pipes, and a cross section of the levee that tell the tale of the development of Japan's industrial legacy. The cross section of the levee in the Sayama Pond Museum, the exhibit and preservation systems and the matrix of pipes were interesting to the members of the delegation, and prompted several questions. Most impressive was the preservation of civil engineering legacy.

### **The Urban Monorail System**

Surface transportation in Okinawan is overwhelming dependent on automobile traffic. In particular, the heavy congestion in Naha City, the political and economic center of Okinawa, has contributed to a lowering of quality of life and reduced urban functionality. It was therefore decided to establish a swift and dependably operating monorail that would allow development of new commuter routes. In conjunction with a re-mapping of bus service routes, this will permit a highly convenient and practical form of public transportation. The delegation visited the construction site of the monorail system. Particularly those who come from nations with dense urban concentrations came questions of land acquisition, comparison and competition with other forms of mass transport, and expected consumer profiles.

October 23 (Wed), 2002

### **Ie Village**

Although poor weather affected the ferry passage to Ie Island, the Village Office provided an explanation on how the Office and local citizens worked to secure supplies of water. While Ie Island has an annual precipitation of some 2,000 mm, the coral limestone soil makes it difficult to cache water, and lack has always been a serious aspect of life on the island. Precipitation carefully gathered into tanks from roadways and from the airfield surface is used for irrigation with some portion for potable water. A stable supply of water ensured via a pipe running over the ocean bottom began in January 1977, proved to be a lasting solution to the problem of lack of potable water. At this time, there is a 10-year program to construct an underground dam to secure water for irrigation. During the delegation tour of the island, questions arose about the total costs, how costs were to be shared, how the facilities would intersect with sewage and waste management sanitation programs and issues, how the reservoir and pump facilities were to be managed, how red soil erosion came into play, and whether the mosquito population would contribute to malaria or dengue fever.

### **Haneji Dam**

Built as a multipurpose dam, Haneji's levees were completed in 1999. Pilot operations commenced in FY 2000, with the first gateless air locks ever used in Japan. The water discharge control and river flow controls pioneered Japan's first use of tension radial gates. The briefing was carefully considered, and questions came in rapid succession on the development of the technology, the status of the patent, and applications outside Japan. Additionally, the professional engineers were impressed by the attractive physical layout and compatibility with the surrounding environment of the dam's construction and technology.

### **Taiho Dam**

To allow a better comparison with the already completed Haneji Dam, the delegation visited the future site of the main body of Taiho Dam. Taiho Dam is a multipurpose facility that helps ensure stable water supplies, regular river flow, and provides for continuous irrigation of the down stream areas. The delegation was briefed on the environmental preservation measures underway at the dam construction site, and questions involved who is responsible for and who conducts environmental surveys, questions on the sand and soil of the biotope, wildlife habitat, and how felled trees were utilized.