

Regular Course on Current Situation and Future Perspectives of LNG Technology (TR-15-14)

1. Background and Objective

This course was widely geared toward engineers who engage in work related to the LNG area, and provided comprehensive knowledge of the basic technologies for refining, liquefying, transporting, storing and utilizing natural gas. It covered such topics as the global LNG demand-supply trend, the exploration, development, production and economics of natural gas, future technologies that use natural gas in consideration of recent trends, as well as a general overview of natural gas liquefaction plants, LNG tankers, LNG storage facilities, pipeline technologies, consumption-side facilities and their major equipment, with hopes that such knowledge might offer the course participants hints to resolving their respective problems and issues.

In fiscal 2014, the course was implemented from November 4 to 21, 2014, with the participation of 10 participants from seven countries.

2. Course Content

(1) Training at JCCP

Before embarking on visits to various plants and facilities for onsite training, a program centered mainly on lectures was provided at JCCP Headquarters to allow the participants to sort and acquire basic knowledge in preparation for the latter part of the course. First, a lecture on “global LNG demand-supply trends” (by Japan Oil, Gas and Metals National Corporation (JOGMEC)) discussed the current status of the world’s natural gas and LNG. Then, a case example of a development project was discussed in reference to the exploration, development and production of natural gas (JX Nippon Oil & Energy Corporation), and technical aspects were covered in lectures on an overview of natural gas refining and liquefaction technologies (JGC Corporation), pipeline technologies (JFE Engineering Corporation), LNG tank technologies (Chiyoda Corporation), and future technologies that utilize natural gas (Toyo Engineering Corporation), with the objective of providing

comprehensive knowledge of various related fields.

(2) Site visits

Visits were made to the following plants of various companies that excel in their respective field, to allow the participants to actually observe, experience and verify the knowledge that was introduced in the lectures at JCCP.

- 1) At Osaka Gas Co., Ltd.’s Himeji LNG Terminal, which boasts world-class flat-bottomed vertical cylindrical LNG tanks and LNG gasification facilities for supplying city gas, the participants gained a specific image of consumption-side facilities after receiving LNG. They also gained knowledge of the properties and handling precautions of cryogenic fluid. This experience at Himeji LNG Terminal seemed to make a particularly strong impression on participants from countries in Southeast Asia that already own or have plans to construct an LNG receiving terminal.
- 2) Visits were made to the facilities of equipment manufacturers, such as Kobe Steel, Ltd.’s Takasago Works, Mitsubishi Hitachi Power Systems, Ltd.’s Takasago Works, and IHI Corp.’s Yokohama Works, to acquire knowledge of LNG vaporizers, heat exchangers, gas turbines, pressure vessels, etc. from their manufacture to maintenance. The participants expressed an interest in such basic equipment from



At Osaka Gas Co., Ltd.’s Himeji LNG Terminal

their respective standpoints, as an important field to both natural gas producers and consumers.

- 3) Mitsui Engineering & Shipbuilding Co., Ltd.'s Chiba Works provided a specific picture of the LNG ship designing and shipbuilding technologies. In a rare opportunity to visit a shipbuilding site, the participants learned how steel plates are shaped into separate units, and how those small units are ultimately assembled into a complete ship.

3. Observations

This course honed in on the natural gas field, which is

garnering strong interest in recent years, and was attended by engineers who engage in work related to LNG and natural gas areas. As they each applied themselves to the program with strong problem awareness, it is hoped that they have acquired hints and ideas for addressing their own respective problems and issues.

The participants' feedback will be taken into consideration along with both internal and external situations, so that changes can be made to the course content as appropriate to provide an even better program in the future.

JCCP extends its deepest gratitude to everyone concerned for their support and cooperation in bringing the course to a successful conclusion.

<by Toshinobu Ishikawa, Training Dept.>