

May 11, 2020

Tomakomai Port Authority
Japan Petroleum Exploration Co., Ltd.

Completion of "Tomakomai Port LNG Bunkering Study Group"

Tomakomai Port Authority and Japan Petroleum Exploration Co., Ltd. (JAPEX) announced that "Tomakomai Port LNG Bunkering Study Group" (hereinafter "the study group") was completed in April 2020 with the planned proceedings and discussions since launched the study group in February 2019.

The study group has worked to extract issues and clarified the path to resolution for implementing LNG bunkering based in Tomakomai Port, Hokkaido (Tomakomai City, Hokkaido-Atsuma Town, Yufutsu District) for facilitating the coordination in the upcoming specific application procedure.

The 25 members participated in the study group, which were Tomakomai Port Authority as the port authority, relevant government agencies and port-related associations including the Tomakomai Port Office of the Muroran Development and Construction Department of the Hokkaido Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, and the Tomakomai Maritime Office of the Muroran Transport Branch of the Hokkaido Regional Transport Bureau of the Ministry of Land, Infrastructure and Transport, and private companies including the shipping industry such as Mitsui O.S.K. Lines, Ltd., and JAPEX as the organizer.

A total of 6 meetings were held since the first meeting in late February 2019 to this spring, and the issues to be clarified by each implementation method of LNG bunkering at Tomakomai Port were mainly identified. And we examined how to make their solutions and rules based on applicable laws and regulations and concluded several key factors for the solution. The outcome of the study group has uniqueness, particularly in the more practical examination and consideration, including the specific features of each quay in Tomakomai port such as berth specifications and target ship types.

Please refer to the attached document about the summary of the report, as the outcomes of the study group.

The study group hopes that the outcomes will be utilized by the members for the early introduction and improvement of LNG bunkering at Tomakomai Port, also promotion of LNG bunkering in Japan and overseas, aiming contribution to the reduction of greenhouse gas (GHG) and sulfur oxides (SO_x) emissions by the diffusion of LNG as a marine fuel.

<Attachment>

Overview of Tomakomai Port LNG Bunkering Study Group

<Reference>

Please visit to the websites for the senders' further information as follows:

Tomakomai Port Authority <http://www.jptmk.com/>

Japan Petroleum Exploration Co., Ltd.(JAPEX) <https://www.japex.co.jp/english/>

(Attachment)

Overview of Tomakomai Port LNG Bunkering Study Group

1. Overview of the study group

- The purpose of the Study Group: To identify issues for early realization of LNG bunkering at Tomakomai Port
- Participants: All 25 government agencies / organizations / private companies
 - * Sponsored by Tomakomai Port Authority, Japan Petroleum Exploration Co., Ltd. (also in charge of the position of the organizer), The names of participants are in principle are not disclosed
- Number of Meeting Times and Venue: Six times in total from February 2019 to April 2020 in Tomakomai, Hokkaido
 - * The 6th(last) meeting (scheduled to be held in March 2020) was held on paper due to the spread of new coronavirus infection in the end of April

2. Main Subjects / Contents of discussion / Study contents

- ① Confirmation and arrangement of precedent cases and applicable laws
 - ✓ Survey and report of advanced cases of domestic and overseas LNG bunkering that can be used as a reference when introducing LNG Bunkering at Tomakomai Port
 - ✓ Confirmation of issues for each method such as Truck-to-Ship method (* 1), portable tank method (* 2), Ship-to-Ship method (* 3)
- ② Study of LNG bunkering method suitable for Tomakomai Port
 - ✓ Examination of the compatibility of each method, taking into account the types of vessels that are in regular service at Tomakomai Port and the characteristics of the port quay
 - ✓ Identify issues related to infrastructure development and operation of each method based on the characteristics of each quay at Tomakomai Port
- ③ Road map at Tomakomai Port
 - ✓ To summarize key points of the compatible method for each quay (ship type) and the staged introduction image of future LNG bunkering at Tomakomai Port

3. Achievements and future prospects

- Future outlook: Expected to activate the movement toward the realization and dissemination of LNG bunkering as a marine fuel in Tomakomai Port and all over Japan by utilizing the outcome of this study
 - ✓ Private companies participating in this study group, especially shipping companies, will be able to refer to the confirmation of laws and regulations that should be complied with and standards of technology and operation when they consider the introduction of LNG fueled ships along with replacing ships.
 - ✓ LNG as a marine fuels and LNG bunkering are currently expected to be the only realistic options available as measures to meet the “GHG reduction strategy” such as halving greenhouse gas (GHG) by 2050 compared to 2008, in addition to the tightening of regulations on the upper limit of sulfur

oxide (SOx) concentration in marine fuels adopted by the International Maritime Organization (IMO) from January 2020 (suppressing the upper limit of sulfur content in fuel oil or using SOx scrubber). We hope that participating parties will contribute to the realization and spread of the project at the domestic and overseas ports other than Tomakomai Port by utilizing the results of this study group.

note)

- * 1: Truck-to-Ship is one of the LNG bunkering implementation methods that supplies LNG fuel from a land-side LNG truck to a LNG fueled ship that is docked on a quay that can supply LNG fuel.
- * 2: The portable tank system means that an LNG fuel tanker vehicle is docked on the quay where the LNG portable tank (LNG container) used as a marine fuel tank can be loaded and unloaded, and the crane or Roll on Roll off trailer is used to load and unload the LNG portable tank.
- * 3: Ship-to-Ship (STS) is an LNG bunkering implementation method in which an LNG bunker ship berths and supplies LNG fuel to a LNG fueled ship that is docking, or anchored on a quay or pier.