

2016 CSLF Annual Meeting, Tokyo, Japan

Site Visit to the Tomakomai CCS Demonstration Site, Hokkaido

October 6, 2016

Note: Participants are required to arrange their own air travel between Haneda Airport and New Chitose Airport. See below for recommended flights.

Schedule of Site Visit:

07:45	Bus departs from Fukuracia Tokyo Station to Haneda Airport (<i>see page 2</i>)
08:30	Bus arrives Haneda Airport
09:30	Flights depart airport (<i>see below</i>)
11:05	Flights arrive New Chitose Airport
11:20	Meet up at New Chitose Airport (<i>see page 3</i>)
11:35	Depart from New Chitose Airport by bus
12:15	Lunch at Grand Hotel New Oji
13:05	Depart for Tomakomai CCS Demonstration Site by bus
13:40	Tour of Tomakomai CCS Demonstration Site
15:40	Depart for New Chitose Airport by bus
16:20	Arrive at New Chitose Airport
17:25	Flights depart airport (<i>see below</i>)
19:05	Flights arrive Haneda Airport
19:30 (<i>tbc</i>)	Bus departs Haneda Airport for Fukuracia Tokyo Station
20:15 (<i>tbc</i>)	Bus arrives Fukuracia Tokyo Station

Flights Recommended:

From Haneda to New Chitose:

- JAL 509 / Departure at 09:30, Arrival at 11:05
- ANA 057 / Departure at 09:30, Arrival at 11:05

Anyone who will be checking luggage should take an earlier flight, as the meet-up at the bus will happen very soon after the flights arrive at New Chitose Airport.

For those who take either of the recommended flights, a bus transport is arranged in Tokyo, leaving near the meeting venue Fukuracia Tokyo Station and arriving at Haneda Airport.

Other transport to the airport can be found at the following website:

https://www.tokyo-airport-bldg.co.jp/en/access/route_master/

From New Chitose to Haneda:

- JAL 520 / Departure at 17:25, Arrival at 19:05
- ANA 074 / Departure at 17:30, Arrival at 19:05

For those who take either of these flights, a bus transport is arranged from Haneda Airport to near Fukuracia Tokyo Station. Other transport can be found via the above website.

Meeting Point for Bus Transport from the Meeting Venue to Haneda Airport

Bus departure time: 7:45

Meeting point: Outside of the entrance of Asahi-seimei Otemachi Building, 5th and 6th floors of which is the meeting venue, Fukurashia Tokyo Station

N.B. Please be punctual. Our bus cannot stop more than five minutes on the street.



Overview of Asahi-seimei Otemachi Building



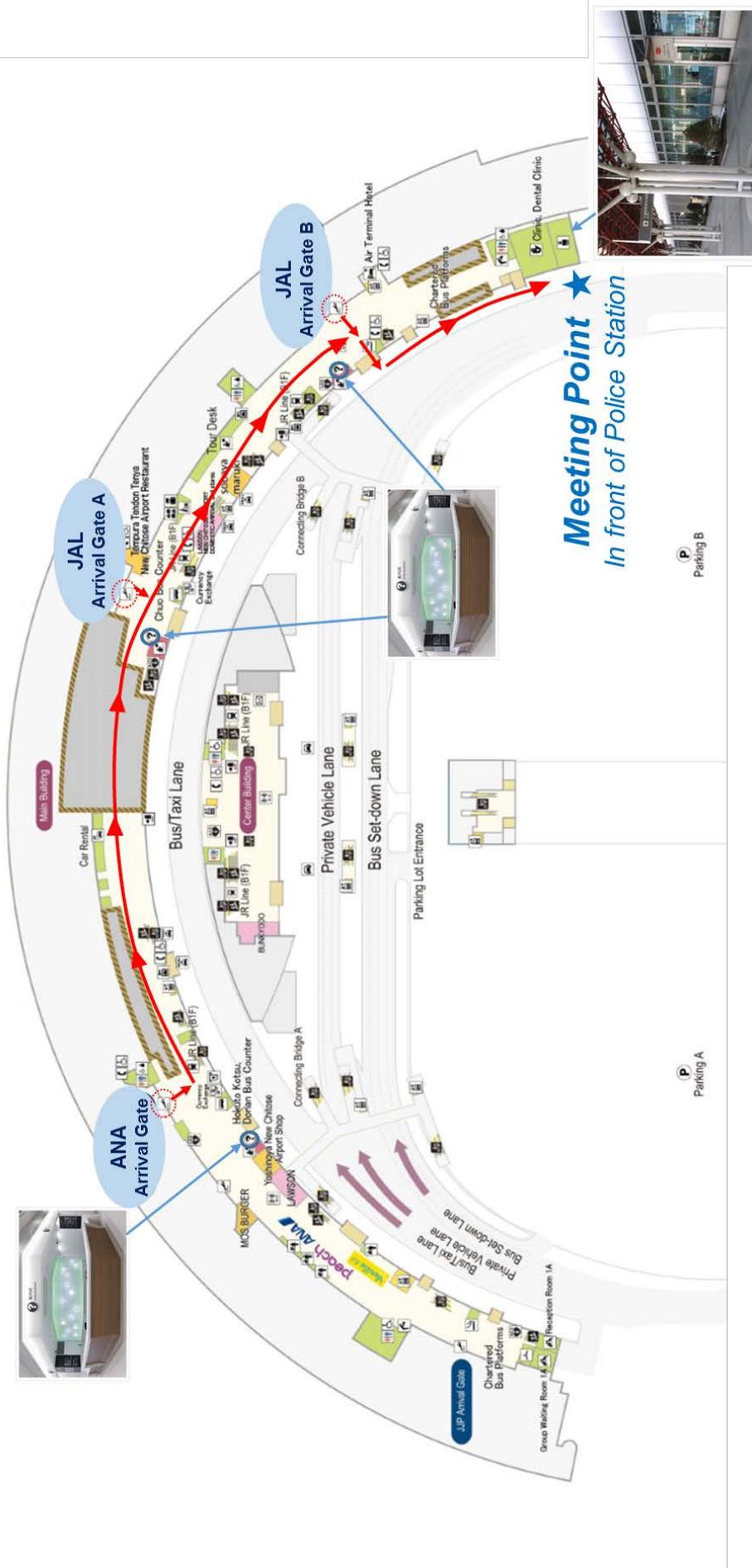
Meeting Point - the Entrance of Asahi-seimei Otemachi Building

Meeting Point at New Chitose Airport

Meet-up time: 11:20

Bus departure time: 11:35

1F
Domestic : Arrival Lobby
International : Curbside Lobby



Overview of Tomakomai CCS Demonstration Project in Hokkaido

Tomakomai CCS Demonstration Project is a large-scale CCS demonstration project which is currently being undertaken by the Japanese government in the Tomakomai area, Hokkaido prefecture, Japan. The project objective is to demonstrate the viability of a full CCS system, from CO₂ capture to injection and storage. One hundred thousand tons per year or more of CO₂ will be injected and stored in offshore saline aquifers in the Tomakomai port area. The implementation of this project has been commissioned to Japan CCS Co., Ltd. Since April 2016, CO₂ capture and injection has started at the rate of around 100 thousand tons per year of CO₂.

The main features of this project are as follows:

- **Schedule:** Construction of the facilities was completed in October 2015, and test-run of the facilities also successfully finished in February 2016. CO₂ capture, injection & monitoring is conducted from 2016 to 2018 and monitoring will be continued until 2020.
- **CO₂ Source:** Hydrogen Production Unit of adjacent oil refinery
- **Capture type:** Industrial separation-chemical absorption (amine); two-stage CO₂ capture system provides for low energy consumption
- **Storage Formation:** Sandstone layer at 1,000-1,200m depth & volcanic rocks at 2,400-3,000m depth
- **Drilling:** CO₂ injection wells were drilled from an onshore site directionally into offshore reservoirs, greatly saving drilling and maintenance costs. Notably, the shallow reservoir was reached by Extended Reach Drilling (ERD).
- **Monitoring:** Extensive monitoring system comprised of observation wells, onshore seismometer, ocean bottom seismometers, ocean bottom cable to monitor natural earthquakes and micro-seismicity in order to verify that natural earthquakes do not affect CO₂ injection, and CO₂ injection does not induce noticeable tremors.
- **Regulation:** Marine environmental monitoring is being conducted based on “Act on Prevention of Marine Pollution and Maritime Disaster” which complies with London 1996 Protocol.
- **Public Outreach:** The project is the first case of CCS near urban area; good relationships with local communities have been maintained as a result of extensive public outreach activities.



About Tomakomai City, Hokkaido

The City of Tomakomai is on the Pacific Ocean side of Hokkaido. With a population of approximately 173,000, Tomakomai is the largest international trading port and a major hub in Hokkaido's economy, handling about a third of the island's cargo volume. Many industries are located along Tomakomai's waterfront area, such as oil refineries, automobile manufacturers, power plants, paper mills and chemical plants. It is also an oil and gas producing area with a large gas field located inside the city. Fishery is also a major industry in Tomakomai, and a local specialty is the Hokki shellfish (surf clam).

Tomakomai places great emphasis on the preservation of its natural environment. The Utonai bird sanctuary, registered as the forth Ramsar site in 1991 is an important stopover for migratory birds. There are also many scenic spots in and around town such as Mt. Tarumae and Lake Shikotsu.

In October, the average temperature is 11.3 °C, and the average high and low temperatures are 15.8 °C and 6.1 °C, respectively.



Lake Utonai



Mt. Tarumae



Lake Shikotsu