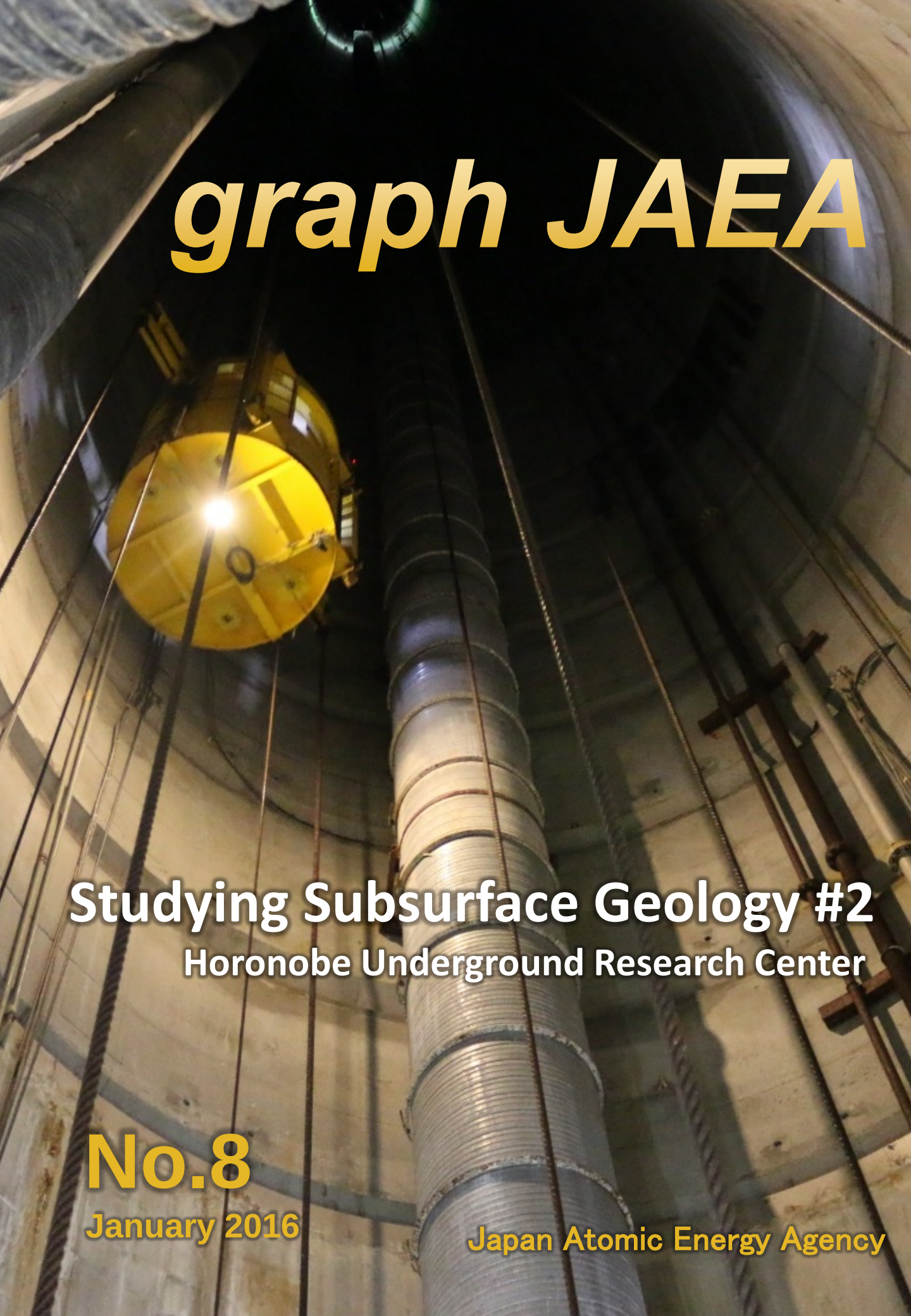

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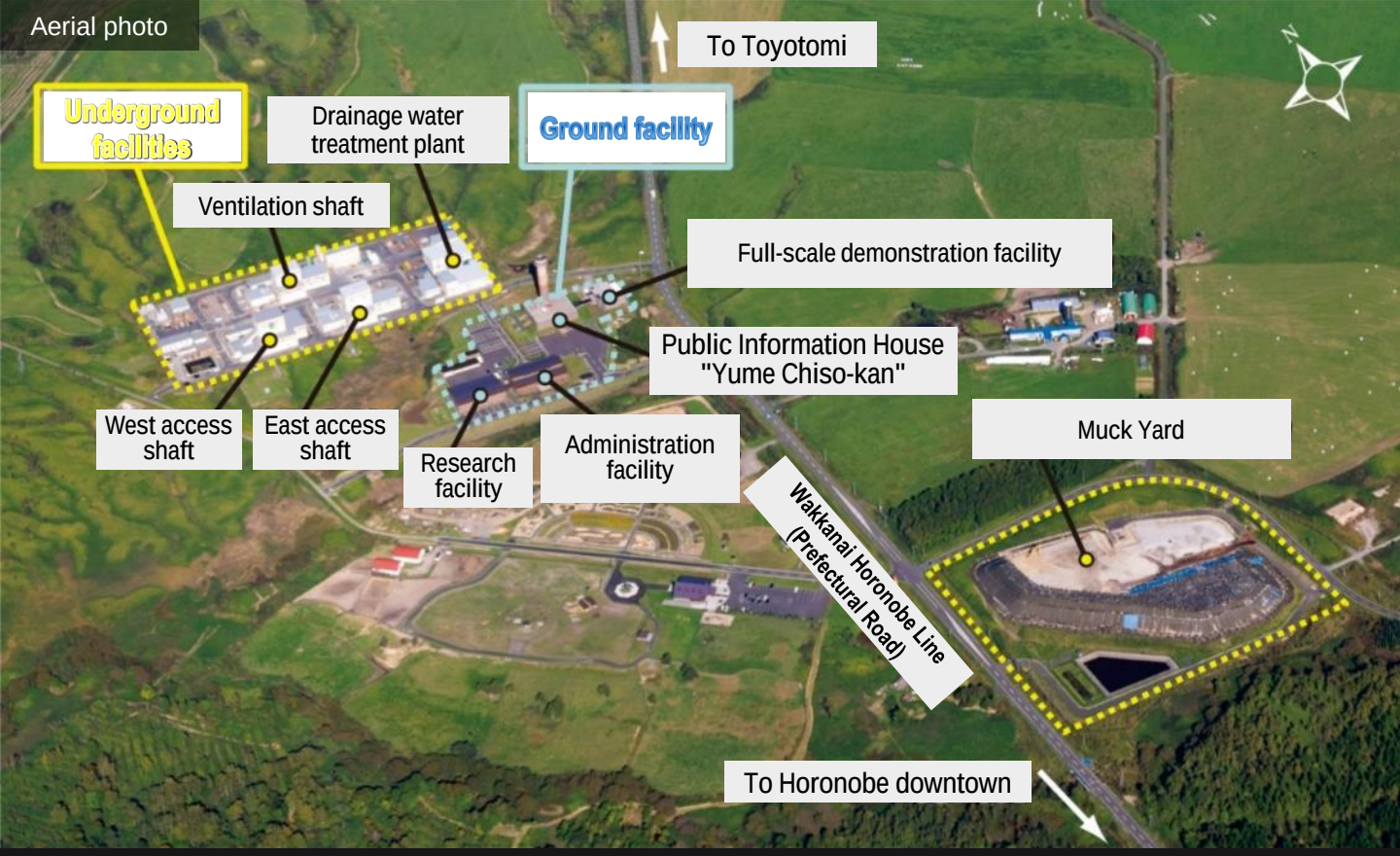
Studying Subsurface Geology #2

Horonobe Underground Research Center

No.8
January 2016
Japan Atomic Energy Agency

Aerial photo



The Horonobe Underground Research Center conducts scientific research on geological strata and R&D on geological disposal, as part of R&D on geological disposal technologies for high-level radioactive waste.

For details, please visit the home page ⇒ http://www.jaea.go.jp/english/04/horonobe/index.html

Appearance in winter

The underground facility for this research

Geological environment of the Horonobe Underground Research Center (Horonobe, Hokkaido)

Mudstone
(Sedimentary rock)
Soft rock
Saline ground water

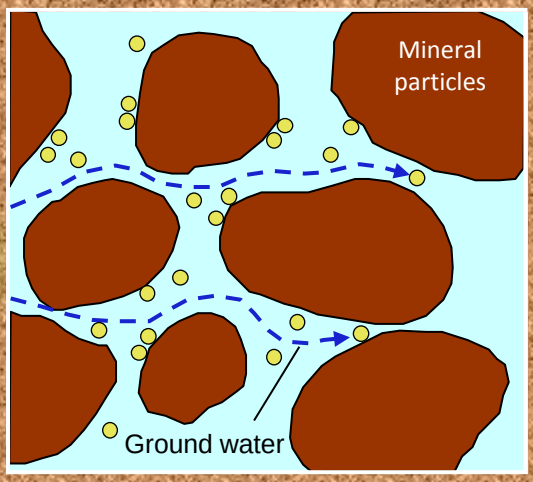


Illustration of geological environment

[Shafts] As of Jan. 2016

East access shaft
Excavation depth 380.0m
Ventilation shaft
Excavation depth 380.0m
West access shaft
Excavation depth 365.0m

[Experiment drifts] As of Jan. 2016

140m drift
Excavation length 186.1m
250m drift
Excavation length 190.6m
350m drift
Excavation length 757.1m

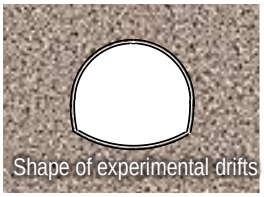
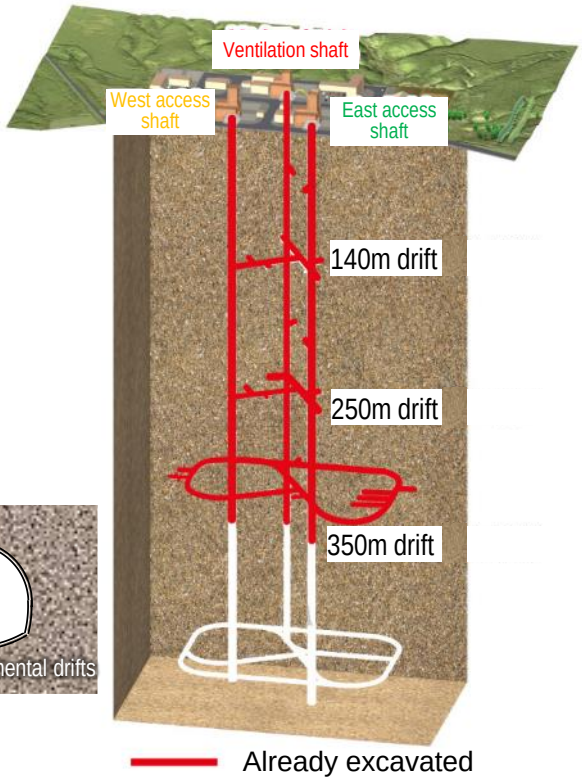


Diagram of underground facilities



*This diagram may change depending on the results of future surveys and research.

West access shaft
(350m in depth)

Scenes of excavation

At penetration of gallery (350m in depth)

Setup of simulated overpack

Full-scale engineered barrier system experiment

Installation of plug (cover)

Full-scale engineered barrier (simulated overpack and shock absorbing material) has been installed in the 350m drift, and its performance is being verified based on data obtained from a variety of sensors.

Backfill complete

Overpack corrosion test

A simulated overpack made of carbon steel machined into rod form was buried in the Niche No.3 of 350m drift, with heat applied via an electric heater, and the corrosion situation of the carbon steel is being checked.

Test hole

350m Niche No.3

Situation of in-situ test

In the 350m drift, a mass transport test is being conducted to measure the behavior of materials inside the natural barrier (bedrock) and engineered burrier (buffer material). The photo shows the scene of the in-situ tracer test for understanding the situation of mass transport within a single fracture.

Mass transport test

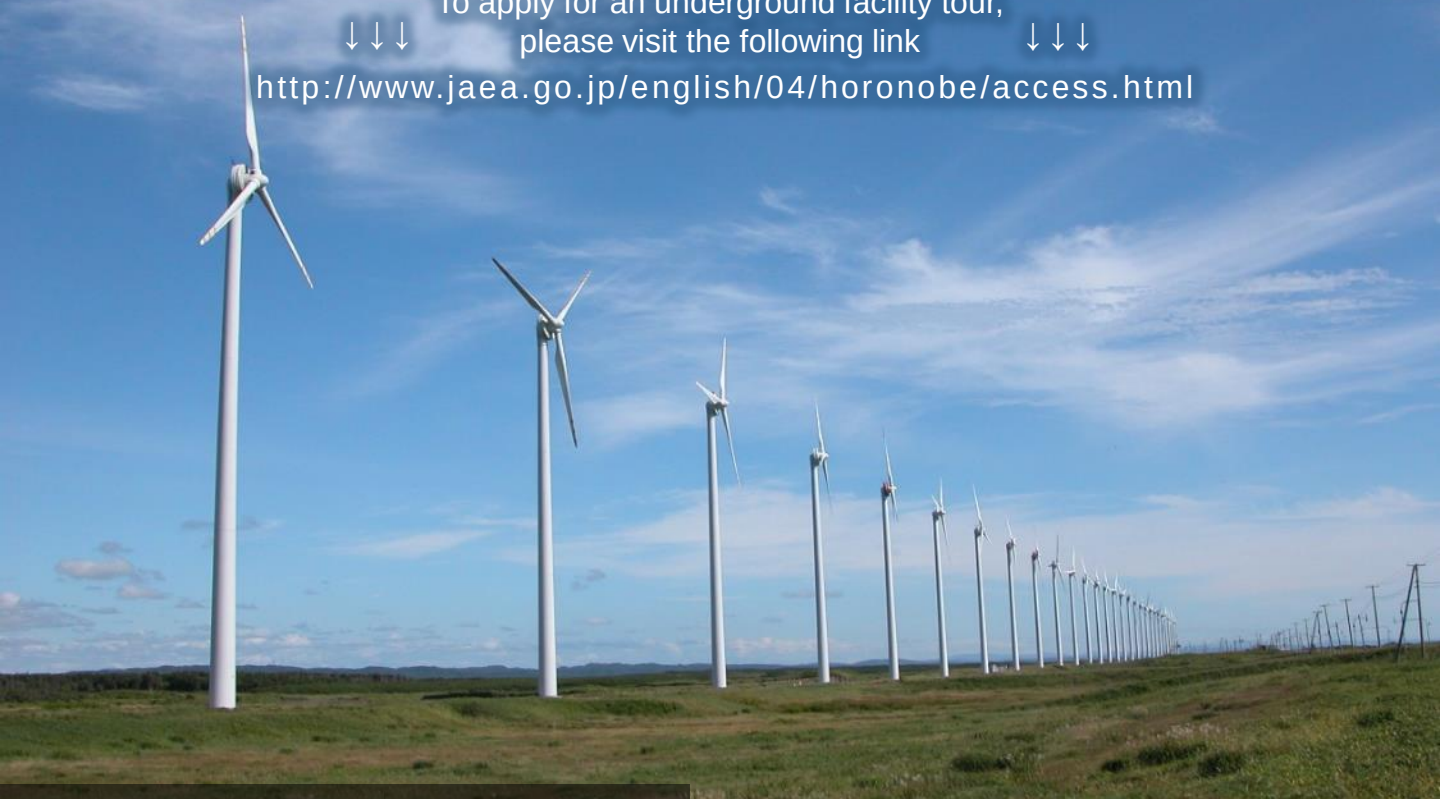
Boreholes for test

Monument of Latitude 45 Degrees North and Mt. Rishiri (Rishiri Fuji)

Scenery around the center

When you visit Hokkaido,
why not take a tour of an actual underground facility at our center?

To apply for an underground facility tour,
↓↓↓ please visit the following link ↓↓↓
http://www.jaea.go.jp/english/04/horonobe/access.html

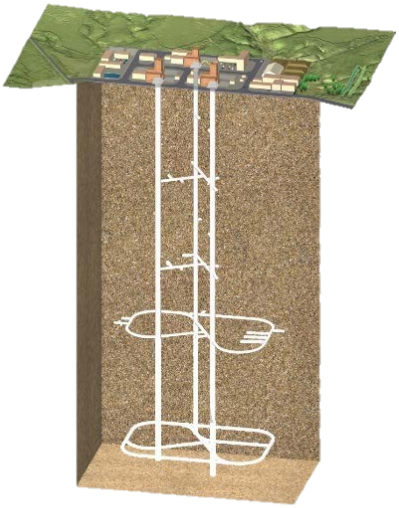


Otonrui Wind Farm where 28 wind turbines are lined up in the north-south direction over a distance of 3.1km

The JAEA is committed to studying geological disposal technologies

Horonobe Underground Research Center

Here, research is focused on sedimentary rock and saline ground water. This center is the subject of this issue.



Nuclear Fuel Cycle Engineering Laboratories

Here, we conduct laboratory simulations to investigate ground water quality and water quality change mechanisms.

Tono Geoscience Center

Mizunami Underground Research Laboratory,
Toki Research Institute of Isotope Geology and Geochronology

Research at the Mizunami Underground Research Laboratory is focused on crystalline rocks and fresh ground water. The Toki Research Institute of Isotope Geology and Geochronology is investigating the geological environment in the past. The photo below shows a system for measuring age, featured in the previous issue.

graph JAEA

[Public Information House "Yume Chiso-kan"]

(Cover photo)
Descending into the underground facility in a “kibble,” a construction elevator that looks like a birdcage. This is the scene when descending to the 350m drift.

Geological disposal of high-level radioactive wastes

Please follow the link below for a general explanation of geological disposal of high-level radioactive waste.
http://www.jaea.go.jp/04/tisou/english/brochure/pdf/jaea_girdd_e.pdf

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