

The Overview of the Study Plan on Environmental Impact Assessment in phase-2 of the MH21

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The Japan's Methane Hydrate R&D Program initiated in FY2001 has moved in the Phase-2 (FY2009-2015), and being conducted with members of the Research Consortium for Methane Hydrate Resources in Japan (MH21). In the Phase-2, two offshore production tests from methane hydrate sediments will be planned around offshore Japan, and environmental impact assessment (EIA) on these tests as well as on future methane hydrate (MH) developments is one of the great concern.

For the comprehensive EIA on the MH development, we have started the following research; (1) Identification of environmental risks, (2) Evaluation on significance of environmental risks, (3) Investigation on avoidance plan or mitigation plan. In a series of this process, we will implement the EIA on the two offshore production tests to acquire the environmental data for commercial production. Here we present the research overview related to (1) and (2).

(1) Identification of environmental risks

By the results of the Phase 1, we have clarified appropriate occurrence type of MH deposits, the production method, and the development system. Depending on these results and restrictions such as (a) Compliance of domestic law, (b) Economical efficiency, (c) Consistency with the EIA procedure of production system, the following four risks have been extracted at the moment as the specific environmental risks for MH development; (a) Methane leakage from seafloor, (b) Seafloor deformation, (c) Submarine landslide, (d) Disposed water from MH dissociation. We also have estimated that environmental risks on commercial development of MH concentrated zones at the eastern Nankai Trough are not significant, if pressure reduction method should be taken for gas production method from MH, test sites should be chosen carefully and formation property alternation should be well known.

(2) Evaluation on significance of identified environmental risks

To evaluate properly the significance of these environmental risks, it is necessary to predict and evaluate the environmental impacts before the field test and to monitor the behavior of environmental impact factors through the tests. Using the data given by monitoring tools and detailed marine environmental surveys, we will verify our estimation described above that the environmental risks would not be significant. The main research items in the Phase-2 are described below.

- (a) Exposure tests of marine organisms in dissolved methane and methane gas
- (b) Investigation on the possible methane gas migration paths by 3D seismic surveys
- (c) Investigation on the possibility of submarine landslide occurrence based on the strength change of MH existing stratum and overburden during the MH dissociation, as well as geological property of MH concentrated zone.
- (d) Simulation by numerical model to predict the behavior of disposed water derived from dissociation of the MH reservoirs.
- (e) Investigation on the monitoring procedure of environmental risks for marine ecosystems,

methane gas leakage and seafloor deformation. Monitoring items, points, periods and sensor selections should also be carefully considered.

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