

## Implementation and Effect of Major Oil Recovery System Exercises

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1. Exercise period: Two days, May 19-20, 1999

2. Weather conditions during exercise

	Wind speed	Wind direction	Wave height
At start of exercise	10~12m	South	1.0m
During exercise	10~13m	West	1.5m
During 180° turn	15~16m	Southwest	2.5m
At discontinuation of exercise	16~18m	West	2.5m

\* We encountered a weather phenomenon unique to the Sea of Japan in May, with sudden gusts of wind generated when the wind direction turned west.

3. Content of marine exercise

- 1) Deploying the boom in J formation
- 2) Simulated oil recovery by using skimmer
- 3) Capturing a target buoy
- 4) Making a 180° turn on the starboard

4. Pre-exercising conditions

Postponement of **oil bag** deployment

\* Deployment was postponed because of the weather conditions encountered when the training team arrived at the site. (The strong winds would have made it difficult to recover the oil bag ashore.)

5. Exercise

The exercise was designed to improve oil recovery skills through an operating exercise based on the scenario of an large oil spill occurring over a wide area of open sea. Exercise was implemented four kilometers off the coast of Niigata West-port with the participants from six Stockpile Bases in Japan.

Exercise was conducted in conjunction with the commissioning and testing of the Transrec system, which was the first large-scale oil-recovery system to be installed on the west coast of Japan.

The main purpose of the training exercise was to practice the following tasks: to become familiar with the equipment and proficient in its deployment, operation and recovery.

\* Boom deployment in a J formation

We were told to keep the following three points in mind as we directed the participants before the boom was deployed:

- 1) Make sure to have close communications between sections (provide information).
- 2) Keep a close eye on wind direction, wind speed, and currents.
- 3) Always watch the status of the **cross-bridle rope**.

With the above three instructions in mind, I entered into the bridge of the main ship to begin directing the exercise. When we saw the rough seas and the readings on the ship's anemoscope and anemometer, however, I could not help having some anxiety about the safety and execution of the exercise. Nevertheless, with the backing of all participants, I decided to proceed with the exercise.

While we were deploying the boom at right angles to the axis of principal vessel at the beginning, I received a request from the boom operator to turn the vessel to the starboard to modify the angle of the boom. Doing so, however, would have brought the deployment direction of boom into conflict with the wind direction, so the request was denied.

In order to make a J formation in increasingly strong winds, I directed the towingboat **Akashiyamaru** to gradually modify its course toward the front of the principal vessel **Shin-Nichimaru's** prow. During this time, several air-rings in the boom lost air and the boom operator refilled the air chamber by using the backup system.(We received advice from the boom manufacturer saying that there is a high probability of air leaking from the air-rings when the boom is deployed on windy days, and that deployment should only be attempted with a backup system connected.)

Because of the high waves and wind, it proved extremely difficult to keep the **cross-bridle-rope** at right angles to the axis of the principal vessel **Shin-Nichimaru**. For this reason, it was necessary to constantly adjust the length of the cross-bridle-ropes to prevent it from breaking and to maintain the boom in a J- formation.

The high winds also pushed the skimmer head close to the principal vessel **Shin-Nichimaru**, and threatened to push it through the gap between the stern of the principal vessel and the rear end of the boom.

Perhaps because of this, the Transrec operator had difficulty to verify the skimmer's position and asked for assistance to modify the skimmer's position from the bridge commander.

For the buoy capture exercise, a buoy was placed about 300m in front of the towing-vessel Akashiyamaru. Despite the bad weather conditions (wind speed of 16m, wave height of 2m), the buoy was successfully captured without breaking the J formation.

A 180° turn on the starboard was then started in the midst of increasingly harsh wind and waves. In the middle of the starboard turn, however, the J-formation of the boom was largely broken down by the influence of the high wind and waves.

As the wind and waves grew stronger, it was decided that completion of the starboard-turn would be impossible, and the turn was abandoned. At that point, the exercise were discontinued due to the safety reason.

\*Weather conditions at the time the exercise was discontinued

Wind speed: 16~18m  
Wave height: 2.5m  
Wind direction: West

Picking up the suggestion of Mr.Sakai, salvage muster of Shinnichimaru, the cross-bridle and towing ropes were let go and the boom was allowed to stream behind the principal vessel.

At this time, the officer of the marine security agency who was onboard as a observer ordered us to put two pilot vessels in front of and behind the principal vessel Shin-Nichimaru and to tune to the channel 16 which is for emergency radio contact.

With these precautions taken, the principal vessel was designated area outside of Niigata west port and we started to retrieve the boom, which was streamed behind the principal vessel. Retrieving the boom was accomplished by adjusting the Shin-Nichimaru's direction in a way that made boom retrieval smoothly and safely.

## 6. Points of issues and impression

The inexperience of the commander made it difficult to fully grasp the overall situation and impossible to provide well-timed information to each operating section. It seemed especially difficult to respond adequately to changing weather conditions, which are difficult to predict. But I think we will be able to respond more adequately to these difficulties by repeating exercises and accumulating experience. At the same time, all of the operators participated in this exercise discovered that they could operate the Transrec system even in stormy weather, and this served them to have a very little confidence in their operation.