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Abstract

The NAKHODKA oil spill in 1997 caused extensive damage to the Japanese coast of Japan Sea, and the amount of damage was 36 billion yen. This paper shows an oil skimmer in emergency. Japanese coast is very long but the oil recovery vessels are not distributed enough to response quickly. We supposed that the crane barge will be useful for oil recovery because they are distributed all prefectures which has coastline and ports. Therefore, the Bucket Oil Skimmer with Rake was developed. The skimmer is operated by the labors employed by the company of the crane barge operator. It is transported by truck to the port near the coast where we have to recover oil. The crane barge prepares to recover oil at the quay. The system should be easy to operate. Therefore we designed that the skimmer can recover the oil from C heavy fuel to emulsified high viscous oil. Operational image is similar to the grab bucket that is often used for oil recovery in emergency. These concepts help to recover the oil without special technical knowledge. However, the grab bucket recovers so much water with oil we must prepare enormous capacity of storage. The skimmer we developed can separate the high density oily phase from recovered oily water by its drain device. We tested the skimmer in the large basin under waves, and made a field simulation at SAKAI Port. We appreciate the skimmer that its oil recovery rate will be 5.9t/h, and oil recovery efficiency will be 70% from 1/4 scale model test. It shows that its capacity is as same as the Grab Bucket, and the oil density in recovered fluid will be two times amount. From the field test, we appreciate the skimmer will be able to be operated simply without special knowledge about oil spill response products.