

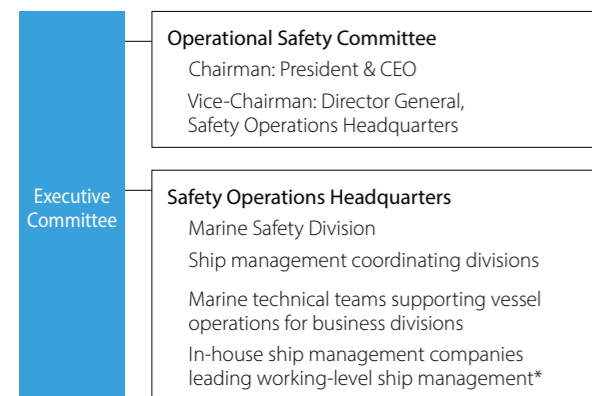
Safe Operation

Safe Operation Management

Safe Operation Management Structure

MOL reorganized the division responsible for safe operation in February 2015. This move was aimed at integrating and horizontally disseminating information among different types of vessels while maintaining a structure that focuses on the front-line operation of every vessel type, reinforcing company-wide operational safety measures, and developing an organizational structure that focuses all the authority necessary to be responsible for the entire Group's safe vessel operations into the Marine Safety Division. Under the new structure, all land-based and oceangoing personnel are united to strive to maximize operating safety, with the goal of becoming the world leader in safe operation.

Organizational Structure Supporting Safe Operation



* MOL Ship Management Co., Ltd. and MOL LNG Transport Co., Ltd.

Emergency Response System

MOL continues to strengthen its systems so that it can provide an accurate response in the unlikely event of an emergency.

Safety Operation Supporting Center (SOSC)

The SOSC is staffed at all times by two marine technical specialists, including an experienced MOL captain. They use the FMS. Safety system, which was developed in cooperation with Weathernews Inc., to monitor weather and related developments where our vessels are operating. FMS.Safety is used to check on the weather, sea, and other conditions surrounding the approximately 850 vessels operated by MOL Group companies 24 hours a day 365 days a year. There is always someone ready and at hand if a ship captain needs assistance. The system collects information on weather, international media reports, and other factors that might affect vessels under way so that the SOSC stands ready to offer timely information and advice and help prevent serious accidents before they happen.



Safety Operation Supporting Center (SOSC)

Accident Response Drills

MOL regularly conducts accident response drills on vessels while at sea. These drills simulate various situations such as an onboard fire or water immersion, or acts of piracy or terrorism, so that seafarers can respond swiftly and appropriately in an emergency. The Head Office conducts serious marine incident emergency response drills once a year with the cooperation of the Regional Coast Guard Headquarters. The drills involve MOL's president, other corporate officers, representatives of relevant departments and ship management companies, and vessels. In October 2017, we conducted an emergency response drill based on the premise of a fire breaking out in the engine room of a car carrier that is leaking fuel and taking on seawater after striking into a reef.

We will continue to conduct drill on a regular basis and further strengthen our emergency response system.



Evacuation drill on board

Safe Operation Measures

Efforts to ensure safe operation will never end. Coupled with the revision and continuation of policies already in place to strengthen safe operation, MOL will thoroughly implement policies to prevent a recurrence of serious marine incidents.

Making Processes for Realizing Safe Operation Visible

MOL has introduced objective numerical indicators for measuring safety levels, and also set the following numerical targets, including the Four Zeroes.

1. Four Zeroes (an unblemished record in terms of serious marine incidents, oil pollution, fatal accidents and cargo damage)
2. LTIF*1 (Lost Time Injury Frequency): 0.7 or below (Since fiscal 2015)
3. Operational stoppage time*2: 24 hours/ship or below
4. Operational stoppage accident rate*3: 1.0/ship or below

In fiscal 2017, we did not achieve 1 above as unfortunately two fatal workplace accidents occurred on MOL Group-operated vessels and we also did not achieve 3 as shown in the below graph.

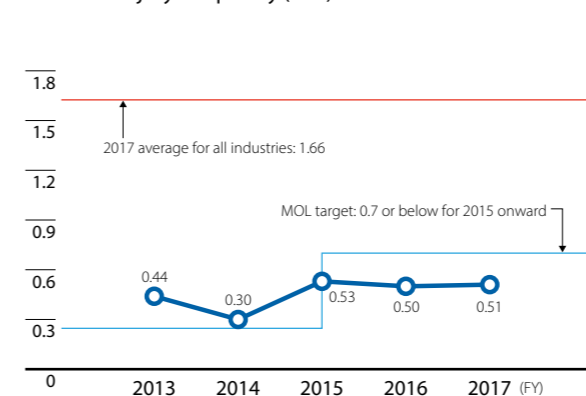
*1 LTIF (Lost time injury frequency): Number of work-related accidents per one million hours worked that resulted in time lost from work of one day or more. In the scope of calculations, we originally included only workplace illnesses and injuries requiring disembarkation from the ship. The LTIF criteria was strengthened from fiscal 2015, and now includes any workplace illness or injury that prevents a worker from resuming even a reduced workload on that day, regardless of whether the illness or injury requires disembarkation.

Average for all industries (2017) was 1.66, shipping industry 1.14, and transportation equipment manufacturing industry 0.43. (Source: 2017 Survey on Industrial Accidents issued by the Ministry of Health, Labour and Welfare)

*2 Operational stoppage time: Expresses the amount of ship operational stoppage time due to an accident per ship per year.

*3 Operational stoppage accident rate: Expresses the number of accidents that result in ship operational stoppage per ship per year.

Lost Time Injury Frequency (LTIF)



Preventing New or a Recurrence of Serious Incidents

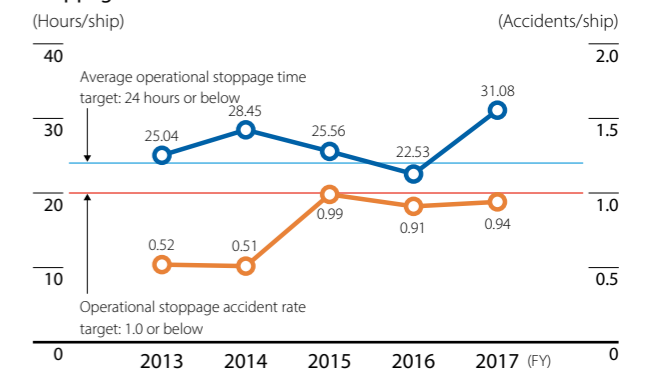
MOL is constantly and repeatedly implementing and raising awareness of fundamental matters while striving to thoroughly keep fresh the memory of serious incidents we have experienced and prevent a recurrence of serious incidents while giving due consideration to improving teamwork, safety awareness, awareness of relevant parties and vessel management quality. We will continue to adapt our accident prevention system by making improvements related to both seafarer training and ship facilities to break the chain of errors in which minor factors combine and ultimately lead to major maritime accidents.

In terms of seafarer training, we are thoroughly implementing drills prior to boarding and supervising the instruction of less experienced seafarers. We are also enhancing land-based education and training curriculum and programs such as "hazard experience" training sessions and BRM drills.*4 These measures are geared towards enhancing the ability of seafarers to perceive danger and promoting teamwork. In addition, we are working to raise safety awareness among seafarers by collecting information from each vessel in operation on examples of incidents and problems as well as close calls*5 and by using videos, photos and illustrations to appeal to the visual sense of seafarers. In terms of ship facilities, we are working to equip ships with error-resistant equipment and promoting the adoption of information technology. This involves promoting the fail-safe design concept by providing shipyards and equipment manufacturers with feedback from vessels in operation on areas of non-conformance and areas in need of improvement.

*4 Bridge resource management drill: Simulating an incident on a vessel operation simulator to enable seafarers to acquire response techniques. It includes MOL's original programs.

*5 Close calls: Risky incidents that came very close to causing a more serious accident.

Average Operational Stoppage Time and Operational Stoppage Accident Rate



● Average operational stoppage time (left scale)
● Operational stoppage accident rate (right scale)

Cooperation for Safe Operation

The MOL Group works together with vessels, shipowners, and ship management companies to work toward achieving the world's highest level of safe operation of all owned and chartered vessels by sharing safety-related information. The Company regularly broadcasts "Safety Alerts"—information pertaining to safe operation, including work-related incidents involving casualties—to every vessel. MOL conducts "Safety Operation Meetings" and "Safety Campaigns" involving vessels, shipowners, ship management companies and even the sales division to deepen understanding of its safety standards and to discuss safety improvements. MOL also inspects vessels to check whether its safety standards are understood well and put into effect. If there is a need to make improvements, MOL will take corrective actions, communicating with the vessel, shipowner and ship management company in the process.

Opening a Self-Operated Maritime Academy in the Philippines in August 2018

Filipino seafarers form the core of the crews on MOL's operated vessels. As operation technology grows increasingly sophisticated, we expect to see more activity for these seafarers. As the culmination of MOL's initiatives aimed at safe operations, in August 2018, MOL will open the Maritime Academy in the Philippines. The academy facility, which has been already constructed, imitates its layout of the practice facilities as realistically as possible. The academy will provide students with training that makes them work-ready as soon as they complete their studies. Through operation of the academy, we will reinforce efforts to secure and train excellent seafarers and achieve the world's safest operations.



A bridge training facility at the academy



A main engine training facility at the academy

Third-Party Evaluations

Safe Operation, Including Evaluations of Seafarer Educational Programs

■ Standard Training Courses for liquefied gas transportation certified by DNV GL AS

The LNG Carrier Standard Training Course and the LEG/LPG Carrier Standard Training Course implemented globally by MOL were certified by Norway's Det Norske Veritas (DNV) GL AS in 2007 for compliance with the LNG carrier crew ability standards and in 2016 for compliance with the LEG/LPG advocated by SIGTTO.**

** Society of International Gas Tanker and Terminal Operators Ltd.



■ Management program for seafarer education and training acquired certification from DNV GL AS

MOL's management program for seafarer education and training was recognized to be effective and certified in its tanker and LNG carrier operations by DNV GL AS in 2012 for compliance with the Competence Management System (CMS).

