OCIMF Mooring Equipment Guidelines (MEG4)

A look at what's new – and what you might not have implemented yet

Bally Duggal AFNI

The fourth edition of the Oil Companies International Marine Forum (OCIMF) Mooring Equipment Guidelines (MEG4) was issued in July 2018. These revisions were brought in in response to changes in the design of the terminals and ships, the evolution of moorings from steel wire to high performance synthetic mooring lines and concerns over mooring lines failing under tension, which has resulted in serious incidents on board. MEG4 was developed by an industry working group which included representatives of various shipowner/operator organisations, shipping companies, terminal operators, cordage institutes, and classification societies. To date, however, I have seen several non-compliances where ships have not yet implemented key changes.

MEG4 updated and revised

MEG4 focuses on the safety of ship and terminal personnel. The fourth edition has been updated and revised with new chapters and key changes which include:

- New terminology.
- Enhanced guidance for the purchasing, condition monitoring, and retirement of mooring lines and tails.
- Enhanced guidance on documentation of mooring equipment.
- New chapter on human factors in mooring design.
- New chapter on jetty design and fittings.
- New chapter on ship-shore interface.
- New chapter on alternative technologies.
- Mooring System Management Plan (MSMP).
- Line Management Plan (LMP).
- Updated wind and drag coefficients.

MEG4 supersedes MEG3 and *Effective Mooring, Third Edition*. It is primarily aimed at the hydrocarbon and chemical industry sectors, conventional tankers, gas carriers and the terminals at which they call.

Updating terms

The MEG4 uses the terms Ship Design Minimum Breaking Load (SDMBL), Line Design Break Force (LDBF) and Working Load Limit (WLL) to clearly define a set of terms and test methods for mooring line Minimum Breaking Load (MBL) that can be used consistently by both line users and manufacturers when designing, specifying, testing and operating mooring lines.

In MEG3, MBL was defined as the minimum breaking load of a new dry mooring line as declared by the manufacturer. This gave rise to the misunderstanding that lines can be safely loaded up to their MBL with no failures or degradation. The concept of a safety margin was not understood, and shipowners expected that mooring line certificates must exactly match the MBL requested. For this reason, the use of MBL is now replaced in MEG4 by SDMBL, LDBF and WLL.

Onboard implementation of OCIMF MEG4

To ensure compliance with OCIMF MEG4, ship operators will need to establish and implement the following mooring procedures:

- Manufacturer's certificates for mooring lines, connecting shackles, and synthetic tails should be kept in a file on board clearly showing which components have been fitted to each mooring winch.
- A Mooring Ship Management Plan (MSMP) should be provided on board each ship. The objective is to ensure that all assessed risks are effectively managed through the design and operation of the mooring system. The MSMP may be specific to the ship or operator's Safety Management System (SMS).
  The MSMP will consist of:
  Part A General ship particulars;
  Part B Mooring equipment design philosophy;
  Part C Detailed list of mooring equipment;
  Part D Inspection, maintenance and retirement strategies;
  Part E Risk and change management, safety or personnel and human factors;
  Part F Records and documentation;
  Part G Mooring System Management Plan Register (MSMPR).
  MEG4 recommends that onboard mooring equipment and fittings, including mooring lines, are identified as critical equipment or systems.
- A Line Management Plan (LMP) should be provided on board each ship. Ship operators will need to develop a programme for line maintenance, inspection, retirement and end to end policy. The process will be based on manufacturer guidance and operational experience. The maintenance, inspection and retirement programme should be developed as part of the mooring line specification and selection process and documented in the ship's LMP. The frequency of inspection should be defined in the ship's LMP in accordance with the operator's Planned Maintenance System (PMS). Operators will need to work with the line manufacturer when creating inspection procedures to make sure appropriate frequencies are chosen to suit their trading pattern.

- Industry guidelines for mooring lines require Line Design Break Force (LDBF) of 100-105% of the Ship Design MBL (SDMBL). Synthetic tails should have a LDBF 25-30% higher than that of the ship SDMBL. Operators should aim to retire tails at or before the time they reach 75% of the SDMBL.

Interim measures

New ships are expected to have information for all the above parts of the MSMP and LMP, while existing ships may need to engage the shipyard to collate the required information.

Due to the short timeframe between the launch of MEG4 and the implementation of the seventh edition of the SIRE Vessel Inspection Questionnaire (VIQ7), ship operators should clearly detail any changes that have not been incorporated, the reasons behind this and the interim steps taken to mitigate any perceived risk. This will be particularly important in response to VIQ7 questions 9.2 on the Mooring Ship Management Plan and 9.3 on the Line Management Plan.

What's covered by MEG4?

MEG4 provides more insights on hardware design, mooring dynamics, mooring line design, inspection and discard criteria, as well as recommendations on mooring line strength and questions buyers should ask mooring line manufacturers. These questions include topics such as fibre choice, mooring line design, linear density of the load-bearing core, special coatings, and material wear mechanisms. In addition, several new tests are detailed that will require compliance from mooring line manufacturers to prove their lines are fit for mooring specified vessels.

OCIMF's release of the fourth edition of its Mooring Equipment Guidelines requires a significant change in how mooring systems will be designed, selected, maintained and retired. In addition, terminology has been clarified, a robust framework has been created to improve mooring line selection and purchase, and design guidance updated to improve mooring line longevity.

MEG4 promotes close cooperation between the ship naval architect, ship building yard, mooring equipment manufacturer, mooring line manufacturer and vessel owners and operators for safe use and long lifetime operation of mooring equipment on board the ships. This is further reinforced with references to the various planning procedures in the seventh edition of the Vessel Inspection Questionnaire (VIQ7).

The new mooring equipment guidelines are primarily aimed at the hydrocarbon and chemical industry sectors