



**Human Element Issues QITAPI-HEI-18-2020**  
**(Reminding IMO Guidelines on Fatigue)**

► **Introduction:**

In the 100th session of its Maritime Safety Committee (MSC 100), IMO approved revised guidelines on fatigue, to assist all stakeholders to contribute to the mitigation and management of fatigue, which poses significant risks to safety and health of seafarers, operational safety, security and protection of the marine environment.

The following highlights have been extracted from MSC.1/Circ.1598 guidelines.

► **Composition:**

The Guidelines are composed of modules each devoted to an interested party.

The modules are as follows:

- **Module 1** Fatigue
- **Module 2** Fatigue and the company
- **Module 3** Fatigue and the seafarer
- **Module 4** Fatigue, awareness and training
- **Module 5** Fatigue and ship design
- **Module 6** Fatigue, the Administration and port State Authorities

The modules are all interrelated; it is recommended that all parties become familiar with module 1, which contains general information on fatigue.

These guidelines should be taken into consideration when:

1. developing, implementing and maintaining safety management systems under the ISM Code;
2. promoting fatigue mitigation and management;
3. promoting awareness of the causes and consequences of fatigue and developing and delivering training programmes and courses;
4. conducting casualty or accident/incident investigations; and
5. preparing applications for minimum safe manning documents or when determining minimum safe manning levels for ships.

► **Module 1 Fatigue:**

Causes of fatigue:

1. lack of sleep, i.e. inadequate restorative sleep;
2. poor quality of sleep and rest;
3. work/sleep at inappropriate times of the body clock (circadian rhythm);
4. staying awake for long periods;
5. stress; and
6. excessive workload (prolonged mental and/or physical exertion).

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There are many ways to categorize the causes of fatigue. To ensure thoroughness and to provide good coverage of most causes, they have been categorized into five general factors:

1. seafarer-specific factors;
2. management factors (ashore and aboard ship);
3. ship-specific factors;
4. environmental factors; and
5. operational factors.

The most significant aspects of fatigue are:

1. sleep;
2. body clock and the circadian rhythm;
3. time awake;
4. jet lag;
5. workload;
6. stress;
7. health; and
8. individual differences

► **Module 2 - Fatigue and the company:**

To ensure that fatigue prevention is practiced onboard, a company should consider the following:

- ISM Code requirements for clear, concise guidance on operational procedures on board;
- ensure adequate resources, including manning levels;
- promote a safety reporting culture with open communication and no fear of reprisal;
- the need for joining seafarers to be adequately rested before assuming duties;
- schedule time for proper handover on crew change;
- voyage length, time in port, length of service and leave ratios;
- multicultural issues; language barriers, social, cultural and religious isolation;
- interpersonal relationships, stress, loneliness, boredom, social deprivation and increased workload as a result of small crew numbers;
- provision for shore leave and on board recreation, family communication;
- watch-keeping arrangements;
- job rotation, if practicable;
- adequate sleeping berths and accommodation;
- adequate quality and quantity of food for proper nutrition;
- read other modules of these guidelines for additional potential managerial mitigation tools; and
- modification of present ship design or future designs, if necessary.

► **Module 3 - Fatigue and the seafarer:**

To reduce and manage the risk of fatigue on ships:

- Seafarers should obtain adequate sleep
- Sleep is most valuable if obtained in a single block.
- There may be instances when seafarers may not obtain adequate sleep, even though they are provided with adequate sleep opportunity, due to factors like the type of food consumed or use of electronic devices.

A number of countermeasures have been identified as potentially providing some relief in managing fatigue:

1. Short rest breaks within duty periods
2. Strategic napping
3. Caffeine
4. Nutrition and hydration
5. Environment (light, temperature, humidity and sound)
6. Physical activity
7. Social interaction
8. Job rotation when practicable.

It must be emphasized that these countermeasures will not restore an individual's state of alertness; they only provide short-term relief and may, in fact, simply mask the symptoms temporarily.

► **Module 4 - Fatigue, awareness and training:**

Fatigue training and awareness are essential components for effective fatigue management. Fatigue management should be taught in such a way that seafarers can understand and relate to it personally. As a minimum, training should consist of:

1. fatigue, its causes and potential consequences (contributors, consequences, high-risk situations);
2. sleep (circadian rhythms, body clock, sleep process, circadian low, sleep debt, sleep disorders, working at night and watch-keeping);
3. fatigue countermeasures (e.g. mitigation strategies, managing sleep habits, caffeine, nicotine, alcohol, nutrition, exercise, napping, rest breaks);
4. basic information on sleep disorders and treatment of them, where to seek help if needed and any requirements relating to fitness for duty;
5. an understanding of the rules and regulations dealing with fatigue (MLC, 2006 and STCW Convention), and a recognition that these represent one line of defence in managing the risk of fatigue;
6. how to identify fatigue in oneself and in others;
7. personal strategies that seafarers can use to improve their sleep and to minimize their own fatigue risk, and that of others, while they are on duty;
8. the responsibility of the company to provide, and of seafarers to take advantage of, adequate rest periods;
9. the responsibility of the seafarer to report situations when unable to obtain adequate sleep or feeling at risk of making fatigue-related errors; and
10. the responsibility of the company to have policies in place to appropriately manage fatigue risks including policies against retaliation for reporting.

► **Module 5 - Fatigue and ship design:**

There are various aspects of fatigue that can potentially be influenced by the design of the living, sleeping and working environment. Fatigue can be caused by excessive noise, heat or cold, light, too much or too little humidity and poor air quality, among others, where people live and work.

Sleeping, living and working areas should be located within the ship to minimize undesired motions, vibrations and noise.

Consideration should be given to:

1. ensuring cabins are cool, quiet, dark and well ventilated;
2. bunk design, layout and orientation;
3. mattress, bedding, padding for ship movement, headroom clearance especially upper bunk/deck-head;
4. insulating and/or isolating sleeping areas;
5. use of colour and artwork in the cabins; and
6. use of acoustic insulation and/or other noise-abatement measures.



► **Module 6 - Fatigue, the Administration and port State Authorities:**

*-Fatigue and the Administration:*

Administrations have an important role to play in mitigating and managing the risks of fatigue at sea:

- Implementation and enforcement of international regulations that have a direct impact on mitigating and managing fatigue.
- Consider the impacts on seafarer fatigue as a result of the requirements placed on shipboard operations and seafarers.

*-Fatigue and port State authorities:*

Port State authorities are encouraged to consider the potential effects that inspections and reporting requirements may have on the wider aspect of seafarer fatigue:

- Port State authorities should consider the impact of inspections, surveys, audits and other visits to ships on seafarer fatigue.
- Port State authorities should consider the impact of reporting and information requests on seafarer fatigue.

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