REPUBLIC OF THE UNION OF MYANMAR
MINISTRY OF TRANSPORT AND COMMUNICATIONS
DEPARTMENT OF MARINE ADMINISTRATION

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Date :24th December 2016

Directive (14/2016)

FATIGUE PREVENTION

Applicable to: All Ship - owners, Ship Operators, Flag State Surveyors, Recognized Organizations, Masters and Officers of Myanmar Flagged Ships.

Reference :

- **(a) STCW Convention,1978 as amended Reg: VIII/1**
- **(b) STCW Code, as amended Section A-VIII/1 and B-VIII/1**
- **(c) IMO MSC/Circ.1014**
- **(c) IMO-Resolution A.772 (18)**

1. The Department of Marine Administration circulates this directive in the exercise of the power of Section 294 (B), paragraph (b) of Myanmar Merchant Shipping Act, 1923 as amended.

2. This directive applies to Myanmar flagged ships engaged on International voyage complying with requirements of SOLAS 1974, as amended for the fatigue prevention.

3. The Guidance for Fatigue prevention is set out by Department of Marine Administration to fulfill the relevant requirements of above references.

4. Administration directed that measures are established by shipping companies and ship Masters in accordance with the provision of Regulation VIII/1, paragraph 1 of STCW Convention and Section A-VIII/1 and Section B-VIII/1 of STCW Code.

5. Therefore, Shipping Company shall, for the purpose of preventing fatigue:

(a) establish and comply rest periods for watchkeeping personnel onboard the vessels,

(b) comply with the requirements of rest periods as set out in section A-VIII/1 of the STCW Code and display watch schedules on board their ships where they are easily accessible, and

(c) require that watch systems are so arranged that the efficiency of all watchkeeping

personnel is not impaired by fatigue and that duties are so organized that the first watch at the commencement of a voyage and subsequent relieving watches are sufficiently rested and otherwise fit for duty.

6. Shipping Company or any Seafarer who fails to comply in accordance with this Directive and Guidance for Fatigue prevention shall be taken the disciplinary action and/or dismissal from employment.

Maung Maung Oo
Director General
Department of Marine Administration

Department of Marine Administration
Ministry of Transport and Communications
Republic of the Union of Myanmar

GUIDANCE FOR

FATIGUE PREVENTION

2016

DMA

Introduction

1. This Guidance for Fatigue prevention applies to shipping companies and their seafarers employed on Myanmar flagged ships.

2. This Guidance defines the specific rules and responsibility for preventing and managing Fatigue in the workplace ensure safety, security and pollution prevention onboard.

3. Administration directs that measures are established by Shipping Companies and Ship Masters in accordance with the provision of Regulation VIII/1, paragraph 1 of STCW Convention and Section A-VIII/1 and Section B-VIII/1 of STCW Code.

4. This Guidance for Fatigue Prevention is set out on 24th December 2016 according to the directive 14/2016 in the exercise of the power of Section 294 (B), paragraph (b) of Myanmar Merchant Shipping Act 1923, as amended.

Guidance for fatigue prevention

CONTENTS

Guidance for Fatigue prevention

1. Policy

This Guidance defines the rules and responsibility for preventing and managing Fatigue in the workplace ensuring safety, security and pollution prevention onboard.

2. Purpose

To provide all seafarers with information on personal risk management of fatigue, guidance for recognizing fatigue related risks at workplace ensuring safety, security and pollution prevention onboard.

3. Application

This Guidance for fatigue prevention applies to Shipping Companies and their seafarers employed on Myanmar flagged ships.

4. Responsibility

4.1. The Shore-based Management of the Shipping Company is responsible for

.1 the recommendations and guidelines,

.2 the close monitoring on the physical implementation, and

.3 the further improvement, if any as based on the findings of the implementation.

4.2. The Shipboard Management of the Shipping Company is responsible for

.1 the physical implementation for the enforcement of the Company's Policy,

.2 The systematic application of recommendations and guidelines, and

.3 The immediate reporting of negative findings and taking appropriate actions.

4.3. The Ship Master is responsible for

.1 Monitoring and providing feedback on the programme through the ship's safety committee,

.2 Monitoring the performance of ship officers and seafarers,

.3 Obtaining medical or specialist advice and dealing with emergency medical situations,

.4 Monitoring and recording the watch schedule, hours of work/rest of ship officers and seafarers and

.5 Ensure that watch systems are so arranged that the efficiency of all watchkeeping personnel is not impaired by fatigue and that duties are so organized that first watch at the commencement of a voyage and subsequent relieving watches are sufficiently rested and otherwise fit for duty.

5. Definitions

5.1 Fatigue means "A reduction in physical and/or mental capability as the result of physical, mental or emotional exertion which may impair nearly all physical abilities including: strength; speed; reaction time; coordination; decision making; or balance."

6. Fatigue

The most common causes of fatigue known to seafarers are lack of sleep, poor quality of rest, stress and excessive workload. There are many other contributors as well, and each will vary depending on the circumstance (i.e. operational, environmental).

There are many ways to categorise the causes of fatigue. To ensure thoroughness and to provide good coverage of most causes, they have been divided into 4 general categories.

. Crew-specific factors
. Management factors (ashore and aboard ship)
. Ship-specific factors
. Environmental factors

6.1. Crew Specific Factors

The crew-specific factors are related to lifestyle behavior, personal habits and individual attributes. However, fatigue varies from one person to another and its effects are often dependent on the particular activity being performed.

The crew-specific factors include the following:

- Sleep and rest
- quality, quantity and duration of Sleep, sleep is orders/disturbances, rest breaks
- Biological clock/circadian rhythms
- Psychological and emotional factors, including stress
- fear , monotony and boredom
- Health
- diet , illness
- Stress
- skill, knowledge and training as it relates to the job, personal problems,interpersonal relationships
- Ingested chemicals o alcohol
- drugs (prescription and non-prescription) , caffeine Age
- Shift work and work schedules
- Workload (mental/physical)
- Jet lag

6.2. Management Specific Factors (ashore and onboard ship)

The management factors relate to how ships are managed and operated. These factors can potentially cause stress and an increased workload, ultimately resulting in fatigue. These factors include:

1. **Organizational factors**
   - staffing policies and retention, role of riders and shore personnel, paperwork requirements, economics, schedules-shift, overtime, breaks **,** company culture and management style, rules and regulations, resources, upkeep of vessel **,** training and selection of crew .
2. **Voyage and scheduling factors**
   - frequency of port calls , time between ports, routing, weather and sea condition on route, traffic density on route, nature of duties/workload while in port .

6.3. Ship Specific Factors

These factors include ship design features that can affect/cause fatigue. Some ship design features affect workload (i.e. automation, equipment reliability), some affect the crew's ability to sleep, and others affect the level of physical stress on the crew (i.e. noise, vibration, accommodation spaces, etc.). The following list details ship-specific factors:

- ship design
- level of automation
- level of redundancy
- equipment reliability
- inspection and maintenance
- age of vessel
- physical comfort in work spaces
- location of quarters
- ship motion
- physical comfort of accommodation spaces

6.4. Environmental Specific Factors

Exposure to excess levels of environmental factors, e.g. temperature, humidity, excessive noise levels, can cause or affect fatigue. Long term exposure may even cause harm to a person's health. Furthermore, considering that environmental factors may produce physical discomfort, they can also cause or contribute to the disruption of sleep.

Ship motion is also considered an environmental factor. Motion affects a person's ability to maintain physical balance. This is due to the extra energy expended to maintain balance while moving, especially during harsh sea conditions. There is a direct relation between a ship's motion

and a person's ability to work. Excessive ship movement can also cause nausea and motion sickness.

Environmental factors can also be divided into factors external to the ship and those internal to the ship. Within the ship, the crew is faced with elements such as noise, vibration and temperature (heat, cold, and humidity). External factors include port and weather condition and vessel traffic. There are a number of things that can be done to address these causes.

Some contributors are more manageable than others. Opportunities for implementing countermeasures vary from one factor to another (noise can be better addressed during the vessel's design stage, breaks can be addressed by the individual crew member, training and selection of the crew can be addressed during the hiring process, etc.).

7. Cause of Fatigue

Fatigue may be caused and/or made worse by one or a combination of the following:

Lack of sleep

Only sleep can maintain or restore your performance level. When you do not get enough sleep, fatigue will set in and your alertness will be impaired.

Poor quality of sleep

Fatigue may be caused by poor quality of sleep. This occurs when you are unable to sleep without interruptions and/or you are unable to fall asleep when your body tells you to.

Insufficient rest time between work periods

Apart from sleep, rest (taking a break) between work periods can contribute to restoring your performance levels. Insufficient rest periods or postponing assigned rest times (to finish the job early) can cause fatigue.

Poor quality of rest

Disturbances while resting such as being woken up unexpectedly, on call (during port operations), or unpredictable work hours (when arriving in port) can cause fatigue.

Stress

Stress can be caused by personal problems (family), problems with other shipmates, long work hours, work in general, etc. A build up of stress will cause or increase fatigue.

Boring and repetitive work

Boredom can cause fatigue. You may become bored to the point of fatigue when your work is too easy, repetitive and monotonous and/or bodily movement is restricted.

Noise or vibration

Noise or vibration can affect your ability to sleep/rest, and it can affect your level of physical stress, thus causing fatigue.

Ship movement

The ship's movement affects your ability to maintain physical balance. Maintaining balance

requires extra energy, which can then cause fatigue. A ship's pitching and rolling motions mean you might have to use 15-20% extra effort to maintain your balance.

Food (timing, frequency, content and quality)

Refined sugars (sweets, doughnuts, chocolates, etc.) can cause your blood sugar to rise rapidly to a high level. The downside of such short term energy is that it usually results in a rapid drop in blood sugar. Low blood sugar levels can cause weakness, instability and difficulty in concentrating and in the extreme cases unconsciousness. Eating large meals prior to a sleep period may disrupt your sleep.

Medical conditions and illnesses

Medical conditions (i.e. heart problems) and illnesses, such as the common cold, can cause or aggravate fatigue. The effect depends on the nature of the illness or medical condition, but also the type of work being carried out. For example, common colds slow response time and affect hand-eye co-ordination.

Ingesting chemicals

Alcohol, caffeine and some over-the-counter medications disrupt sleep. Caffeine consumption can also cause other side effects such as hypertension, headaches, mood swings or anxiety.

Jet-lag

Jet-lag occurs following long flights through several time zones. It is a condition that causes fatigue in addition to sleep deprivation and irritability. It is easier to adjust to time zones while crossing from east to west as opposed to west to east. The greatest difficulty in adjustment results from crossing 12 time zones, the least from crossing one time zone. Our bodies adjust at the rate of approximately one-hour per day.

Excessive work load

Working consistently "heavy" workloads can cause fatigue. Workload is considered heavy when one works excessive hours or performs physically demanding or mentally stressful tasks. Excessive work hours and fatigue can result in negative effects such as the following:

- increased accident and fatality rates
- increased dependence upon drugs, tobacco or alcohol
- poor quality and disrupted sleep patterns
- higher frequency of cardiovascular, respiratory or digestive disorders
- increased risk of infection
- loss of appetite

8. Effects of Fatigue

Alertness is the optimum state of the brain that enables us to make conscious decisions. Fatigue has a proven detrimental effect on alertness this can be readily seen when a person is

required to maintain a period of concentrated and sustained attention, such as looking out for the unexpected (e.g. night watch).

When a person's alertness is affected by fatigue, his or her performance on the job can be significantly impaired. Impairment will occur in every aspect of human performance (physically, emotionally, and mentally) such as in decision-making, response time, judgment, hand-eye co-ordination, and countless other skills.

Fatigue is dangerous in that people are poor judges of their own level of fatigue. The following are examples of fatigue's known effect on performance.

- Fatigued individuals become more susceptible to errors of attention and memory (for example, it is not uncommon for fatigued individuals to omit steps in a sequence).
- Chronically fatigued individuals will often select strategies that have a high degree of risk on the basis that they require less effort to execute.

9. Prevention for Fatigue

There are a number of steps that can be taken to prevent fatigue. Many of the measures that reduce fatigue are unfortunately beyond a single person's control, such as voyage scheduling, ship design, and work scheduling.

Steps such as the following are important in the prevention of fatigue on board ship, and are within the Ship Officer's ability to influence and implement:

- Ensure compliance with maritime regulations (minimum hours of rest and/or maximum hours of work)
- Take strategic naps
- Develop and maintain good sleep habits, such as a pre-sleep routine (something that you always do to get you ready to sleep)
- Eat regular, well-balanced meals (including fruits and vegetables, as well as meat and starches)
- Exercise regularly
- Drink sufficient amount of water
- Use rested personnel to cover for those travelling long hours to join the ship and who are expected to go on watch as soon as they arrive on board (i.e. allowing proper time to overcome fatigue and become familiarized with the ship,
- Create an open communication environment (e.g. by making it clear to crew members that it is important to inform supervisors when fatigue is impairing their performance and that there will be no recriminations for such reports
- Schedule drills in a manner that minimizes the disturbance of rest/sleep periods

- Establish on board management techniques when scheduling shipboard work and rest periods, and using watch-keeping practices and assignment of duties in a more efficient manner (using, where appropriate, IMO and ILO recommended formats "Model format for table of shipboard working arrangements" and "Model format for records of hours of work or hours of rest of seafarers")
- Assign work by mixing up tasks to break up monotony and combining work that requires high physical or mental demand with low-demand tasks (job rotation)
- Schedule potentially hazardous tasks for daytime hours
- Emphasis the relationship between work and rest periods to ensure that adequate rest is received; this can be accomplished by promoting individual record keeping of hours rested or worked. Using (where appropriate) IMO and ILO recommended formats in "IMO/ILO Guidelines for the Development of Tables of Seafarers' Shipboard Working Arrangements and Formats of Records of Seafarers' Hours of Work or Hours of Rest"
- Re-appraise traditional work patterns and areas of responsibility on board to establish the most efficient utilisation of resources (such as sharing the long cargo operations between all the deck officers instead of the traditional pattern and utilizing rested personnel to cover for those who have travelled long hours to join the ship and who may be expected to go on watch as soon as they arrive)
- Ensure that shipboard conditions, within the crew's ability to influence, are well maintained i (e.g., maintaining heating, ventilation and air-conditioning (HVAC) on schedule, replacing light bulbs, and contending with sources of unusual noise at the first possible opportunity)
- Establish shipboard practices for dealing with fatigue incidents and learning from the past (as part of safety meetings) Increase awareness of long term health benefits of appropriate lifestyle behaviour (e.g. exercise, relaxation, nutrition, avoiding smoking and low alcohol consumption)

9.1. Sleep

- Sleep is the most effective strategy to fight fatigue. Sleep loss and sleepiness can degrade every aspect of a person's performance: physical, emotional and mental. To satisfy the needs of your body, you must acquire the following:
- deep sleep
- between 7 to 8 hours of sleep per 24-hour day
- uninterrupted sleep
- Here is some general guidance on developing good sleep habits:

- develop and follow a pre-sleep routine to promote sleep at bedtime (examples are a warm shower or reading calming material)
- make the sleep environment conducive to sleep (a dark, quiet and cool environment and a comfortable bed encourages sleep)
- ensure that you will have no interruptions during your extended period of sleep
- satisfy any other physiological needs before trying to sleep (examples are, if hungry or thirsty before bed, eat or drink lightly to avoid being kept awake by digestive activity and always visit the toilet before trying to sleep)
- avoid alcohol and caffeine prior to sleep (keep in mind that coffee, tea, colas, chocolate, and some medications, including cold remedies and aspirin, may contain alcohol and/or caffeine)
- avoid caffeine at least six hours before bedtime
- consider relaxation techniques such as meditation and yoga, which can also be of great help if learned properly.

9.2. Rest

Another important factor that can affect fatigue and performance is rest. Rest, apart from sleep, can be provided in the form of breaks or changes in activities. Rest pauses or breaks are indispensable as a physical requirement if performance is to be maintained. Factors influencing the need for rest are the length and intensity of activities prior to a break or a change in activity, the length of the break, or the nature or change of the new activity.

All persons who are assigned duty as officer in charge of a watch or as a rating forming part of a watch and those whose duties involve designated safety, prevention of pollution and security duties shall be provided with a rest period of not less than;

.1 a minimum of 10 hours of rest in any 24-hour period; and

.2 77 hours in any 7-day period

Seafarers should be reminded that rest periods are stipulated in 24 hour periods and seven day periods, not one day and one week. In other words, the clock does not start ticking at 0001 hours and/or Monday. A Port State Control or Flag State Surveyor can check the hours in ANY 24 hour and/or seven day period.

The hours of rest may be divided into no more than two periods, one of which shall be at least 6 hours in length, and the intervals between consecutive periods of rest shall not exceed 14 hours.

The above requirements do not apply in the case of emergency or in other overriding operational conditions. Musters, fire-fighting and lifeboat drills, and drills shall be conducted in a manner that causes minimizes the disruption to rest periods and does not induce fatigue.

When a watchkeeping is on call, e.g. an engineer officer on UMS duty, adequate and compensatory rest period shall be provided if the normal period of rest is disturbed by call- outs to

work

Overriding operational conditions should be construed to mean only essential shipboard work which cannot be delayed for safety, security or environmental reasons or which could not reasonably have been anticipated at the commencement of the voyage.

Parties may allow exceptions from the required hours of rest provided that the rest period is not less than 70 hours in any 7 day period and on certain conditions, namely:-

- Such exceptional arrangements shall not be extended for more than two consecutive weeks. The intervals between two periods of exceptions shall not be less than twice the duration of the exception;
- The hours of rest may be divided into no more than three periods, one of which shall be at least 6 hours and none of the other two periods shall be less than one hour in length;
- The intervals between consecutive periods of rest shall not exceed 14 hours; and
- Exceptions shall not extend beyond two 24-hour periods in any 7-day period.

Exceptions shall, as far as possible, take into account the guidance regarding prevention of fatigue in section B-VIII/1.

Six hourson/Six hours off.

Working 'sixes' may, in theory, appear to meet the criteria under STCW 2010, thus avoiding infringements of the Hours of Work and Rest regulations. However, there are other factors which need to be considered.

STCW sets out appropriate guidance for taking over the watch such the procedures will need to be carried out before the relieving watchkeeping takes over the watch.

Hence, the relieving officer will need to be at their place of work (bridge, engine control room, etc.) before the commencement of their watch and the officer to be relieved cannot leave until the handover is complete.

Therefore, when watchkeepings are working 'sixes', the Master and/or owners will need to be able to demonstrate that the handover period is successfully carried out without reducing the 6 hours rest time.

Administration shall establish the watch schedules be posted where they are easily accessible and records of daily. The schedules shall be established in a standard format (Appendix-1)as per IMO/ILO Guidelines in the English language.

Administration also shall established records of daily hours of rest of seafarers be maintained in a standardized format (Appendix-2) in English Language to allow monitoring and verification of compliance with the provision of STCW Code. The seafarers shall receive a copy of the records pertaining to them, which shall be endorsed by the master or by a person authorized by the master and by the seafarers.

It shall be deemed to impair the right of the master of a ship to require a seafarer to perform any hours of work necessary for the immediate safety of the ship, persons on board or cargo , or for the purpose of giving assistance to other ships or persons in distress at sea. Accordingly, the master may suspend the schedule of hours of rest and require a seafarer to perform any hours of work necessary until the normal situation has been restored. As soon as practicable after the normal situation has been restored, the master shall ensure that any seafarers who have performed work in a scheduled rest period are provided with an adequate period of rest.

9.3. Strategic Napping

Research has identified “strategic napping” as a short term relief technique to help maintain performance levels during long periods of wakefulness. The most effective length for a nap is about 20 minutes. This means that if you have the opportunity to nap, you should take it. However, there are some drawbacks associated with napping. One potential drawback is that naps longer than 30 minutes will cause sleep inertia, where situational awareness is impaired (grogginess and/or disorientation for up to 20 minutes after waking. A second is that the nap may disrupt later sleeping periods (you may not be tired when the time comes for an extended period of sleep).

10. References

(a) ILO Convention No. 180
(b) ISM Code
(c) STCW Convention,1978 as amended Reg: VIII/1
(d) STCW Code, as amended Section A-VIII/1 and B-VIII/1
(e) MSC/Circ. 1014- Guidance on Fatigue Mitigation and Management.
(f) IMO- Resolution A. 772(18) – Fatigue Factors in Manning and Safety
(g) Directive of fatigue prevention.
(h) Guidance for Fatigue prevention

Appendix – 1

TABLE OF SHIPBOARD WORKING ARRANGEMENTS

Name of Ship: **Flag:** **Latest update of table:**

The minimum hours of rest are applicable in accordance with Maritime Regulations issued in conformity with the ILO Maritime Labour Convention, 2006, and with any applicable collective agreement registered or authorized in accordance with that Convention and with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended, (STCW Convention).

Maximum hour of work or minimum hours of rest[1]: Minimum Hours of Rest shall not be less than: (i) 10 hours in any 24-hour period;& (ii) 77 hours in any 7-day period.

Maximum Hours of Work shall not exceed (i) 14 hours in any 24-hour period: and (ii) 72 hours in any 7-day period.

Position/ Rank[2]	**Schedule daily work hour at sea**		**Schedule daily work hour in port**		**Comments**	**Total daily work hours**	
	Watch Keeping (from - to)	**Non-watch keeping duties (from - to)[3]**	**Watch Keeping (from - to)**	**Non-watch keeping duties (from - to)[3]**		**At Sea**	**In Port**

MASTER'S SIGNATURE

1 Delete as pplicable.

2 For those/ranks that are also listed in ship safe manning document, the terminology used should be the same as in the documents.

3 For watchkeeping personal, the comments section may be used to indicate the anticipated number of hours to be devoted to unscheduled works and any such hours should be include in the appropriate total daily work hours column.

Appendix – 2
RECORDS OF REST HOUR

Name of Ship _____ Rank _____

Name of crew _____

For the month/Year Watch Keeper Yes ☐ No ☐

TIME / DATE	0000-0100	0100-0200	0200-0300	0300-0400	0400-0500	0500-0600	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200- 1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-2400	TOTAL REST HOUR IN 1 DAY	TOTAL REST HOUR IN 7 DAYS*	O/T RECORD	COMMENTS
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TIME / DATE	0000-0100	0100-0200	0200-0300	0300-0400	0400-0500	0500-0600	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200- 1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-2400	TOTAL REST HOUR IN 1 DAY	TOTAL REST HOUR IN 7 DAYS*	O/T RECORD	COMMENTS
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23																												
24																												
25																												
26																												
27																												
28																												
29																												
30																												
31																												

I agree that, this Record is an accurate reflection of the hours of rest of the crew concerned

Total Overtime Hours	

Resting Period	R
Normal Work	W
Overtime Work	O

Signature of Master or Authorized Person

Name:

Rank:

Signature

Name

Rank

Note: (1) Daily record and Keep onboard. Not require for Head Office/(2.)* Pls show total rest hours for every week in Sunday.

(2) Normal working hour 8 Hour per days and others will record with overtime. Daily overtime 4 Hours per day or more but total overtime not more than 96 Hours per Months.