



RPC

Seafarer fatigue

Causes and mitigation

A presentation for the Nautical Institute Hong Kong branch

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What is fatigue?

“A state of feeling tired, weary, or sleepy that results from prolonged mental or physical work, extended periods of anxiety, exposure to harsh environments, or loss of sleep.”

IMO MSC/Circ/1014: Guidance on fatigue mitigation and management (2001)

What causes fatigue amongst seafarers?

“Prolonged mental or physical work.”

- Most crew work 10-12 hours, every 24 hours
- Tours of duty typically between one week and six months, often longer
- Working in the engine room, particularly on an older ship can be very demanding physically
- Bridge watch keepers are required to maintain a high level of concentration for periods of up to six hours

What causes fatigue amongst seafarers?

“Extended periods of anxiety.”

- Particularly true for seafarers working long tours, far from their country of abode
- Problems at home can weigh heavily on the mind of a seafarer, away for an extended period
- Navigation officers, manoeuvring the vessel in areas of high traffic density, sometimes in restricted visibility

What causes fatigue amongst seafarers?

“Exposure to harsh environments.”

- Engine room staff often work in very difficult conditions
- Deck officers and crew often spend long periods exposed to the elements, while on cargo watch
- Extended periods of bad weather can make life very uncomfortable for all crew, who must work **and** live onboard

What causes fatigue amongst seafarers?



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What causes fatigue amongst seafarers?

“Loss of sleep”

- Ships work 24/7
- Sleep is often interrupted by noise/vibration, regardless of the location of a cabin
- Heavy seas and bad weather inhibit sleep quality

What causes fatigue amongst seafarers?

Other causes

- Health
- Fitness and diet
- Age
- Psychological factors

What are the consequences of seafarers fatigue?



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What are the consequences of seafarers fatigue?



Sheng Neng 1



Sheng Neng 1

- Chief officer on watch
- Awake at the time the incident occurred
- 2.5 hours sleep in 38.5 hours prior to incident occurring

Maritime labour convention

- Came into force 20 August 2013
- Enforceable by port state control and flag state
- Greater risk of vessel detention
- Minimum of 10 hours rest in any 24 hours period
- Minimum of 77 hours rest in any seven day period
- Daily rest hours may be over two periods, one of which must be at least six hours long

Maritime labour convention

Are the regulations effective in preventing fatigue?

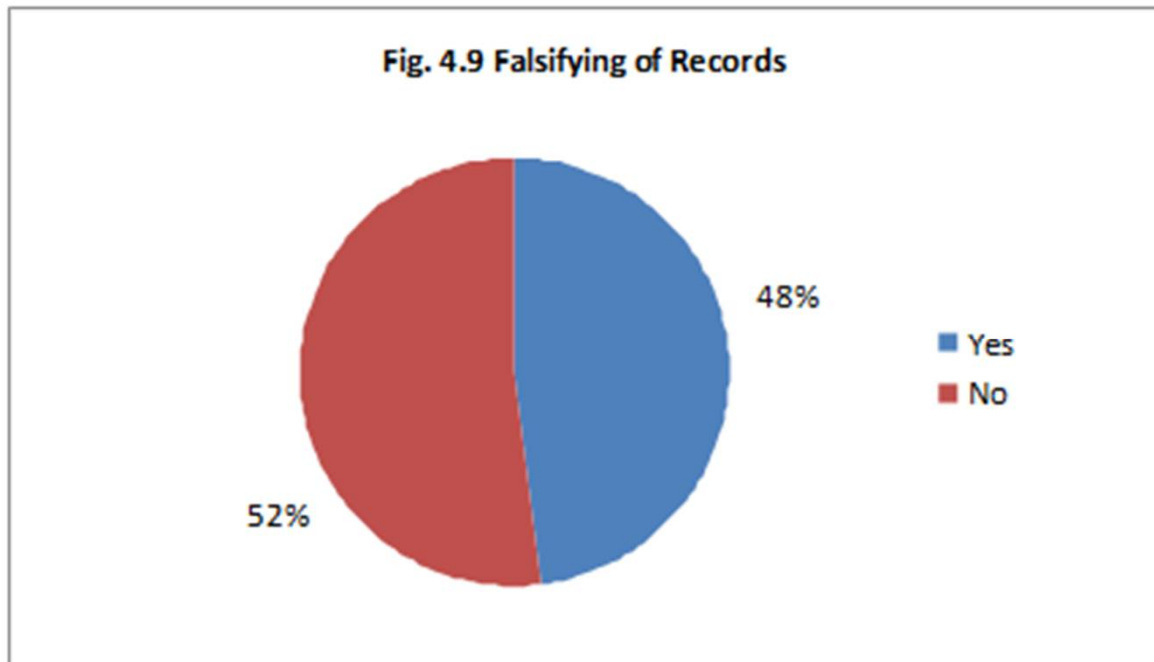
Maritime labour convention

Allowable work routines

- Six hours on, six hours off, seven hours on, five hours off, for the duration of a tour of duty
- 14 hour working days, up to six consecutive days
- 13 hour working days, for the duration of a tour of duty

Maritime labour convention

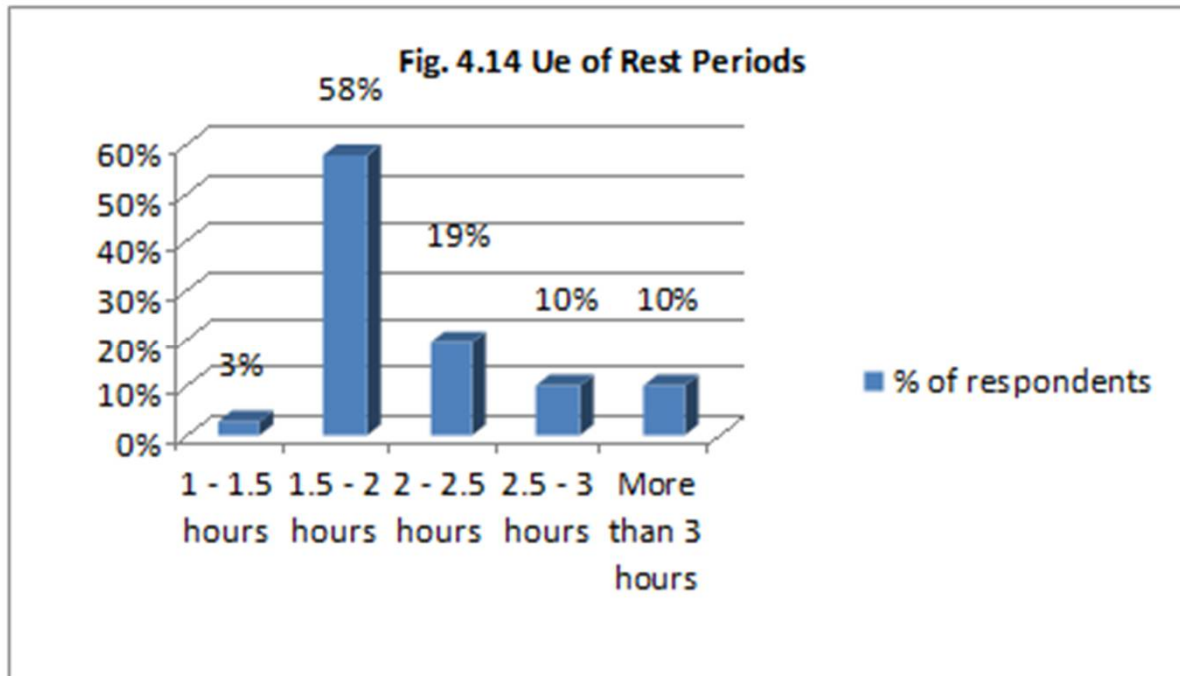
Are records being kept accurately?



REST ≠ SLEEP

Maritime labour convention

Use of rest periods



Sleep

What constitutes good sleep?

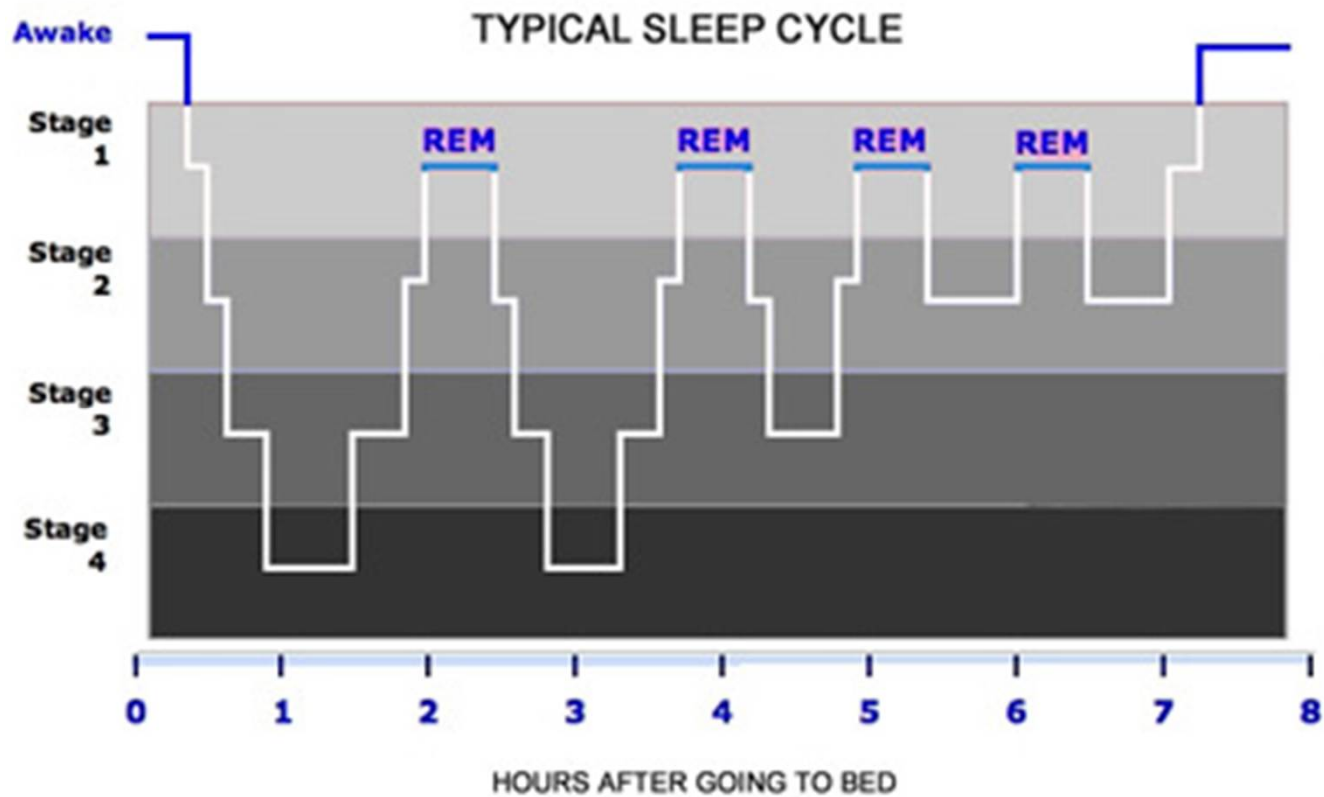
- Duration
 - 7.5 – 9 hours in every 24 hours
- Continuity
 - Four x hour-long naps is not as effective as four consecutive hours of sleep
- Quality
 - Effective sleep routine, in sync with biological clock

Sleep

What constitutes good sleep?

- Average person requires 7.5 – 9 hours sleep in every 24 hours (more if this cannot be achieved consecutively)
- Sleep is in cycles of approximately 90 minutes
- The Biological Clock and Circadian Rhythms.
- Quality of sleep is as important as duration

Lead-in bullet point slide



Smith, et al. 2013

Benefits of preventing fatigue

- Reduce the risk of casualties
 - marine casualties
 - errors in cargo handling
 - personal injury/fatalities on board
- Improve crew productivity
- Prevent non-conformities/deficiencies/detentions

Preventing fatigue and ensuring compliance

- Proactive on board management of working hours
- Tailored watch routines and avoid six on/off watches
- Compliance with schedule of hours of work and contingency planning
- Accommodation and sleeping environment
- Crew welfare

Crew education

- Understanding of the regulations
- Importance of compliance
- Recording of hours
 - importance of maintaining records
 - consequences of poor record keeping and falsifying records
- Time management
- Notifying senior officers of **potential** instances of non-compliance or when suffering from fatigue

Conclusions

- Requirements for hours of work/rest, alone, are not sufficient to prevent fatigue
- Means of recording hours of work/rest allows for falsification/inaccurate recording
- Education, understanding and involvement of all crew is imperative
 - preventing non-compliance
 - importance of rest and proper utilisation of rest periods
- Active role of SHEQ ashore, including liaising with operations departments

Q&A

