Work-Related Mobility and Fatigue on the Great Lakes and St. Lawrence River: Canadian Seafarers’ Experiences

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Outline

- Fatigue in the Shipping Industry
- Shipping and E-RGM
- Fatigue and mobility among Canadian seafarers working the Great Lakes and St. Lawrence River
- Methods
- Findings
- Conclusion and Recommendations
Fatigue and OHS

- Fatigue refers to “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.” (International Maritime Organization, 2001).
Seafarer fatigue and OHS

- Shipping is a safety-critical industry, and seafaring is a demanding job (Sampson, 2013; Walters & Bailey, 2013).
- “Just work and sleep” describes life on board for short-sea seafarers, alternating between demanding work and rest (Pauksztat, 2017).
- Fatigue affects seafarers’ decision-making skills and jeopardizes maritime safety (Rothblum, 2000).
- Fatigue and sleepiness are estimated to account for 25% of maritime accidents (Raby and McCallum, 1997).
Fatigue in the Shipping Industry

Causes of fatigue:
- Demanding nature of work (Walters and Bailey 2013).
- Long working hours and isolated, confined work environment, motion and noise (Wadsworth et al., 2008).
- Limited right to rest and reduced crew size (Smith et al 2006).
- Ship schedules and duration of port calls (Pauksztat 2017).
- Pressures from shore-based managers, charterers and port inspectors (Sampson et al 2016).

Measures to prevent Fatigue
- Right to minimum rest hours
- Right to adequate manning (Li & Ng, 2002 and Stevenson 1996)
- Social interaction to overcome feelings of isolation (Hystad and Eid 2016)

the burden of legal compliance: more paperwork, more fatigue?
E-RGM and fatigue

- Current studies identify the mobility of ship as a contributing factor to seafarers’ fatigue levels, including motion, ship schedules and duration of port calls.

- This research explores fatigue and E-RGM from a comprehensive approach as follows:
  - Getting to work
  - At work
  - Living at work
  - Living at home
E-RGM and Seafaring

- E-RGM pervades the work of seafarers
- Variable and potentially extended commutes between places of residence and ships
- Some variability in ports of departure and tour endpoints
- Work on mobile platforms travelling variable distances including across international boundaries
- Transient work platforms (can change vessels)
- Variable and changing 24-hour/7 work schedules particularly for short-haul seafarers
The study

- Under-studied area
- Canadian seafarers on the Great Lakes and St. Lawrence River confront dual work-related mobility:
  - mobility on water: navigating, piloting, swinging outboard, mooring and cargo handling.
  - commuting mobility: long-distance air travel and road driving prior to and after voyages
Research Question and Methods

- How does the variable aspects of employment-related mobility affect Canadian seafarers’ experiences of fatigue on the Great Lakes and St. Lawrence River?

- Methods:
  - Legal doctrinal analysis of Canadian maritime occupational health and safety regulations and policies.
  - 20 interviews between July 2017 and January 2018.
  - Face to face
  - Skype and Telephone
  - Audio-recorded
  - Average length of 99.76 minutes
  - Pseudonyms are assigned.
Findings (1): Getting to Work

- Many seafarers are exhausted at the beginning of their voyages.

- *In my previous company, I had a lot of issues with this (commuting hours). When we change 30% of the crew, most of them coming from the east end of Canada, they are coming on board having travelled for eight hours straight. And I am now going on the Welland Canal to Hamilton and back [...]. They were exhausted, but I have no choice but to work these guys! (Captain Charlie)*
Findings (1): Getting to Work

- Seafarers have to conduct safety-critical tasks straight after long commuting.
- [Commuting is] more difficult for people from BC compared to Toronto people. We have to fly 4-5 hours and usually at night. One time, I joined the vessel when it just arrived in the port and I started unloading the vessel for 6 to 8 hours. Then I had to load fuel immediately. This was the most dangerous thing in my work. It was a straightforward thing but it was still a very dangerous operation, with the potential dangerous consequence when something went wrong, in particular when we were very tired. (Chief Engineer Delta)
Findings (2):
At work – work schedules

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<tr>
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<th>Shifts on Board</th>
<th>Overtime</th>
<th>Shore leave system</th>
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<tbody>
<tr>
<td>Bulk Carriers</td>
<td>4 on 8 off</td>
<td>Such as loading and discharging cargo, port operation, canal transits.</td>
<td>Three months on and one month off</td>
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<td>Tankers</td>
<td>6 on 6 off</td>
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<td>Six weeks on and six weeks off</td>
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Findings (2): At work

- Frequent transits on Canals across locks make Canadian seafarers have little chance to have a rest.
  - Once you are on the St. Lawrence River, you will be on the wheel for more intensive work. The minute you get to Montreal, you get the first lock. Then that starts the work: you wake up everybody to wait for the lock, even the engineers. [...] You do the first lock half an hour and in 1.5 hours you have passed the first lock. Then you get 1.5 hour sailing to the next lock. Then another 30 minutes, another lock; then another five-hour break, then another lock. Then an hour and another lock. Then you got two more locks, then you reach Lake Ontario – from Montreal to Lake Ontario, on and off, on and off. You go to work and come back. So your hours start to rise, and you are about to be called every two hours, four hours and you cannot concentrate. (Ex-deck rating Dave)
Canals and locks connecting the Great Lakes and the St. Lawrence River
Findings (3)
Living at work – Rest hours

- minimum hours of rest shall not be less than: (i) ten hours in any 24-hour period; and (ii) 77 hours in any seven-day period (154 hours in any 14-day period)

- Maritime Labour Convention, 2006, Regulation 2.3

- minimum hours of rest for Canadian seafarers: (i) at least six consecutive hours of rest in every 24-hour period; (ii) at least 16 hours of rest in every 48-hour period (112 hours in any 14-day period).

- Marine Personnel Regulations (SOR/2007-115)
Findings (2)
Living at work: lack of quality rest

- There are a lot of causes [of accidental injury]. The lack of manpower on deck was a problem in this case. The rating was [forced to work] but he was tired and needed rest. Another thing people tend not to talk about is sea conditions. What would you do in the 30 or 40 feet swell? You cannot sleep because the vessel is moving so much. You still have to go on watch and carry on. You get time off but you cannot sleep because of the motion of ships at sea. (Second Officer Claude)
Findings (3)
Living at work: limited shore breaks

- The things are worse with the new security regulations. Because the shore side uses the security regulations to restrict access to their property. The crew are now stuck on board with no breaks, in both the US and Canada. [..] The ports are using strict restriction measures. At one terminal on Lake Ontario, we loaded salt. To access the dock, we have to produce photo ID, sign in and sign out. If we arrived in the early morning, say 2 or 3 am, we would not be able to access the port at all. There were fishermen on the other side of the dock, they did not need to sign. We were treated like aliens in our own country. In another Canadian port, we were not permitted to enter into the dock. We could not use cell phones in the dock. You are not allowed to stand in the dock to use the phone. It is not permitted! (Chief Engineer Delta)
Findings (3)
Living at work: limited shore breaks

- Before the hands-free mooring technique, there were three staff at the terminal. If we needed a shore break, we could report to the port staff and they would open the gate for us. Now with the hands-free mooring, there is only one staff member, and he or she may be away for some reason. If we cannot find him/her, we cannot have a shore break. (Engine room rating Edmund)
Findings (4) living at home

- Rest at home: recover from fatigue or take another call?
  - I was a permanent relief officer, and that was written on my union paper. I had a lot of work, but there was zero job security. I worked 4 to 5 months on the Lakes and then I came home for a couple of days. Then they would call me and wanted me to come back. I had to say yes, because if I said no there was nothing guaranteed [...] that they would call me back. [...] I could not have work opportunities. I do not have the seniority in the union, so I had to work from vessel to vessel. When they need me, I have to go. (Second Engineer, Lima)
Fatigue and Fatality at Sea

- “There were a lot of facts involved in the accident. But fatigue was the major contributor. For a lot of cases, physical and mental fatigue is the major issue...” (Chief Engineer Delta)

- Determinants of fatigue:
  - Event occurred near the end of back-to-back shifts
    - 3 months
    - 2 days in airport without returning home
    - Accident occurred near the end of the 4 month shift
    - Total 7 months at sea except for 2 days in the airport
Determinants of the back-to-back shifts: Individual and organizational factors

- Early career officer in charge of the mooring operation at the time of an accident
  - Early career: hard to turn down a shift because hours at sea are required for promotion.
  - Domicile thousands of km from Great Lakes so no time to return home: waits in airport for next ship
  - HR couldn’t find a replacement and encouraged the officer to accept the back-to-back shift
  - Current regulation tolerates 12 months at sea without vacation
Findings (4) living at home

- Rest at home: recover from fatigue or face more loneliness?

- You see all men and we are like a family on board. But when you go home, the guys will see each other from time to time at home. But I am not going to do that and I cannot go to another guy’s home when his wife there. [...] Then you tend to go home and you do not have a network of friends because you spend most [of your] time with those guys on board and then you come home and you do not have them at home. I think women tend to be more vulnerable to being lonely even when they come home. (Second Officer Claude)
Conclusion and Recommendations

- Mobility affects the patterns of rest and fatigue level experienced by Canadian seafarers, perhaps in particular for the least experienced.
- The compound effects of commuting mobility and mobility during transits on canals should receive special attention from the companies and policy makers.
- This research suggests that Canadian seafarers’ rights to minimum hours of rest should be levelled up to be equivalent to the international labour standards, and quick and friendly approval for seafarers’ shore breaks should be ensured.
- National and international regulations should address the number of consecutive days at sea and the payment system should be adjusted accordingly.
Next Step...

- Regulating Maritime Occupational Health and Safety in the Canadian Arctic Gateway: Regulatory Divergence or Convergence between the Shipping and Fishing Sectors.

- With Professor Aldo Chircop, Canada Research Chair on Maritime Law and Policy.
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