



Seafarers as First Responders: An Ethnographic Study of Safety and Survival Training

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ABSTRACT

Seafarers are “on their own” at sea, isolated from medical care and unable to call 911 when requiring an emergency response. Critical, of course, is that organizations train seafarers in health and medical care at sea, as well as survival and safety – the latter being the focus of the current paper. Here, I strive to unpack what basic safety and survival training (STCW-95) means for future or current seafarers. Recognizing the role of the self in survival, I present a reflective, experiential, and analytic autoethnographic study of safety and survival training that brought to light and then reinforced the need to recognize seafarers as first responders. I unpack training as a participant in Basic Safety, a course necessary for a Transport Canada certification that is required to be part of crew at sea, to evidence the first responder roles of seafarers and to recognize the responsibility for survival of self, crew, and civilians that a seafarer bears. I then unravel the training experience, including experiences of fighting fires, search and rescue, and cold-water immersion, reflecting on implications for policy and practice, as well as to inform societal perceptions of seafarers.

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1. Introduction.

In government and among certain social spaces, coastguard and search and rescue personnel are recognized public safety personnel (PSP); however, the label of first responder tends to be more readily attributed to police, firefighters, and paramedics (CIPSRT, 2022). Unrecognized in all contexts are Seafarers, who are the first responders in any disaster that occurs on ship—where fatal accidents and injuries happen on water across industries worldwide (Roberts, Nielsen, Kotłowski, & Jaremin, 2014). Seafarers are “on their own” at sea, isolated from medical care (Lefkowitz, Slade, & Redlich, 2018). For example, head injuries are common on ship and can be serious or life threatening; simply said, members of the crew must respond to these injuries (and all others). Their varying first-responder duties are also above and beyond the other tasks assigned to

them on ship—i.e., their job (e.g., fishing, cooking, engineering) –for their other positions, as typically each crew member is delegated a set of emergency duties on a muster list to enact when an incident arises (Hristova, 2019).

In the current autoethnographic study, I unpack experientially and analytically the experience of becoming certified to go to sea as a member of a crew. Experientially, I reflect on how course material and applications reveal the first responder role of any seafarer and my own experience completing the Basic Safety training course (STCW-95), which beyond practical components, cumulates into a written examination required for certification. Analytically, I interrogate the role of a seafarer in the preservation of life and reflect on implications for practice and society.

2. Background.

Dating back to 1990, evidencing the historical recognition of injuries at sea, Barss and Hall (1990) documented the medical needs responded to by crewmembers in the University-National Oceanographic Laboratory Systems. They described

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the 122 cases among regular and scientific crew (from 1985 to 1987) requiring tele-medical communication for care. Cases included injuries (31%) and infected (34%) and non-infected (23%) medical cases (Barss & Hall, 1990). At sea, the crew (and passengers) are unable to call 911 for immediate assistance when requiring an emergency response. The first responder roles of Seafarers include that of a paramedic (i.e., require first aid training), firefighter (i.e., responsible for putting out fires on ship), and emergency responder (i.e., rescue) – among others. Each member of the crew is responsible for their survival, including in cases of ship abandonment. Yet, when considering and preserving the safety of civilian passengers, the crew is also responsible for their security and rescue.

Thus, without any doubt, Seafarers, beyond those employed in coastguard and search and rescue, are first responders and PSP—responsible for their health and survival, that of the crew, and that of civilians. Boats are loaded with personal and operational protective equipment, including lifesaving appliances, firefighting gear, medical equipment, and equipment in case of an oil spill. The crew are expected to be the first responder to any of these challenges as each may arise. The objective is to keep the “accident” from becoming a “disaster”—natural, personal, or professional. The crew are trained for emergency response for humans and the environment – ships require a pollution plan muster list as well as a disaster muster list.

2.1. *Training.*

Much of the research in the area of survival training occurs among public safety and armed forces populations (Øvergård, Bjørkli, Røed, & Hoff, 2010; Saus, Johnsen, Eid, & Thayer, 2012; Wahl, 2020) and involves simulators (Renganayagalu, Mallam, Nazir, Ernsten, & Haavardtun, 2019; Sanfilippo, 2017; Saus, Johnsen, Saus, & Eid, 2010; Veitch, Billard, & Patterson, 2009). Some research is from the perspective of the instructor teaching with simulators (Sellberg, 2018; Sellberg & Lundin, 2017), while other research reflects on the structure of interactions during simulations (Hontvedt & Arnseth, 2013), simulation fidelity (Hontvedt & Øvergård, 2020), and the frequency of retraining (Bottenheft, Oprins, Houben, Meeuwse, & Valk, 2019). Researchers have studied on-board training for maritime vessels, including a focus on familiarization of ship, which is key to reducing maritime incidents (Tvedt, Oltedal, Batalden, & Oliveira, 2018). Others have looked at safety equipment among fisherman, like Piniella (2007), who found that using safety equipment improperly compromises the health and safety culture on ship.

Norafneeza, Anwar, and Arryanie (2019) studied human factor “issues” in basic offshore training for platforms in tropical water. They found that not all alarms and public announcements are heard, and definitely not clearly, in cabins and noisy areas—which can delay responses in the event of an emergency. Thus, affecting survival is communication, essential to survival, but easily compromised by noise and less reliable when not manually activated (in comparison to automatic alarm activation). Others, like Barić, Čulin, and Bielić (2018), have focused on human factors such as how poor organization, cultural differences, and attitudes and improper behaviours can lead to

accidents. Barić et al. (2018) propose leaders who make “good decisions” (p. 710), have good relationships across the group, and reduce any antagonism between persons of different specialization (e.g., Master, Chief Engineer) are key to reducing accidents (see Griffioen, van der Drift, & van den Broek, 2021 for a presentation of new models for supporting attitudes and behaviours that promote safety).

Researchers, including Jamil and Bhuiyan (2021), have studied learner experiences in maritime simulation programs. Jamil and Bhuiyan (2021) found that when training in simulation programs, necessary are clear definitions of “learning outcomes”, improvement in learning context that support “exploration and second-chance learning”, reducing gaps in theory versus practice by “ensuring skills-knowledge balance and in-depth scholarship building”, the facilitation of tasks “for learning preparation and learning extension, and the repositioning of “simulation components and their assessment schemes across the academic programme” (p. 18). Learners’ experiences, although the studies are few, are necessary given the movement to increase academic as well as vocational training for those going to sea. Internationally, though arguably a false dichotomy (Cowling, 1998), there appears to be a trend towards university-style education (e.g., critical thinking, theory, inquiry) that complements vocational training (e.g., acquisition of practical skills, structured thinking) in the practical certification of competency related qualifications for going to sea (M. Manuel & Nakazawa, 2008). Included here is the movement of degree acquisition for seafarers (M. E. Manuel, 2017).

2.2. *Auotethnography and Current Study.*

In an ethnographic study, an author of Jensen, Solberg, and Gudmestad (2019) participated in a scenario – a mass evacuation from a stranded cruise ship in Arctic waters – that included survival in cold waters. In his experience, his primary lesson learned is that survival “is dependent on active participation from the survivors” (np.). Recognizing the role of the self in survival, what is missing in all reviewed literature and scholarship is a reflective, analytical autoethnographic study of safety and survival training that reinforces the recognition of seafarers as first responders. Moreover, missing is the examination of training to evidence the first responder roles of seafarers and recognize the responsibility for survival of self, crew, and civilians that a seafarer bears. Although simulators are key to training, research is necessary that goes beyond PSP and armed forces personnel, as well as the efficiency of simulation, to examine the training experiences of seafarers who undergo offshore safety and survival training that includes reflection on how one learns the first responder role.

2.3. *Context: The Offshore Safety and Survival Centre and ST-CW-95.*

In the Canadian province of Newfoundland and Labrador, instructors at the Offshore Safety and Survival Centre (OSSC) train individuals in emergency response to go to sea. Part of the Fisheries and Marine Institute of Memorial University of Newfoundland, the OSSC opened in the early 1980s, and offers a

“comprehensive range of safety and emergency response training courses to the offshore petroleum, marine transportation, fishing and land based industries” (<https://www.mi.mun.ca/departments/offshoresafetyandsurvivalcentreosscc/>, O4/22/2022, -np). The facilities are vast, including a survival tank (with a helicopter underwater escape trainer (HUET), fire fields (including propane), lifeboats, fast rescue craft launching devices, seagoing marine training vessel, and, among other tools and equipment, a virtual marine S92 VR helicopter cabin simulator. Although many courses are offered at the OSSC, the course I was undertaking is Standards of Training, Certification and Watchkeeping for Seafarers (STCW-95), which results in a certificate, and refers to the 1995 amendments to the international convention on STCW, 1978. The 1995 amendments, which completely revised the STCW, went into effect January 1, 2012 and were fully phased in by January 1, 2017. The course is designed to meet the International Maritime Organization (IMO) requirement – the IMO is an organization within the United Nations, and mandates training to go to sea. The course also meets the Canadian regulations – the Transport Canada regulations, which include the domestic vessels safety course (different than the IMO). Other offered courses include that providing Proficiency in Survival Craft (including rescue boats other than fast rescue boats; PSC), and Advanced Fire Fighting (AFF, which is actually advanced shipboard firefighting).

3. Methods.

In research and writing, experiences of an event, process, or undertaking can be a key source of information and opportunities for inquiry, particularly when engaged in rigorous analyses of the self against broader cultural experiences (Ellis, Adams, & Bochner, 2011). Autoethnography, an outcome of the postmodern confidence crisis in social science research where scholars strived to understand the truth and empirical nuances underpinning grand and master narratives (Lyotard, 1984), is a means to reflect and analyze personal lived experiences. Some autoethnographers focus on incidents of life changing proportions (Zaner, 2004), or “times of existential crises that forced a person to attend to and analyze lived experience” (Ellis et al., 2011 p. 275). Johnston (2020, p. 138) writes that “By accommodating and recognizing the impact that degrees of subjectivity, emotionality, and evocative personal experiences have on the research process (Harding, 2004), autoethnography can deepen our concerns for social justice and empathies for marginalized populations (Ellis & Bochner, 2000)”. Although I am not suggesting that seafarers are a marginalized population, there is social justice needs that underpins the realities of sea life—there is a need for ensuring the safety, security, and survival of seafarers (and passengers)—and to recognize seafarers for their role as rescuers and survivors.

Nevertheless, sharing and reflecting on experiences can serve to create connection between individuals with similar experiences but can, also, unpack the link between cause and manifest as well as latent consequences. Where my reflectively rests, in the current study, is in my exploration of the processes involved for going to sea and what such processes suggest should inform

policy and future directions of study. What quickly became clear is that every seafarer is a first responder in the context of any emergency on ship. On board, each person has a marked role if a disaster is to occur—all are responsible for the provision of safety and lead their own personal survival. Thus, in the current study, I reflect on what it means to be trained to be the first responder that is a seafarer preparing (or recertifying) to go to sea. I speak to the course material, the immersion in cold water, the learning of safety and survival, and the experience of putting out fires—all required by Transport Canada to be employed in any occupation of a seafarer.

I employ a phenomenological lens centred on my lived experiences in completing the course, before heading to sea, as I strove to create a new way of knowing and a new appreciation for the seafarer professions (Rennels & Purnell, 2017). The ‘phenomenon’ in question is the six-day course, where I sought to capture the structure, essences, messaging, cultural scripts, shifts in cultural understanding, lived experiences, and nuances around safety and survival at sea, as well as my location and positionality in relation to this social context (Pitard, 2019). In this—arguably realist—space, I learned to “question taken-for-granted ideas, assumptions, and presuppositions veiling a phenomenon” (Allen-Collinson, Vaitinen, Jennings, & Owton, 2018) and instead sought out the truths about training and the insight such training provided about life at sea.

Recognizing that my experience is still laden in my personal interpretations, I approached the autoethnography analytically – although I maintained evocative insights, largely as I reflect on my array of emotions I combated, such as anxieties, fear, and elements. Though I hope to build a deeper understanding of the seafarer positioning in relation to the scholarly literature on this topic, rather than, as per evocative autoethnography (Ellis & Bochner, 2000), a focus on striving to pull readers into my own cathartic, lived experience, I use a process most commonly associated with features of analytical autoethnography. Specifically, I question societal powers and how they may create the lack of common understanding around the seafarer role, the impact of relationships, or even truths on interpretations of their relationships (Anderson, 2006), while also aiming to create a new interpretation that recognizes the realms of risk inherent to work at sea.

My data sources for the ethnography are rooted in field and class notes, collected over the period leading up to, during, and after the six work-day course, which started on an early Thursday morning and ending the following Thursday in the late afternoon. I took notes, prior, during, and after each experience, reviewing and looking for emergent themes across the notes—focusing on what was most pronounced and constant in the messaging received during training. I often had the advantage of writing in ‘real-time’ at least when in the classroom, which ensured I could note details of the moment rather than rely on retroactive memory. My primary data source remained my jottings that recorded my changing interpretations as I completed the training and learned about seafarers’ roles when employed at sea in any capacity. Perhaps naively, I did not expect that all must serve in first responder capacities when I started the course, I had no idea that there is a need for faith in your crew

for survival as well as faith in your own abilities.

My process was not solely autoethnographic, as I took the course with a group, and it was within this group that the ethnographic elements of participant observation also came to fruition. More specifically, I immersed myself completely in the training field, participating, experiencing, and observing phenomena to obtain an insider's perspective and thus interpretations rooted in an insider perspective (Davies & Francis, 2018). I caveat, however, that event after training I did and do not feel like an insider—my positionality feels more of that of a researcher. Different than my experiences in correctional officer training (author cite), I required this certification to complete my research objective – to go to sea. Thus, there was a new anxiety, one I never before experienced in research, the need to acquire the certification rather than just participate and observe. Thus, I was not a *trusted* outsider, I was no different than any of my classmates, I was observing and entering the social world of those I was also studying, in their setting and in their space – I was living my research experience.

In my case, participant observation represented a new starting point for research in the field of mariners (J. Douglas, 1976; J. D. Douglas, 1972). I believe that by participating in the field I would learn the questions to ask and where more research on seafaring may be welcome. Although Davies and Francis (2018, p. 351) argue “true participation is fraught with epistemological and methodological challenges and is consequently quite rare”, I had the opportunity and privilege of full participation. I had a role in the social group – I was part of the social group – and others interpreted my actions while I interpreted theirs – we were all immersed in the field that we collectively constituted. I did not worry about going “native” and becoming overly engrossed in the training course, as I too had to pass the written and practical exams. I was in essence the “complete participant”, rather than a “participant as observer”, “observer as participant” or engaged in “complete observation” (Gold, 1958).

Unlike traditional ethnographies, the ethical issues tied to my immersion in the field were not tied to the disclosure of my identity (other researchers were in the course), rapport building, earning respect, or establishing trust as I was not dependent on being accepted to understand the material or have the experience. I did experience role conflict – where I had to balance my researcher and participant role – to take notes but still learn all material and had to be respectful of the privacy of other participants who did not elect to be part of my ethnography and thus be part of my research experience (see author cite). I took care to preserve anonymity in writing up my analysis, never identifying any instructor or participant. I consulted with a colleague to ensure I struck a balance and used care in my presentation of self and other. Simply said, despite the emotionality present in the narrative, I maintained control of my emotions and applied ethical considerations similar to ethnographies, and drawing on my experience as an ethnographic researcher (author cite).

4. Results.

Prior to the course, I had to obtain a Candidate Document Number (CDN; a unique number that Transport Canada awards

to an individual to assist with their record keeping and document identification). The CDN number is required prior to the Seafarers Medical Examination – the second step for certification. I acquired my CDN number in March 2022. A week or so after, on March 23, I had my seafarers' medical. Given seafarers are at sea, and responsible for their safety and that of others aboard, it is essential that there are no pressing health concerns that may impede their safety and health on ship. The medical entailed some paperwork, and a quick physical examination – weight, height, BMI, an eye exam, blood pressure, and some abdominal poking. With a clean bill of health, I received my ‘paperwork’ and the doctor cleared me to go to sea.

On April 7, 2022, I started my Basic Safety STCW'95 course, which ran six days from 9:00 am to 4:30 pm, in my possession was my paperwork from the Medical, an employee participation form, and paperwork to for a fit test for the Scott AV3000 facemask. In the following narratives, I first provide the context around the research environment—the course and class. I then unpack the training material, fit testing, and practicum experiences, first practicum in the survival tank and then on the fire fields—always within the context of analyzing the role of seafarers in first response, survival, and the preservation of safety.

4.1. Course Context.

The course objectives are threefold, requiring students to achieve proficiency as per the IMO in personal survival techniques; fire prevention and firefighting; and personal safety and social responsibilities. The course aims are for all participants to be able to “Identify dangers at sea, Raise alarms and respond to associated emergencies, Minimize the risk of fire, to maintain a state of readiness, to fight fires on a vessel, Abandon a vessel and to survive in a marine environment, and Take part in rescue operations”. The major topics covered include, but are not limited to, hazards, emergencies, emergency preparedness and response, pollution prevention, safe working practices, survival, effective human relations on boards ships, safe working practices, effective communication, firefighting theory, fire prevention and control aboard ships, shipboard firefighting organization and training, practical firefighting, use and care of firefighting equipment, and rescue.

To pass and receive the certification, required is 100 percent attendance, acceptable standards of performance and conduct in practical exercises, completion of practical exercises to the satisfaction of the instructor, and attaining at least 70 percent in a theoretical exam that covers the entire syllabus and consists of 50 multiple choice questions.

Our instructors were well versed in seafaring, survival, and firefighting. The class, including myself, had nine students, each unique in their reasons for completing the course. Some were recertifying after a lifetime boating, others headed to sea for the first time in hopes of a second career on a boat, and others were doing the class for the purpose of research projects that occur in the ocean – a diverse group with six self-identifying men and three self-identifying woman.

Of note, Covid-19 affected training. Staff at the OSSC were already reduced to skeleton crew at the start of the course, and fewer remained as the days progressed – Covid-19 was making

its way through the instructors. All were positioned with physical distance and masks in the classroom and the OSSC modified some practicum exercises to maintain physical distancing between students (and instructors) in the field. Masks could only be removed on the fire field and when eating or drinking. To emphasize the impacts of Covid-19, on the second day, when another instructor tested positive, we almost had our practicum in the survival tank canceled. Rather than a cancellation, the remaining instructors reassigned their responsibilities to ensure we were able to complete the class.

4.2. *Survival Instruction.*

Despite the many hazards on ship (i.e., in the engine room, those in navigation, busy areas, on vessels, and in water), people are the key hazard, impacting or creating all other hazards. For example, someone designed the non-ergonomic vessel, someone decided to go into poor weather; thus, many accidents at sea result from human error. Transport Canada, we learned, publishes lessons learned based on accidents that happen, and the frequencies of such events.² I took to heart the survival lessons (e.g., wear a seatbelt in a lifeboat; know the Safety of Life at Sea (SOLA) regulations (particularly regulation 19)). It is through training in accident prevention that safety procedures and emergency responses are learned which address hazards, or at least reduces the possibility of the hazard becoming a situation or disaster. Seafarers, on ship, must know incident management, emergency response (muster points, etc.), the different alarms for different crises, and emergency drills – a shipboard exercise that practices correct procedures for abandoning, firefighting, mob recovery, injured person care, etc. To ensure proficiency, drills must be held on passenger vessels weekly or biweekly and prior to departing final loading port and monthly on cargo or fishing vessels over 150 tons and on all vessels, drills occur within 24 hours of departure if there is a 25 percent crew change. Drills are common, necessary given the first responder role of the crew, as through practice people become more comfortable and thus capable. During these initial lessons, I was surprised for lack of a better word. I recognized quickly that I was very uninformed about what going to sea entailed and unaware of the first responder role of seafarers. There is a degree of responsibility on ship among seafarers that I did not expect, although in retrospect this responsibility feels obvious—there is no one else to call for support or immediate assistance. Like any first responder, a seafarers foremost responsibility to survive in emergencies. Survival is very much dependent on self. Affecting survival are psychological factors, age, physical condition, fitness (body fat), and knowledge, as well as clothing, having a buoyancy apparatus, and a survival craft. The goal is to avoid cold-water shock and drowning. The enemies of survival being drowning, hypothermia, fatigue, seasickness, cold-water shock, injuries, psychological state, and dehydration. For survival, we learned how to pitch our noses while covering our mouth – which prevents grasping and inhaling water (and thus drowning)—as well as to stay on our

backs and with our back to the waves (to further prevent water inhalation). Although one can survive with a lifejacket in 0 degrees water for some time (Hayward, Eckerson, & Collis, 1975), the objective should always be to get out of the water; a decision that may be hard but will save lives. Seafarers can use the Heat Escape Lessening Position (HELP), which extends survival time by 50 percent (Bailenson et al., 2008) and that, when in water with others, should huddle. To survive, we need to maintain body temperature within a narrow normal range (heat balance), body fluids (hydration), and energy levels. We learned the signs of hypothermia (e.g., violent shivering; blue-grey skin) and its treatment (e.g., horizontal rescue from water due to numb limbs) during rescue—which is the responsibility of the seafarer. We learned the need for “self-admittance, self-confidence, and self-control” as well as survival plans that include using the equipment and tools for survival (e.g., Class 1 EPIRB, the Search and Rescue Transponder (SART), flares, and the nuance of being rescued). Training included studying the three phases of marine abandonment: evacuation (e.g., getting clear of your ship without being hurt), survival (e.g., clock starts the moment one enters water), and rescue. We learned about the rigid and inflatable liferafts, the Davit (used for launching a survival raft), Personal Floatation Devices (PFD; which keep one afloat); lifejacket (i.e., which will keep your head out of water if your unconscious, has buoyancy under the chest, gives sizing, and has transport Canada requirements inside). I realized I will always choose a lifejacket over the “more fashionable PFD”, because the lifejacket has buoyancy, ensures a stable face up floating position, and, being only black, orange or red, has enhanced detectability for rescuers.

4.3. *An Afternoon in the Survival Tank.*

Anticipation and nerves preceded the tank expedition. Thus, I would much have preferred to be in the tank in the morning, but this was impossible because we still required training. The training did little to reduce my anxiety – I like to be neither cold nor wet – and the learned exercises reinforced the first responder priority of survival. The survival tank is large and the water around 20 degrees, which may not sound as cold as it feels. On deck, we first donned our immersion suits, once to try them on and familiarize ourselves, next with the lights out and a two-minute timer to be sure we could get into the suits quickly and efficiently as well as in the dark of night. Next, we climbed down a three meter ladder, learned how to relax on our backs in our suits, and then how to be upright, turn 360 degrees and, afterward, we swam on our backs to the raft which we entered and exited. The amount of water sweeping into the suit was cold and filling up the suit rather quickly—I was not dry and I found the water daunting and much more difficult to push through (stepping to be upright) then if I was to do so in swimwear. The 360-degree spin was intended to look for rescuers, as being rescued was key to survival.

In the third exercise, we stepped out the edge of the tank into the water, hand over face as demonstrated to prevent water inhalation, and proceeded to climb up the three-meter rescue ladder. We ended our immersion suit training by optionally –

² We were told that the most frequent event was collision and most incidents occur on fishing vessels.

which I did despite my fear of heights – stepping off the three-meter platform. I was proud of myself for doing so, particularly given my nerves over heights and my reluctance with cold water immersion. I recall avoiding looking down, instead listening to the instructor and staring at the “would be” horizon. Next, after watching how to flip the lifeboat if upside-down, we enter the water with our clothing (mine already completely wet given the ill-fitting immersion suit) and lifejacket – each approved by Transport Canada. The winds and waves in the tank, as well as cold rain, were activated as we learned how to float in the HELP position, which resembles the fetal position in the water, to preserve heat. The cold was near unbearable by this time, after sitting in wet clothes on the deck for nearly 30 minutes of instruction prior to the lifejacket immersion, all intensified by the winds and rain produced in the tank – a phenomenal facility by all means. I was keen to exit the water and to become warm—and never want to learn how long I would last in cold water. In the event of an emergency, a seafarer must first survive and then support others in their capacity to survive. In the water, this includes huddling and ensuring all “make it” onto a liferaft.

4.4. *Seafarers as first response.*

We started day three, a full day of in class lectures, with further unpacking – in essence – the first responder role of all seafarers, recognizing everyone in the crew plays a role in emergency response and hazard prevention. We started with a discussion of safe working practices, the importance brought home by the instructors recounting two persons who they know who died at sea – both on the gangway. To be safe, one must familiarize themselves with the ship – the hazards of the gangway and safety net, the main deck (especially cargo operations), hold and hatches (falling), forecabin and poop deck (i.e., forward and back of the vessel), windlass anchors and winches, cranes and derricks, manifold and deck pipeline system, accommodation, bridge, and engine room. Hazards on ships are many, from weather to oxygen, to gases, to chemicals, pirates and stowaways, fire, or ship movement and unsecured equipment. We learned that cargo ships are among the most dangerous ships to work on – when loading and unloading – while the safest vessel is a tanker, as a tanker is both deeper in the water and has a clear deck.

Enclosed spaces, unintended or designed for human occupancy, are only entered with the permission of a supervisor. Examples of such spaces are forepeak, chain locker, cofferdams, topside tanks, cargo tanks, ballast tanks, duct keel, aft peak tank, bunker tank, pump room. The main lesson here was about preventing anoxia – absence of oxygen – with symptoms including giddiness, breathlessness, unconsciousness, coma and death may occur or permanent brain damage, memory loss, mental instability, and paralysis. To enter an enclosed space, precautions are necessary, including the strict following of the entry permit system, to ventilate the space, and confirm atmospheres by testing oxygen levels with 20.9% being necessary. Personal protective equipment (PPE) is also necessary, as well as staying alert, monitoring the atmosphere, observing safety precautions while job is underway, and being neither over con-

fidant or negligent – proper clean up afterwards, all these items are considered in the Entry Permit.

We learned when hot work permits were necessary (e.g., doing anything that generates heat or sparks hot or intense enough to ignite a flammable gas-air mixture requires a person watching), the challenges of working aloft (e.g., at a height), locking or tagging out equipment, about engine room watchkeeping and maintenance, and how good housekeeping can prevent accidents. We studied the Safe Working Practices Regulations from Transport Canada and Maritime Occupational Health and Safety Regulations. There are two manuals aboard any ship: the lifesaving equipment manual and the vessel fire safety regulations.

As we discussed anti-exposure work suits (e.g., needs to be with a functional zipper, suit clean and dry, attachments in good condition, SALAS tape in good condition, should be rinsed with fresh water after use and dried carefully, keep free of grease and stains) and line throwing devices, the complex role of seafarers as first responders to all hazards was reinforced in the training.

Fatigue, a state of feeling tired, weary or sleep that results from prolonged mental or physical work, extended periods of anxiety, exposure to harsh environments or loss of sleep, can be particularly dangerous in the marine industry. We learned how fatigue can result in human error and impact decision making processes. As first responders, to prevent accidents, seafarers must be rested to be safe watchers but rest can be difficult on ship as the ship is always operational, and like a prison, impacts sleep caused by stress, excessive workload, environmental factors, and sea/port rotations—to name just a few factors (e.g., also included are crew specific, management, and ship specific actors). We discussed the biological clock and circadian rhythm, learning the internal clock can only be adjusted by an hour or so a day, which is complicated in international waters where time zones are passed through.

We also learned of the first responder role of seafarers in pollution prevention, including of oil and plastics. Pollution from ships tends to arise from stranding and collisions, lighting operations, unchecked garbage and sewage disposal, tank cleaning, washing and line flushing, unchecked chemical disposal, and deballasting. Lectures ended with discussion of social responsibilities, recognizing seafarers rights are protected under the Maritime Labour convention of the ILO, which Canada has ratified under the *Canadian Shipping Act* and the *Canada Labour Code*. All seafarers have the right to know, be trained, and refuse dangerous work. On ship, the minimum age of employment is 18, and standardized employment agreements include many details, such as the minimum required hours of rest (6), rightful pay of wages, paid annual leave, repatriation at the end of a contract, medical attention onboard a vessel, food rations and shelter, overall workplace safety, and present the efficient method for filling a complaint. We discussed the zero tolerance for drugs on ship, including legalized marijuana, as Canadian rights do not apply on board a vessel in foreign waters, thus there is a need to follow the laws of waters.

4.5. Firefighting Training.

Our firefighting training started with basic safety, which includes knowing the location of firefighting appliances and emergency escape routes. To protect against structural fires, we studied the SOLAS and Canadian requirements aimed at: preventing the occurrence of fire and explosion, reducing risk to life and that of damage, how to contain, control, and suppress fire and explosion in compartment of origin, and how to provide adequate and readily accessible means of escape for passengers and crew. We discussed escape routes, in B' and C' class divisions and that the procedures for dealing with fire are consistent at sea or in port – sound the emergency alarm, try to extinguish, and emergency party must be mustered. We discussed automatic fire detection systems (automatic alarms), fire zones (e.g., ships are divided into zones to contain fires), about being vigilant (e.g., prevention requires preparedness, fire watch, maintenance of equipment, constant vigilance, proper watch keeping duties of officers and monitoring of equipment) and the duties of Firewatch as well as fire hazards (e.g., engine room, galley).

Reviewing the fire triangle or tetrahedron (heat, fuel, oxygen), flash point (e.g., the lowest temperature at which a fuel will emit an ignitable vapor), three ways for heat transfer (e.g., conduction, convection (transfer of heat through vapours) and radiation (through air), rates of combustion, and the classes of fire (A, B, C, D, and K; class A leaving ashes and B able to smother)—recognizing that fires burn differently thus have to be classified, we learned the seafarers role in fire prevention, reduction, and extinguishment.

We unpacked the public safety role of seafarers in learning the ins and out of fire extinguishers and extinguishing principles (e.g., a 10B extinguisher puts out 10 square feet of a class B (fuel, liquid) fire), for instance when to apply an extinguishing agent applied directly versus indirectly for boundary cooling. We reviewed the procedures (e.g., raise alarm, never pass a fire to get an extinguisher, ensure you have correct extinguisher for type of fire, keep low while fighting the fire, never turn your back on a fire even when backing away) for fighting fires and thus for avoiding accidents/disasters and ensuring the crew and civilians remain safe. We studied the SCBA (self contained breathing apparatus), to ensure we would be proficient on the fire field and in case of adverse events that included the hazardous atmospheres for respirations: elevated temperatures, smoke, toxic gases, and oxygen deficiency – indeed, superheated gases can cause pulmonary edema, smoke can damage eyes and the respiratory system, and gases can result in hydrocarbon narcosis and oxygen deficiency. The IDLH atmosphere, where the concentration of oxygen, flammable or toxic contaminants would cause a person without respiratory protection to be fatally injured or cause irreversible side effects, needs to be managed with care, efficiency, and to eliminate the source of threat. Again, seafarers are responsible for their survival and the safety and rescue of all on board.

To wear the SCBA, there are physical, mental, and medical needs, however there are always limitations to all equipment (e.g., increased weight, air supply, visibility, decreased ability to communicate, decreased mobility). The SCBA in hard

labour last 20 minutes and in mild labour 30. The physical condition of user, degree of physical exertion, emotional stability of user, condition of apparatus, cylinder pressure before use, and training and experience of user all affect the duration of the air supply. After reviewing components of the SCBA, we learned the most common on ship is Scott 2216 psi – rated for 30 minutes / 1270 L and weighing about 24 pounds. The low pressure alarm, which indicates end of service, activates when pressure falls below 25 percent (in models manufactured prior to 2013) or 33 percent (sets manufactured after 2013) of the cylinder capacity—the sounding alarm means leave the IDLH environment immediately.

As first responders, we learned that rescue, required when conditions prevent self-evacuation or when victims are directly threatened, is first priority but exposure protection or fire extinguishment may be needed to perform a rescue. Factors affecting rescue include the size of space, personnel available, equipment available, ease/difficulty of access, size of victim, fire and smoke conditions, and if the victim pinned or trapped. We learned how to remove causalities, either alone (e.g., clothing/blanket drag, cradle in arms life/carry, incline drag) or with a team member (e.g., lift/carry, extremities lift/carry, chair life/drag) both always facing the same direction.

In fire theory, we covered all core elements of how fires burn and extinguish as well as the theory behind firefighting, including with flashovers (i.e., everything ignites) and rollovers (e.g., gases can into adjacent spaces and ignite when mixed with air). We discussed decay (e.g., when available fuel in the compartment is consumed by fire, amount of fire begins to diminish and temps begin to decline, temps in compartment may remain moderately high for some time), backdraft – which can lead to injury or death and venting to clear the gas. Always reiterated was to become competent and confident with all duties assigned on muster list and to know the location of all needs and to read the ship specific firefighting plan. Given the crew are first responders, they must engage in regular training and drills, practice preparedness for any fire emergency, have knowledge of actions to take when called to fire stations and of escape routes, as well as of dangers of smoke and toxic fumes. We learned of deck foam systems, and machinery space foam suppression systems as well as when to use high expansion foam.

4.6. Fit Testing.

On day four of training, we started at 8:00 am with fit testing for using the SCBA. The fit test, a compliance measure for the provincial occupational health and safety legislation. We don the mask and a machine tells us if the mask fits our face. The fit test is necessary to make sure you have a good seal in your mask—it is recommended annually. One cannot consume coffee, gum, or juice within 30 minutes of the fit test and men have to be clean shaven for the fit test. The fit test was rather quick, donning the mask, we then breath normal, talk while wearing the mask, bend and turn our heads among other exercises until we “pass”.

4.7. *Fire Practicum.*

I felt confident enough in my abilities to shy away some, but not all, nerves and anxiety. We first collectively enter the fire training facilities, collect our gear, first boots, then coveralls sized to fit, pants and turnover jackets, hoods and gloves. The gloves were bulky and the boots are designed for someone with big toes. We walked down to the firefield, where we learned about extinguishers. First, we used an extinguisher for a class B fire (one made of gas fuel), one at a time using a sweeping motion to extinguish the fire – learning to eliminate the fire at the source, but not advance to closely or the fuel will spread and thus the fire too will spread. We employed PASS, as learned in class: Pull the pin, Aim the nozzle, Squeeze handle, Sweep nozzle. The strategy here was to extinguish by inhibiting chemical chain reactions, where we smothered or blanket the fire to reduce the temperature and source. Next, we each extinguished a three part class B fire – one at the ground level, and two more elevated. The winds made the fires roar slightly at times. Finally, we used a foam extinguisher to fully cease the fire, comparing how that made the fire impossible to relight due to the foam, whereas the class A extinguisher, water canister, just exacerbated the fire, enhancing its flames.

Our second fire practicum, day five, started with a quick but efficient change into our bunker gear with our SCBAs, all fit and tested, a practice we did repeatedly, ensuring each time we donned our mask the fit was snug and no air was entering or exiting. To achieve this, I pulled on the facepiece with my chin in first, tightened the straps, and then put my hand over the airway to check for a seal. Next, we would test the positive air pressure by fitting the regulator to the facepiece and holding our breath while turning our head side to side. This process would exposure any leaks in air. Once tight and fitted we could start the activities, reading to go on air when necessary. Checks included of the bypass valve, a “built in emergency backup” for any failure to the facepiece regulator—the valve can bypass the facepiece regulator by controlling a direct airline from the 1st stage regulator in the event that the 2nd stage regulator fails (e.g., the valve should only be used for emergency). The air pressure inside the facepiece is higher than the air pressure outside, not surprisingly, I did feel lightheaded, even flushed, after use. We checked our Personal Alert Safety System (PASS), which provides an audible means to locate a firefighter that has stopped moving, lost, trapped, or incapacitated.

We first entered the smoke filled “ship”, with no visibility. Divided into two groups, I led my team as we kept our right hand to the wall as we navigated the spaces and small rooms to find a casualty – which I identified after sweeping my leg across a small space – who I kicked accidentally in trying to rescue and identify. There is no visibility in smoke. What became pronounced is how you cannot just “run in and save a person”, it is black and you’re navigating a new space unsure of the nooks and structures as you try to find the source of the fire and any unaccounted for individuals. We worked as a team, proceeding cautiously, trying to stay in constant communication which is hard given the SBCA and sound of air combined with awareness of each breath. We followed the walls, recognizing and checking the probable areas for a causality (e.g., inside doors,

behind doors, close to windows, closets, ends of passageways, shower stalls, under beds, under tables, under stairs, stairwells). Once a room was searched, we indicated it, closing doors to confine the fire, always alert for trapped victims in our comprehensive search. I found the blackness mildly disorienting, particularly in the small area search, where one member of my team stayed at the door and I searched, staying in constant verbal communication. My team member at door occupied the door space, which allows for quick search and quick recognition if a causality tries to exit the door.

I felt the confinement of the facepiece difficult at times, questioning my own ability to use the SCBA, which was proficient and fine, but the awareness of breathing with the apparatus on, in the dark, was new. I was aware of every breath and my reliance on the air provided by the cylinder—knowing full well equipment can malfunction.

The cylinder, combined with bunker gear, did become heavy over the course of the day. Today I still feel it in my shoulders and next, the efforts and strains of a day of wear and activity. We started on hoses, learning how to hold the hose for those on the nozzle, but also being they at the nozzle and learning how to command the different spray patterns – for a wall of protection versus for extinguishing. We practiced fog stream patterns, straight, narrow fog (15-45), wide fog (45-80) and using water as a protective cover. The class moved through the different positions, and all of us put out a fire. For my fire, I use the hose with foam, after a quick adjustment of the hose to add the pipping to allow the foam to be diluted into the waterline for the hose. I followed the rules for foam, understanding the foam suppression system (which can be pump, water main, form proportioned and associated piping, foam concentrate storage tank). The firefighting was physically taxing but rewarding once extinguished. I also recognized the team reliance inherent to fighting fires, when on the nozzle, the person behind you – your support – determines how much strength to maneuver the hose is necessary. A person holding the weight behind you provides you with additional freedom to direct the water and sweep fully, a person light on the weight makes the task at the nozzle much more challenging and the exertion of energy, in my experience, felt doubled.

We cleaned up the hoses, laying them out and rolling once flattened, into perfect circles of hose – a technique I will now use with my garden hose. After cleaning up the propane fire field, a luxurious training space, we did a quick change and drop of our SBSA – keeping it ready for the next day.

Suited up in the morning for a final day of training, again with air checks and ensuring our facepieces were snug, we started with being on a hose and getting comfortable with the type of nozzle most commonly found on ship. Next, we climbed to the second tier of the boat structure. There was a fire in the switch room, and we were to prop the door open with our shoulder and extinguish it, checking after to ensure it was out. We rotated through the different positions on the hose and nozzle, practicing each. I started in the third person position, holding the hose and pulling it forward to help ease the burden for those in position two (supporting the hose for the person on the nozzle) and position one – on the nozzle. Next, I moved into position two,

I recall being on my knees and willing myself to stand given the extra weight of not just bunker gear and SBSA but also the water and hose. In first position, on the nozzle, I relied on my trainer, propped the door open with my shoulder when all were ready, calling out to the team to confirm, and extinguished the fire. I closed the door when it was out (I could see the fire but nothing else and not for long as my mask and the shield of my helmet quickly blackened), and then re-propped open the door to ensure it was out. My pants and gloves wet from water, but feeling proud of my learning.

We continued to do a scenario, where we divided into two groups, one group to put out the fire (my group) in the engine room and the second group to search the cambers (cabin, galley, etc.) to find the casualty. We approached the fire, I was in position three with the hose, entered the dark space and my team member on the nozzle extinguished the fire. We learned about maneuvering a hose in the dark and through closed (and close) quarters. The other team was successful in identifying the casualty and conducting the search. We returned to our muster and counted anew to ensure all persons were accounted for in the muster – a practice we had become very familiar with since our days in the tank. During the search, we had access to a Thermal Imaging Camera (TIC), which allow fire teams to see sources of heat through darkness and thick smoke. The cameras are used to locate victims and hidden fires but cannot see through walls, water, or glass or anything reflective. They are not a replacement for searching, only a complement.

We ended the practicum by learning how to launch a smoke and handheld flare. The smoke flair being least effective (it cannot be seen in the dark) and the handheld a precaution as it is burning metal and thus will burn even in water (and clearly a hole through the liferaft if dropped).

4.8. *The Exam.*

After a night and morning of studying, I failed to feel prepared for the exam. I read the manual, but recognized, testing makes me terribly nervous – especially multiple choice and when I feel personal pressure to succeed. The exam was at the end of day, nerves were collectively high and failed to dissipate while we awaited the grading. All passed and certificates were then handed out, however, I still questioned how I received 86 percent, knowing I was unclear on some answers and felt not yet prepared for taking on an emergency response role on ship. Almost ironically, I demonstrated full and thorough knowledge yet still did not feel confident; thus further emphasizing my appreciation of seafarers as public safety personnel.

Discussion and Conclusion.

My focus in the current article has been to unpack what basic safety and survival training (STCW-95) means for future or current seafarers. Pronounced is the role of the self in survival, something all first responders must recognize, as all first responders must first keep themselves alive and recognize their own limitations to preserve the life of others. I recognized my limitations – often strength and size – and learned to request

help when necessary or I too would compromise my safety and that of the crew. I employed a reflective, experiential, and analytical (auto) ethnographic study of safety and survival training that brought to light and then reinforced the need to recognize seafarers as first responders. In learning survival and safety (e.g., hazards, fire), I developed a deeper understanding of what it means to be the crew on ship, the role of self in evacuation and abandonment, and the role of the collective in rescue and safety. There is a need for vigilance on ship, comradery—a seafarer is dependent on the crew for safety, rescue, and survival—and interdependence. Through this relationality, I learned how to do first response in emergency situations and how to prevent a hazard, albeit human, pollution, or otherwise, from becoming a disaster.

Survival training was intimidating but possible. For example, firefighting training was vast and complex, incorporating chemistry with safety, and response with survival. Causalities are heavy, rescue is exciting but challenging, and the gear was heavy, ill-fitting, and cumbersome. Future research, here, is necessary to understand if the gear is cumbersome and ineffective for all women or select and to understand the necessary modifications for immersion suits to actually provide an opportunity for survival to all wearers. Research also on the bulkiness of firefighting clothing is necessary or if its design has never accounted for the smaller stature and body of women. Moreover, research is necessary from the perspective of seafarers'; namely. do they recognize their role in first response? In survival? And how does this underlying risk impact their self, mental health, and families?

Society is dependent on seafarers, marine industries are vast and contribute significantly to the economy, yet the recognition of the risk inherent to being on ship are limited. Seafarers are clearly first responders, yet society, policies, and practices have yet to fully recognize and interpret seafarers as such. Thus, there is a need for inclusive policies that protect the seafarers, there is a need for danger pay, for accommodation for their first responder role and the inherent risk—including of death—tied to the profession. On ship, the crew is responsible for rescue, for emergency response, and for preservation of life; however this truth is largely removed from dialogue around seafarers. Ships are dangerous work locations with many hazards and key is to continue to create constructive and logical policies that ensure the safety and survival of those at sea.

Theoretically, I contribute to the incorporation of autoethnographic approaches with ethnographic participant observation. I reveal how experience can be reflected on to constitute research and put forth greater interpretations about a collective that can then be used to create policy, awareness, and modify practice. My objective is to reveal the complement between self-reflection and participant observation, where I pondered how my interpretations reflected on what I observed around me while undergoing training.

The current study is limited. Without conducting interviews, there was no opportunity to probe for collective understandings and interpretations. I only completed one course, and thus, on experience of training, thus the results, like in all qualitative research, may not be generalizable. I was reflective and analytical

but this was my first venture into the world of seafarers and marine industry, thus I did not have scope of background to inform training or knowledge of policies – all was new to me. Overall, my reflections build epistemological and empirical knowledge that inform about the duties and less known training regiments of seafarers.

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