

# U.S. BRIG NIAGARA CREW HANDBOOK

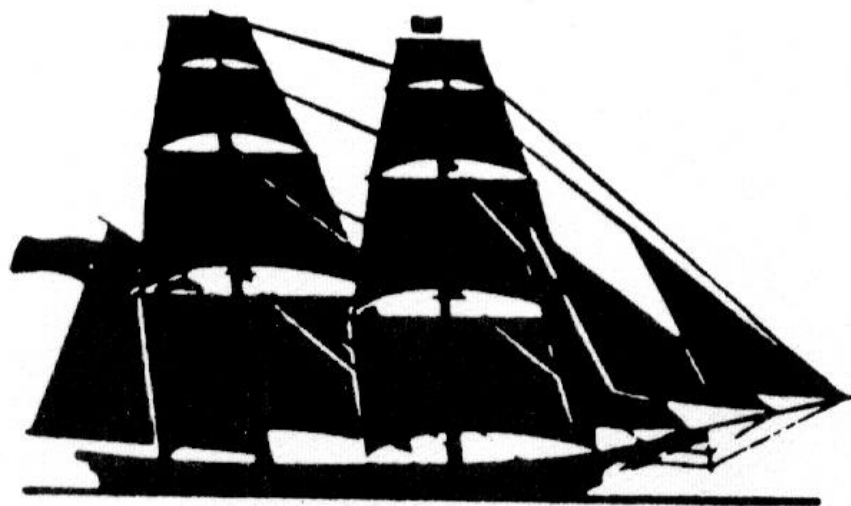


Pennsylvania  
Historical & Museum  
Commission



## 9th Edition





# U.S. BRIG *NIAGARA*

## CREW HANDBOOK

9<sup>TH</sup> EDITION

Written and Edited By:

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Senior Captain, U.S. Brig *Niagara*  
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-AND-

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U.S. Brig *Niagara*

The U.S. Brig *Niagara* and the Erie Maritime Museum are owned by the Commonwealth of Pennsylvania, operated by the Pennsylvania Historical and Museum Commission (an agency of the Commonwealth), and managed with the assistance of the Flagship Niagara League, which is a private 501-C(3) corporation chartered as an associates group by the Pennsylvania Historical and Museum Commission.

The U.S. Brig *Niagara* is inspected by the United States Coast Guard as a Sailing School Vessel, and as such is prohibited from carrying passengers for hire. The US Federal Regulations for Sailing School Vessels are different than those for Passenger Vessels. Sailing School Vessels adhere to different design, construction, and safety standards than do Passenger Vessels. Sailing School Trainees learn a sailing related curriculum while on board, and are active participants in the working and sailing of the vessel.

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For information about the contents of this book or about serving onboard U.S. Brig *Niagara* as a sailing school student, trainee, or professional crewmember, contact the Erie Maritime Museum at the address above, call 1 (814) 452-2744, or visit our website at [www.flagshipniagara.org](http://www.flagshipniagara.org).

## ACKNOWLEDGEMENTS

This handbook, like all others, is heavily lifted from existing material and could not exist without the extensive work of others.

For co-authorship, editing, and assembling the First Edition of the US Brig Niagara Crew Handbook, much of which remains or has been built upon herein:

**Capt. Daniel P. Moreland**, Chief Mate, U.S. Brig *Niagara*, (1991- 1993) now Master of Bark PICTON CASTLE, Master of motor and sail vessels any gross tons, oceans.

For the historical orientation, the writings of **Max Rosenberg, Roy P. Stonsifer, Donald Hickey, Jeff Sherry, Howard I. Chapelle, Gerard Altoff, John Eck.**

For their contribution toward shaping the growth of onboard operations as previous and/or current *Niagara* officers, and crew **Capt. Arthur “Skipper” Kimberly, Capt. John Beebe-Center, Brian Donnelly, Angus McCamy, Capt. Thomas K. Ward, Capt. Jason Quilter**, and **William (Billy) Sabatini** (Chief Mate since 2008 and officer onboard since 2005)

Artwork on pages iv, v, and vi by **M.C. Restifo**

Finally, the authors would like to acknowledge those who led us this way in the path of square sail, steeped us in a tradition of seafaring, and told us to pass it on:

**Capt. Carl Bowman** - Barks EAGLE, ELISSA and STAR OF INDIA;

**Capt. Jay Bolton** - Bark ELISSA and Barkentine GAZELLA PRIMERO;

**Capt. Arthur Kimberly** - Brigantine ROMANCE;

**Capt. Vilhelm Hansen and Otto Bentsen** - ship DANMARK;

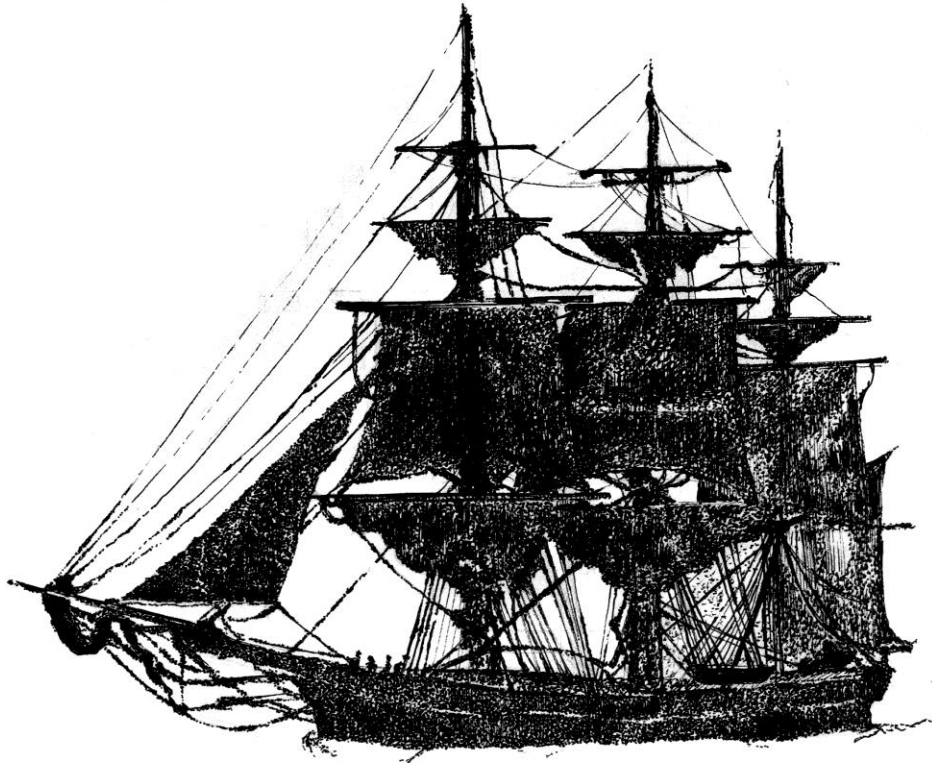
**Capt. Richard T. Shannon** –Barks ELISSA and SEA CLOUD

**Capt. Paul Welling, USCG RADM** – Barks ELISSA and USCG Bark EAGLE

...and of course, **Melbourne Smith** who keeps building challenging ships for us to sail in.

Walter Rybka –Senior Captain, Flagship *Niagara*; Master of motor and sail vessels, 1600 tons (3000 ITC tonnage), oceans.

Wesley Heerssen--Captain, Flagship *Niagara*; Master of motor and sail vessels, 1600 tons (3000 ITC tonnage), oceans



. . . The young apprentice may have come aboard with his head filled with queer ideas about sailing ships and the sea, principal among which is a fixed notion that all he has to do is look on while old sailors explain things to him and then later on give the Captain advice about sailing the ship. His first month at sea may be a distressing experience, shattering illusions right and left, he sees only the bare bones of real life remain. He expected romance and found work; he expected a “great life” and found himself principally called upon to perform feats of almost superhuman endurance - feats which everybody did daily and nobody ever noticed. Then, after he settles into things, he finds that here really can be a romance in those bare bones of life if one knows how to go about looking for it. He sings while he works aloft, and feels the thrill of the sea in his veins as he hangs on to the wheel, and laughs when he is wet through for the twentieth time in succession, and turns out quickly when the call is for all hands on deck, though he made the acquaintance of his bunk only half an hour ago and his watch is always catching it, and he fights the mad canvas aloft with the men . . . Yes, the sailing ship can be hard, and it is not always a pleasant process having the edges knocked off you . . . But the sailer casts a spell over those who sail in her. . .

Alan Villiers

## FOREWORD

**T**he Great Lakes are known to many as the inland seas of the North American continent. Upon these waters, we ply our trade each summer while sailing out of Erie, PA to ports across the Great Lakes ranging from Duluth, MN to Montreal, Quebec and from Chicago, IL to Penetanguishene, Ontario. As sailors in a War of 1812- era reconstructed naval warship, our trade is neither to engage in military service nor to wage war in defense of our nation. Our trade is far less publicized, less understood, and less recognized by the population at large on both sides of our border with Canada

We are in the business of sail training and thus preserving the experience of sailing in square riggers for several reasons... It has been proven successful in instilling values required for the development of good moral character and leadership, especially in young adults. Tidbits of information about sailing may well be lost from memory not long after leaving *Niagara*, and many details may be forgotten years later, but when a person learns the value of something like honesty, accountability, work ethic, or integrity, (or even just more clearly-defines their pre-existing understanding of it) that knowledge tends to stay with them for a lifetime. In this way, U.S. Brig *Niagara* serves the greater good of humanity, and as this is the highest purpose for which the ship can be used, sail training should be and is an integral part of the ship's mission.

*Sail* training also adds the additional benefit in helping us to build each spring an effective crew for *Niagara*, so the ship may complete her summer sailing mission to preserve our maritime heritage, and the history of the Battle of Lake Erie and the War of 1812. Ours is a romantic trade, which has potential to be a risky endeavor, and passion for it must not be left unchecked by at least a modicum of wisdom on the part of the trainee, and consistent supervision by the professionals. Our cargo of historic preservation is delivered by travelling to distant ports for the widest distribution possible. In delivering this "cargo", I will strive to serve the best interests of each of you, my shipmates. In return, I expect the same from you toward each of your shipmates.

In *Niagara*, you can expect to enjoy many opportunities, under the watchful eyes of the more experienced, to expand your horizons. Some challenges you face may be physical, others may be intellectual or emotional, but each will provide you a learning opportunity. Together, we will endeavor to establish a culture of teamwork that will foster the character-building environment that becoming a sailor in *Niagara* can provide. Sail training is a noble and enriching business, if carried out as intended, and this handbook will serve to guide you in that endeavor.

Whether joining *Niagara* as a trainee, or as a professional member of the crew, it is important to remember that at sea this ship, as is the case with any ship, ventures forth into a watery wilderness. Once there, all provisions for the needs of the ship consist only of what the crew had the forethought to bring with them. This certainly includes adequate provisions of food, water, and fuel, but also comprises prior training in the safe operation of the ship, emergency procedures, good seamanship, and proper conduct for the newly joined crewmember.

While this ship may be known to the public as U.S Brig *Niagara*, she is officially named *Niagara*, which in official correspondence is usually preceded with the acronym describing her inspection status as SSV (Sailing School Vessel). As Captain, it is my job to provide students and professionals with a safe and rewarding experience. It would be a remarkable disservice to the traditions of square rig seafaring to interpret the rewards of sailing in *Niagara* as merely “a good time”. Instead, I do hope and anticipate that your time here will be remembered for years to come as a challenging, unique, adventurous, educational, enjoyable, and overall rewarding experience.

*Niagara* is more than just an icon of Erie, as one of the most authentic wooden square-rigged sailing ships in the world (replica or otherwise), she is an important link to our past. Furthermore, *Niagara* is the largest US Coast Guard inspected wooden square rigger in America that regularly takes people to sea. For these reasons, and because of the valiant history and important maritime heritage that *Niagara* represents, I feel it is an exceedingly rare privilege to sail in her.

The 2013 sailing season marks the Bicentennial Commemoration of the Battle of Lake Erie (*Niagara*'s historic claim to fame). As Pennsylvania's official flagship, we represent Governor Tom Corbett, the PA Historical and Museum Commission, and the people of the Commonwealth of PA. As a long-serving icon of Erie, and the vessel which helped establish the town as an important commercial port two hundred years ago, we represent the pride of the local community. Take the opportunity to study and embody the manners of our profession, learn your role in executing our mission, and take pride in our maritime heritage.

In *Niagara*, we strive to exemplify the term “shipmate”. As your shipmate, I am dedicated to providing you opportunities to excel and develop. In return, I expect your best effort. We will develop proficiency in our assigned positions, look for opportunities to help others, and treat each other with respect and dignity.

How you approach the opportunity to sail in *Niagara* and learn from the experience is entirely up to you, but when it comes to effort vs. reward, you will only get back as much as you put in. As my mentor and supervisor, Senior Captain Walter Rybka once told me, “Self esteem doesn't come from feeling good; it comes from knowing you did good”.

Going to sea is a challenging, rewarding, and enjoyable opportunity with a rich tradition. I am proud to be a career square-rig sailor; the camaraderie and respect between shipmates is a bond like no other. I am honored to sail in *Niagara* and look forward to serving the coming sailing season with you and our other shipmates. You should be similarly excited about *Niagara*. This is YOUR ship: get involved every day. Be the very best sailor you can be. The sea demands it, the *Niagara* tradition requires it, and I expect it.



**Wesley W. Heerssen, Jr.**  
Captain, SSV *Niagara*  
Erie, Pennsylvania  
April 22, 2013







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## MOONLIGHT

One night, while we were in these tropics, I went out to the end of the flying jib-boom, upon some duty, and having finished it, turned round, and lay over the boom for a long time, admiring the beauty of the sight before me. Being so far from the deck, I could look at the ship as a separate vessel, and there rose up from the water, supported only by the small black hull, a pyramid of canvas, spreading out far beyond the hull, and towering up almost; as it seemed in the indistinct night air, to the clouds. The sea was as still as an inland lake; the light trade-wind was gently and steadily breathing from astern; the dark blue sky was studded with the tropical stars; there was no sound but the rippling of the water under the stem; and the sails were spread out, wide and high; the two lower studdingsails stretching, on each side, far beyond the deck; the top-mast studding sails, like wings to the topsails; the top-gallant studding sails spreading fearlessly out above them; still higher, the two royal studding sails, looking like two kites flying from the same string; and, highest of all, the little skysail, the apex of the pyramid, seeming actually to touch the stars, and to be out of reach of human hand. So quiet, too, was the sea, and so steady the breeze, that if these sails had been sculptured marble, they could not have been more motionless. Not a ripple upon the surface of the canvas; not even a quivering of the extreme edges of the sail - so perfectly were they distended by the breeze. I was so lost in the sight, that I forgot the presence of the man who came out with me, until he said (for he, too, rough old man-of-war's-man he was, had been gazing at the show), half to himself, still looking at the marble sails - "How quietly they do their work!"



Figure 1—View from the Flying Jibboom

-R.H. Dana

*"Yet a Sailor's Life is at best but a mixture of a little good with much evil, and a little pleasure with much pain. The beautiful is linked with the revolting, the sublime with the commonplace, and the solemn with the ludicrous."*

*-Two Years Before the Mast – R.H. Dana*



## I. CAPTAIN'S INTRODUCTION

March 14, 2013

To all Prospective Crewmembers

The U.S. Brig *Niagara* depends upon a mix of professionals and trainees to serve as crew for the sailing program as well as the ongoing maintenance of the ship. *Niagara* is owned by the Commonwealth of Pennsylvania, administered by the Pennsylvania Historical and Museum Commission, and operated with the support and cooperation of the Flagship *Niagara* League.

The ship is a re-creation of the 1813 wooden sailing warship, and is inspected by the United States Coast Guard as a Sailing School Vessel. *Niagara* is a blend of historic authenticity and modern safety considerations such as auxiliary propulsion, electronic navigation equipment, subdivided watertight hull compartments, as well as life-saving and fire fighting gear. When open for tours in port by paying visitors, she is inspected as an Attractions Vessel.

*Niagara* is manned by a crew of 18-20 professional officers and seamen, and up to 29 trainees. During crew training daysails, *Niagara* will also carry up to 55 day-sail students onboard. It will be the duty of all crewmembers to watch out for the safety of our new students, and to ensure that their experience onboard is educational and rewarding.

There are several things that are very important for all crew members to understand. Firstly, all persons in the crew, from the Captain on down, are here to serve the needs of the ship, not the other way around. This is the real difference between a seaman and a passenger. All crewmembers will have duty assignments on the Emergency Station Bill, and will have a significant level of responsibility toward ensuring the safety of the vessel and all those who come onboard. To that end, this Crew Handbook outlines the operational policies and procedures for the vessel and the standards for crew training, safety, and efficiency.

Secondly, the importance of a good attitude must never be underestimated. At sea, and particularly under sail, we must always keep in mind that we make passages at the sea's sufferance, not in defiance of it. Going to sea also requires the cheerful acceptance of whatever comes, be it pleasure or hardship.

Lastly, we should all be appreciative of just how much there is to learn, and how very rare an opportunity is available onboard *Niagara*. This crew has a chance to participate in one of history's most important human endeavors, harnessing the wind by the combined effort of many hands.

This crew may enter the “wooden world” and learn anew a centuries-old language, while hauling on lines, pulling boats, climbing aloft, handling sail, or walking the capstan. Each task carries with it the responsibility to do it right for the safety of all onboard. It is this level of interdependent trust and cooperation that make a ship's company a metaphor for society. The very word “shipshape” evokes an image and an ethos of order and harmony. Traditional seamanship is a fundamentally important part of our cultural heritage.

As a Sailing School Vessel, *Niagara* has the mission of teaching and preserving through use, the craft of seamanship, both traditional and present day. As the Erie Maritime Museum's main exhibit, the ship has the additional mission to preserve and interpret for visitors and citizens, the history of the Lake Erie Campaigns during the War of 1812. Together, the mission of *Niagara* should be considered in the larger context of enhancing our understanding of history in general. While carrying out this mission, we must also strive to reflect credit upon the Commonwealth of Pennsylvania, and particularly our homeport of Erie. Our message is our cargo, and all hands are a part of its delivery.

We have an obligation to promote awareness of history as an essential element in the maintenance of an informed electorate, which is inseparable from the maintenance of a viable democracy. The United States is a nation of vast cultural and ethnic diversity. The only fastenings that hold this country together are a set of shared ideals, values, and laws, the understanding of which is dependent upon some knowledge of history.

Underway, the crew drill in sail handling, maneuvering under sail, and emergency procedures. The routines of cleaning ship, galley help, standing watches, etc. are ongoing for the duration of the voyage. In port, the crew will be required to continue standing their watches, but the duty will primarily consist of conducting guided tours (which will require learning the ship's history).

*Niagara* offers only a partial re-creation of man-o-war life in the age of sail; there is no grog, flogging, live ammunition, or surgery without anesthetics. The ship does, however, require that crew sleep in a hammock within inches of other snoring people, in a berth deck with 5'



headroom under the beams. The crew must also eat simple meals and wash dishes in a bucket, live with one toilet for every twelve people, and limit fresh water usage. The ship also requires watches to be stood on deck, in the rain, in the middle of the night, whether the crew is feeling seasick or not.

The primary concern of the professional crew is the safety of all onboard. Developing competence in the crew is the best way of ensuring safety and is the goal of all onboard training. *Niagara* is a large wind-and-muscle powered machine, and the crew must work within the moving parts of this engine. The ship has steep ladders, numerous tripping opportunities, is subject to abrupt motion, and has miles of rope which must be handled, sometimes under large strain. Rope burns and sprains are easy to come by for the unwary.

The professional crew are there to provide leadership and instruction, but we cannot completely protect you from your own carelessness should you cease to pay attention. All crewmembers must take an active role in safeguarding the ship, their shipmates, and themselves. Constant vigilance is the price of safety.

Social tolerance, physical endurance, and a cheerful, open-minded acceptance of the ship's needs are the best assets one can bring. If little sleep, no privacy, some blisters, and sharing in menial tasks are no deterrent to your quest for camaraderie, adventure, and accomplishment, do sign on. The upcoming sailing season is a grand opportunity, and we hope you will make the most of your time onboard.

Sincerely,

Walter P. Rybka  
Senior Captain  
U.S. Brig *Niagara*

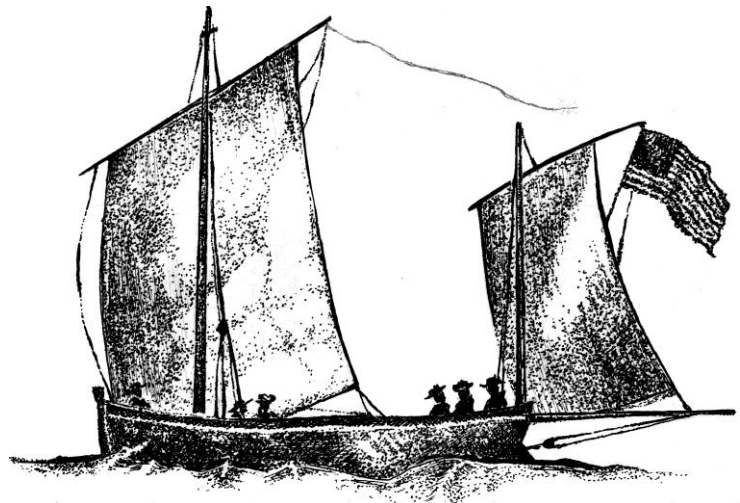


Figure 2— A Ship's Cutter



**Figure 3 -Taking in Sail**

*“Apprenticeship is a necessary period in one’s life as a sailor. There will be moments of elation when the future presents itself in all its boundless glory, while gazing at the stars; there will be moments of dark dejection in which one thinks of suicide. The rest of the time one will mainly feel hungry.”* -Jan DeHartog

**BOUND FOR BLUE WATER...by John Masfield**

We're bound for blue water  
    where the great winds blow,  
It's time to get the tacks aboard,  
    time for us to go;  
The crowd's at the capstan  
    and the tune's in the shout,  
"A long pull, a strong pull,  
    *and warp the hooker out.*"

The bow-wash is eddying,  
    spreading from the bows,  
Aloft and loose the topsails  
    and someone give a rouse;  
A salt Atlantic chanty shall  
    be music to the dead,  
"A long pull, a strong pull,  
    *and the yard to the masthead.*"

Green and merry run the seas,  
    the wind comes cold,  
Salt and strong and pleasant,  
    and worth a mint of gold;  
And she's staggering, swooping,  
    as she feels her feet,  
"A long pull, a strong pull,  
    *and aft the main-sheet.*"

Shrilly squeal the running sheaves,  
    the weather-gear strains,  
Such a clatter of chain-sheets,  
    the devil's in the chains;  
Over us the bright stars,  
    under us the drowned,  
"A long pull, a strong pull,  
    *and we're outward bound!*"

Yonder, round and ruddy,  
    is the mellow old moon,  
The red-funneled tug has gone,  
    and now, sonny, soon  
We'll be clear of the channel,  
    so watch how you steer,  
"Ease her when she pitches,  
    *and so-long, my dear!*"



## **II. THE MISSION**

The Pennsylvania Historical and Museum Commission preserves the Commonwealth's memory as a teacher and champion of its heritage for citizens of Pennsylvania and the nation.

*Niagara* meets PHMC's mission by serving the public as a Sailing School Vessel. As such, *Niagara* has the mission of teaching, and preserving through use, the craft of seamanship, both traditional and present day, while sailing as the Flagship of Pennsylvania.

The primary mission of the Erie Maritime Museum and the U.S. Brig *Niagara* is to preserve and interpret, for visitors and citizens, the history of the Lake Erie Campaigns during the War of 1812. The museum also collects, documents, and interprets the maritime contributions of Erie to the development of the Commonwealth.



**Figure 4- U.S. Brig *Niagara*, Sailing into Presque Isle Bay and Erie Harbor**



### **III. DESCRIPTION OF OPERATIONS AND CREW POSITIONS**

U.S. Brig *Niagara* is a training ship. Whether sailing into harbor amidst a sea of spectators for a waterfront festival somewhere, or whether conducting a daysail out of Erie, PA, or whether making passage across the Great Lakes with a ship full of live aboard trainees, sail training is our primary business. We can conduct no other business without a well-trained crew, and it is our trainees who help us make it all happen. In return, we provide them lessons in the operation of and life aboard a square-rigger. It is the duty of everyone onboard to keep themselves and each other safe.

#### **Manning Requirements**

In 1813, the ship had 155 personnel onboard, maybe one third of them were seamen, the rest being there to fill out the gun crews. Fortunately, we are not sailing under the same historic conditions. We have modern information, technology, and machinery readily available to reduce risk of sudden and catastrophic accidents. However, the important thing to keep in mind is that this ship's sailing rig is historically authentic and was designed around the idea of plentiful labor being instantly available to reduce sail area quickly and whenever needed. Considering the large crew compliment, berthing space and "hotel systems" (toilets, showers, galley) are extremely limited. Therefore, the present-day operation and life onboard is similar to the original 1813 conditions.

US Coast Guard inspected Sailing School Vessels are required to carry US Coast Guard licensed and documented personnel onboard when underway. All mariners employed on vessels of more than 100 gross tons operating in the Great Lakes are required to have a Merchant Mariner Credential with appropriate licenses and ratings for each position. Our USCG Certificate of Inspection requires a minimum manning of one licensed captain, two licensed mates, four documented A.B. seamen, and three documented ordinary seaman on overnight passages.

However, in order to sail *Niagara* in an effective way, we normally carry more positions, with a total professional crew count ranging between 14 to 21 members and the trainee count averaging around 20 on overnight passages and 75 on daysail programs. The roles and responsibilities for each of these professional crew positions are described later in this chapter.

## **Leadership Ethos and Expectations of Officers and Crewmembers**

Throughout the history of our nation, the men and women of the US military have dedicated their lives and careers to being excellent leaders to their subordinates. As a reconstruction of a historic US Naval warship, it is entirely appropriate that we examine some of the teachings of the US Naval Academy on this subject. The information in this section is intended to remind the officers onboard that the crew is aware of what is expected of them, and that directness, tact, diplomacy, applying earnest effort to one's duties, competence, and ethical treatment of others are the keys to effective leadership. While directness, tact, and diplomacy are learned skills, the latter three qualities are more about one's character and integrity.

When people think of ethics, they think of differences between right and wrong, but often only as applied to certain topics like stealing, lying, cheating, etc. Instead, ethics should be considered and applied to everything we do. Ethics are standards by which one should act based on values. Values are core beliefs such as duty, honor, and integrity that motivate attitudes and actions. Not all values are ethical values (integrity is; happiness is not). Ethical values relate to what is right and wrong and thus take precedence over unethical values when making ethical decisions. *Niagara* crewmembers should carefully consider ethical values when making decisions as part of official duties.

The **Primary Ethical Values**, which all shipmates should endeavor to maintain are as follows:

**Honesty.** Being truthful, straightforward, and candid are aspects of honesty. Truthfulness is required. Deceptions are usually easily uncovered. Lies erode credibility and undermine public confidence. Untruths told for seemingly altruistic reasons (to prevent hurt feelings, to promote good will, etc.) are nonetheless resented by the recipients.

Straightforwardness adds frankness to truthfulness and is usually necessary to promote public confidence and to ensure effective, efficient conduct of operations. Truths presented in such a way as to lead recipients to confusion, misinterpretation, or inaccurate conclusions are not productive. Such indirect deceptions can promote ill-will and erode openness, especially when there is an expectation of frankness.



Candor is the forthright offering of unrequested information. It is necessary according to the gravity of the situation and the nature of the relationships. Candor is required when a reasonable person would feel betrayed if the information were withheld. In some circumstances, silence is dishonest; in other circumstances, disclosing information would be wrong and perhaps unlawful.

**Integrity.** Being faithful to one's convictions is part of integrity. Following principles, acting with honor, maintaining independent judgment, and performing duties with impartiality help to maintain integrity and avoid conflicts of interest and hypocrisy.

**Loyalty.** Fidelity, faithfulness, allegiance, and devotion are all synonyms for loyalty. Loyalty is the bond that holds the ship together and the balm against dissension and conflict. It is not blind obedience or unquestioning acceptance of the status quo. Loyalty requires careful balancing among various interests, values, and relationships in the interest of harmony and cohesion.

**Accountability.** *Niagara* officers and crewmembers are required to accept responsibility for their decisions and the resulting consequences. This includes avoiding even the appearance of impropriety. Accountability promotes careful, well-thought-out decision-making and limits thoughtless action.

**Fairness.** Open-mindedness and impartiality are important aspects of fairness. *Niagara* officers and crewmembers must be committed to justice in the performance of their duties. Decisions must not be arbitrary, capricious, or biased. Individuals must be treated equally and with tolerance.

**Caring.** Compassion is an essential element of good management and shipboard professional relationships. Courtesy and kindness, both to those we serve and to those we work with, help to ensure individuals are not treated solely as a means to an end. Caring for others is the counterbalance against the temptation to pursue our mission at any cost.

**Respect.** To treat people with dignity, to honor privacy, and to allow self-determination are critical in a community of diverse people. Lack of respect leads to a breakdown of loyalty and honesty within a community and brings chaos to the crew. The nature of life on a sail training ship requires that officers act ethically at all times. Whether aboard the vessel or not,

we are representatives of the ship, and stewards of the lives of everyone who sails in her. In Niagara, we are trained to live and work in an environment exposed to weather and the perils of going to sea, in a ship with Spartan living conditions, together with a large group of people we have only just met recently. We are trained to get the job done, despite the challenges we face, and yet often we get the job done with great satisfaction because of the challenges we faced. An unethical action amidst such challenges stands to unravel everything we have worked so hard to achieve.

**Commitment To Do Your Best.** Work ethic is a large part of what can be easily learned in a sailing ship, and thus what we hope to teach our trainees. That said, little can be taught about it, if coming from a crewmember that is not recognized to be earnestly making his/her best efforts in the performance of required tasks. Likewise, we cannot hold a trainee or subordinate crewmember accountable to put in a fair day's work, if we ourselves are not committed to doing so on a consistent basis.

There are many reasons to act ethically. Among these is that when an officer fails to act ethically, it reflects adversely on the ship's command structure. Officers are expected to know what is going on in their respective divisions, and being unaware of problems developing reflects a break in the chain of command. Problems and potential problems are required to be reported to watch officers quickly, and if this does not happen in a timely manner, something unethical has happened somewhere within the chain of command, and investigation to implement immediate correction is warranted.

If you act unethically, your senior officer or the Captain will suffer because it will be assumed, rightly or wrongly, that too much authority was delegated, not enough responsibility was exercised, and a climate for wrongdoing was probably traceable back to the Chief Mate or Captain. When officers do the right thing, they establish a climate that encourages all crewmembers to be ethical.

An officer may act unethically thinking the greater good of mankind is served, that doing things "right" counts more than "doing the right thing." This is a rationalization, for it is usually impossible to act unethically without someone or something being hurt.

Further, when crewmembers or trainees see unethical action as a way of doing business; they too will decide which rules to obey and which rules to ignore. Everyone is hurt when an officer acts unethically because it casts doubt on all the officers, the Captain, and the ship's organization in general.

Unethical conduct tends not to be a one-time affair, as it typically has unintended consequences, and can often lead to more unethical conduct. Much of the information in this section is derived from *Ethics for the Junior Officer*, Naval Institute Press, and the following quotation from *Naval Leadership: Voices of Experience*, Naval Institute Press, is remarkable in its simplicity and truthfulness:

“First you find yourself overlooking small infractions that you would have corrected on the spot in the past.

Soon, you are a participant in these infractions. “After all,” you say. “Everybody’s doing it.”

All too soon you find yourself trapped: You no longer can stand on a favorite principle because you have strayed from it.

Finding no way out, you begin to rationalize, and then you are hooked.

The important fact is, the officers who travel the path outlined above have misused the very basic quality and characteristic expected of a professional officer, or any other professional for that matter:

They have compromised their integrity.”

A valuable ditty, along the same lines, applies:

Sow a thought, reap an act,  
Sow an act, reap a habit,  
Sow a habit, reap a lifestyle  
Sow a lifestyle, reap a destiny

As trainee and professional members of the US Brig *Niagara* crew, we should remember and live up to this axiom: “Treat Your Shipmate As Yourself”. This is the golden rule. In *Niagara*, we use the motto “Ship, Shipmate, Self”, which means serve first the Ship, then your Shipmates, then Yourself. While this motto is keenly appropriate for any training ship, and as this section implies, you are not serving the ship, if you are not serving the best interests of your shipmates.

Officers, do your best to lead well.

## **Crew Duties and Responsibilities**

### **Captain**

The Captain sometimes, as in official documents and business, is referred to as the ship's *Master*. The Captain is responsible for the ship and all that goes on onboard: for the safety of lives and property, execution of the mission, maintenance and seaworthiness of the vessel, management and protection of the crew, creation of the ship's schedule, and always acting in the owner's, operator's, and charterer's interests. The Captain plans and implements the annual sailing program for the ship, and handles or delegates all logistical needs for underway operations and making voyages possible. The Captain controls, directs, and supervises the professional crew, trainees, daysail students, and any guests who sail onboard.

### **Chief Mate**

The Chief Mate, as executive and operations officer, is the Captain's right arm. The Chief Mate must be fully capable of assuming command should the Captain become disabled. The Chief Mate manages the operation of the ship to the Captain's satisfaction, and presents the Captain with updates on any new or ongoing concerns.

The Chief Mate's job, in addition to occasional navigational and watch-standing duties, is to attend to operational details by overseeing the other officers' and Boatswain's work, to ensure the seaworthy condition of the vessel and crew. The Chief Mate manages (or delegates and supervises) the ship's operations, safety systems, personnel, maintenance, and record-keeping. It is the Chief Mate's duty to be aware of any problems existing onboard so he may effectively resolve them and/or report their status to the Captain.

### **Engineer**

The Engineer reports directly to the Captain, or in his absence to the Chief Mate. The engineer is responsible for the maintenance and testing of all engineering systems to insure they are maintained and functioning in proper working order. The person in this position may also serve as a mate or as a seaman within a navigational watch as qualifications permit and the ship's needs require.

### **Carpenter**

The Carpenter reports directly to the Captain, or in his absence to the Chief Mate. The carpenter is responsible for the maintenance of the wooden structure of the ship, the ship's

cabinetry and spars, and the ship's boats. The person in this position may also serve a mate or a seaman within a navigational watch as qualifications permit and the ship's needs require.

### **Mate(s)**

*Niagara* typically carries three other mates, but at least one, and sometimes four. The Mate on watch is responsible for conning the ship and maintaining the navigational plot and other navigation watch procedures in conformance with the Captain's standing orders, and local, federal, and international law. At all hands evolutions, such as sail stations, the Mates are assigned to be in charge of a mast or a division of the crew. Mates assist in supervising maintenance work and training duties as delegated by the Chief Mate or Captain, often through the use of the Boatswain.

In addition, the Mates will have collateral duties as safety officer, compliance officer, navigation/ communications, etc... The assignment of these duties will be made by the Captain, depending on the circumstances of the voyage and the particular skills of the mates onboard at the time.

### **Boatswain (pronounced "Bosun")**

The Boatswain is the Chief Mate's right arm and is the primary sailing school instructor for marlinespike seamanship and deck safety related topics. The Boatswain is delegated by the mate to be the crew's foreman in carrying out maintenance work. The Boatswain is a dayman primarily to be able to keep the work moving through changes of watch although the boatswain may become a watch stander on passages where maintenance work will be subordinated to sailing needs. The Boatswain, acting under the direction of the Chief Mate, is also the chief rigger, responsible for the condition of spars, standing and running rigging, and in fact for all deck department equipment.

The Boatswain serves as a "warrant officer", and as such, is neither an officer, nor a member of the navigational watch. This places the Boatswain in a unique position to hear and share with other crewmembers, officers, and/or the Captain (as needed) any crew concerns, which another crew member might have, particularly when the crewmember is not comfortable bringing the concerns directly to an officer on his/her own. The Boatswain serves alongside the operational chain of command, and can therefore be a more comfortable sounding board (than a direct superior) for trainees and professional crew looking for guidance on how to deal with any particular issue involving life aboard the ship. In this way, the Boatswain also serves, for lack of a more descriptive name, as ombudsman to the crew. That said, the most direct way (and typically the best way) to resolve issues onboard is to

discuss them with the person responsible for creating the issue, or with his/her direct superior.

### **Steward/Cook**

This position is vitally important to the domestic happiness of the ship. In some years it is divided into two positions of Steward and Cook. While getting good meals out on time is the most essential part of the Cook's job, the Steward must plan and carry out provisioning, manage a budget, and oversee the meal quality, sanitation, and cleanliness of the crew messes, galley, and food storage areas. Crew members will be assigned by the Mate on a rotating basis to report to the Steward as galley help and for cleaning duties. The Steward will manage his/ her assigned assistants to ensure that the set up and break down of crew messes occurs in a timely manner. This position must have a Merchant Mariner's document as Ordinary Seaman.

### **A.B. Seamen**

The A.B. Seaman is a fully capable deckhand who has significant experience on ships in the deck department, and carries a USCG A.B.Sail Document (*officially called a U.S. Merchant Mariner's Document endorsed with the rating of Able Seaman- Sail or higher rating*). *Niagara* carries three A.B. Seamen, although the Carpenter or Engineer will have an A.B. Document as well. Several Ordinary Seamen may have the A.B. Document also. The A.B. Seaman must be familiar with all of the procedures and practices of deck seamanship used onboard *Niagara*. The A.B. is expected to lead trainees and ordinary seamen by example, and occasionally by direction to accomplish tasks usually assigned by an officer. The A.B. will often be the most experienced professional crewmember working directly alongside others, which lends itself to the need for an AB to lead by example. Meanwhile the task supervisor (an officer or the Boatswain) will make repeated rounds to inspect the work. The A.B. must be able to hand, reef, and steer, and to teach the same to others.

### **Ordinary Seaman**

In *Niagara*, a full compliment of Ordinary Seamen is between six and eight (depending on nature of season), one of which serves in the galley as Assistant Cook, leaving two Ordinary Seamen in each watch. Ordinary Seaman provide much of the manpower needed to get most jobs done. They work alongside the A.B. Seamen and Trainees to accomplish tasks assigned by a Mate or the Boatswain. They also receive educational instruction from the the officers, the Boatswain, and sometimes from the A.B. Seamen as needed to accomplish their

tasks. These positions must have a Merchant Mariner's Document endorsed with the rating of Ordinary Seaman.

### **Apprentice Seaman**

*Niagara* carries 4 to 8 apprentices onboard during the sailing season. Apprentice Seaman are longer-term trainees who gain experience over the longer period onboard and have more exposure to training opportunities spread over time. This program is designed to prepare the apprentice for a career as a professional mariner. Apprentices typically join with some prior experience and limited working knowledge of sailing ship operations.

### **Trainees**

Trainees are an essential part of the crew, providing much of the labor force to operate the ship under sail. Trainees represent more than half of the entire ship's compliment, which is not more than forty-nine total persons onboard for overnight passages. They perform similar tasks as the Ordinary Seamen while underway and docent duties in port. Trainees are always under the direction of the ship's officers and supervision of the professional crew. Supervision often involves the professional crewmember providing initial instruction, then leaving the trainee alone for a short time to work on task, and then checking up on the trainee later to review progress made and provide further instructions if needed. The amount of direct supervision required for any given trainee is to be determined by the officer in charge of the trainee and his/her assessment of the trainee's individual needs. Trainees are responsible for managing their own behavior with the maturity level of an adult. All trainees and particularly minors who sail onboard with parental consent, must understand that this is an adult environment in which they must adhere to all ship's policies and procedures as outlined in the Standing Orders section of this book.

Trainees are expected to follow all lawful orders given by ship's officers, and to follow general directions and instructions given by members of the ship's professional crew. When a safety concern exists, trainees must notify an officer immediately. Safety training is a large part of the seamanship training provided onboard, so trainees are expected to pay attention when receiving instruction, read all training materials given, and to treat all emergency drills as if a real emergency exists.

## **Auxiliary Duties for Professional Crewmembers**

Each professional crewmember is assigned additional duties as a means of ensuring that important routine tasks are completed. It is the responsibility of each crewmember to ensure that his/her assigned auxiliary duty is performed accordingly:

### **Navigation and Communications Officer:**

This person is one of the Mates. Duties include: ordering, correcting, and organizing all nautical charts, navigation publications, plotting tools, etc. The Nav/Com officer maintains all navigation and communications tools, supplies, equipment, and documentation.

### **Safety Officer**

This person is one of the Mates. Duties include: management of the maintenance and inventory of all safety equipment including PFD's, immersion suits, life rings, MOB poles, life rafts, flashlights, batteries, flares, boat kits, emergency kits, safety harnesses, fire extinguishing equipment, medical gear. Routine inspections of equipment are managed with checklists and done weekly, monthly, and before getting underway.

### **Compliance Officer**

This person is one of the Mates. Duties include ensuring that all official record-keeping is properly maintained. Typical records include: official logbook, engineering log, discharge log, medical log, radio telephone logbook, rigging inspection log, maintenance log, etc...

### **Boatswain's Mate**

This person is either an A.B. Seaman or an Ordinary Seaman. Duties include: keeping an inventory of all painting supplies such as sandpaper, scrapers, paint, varnish, linseed oil, pine tar, rags, paint brushes, thinners, cans, dust masks, respirators, gloves, etc. Also, this person assists the Boatswain with organizing the rope locker and rope inventories.

### **Medical Officer**

This person is whomever is the best qualified crewmember for the job, typically with a valid E.M.T. license or USCG/ STCW Medical Care Provider endorsement or equivalent. The Medical Officer maintains all medical supplies and equipment onboard, and documents all medical incidents and conditions involving anyone onboard the ship. He/she is also the person who will take charge of medical situations that arise onboard to treat minor wounds and illnesses, and stabilize serious conditions for transport to a shoreside medical treatment



provider. The Medical Officers report to the Captain the nature all medical situations and presents recommendations for any needed action. The medical officer keeps and maintains all personnel medical information in the Medical Officer's files.

### **Education Officer**

This person is typically one of the Mates. The Education Officer plans and schedules classes for professional crew and trainees. Classes are typically conducted as individual programs require while in Erie, and each afternoon while underway on passages. The Education Officer does not have to teach all of the classes, but is responsible for insuring that each trainee's progress is tracked and recorded in his or her *Niagara Seamanship Training Logbook*. Officers of each division are responsible for assessing and recording their respective trainees' progress in the *Niagara Seamanship Training Logbook*.

### **Assistant Engineer**

This person is usually an Ordinary Seaman. He/She assists the Mate/Engineer with general electrical and mechanical maintenance and operations as needed. Some of the duties include assisting with oil changes, fuel filter changes, battery maintenance, starting and securing engines and generators, switching ship's shore/generator power service as needed, replacing light bulbs, maintaining inventories, etc. The Assistant Engineer's specific duties and responsibilities may vary depending on skill level. The Assistant Engineer's time commitment to engineering duties is determined by the Chief Mate, but in general does not excuse him/her from watch-standing with his/her division. The Chief Mate and the Engineer will coordinate the assignment of engineering tasks to the Assistant Engineer.

### **Gun Captain**

The Gun Captain is responsible for maintaining the guns and associated equipment and supplies, and for training and supervising the gun crew. The Gun Captain must be thoroughly familiar with the *PHMC Safety Manual for Historic Weapons Demonstrations* and the *Niagara Gun Drill*. The Gun Captain is responsible for the safe handling of black (gun) powder and for the safe execution of gun firing demonstrations. This person must receive training from a (black powder safety-certified) PHMC Safety Officer, and must be approved by the Captain.

### **Purser**

This person a professional member of the crew. Duties include checking in students for daysails and submitting the Daysail Student/ Emergency Contact List to the Captain and the

office before sailing, keeping an inventory of and issuing crew shirts to new crewmembers, and managing the ship's gift shop during port festival events. The Purser also manages the Trainee Index. The Trainee Index is a book containing information about all trainees including: a photo, contact information, general information, food allergies, Crew Rating achieved, and officer evaluations..

### **Flag King (or Queen), Cleaning Locker Guru, Waste Management Log Keeper, and Coxswain**

With a little imagination, these positions are self-explanatory, specific details will be explained verbally at the initial orientation of professional crewmembers. Assignments are made among A.B.'s and O.S.'s.

### **Boat Coxswain**

Each of the three ships boats (*Cutter I*, *Cutter II*, and the *Cutter III*) has a designated coxswain. The Boat Coxswain is an A.B. Seaman and is responsible for the care and upkeep of the boat. The Boat Coxswain is responsible for training anyone going in the boat in the use of the safety equipment therein, and to teach boat crewmembers how to perform the tasks necessary for the safe operation of the boat. He/she is also responsible for operating the boat as the person in charge while underway from the ship, and maintaining and posting on the ship a float plan while on rowing or sailing expeditions.

## **Vessel Organization, Routines, and Daily Life Onboard**

Both the sailing and in-port operations of *Niagara* lend themselves to a two-watch system in which each watch is divided into two "divisions". Historically, this would have been a 4 hours on and 4 hours off by day, and 2 hours on and 6 hours off by night, but we have modified the watch schedule to provide the crew more rest. When the ship is underway overnight, sail is typically reduced so one division (half of a watch) is enough, and the watches become 3 hours on, and 9 hours off by night for each division, and 4 hours on and 4 hours off by day for each watch.

Onboard *Niagara*, specific standing orders from the Captain and operational routines are established to ensure that a safe and effective navigational watch is maintained. In addition to the navigational watch, housekeeping routines must also be maintained. The first rule to maintaining morale is "A clean ship is a happy ship". This means that on a well-found vessel like *Niagara*, routine wash-down of the decks and sanitation of the areas below decks are

essential to ship's operations. As such, these routines are carried out by the "spare" members of the navigational watch: those people who are not actively steering, keeping lookout, etc.

While *Niagara* may be on a relatively long voyage, the passages are typically short. The ship will be almost continuously in piloting waters, which requires constant attention from the conning officer both for collision avoidance and maintaining the navigational plot. A large part of the route will be in canals, rivers, and narrow bays, the kind of places where one must worry about running aground on both sides.

Such a voyage actually places much greater demands on the skill and alertness of crew than does a long ocean passage. Anyone who thinks coastwise passages are easier than being far out to sea would probably also think low level mountain flying is easier than cruising along at high altitude. As the saying goes, "It's not the ocean that gets you, it's the hard edges!"

At all hands sail stations, each watch is assigned to specific duties...one watch is assigned to the foremast, another to the main, and members of those watches are assigned to steer, keep lookout, etc. The manning needs for the ship while in port will vary depending on the nature of the port visit. On official port visits, at least two divisions are assigned to be onboard by day, and at least one division onboard at night. All hands are required to be aware of the watch schedule and to return on time for muster.

### **Berthing and Messing**

The ship's crew eat meals on six tables on the berth deck. These tables are designed to be broken down and stowed after meals. During rest periods, the berth deck serves as an accommodation space where the Ordinary Seamen, apprentices, and trainees sleep. The AB Seamen sleep in the 5-man cabin and eat on the berth deck with their respective divisions. The Captain, Mates, Carpenter, and Engineer berth in the wardroom cabins and eat at the wardroom table. On calm, hot days, we occasionally eat on deck, buffet style.

Another important duty assignment called the "Major Galley Assistant" is assigned by the Boatswain each day to be the cook's helper. In addition to helping cook and tending the stove, the Major Galley will have the clean-up duty for galley dishes and equipment, and the wardroom mess. When in Erie, the Major Galley Assistant also serves as the ship's Duty Watch for a 24-hour period and has other duties, which are referred to in the "Checklists, Tasks, and Assigned Duties" section of this Manual.

## **Ship Sanitation**

A clean ship is a happy ship. Keeping the ship clean is an enormous undertaking that must be managed continually, and is the first step to keeping the crew healthy. The ship is cleaned twice per day, and attention to detail while cleaning is essential. Everyone will take part in cleaning. The AB Seaman of the division assigned to daily chores will lead and supervise the project, to meet the Mate's, and in the case of the galley, the Cook's satisfaction.

The filth of forty sailors can accumulate in minutes to an unacceptable level if we fail to clean up after ourselves. Each head is outfitted with cleaning supplies. Use them often, and immediately after you make a mess. If you make the mess, then you clean it up...don't leave it for someone else. We clean the heads twice per day as an underway routine, and once per day in ports where shore facilities are available. Still, in between regular scheduled cleanings, we should take the time to sanitize the toilets, seats, and all surfaces regularly touched by hands and as soon as the situation warrants! These are health concerns, not just courtesy concerns. The heads are the most likely place where germs can spread, and they must be kept clean for the health of the whole crew.

When influenza or other contagious illness infects a member of the crew, he/she will be quarantined in the sick bay, which is the starboard forward cabin in the Ward Room. This is the best protection for the rest of the crew that the ship can provide. However you can protect yourself and others by washing hands often, covering your mouth and nose when you sneeze or cough, and by cleaning the ship often with disinfectants, and especially the heads & sinks

## **Medical Issues**

All trainees, apprentices, and professional crewmembers are required to submit medical information to the Marine Operations Coordinator prior to getting underway. This information will be protected per the requirements of the Privacy Act and HIPAA rules. It is essential that the information you provide be complete, accurate, and up to date at the time you join the vessel. If anything changes in your medical condition, your medical file must be updated to reflect the change. This is important to providing you with appropriate medical care, should it be required while the ship is at sea.

If you become ill or injured, report it to the Medical Officer immediately, who will then report it to the Captain. Injuries and illnesses onboard are safety and medical concerns that must be documented by the Medical Officer and the Captain. Certain medical issues are cause to be excused from watch, others are not. Similarly, certain medical issues are cause to

require one to not go aloft, such as sea sickness, fever, dehydration, sprains, etc. Any officer can excuse a crewmember from watch or ground him from the rig until he is healed, and when this occurs, the Captain will be notified.

Seasickness can be a serious matter, but most often it is merely a little discomfort that takes getting used to before it finally goes away. Most people who get seasick suffer from symptoms that can be reduced with rest, hydration, and simple food, like crackers and soup. In many cases, sailors will get seasick simply because they are tired and dehydrated. It could be that they are tired and dehydrated because they consumed alcohol the night before, or consumed diuretics such as coffee, tea, etc. Whatever the case, know that your best chance of feeling well is a good meal and a full night's rest before sailing, and drink twice the amount of water at sea as you normally would ashore.

If you do become seasick and nauseous, notify the officer of the deck immediately and do not vomit in the heads or overboard. The officer of the deck will assign someone to keep a constant eye on your condition and safety, if deemed that additional assistance is needed. Use a bucket, don a safety harness and clip in to the rail on the lee (downwind) side of the ship- NO EXCEPTIONS. When the bucket gets full, toss the contents overboard and rinse the bucket clean from a midships gun port on the lee side. Make certain you are clipped in, as seasick folks get dizzy and fall overboard easily. Try to drink water, and if possible try to eat, even if all you can eat is a few saltines.

Finally, consult your doctor before taking sea sickness medication, but try taking nothing at all unless you are absolutely certain you need it. Medications affect each person differently and usually have noticeable side-effects. Some make you drowsy and can hasten your exhaustion, which can lead to nausea. If you do use medications, start taking them at least 24 hours before sailing to ensure effectiveness and that there are no undesirable side-effects.

The Flagship Niagara League, Inc. will provide for the medical treatment of any employees who serve as crewmembers onboard and who fall ill or become injured on the job, and as otherwise covered under the Jones Act. Trainees are required to pay for their own medical treatment of injuries and common illnesses, and private medical insurance is required.

## **Watch Schedule and Routines on Passages:**

The watch schedule employed while sailing is designed to provide equal and adequate time for each member of the ship's company to sleep, conduct training, conduct the navigational watch, and conduct ship's maintenance when needed. Crewmembers should bear in mind that a watch schedule can change from passage to passage. Unforeseen changes in the weather or in the crew compliment, can lead to temporary changes in the watch schedule.

While underway the daily watch schedule "dogs", or rotates so that your watch is on duty for the mid-watch one day, then off duty on the mid-watch the next day. The crewmembers in the division assigned to the navigation/ deck watch are required to steer the ship, handle sails, keep a lookout, and do all of the tasks involved with navigating the ship safely. Navigation/ deck watches are two to four hours long, and are usually maintained with only one division. However, during inclement weather, more hands are often needed and the Captain may order the entire watch, or when necessary, all hands to be on deck and on duty until the weather and/or workload subsides.

During the forenoon watch and the afternoon watch, both divisions within a watch are on deck and on duty. One division is assigned to the navigation watch, while the other is assigned to maintenance projects with the Boatswain, the Engineer, the Carpenter or the Cook. These positions are daymen, and they are the managers of their respective departments who supervise and teach trainees to conduct routine maintenance as part of their training and service to the ship. The maintenance division relieves the navigation division half way through the watch (i.e., after 2 hours). Usually all hands are called for one hour in the morning for class, and two hours in the afternoon for sail training and/or safety drills. Classes and drills may be suspended to allow the crew in the off-watch more time to rest (such as when the weather is rough, etc).

During the dog watches, maintenance projects are usually suspended, and the division on watch is put to the tasks of reducing sail for the night, scrubbing the deck, cleaning the heads, and among other chores, sweeping and mopping below decks. The rigors of the watch routine and training regimen consume nearly all of your waking hours in the day. Sleep is precious, and the wise crewmember will take every opportunity available to sleep while not on watch.

Waking up the crew is a routine that requires a specific protocol: Always wake everyone who is needed. After waking up just the members of the navigational watch periodically through the night, it is easy to forget to wake the daymen for breakfast (Captain, Boatswain,

Carpenter and Engineer). Remember to wake the daymen! Check the “*Life Onboard Niagara- Familiarization Training*” for specific instructions on how to wake up other crewmembers.

Morning wake-up and stowing of hammocks is at 0645 for the *on-coming watch*. They begin their day by breaking down and stowing their hammocks and setting up the mess tables in their area of the berth deck for breakfast. Mess tables must be set up by 0715 in the area where the oncoming watch’s hammocks were hanging. This should be done as quietly as possible since one division will usually still be sleeping.

The *on-coming watch* eats breakfast at 0720 and reports on deck properly dressed and ready for duty by no later than 0750 for muster. Do not be late for muster. Timeliness is a hallmark of a good seaman; don’t let it be you that delays the relieving of the *off-going watch* (they’ll be tired and won’t appreciate you for it).

The on-duty navigation/deck watch begins morning deck wash at 0600. At 0645, the watch on deck sends someone throughout the ship to wake the entire *on-coming watch* for breakfast (both divisions). The watch on deck send available watch members to report to the Cook at 0700 to help set up the on-coming watch’s mess tables, do anything else needed to facilitate serving breakfast, and then start on washing dishes. The watch must remember to wake the daymen at 0700.

For breakfast, the meal is served on one side of the berth deck only. The tables must be cleared between seatings and made ready for the second seating in the same location. This allows the division which remains off duty, and is not on-coming before breakfast to sleep for an extra hour.

All hammocks and personal gear will be cleared away and stowed by no later than 0700 for the oncoming watch and by 0845 for the off watch. At 0800, the change of the watch, the off watch eats breakfast.

The forenoon watch continues from 0800 through 1200 performing the navigation watch routine, breakfast dishes, daily below-decks cleaning chores, and ship’s maintenance. The afternoon watch members are woken at 1100, they eat at 1120, and report on deck at 1150 to muster and relieve the watch by 1155. Unless there is work to do (usually sail handling) at the change of the watch, The off-going forenoon watch musters by 1200, is relieved, and goes below for lunch. Lunch dishes are completed by 1345, which is also when all hands are woken for afternoon class.

Afternoon class may be postponed, cancelled, or shifted to the forenoon watch for any reason, but usually due to the weather or the need to conduct safety drills. Afternoon classes will be conducted to cover various related topics ranging from marlinespike seamanship, to sail handling, to navigation, to safety training, to sail making, to history, or potentially to any topic desired by the trainees or professional crewmembers. Afternoon class is typically one to two hours in duration.

At 1600 during the first dog watch, the second deck wash of the day is conducted. At 1700 the oncoming division is woken, mess tables for dinner are set up on the berth deck, and members of the navigation watch assist in the galley with dishes. The watch relief protocol is the same for all watch periods until breakfast the following morning with wakeups on the half hour and muster ten minutes before the hour throughout the night as per the daily schedule on the following page.

#### **Daily Routine and Watch Schedule:**

0000 Record Midnight Position in the log  
0130 Wake the on-coming division

0150 On-coming division muster  
0155 On-coming division relieves off-going division  
0430 Wake the on-coming division

0450 On-coming division muster  
0455 On-coming division relieves off-going division  
0500 ***Wake the Steward and/or Cook*** – see “Night Orders” for details.  
0600 Deck wash, wake the Major Galley  
0645 Wake the on-coming watch  
0700 Set up for breakfast (set up Ward Room mess and Berth Deck Mess). Wake Daymen  
0720 Breakfast for on-coming watch and daymen

0750 On-coming watch muster  
0755 On-coming watch relieves off-going division  
0800 Breakfast for off-going division and off watch  
0845 Below-decks clean up  
0940 Wake Up Trainees for Morning Class  
0955 Maintenance division relieves the navigation division  
1000 Morning Class- 1 hour (1000- 1100)  
1100 Wake the on-coming watch, Lunch set up- Division Galley Assistants to the Galley  
1100 Set up for lunch. Start lunch dishes.



1120 Lunch for the on-coming watch

1150 On-coming watch muster

1155 On-coming watch relieves off-going watch

1200 Lunch for off-going watch and daymen

1340 Wake all hands for Sail Training/ Drills

1400 All hands turn to for Sail Training/ Drills

1530 Wake on-coming division

1550 On-coming division muster

1555 On-coming division relieves off going watch

1600 Afternoon deck wash/ soles and bowls

1700 Wake the on-coming division. Set up for dinner. Start Dinner Dishes.

1720 Dinner for the on-coming watch

1750 Muster for the on-coming division

1755 On-coming division relieves the off-going

1800 Dinner for the off-going watch and off watch (off-going watch wakes off watch for dinner)

1830 Dinner dishes/ galley clean-up

1950 On-coming division muster

1955 On-coming division relieves off-going division

2000 Rig Inspection

2230 Wake the on-coming division

2250 On-coming division muster

2255 On-coming division relieves the off-going division

## **General Quarters**

General Quarters is a common operational condition. It is a call to all hands to take their assigned positions for general working of the ship with all watches turned to. Typically, this is used when entering or leaving port or when conducting maneuvers of a non-emergency nature. Each crewmember is assigned a task or a station, such as the helm, lookout, et cetera, and their name and designated assignment is posted on the *Watch, Quarter, and Station Bill*.

## **Training**

Training is a vital part of the sailing program and the ship's mission. Seamanship, safety, historical, and/or another topic of training will be conducted daily. Some forms of instruction will be pre-planned briefings and topic-specific classes. Others will be less organized training sessions and of course, on the job training while sailing, conducting maintenance, or during public tours.

The safe operation of the ship demands that safety and emergency drills be frequent. The schedule of drills and their content will be varied by the officers depending on circumstances and the experience level of the crew onboard. Special training classes (sail training, navigation, etc.) and/or safety drills usually occur between 1400 and 1600 daily. However, safety drills could be called at any time day or night at the Captain's discretion.

## **Morale**

It must be understood that touring *Niagara* places extraordinary demands on the management and cohesion of the crew due to the nature of the voyage. Traditionally a ship's company were together, separated from the outside world, for significant periods of time. This allowed for teamwork to develop as people had time to get to know each other and the ship. Yet our voyages are characterized by frequent turnover of personnel, amid nearly continuous distractions and demands of the land intruding on the ship's community.

In the past, after a long passage (weeks and months), port visits were eagerly awaited. Yet on a series of short passages, the ports get to be a frustrating interruption in the routine of maintaining the ship. As Conrad so eloquently put it, "Ports are hell, ships rot, men go to the devil!" The *Niagara's* crew, however, must keep in mind that the survival of the ship is just as dependent upon their work presenting her in port as it is upon their work sailing her between ports.

There is no doubt that the intended voyages are a grueling amount of work. There is also no doubt that it is a wonderful opportunity to see rare sights and learn something of life in a sailing ship. The seafaring experience is a fundamental part of our culture which only a very few have the privilege of experiencing in this era, and *Niagara* can give a rich dose of it.

### **Guests Onboard During Passages**

As stated previously, *Niagara* underway is a very special experience. It is of long-term benefit to the ship to make that experience available to individuals who are involved in the program's development or are in decision-making positions that affect the ship's future. Therefore, it is likely that on any given passage there will be one or more individuals onboard who will not be signed on as crew but are there as observers.

The best way to absorb guests into the ship's systems and to give them the best immersion in the experience will be to assign them to stand watch with the rest of the crew. With that said, there may occasionally be guests onboard on passages who do not stand watch. Guest will participate in all orientations to the vessel and safety training, as would any new trainee.

### **Bathing**

There are men's and women's showers and rest rooms for crew in the Erie Maritime Museum building while the ship is in Erie. These facilities are shared by ship's crew and museum staff, and ship's crew are required to clean up after themselves to keep the restrooms clean. The shore showers and restrooms are cleaned daily when the ship is in Erie by the major galley/ duty person.

Underway, there are no permanently installed showers on the ship. Crewmembers shower in swim suits on deck with buckets or often with the fire hose after the afternoon deck wash. The weather and the living quarters on the ship can get hot in the middle of the summer. Crew members are encouraged to bathe daily and maintain a healthy level of personal hygiene.

There are no curtains or privacy barriers rigged during deck showers and crewmembers must conduct themselves in a mature, decent, and respectful manner. Because bathing can be a "Co-ed" occurrence, those bathing will wear swim suits and all hands (including those bathing) will respect the privacy of others who are bathing (to the greatest extent possible.)

## Sail Training Program Curriculum for 3-Week Trainees

The following information is a bulleted list of training items that trainees should endeavor to learn, and the ship's crew should endeavor to teach during a trainee's first three weeks onboard. Note that learning this information is not a complete list, but is a guide, and whatever the course of instruction on a particular passage, it will require an equal commitment of time and energy on the part of the student to read, the instructor to prepare lesson plans, and both to employ earnest effort toward achieving trainee understanding of the following topics:

### 1. Ship's History per Crew Handbook Chapter VI

- \_\_\_\_\_ U.S. Reasons For Declaring War on England
- \_\_\_\_\_ The Sailing War Ship (types of ships, guns, tactics for warfare, limits of ship maneuverability)
- \_\_\_\_\_ "Enter The Wooden World"
- \_\_\_\_\_ Know "Life Onboard Ship" (Berthing, Watches, Meals, Grog, Pay, Possessions, Recreation, Prize Money, African American Seamen, Perry's Problems)
- \_\_\_\_\_ Know "Fighting the Ship" and the "Events of Sept. 10, 1813"
- \_\_\_\_\_ Know "Results of the Battle" and "Results of the War"

### 2. Safety Per Crew Handbook, Chapters IV, VII, and VIII

- \_\_\_\_\_ Standing Orders, General Orders, Applicable at all Times (By Day 2, including the Aloft Policy)
- \_\_\_\_\_ Watch, Quarter, and Station Bill (By Day 2, Know your assignment and responsibilities)
- \_\_\_\_\_ Proper use and stowage locations for Personal Flotation Devices, Exposure Suits, Life Rafts, Safety Harnesses, Man Overboard Rings & other MOB Gear (know before getting underway)
- \_\_\_\_\_ Standing Orders, Orders Applicable When Underway (know before getting underway- Routines, Stations, Conduct, etc.)
- \_\_\_\_\_ Fire Safety and Flooding Equipment and Procedures

- \_\_\_\_\_ Compartment Exit/ Entry Locations
- \_\_\_\_\_ Emergency Lighting Locations
- \_\_\_\_\_ Extinguishers
- \_\_\_\_\_ Hose stations
- \_\_\_\_\_ Water-Tight Doors, locations and operation
- \_\_\_\_\_ Fixed CO2 System Controls
- \_\_\_\_\_ Fire & Abandon Ship Drills
- \_\_\_\_\_ Bilge/ Fire Pump #1, Location and Operation

**3. General Seamanship-** Per the *NIAGARA SEAMANSHIP* manual and hands on training.

- \_\_\_\_\_ Name and location of each of the ship's sails
- \_\_\_\_\_ Know the name, location and function of each spar on the ship
- \_\_\_\_\_ Know the name, location, and function of each piece of running rigging used for setting, trimming, or taking in each sail
- \_\_\_\_\_ Line handling:
  - \_\_\_\_\_ types of rope- hemp, manila, polyester, polypropylene
  - \_\_\_\_\_ how to recognize when lines are under strain
  - \_\_\_\_\_ how to belay a line safely on a pinrail or cleat
  - \_\_\_\_\_ how to ease a line safely from a pinrail or cleat
  - \_\_\_\_\_ how to cast off a line safely from a pinrail or cleat
  - \_\_\_\_\_ how to coil a line and hang the coil on a pin or cleat.
  - \_\_\_\_\_ how to haul on a line; sweat a line on a pinrail
  - \_\_\_\_\_ know line handling commands
- \_\_\_\_\_ Identify line groupings on the pinrails, mast cleats, and fife rails (know generally where to find sheets, braces, clewlines & buntlines, etc.)
- \_\_\_\_\_ Orders and commands for sail handling maneuvers
- \_\_\_\_\_ Know the basic knots
  - \_\_\_\_\_ How to tie a Reef Knot
  - \_\_\_\_\_ “ Sheet Bend
  - \_\_\_\_\_ “ Figure 8
  - \_\_\_\_\_ “ Round Turn and Two Half-Hitches

- \_\_\_\_\_ How to tie a Bowline
- \_\_\_\_\_ “ Clove Hitch
- \_\_\_\_\_ “ Rolling Hitch
- \_\_\_\_\_ Become familiar with each boat’s design and equipment
- \_\_\_\_\_ Know and be able to follow oar commands to work an oar
- \_\_\_\_\_ Identify all lines on ship

#### 4. Life Onboard- Per

Know the following:

- \_\_\_\_\_ Use of the Chain of Command, importance of good communication.
- \_\_\_\_\_ Use of the Division Board for daily assignments of the watch schedule, special duties, and routines
- \_\_\_\_\_ How to sling and stow your hammock and gear
- \_\_\_\_\_ How to conduct a Brig Check
- \_\_\_\_\_ Where to find tools and supplies in the Cleaning Locker, Line Locker, and Forepeak
- \_\_\_\_\_ How to set up Division Tables for Meals
- \_\_\_\_\_ How to scrub Decks, Heads, and Soles
- \_\_\_\_\_ How to do dishes while underway
- \_\_\_\_\_ Know the responsibilities for galley assistants and Major Galley assignment.
- \_\_\_\_\_ Restricted areas; rules for entering Officer Country and Engine Room.

## Sail Training Curriculum for Apprentice Seaman

The apprentice seaman program is designed to prepare former *Niagara* 3-week trainees or sailors from other ships for an entry-level professional deckhand position aboard any tall ship. The following list of knowledge and skills should will be among the information taught, studied, and learned during this program:

- \_\_\_\_\_ Any knowledge and skills outlined for a Trainee above, but not yet mastered.
- \_\_\_\_\_ Know all line locations, fully.
- \_\_\_\_\_ Know additional knots:
  - \_\_\_\_\_ pass a stopper
  - \_\_\_\_\_ wall knot
  - \_\_\_\_\_ constrictor
  - \_\_\_\_\_ buntline hitch
  - \_\_\_\_\_ whipping
  - \_\_\_\_\_ turn in seizings: flat, round, and racking
  - \_\_\_\_\_ eye splice
- \_\_\_\_\_ Understand and be able to teach the duties of lookout, anchor watch, gangway watch.
- \_\_\_\_\_ Understand and be able to teach the relative bearing point system.
- \_\_\_\_\_ Serve as lead helmsman. Know how to sail “full and by”, per compass course, and by rudder or steering commands.
- \_\_\_\_\_ Demonstrate proficiency in all line handling; handling hawsers as well as running rigging.
- \_\_\_\_\_ Work the capstan (on bars).
- \_\_\_\_\_ Clap on a handybilly
- \_\_\_\_\_ Use fire extinguishers and hoses.
- \_\_\_\_\_ Surface preparation, painting, and cleanup.
- \_\_\_\_\_ Pass as oarsman, which requires understanding of rowing commands as well as proficiency at rowing.
- \_\_\_\_\_ Demonstrate honesty, integrity, work ethic, and a positive attitude.

## Sail Training Curriculum for Daysail Students

See “*Vessel Familiarization and Safety Training Curriculum- For Daysails*” on page 127 for pre-underway training information. After initial orientation and getting underway, daysail students participate in a program for the completely inexperienced, reasonably healthy, and ambulatory adult or child (ages 12 and up with parent or guardian present), which introduces the following information:

### 1. Ship’s History (any of two or up to four of the following topics, depending on group interests and timing)

- \_\_\_\_\_ U.S. Reasons For Declaring War on England
- \_\_\_\_\_ The Sailing War Ship (types of ships, guns, tactics for warfare, limits of ship maneuverability)
- \_\_\_\_\_ “Enter The Wooden World”
- \_\_\_\_\_ “Life Onboard Ship” (Berthing, Watches, Meals, Grog, Pay, Possessions, Recreation, Prize Money, African American Seamen, Perry’s Problems)
- \_\_\_\_\_ “Fighting the Ship” and the “Events of Sept. 10, 1813”
- \_\_\_\_\_ Know “Results of the Battle” and “Results of the War”

### 2. General Seamanship

Witness instruction and/or demonstration in the following:

- \_\_\_\_\_ Description of all sails to be set on the given day; name, location, use, etc.
- \_\_\_\_\_ Line Handling
  - \_\_\_\_\_ Recognize when lines are under strain
  - \_\_\_\_\_ Belay a line safely on a pinrail or cleat
  - \_\_\_\_\_ Ease a line safely from a pinrail or cleat
  - \_\_\_\_\_ Cast off a line safely from a pinrail or cleat
  - \_\_\_\_\_ Coil a line and hang the coil on a pin or cleat.
  - \_\_\_\_\_ Haul on a line (review commands)
- \_\_\_\_\_ Orders and Commands for Sail Handling Maneuvers



## **IV. STANDING ORDERS**

Standing orders are orders given by the Master which are to remain in effect at all times until the Master directs exceptions or changes. As the sailing program develops, these orders will be expanded and amended as needed. The standing orders are divided into sections as follows:

### **General Orders, Applicable At All Times**

#### **1. When In Doubt**

Notify your supervisor when in doubt about what it is you are doing, or generally, when you are in doubt about anything at all. If you are unsure of whom your supervisor is, then notify an officer. If you are unsure of whether or not you are in doubt, **THEN YOU ARE IN DOUBT!** It is extremely important for the safety of everyone onboard that all crewmembers, trainees and professionals alike, are certain of what it is they are doing. Never be afraid to admit when you are in doubt or unsure of yourself. On any ship, the officers require that their crew admit when they don't know something pertinent, but lose trust in them when they try to hide it.

#### **2. Reporting for Duty**

The Chief Mate is the officer to whom the Captain delegates the general running of the ship. The other officers and members of the crew report directly to the Chief Mate and are responsible for specific areas of the ship or departments, such as navigation, boats, lifesaving equipment, rigging, etc.

Crew members coming onboard to work shall report to the Chief Mate or in his stead, to the officer of the deck designated by the Captain or the Chief Mate. Upon completion of a task, report it to the officer who assigned the task.

#### **3. Chain of Command**

Understand it! Follow it! Utilize it! The Chain of Command exists to provide an effective structure for managing all that occurs aboard the ship. It is particularly useful in

preventing and correcting operational and personnel management issues. It is established by the Senior Captain and Captain, and is everyone's responsibility to maintain. If the Captain's designated representatives are not properly dealing with any existing problem onboard, the Captain must be informed, or the problem will not likely be corrected, and the chain of command will be broken, resulting in certain harm to someone or something, somehow. Good communication and adherence to the chain of command are the first steps toward maintaining a safe operation and a happy ship.

Direct orders from the Captain supersede all previous orders from any source. In the normal working of the vessel, the crew will receive most of their orders from the Mate or other professional crew, all of whom are the Captain's representatives. When receiving conflicting orders from two crewmembers of different rank, notify each of them of the communication conflict, and follow the instructions of the higher ranking crew member.

When seeking (non-medical) clarification, advice, or assistance from a member of the crew or to report a problem or issue, begin with the AB Seaman or Ordinary Seaman of your division. Follow his/her advice, unless it seems imprudent, unethical, incorrect, or inappropriate. In such case, describe your communication with the AB or OS to the Mate of your watch, and seek his/her advice/ clarification. If you feel uncomfortable talking to members of your watch, or if you have a complaint about a member of the crew, talk to the Boatswain or the Captain, because if such is the case, a problem likely exists that the Captain needs to know about.

#### **4. Repeating of Commands**

Commands are statements, typically given by officers, to carry out the Captain's orders. Commands are to be repeated as given. This ensures that the command has been correctly heard and understood. If the command is not heard, the crewmember is to say "say again" or "repeat," and the officer will repeat the command. It is essential for officers to know that commands have been understood and are being correctly carried out before turning their attention elsewhere. Therefore, REPEAT COMMANDS!

#### **5. Use of Drugs, including Alcohol**

Under no circumstances are crew members to come onboard the ship under the influence of, or in possession of, illegal drugs or alcohol. Some prescription medications may affect

reflexes, depth perception, etc., or may interact with other drugs you may need to take after an accident or illness, which is why the medical officer must be notified of any prescription drugs you are taking. If you are injured and unconscious, we need to know what is in you

If you are found to have abused drugs or alcohol during your time onboard Niagara, you will be sent home. This is not a matter of hyperactive law enforcement or puritan morality; this is a matter of common sense and safety. You are a danger to your shipmates in any condition less than sober.

The officer of the deck shall suspend from duty any crewmember deemed by that officer to be under the influence of mind-altering substances at the designated time for duty, and shall inform the Master immediately. The Master will, at his discretion, administer a blood alcohol level (breathalyzer) test, and/or require a (laboratory) urinalysis drug screen suspected of alcohol or illegal drug use onboard. If evidence of misuse of alcohol or drugs exists, the Captain will, as required by law, notify the US Coast Guard, who may take action against the seaman's credentials.

At times in port there will be receptions onboard to which the crew is invited and at which alcoholic beverages may be served. The on-duty watch shall refrain from consuming alcohol, unless permission (for non-safety sensitive positions) to consume alcohol for social purposes is granted by the Captain.

## **6. Smoking**

While open to visitors for tours or receptions in port, and whenever dockside in our home port of Erie, PA, there is to be no smoking onboard the ship. At other times and while underway, the designated smoking area is on the lee side of the weather deck, forward of the foremast. Fire is a great concern in a wooden ship; all smoking materials must be properly extinguished when finished. Crew members shall not smoke on duty, and smoking may be suspended at any time deemed warranted by the Master. Under no circumstances shall anyone smoke below decks.

Anytime the gun powder magazine is opened, such as during gun demonstrations, the order "**Smoking Lamp is Out**" will be sounded to instruct anyone who is smoking to immediately extinguish their smoking materials. Smoking materials must be properly extinguished in the designated sand-filled butt can, which should be kept near the bow of the ship. Do not throw smoking materials overboard. Under no circumstances is anyone to

smoke while the “Smoking Lamp is Out” and until the order “**Smoking Lamp is Lit**” is called.

## **7. Walking vs. Running**

Walk! Do not run, in the execution of duties. Even in situations demanding rapid response, walk as fast as you can but do not run. Running, particularly in emergency situations, can lead to falls and injuries that will detract effort from the work at hand.

## **8. Handling Lines**

- Always check the strain on a line before taking it off belay.
- NEVER Take A Turn Around Your Wrist To Help You Pull!!!
- Keep hands & fingers at least a foot away from blocks, belaying pins, or cleats when hauling and when easing out lines under load.
- Learn what it means to “Palm the Line” and what to do when handling lines under strain, before you attempt to handle a taut line.
- Always coil lines clockwise, starting from the line where it is made fast on the belaying pin and coiling on the deck and until you reach the end of the line.
- If not completely sure of what you are doing with a line, ask the supervising officer for instructions or clarification of the order. Do not be shy about this!

## **9. Conduct**

All hands are expected to conduct themselves in a responsible, respectful, careful, thoughtful, honest, and sober manner. Do your best in the performance of any tasks related to the service of the ship, in the best interests of the shipboard community, and generally speaking, in all aspects of shipboard life. Seek friendship amongst your shipmates, but avoid becoming overly familiar, especially if such familiarity might interfere with your ability to treat each of your shipmates fairly and impartially during the execution of your duties.

## 10. Aloft Policy

- Unless otherwise approved by the Captain, only trainees and crewmembers who have been declared as medically fit, and after having been fully instructed and understand this policy and subsequent aloft safety procedures may climb in *Niagara's* rigging.
- All crewmembers going aloft must wear a safety harness issued by the ship. Trainee work aloft is monitored by members of the professional crew; anyone deemed too shaky or otherwise unsafe will be told to return to the deck.
- All persons going aloft for the first time must be closely supervised by professional crewmembers on the initial climb, which shall be confined to the lower shrouds and top platform. On subsequent climbs, new climbers will be shown how to proceed higher and lay out on the yards.
- Obtain the permission of the officer of the deck before going aloft, and report when you are back down out of the rig.
- While working aloft is a condition of employment for the professional members of the deck crew, some trainees simply do not climb (for various reasons). No stigma shall be allowed to be placed on anyone who fears going aloft or has other reason not to go aloft to work in the rigging. Trainees shall be encouraged to overcome their fears through careful instruction and supportive guidance, but shall not be pressured to climb, if it is something they absolutely do not want to do.

All crewmembers must realize that working aloft is not for everybody. No stigma is attached to inability to work aloft; most of the work of sailing the ship is done on deck anyway. If you find yourself feeling uncertain of your ability to proceed, don't push it. Come down and try again later. Many people only learn to work aloft after successive efforts at incrementally higher levels. We do not want any "rig martyrs"; the best way to serve the ship and your shipmates is to be sensible.

### **Aloft Procedures:**

- No unnecessary gear is to be carried aloft; this means empty your pockets.
- Anything carried aloft must be secured to the wearer's harness with a lanyard. No exceptions.
- Step onto and off of footropes carefully, and call out "laying on!" or "laying off!" when other crewmembers are on the same footrope. The level of the footrope changes with each person laying on or off and a sudden shift can be dangerous.
- Ascend and descend on the windward side, unless ordered otherwise.
- Use only standing rigging for handholds. Running rigging may not be belayed on deck or may be hauled upon or let go while you are holding onto it. Hands should be on shrouds and vertical standing rigging only; the ratlines are for feet only.
- When climbing, always maintain at least three points of contact with the rig, such as two feet and one hand or two hands and one foot. If you have only two points of contact, you are less stable and more likely to lose your balance, lose your grip, and then fall. Never let go with one hand until you have a good grip with the other. Always remember: "one hand for yourself, and one hand for the ship."
- When laying onto a yard, it must always be stabilized with its lifts, braces, truss tackles, and/ or rolling tackles as needed to prevent excess motion.
- When a square sail is in its gear or furled, do not lay out onto the yard unless the braces and lifts are taut (and truss tackles on the lower yards, if climbing on the lower yard). Also, if climbing on yards above the lower yard, at least the windward rolling tackle must be taut and secured before laying out onto the yard.
- When any square sail is set, its braces (and the lower yard's lifts & truss tackles) must be taut and secured before laying out onto the yard.

Topsail, topgallant, and royal yards are hoisting yards. When they are set, the yards are hoisted and held parallel to the lower yard by their sails. The lower yards have running (adjustable) lifts which must be made fast on deck before going out onto *any* yards when the topsails and topgallants are set. When the topsails or topgallants are taken in, their yards are lowered until their own fixed lifts go tight. Then rolling tackles are attached to the yards to prevent them from swinging side to side.

## Use of Safety Harnesses:

The safety harness increases, but does not guarantee, your safety. It is up to you to keep a cool head and to be careful where you place your hands and feet. The harness will do nothing to keep you from falling while you are climbing the shrouds. The greatest danger comes anytime a crewmember is in one place to do a job, especially one requiring two hands. Attention gets focused on the job, and even a minor lurch of the ship can lead to a sudden loss of balance.

Securing the harness lanyard while working in one place will not prevent your slipping and sustaining some level of injury; but in the event of a slip, the harness can mean the difference between getting bruised and getting killed.

- Always “clip in” before beginning a task. The tops and crosstrees require the climber to choose between going up through the inside (the lubber hole), or going out and around, which requires the climber to have excellent upper body strength.
- Going through the lubber holes is recommended, particularly if the climber is not of above average strength or when the weather is rough.
- Cranelines are horizontal foot ropes between the lower masts and the shrouds, and they are an area of added risk as well. Cranelines are difficult to climb on and crew must clip-in their safety harness to a solid attachment point (such as the next higher craneline) before stepping onto cranelines.
- When traveling horizontally on a yard, clip your harness lanyard into the back-rope. Whenever possible, remain clipped in to the back-rope. However, there are also becketts on the yard (rope loops attached to the jackstay) intended for clipping your harness lanyard into, and sometimes you may need to unclip from the back-rope in order to clip into a becket. Becketts are especially useful when working on the yardarms where it is often necessary to move your body outside the back-rope. When clipping into the becketts, keep in mind that when you transfer your harness lanyard, you will be unclipped for a moment. In summary, when you are stopped and working aloft you must always be clipped into a solid, stationary piece of the rig such as a becket, back-rope or shroud.
- *Usually*, while working from the shrouds or other parts of the rig, the lanyard may be clipped to itself after passing around a member of the standing rigging. Remember that some pieces of standing rigging run vertically and have nothing attached to them to stop

your lanyard against. For example, one *would* clip into a shroud and not the ratlines because the shroud is much stronger and although it is a cable that runs vertically, there are many ratlines attached to it to prevent your lanyard from sliding down. One *would not* clip into a backstay, which runs vertically downward with nothing to prevent the lanyard slipping downward. Common sense is required here.

- Clip in whenever you are stationary, even when standing on the top or crosstrees. It is particularly dangerous to become complacent while standing on these comparatively secure stations.
- Examine your harness before each use. Do not use a harness if any part appears worn or defective: web, buckle, D-ring, lanyard, carabineer, etc. If you find a defective harness, bring it to the attention of a Mate or the Boatswain. Lanyards can be repaired, defective harnesses should be destroyed.
- NEVER WEAR A HARNESS OR HAVE DANGLING LANYARDS IN THE ENGINE ROOM OR NEAR ANY MOVING MACHINERY!!!

## **11. Learning Terminology**

It is imperative that all crewmembers learn the names, locations, and functions of all lines as well as the commands for all evolutions. Otherwise, you are a danger to your shipmates.

All hands shall be required to learn the belaying pin locations for all running rigging, as well as the names and locations of all ship's equipment, such as capstan, pumps, fire extinguishers, etc.

## **12. Ship's Boats**

Boats are only to be launched by order of the Master or officer of the deck, in his absence.

Boats are to be commanded by a member of the professional crew who has been designated as coxswain by the Master.

The coxswain shall see to it that a boat does not leave the ship unless it is properly equipped with PFDs, flashlight, first aid kit, oars, fuel, and VHF radio (*see each "Launch Procedure and Underway Checklist" for the ship's boats in Chapter X.*)

Boats shall not leave the ship without the permission of the officer of the deck, who must be informed of the intended mission, destination, and expected time of return.



On any boat expedition, the name of the coxswain, which boat, number of persons onboard, and mission will be logged by the officer on watch at time of departure. Return of the boat shall also be logged. In addition to the above log entries, while in Erie, a float plan will be posted in the crew break room, consisting of the same information and the expected time of return.

### **13. Engine Room**

Unless properly trained for engine room checks, crewmembers are not to enter the engine room unless ordered to do so. There are many hazards including electrical switches and fuel valves that can be accidentally bumped and moved by an untrained individual.

Murphy's Law says that a dislodged fuel valve will cause main engine failure at the absolute worst possible time- believe it! Also, the engines have exposed moving parts that can cause severe injury if you don't know what to look out for. For these reasons, do not wear safety harnesses or have dangling lanyards in the engine room. Visitors are not allowed to enter the engine room.

Any work done in the engine room will be under the direction of the Engineer who will have obtained the Master's approval.

### **14. Trash**

No trash, personal or otherwise, is to be thrown overboard. Trash and garbage onboard must be segregated. It is very important that crewmembers are careful to place waste in the appropriate containers. In salt water there are certain areas where it is legal to throw organic matter overboard. Plastic is never to be thrown overboard. Oily wastes are a fire hazard and must be stored separately. In the Great Lakes no form of garbage may be tossed overboard.

## **Orders Applicable When Underway, In Addition To the “General Orders”:**

### **1. Personal Safety and the Rails:**

All crewmembers are cautioned against sitting on rails or standing on top of bulwarks or chain plates without a handhold on the shrouds. Crewmembers shall watch out for each other on this particular item. It is easy to get careless, and yet this is the fastest way to fall overboard.

### **2. A Call To “*Muster*” Means:**

The watch on deck is to put aside what they are doing and fall in by divisions on deck, amidships.

### **3. A Call for “*All Hands Muster!*” Means:**

Both the on and the off watch crewmembers, as well as daymen must come on deck as soon as possible. This order is given when large numbers are needed and presumes the person coming on deck is ready to work, and that he/she has clothes, shoes, or oilskins as needed.

### **4. A Call for “*All Hands On Deck!*”:**

This command should not be used loosely, lest you forget that it requires all hands to evacuate below decks immediately, regardless of attire or lack thereof. All crewmembers and trainees must have their boots, knife, and foul weather gear ready to grab, stowed properly, and in such a way that grabbing their basic gear will not slow them down in any way as they clamber up on deck. If your gear is not ready to grab, leave it, and get on deck immediately!

### **5. Watch, Quarter, and Station Assignments:**

Upon joining the ship, all crewmembers will be assigned a number, which will allow them to find their assigned berthing space and duty stations according to the watch, quarter, and station bill. Copies of these billets are posted in the berth deck, chart room, and in each

head, and all crewmembers are required to familiarize themselves with their duties prior to getting underway.

#### 6. Watches to be Relieved on Time:

This will typically require a 20 minute wake-up call, 30 minutes if foul weather gear is needed. The on-coming watch (or division) shall muster with their Mate at their regular muster station on the main deck 10 minutes before the turn of the watch. The off-going watch is not relieved until their Mate musters them, accounts for everyone to make sure they are all present, tells them they are relieved, and are free to go below.

While on watch, crew members must have the permission of the Mate on watch (or the Mate's A.B., if so designated) to go below and must report to the Mate (or the Mate's A.B., if so designated) when back on deck.

There will be occasions when the on-coming watch will be called out early or the off-going watch kept on deck longer, if sail must be shortened or some other situation demands more hands than a watch on deck.

Do not go below until you have been relieved by your watch officer. After the muster & debrief, the off-going mate will relieve the watch to go below.

Remember! When you are being relieved from your post, you must pass along accurately any information given to you by someone else. When relieving a post during the watch change, you must repeat all pertinent data given to you, then report to your Mate the same pertinent data to confirm the Mate is aware of what you are doing, what you see, etc.

#### 7. Injuries and Illnesses:

All hands must report any illness or injury suffered or witnessed to the medical officer, who will report any illness or injury requiring rest, continued observation, prescription medication, onboard medical care, or professional medical examination or treatment to the Captain. In such cases, the medical officer shall prepare for the record, an incident report to the Captain. All such information shall be kept confidential between the patient, the patient's doctor, the ship's medical officer, and the Captain (or his designated representative.)

#### 8. Conduct on Deck

A ship is certainly no place for horseplay, and it will not be tolerated. Since good camaraderie is often found on *Niagara*, sounds of conversation, laughter, music etc. are often heard on deck and encouraged when the work is done. However, when a ship is underway, *all* seamen and trainees onboard must be attuned to the way the ship is responding to the

weather conditions on deck. In that light, you can have fun when you're off watch, but you can't distract the navigational watch or lose your situational awareness.

Whether on watch or off, silence will be maintained at all times during sailing maneuvers and especially during docking maneuvers to facilitate the passing of orders.

## **Instructions to Officers**

### **Navigation Watch Procedures**

When relieving the watch, the on-going Mate shall not relieve until having read and initialed the night orders, if any, and is sure of the vessel's position, what sails are set (or how she rides to her anchors), weather conditions, course ordered and steered, is aware of traffic in the vicinity, and is satisfied as to the safety of the ship.

The on-coming Mate shall ensure that the helm, lookout, and any other duty stations are relieved at their posts prior to relieving the off-going Mate.

When the Mate of the on-coming watch is fully briefed and satisfied, and when the members of that watch have relieved the off-going watch, the on-coming Mate shall report "I am ready to relieve you" to the off-going Mate. The appropriate response shall be "I stand relieved". The Mate of the off-going watch shall allow the change of the watch to occur until such an unmistakable exchange has taken place.

The off-going Mate shall inform the helmsman who has the con, muster the off-going watch before dismissing them, make entries in the Official Log and initial them, and plot a position on the chart before going below.

The Mate on watch shall call the Captain if:

- a change in course of more than 10 degrees is needed
- a change in speed is warranted. The Mate is to reduce speed and/or alter course immediately, and as needed, only if immediate action is required to avert danger.
- an approaching vessel has a CPA of less than 2 miles
- the wind increases more than one Beaufort level
- the wind shifts direction by two points or more (22 ½ degrees)
- visibility drops below 3 miles
- Squalls or a change in the weather seems likely
- an increase in sail is deemed desirable
- a reduction of sail is deemed prudent or desirable. The Mate is to take in sail on his own initiative should the situation be urgent. Permission will be required to reset it.
- in any doubt as to the safety of the ship
- any mechanical failure, accident, or injury occurs
- any person reports or shows signs of suffering from a serious illness or potentially communicable disease, particularly with symptoms of nausea, diarrhea, or fever.
- in doubt about the course, work ordered, or proper course of action
- if there are any special instructions
- in any doubt whatsoever

The vessel's position shall be recorded and plotted at the time of any course change and at least hourly by the best means available and at least half-hourly in periods of restricted visibility, dense traffic, or when navigating in narrow channels or rivers.

Brig Checks are to be conducted as described in the Crew Handbook and are to be logged at least hourly.

Whenever preparing to get underway, all "Prep for Sea Checklists" shall be followed, completed, signed, and filed for record before the vessel gets underway. (See "*Checklists for Professional Crew Positions*" in the Crew Handbook, Chapter X)

Normal navigational watch conditions in fair weather with light to moderate traffic and in open waters shall be deemed "Watch Condition Green".

When underway in heavy weather or restricted visibility, Watch Condition "Yellow" shall be deemed to exist, shall be logged, and two officers shall be on duty to maintain a safe navigational watch and proper control of the ship.

When underway in restricted visibility or heavy weather and additional risk conditions exist such as restricted visibility, heavy weather, dense traffic, or navigating in narrow channels or rivers, Watch Condition "Red" shall be deemed to exist, shall be logged, and at least three officers shall be on duty to maintain the navigational watch and proper control of the ship.

When underway in confined waters, even in good visibility, an additional officer or A.B. will be on the bridge to assist the conning officer in keeping track of traffic, navigation aids, and the ship's position, course, and speed.

## Orders and Commands for Sail Handling and Maneuvers

In handling the ship under sail, there is often inconsistency and confusion in terminology. Control of the ship is essentially control of large numbers of people by voice. Confusion as to meaning can have the same consequences as a faulty telephone, and just as quickly.

The rigging of a sailing ship is a powerful engine fueled by wind. The fuel supply cannot be regulated and is often considerably more than wanted. Control of this mechanism requires many hands doing the right thing at the right time. Two key elements in achieving this are the training of the crew and the efficiency of the officers in directing their efforts. This in turn is dependent upon giving concise orders which the crew can instantly understand.

Line handling commands are commands intended to direct the control of any particular line. Sail handling commands are those intended to direct the control of a sail (typically through use of multiple lines). Other traditional terms such as “**handsomely**”, which means slowly, and “**smartly**”, which means quickly may be applied to either line handling or sail handling commands.

In order to avoid confusion, particular attention shall be paid to standardizing the language of commands used onboard *Niagara*. As a general rule, sail handling commands involve the name of an object (a line or sail, for example) and an action word describing what should be done with it. In general, name the object and then the action when constructing the words of the order to be given. More specifically, the following shall be in use:

### Line Handling Commands:

“**Stand by** . . . (Name of Line), or “**Man the . . .**”: These commands are interchangeable. Lay down the coil, clear for running, take the hitch off, but keep turns on the pin, and wait for the next order.

“**Avast**” : cease whatever you are doing; stop pulling (or easing) immediately, and stand by for further orders. *\*\*This is a particularly important command.* Even if it is confused with “Fast,” as in to secure, the effect of stopping the action will be achieved.

“**Hold**” should not be used as a command for handling running rigging because half the time it will be confused with “Haul.” This obviously has the potential for serious

consequences and at the least entails a lot of unnecessary shouting and delay. “Hold” is used for mooring operations. For example, “*Hold* the bow line!”

**“Make Fast”:** Make a line fast to belaying pin, cleat, bitt, etc.

**“Ease Up”:** Give a little slack slowly, usually used to test a tail stopper

**“Come Up”:** Drop the line, tossing slack toward the person belaying. *This is a particularly important command* to ensure that the line is belayed properly without impedence.

**“Ease Away”:** Slowly pay out a line, keeping a turn on the pin so that the motion can be stopped instantly. Most often used tending gantlines or top-ropes, where only small amounts of slack are wanted.

**“Lower Away”:** Pay out a line under control, keeping a turn under the pin to permit stopping on command.

**“Cast Off”:** To take a line completely off a pin or bitt and allow it to run freely. In reference to mooring lines, the eye is cast off ashore as well.

**“Haul Away”:** Pull on a line, usually a rapid hand over hand on the halyards, sheets, or braces.

**“Take Up”:** Take a strain on a line and take in slowly. This command is usually applied to gaining small increments under a heavy strain, such as in adjusting moorings or sending up spars.

### **Sail Handling Commands:**

**“Loose (name of sail)”:** Cast off the gaskets securing the furled sail to make it ready for setting.

**“Set (name of sail or sails)”:** This is a command of delegation, from the Captain or conning officer to who ever is acting as mast captain, who will then proceed to give the line by line orders for accomplishing sail setting.

**“(Name of sail) halyard, haul away”:** This is the command for those on the halyard to start pulling while, simultaneously, the downhauls, clewlines, buntlines, braces, or other associated rigging are tended as needed. Naming the sail first is a reminder for everyone to be sure they are on the right line, and give a second to get turns off the pin so that when the



‘haul away’ comes there is no wasted effort. When setting several sails together, naming them all first allows them all to begin going up together on the one order of ‘haul away.’

**“Sheet Home”:** Haul on the sheets while simultaneously casting off buntlines and slacking away clewlines.

In this and most other commands, the verb is the line that must be pulled. Since this cannot be done without casting off or slacking the lines opposing, it is also the command for those actions. With green hands, separate orders for each and every line may be needed at the first drills, but as soon as possible officers need to wean deckhands from excessive instruction. Excess verbiage from the officer in charge will usually do more to slow things down than to speed them up.

**“Board the Tack, Haul Aft the Sheet”:** The courses do not have a yard under them to sheet home to. Therefore, separate orders are required to haul down the weather and lee clews. Just as in fore and aft sail, the tack is the corner to windward, the sheet is to leeward. The tack is typically boarded first and taken in first.

**“Take In (name of sail or sails)”:** As in setting, this is a command of delegation. The officer acting as mast captain will then proceed to give all further orders when hands are ready.

**“Strike (name of sail)”:** Take in a sail as quickly as possible. The first person to reach the halyard begins lowering immediately, without waiting for further commands or for all other lines to be manned and ready. This command should be reserved for situations of urgency, such as impending squalls.

There is a tendency nowadays to use ‘take in,’ ‘douse,’ and ‘strike’ interchangeably. This is wrong. If ‘strike’ is saved for emergencies, the one word will itself convey the need for speed. Otherwise, the officer will be reduced to shouting “move it!” or “now!” or some other sloppy nonsense in an emergency because the opportunity to differentiate levels of urgency through vocabulary has been squandered.

**“Standby the (name of sail) halyard”:** This is a command of possible urgency, given by the officer who has the con. As implied by ‘standby,’ the sail may not be taken in. But even if the sail is definitely going to come in, there is a subtle difference between an order to “take in” and a “standby halyard” order. “Take in . . .” implies no particular urgency; the sail comes down when all gear is manned and ready. “Standby . . . halyards” means the officer who has the con needs the control of having the halyard ready to lower at the next instant.

**“Clew Down”:** This is actually the command to lower away square sail halyards but is given to the active line, the one being hauled on. *Note: The most common mistake in taking in square sail is to release the sheets on this order. Officers should be particularly alert for this.*

**“Clew Up”:** This is the command to release the sheets and haul on the clews and bunts to complete taking in the sail. *Do not confuse this order with the order to Clew Down. Wait, do not release the sheets until you hear “clew up.” “Clew up” will come after “clew down.”*

**“Rise Tacks and Sheets”:** During the maneuvers of tacking and wearing, it is often desirable to be able to brace the yards without simultaneously manning course tacks and sheets. This order does not take in the sail completely. It only requires slacking tacks and sheets and hauling clew garnets sufficient to get the sail out of the way of bracing. The presumption is that the sail will be reset soon. If it is windy enough not to want the courses flogging during the maneuver, the order may be to “Clew Up the Courses” instead.

**“Brace Up”:** Haul on the braces to “sharpen up,” or bring the ship up to the wind. The yards are hauled closer to fore and aft.

**“Brace In”:** The opposite of bracing up. The yards are hauled closer to square. Used when trimming the yards somewhere between sharp up and square.

**“Square the Yards”:** Brace the yards square to the fore and aft line.

**“Brace with the Wind”:** Used in wearing ship. The object is to trim the yards slowly, keeping them perpendicular to the direction of the wind, while the ship turns. In essence, the yards are kept still relative to the wind while the ship is turned under them.

**“Let Go and Haul”:** Used primarily in tacking, but also for other maneuvers. This command means to let go one set of braces and haul on the other to swing the FORE YARDS from sharp up on one tack to sharp up on the other, as rapidly as possible.

**“Mainsail Haul”:** All of the explanation for “let go and haul” applies, except that this command is used for the MAIN YARDS.

**“Back the Yards”:** Usually given for either fore or main yards. It requires bracing the yards far enough around to bring the sails just aback, but not as full aback as might be achieved by bracing sharp up while aback. The reason for differentiating between just aback and braced full aback is that in backing and filling maneuvers, it may be necessary to spill wind or fill the sail momentarily. It will take too long if the yards have to be hauled around from sharp up.

**“Point the Yards to the Wind” or “Shiver the Yards”:** Brace the yards to be pointed at the wind’s eye (the direction the wind is coming from), with the sails luffing, neither drawing nor aback.

**Other Commands, which are correct, but are not typically used in *Niagara*:**

**“Belay”:** Same as “Make Fast”

**“That’s Well”:** A line has been pulled far enough. This usually is an order to belay. The reason for having this command is to give the Mate a calm way of conducting routine tasks. It allows “Avast!” and “Belay!” to be kept in reserve for the leader of the line being handled.

**“Up from Behind”:** Same as “Come Up”

**“Heave Around”:** March the capstan bars around. Heave and haul are generally used interchangeably without ill effect on the work, but the most senior shipmaster I (W. Rybka) ever served under was a stickler for nautical grammar and always maintained that . . . “You haul on lines and heave on winches or capstan bars.”

**“Douse”:** Same as “Strike”, e.g. to douse a sail.

**Helpful hints about understanding square-rig nomenclature:**

All spars and rigging are named for the mast they are attached to. The foretopsail yard is on the foretopmast, etc. The place where confusion arises is in reference to the fore and main masts. It is one of the few ambiguities in nautical speech. While foremast, for example, is taken to mean all masts and yards on the fore, the strict interpretation is that foremast means the mast stepped on the keelson and nothing else.

Therefore, “fore lower mast” is a redundant term, as is “fore lower yard.” It is the “foreyard” because it is on the “foremast” as are the forestay and fore shrouds. The adjective “lower” has crept in not only to differentiate which section of mast is being referred to; but also because when speaking collectively of the fore and main yards it is correct to refer to them as the “lower yards,” but it is redundant to say “fore lower yard” in the singular because “foreyard” will do.

While the “courses” are the lowest sails, it is incorrect to say “course yards.” Some true old salts react to this like chalk screeching on a blackboard. Courses are a classification of sail by position not a type of spar.

By striving to use the proper terminology, officers can greatly increase the safety and efficiency of work on the ship. This is, after all, the primary goal of seamanship.

## **Dockside Policies and Procedures**

- In ports other than Erie, at least one watch officer and one watch shall be onboard at all times.
- The officer of the deck shall maintain a brow watch at all times and see to it that inspections of moorings and bilges are made at least hourly and logged.
- No visitors after 2200 (10pm) without the Captain's permission.
- Visitors during non-public hours are to be accompanied by a crew member.
- During deck watches in port, at least one crew member must be on deck at all times. Other watch members may go below for brief periods only.
- Anyone asking to see the Captain should first be referred to the officer of the deck.
- Do not point out the Captain to passersby; he is usually quite occupied
- All hands are reminded to read the ship's Standing Orders contained in this handbook.
- Violation of the ship's rules may result in restriction to the ship, extra duty, or being dismissed and sent home. The Captain will, at his discretion, discharge immediately or at the nearest port anyone who breeches the ship's rules, is insubordinate, or causes willful destruction of property, drunkenness, or has other conflicting behavioral problems.

## **Special Orders for Minors**

- While in port, minors are not permitted to venture out of sight from the ship alone. They may travel in groups of three or more with other trainees or crewmembers, but NEVER alone.
- Minors must also heed a curfew to return to the ship by 2200 each night. The watch officer on duty will count heads for all minors in the ship's company and report to the Captain any minors who are not onboard by curfew.
- Minors are not permitted to stay ashore in ports unless they are in the custody of their parents or legal guardians.
- In the case of minors who breach the ship's rules, parents will be contacted and informed, and transportation arrangements will be made to send the minor home, if the Captain deems it necessary or at the request of the parents.

## **Special Orders for Public Visitation**

### **Public Visitation in Erie**

In Erie, we have a corps of volunteer guides, who are managed separately from the sailing crew. They give fully guided tours to small groups of museum visitors. Most of the Erie tour guides are history enthusiasts, and many of them are retired adults who are not inclined to sail as ship's crew. They give extremely valuable service to the ship, giving thorough and comprehensive tours, and they deserve to be treated with appreciation and respect.

On crew maintenance and training days in Erie, crewmembers must watch carefully for the safety of our guides and our visitors. The Erie guides do not typically receive the same level of training as ship's crew. If a guide wishes to bring his tour through the area where you are working, you must either move your work to another area, or ask the guide to stay clear until it is safe to pass.

Do not let tours walk under suspended loads or work projects going on in the rigging, and remember that they may not be able to recognize the work zone, so it should be appropriately roped off. Use "Wet Paint" signs and other warning signs appropriately. Close all open sole boards and hatches below decks when a tour goes through. The maintenance crew must do their work with visitor safety in mind, and without disrupting the tours, but occasionally there is no way around it. The Chief Mate will make decisions regarding when to stop work or to stop tours in a specific area, or altogether.

On days when the crewmembers have time off, the berth deck must be prepared for tours by the time the museum opens. This means that anyone sleeping on the berth deck must wake up in time to properly stow their hammocks and personal gear, and in time to set up the berth deck for tours by 0900.

### **Public Visitation in Official Port Stops with Major Festival Events**

In most official port stops, *Niagara* attracts tens of thousands of visitors because a large maritime festival event is part of the planning and is often the reason for the visit. Security is a primary concern at such large events; specific security procedures will be in place at each event to mitigate specific security threats and respond to potential security incidents. Crewmembers will be notified of these procedures, and they will be posted onboard for crewmembers to read. At anytime we are alongside a pier, crewmembers are not to

personally accept any packages not directly addressed to them for any reason. Only officers may accept packages on behalf of the ship. If a package arrives, notify an officer before the package comes aboard the vessel. The officer will confirm the package was expected or is not unusual in any way before taking possession of it. Notify the officer of the deck and the Captain immediately if any suspicious package, backpack, person, etc. arrives, is found in an unusual location, or is left unattended onboard or near the ship.

At port events, the ship's crewmembers (including trainees) serve as tour guides and should be familiar with the "Historical Orientation" portion of this handbook. While content is of primary importance, guide performance is the next consideration. A good script alone will not ensure an adequate tour. We provide our crew with training and some performance coaching in voice projection, dramatic emphasis, not overdoing it, gauging the audience's attention span, tour path/route, and details to discuss along the route. Of course, good oral performance is a demanding effort. In order both to do a good job and to remain in a reusable condition, docents need to be relieved on a frequent basis.

When on a voyage, the visitation is often very heavy and requires the crew to man stations while visitors walk (self-guided) around the deck and the berth deck. A path is made by roping off areas of the deck to guide visitors along the route to the various stations (*see the illustration at the end of this section*).

It is essential to manage the flow of traffic when open for tours in other ports. Visitors often wait in long lines to get onboard *Niagara*. Visitors get hot, sweaty, dehydrated, and can get grumpy if the line moves too slowly. For that reason, in these cases, crewmembers serving as guides must not get too wordy. They have to keep the traffic moving on deck, provide the best tour possible, and pull the serious enthusiasts aside to answer their questions without disrupting the flow of traffic.

### **Dockside Tours During Port Visits- Crew Stations:**

1. Gangway (Brow) Watch- on-coming: At the foot of the on-coming brow, on the main deck. This person's primary responsibility is to catch anyone falling on the stairs. They will also keep the count of visitors boarding the ship and direct them forward, along the onshore side of the deck. This station also coordinates with the off-going brow station to manage traffic flow on the brows. *Never leave this station unattended!*

2. Forepeak Hatch Station: On the starboard side of the forepeak hatch. This person's primary role is to assist visitors while stepping over the mainstay and across the forepeak

hatch. Anyone who appears unable or uneasy about crossing the deck here should be directed to cross the deck at the midships hatch instead. This person should also inform visitors about the history of the ship's bell, and can extrapolate and interpret information from the "Sailing Ship as a Machine" section (as best as the traffic situation will allow).

3. A.B. Seaman: This position usually roves the deck, at the Mate's discretion. This should be an A.B, but could be an O.S. His/her duty is to give the deck officer an extra pair of eyes and to be available at the deck officer's call. The A.B. will monitor the safety of visitors, the flow of traffic, the rotation of crew at their stations, brochure racks on the dock (keep them full), and the mooring conditions (brows okay, chafe gear, dock lines, gangway and netting okay, etc.)

4. Gunnery Station: On the offshore side of the ship, just forward of the forward carronade. This station should have on display all of the gunnery tools except for slow match and black powder. A piece of manila should be wrapped around the lintstock in place of slow match. Do not remove shot from the shot holder and allow visitors to handle cannon balls, they are heavy and can smash toes when dropped. Describe the "Gun Drill" and "Fighting the Ship" sections as best as possible without interrupting the flow of traffic. Uninterested visitors will pass around the interested visitors at this station.

5. Main Companionway Catcher: On the on-shore side of berth deck, at the foot of the main scuttle (sliding hatch) companionway (stairs). This person's primary responsibility is to catch anyone who may lose their footing going down the main scuttle companionway and to warn visitors of low headroom. They will also direct visitors toward the galley and across the berth deck. *Never leave this station unattended!*

6. Berth Deck Station: "Life Onboard Ship" section. Discuss similarities between the life onboard in 1813 and today. One division table & set of benches, and one hammock should be set up on the offshore side of the berth deck. Do not allow visitors anywhere other than the berth deck, and don't let them climb into the hammock- you can demonstrate it if you wish. The galley doors should be open and roped off with a "crew only" sign for visitors to look inside. The five-man door and engine room door should be closed and locked and have "crew only" signs posted on them. Only guided tours at the Erie Maritime Museum will go throughout the ship. No visitors should ever go into the engine room!

7. Capstan Station: "The Sailing Warship" section. You could also discuss "Officer Country" on slow days. This is the best station for answering general questions about the ship. Lingering guests are least likely to interrupt the flow of traffic in this area, but it can happen, so pay attention.



8. Helm Station: Watchkeeping, Steering, and Lookout. Discuss how we sail the ship today. Since you are informing visitors about your experience onboard, you are likely to get questions about how to become a trainee or crewmember, or about the composition of the crew (number of trainees, professionals, males, females, teenagers, adults, retirees, etc.). Try to be brief answering these types of questions, but definitely answer them as best as you can. Otherwise, try to focus on Watchkeeping, Steering, and Lookout. Show them the tiller (but don't let them cross over and aft of the tiller tackles), show them the compass, the bridge deck, and the restricted view due to the hammock cloths, etc.

9. Officer of the Deck: this individual will be one of the ship's licensed personnel; and is responsible for the safety of the ship, visitors, and crew as well as ensuring that all necessary functions are carried out. The Officer of the Deck (O.O.D.) will ensure that no more than 250 visitors are onboard at one time (watch the counters). These responsibilities cannot be effectively managed from shore or below, and the O.O.D. should be on deck except for brief periods to inspect below decks, gift shop, or line issues on shore. When leaving the deck the OOD shall have a radio and remain in radio communication with the AB of the watch until the OOD returns to the deck.

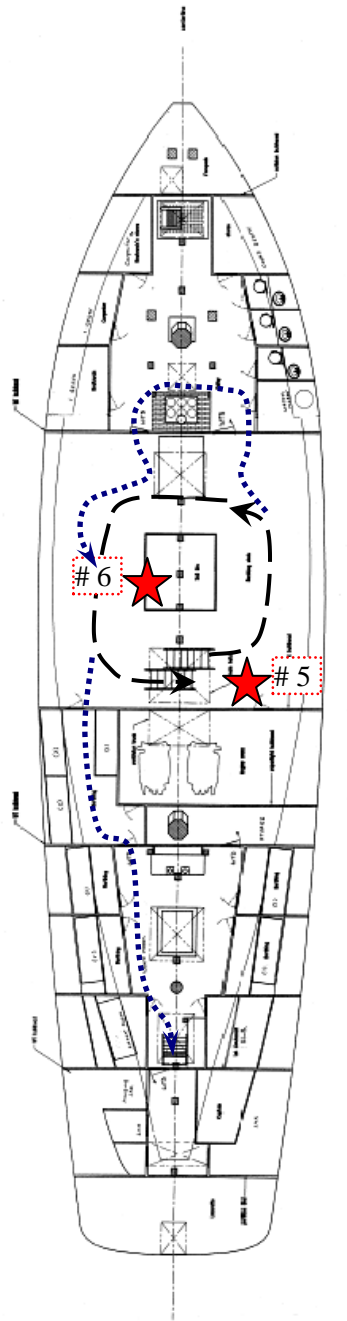
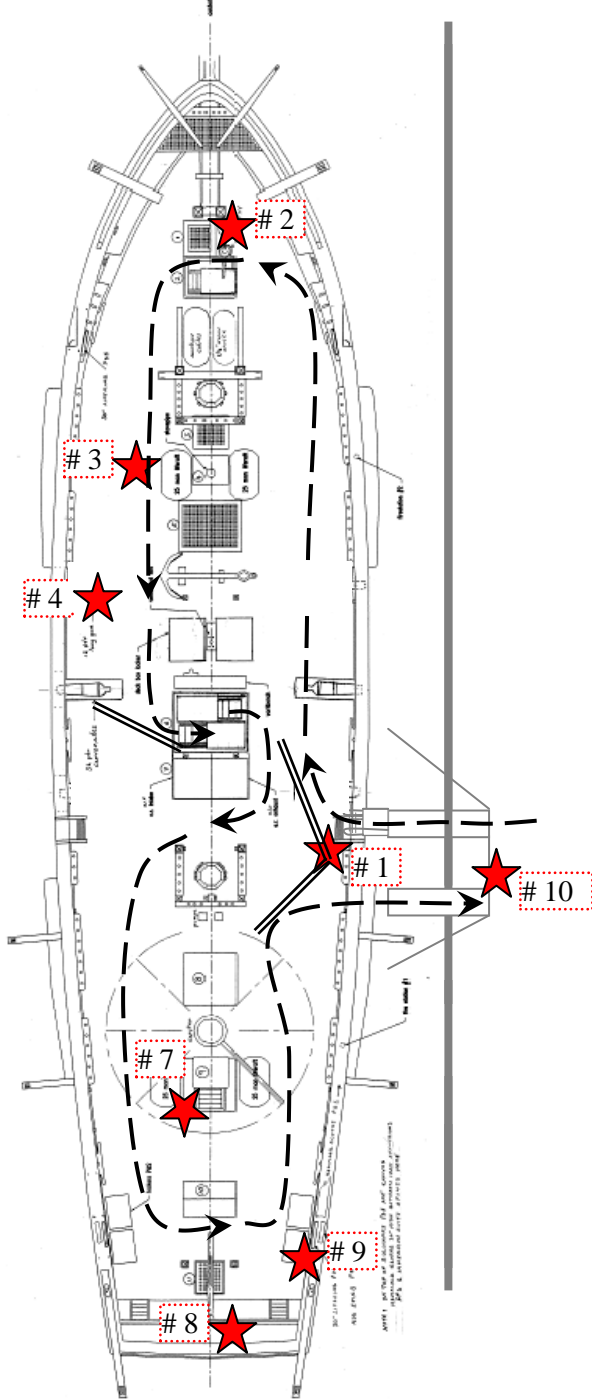
10. Gangway (Brow) Watch, off-going: At end of brow on pier. This position has three responsibilities. Catch anyone who stumbles and falls at the end of the off-going brow, maintain a count of departing visitors, and coordinate the flow of traffic on both brows with the crewmember at the "on-coming brow". The brows can hold a maximum of 1000 pounds as a safe working limit. Do not allow more than 4 persons on a brow at one time, and keep the traffic moving.

This station is also the contact point for persons seeking to board for business or social reasons, call for the A.B. or the Deck Officer if they are needed to fetch a member of the crew. *Never leave this station unattended, nor become distracted from catching someone's fall!*

**Figure 5- Diagrams of Public Tour Paths**

MAIN DECK TOUR PATH (Stbd side-to)

BERTH DECK TOUR PATH (Stbd side to)



**Legend**

- Tour Path — — — — —>
- Tour Station ★
- Rope Barricade = = = = =>
- Tour Path (in Erie only) ·····>

## **Scheduling of Public Hours of Visitation**

In order to meet the ship's mission and port visitation objectives, it is necessary to make the ship available to visitors for tours and receptions. It is therefore important to maintain the ship and the crew in a reusable condition, so they are adequately rested and properly prepared to make the shift from shipboard hosts to trainees and seamen when the time comes to get underway for the next destination. As an example, a typical port schedule is as follows:

### **Port Arrival on Thursday**

Arrival is typically no later than 1700 on Thursdays. Wherever possible, sail will be carried as close as possible to docking so that press and public spectators may see the ship under sail. After arrival it takes several hours to furl sails, trim yards, secure moorings, rig fenders, brows, awnings, dockside interpretive materials, trash removal, shore power & water hook-ups, etc. This is all done on the evening of arrival to be ready for USCG boarding and inspection as an attraction vessel (typically on Fri. morning) before the public can board.

### **Public Visitation Schedule**

Public visitation is typically scheduled for Friday, Saturday, and Sunday, although some port stops may be shorter or longer duration. A typical 3-day weekend stop is scheduled as follows:

0800- Crew mustered for work, cleaning ship, and doing maintenance as needed. USCG Attractions Vessel inspection occurs before opening to the public, if not completed earlier.

1000 to 1800- Open for tours (below deck closed for lunch from 1230 to 1330)

If an evening reception is scheduled, it may begin at 1800 and continue until 2100, but tours will end at least one hour before the start of the reception to accommodate cleaning the ship. However, most receptions are 1900 to 2100, and no later than 2200. If all crew are not invited to the reception, or if substantial food will not be served, then the reception needs to be delayed until 1900 to permit feeding the crew and clearing away the wreckage on the berth deck, or dinner will be provided ashore, or the berth deck will be closed. In either case, receptions are not scheduled past 2200.

If no reception is scheduled, on occasion, public hours may be extend to 2100, which, to accommodate those already in line, will probably stretch to nearly 2130. The above schedule provides two hours ship's work, eight hours visitation, and either a two or three-hour reception period spread over up to twelve hours of the day.

The crew will soon find that public visitation is the hardest and most grueling work of a voyage. Yet the ship's message is her cargo, and all hands are part of its safe delivery. Continued sailing of the ship is as dependent upon courtesy to visitors and good tour performance as it is upon maintenance or any other work. If additional interpretive staff is available, the place to put them is on the pier; the ship is too crowded.

If short-handed and crewmembers are not available to man all stations set out above, priority must go to gangway and stairway watches and traffic control. The practical minimum for safe visitation in ports with high traffic is seven hands and an officer. Under these conditions, interpretation is essentially foregone. It must be firmly kept in mind, however, that visitor safety is the highest priority. A stairway watch cheerfully talking to visitors and answering questions while facing away from their station will fail to catch someone falling, which is the reason why they were put there in the first place.

Public visitation is in many ways our most hazardous operation. The ship is crowded and noisy. The visitors are in an unfamiliar environment, crowded with tripping hazards, their attention is being diverted everywhere except where they are putting their feet. The crew has no way of assessing beforehand the physical agility, sobriety, or basic common sense of the herd rumbling over the brow and down the steep stairs.

To keep athletic drunks from heading for the rigging, overweight people from tumbling down the stairs, the absent-minded from banging their heads, or hyper children from spilling out the gun ports, while remaining polite to everybody is very hard work and demands both vigilance and concentration. This is no exaggeration.

In most ports the ship is a rare attraction, and volume will preclude lengthy presentations. Absolute capacity has been found to be about 750 persons per hour. This represents a back to belly line making one turn around the deck and getting off in about five minutes, a poor way to see the ship. The maximum capacity for giving any sort of meaningful tour is between 450 and 500 people per hour, provided sufficient guides are available to move the tour along. Average tour time under these conditions is 15 minutes.

It will be impossible to present all the information given here in one tour. The reason for providing crew with such a lengthy text for study is that all may have a comprehensive understanding of the ship's history, from which selected highlights can be pointed out or detailed questions may be answered. It is neither important nor achievable that all visitors learn the complete story. What is important is that the visitors have an enjoyable experience which presents accurate information and stimulates their curiosity. Ideally, the goal is to have every visitor leave with a desire to read a book or to visit another museum to learn more about the subject.

### **Cardinal Rules for Guides:**

1. Visitor safety is the highest priority; pay attention. Watch for signs of heat exhaustion/ dehydration. Watch for inadequately supervised children.
2. Be polite, no matter what.
3. Make sure your audience can hear you.
4. Keep it short; information overload leads to boredom.
5. Don't be afraid to say "I don't know" when that is the truthful answer to a question. NEVER make something up just to have something to say.
6. Direct all press inquiries and requests to the officer of the deck.
7. Keep the brochure racks stocked.
8. Be on time for station relief & rotations.
9. Never leave your station unattended without permission from the officer of the deck.

*"Both ships and men live in an unstable element, are subject to subtle and powerful influences, and want to have their merits understood rather than their faults found out."*

-Joseph Conrad



## V. WATCHKEEPING, STEERING, AND LOOKOUT

### **Basic Principles of Watch Keeping**

There are several different types of watches on a ship: navigational watch, anchor watch, dock watch, fire watch, etc. The importance of diligence on watch and attention to duty can not be underestimated, and everyone onboard is expected to earnestly try to perform their duties as best as they can. Regardless of which type of watch one is keeping, one must keep the ship safe from harm, and the following pages of this chapter are intended to help you do so.

History seldom records the details of “near-accidents” that were narrowly averted by the appropriate reactions of a competent watch. Instead, those stories are occasionally remembered as some sailor’s yarn, and usually with an exaggerated description of the weather. No, history remembers the tragic catastrophes, usually caused by more than one person’s mistake, negligence of duty, or bad judgment.

A good team on a ship will catch and correct each other’s mistakes and judgment errors before an accident occurs. Watch keeping is a team effort, and as such, negligence to duty on anyone’s part breaks the chain of teamwork.

### **Steering: Quartermaster’s Duties**

When the ship is underway, the Captain or Mate of the watch is said to be “conning” the ship, meaning he or she is in control of the ship. However, the person who is actually steering is the lead helmsman and his/her assistant helmsman, who is taking orders from “the con.” The helm consists of the tiller and its tackles.

Remember that with a tiller, unlike a wheel, the tiller must be moved to the opposite side of the intended direction of turn. For example, in order to turn the ship to the right (to starboard), the tiller must be moved left (to port). Steering orders are given as LEFT or RIGHT, and indicate the direction the ship is to be turned, not the direction of pushing the tiller.

There are two kinds of orders given to the quartermaster: steering commands and rudder commands. *Steering Commands* are used in open waters, and *Rudder Commands* are used in channels or while maneuvering, such as during docking.

## Relieving the Helm

The protocol described below must be followed by the relieving lead helmsman and by the lead helmsman being relieved:

- 1) Before relieving the lead helmsman, the following information must be obtained:
  - a) Who is conning the ship
  - b) What course is being steered, or what was the last order given to the lead helmsman
  - c) What kind of helm is being carried to keep the ship on course - e.g., weather or lee helm, left or right rudder.
- 2) Lead helmsman being relieved gives all of the above and any other pertinent information to their relief.
- 3) Relieving lead helmsman repeats all information.
- 4) Relieved lead helmsman reports to the mate on watch or individual conning the ship that they have been relieved and states the last course given.

Relief protocol for the assistant helmsman should be the same as described above.

## Orders to the Helm- Steering Commands:

**“Steer...” or “Come *left/right* to...”** (example 1, 9, 5): The steering command used to direct the helmsmen to steer a specific compass course. Always repeat back the order you are given, and make sure the conning officer hears you. Courses are to be given as three digits, “*one, nine, five*” instead of “*one ninety-five*.” This is very important to prevent confusion. For example, if the order is given “Come left to *zero, nine, zero*”, then there is no doubt that the new course is 090.

Suppose, however, that the order had been given as “*Come right to ninety*.” It may be heard as “*Come right, two ninety*” with the result that the ship will be swung to 290 instead of 090. This is another 200 degrees further to the right of 090 and nearly in the opposite direction!

Courses are always to be given in degrees, not points. For example, “Steer 1, 8, 0” not “Steer South.” When turning the helmsmen should call out every 10 degrees of heading change. For example: The course has been 180. The order is given “Come right to 2, 4, 0.”



The helmsman repeats the order, and as the ship is swinging calls out “one nine zero, two zero zero, two one zero . . . etc. until the new course is reached. When on the new course report “Steady at two four zero.”

**“Mark Your Head”:** This command means *“Tell me what the ship’s compass heading is at this moment”*. The officer does not want you to simply tell him/her what course you have been ordered to steer; the officer wants to know how far off course you are (the direction the ship is pointing) at the moment asked. Tell the officer the exact heading of the compass at the time the order is given.

If you are swinging rapidly such as during an ordered turn, call off every ten degrees of heading change as the ship turns.

**“Left (or Right) easy!”:** Move the tiller about twenty degrees to starboard, so it is pointed near the starboard side of the binnacle box, and repeat the order “Left Easy!”. In most conditions, this will turn the bow of the ship slowly to the left. The bow should swing about one degree per second. Watch your rate of turn and adjust (fine tune) the position of the tiller to achieve a turning rate of about ten degrees over ten seconds. Hold the tiller in this position and call off every ten degrees of heading change until a new course or helm command is given.

**“Come Left/Right Better”:** Push the tiller farther to increase the rate of turn.

**“Ease the Swing”:** A command given during a turn. Ease the tiller nearer to midships by half its distance, or as needed to slow down, but not stop the rate of turn. As a rule of thumb, if the helm is at half left, try easing it to quarter left, then make sure the compass shows that the ship is still swinging through the turn. If not, increase the helm a little toward half left. Likewise, if the helm is hard right, try easing it to half right when the “Ease the Swing” command is given, and the rate of turn will slow down.

**“Check the Swing”:** Stop the ship’s swing. Stop her from turning by placing the tiller nearly “Quarter Left/Right”, but on the opposite side of midships. If the helmsmen simply put the tiller at Midships, the ship’s bow would continue to swing due to momentum. Placing the rudder a bit on the opposite side after a turn stops the turn very quickly by compensating, then the rudder must be placed midships with correct timing to prevent overcompensating.

**“Steady,” “Steady There,” or “Steady Up”:** This order is used when the ship’s heading is changing, and often during a turn, in order to stop the ship’s turn and steady the ship’s heading. When the order is given, use the tiller to control the rudder as needed to stop the ship’s turn, and make the new course to steer whatever the ship’s heading was at the instant the officer ordered “Steady.” So, if the ship was steering 070, and the Con ordered

“Right Easy,” and then ordered “Steady” just as the ship’s heading was swinging past 090, then the helmsmen will bring the helm to midships to check (stop) the ship’s swing, then would steer as needed to maintain a course of 090. Remember, Repeat the Command! “Steady on 090.” Then when the ship is actually steady on her new course, the lead helmsman calls out “I am steady on 090” –or “I am steady on ...” (whatever the course may be.)

**“Steer Full and By”:** The steering command used to direct the quartermaster to steer by the wind in the sails, specifically to keep the sails “full” and steer “by” or as close to the wind as possible. The “Don’t Give Up The Ship” flag at the top of the main topgallant mast and the weather leech of the lowest square sail are the best indicators. Remember to repeat the order.

**“Head Up”:** Remember to repeat the order. A steering command used to direct the helmsmen to steer closer to the wind. If you steer too close, the sails begin to luff or spill their wind and the weather leech curls inward, you then “FALL OFF” or steer away from the source of the wind. At this point, you should look at the compass to get a bearing on the wind. This will help you keep the ship steady.

### Orders to the Helm- Rudder Commands:

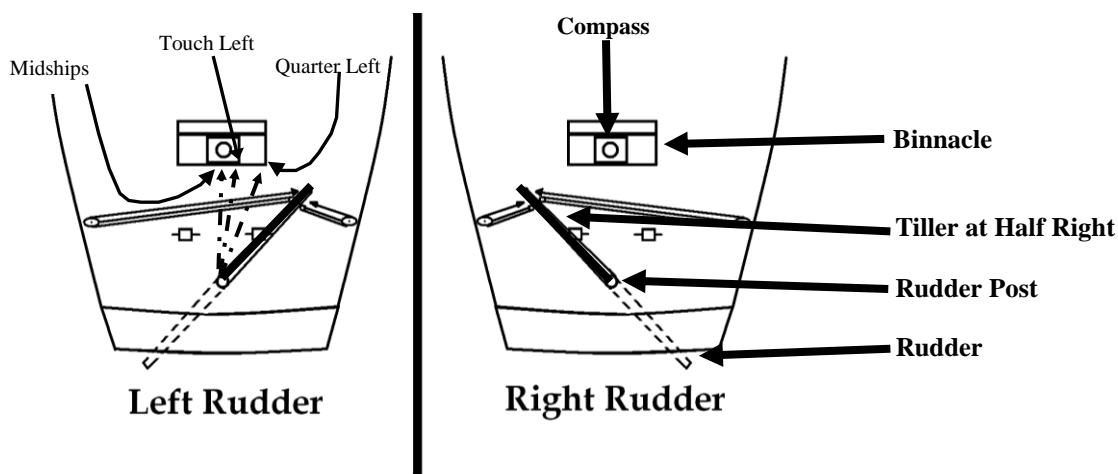


Figure 6- Rudder Position & Commands

**“Midships”:** Move the tiller to centerline.

**“Hard Left/Right”:** Move the tiller as far over as it will go, in the direction that will produce the desired turn. Remember, when the order is “Hard Left” the tiller is put hard

over to the starboard side of the deck. Underwater, the rudder goes to the left (to port), which makes the bow of the ship turn to the left when the ship is making headway.

**“Half Left/Right”:** Move the tiller to one half its full travel in the direction which will produce the desired turn. Onboard *Niagara* this position is reached when the tiller is directly over one of the quarter bits.

**“Quarter Left/Right”:** Move the tiller to one quarter its full travel in the direction which will produce the desired turn. Onboard *Niagara* this position is reached when the tiller is directly in line with the *outboard edge* (on either side) of the binnacle/ engine control box.

**“Touch Left/ Right”:** The tiller is moved one eighth of its full travel from the “Midships” position, or half way between “Midships” and “Quarter left/right”. The tiller is moved in the direction which will produce the desired turn. Onboard *Niagara* this position is reached when the tiller is pointing slightly to one side of the compass. In the binnacle which houses the compass, there two partitions that separate the box into three compartments. Pointing the end of the tiller at either one of these partitions will place the tiller in either the Touch Left or Touch Right position.

**“Half-Touch Left/ Right”:** The tiller is placed just slightly either side of the midships position, about half way between “Touch left/right” and “Midships”

**“Shift the Helm”:** Also sometimes given as “Reverse the Helm.” At the time the order is given, note the position of the tiller and move it to the mirrored position on the opposite side of midships. If the helm was hard right, shift it to hard left. If the helm was quarter left, shift it to quarter right. This order is most often given during tacking or docking maneuvers when the ship may have some sternway (speed going astern) which may make the order difficult to execute.

**WARNING:** If the ship has any appreciable speed going astern, it will be extremely difficult to move the rudder against the water pressure until midships is reached. Then the shift in water pressure to the opposite side of the rudder will want to rapidly slam the rudder hard over to the new side, which will produce a rapid swing of the tiller bar on deck if those on the helm lose control. This can knock people down or throw them into the bulwarks. It may even damage the rudder seriously enough to require dry-docking.

For this reason it is important that conning officers try to avoid calling for a shift of helm if the ship has sternway. If the situation demands shifting the helm while going astern, it is imperative that the helm crew use the relieving tackles and not allow the tiller to get away from them.

Maneuvering the ship into her berth is often strenuous for helmsmen. Expect any order, and execute it smartly. You must always remember to repeat the orders given to you by the officer having the con.

### **Steering and Communicating Orders**

1. All orders given to the lead helmsman are to be repeated, verbatim, loudly and clearly to assure that the officer in charge hears the repeated order.
2. If the lead helmsman did not hear the given order or did not understand the order, they are to say in a **loud and clear** voice: “REPEAT “ or “SAY AGAIN.”
3. If the lead helmsman believes that he received an incorrect order, he is to repeat the order **loudly** in the interrogative and say “REPEAT”. For example, say: “HARD LEFT? REPEAT!!” This feedback to the officer who initiated the order will either alert him to his error and he will correct his order, or he will reconfirm the order that he wants. If he confirms the same order, it must be executed, even if it seems incorrect to the lead helmsman. In this event, the lead helmsman will again repeat the order as he executes the order. Example: “COMING HARD LEFT.”
4. If you are given an order to turn the ship and the rudder does not effect the desired result, advise the officer immediately! Example: “RUDDER HARD LEFT, HELM NOT ANSWERING.”
5. The lead helmsman is responsible for keeping the officer in charge notified of weather/lee helm or of any circumstances which make steering difficult or abnormal.

## Standing Forward Lookout

Lookouts are responsible for detecting, by sight and/or sound, other vessels, aids to navigation, obstructions in the water, light flares, or any other sightings that are seen over 360 degrees of the horizon from the bow.

### How to Report

When reporting to the Mate on watch, report WHAT, BEARING, and ESTIMATED DISTANCE in ship lengths or miles.

- What: Describe as best as possible exactly what you see: i.e. “Flashing white light.”
- Bearing: Use the point system given in the accompanying illustration when reporting the bearing. Remember that if the sighted object is far away, the bearing of the object as seen from the bow will be the same bearing as seen from the stern. Report the angle that YOU see. Do not try to compensate for what you think the angle will be when viewed from the officer’s perspective back aft. Unless object is very close, it will be the same.
- Estimated Distance: Estimate the distance in nautical miles. On a clear day the horizon is approximately 10 miles away. Something halfway from you to the horizon is 5 to 6 miles away. The bow wave of a freighter is typically visible at 3 miles or less. Ship-lengths is your own estimate, and practice will improve your efforts.

Examples of a proper Lookout’s report: “Flashing white light, 2 points on the port bow,” “10 ship lengths,” or “Ship showing red light, broad on the starboard bow, range 5 miles.”

To report, one of the two lookouts shall walk aft and report to the Mate on watch, who shall acknowledge receipt of the report.

### Reporting When the Ship Is In Narrow Channels or Restricted Waters

- When navigating in restricted waters or narrow channels, the lookout may be given a handheld radio to communicate directly with the conning officer. If so, report as directed.
- If an object was reported on the horizon and it comes nearer, report it again.
- The rule is: even if you “know” the Mate has seen it, REPORT IT ANYWAY.

In the event of needing to report a hazard immediately, where the delay of walking the length of the deck is deemed dangerous, shout loudly and strike the ship’s bell; once for an object to starboard, twice for an object to port, and three times for an object dead ahead.

## The Relative Bearing Point System:

There are 32 points for the Relative Bearing Point System. They are each 11 ¼ degrees apart. Relative Bearings are used by the lookout to report sighted vessels or other objects to the officer of the deck. In the illustration below, notice how the Relative Bearing Point System is similar to the points of the compass on page 71.

- Relative Bearing Point System: The cardinal points are Dead Ahead, on the Starboard Beam, Dead Astern and on the Port Beam.
- Compass Point System: The cardinal points are North, East, South, and West
- Relative Bearing System: The inter-cardinal points are Broad on the Starboard Bow, Broad on the Starboard Quarter, Broad on the Port Quarter, and Broad on the Port Bow.
- Compass Point System: The inter-cardinal points are Northeast, Southeast, Southwest, and Northwest.

In the Relative Bearing Point System, *the points between the cardinals and intercardinals are named after the nearest cardinal point.*

For example, one would say “**Two points on the Starboard Bow,**” instead of “Two points forward of Broad on the Starboard Bow.”

Also, one would say “**Two points forward of the starboard beam**”, and not say “Six points on the Starboard Bow.” The diagram to the right shows only the starboard side points fully labeled. The port side points are named in the same way as starboard.

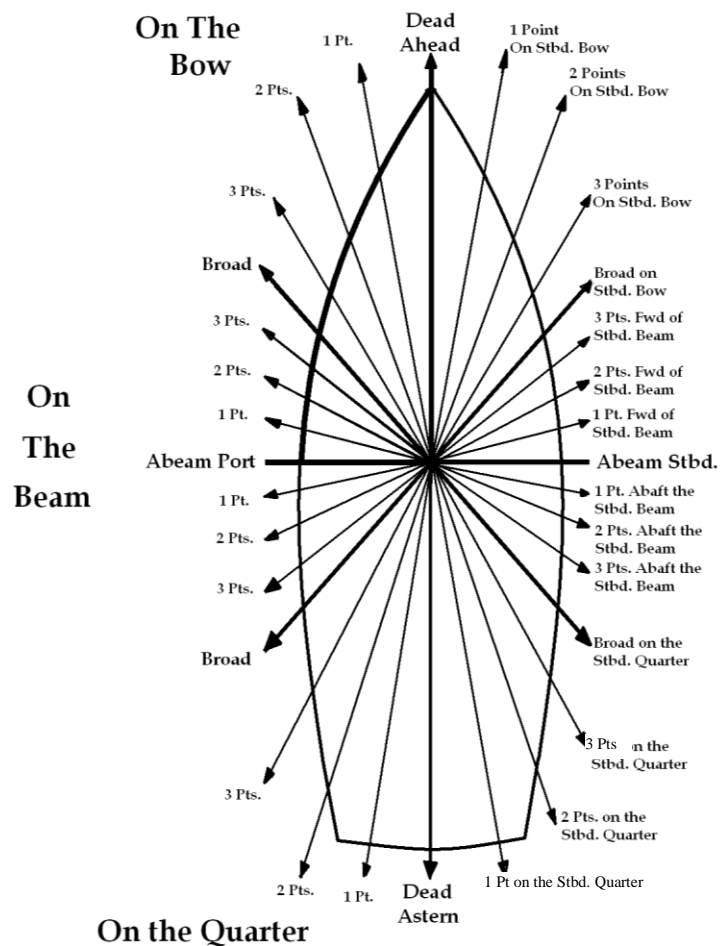


Figure 7- The Relative Bearing Point System

## The Magnetic Compass and Boxing the Compass

The origins of the magnetic compass are not precisely known, but it was developed and probably independently invented by several different seagoing cultures. The Vikings and the Chinese were familiar with one of the earliest forms of compass as early as the eleventh century. They apparently understood the magnetic properties of lodestones, a type of iron ore, which was placed atop a piece of wood and floated in a bowl of water to make a crude compass. When the lodestone was oriented properly, the piece of wood would rotate in the bowl of water and point to the magnetic north pole. Cardinal directions (North, South, East, and West) were painted on the inside of the bowl, and the bowl was rotated so the piece of wood and the symbol for North were aligned.

As compasses evolved, so too did the point system. Intercardinal directions were added (Northeast, Southeast, Northwest, and Southwest). Then eventually, finer subdivisions known as the combination directions (NNE, ENE, ESE, SSE, SSW, WSW, WNW, and NNW), and finally the by-points were added: N x E (said as North by East), NE x N, NE x E, etc. The by-points are named after the cardinal or intercardinal direction that they are nearest. The 32 points on the inner circle of a modern merchant service compass card represent  $11\frac{1}{4}$  degrees per point. Points are further subdivided into  $\frac{1}{4}$  points, but we won't discuss that here. See the diagram below and try to fill in the blanks on the west side of the compass card.

Understanding how the compass card evolved will help you remember how to name the compass directions and points. While the compass point system is considered by many to be antiquated, and is no longer used for steering purposes on ships, the National Weather Service and most ships still use this system for describing and recording weather data such as wind and sea direction. *Remember, when steering on Niagara, we conform to modern practice and use numerical compass courses, not the directional points of the compass. However, we use directional points to record weather observations in the ship's log book.*

Compass point names, abbreviations and numerical values are as follows:

<b>000°</b> - (N) North	<b>090°</b> - (E) East	<b>180°</b> - (S) South	<b>270°</b> - (W) West
<b>011 ¼°</b> - (N x E) North by East	<b>101 ¼°</b> - (E x S) East by South	<b>191 ¼°</b> - (S x W) South by West	<b>281 ¼°</b> - (W x N) West by North
<b>022 ½°</b> - (NNE) North Northeast	<b>112 ½°</b> - (ESE) East Southeast	<b>202 ½°</b> - (SSW) South Southwest	<b>292 ½°</b> - (WNW) West Northwest
<b>033 ¾°</b> - (NE x N) Northeast by North	<b>123 ¾°</b> - (SE x E) Southeast by East	<b>213 ¾°</b> - (SW x S) Southwest by South	<b>303 ¾°</b> - (NW x W) Northwest by West
<b>045°</b> - (NE) Northeast	<b>135°</b> - (SE) Southeast	<b>225°</b> - (SW) Southwest	<b>315°</b> - (NW) Northwest
<b>056 ¼°</b> - (NE x E) Northeast by East	<b>146 ¼°</b> - (SE x S) Southeast by South	<b>236 ¼°</b> - (SW x W) Southwest by West	<b>326 ¼°</b> - (NW x N) Northwest by North
<b>067 ½°</b> - (ENE) East Northeast	<b>157 ½°</b> - (SSE) South Southeast	<b>247 ½°</b> - (WSW) West Southwest	<b>337 ½°</b> - (NNW) North Northwest
<b>078 ¾°</b> - (E x N) East By North	<b>168 ¾°</b> - (S x E) South by East	<b>258 ¾°</b> - (W x S) West by South	<b>348 ¾°</b> - (N x W) North by West

Naming the points, beginning with North and continuing clockwise around the other 31 points of the compass is called “Boxing the Compass.” Any professional mariner should be capable of boxing the compass. See if you can fill in the unlabelled points on the compass card below. Then practice and try to memorize the points so you can box the compass. *While boxing the compass is not an important skill for the three-week trainee, it is elementary education for an aspiring navigator, and therefore will likely be of interest to many trainees.*

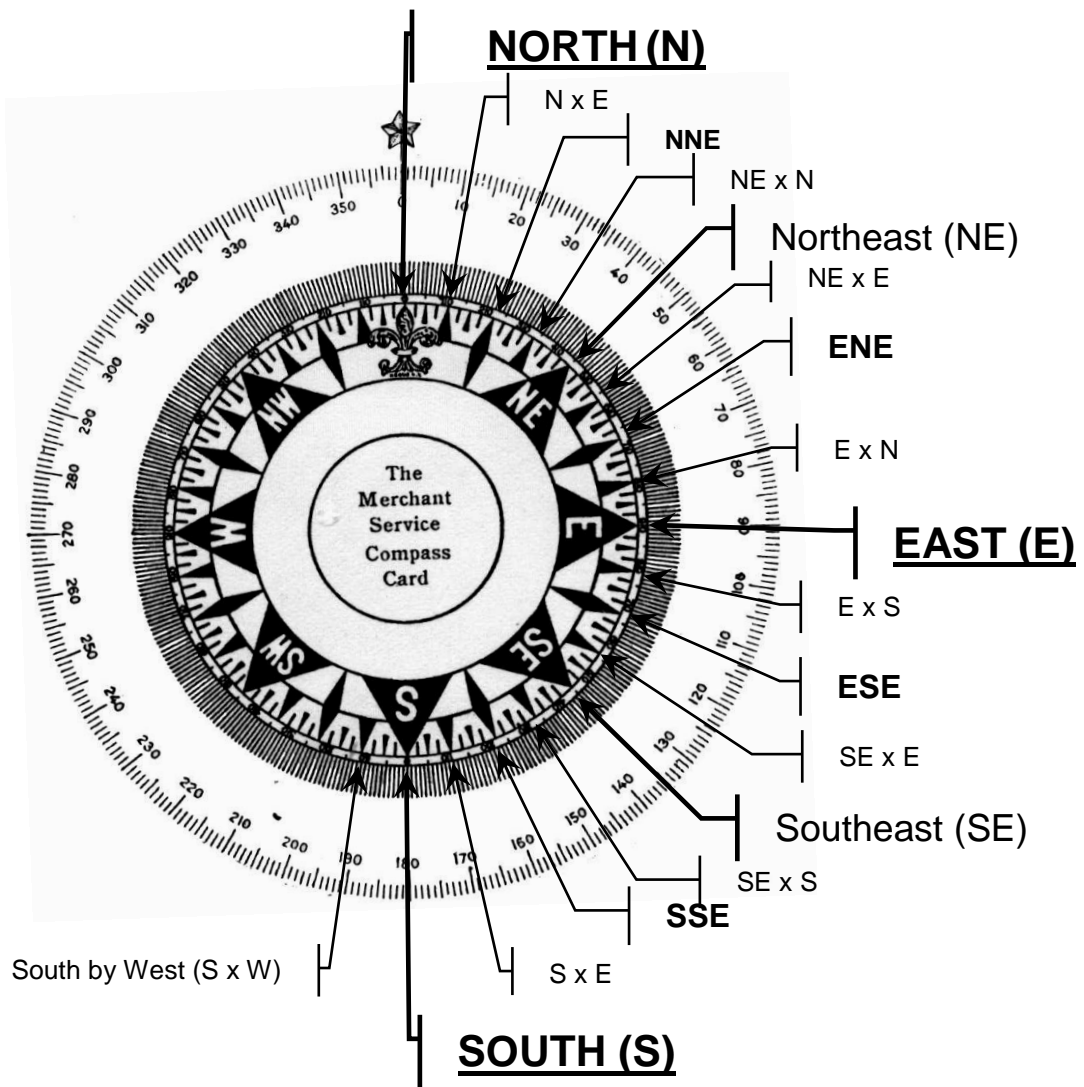


Figure 8- Boxing the Compass



## **VI. HISTORICAL ORIENTATION FOR NEW NIAGARA CREW**

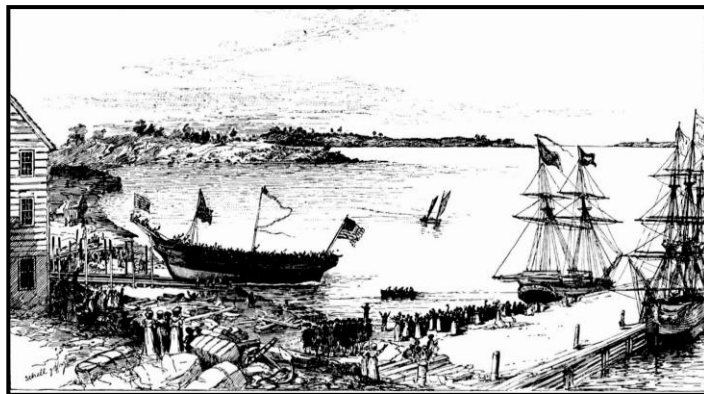
In our home port of Erie, we have tour guides at the Erie Maritime Museum to guide visitors through the ship. However, all crew should be capable of answering visitors' questions. When visiting other ports, the ship's crew take on tour guide duties.

Our mission requires us to share and interpret the ship to the public in a meaningful manner. This means to be as informed and informative as possible and to be cheerful and obliging with our visitors. Some questions will be repeated seemingly endlessly. This makes them no less valid. The following is intended as a start in the interpretive orientation. It is not a substitute for full guide training. Interpretive training sessions will be held occasionally.

In talking to groups, keep in mind a few generalities. Be pleasant and open to the people. Be firm, however, with young (or not so young) children who climb onto the cannon or hatches.

Most of the people that you speak to know little or nothing about what you are talking about, and will listen quietly to what you say and will appreciate your efforts. Pause occasionally and ask for questions. A few will ask some curious questions. Handle them gently and with good humor. A few of your groups may be "buffs" or people with a great deal of knowledge. Don't let them tie up your time and presentation. Use their knowledge if you can. If they do become a problem, ask them to see you after the presentation-tour for more detailed discussion and answers.

Give your talk clearly and with enthusiasm. Show your interest. If you like your subject your audience will respond in a positive way to you.



**Figure 9- Launching a New Hull**

## **Historic Significance: United States Reasons for Declaring War on England**

### **Napoleonic Wars, Conflict of “Superpowers” England and France**

The War of 1812 should be seen in the context of a worldwide series of wars that went on for decades between the two strongest imperial powers of that age. Both England and France were attempting to restrict the other’s trade by seizing neutral ships bound for their enemy’s ports. Although France was just as intent on seizing United States ships bound for England as England was on preventing U.S. trade with France, only England’s Royal Navy had the power to seriously interfere with American commerce.

The Royal Navy was always short of men to man the fleet England so desperately needed to contain France. Many Englishmen were serving in U.S. ships, some were navy deserters, and many more were immigrants. To the Royal Navy, once an Englishman, always an Englishman, and thus subject to impressment, i.e. drafted on the spot into the Royal Navy for an indefinite period.

U.S. merchant ships were routinely stopped and searched by English warships looking for English citizens. Not only did this violate the sovereignty of the U.S. flag over our ships, but very often U.S. citizens were impressed. This was an era before passport photos and fingerprints, and accents had not yet become very different between Englishmen and their former colonists. In any case, a Royal Navy officer seriously short of men was not likely to give anyone the benefit of doubt.

While the issues of neutral vessel’s rights to trade, impressment of seamen, and U.S. financial woes from loss of access to European markets were primary causes of the War Of 1812, there were other factors involved as well.

At the beginning of the 19th century, the United States was beginning to expand westward into the Ohio River valley. The British, with only a tiny population in Canada, did not wish to see the United States growing larger, perceiving a threat to their hold on Canada, and a potential ally of their great enemy France. The British supplied arms to a confederation of Native American tribes, united by the Shawnee chief Tecumseh, in the hope of having a buffer zone to block U.S. expansion. The U.S. frontier states, such as Ohio, Kentucky, and Tennessee, saw this as a direct threat to their existence, let alone growth. British policy stopped short of inciting Indians to attack US Settlements. The continual influx of settlers into Indian lands was the root cause.

The U.S. frontiersmen completely agreed with John Quincy Adams' 1814 statement that it was absurd "*to condemn vast regions of territory to perpetual barrenness that a few hundred savages might find wild beasts to hunt upon it.*" The Indians were to be subdued and forced to modern ways or driven ever further to the west. To many Americans, Canada looked ripe for the taking as well, if only to free North America entirely of British influence.

The New England states, dependent upon seaborne trade, were very much against declaring war on the world's greatest maritime power. Support for the war was loudest in the South and the West, whose freedom to expand was dependent upon removing both Native American and British influence from the interior of the continent. The War of 1812 was not a very popular war. The vote to declare war on England was 79 to 49 in the House and 19 to 13 in the Senate, along regional as well as party lines, the highest percentage of dissenting votes for any declaration of war in US history.

The United States was banking heavily on the fact that Great Britain was embroiled with France and could spare few resources to fight here. Her army was fighting Napoleon in Spain, and her fleet was trying to blockade most of Europe. Many legislators believed that declaring war alone would convince the British to cease seizing U.S. ships and men rather than have to divert effort from fighting France.

In fact, the "Orders in Council" (the English government's policies which prompted the declaration of war) had been rescinded two days before war was declared. But the news could only get across the Atlantic by sailing ship, and hostilities had begun before word reached Washington. In terms of relative power, a declaration of war against Great Britain was an extremely risky gamble for the fledgling United States.

Americans have always had an aversion to maintaining large standing armies (at least until the end of WWII). On the naval side, an efficient fleet had been built to fight the Barbary Pirate states of North Africa at the beginning of the century, but had been allowed to decay for lack of funds immediately after hostilities ceased in 1807. The United States began the War of 1812 with a tiny and ill-prepared army and less than 20 effective warships versus the Royal Navy's nearly 700, the overwhelming majority of which were committed to the war in Europe.

### **Importance of the Northwest Front**

The war began very badly for the U.S. British troops and their Indian allies quickly captured U.S. outposts at Dearborn (now Chicago), Mackinac, and Detroit, leaving the entire

Northwest frontier vulnerable. A U.S. invasion of Canada across the *Niagara* peninsula was beaten back. At the end of 1812 the Northwestern frontier was largely under British control.

The only bright spot in this dismal picture was that the U.S. Navy distinguished itself by winning 5 single ship actions during the first six months of the war. This achievement was due not only to the ardor and skill of the crews but also to the U.S. design philosophy of building maximum fighting power into the few ships we had. Our ships typically were larger and threw a much heavier broadside than the English ships they were fighting. However good these single-ship victories were for boosting U.S. morale, the real damage to the immense Royal Navy was negligible. To put this in perspective, in the preceding twenty years, the Royal Navy had fought hundreds of engagements against French, Spanish, and other European naval ships, and had won all but a handful of these. Large fleet actions had invariably been either a draw or a British victory.

### **Importance of “Sea Power” on the Frontier**

In the Great Lakes region of that era, the surrounding lands were heavily wooded and roadless wilderness. The Lakes and rivers were the only viable transportation routes for large quantities of men and supplies, as well as the fastest. The few land routes in the west were subject to raids by Indians allied with the British. Military control of the Lakes assured one side protection for its supply lines and denied it to the other side, placing a stranglehold on the enemy.

By today’s standards, a sailing ship seems a most inefficient way to travel. To move at all, they were dependent upon the wind being of the right strength and from the right direction, and they had a top speed of 10 to 12 miles per hour. The average speed was more like 5 miles per hour. Yet this was the high technology of the age. Consider that troops with full packs could march at best 20 miles a day on good roads, much less over rough terrain. Nor could men carry many days’ supplies with them on a march. For that, horses and wagons were needed, which could only move a few tons a few miles per day and only in the few places where there was some excuse for a road.

On the other hand, ships could move hundreds of men and hundreds of tons of supplies at a time, at speeds averaging 100 miles per day. A ship could sail 24 hours a day and thus get far beyond where horses and men would have dropped from exhaustion. Even after waiting days for a fair wind, ships were still likely to get ahead of any army marching along the shore. Also, armies were just as weather dependent in needing to wait out heavy rains, which made roads too muddy for wagons. For these reasons, control of the frontier was dependent upon having ships to move men and supplies and being able to protect those ships from the enemy.

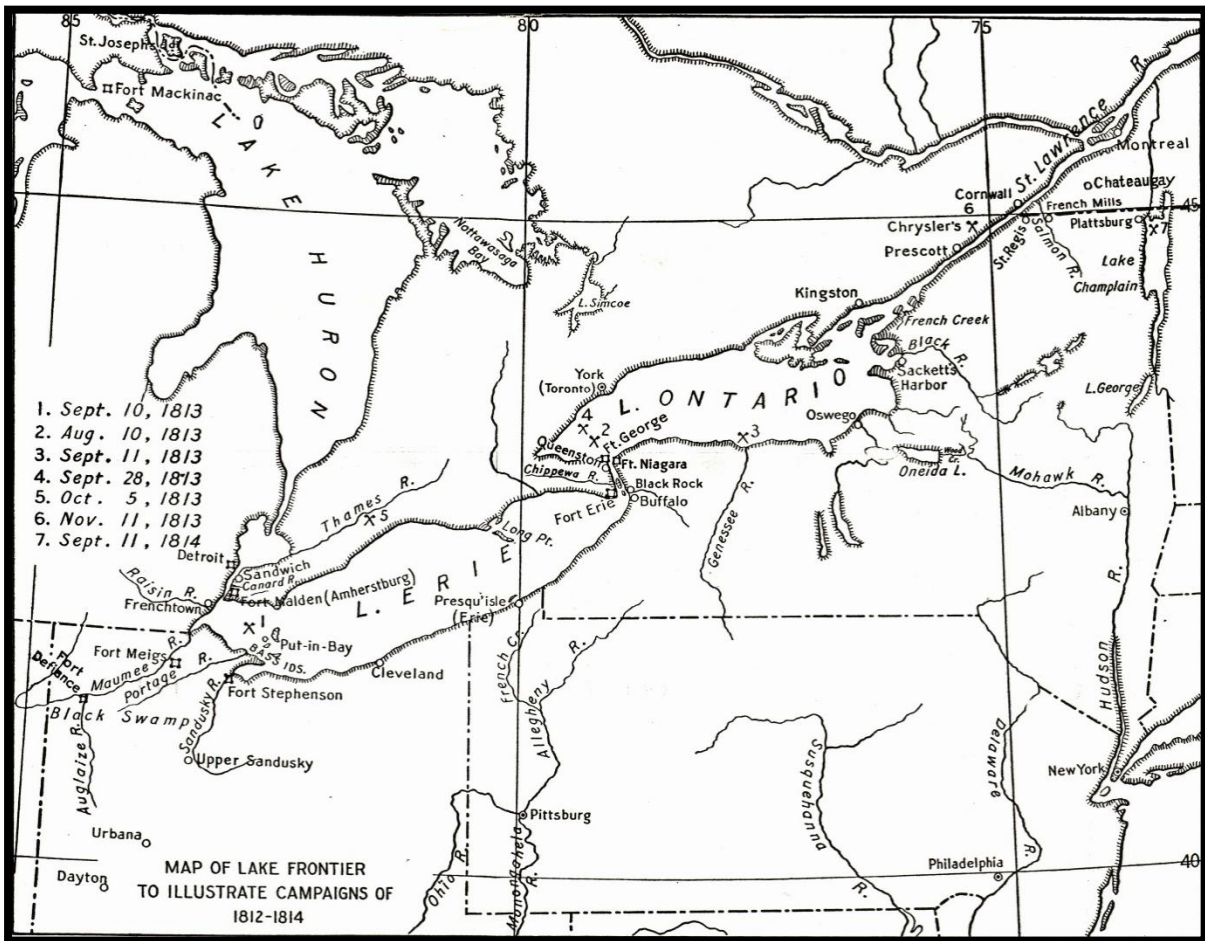


Figure 10- Map of the Great Lakes Frontier, 1813

The map above shows the locations of engagements that were significant to securing sea power on the Great Lakes and are described succinctly as follows: (1) The Battle of Lake Erie, (2) (3) and (4) Indecisive Naval Engagements of Chauncey vs. Yeo on Lake Ontario,

(5) The land battle at Moraviantown on the Thames River, North of Lake Erie, (6) The land battle at Chrystler's Farm on the St. Lawrence River, and (7) The Battle at Plattsburg Bay on Lake Champlain.

### **Building of the Lake Fleets**

The chief obstacle for the British in defending Upper Canada was geographic. Ocean-going ships could not ascend the St. Lawrence River above Montreal. Thus, the strength of the Royal Navy could not easily be brought to bear, and both sides were starting nearly from scratch. Lake Ontario was separated from Lake Erie by Niagara Falls. Therefore, ships for use on either Ontario or Erie and the other upper Lakes could not be brought in. They had to be built there and could only operate on those waters. In this sense the British started out with some advantage in already having some warships on the Lakes, but this was offset by the fact that their supply line to bring in materials for new construction was even longer and more difficult than ours.

## **The Sailing War Ship**

### **Square Rig and Various Ship Types**

Square rig, which was the dominant type throughout the age of sail, is defined by yards (the horizontal spars from which the sails are set) set square to the centerline of the ship. Square rig looks complicated, cumbersome, and inefficient by modern yacht standards. However, it was the only practical alternative for large ships in those days. A modern rig could not be made to stand in the sizes required with the materials then available, which were limited to wood, organic fiber rope, natural fiber sails, and only small quantities of iron in critical places. Dividing up the sail area into many small planes made it easier to support, easier to control, and easier to repair.

Modern rigs are dependent upon the strength of modern materials and the availability of repair facilities when something does break. The seamen of past ages had to be able to look after themselves completely unaided on the far reaches of the planet. In this context square rig was extremely efficient.

Ship rig refers to a vessel with three or more masts, all of which are square rigged. A brig means a vessel with two masts, both of which are square rigged. A schooner refers to a vessel with at least two masts, whose primary sails are fore-and-aft sails, like *Niagara's* spanker (*see illustration- US Brig Niagara Sail and Spar Plan on page 143*).

### **Limits of Ship Maneuverability**

Sailing ships cannot sail directly into the wind. A modern yacht can sail within 45 degrees of the direction the wind is coming from. A traditional schooner may sail between 55 degrees and 65 degrees off the wind. A square-rigger at best will make good a course of about 75 degrees off the wind on either tack, which means an arc of 150 degrees is denied the ship. This means that if one thinks of themselves as being in the center of a circle choosing a direction to go, a pie slice representing over 40% of the circle cannot be sailed into or traversed without a long, slow process of zigzagging back and forth called “beating to windward” Think of going upwind or going uphill on a mountain road with many switchbacks (*see illustration- “To Tack a Brig” on page 150*).

### **Broadside Guns Dictated Tactics**

The seagoing artillery of the era was cast iron cannon, muzzle loading, and chiefly firing solid round shot. Gun size was limited by the ability of muscle power to load and handle guns on a rolling, pitching deck. A further limit was the strain put on the wooden structure of the ship by the weight of the guns and shock of recoil. Guns were designated by the weight of ball fired. Sizes ranged from 4 pounders to 42 pounders, depending on the size vessel the gun was to be mounted on. Larger vessels not only carried more guns, but they could carry heavier ones. Therefore, the difference in hitting power increased geometrically as the ships got bigger.

Because the guns took at least a minute to load, and were not very accurate, it was usually better to have many smaller ones than a few big pieces to increase the chances of scoring hits. The only way to mount a large number of guns was in rows down the ships sides, hence the term broadside. Because only a few guns could fire ahead or astern, battles were usually fought by ships sailing in parallel rows while firing at each other.

The maneuver every commander hoped to be able to accomplish was called “crossing the T.” This meant being able to sail across the bow or stern of the enemy so that a full broadside could be fired down the length of his deck while very few of his guns could reply.

## **Differences between Long Guns and Carronades**

The standard naval gun had an effective range of about a mile and some pretension of accuracy at about half that range. The ball also slowed down and lost smashing power the greater the range. In most actions the majority of damage was done after the ships closed to ranges of under one half mile, the carnage increasing as the range came down to grappling distances.

In 1778 a new type of gun was developed for the Royal Navy by the Carron foundry in Scotland. It was called a carronade, and was soon copied by most navies. This type was about half the weight of a standard gun for a given weight of shot, because it had a shorter barrel with a thinner wall. This meant, for example, that a ship capable of carrying 12 Pdr. long guns could now mount 32 Pdr. carronades. The tradeoff, however, was that carronades could not use as much powder as a standard gun, and therefore were only effective out to about one quarter mile.

A ship could have a great advantage in weight of broadside by arming with carronades, but also could be at the mercy of a ship armed with long guns until the range had closed. Since most actions were decided at short range, the carronade became very popular. This was especially so on smaller ships where the weight of long guns was felt to offset their advantage in range. Large ships carried some of both types.

Ships of *Niagara's* size would typically carry a battery of about 16 long, 12 pdr guns or 32 pdr carronades. *Niagara* carried 2 long 12 pdrs, and 18 carronades, 32 pdrs, a heavy battery for her size.

### **Perry's Problems: remoteness from supply sources, difficulty of recruiting skilled men to a wilderness outpost.**

The initial effort at building a squadron on Lake Erie was begun by Daniel Dobbins, a local shipmaster, in the winter of 1812-13. In March of 1813 an experienced New York shipbuilder, Noah Brown, was contracted to take over building the fleet. Oliver Hazard Perry arrived soon after to command the vessels.



The task was a daunting one. Skilled shipwrights could only be recruited from East Coast cities and had to be persuaded by high wages to march for weeks through Pennsylvania's mountainous wilderness, in winter, to reach the frontier outpost of Erie. Everything needed except wood had to come the same way. To house so many men in winter, the first project was to build more log buildings. A larger town needed to be built, before a shipyard could be established, before a fleet could be built.

**Requirements Peculiar to this squadron: built fast and cheap, needed shoal draft, less need to carry stores than ocean going ships.**

With the expectation that spring could bring a British attack, the need for speed was the paramount consideration. Timber was instantly available in unlimited quantity. But iron for fastenings, rope, sailcloth, cannon, and ammunition all had to be transported hundreds of miles to reach the squadrons. The naval war on the Lakes has often been called the "shipwright's war," in that both sides were dependent upon the skill and speed of the builders before any battles could be fought.

On Lake Ontario the major U.S. base was at Sackets Harbor, near the St. Lawrence River. The British base was at Kingston. On Lake Erie the British were building at Amherstburg, across from Detroit, while the U.S. squadron was built at Erie, which offered the only sheltered harbor on our side of the Lake and was not too far from Pittsburgh for shipment of supplies. The builder, Noah Brown, best summed it up;

*"...though staunchly built, we want no extras. Plain work is all that is required; they will be wanted for only one battle. If we win, that is all that is wanted of them. If the enemy is victorious, the work is good enough to be captured."*

While Erie had Presque Isle Peninsula to create a sheltered harbor, the bar its entrance had at best only six feet of water over it. Lake Erie in general has many shallow areas. Therefore, *Niagara* had to be built with the shallowest draft possible, consistent with carrying her guns and being able to sail. Even so the ships still needed to be lightened and lifted over the bar with camels (barges which could be secured alongside, partially flooded, and then pumped out to lift the ship they were attached to).

An ocean-going warship of the same armament and overall size would have been much deeper. This would help the vessel's overall sailing characteristics but was also necessary to give room to carry fresh water and stores for months at sea on salt water. The Lake Erie squadron could drink out of the lake and did not have to carry supplies for a long campaign, so the lack of room in the ship was not so much of a handicap.

The U.S. Lake Erie Squadron was not ready to sail until August of 1813. The British had more small ships in commission at the beginning of the season but faced identical problems in building their larger vessels.

Due to the bar, the British ships could not enter Erie harbor while the American fleet was still under construction. The British squadron had kept up an active blockade throughout the spring and summer but unexpectedly lifted the blockade to return to Canada, probably for re-supply.

Taking advantage of this, Perry moved his vessels over the bar. *Lawrence* and *Niagara* had to be floated over the bar without their cannon. The British reappeared before the brigs could be re-armed but did not perceive that their adversaries were temporarily defenseless. Being faced with the larger American force, the British retired up the lake to Amherstburg, near Windsor, Ontario.

#### ***Niagara* is the Fourth Incarnation of the Vessel.**

After the war, *Niagara* and several other ships were allowed to sink at their moorings in Misery Bay. In 1913, the Centennial year of the Battle of Lake Erie, the remains of *Niagara* were raised, and a reconstruction of the ship was built up from them. This vessel was towed around the Lakes for visitation in many ports and returned to Erie for public exhibition. By the 1920s, the ship had to be closed due to lack of maintenance, and in 1929 she sank once again at her moorings.

During the late 1930s the ship was again raised, and the hull rebuilt as a public works project. Due to intermittent funding the hull was not completed until 1943, and not rigged until 1963. This time she was an out-of-the-water exhibit only. By the 1980s this third ship had again become too rotten, and the decision was made to rebuild her again and return to her

original form to sail the Lakes. The present *Niagara* was built by shipbuilder Melbourne Smith for the Commonwealth of Pennsylvania in 1988. Some timber from the original ship is carried onboard. The ship first sailed in 1990 and began touring Great Lakes ports in 1991.

**Today's Problems: remoteness from supply sources for authentic materials, difficulty of recruiting skilled crew to a wilderness outpost.**

In a remarkable parallel, developing a sailing program for *Niagara* today faces problems similar in kind, though infinitely less in degree. Because the age of sail is long gone, appropriate supplies, such as pine tar, hemp, etc., are still coming from hundreds of miles away. Because no square rig tradition survives in the Great Lakes, the professional crew has mostly been recruited from saltwater experience.

**Today's Requirements: auxiliary power, navigation, electronics, lifesaving equipment, sanitation.**

While for centuries sailing ships navigated all oceans, the natural hazards were great and shipwrecks with loss of life were frequent. While for centuries sailing ships made voyages of tens of thousands of miles, and returned home safely without the aid of engines, they did not do it on any kind of a schedule. The key was to wait until nature favored a passage, which does not always coincide with scheduled visits to ports. For these reasons *Niagara* sails today with auxiliary engines, inflatable life rafts, a powered rescue boat, and modern navigational equipment in the form of radar, GPS, and radio. Today's crew also has a better chance of staying clean and therefore a lesser chance of catching disease than the 1813 crew.

## **Enter “The Wooden World”**

### **Organization of a Warship**

While all ships are dependent upon good discipline for their safety and efficiency, the needs were particularly exacting in a naval vessel. In addition to sailing the ship, there was another level of drills to master in working the guns and fighting the ship. The numbers of men required for this effort were far larger than required to navigate the ship and brought about management problems just in berthing, feeding, and organizing the work of up to 155 men in such a small space. Everyone had a number and an assigned place for sleeping, setting sail, anchoring, manning a gun, cleaning ship, etc.

All of this effort was directed at achieving the smashing, burning, or drowning of the enemy before he could do it to you. Serious business. Orders needed to be obeyed instantly, even at the cost of many lives. Men needed to be drilled not only to master the skills required to sail and fight the ship, but to acquire the confidence in themselves and their officers, and the habit of obedience, that would permit the ship to continue fighting while rigging, timber, and flesh were being torn apart.

### **Ranks, Duties, Divisions, etc.**

The term “captain” by common usage denotes a person in charge of a ship. But historically “captain” implied military rank. A “master” was a civilian with the navigational skills to be in charge of a ship. Within the military, the more correct term is commanding officer because, particularly on smaller vessels, the commanding officer’s rank was below that of Captain. Commanding officers of naval vessels are always referred to as captain by the crewmembers onboard their own ship.

Oliver Hazard Perry was a “Master Commandant” (equivalent today to Commander), and was temporarily referred to as “Commodore” because he had command over several vessels. He was promoted to the rank of Captain after his victory.

Below the commanding officer were lieutenants who would be in charge of a watch when sailing and in charge of one end of the gun deck in action. Below the lieutenants were the warrant officers; the surgeon, sailing master, chaplain, and purser, and skilled specialists such as bosun, gunner, sail maker, and carpenter. The crew were divided into skill levels of “Able Bodied” seaman for the thorough professionals, “Ordinary” seaman for the less experienced, and “Landsmen” for the completely inexperienced. In the Lake fleets during the War of 1812 these last were mostly soldiers. The crew were divided into two watches and subdivided into many divisions for various tasks.

**Perry's Problems: manning and training with so many green hands in the crew.**

The U.S. Navy in the War of 1812 was strictly a trainee force. Perry had a hard time recruiting experienced seamen to join this tiny fleet in the wilderness. The skilled seamen were a minority; and a collection of soldiers and frontiersmen had to be drilled into a ship's company in only a few weeks.

**Today's Problems: manning and training with so many green hands in the crew.**

While today's *Niagara* does not have to be fought, she does have to be sailed. Once again one third of the crew are professionals and the rest a motley assortment.

## The Sailing Ship as a Machine

### A Purpose for Everything:

It would take days to give a visitor an explanation of every piece of equipment seen on the ship. The point to convey is that every feature of the ship has a very specific function to perform. The items worth calling attention to are the principle systems, and features peculiar to a warship.

- The hammocks were stowed atop the bulwarks not only to get them out of the way but to provide some protection in action against splinters and musket balls.
- Gratings on the hatches were essential to allow ventilation below, where up to 75 men might be sleeping.
- Anchors were essential for keeping the ship off of the land. The land is always the ship's greatest enemy, a fact very seldom appreciated by landsmen.
- The capstan is the most powerful piece of equipment in the ship and is needed for weighing anchor, sending masts up and down, moving her in and out of docks, getting cannon onboard, etc.
- Pumps were an essential part of any ship. All wooden ships leaked more or less and a lot more after a battle.
- *Niagara* is near the upper limit of size for a ship to be propelled by sweeps. Even with the large crew available, it is doubtful if she could be moved at a speed of more than 2 knots under sweeps for any length of time. Sweeps would be needed working in and out of harbors in calm conditions or to maneuver the ship in a calm to bring a broadside to bear.
- Boats were the principal interface between the ship and the shore, especially in a wilderness area devoid of developed ports. Boats were needed for communicating and bringing supplies onboard, but also to tow the ship, run anchors out, take soundings before bringing the ship into a questionable channel, carry raiding parties ashore, or attack small ships anchored in shallow creeks.

## **Life Onboard Ship**

### **Sustaining Life in a Small City on a Watery Desert**

Any ship is an intensely urban environment, but none more so than a sailing warship. It would be hard to find another situation in which space and resources were so limited. It is hard to imagine 155 men living onboard *Niagara*. While the Lake Erie fleet was engaged in a very short campaign with frequent shore contact, many oceangoing warships were no larger on deck or in berthing areas but had to keep the sea for six months or more. At sea the single most important ship's store was fresh water. Sailing in fresh water was probably the most appreciated benefit by the saltwater men. But food and all other supplies had to be carefully planned for, carefully stowed, and tightly rationed.

### **Berthing and Watches**

The ship's company was divided primarily into two watches, alternating four hours on and four off day and night. A portion of the men, such as cooks, sail maker, carpenter, surgeon, were not on watches. Commissioned officers and warrant officers had cabins. The rest of the crew slept in hammocks. There was insufficient space to hang all hammocks at once. While every man had his own hammock, the use of space to hang it was shared with someone in the other watch.

### **Meals, Grog**

Meals were eaten on deck, on an oiled "mess cloth". A mess was usually seven to ten men. Because meals were one of the few social occasions in the day's routine, men were allowed some freedom in choosing their messmates. A man who didn't like the company or was ostracized from one mess might be invited to join another where he had a friend. One member of the mess was appointed cook of the mess on a rotating basis. The job was not to prepare food but to go to the galley to get it from the cook and to clean up his mess' utensils afterwards.

The food at best was plain and plentiful. The beef or pork was preserved in salt and needed soaking for hours before it could be cooked. Ship's biscuit was appropriately named "hardbread" ("hardtack" in later periods). It was unleavened flour and water, baked into rock-hard discs, being the only available bread that would keep for long periods. Cooking was limited to simple stews and soups; a single small stove for 150 men meant one pot

menus. Coffee or tea was served when available, and small rations of sugar or molasses were issued when available.

Vegetables were usually limited types that would keep without refrigeration. The greatest deficiency in the diet was fruits and green vegetables. On long voyages scurvy, from Vitamin C deficiency, was a common and sometimes fatal ailment. On the Great Lakes Fleet there was probably enough fresh food coming onboard to prevent this.

Meals were served three times a day; but at times the weather conditions, or proximity to the enemy, required putting out the galley fire so no hot food could be served.

The social highpoint of the day was the daily grog issue, usually served twice, before the noon meal and in the Dog Watches. Grog started in the Royal Navy and consisted of rum mixed with water. The amount of the ration and the strength of the mixture varied over the centuries; but in this period on American ships, the ration was 1/2 pint of spirits per day, which was diluted into grog with equal parts of spirits and water. The U.S. Navy took most of its operational models from the Royal Navy, and the grog ration was standard on American ships until 1862. The Royal Navy continued the grog ration until 1970. U.S. ships usually served whiskey instead of rum.

### **Possessions, Pay, Recreation**

The crew of a sailing man o'war could have very few personal belongings onboard with them. Officers typically had the contents of one trunk in their cabins. Seamen usually had few possessions beyond a change of clothes, one heavy coat, knife, and a few tools. All clothing had to be able to fit into a duffel bag. Pay was in cash, usually a month's advance on joining for a one or two year enlistment. Subsequent pay might be a long time in arrears. Officer's pay was from \$40 to \$75 per month, warrant ranks from \$15 to \$30, and Able Seaman at \$11 per month. In the economy of that era, these were considered respectable wages.

While there was precious little time for recreation onboard a sailing warship, the dog watches from 4-6 pm and 6-8 pm (so called because the purpose was to "dog" or rotate the cycle of four-hour watches so the same watch did not always have the midnight watch) were often the time of day when work and drill were suspended and men were free to socialize.

Music was an important recreation onboard. While merchant ships routinely employed songs (chanteys, pronounced "shanty") to help the crew pull together on a line, this was frowned on in warships. The big crew in a warship made the work less hard and yet all the more important that orders not be drowned out by too loud a chorus. Instead, it was common



to have a fiddler or fife player give a tune at all-hands evolutions such as weighing anchor. A solitary musician could keep an eye on the officer of the deck and stop instantly if he saw an order was about to be given. At most sail evolutions and during any gun drill strict silence was the rule.

### **Prize Money**

In the age of sail, it was relatively hard for the guns to sink ships. Even a hard-fought action might leave a ship a dismantled and splintered hulk with numerous casualties, but with very little underwater damage. Therefore a defeated ship was usually captured. Capturing ships rather than sinking them was the end in itself. The captured ship might be repairable for use in one's own navy, her armament and stores could be of good use, or she might have valuable cargo onboard.

The practice after capturing a ship, especially a merchant ship with a valuable cargo, was to put a portion of the victor's crew onboard as a "prize crew" and sail the capture to a friendly port where it could be sold. A captured warship was usually "purchased" into government service. It was recognized that sometimes the most gallant action produced no "prize" in that the defeated ship sank or was too badly damaged to be sailed home. Lest morale suffer for heroism going unrewarded, governments typically made an award in cases where a victory produced no recoverable cash, as was the case for the Battle of Lake Erie.

The Prize Money awards were approved by Congress, based on a very complicated distribution of twentieths and lesser fractions, the amount proportional to rank. The total award was \$255,000 distributed among 532 men;

\$12,750 to Commodore Chauncey, Perry's superior on Lake Ontario

\$12,140 to Perry, the Commander in the engagement

\$ 7,140 to Elliot, 2nd in command

\$ 2,295 each to other officers

\$447 to \$1214, in varying amounts for lesser ranks

\$215 each to Able Seamen.

The practical result was that senior officers often became the equivalent of millionaires (Perry's award was more than 10 years' pay), and common seamen could gain over a year's pay in a day if they survived. While one should not discount the patriotism and devotion to shipmates and duty of the U.S. Navy or the Royal Navy in this era, it still must have been

easier to face the chance of death or dismemberment on a 1/2 pint of whiskey and with a chance of wealth in the balance.

### **Where Did the Men Come From?**

At the beginning of the war, Perry was in command of a squadron of gunboats at Newport. These were small coastal defense vessels, not likely to see much action. Perry put in for a transfer to the Northwest to find action. About 50 of the experienced seamen in the Lake Erie squadron were from the gunboat squadron who requested to transfer with their commander. Another contingent was from USS *Constitution* and had seen action already, while others were from warships blockaded in East Coast ports.

It is unclear just how many of Perry's men were experienced seamen, but the number was probably between 170 and 200, about 1/3 of the squadron. The rest of the crews were filled out with locally recruited landsmen, Kentucky militia, and various U.S. Regular Army units. Marines in the fleet were a mixture of U.S. Marines, other regular infantry, and militia riflemen.

### **African-American Seamen in the War of 1812**

Seafaring was one of the trades free blacks could participate in with less discrimination than most shore jobs, and they were frequently employed onboard ship. Also, some slaves were hired out by their owners to serve onboard ships, and some officers brought slaves onboard as personal servants/seaman. In the saltwater U.S. Navy of the time, about 20% of the enlisted personnel were black. Although ineligible for officer status, black seamen in this period received the same wages and lived in the same quarters as white seamen of the same rank

It is known that many of Perry's crew were black but just how many cannot be determined because muster rolls did not list race. The official policy was to limit recruitment to free white males. Each commander, however, was responsible for recruiting for his own ship. The obvious choice when confronted with a need to man the ship was recruit whoever was qualified and available, but avoid any objections from higher up by not making any mention of race.

Even if the 20% average of enlisted men were applied to the Lake Erie squadron, the overall percentage would likely be lower, perhaps 10-15% because officers and warrant officers were exclusively white. Furthermore many of Perry's men were from local militia and army units. These units were officially limited to white enlistment. In 1814, Usher Parsons, the Surgeon on *Niagara* during the battle was quoted as saying "One in six or one in

eight was black.” War-time needs led to inclusion of non-whites, but to what extent is not known.

What can be said is that black seamen served in all theaters of the war, often with distinction. Those who served at Lake Erie were probably among the more experienced seamen, from the pre-war regular Navy, and thus made a significant contribution to this campaign where trained seamen were in short supply.

The Royal Navy also recruited free blacks, but again we do not know precise numbers. Part of the Canadian defense along the *Niagara* peninsula was the “Colored Regiment,” many of whom were runaway slaves from the U.S. Thus African-Americans served on both sides in this conflict, but identification of individuals has proved difficult.

### **Perry’s Problems: disease**

Disease was the great unseen enemy. Knowledge of sanitation was minimal, and conditions for spreading infection could scarcely be better than a crowded warship utterly lacking in modern sanitation. In one sense a saltwater environment was healthier, in that the surroundings were inherently antiseptic. There was also no chance of drawing drinking water from the same source the heads were discharging into.

On the Lakes in a calm anchorage with no tide, the sewage discharge from several hundred men created a real problem. Dysentery was a very common affliction of both sailors and soldiers in the campaigns of the War of 1812. Fevers were also common. All told, up to a quarter of Perry’s men were on the sick list at any given time, including the day of the battle. Perry himself had been suffering from fever the day before.

## **Officer Country**

### **Requirements of Naval Discipline**

On any warship, but even more so in the age of sail, there is a social gulf between officers and men. Berthing and messing are in different parts of the ship, and officer country is strictly off limits to anyone without business there. On a sailing ship there was virtually no privacy, certainly no place where officers and men could get away from each other. This made it all the more important for proper protocols and service etiquette to be adhered to. While naval discipline was perforce strict, there were several compensating factors that fostered good morale and made a bond between officers and men.

All onboard faced a common enemy in the sea. While an infantryman might wonder of what use the officers were between battles, sailors saw their officers demonstrating competence in the everyday handling of the ship, without which they might well drown. While a general may have to keep to the rear in order to direct a battle, a naval officer in charge of a ship or a fleet is usually at the same level of personal risk as the lowest ranking seaman.

### **Wardroom as Surgeon's Cockpit**

“Cockpit” was the term given to an area of the lowest deck in a large sailing warship where the wounded would be taken in action. On small warships such as *Niagara*, the wardroom, or officer's dining room, was used as the surgeon's station. Naval battles were essentially close range artillery duels against tightly packed masses of men in a wooden structure. Compared to land battles fought chiefly with small arms, the carnage was often on a horrendous scale.

Aside from outright dismemberment by cannonballs, most of the casualties were caused by wood splinters. A ball smashing through the bulwarks and slamming into a mast or gun carriage would shatter timbers and spray torn wood in all directions. The surgeon's options were limited to bandaging punctures and lacerations, and amputating shattered limbs. Wounds to organs were most often fatal due to infections. Whiskey was the only anesthetic, and in the heat of battle the need for speed often prevented serving any.

It was not unusual for up to a third of the crew to be casualties in a hard-fought action, although ten percent was a more common average. Ninety-six U.S. wounded were treated by Surgeon's Mate Usher Parsons after the battle, and well over 100 British casualties. Only three died from their wounds, a remarkable achievement. Parsons was not a fully qualified

surgeon, but since the surgeons were all too sick to be of help, he had to travel from ship to ship to deal with all the wounded.

## **Fighting The Ship**

### **Clear for Action! (This section written by John Eck)**

Upon sighting a suspected enemy, a naval vessel would “clear for action.” A vessel like *Niagara* could have been made combat ready in around 15 minutes. Each crew member had pre-assigned duties and stations. Below decks, the gunner and his mate(s) were busy opening casks of powder and ladling them into flannel cartridges (flannel because it burned completely leaving no smoldering residue in the gun’s muzzle). Powder monkeys were generally ship’s boys whose task it was to hurry the cartridges from the magazines to the gun crews. These cartridges were carried in a cylindrical leather pass box. To cut, scrape, and ladle, the gunner used copper or brass tools so as to avoid striking sparks.

Nearby, the surgeon would set about preparing the wardroom for surgery, covering the table with sail cloth, and laying out tubs for amputated limbs and severed flesh. Decks were wetted and sanded to retard fire and provide better footing when the blood began to flow.

Each man had a pre-assigned gun and position on that gun. At anytime he could be called off that position to fill in elsewhere for casualties. Also, he could be sent aloft (if a sailor), or to carry the wounded below, or even to man the pumps. If the enemy drew close alongside, he could be called off to take up his station in launching or repelling a boarding party. Pistols, cutlasses, pikes, and boarding axes were also pre-assigned to crew members.

Orders to the gun crew followed the chain of command from commander through the officer of the deck, to the “gun captain.” The gun captain’s job was to direct the loading, aiming, firing, and general exercise of the piece. With six other men, the *Niagara*’s carronades were furiously worked amidst the organized mayhem of battle. It is hard to imagine gun crews staying by their guns through the deafening roar of black powder, the cries of the wounded, and the crash of timbers.

After a gun was fired, it normally recoiled inboard to the extent the heavy breeching line allowed it. In this position, the men worked the muzzle, worming, sponging, and ramming in succession. Their job was to remove any debris from the gun tube, to swab out the tube extinguishing sparks, and to ram home the cartridge, wad, shot, and wad in that order. The

wadding sealed off the cartridge from the air, thus creating greater pressure when it exploded. The second wad was a means of preventing the shot from possibly rolling or sliding out when the ship rolled.

When loaded, the gun was “run out” the gun port (this was accomplished by the use of side tackle attached to each side of the gun carriage and attached to the bulwark). Then the gun captain cocked the large flintlock mechanism which would strike a spark into the vent when the trigger lanyard was jerked. Slow matches on linstocks and even pistols were used as back-up fire ignition systems. Depending on the phase of the battle, the gun captain might await the orders of the quarter gunner or be given the order to fire at will.

Marines were posted at all the hatchways with muskets and fixed bayonets to prevent anyone from leaving their assigned battle positions. Other marines would be on the guns or aloft firing down on the enemy’s decks from the fighting tops halfway up each mast. In a boarding action, these “leathernecks” (so called because of the leather stocks or collars they wore) would, no doubt, be conspicuous.

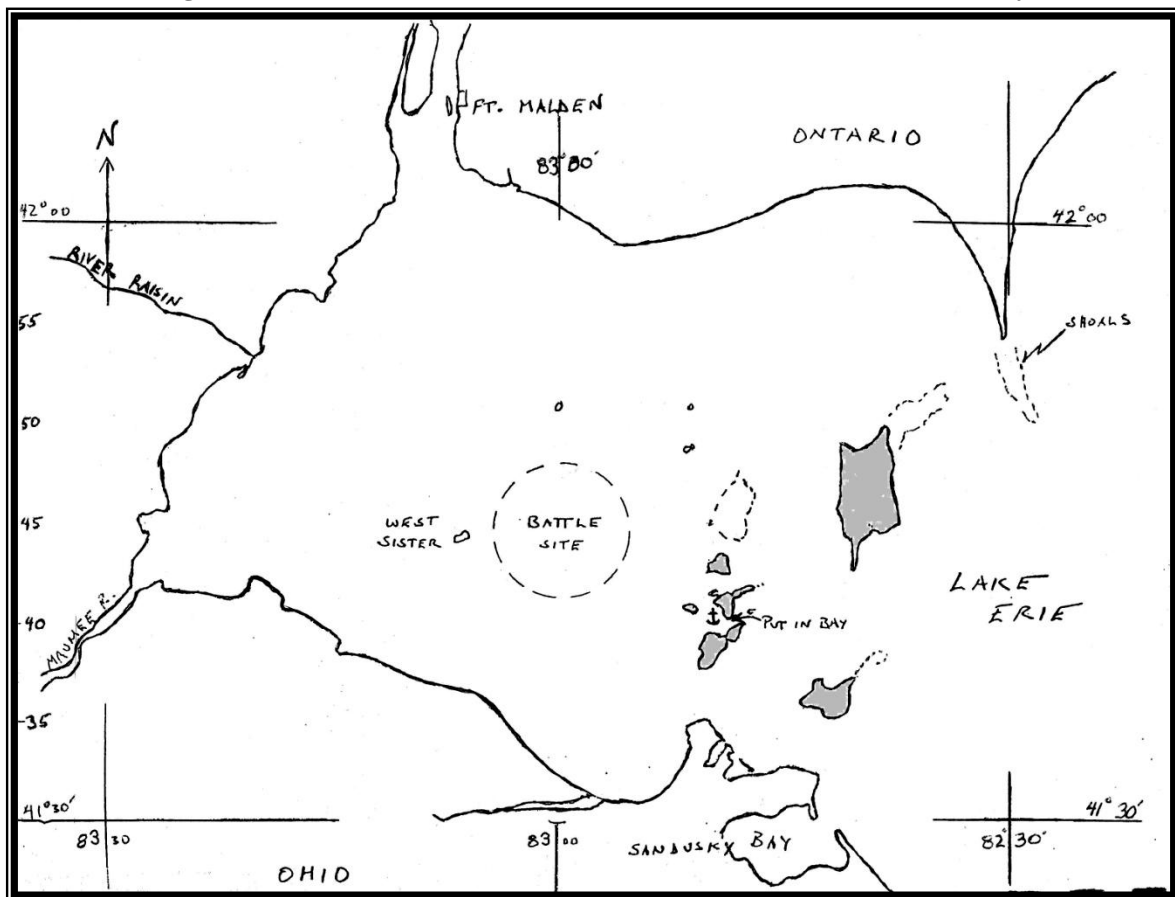
## Events of September 10, 1813

(Resume Rybka Narrative)

Perry had cruised the length of Lake Erie looking for the British squadron in the last weeks of August. Now, in early September, he knew Barclay, the British commander, was hurriedly struggling to complete his own largest ship, *Detroit*, at Amherstburg on the Detroit River.

Perry set up a base at Put-In-Bay, the only good anchorage from which he could watch for a sortie by the enemy. The British were extremely short of food, and either had to re-supply or be forced to retreat from Detroit and southern Ontario. They could not get through with supply ships until the U.S. squadron had been defeated. If they waited, hunger alone would defeat them.

Figure 11- The Battle of Lake Erie- West End of Lake Erie, Near Put-In Bay



Barclay needed the battle as soon as possible, even though his crews had even fewer experienced men than Perry's. His largest ship, HMS *Detroit*, was being rigged and armed immediately before the battle. This meant her crew had no chance to drill or become familiar with the ship. Perry had at least had a month and a half to get his men into shape.

At dawn on Sep. 10, Barclay's squadron was sighted approaching Put-In-Bay. Within minutes, the U.S. squadron was making sail and weighing anchor to meet them. Initially, the wind was southwest, and Perry's ships spent some time tacking back and forth between Rattlesnake Island and South Bass Island. They could not make enough ground to windward to beat out, and Perry had just ordered the ships to run to leeward of Rattlesnake Island when the wind shifted toward the southeast and enabled them to keep to weather of Barclay.

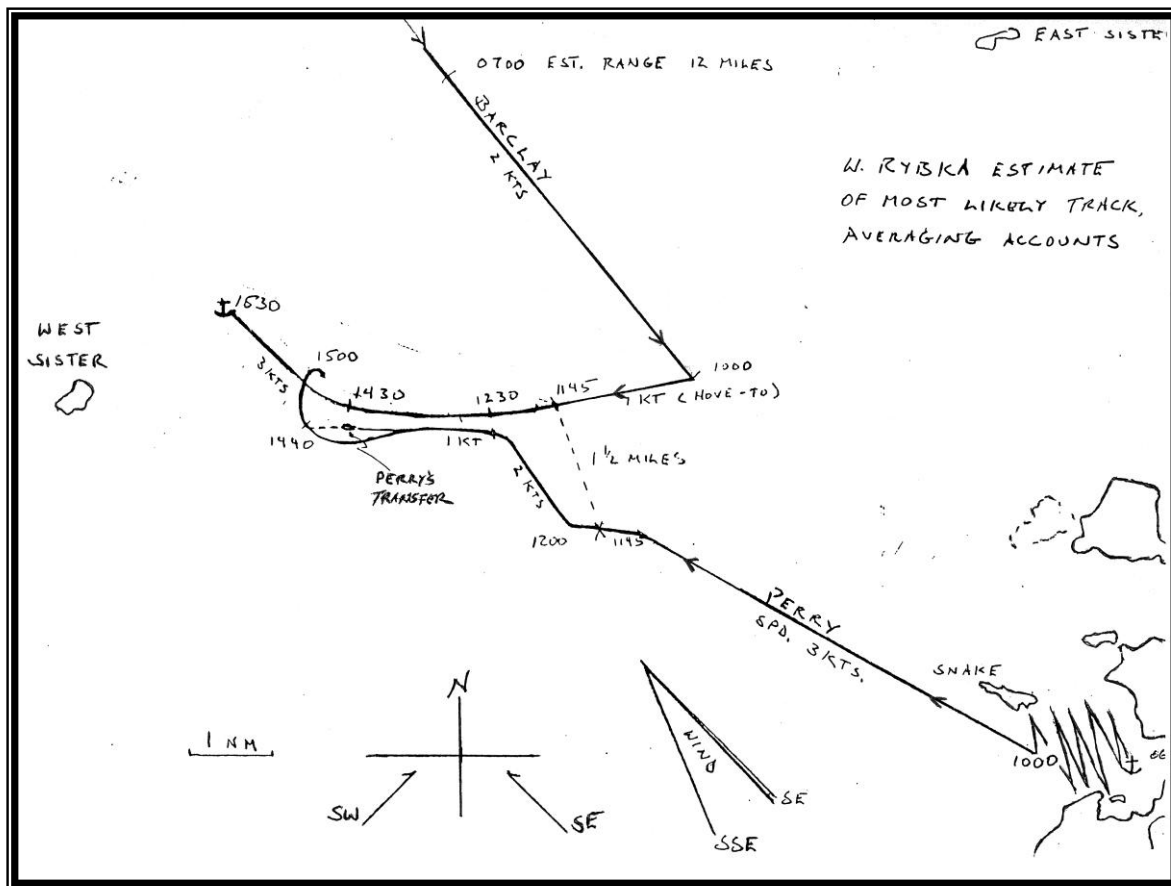


Figure 12- The Battle of Lake Erie, Timeline and Most Likely Track

Barclay went about and formed his line on the port tack, heading west. This gave him more sea room and would keep Perry from getting between him and his base. Perry also



formed a line on port tack and stood toward the British line. His own line was planned to oppose his two largest ships, *Lawrence* and *Niagara*, against Barclay's two biggest, *Detroit* and *Queen Charlotte*.

The U.S. squadron numbered nine vessels to the British six, but nearly all the power of both squadrons was in their two largest ships, the rest being small vessels with only a few guns each. In terms of total number of guns, the two fleets were fairly evenly matched. However, the heavier weight of shot of the short range U.S. carronades gave Perry a great advantage in close range gunnery. The broadside weight was about 150% of the British.

In terms of manning, the U.S. had an even more significant advantage. While the numbers of men were similar, 532 for Perry and a few more for Barclay, a much higher proportion of Perry's men were regular US Navy. The odds were very much in favor of the U.S.

Before the battle began, Perry hoisted his personal flag, inscribed with the motto "***Don't Give Up the Ship.***" These were the dying words of Capt. Lawrence who as commander of the U.S. Frigate *Chesapeake* had been mortally wounded while engaging the frigate HMS *Shannon* earlier that year. *Chesapeake* had just signed on a mostly green crew and was in no way ready to fight when Lawrence deliberately challenged the seasoned *Shannon*. The battle was over in fifteen minutes, with *Chesapeake* forced to surrender. Despite the severity of the defeat, Lawrence's determination made him a hero; Perry's flagship was named in his honor. *Niagara* was named for a recent land victory in that area.

### **Perry's Problems: Elliott lagging behind**

Barclay had an initial advantage in that his armament was chiefly in long guns which outranged Perry's carronades, even though Perry could throw a heavier broadside once in range.

The British did a good job of station keeping; their compact line made for mutual support, but this is also simpler to do when awaiting attack from the lee gage position. The wind was now from the south, although extremely light; and Perry was running down towards the British. This made the differing sailing abilities of his ships more noticeable, as well as forcing him to present his bows to the enemy and endure fire before his broadside could be brought to bear.

Perry's orders to his fleet were to stay close to the *Lawrence*, close to the enemy, and in line. For reasons never fully explained, Elliott kept *Niagara* back, nearly out of range. Elliott's defense was that his orders were to keep station behind *Caledonia*, a small brig in

between *Lawrence* and *Niagara*, which proved very slow, but this omits the more important functions of supporting the Commander and closing with the enemy.

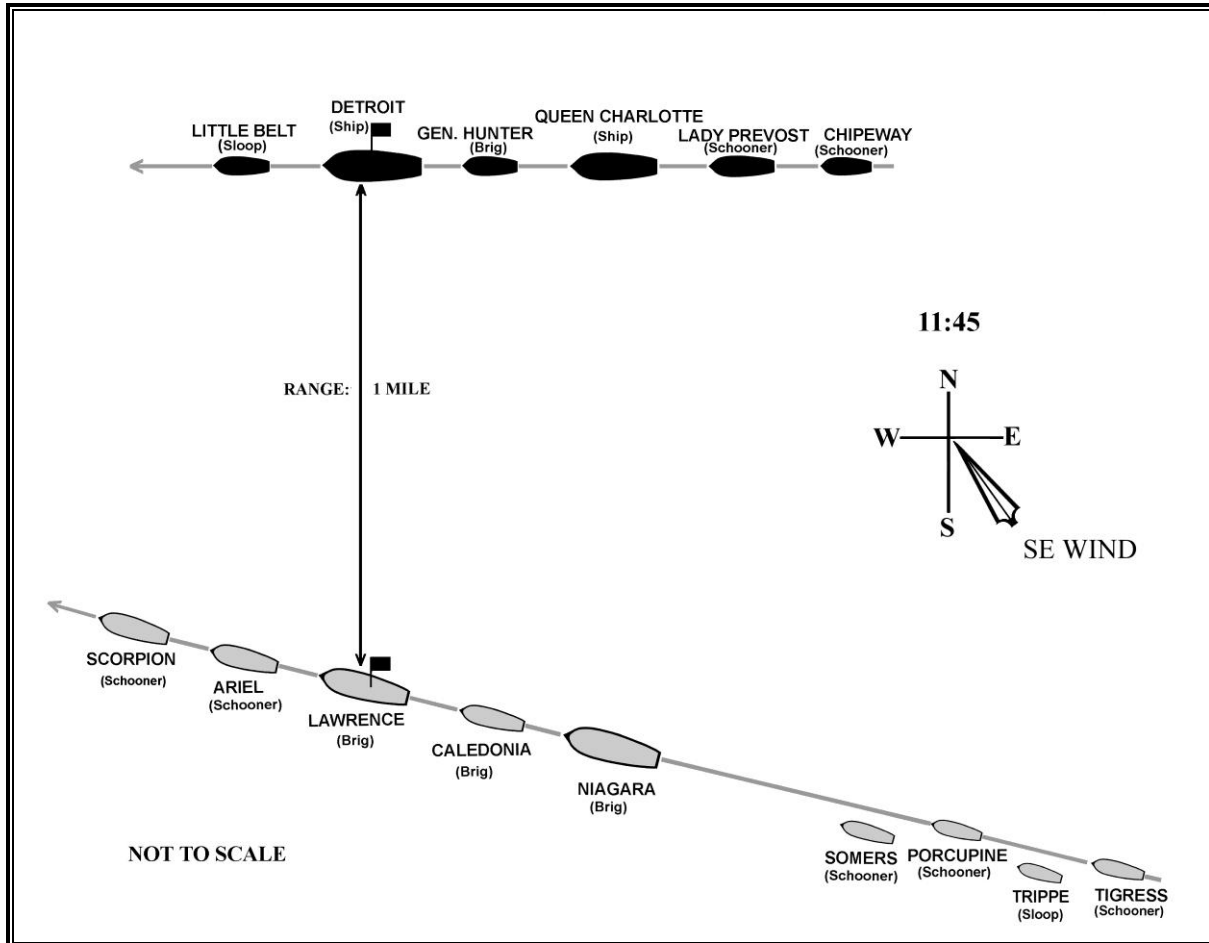


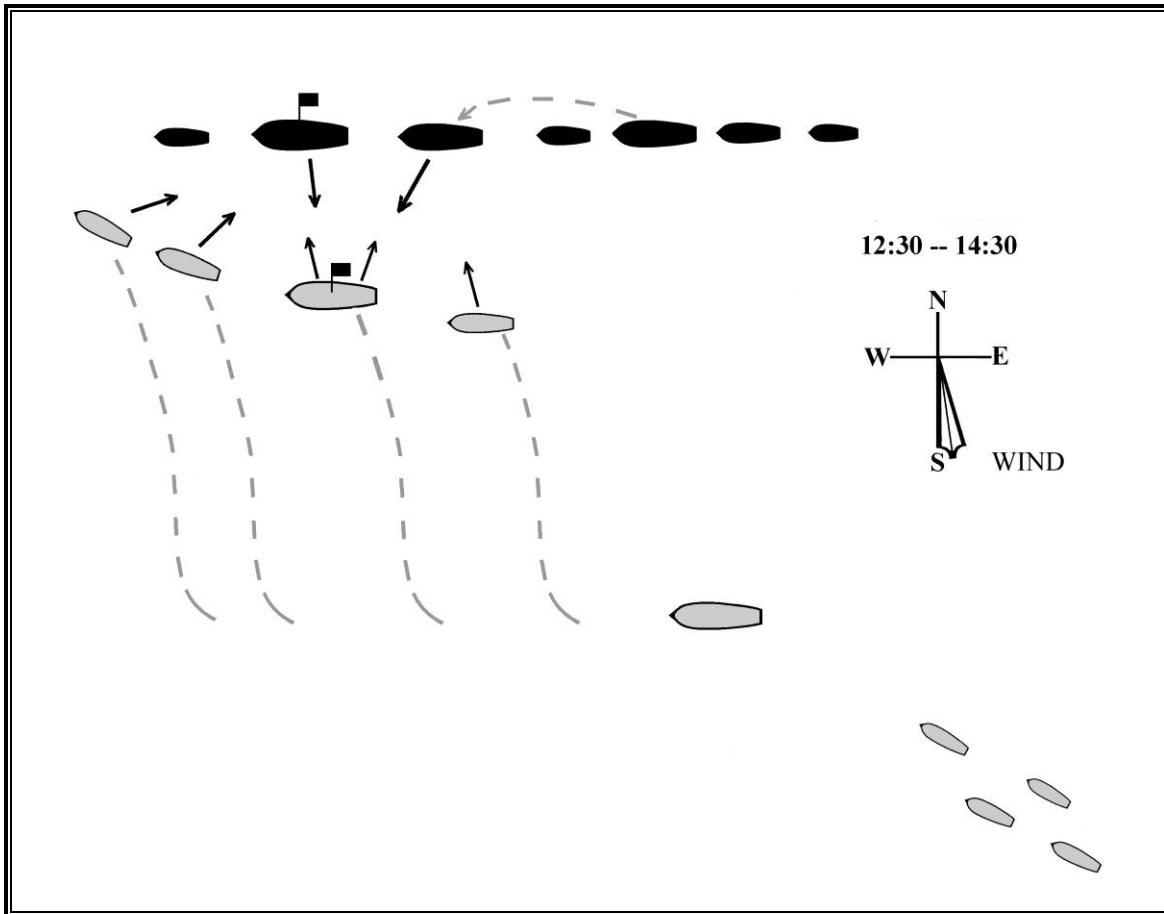
Figure 13- The Battle of Lake Erie at 1145

### Achieving Concentration of Force

The battle opened at 1145 when a British 24lb. ball struck *Lawrence*. The light breeze meant the ships were moving so slowly that it took Perry the next 45 minutes to close the range from about a mile down to the 200 yards or so at which range carronades were most lethal. During all this time *Lawrence* continued to receive fire she could not answer except with the two long 12 pounders. By 1230 Perry was able to open fire in earnest. Because Elliott failed to close, Perry found himself under fire from both the large British ships and a smaller brig as well. The concentration of force at this point was completely with the British

### Carnage on the *Lawrence*

The result of this situation was that for the next two hours *Lawrence* fought an artillery duel on very uneven terms. While her own 32 lb. carronades were inflicting great damage on the British, the combined weight of fire of *Detroit*, *Hunter*, and *Queen Charlotte* eventually put all of *Lawrence's* guns on the engaged side out of action.



**Figure 14- Battle of Lake Erie 12:30- 14:30**

Eighty percent of the men fit for duty on *Lawrence* were casualties, 22 killed and 66 wounded, a proportional toll seldom exceeded in the age of sail.

### Giving up the Ship: Transfer to *Niagara*

Perry had the great good luck to remain uninjured while his ship became a shattered slaughterhouse around him. With both guns and crew gone, there was nothing more that could be accomplished from the *Lawrence*. Perry further had the luck that one of the ship's boats was still intact towing astern.

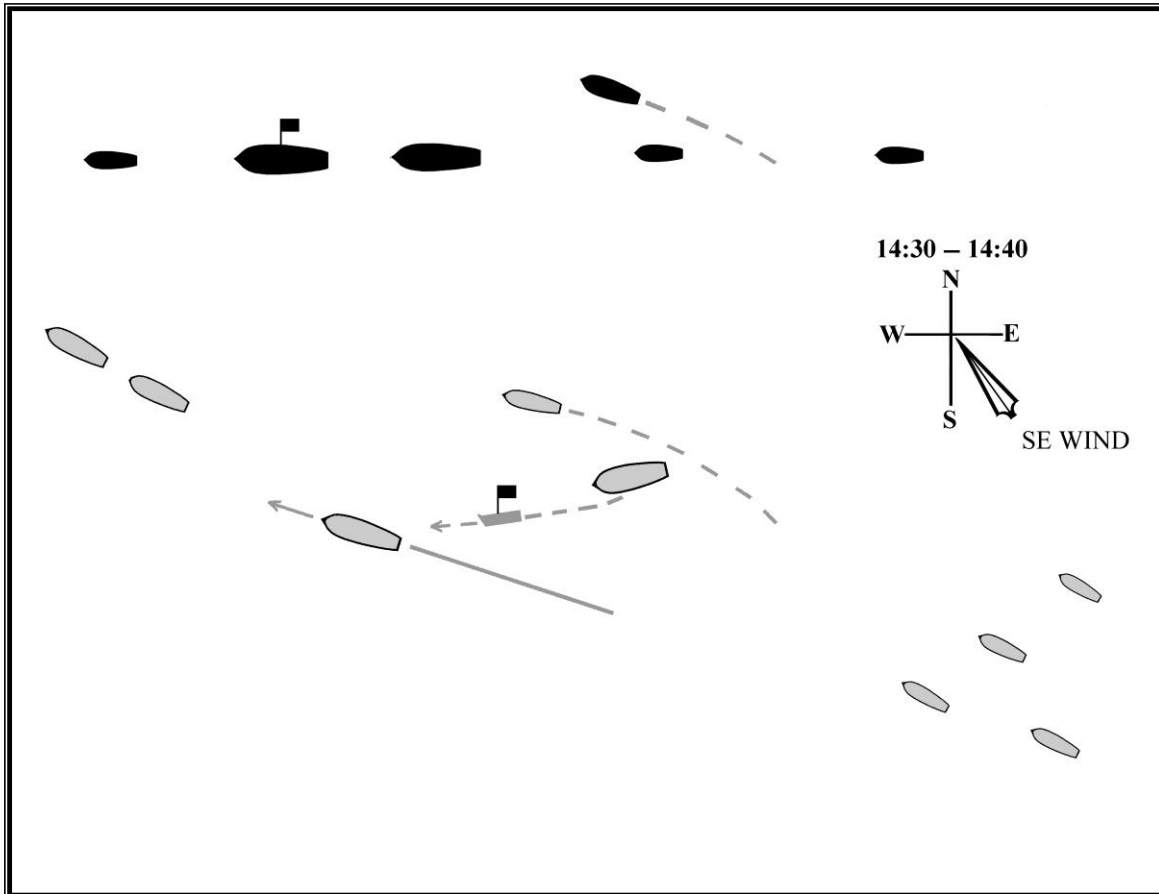


Figure 15- The Battle of Lake Erie 1430- 1440

Perry saw that *Niagara* was still undamaged and determined to continue the fight from her, using the boat to transfer. Perry turned over *Lawrence* to Lt. Yarnall, who later struck the U.S. flag to surrender to avoid further useless slaughter. The British were unable to put anyone onboard to take her as prize because all of their boats had been destroyed.

Perry's amazing luck held in that he survived the transfer to *Niagara* under a storm of British fire. Had he not made it, he may have gone down in history as being killed while fleeing from his ship in defeat.

Upon reaching *Niagara*, Perry had a short and grim meeting with Elliot. Accounts predictably differ as to the words exchanged. Elliot apparently suggested and Perry accepted that Elliot should go off in the boat to encourage the smaller vessels to close up. The breeze was now freshening enough for them to make better speed in any case, and they were eventually engaged. Immediately after Elliot's departure, Perry proceeded to sail the fresh *Niagara* into the British line to closely engage.

### **Collision of Detroit and Queen Charlotte**

By this time, 1440, all the senior officers on both *Detroit* and *Queen Charlotte* were either dead or had suffered incapacitating wounds. Many of their port guns were also dismantled. Their rigging had been badly shot up as well, rendering them all but uncontrollable.

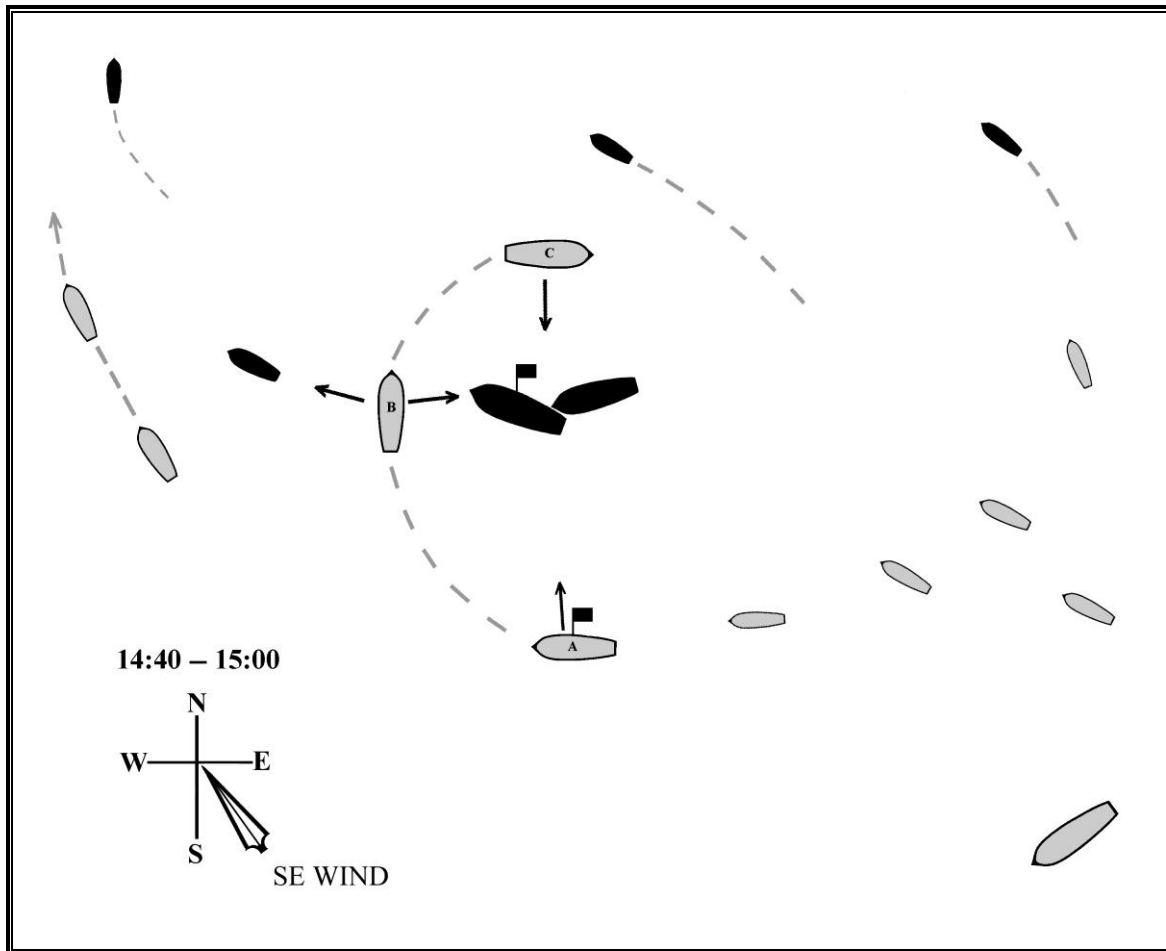
The junior officer in charge of *Detroit*, on seeing the *Niagara* bearing down, struggled to wear ship (a 180 degree turn away from the wind) to present his less damaged starboard battery. *Queen Charlotte* could not wear due to rig damage, with the result that her headgear fouled the *Detroit's* mizzen rigging. The two ships became locked together and were helpless.

### **The Victory**

Perry's luck had been crowned by the British catastrophe, which allowed *Niagara* to cross the T on both British vessels simultaneously. *Niagara's* starboard broadside ripped down the length of the already battered enemy vessels while her port broadside wreaked havoc on the *Lady Provost*. Within fifteen minutes of his transfer, the British surrendered.

Perry returned to his own ship, the *Lawrence*, to receive the British surrender. Immediately afterwards he retired to his cabin for a moment and hurriedly scrawled his famous message to Gen. Harrison:

*"We have met the enemy and they are ours:  
Two Ships, two Brigs, one Schooner, & one Sloop.  
Yours with great respect and esteem,           ~O.H. Perry"*



**Figure 16 - The Battle of Lake Erie 1440- 1500**

After the battle all ships anchored, and the survivors turned to clearing away the wreckage, tending the wounded, and burying the dead. The British practice was to throw the dead overboard as they fell during a battle, only those who fell at the end of a battle received a burial. U.S. practice was to send all casualties below. The dead were sewn into their hammocks, weighted with shot; and a burial ceremony was held after the battle. The dead enlisted men were slid over the side that night. Dead officers from both sides were buried ashore on South Bass Island two days later when all ships returned to that anchorage.

By the standards of the day, the Battle of Lake Erie was a very small action. The combined manpower of all crews of both sides would barely exceed the crew of a single

“First Rate” (100 gun Ship of the Line). Many battles had been fought between European fleets numbering twenty to thirty such ships on a side!

For the first time the U.S. Navy had fought a fleet action. In the Barbary wars there had been some action requiring maneuvering a squadron of ships, but these had been shore bombardments, not engagements against moving ships.

This also marked the first time that an entire British squadron, however small, had been forced to surrender en masse. Even though the British had been forced by circumstances to seek battle in a very unready condition against a foe whose weight of shot outgunned them, this was still a blow to their pride. Needless to say, it was also a euphoric boost to U.S. morale.

## **Results of the Battle**

The Battle of Lake Erie, by leaving the U.S. in complete control of the Lake, eliminated any chance of the British re-supplying their garrison at Detroit, which in turn forced them to abandon it and retreat to the east.

Perry was next able to use the fleet to transport troops to the north shore of Lake Erie, where they intercepted the retreating British army and defeated them at the Battle of the Thames River (Moraviantown).

It was at this battle that the Indian chief Tecumseh was killed. His death, combined with disillusionment with the British, led to the collapse of the Indian confederacy allied with the British. The British were never able to reestablish their power in the west for the rest of the war.

In summary, *Niagara* played a key role in winning the crucial Battle of Lake Erie, which firmly secured the established northern frontier for the U.S. Although the battle had nearly been lost, Perry's great courage, dogged perseverance, and extreme luck gave the U.S. the victory. The real message was not “Don't Give Up the Ship,” but DON'T GIVE UP!

## **Results of the War of 1812**

The Treaty of Ghent, which ended the war in December of 1814 (the peace negotiations met in Ghent, Belgium), officially re-established the pre war status quo. The greatest land battle of the war, a U.S. victory at New Orleans, was fought after the peace was signed but before news could travel. A few more naval engagements were fought for the same reason. The treaty did not take effect until ratified by both governments. The British did so within a week, but the treaty had to be carried over the winter North Atlantic for US Senate ratification. The war's official end was February 17, 1815.

At the end of the war, the U.S. Great Lakes fleet was left to rot. The ships had been quickly built for emergency use and would have been nearly impossible to maintain for very long. The country was also deep in debt and could only spend money where most urgently needed.

The end of the war coincided with the final defeat of Napoleon and a general peace in Europe. This allowed England to downsize her armed forces and eliminated her need for impressment (England never gave an inch on this issue, and it was not mentioned in the peace treaty). The general peace in Europe re-opened markets and ended impressment. The war over here was a minor campaign by comparison to the Napoleonic wars.

The War of 1812 was a formative event in U.S. history. It was the first severe test of national unity; it firmly established the independence of the United States, and it set the stage for westward expansion. Despite a bad start, the U.S. had proven it could defend itself; and U.S. grievances could not be ignored even by a great maritime power such as Britain.

The war had defined Canada as well. Without the war, continued settlement by U.S. citizens north of the border would soon have outnumbered the local population. In another generation, Ontario may have been ready for absorption into the U.S. Yet, after having fought hard to defend themselves from invasion, the Canadian's sense of a nation apart had been greatly reinforced.

The real losers of the war were the Indians. With the removal of British influence in the west, nothing could stop the inexorable westward movement of the United States. There is little doubt that this expansion was inevitable, but the War of 1812 created the conditions that made the Monroe Doctrine and Manifest Destiny the watchwords for the rest of the century.



## **VII. SAFETY MANAGEMENT**

Safety management aboard any vessel requires training and a great deal of preparation prior to departure and regularly along each voyage for emergency situations that *could* occur, but should also be considered as *likely* to occur. Being ready to deal with emergency situations that risk the safety and security of people, the vessel, and/or the marine environment in a coordinated manner begins with the recognition that such occurrences can and might even be likely to occur, and that to effectively protect life, property, and the marine environment, preparation for such occurrences is necessary. This approach to safety makes preparing for emergencies of urgent importance, creates a culture of risk awareness onboard, and improved safety in our onboard operations is a natural outcome.

To support this philosophy, safety drills are conducted frequently and in a routine and consistent manner to provide instructive training in how to respond to each type of emergency so that when it is imperative to the overall safety of the ship that all of the ship's crew has regular and frequent training in how to handle emergency situations as well as common operational situations.

There are many different types of emergencies that can occur on ships, and no amount of practice can guarantee that the crew will successfully deal with the emergency. However, frequent practice with handling the most likely scenarios can ensure that the crew has a basis of training to fall back on that will help them preserve the ship and more importantly, the lives of all onboard.

In general, when conducting emergency drills, crewmembers should execute their responsibilities as if the emergency drill scenario actually exists. Then when a similar emergency actually occurs, crewmembers can reflect on their training and execute their responsibilities in the same way as they had practiced in the drill.

### **Fire Drills and Fire Stations**

This is to get all hands into their assigned duties in an orderly and effective manner. People will be assigned to man fire extinguishers, hoses, buckets, first aid, lookout, helm, sail handling, etc. on the Emergency Station Bill under Fire Stations.

## Marine Fire Prevention and Fire Safety

### The Chemistry of Fire

Fire is a chemical reaction between fuel, heat, and oxygen with combustion as its product. The application of heat and oxygen to a fuel source causes the fuel to oxidize very rapidly. The heat causes the molecules on the surface of the fuel to rapidly expand, rise away from the surface of the fuel, and mix with surrounding oxygen. The process of rapid oxidation produces energy in the form of additional heat and light (flame). This additional heat, which was produced during rapid oxidation, radiates in all directions including toward the fuel. The heat being radiated back toward the fuel increases the rate of oxidation; thus further intensifying the heat, and forming a chemical chain reaction, which is the cyclical and intensifying nature of fire. In a wooden ship, a fire left alone can double in size every minute.

Three things are required for combustion to occur; fuel, heat, and oxygen. If you remove any one of them, the fire will go out. If you reduce the amount of any one of them the fire will weaken.

- **Fuel:** There are four types of fuels, but since *Niagara* has no oxidizing metals onboard, we are only going to review the three more common types of fuel. They are solid fuels (wood, paper, plastic, etc.) liquid fuels (diesel, oil, paint, thinner, etc.) and gaseous fuels (Hydrogen, Propane, Acetylene, etc.)
- **Oxygen:** There is normally 21% oxygen in the air. 16% is required for flaming combustion, and 3% is required for smoldering combustion.
- **Heat:** Heat can be caused by flame, such as from a match, or by sparks, friction, lightning, electrical short circuit, a hot light bulb, etc.

### How Fire Spreads:

An expanding fire must be confined quickly. It can spread rapidly by means of conduction, radiation, and convection.

**Conduction:** The transfer of heat through a solid such as a steel bulkhead. Water in a pot on the stove is brought to boil by conduction of heat through the bottom of the pot. Cooling a hot bulkhead with water will minimize conduction and reduce the risk of fire spreading to compartments adjacent to the fire.

**Radiation:** Direct heat traveling in all directions outward from the fire.

**Convection:** The transfer of heat through the motion of wind, hot air rising, smoke, flying embers, etc.

## **Hazardous Products of Combustion**

### **Flames.**

**Heat:** The inhalation of heat can burn the respiratory tract causing fluid to build up and block the airway, often causing death. Heat will be hottest near the top of the burning space. Stay low at all times!

**Poisonous Gases:** Carbon Dioxide and Carbon Monoxide are deadly and always present. Depending on the fuel burning, other even more deadly gasses may be present. Even small amounts of gasses inhaled from burning plastics such as PVC pipe can be lethal.

**Smoke:** Smoke not only reduces visibility, but it can carry carbon, unburned suspended particles, and vapors from water, acids, and other chemicals.

## **Classification of Fires and Extinguishing Agents**

Before attempting to extinguish a fire, one should know what type of fire it is, which will identify which type of extinguishing agent is most effective. Fires are classified as follows:

Class “A” Fires: Fires involving common (ash producing) combustible materials which can usually be extinguished best by cooling with the use of water. However, dry chemical is also effective as a smothering agent. Materials in this class include wood, cordage, cloth, paper, rubber, and certain plastics.

Class “B” Fires: Fires involving flammable or combustible liquids, flammable gases, greases, and similar products. Extinguishment is accomplished best by cutting off the supply of oxygen to the fire or by preventing flammable vapors from being given off. Carbon dioxide works best to displace oxygen, but dry chemical can often be effective to break the chain reaction and/or smother the fire.

Class “C” Fires: Any fire where energized electrical equipment is involved or too close to the energized equipment to use water. Once the confirmation that electricity is turned off has been made, the Class C fire is downgraded to a class B or A fire (depending on the presence of flammable liquids). De-energizing the equipment followed by the use of carbon

dioxide is the best method. Dry chemical is also effective, but may damage electrical equipment due to the messy, sometimes sticky, and often corrosive residue that is left behind. The dry chemical is usually sodium bicarbonate or monoammonium phosphate.

### **Portable Fire Extinguishers:**

Usually the first line of defense (AFTER THE ALARM IS SOUNDED) in shipboard fire fighting, but (because of their limited supply of extinguishing agent) extinguishers must be backed up by more extinguishers and a hose team as soon as possible. All crewmembers must know how to use a fire extinguisher, what type works best and on what type of fire, and know where they are located.

### **Dry Chemical:**

*Niagara* carries Type “ABC” (dry chemical) extinguishers for Type “A,” “B,” or “C” fires. Type “ABC” dry chemical extinguishers have contents under pressure that will shoot out to a distance of about 30 feet when first used. As the pressure subsides, the range decreases and you must step closer to the fire. Use good judgment, and don’t get too close as the extinguisher runs out of agent. Try to coat the base of the flames (the fuel source) with agent to smother the fire.

### **Carbon Dioxide and HALON 1211:**

*Niagara* also carries Type “BC” Carbon Dioxide and Type “BC” HALON 1211 extinguishers for Type “B” and Type “C” fires. These extinguishers are located near areas most likely to have Type “B” and Type “C” fires (the engine room and the galley). Carbon Dioxide is heavier than air and displaces Oxygen. This can work to your advantage in many situations such as when fire is on a floor, deck, or in a small bilge or compartment.

### **Fire Hose Teams & Their Equipment**

The Standard Navy Nozzle: Allows the firefighter to turn off the water at the nozzle or use straight stream and high velocity fog patterns from the nozzle.

Low Velocity Fog Applicator: This applicator is a 4-foot long extension with a bend in the end. It makes a wide, dense fog pattern to aid with compartment entry through watertight

doors. The extreme fog pattern is designed to protect the firefighter from intense or approaching flames.

### Self- Contained Breathing Apparatus:

Only officers or paid members of the crew who are certified for Basic and Advanced Marine Fire Fighting will use this tool in real situations. Air tanks will provide between 10 and 30 minutes of air depending on the firefighter's breathing rate and volume.

### Protective Clothing:

The primary hose team must wear fireman's bib pants, turnout coat, boots, helmet, leather gloves, Nomax hood, S.C.B.A. and an emergency retrieval wire.

## Firefighting Procedures- Initial Response

Note: this section is intended as a generic guide for study. Actual procedures used onboard may vary somewhat to fit the situation.

### Step 1: Sound the Alarm!

This is the first and most important rule of fire safety. Shout out loud at least three times to let others know the nature and location of the emergency. Sounding the alarm is the first step in recreating the same type of organized response that we practice in drills. The alarm should occur in the same way as it does in a drill. This will also minimize panic. For example: FIRE IN THE GALLEY! FIRE IN THE GALLEY! FIRE IN THE GALLEY! If you do not hear someone else repeat the alarm, then the alarm has not been heard! Never attempt to fight a fire unless you have heard someone else repeat the alarm! The crewmember nearest the General Alarm bell will sound a **continuous ring for not less than 10 seconds**. The con will ensure that the General Alarm signal for fire is sounded.

### Step 2: Size Up the Fire:

In most cases the person finding the fire will smell it before they see it. Before attempting to size up the fire, Sound the Alarm! Next, in a moment's glance you should be

able to determine if the smoke is too thick to approach the fire. If approaching the fire looks safe, approach the fire to within visible range staying low at all times.

In a glance, you should be able to determine:

- The class of the fire
- The rate at which the fire is spreading
- The appropriate extinguishing agent
- How to prevent the spread of the fire
- Whether or not it is safe to approach the fire with an extinguisher

### Step 3: Take Action:

If after sizing up the fire, you deem it is safe to approach a fire, and after sounding the alarm, attempt to extinguish the fire with an appropriate type of fire extinguisher. If the smoke and flames are intense or you think your safety is at risk, try to determine if anyone else is in the space, and evacuate immediately. When you exit the space, close the door behind you. Then inform the Chief Mate of the situation at the scene of the fire and go to your station. REMEMBER, DO NOT RISK GETTING TRAPPED! Always be sure there is an escape route behind you.

## **Fire Fighting Strategy (when the initial attack fails):**

### **Organization of Personnel:**

The Master shall be responsible for the overall coordination of the response to a fire emergency. *Niagara* will usually be sailing in partially protected waters where assistance is not far away. It is better to abandon the ship with no loss of life, than lose a single individual in attempting to save the ship. The safety of the fire team is paramount. No fire team should enter a space until appropriate hatches and ventilation are open to reduce smoke and heat and allow safe entry.

The officer of the deck shall ensure the fire alarm is sounded, that watertight doors are closed, and will maneuver the ship so the fire is on the downwind side of the ship, to direct heat and smoke away from the ship as best as possible.

- The Master shall be in command overall and maintain radio communication with the fire team.
- The Chief Mate shall be in charge at the scene of the fire. Under the direct supervision of the Chief Mate, crewmembers shall man the primary attack hose until the S.C.B.A fire team arrives or until evacuation due to smoke and heat is necessary.
- The Engineer or assigned officer shall be in charge of the Engine Room and standing by the pumps.
- The 2<sup>nd</sup> Mate or assigned officer shall maintain navigation and communication. The Nav-Com Officer will shift the Navigation Electrical Panel to the Emergency Battery Bank. He/She shall maintain the deck log, position log, and radio log during emergencies.
- The S.C.B.A fire team -- professional crewmembers with firefighting training -- shall each don a Self Contained Breathing Apparatus and bunker gear and report to the primary attack hose.
- The Steward shall secure the galley, get a head count of all persons onboard, report to the Captain, and then take charge of persons in addition to crew to help keep them calm, orderly, and standing by.
- All other crew shall fulfill their duties as assigned on the Station Bill.

### **Secure Electricity and Ventilation**

Regardless of the class of fire, electricity should be secured (if possible). This will allow the hose team to enter the space, with a fully charged fire hose, without risk of electrocution.

If the space is confirmed as evacuated, secure all ventilation to the space until the primary attack hose team is ready to enter the burning compartment. Then just before the fire team makes entry, ventilation should be opened in such a way that the smoke and heat will be vented to the outside air as efficiently as possible. This will decrease the temperature in the burning space and make it safer for the fire team to approach the fire.

## **Primary Team Attacks**

The primary team will need their dressers to feed slack into their wire tethers. The dressers must keep their hands on the wire to feel for tugs from the fire team, which signal their need to advance, back out, or evacuate immediately.

The primary fire team's objectives are to rescue trapped personnel and extinguish the fire by getting water or extinguishing agent on the base of the fire as safely and quickly as possible.

Once the fire is out, they must overhaul and remove or extinguish the embers to prevent a re-flash.

## **Secondary Fire Team Responsibilities**

- Protect the Primary team as directed by the Chief Mate or the Master.
- Protect exposures as directed by the Chief Mate or the Master.
- Stay in direct communication with the Master and Chief Mate.

## **Engine Room Fire Procedure**

The engine room is the heart of the ship's electrical and propulsion systems. An engine room fire scenario is the most likely scenario to cause the loss of the ship. Therefore, if the fire is not immediately extinguished with a portable fire extinguisher, the Captain will most likely order to "PREPARE TO ABANDON SHIP" while the fire team continues to attempt to control and extinguish the fire. Complete your fire scenario responsibilities before proceeding to your abandon ship station, unless you hear the "ABANDON SHIP" signal or are ordered otherwise.

In the event of an engine room fire, the damage control team will make ready the portable auxiliary fire pump, and the Fixed CO2 system will not be used unless by direct order of the Master. There are many large marine batteries in the engine room, which present a high risk of electrocution if directly sprayed by a fire hose. The recommended procedure for an engine room fire (when portable fire extinguishers are insufficient) is as follows:

- Confirm the space is evacuated
- Check that all watertight doors and the engine room doors are closed securely.
- Upon Captain's orders, pull all emergency fuel shut-offs (port and starboard main fuel tanks and day tank)



- Secure ventilation (fidley hatches, doors, blowers)
- Secure A.C. Power at the bookshelf control panel, starboard, aft end of berth deck.
- Fire up portable auxiliary fire/ bilge pump
- Discharge Carbon Dioxide upon Captain's Orders Only! If the S.C.B.A. fire team cannot enter, the Captain will make the decision of whether or not to discharge the Engine Room Fixed Fire Extinguishing System (carbon dioxide). All of the above should be completed before CO2 discharge.
- Fire team will use portable hose to cool spaces adjacent to the engine room, if possible.
- The Captain will most likely order to prepare to Abandon Ship if the fire is not immediately extinguished.

## Man Overboard Stations

“Man Overboard” drills will be conducted often. Recovering a person lost overboard is a difficult and potentially risky task that requires crewmembers to keep calm and execute their responsibilities effectively.

### Procedures for recovering a man-overboard:

- SOUND THE ALARM! The person who sees the victim fall over shall shout loudly-  
*“Man Overboard! Man Overboard! Man Overboard! Starboard (or port) Side!”*  
 Then give the victim's name, if possible and give a description of the situation-  
*“Oscar fell off the starboard rail”* (or yard arm, or head rig, etc.)
- After sounding the alarm, all hands should DEPLOY ALL LIFE RINGS, BUOY LIGHTS, AND MOB POLES. *IMPORTANT:* separate the 100-ft life ring lanyard from the ring before throwing the ring toward the victim! This will help the victim in the water grab the line and pull the ring toward him/her.
- If the ship is sailing (not motoring) in open water, whoever is at the helm will immediately Push the M.O.B. button on the Radar/Chart-plotter in the starboard side of the binnacle, then immediately PUT THE HELM DOWN (turn the ship up into the wind, i.e. toward the wind as quickly as possible). The M.O.B. button marks the location of the person in the water when he/she fell overboard, and must be pushed ASAP for an accurate position to be recorded.

- If the ship is motoring or motor-sailing, the helmsman will immediately take the engines out of gear, push the M.O.B. button, and maintain course until ordered otherwise.
- Hands assigned to spot from the rig will get to their stations as soon as possible, LOCATE THE VICTIM VISUALLY AND POINT at him/her with their pointing arm fully extended in the victim's direction. This helps the rescue boat coxswain to locate the victim and helps the spotter keep his eyes on the victim while he/she bobs over and under the waves.
- The Boatswain will PREPARE *CUTTER I* FOR LAUNCHING as quickly as possible. When the *Cutter I* is ready, the Boatswain will loudly notify the Captain as follows: "Captain, Cutter One is Ready to Launch!" *Cutter I* is ready when: there is a coxswain and bow crewman in the boat and wearing PFD's, the gripes are off, plugs are in, painter secured, the officer in charge of the boat and two cutter crew are on deck with a radio and ready to board, the ladder is ready to send into the cutter, and davit tackle falls are laid out and ready to run.
- The ship is stopped, or nearly so. The ship is turned so *Cutter I* is on the lee (downwind) side of the ship, and if possible, the ship is turned so as to return toward the victim.
- *Cutter I* is launched on the Captain's command (if weather, traffic, and sea conditions permit). *Cutter I* is loaded with ladder and crew and departs ASAP toward the victim.
- *Cutter I* should make the final 200 feet of the approach to the victim from downwind taking extreme care not to run the victim over. The officer in charge of the cutter will determine whether or not to deploy the cutter's sea anchor before using the ladder to recover the victim.
- The ladder is used when the victim is injured or unconscious to immobilize the victim in a flat position so as not to cause spinal injury during recovery. If the ladder is used to recover the victim, the cutter's sea anchor is usually deployed from the cutter's bow to keep the cutter's bow into the seas while the victim is recovered. The victim should be rolled onto his back carefully while in the water. Then the ladder is placed athwartships on the cutter and half of it is inserted vertically into the water between the boat and the victim. The cutter carries five crewmembers onboard to give enough manpower to use the ladder as a levering platform to pry the person out of the water, levering against the gunwale (rail) of the boat with the crew holding the victim's shoulders while pulling downward on the upper end of the ladder. Once the victim is

lying on the ladder and across the boat, the crew places the ladder with the victim on it into the boat on the starboard side (or the side that will be away from the ship when the cutter returns to the ship).

- Returning to the ship with a victim on the ladder should be done slowly and carefully so as not to cause further injury. The victim should receive CPR in route to the ship if necessary. By the time the cutter returns, the ship should be stopped and hove to so that the cutter can be recovered under the lee side of the ship, where there is better shelter from the waves and wind.
- The cutter should strive to make it to the victim as quickly as safety will allow and in less than four minutes, if possible.

Bear in mind that a Man-Overboard is usually a person lost. So don't do foolish things like sit on the rails or lose perspective while working in the headrig. Finding a 12-inch high head in even a two-foot sea condition is very difficult and higher sea conditions are obviously far worse.

A successful M.O.B. recovery requires that everyone onboard the ship executes their responsibilities effectively to not only spot the victim and toss him a life ring, but to put the ship about, handle sail, launch the boat, equip and man the boat, get the boat to the victim, and most importantly, get the victim and the boat back onboard.

Remember too that we may not be able to launch *Cutter I* at all. We may need to attempt to recover the person by maneuvering the ship, if the weather is too rough to safely launch the boat.

## **Abandon Ship and Life Rafts**

If we are ever forced to abandon the ship, the life rafts will be our vehicles for departure. Abandon ship scenarios usually happen either very quickly, or very slowly. If it happens very quickly, then something catastrophic has probably occurred (ship is knocked down by severe wind, collision with severe damage, etc.) and we will make haste to launch and board the liferafts. If it happens slowly, then there will be time to prepare to abandon the vessel and to collect valuable extra equipment to take with us.

### **A call is made to “Prepare to Abandon Ship”**

This is not the same as the call to “ABANDON SHIP.” This call means you should execute your responsibilities on the Emergency Station Bill, but do not launch the rafts or

boats until ordered to do so. If conducting a daysail and the water temperature is greater than 70 degrees, PFDs (Personal Floatation Devices, formerly known as Life Jackets) will likely be called for, and should be the first device you grab when in doubt. If on a passage between ports or anytime the water temperature is below 70 degrees Fahrenheit, exposure suits (neoprene full-body floatation suits) will be called for, and should be the first device you grab when in doubt. On the call “Prepare to Abandon Ship” exposure suits or PFDs must be donned by anyone who is not returning below decks to grab gear etc., but is standing by at their abandon ship station.

Crewmembers will gather all emergency gear listed on the station bill at the raft locations. VHF Radios, emergency equipment kits, water, food, etc. are distributed to each raft. Muster roles will be taken at each raft station and crew attendance will be reported to the Captain by the Steward. Boats will be made ready to launch only if time permits. Boat crews report to the Chief Mate for instructions on readying boats. Rafts will be unlash and moved to the launching area as directed by the Captain through the Chief Mate.

All hands will fulfill their duties as assigned and await further instructions from the deck officers or the Captain.

### **The call is made by the Captain to “ABANDON SHIP”**

In general, the ship will not be abandoned unless the ship is no longer tenable or sinking is imminent. It is a very important and careful consideration made by the Captain. Life rafts are usually far less comfortable than a floating and damaged hull. The hull of the ship is a better radar contact than a floating rubber life raft and the chances of being found by rescuers is far better onboard the ship than in a raft. While we have exponentially better chances of being rescued on the Great Lakes than we might in the open ocean, we practice and train for abandon ship as if we were on the open ocean.

Raft launching procedures are posted in each head on the ship. All crewmembers must know the procedure for launching and inflating the rafts. Rafts are launched when and where directed by the Captain through the Chief Mate or other officers. All rafts will be launched on the same side of the ship, gathered and lashed together, and boarded as assigned on the station bill.

Once all hands are in their rafts, a barge of rafts lashed together should be created with one long line remaining attached to the ship. The barge of rafts should be allowed to drift one to two hundred feet away from the hull (the further the better). That line will be cut when the

ship sinks or as ordered by the Captain. If time allows, *Cutter I* might be used to help position the raft barge away from the sinking ship.

Rank, leadership, and order must be preserved in the rafts. Crewmembers must follow any instructions given by the Captain or the ranking member of the raft. Knives, spikes, and sharp objects must be kept away from the inflated parts of the rafts to avoid puncture.

### **Emergency Position Indicating Radio Beacon, EPIRB**

*Niagara* carries two Category I, type 406 MHz EPIRBs. An EPIRB is an Emergency Position Indicating Radio Beacon. The EPIRBs are located abaft the aft ends of the hammock rails on either side of the helm. Two specific crewmembers are assigned to collect the EPIRBs and bring them to the rafts, this is perhaps the most important duty in an ABANDON SHIP scenario. The EPIRBs will each deploy automatically in the event the ship sinks, but they will float away. A prudent effort must be made to get the EPIRBs into the rafts. All crewmembers should know how to activate the EPIRBs and where they are located.

The EPIRB on the starboard side sends a signal to satellites in the sky. The receiving satellites triangulate the location of the beacon, providing an approximate position of the EPIRB. The EPIRB on the port side of the ship (a GPIRB) has an integrated GPS receiver in it, and it transmits the exact GPS position of the beacon to a satellite in the sky. When either EPIRB is detected by satellite, the signal is sent to USCG Search and Rescue teams and informs them of our location and that the US Brig *Niagara* is in distress with up to 100 persons onboard. Other important information about the ship and our operations is also on file with the USCG that will be available to the Search and Rescue teams.



## VIII. ORIENTATIONS

### **Life Onboard *Niagara*: Ship Familiarization Training**

NOTE: This familiarization training should be conducted by the **Officer** on duty on the evening watch on any day that a new crewmember reports aboard.

#### Ship Familiarization:

1. Tour E.M.M. site and facilities. Explain off limit areas (woodworking shop, offices, etc.)
2. Explain alarm system, use of keypads and how to lock/unlock glass doors.
3. Assign their watch per Chief Mate's orders
4. Berthing: Location and assignment
5. How to properly string up, break down, and stow hammocks. Assign hammocks.
6. All of your gear must fit into your sea bag. If you brought a musical instrument, it may be stowed in a bilge, outboard and in a case where it will stay dry.
7. Do not set any gear on the clamp. It will fall into the frame bays and be lost forever and potentially increase the risk of wood-rot in the bilges.
8. Gear adrift will be collected and stowed in the aft head. Do not leave your gear lying around. Any gear not claimed by Tuesday at the end of the work day will be considered abandoned and will be given over to the Bosun's Locker where you'll have to work service hours to reclaim it. Gear adrift happens, but we give you up to a week to reclaim it. Gear adrift is also an imposition on the ship's operations, so pick up your stuff or you'll have to work to get it back.
9. Identify and describe the station bill
10. Operation of the heads
11. Location of med gear in aft head. Identify medical officers.
12. Showers will be available on deck while underway via the fire hose or buckets at the discretion of the Officer of the Deck. When underway, never toss a bucket over the side without first notifying the Officer of the Deck, and tie it to the ship, not to your wrist. Showers are usually available in ports away from Erie. Shore Showers are available in Erie. Wherever you shower, thoroughly clean up after yourself and keep the shower area clean for the next person. The sinks in the locker room must be kept clean as well. Do not leave a puddle and toothpaste for the next person.
13. Location of AC and DC light switches
14. Nearest exits for emergency evacuation
15. Work & Time Off schedules (explanation of watches)
16. Explain the Major Galley Routine (setting up mess tables, dish tubs, setting out food, prepping food for the cook, chopping firewood, cleaning tables & counters, putting dishes away, make juice as directed, keep water jug on deck full at all times & clean

it once per day, duty person when in Erie, use the duty list when in Erie, do wake ups for crew in Erie and as directed).

17. By federal maritime law, trash removal from the ship must be recorded in the Waste Management Logbook. See the Waste Management Officer for details.
18. How to do wake-ups (do not enter a cabin unless requested- knock on the door, do not touch the individual unless they are unresponsive, state the time, state the need to be woken and when they are expected on deck or at a meal, inform the person of the weather conditions, get a recognizable response!)
19. Chain of Command (how to deal with questions and problems- go to the Mate of your watch, not directly to the Captain, he will be informed of any issues. If you are not satisfied with the Mate's response, you may then go to the Captain at an appropriate time)
20. Any crewmember living forward of the main mast shall knock and request to enter the Ward Room before entering, unless entering on ship's business (i.e. major galley setting up the table) The Ward Room is the ship's office and the Navigation Center for the ship. Needless interruptions caused by traffic in the Ward Room can distract the officers and cause disorder in the Ward Room. Do not use the Ward Room Companionway at any time unless asked to do so, especially when underway.
21. Any visitor who requests to see a crewmember must wait on shore until the crewmember invites them aboard. No visitors after 10PM. Anyone asking for the Captain on official business shall also wait ashore until the Captain is notified of their presence and he invites them on board. When closed to the public, no one comes aboard unannounced or uninvited!
22. Quiet Hour on the ship is 2200, unless extended by the Captain.
23. **Do Not Identify the Captain to the Public**- unless on deck and wearing a crew shirt.
24. Night-watch duties while in a port away from Erie.
25. The Cleaning Locker must be kept organized and stocked with supplies. Notify the Cleaning Locker Guru when any supplies are running low. Put stuff back where it belongs when you are done with it! There is a water-maker in the cleaning locker. All gear must be kept well clear of it and properly lashed or stowed for sea at all times while underway! It is very easily damaged.
26. A crewmember should never be late for muster, and thus, for watch! A watch does not relieve the off-going watch until all members of the on-going watch are present and accounted for. Likewise, the off-going watch is not relieved to go below until after the end of watch muster, and the Mate recognizes that all watch members are present and accounted for.
27. Do not eat, drink, or talk while steering the ship or on lookout. The helmsmen and lookouts must maintain constant focus on their duties to keep a sharp eye out/ steer accurately, and keep the ship safe from harm.
28. Minors may only go ashore in groups, must notify the officer on watch where they are going, and must return to the ship by 2200 daily.



## Vessel Familiarization and Safety Training -- For Daysail Students

On a typical Daysail, the schedule and plan for training is as follows:

- 1245 Daysail students arrive
- 1300 Check in complete, Begin Captain's welcome/ introduction
- 1320 Board Ship in four divisions. Muster amidships by divisions. Introduce the officers, and split up into divisions with one division each on the berth deck, deck forward, deck amidships, deck aft.
- 1330 Begin 15 to 18 minute rotating orientation stations as follows:

**Station 1-** Below decks: Take a tour below. Explain Station Bill, identify fire extinguisher locations, show how to use the heads, location of light switches and emergency exits, show how to use watertight doors and explain not to open them if found closed, show the galley- warn of hot stove, show the engine room- (open the door, but explain- restricted area, do not go inside.) Show flashlight locations, division tables, hammocks, five man cabin, and ward room. Explain 5 man and ward room are restricted areas underway- do not enter, but the orientation tour may proceed through and exit to deck through the aft companionway.

**Station 2-** Aft on Deck: Safety Orientation: Show helm, bridge deck (do not go up without permission), binnacle (stay forward of it), show ward room ladder (don't go down), show life rings and explain MOB procedure, show life rafts and explain life raft procedure, have two crew don one PFD and one exposure suite- explain each, explain Abandon Ship Procedure.

**Station 3-** On deck Forward: Explain sail setting for Jib and Fore Tops'l. Use dry erase board to identify names of part of each sail and running rigging. Show purpose for each piece of running rigging, and location of rigging on the pin rail. Set the Jib and teach line handling skills- belaying, handling lines under strain, easing, hauling.

**Station 4-** On deck amidships: Explain safety drills, how we conduct them, muster locations, key dos and don'ts for each drill- MOB, Fire, Abandon Ship. Show how we steer; only review rudder commands, steering commands will be reviewed underway. Explain smoking policy, drinking water, meals, tripping hazards on deck.

1330	Begin orientation/ tour stations	1450	General Quarters	1745	Supper
1350	Rotate stations	1500	Underway	1815	History Talk
1410	Rotate stations	1600	Sail setting complete	1900	Gun Drill
1430	Rotate Stations	1630	Safety drill	1930	Take in sail
		1730	Sail Evolutions	2000	Arrive EMM Dock

## Safety Orientation for New Trainees and Crewmembers

### Show Vessel Safety and Survival Equipment

- Immersion suit/PFD; need, stowage, fit, donning
- Life raft/survival craft; need, location, function, deployment, what not to do
- EPIRB; need, location, function, deployment, what not to do
- Radio(s); need, location, function, use
- Electronic positioning fixing devices; function, how to find position
- Flares; need, location function, use, what not to do
- Fire extinguishers; location, function, use, what not to do
- Other equipment; heaving lines, MOB recovery gear, first aid kit, etc.
- Alarms; what they are, what they mean, reporting inoperative alarms
- Entrapment; exit routes
- Hazards; hatches, winches, machinery, lines, slippery areas, etc.
- Hypothermia recognition and treatment
- Drug and Alcohol Policy
- Aloft Safety Policy
- Placards; report all injuries, report all malfunctions, waste disposal
- Emergency instructions, Station Bill

I certify that I have been instructed in and understand all of the above.

\_\_\_\_\_  
*Print name of trainee*

\_\_\_\_\_  
*Signature of trainee*

\_\_\_\_\_  
*Date*

I certify that the above named trainee was instructed by me in each of the areas of instruction indicated above.

\_\_\_\_\_  
*Print name of trainer*

\_\_\_\_\_  
*Signature of trainer*

\_\_\_\_\_  
*Date*

## **Aloft Orientation Certification of Training**

I certify that I have received training in a manner consistent with requirements described in Chapter IV, General Order #10 Aloft Policy, which includes the ship's rules, policies, and procedures regarding climbing aloft in *Niagara's* rigging, including the required and proper method for the use of safety harnesses.

\_\_\_\_\_  
*Print name of trainee*

\_\_\_\_\_  
*Signature of trainee*

\_\_\_\_\_  
*Date*

I certify that I have provided training, to the trainee named above, in a manner consistent with requirements described in Chapter IV, General Order #10 Aloft Policy, which includes the ship's rules, policies, and procedures regarding climbing aloft in *Niagara's* rigging, including the required and proper method for the use of safety harnesses

\_\_\_\_\_  
*Print name of trainer*

\_\_\_\_\_  
*Signature of trainer*

\_\_\_\_\_  
*Date*

## Tips for Shipmates

There are certain things to bear in mind about life in the crowded confines of a ship.

- Demonstrate good moral character- treat you shipmate as yourself; make ethical decisions, and be respectful of others.
- Drink at least one gallon of water per day.
- Eat regularly the day before and while sailing; avoid caffeine and sugar-loading.
- Never abuse alcohol, and get plenty of sleep, especially the night before sailing.
- Long fingernails get broken, especially when furling sail. A clipped nail is better than a torn nail. Also, jewelry tend to get broken or cause injuries, be smart about it.
- When you first get onboard, do not push buttons or switches (literally as well as metaphorically).
- While on night watch, generally, don't recline or lie down or settle into a position in which you would be less alert or fall asleep.
- When sailing, and not expected to perform any particular task, conserve energy for when you need it most, and take measures to protect yourself against sea-sickness. You may sit down when not working, but it is typically best to stay active. If sitting, don't settle into a position that might cause you to fall asleep on watch. Stay alert, especially if sitting. Be ready to jump up at a moment's notice and don't sit until the deck is tidy and there is nothing productive to do.
- Living on a wooden ship is like living inside a guitar. . . ever thumped a guitar? Makes plenty of noise! Walk softly on deck, especially if getting up early at anchor. The sleep you save may be your own. If you snore, consider bringing an anti-snoring mouth piece. If you don't, consider bringing ear plugs.
- All hammocks, sea bags, and ditty bags are distributed ship's equipment and are not locked. Take care of them, and do not go into another person's gear without permission.

## **Sunburn**

Sunburn is preventable, there is no need to be incapacitated by it, so don't be. Use sunblock! Wear shirts and/or hats.

## **Conservation**

A good seaman is a conserver, by nature, of resources. The ship and our supplies are all we have, please do not waste these resources. We carry our own potable water and none too much of it. We make our own electricity and light.

## **Hammocks**

Hands will be taught how to sling, use, and stow hammocks in a seamanlike manner. This is a serious piece of seamanship, much like furling a sail, and is subject to inspection to ensure safety and orderliness. The location where each hammock is to be strung, is marked with the hammock's number, on the hammock stringers in the berth deck. The hammock locations are designed to allow a clear path for traffic in the berth deck to pass from the five-man cabin to the galley and from any hammock to the hatches.

All crewmembers assigned to hammocks will use their hammocks while underway. Sleeping on the sole can cause traffic problems on the berth deck and clog the escape path during emergencies. No one is to sleep on the sole without the Chief Mate's permission unless it is daytime, and they are off duty (in this case, keep paths clear). The Chief Mate may allow individuals to sleep on the sole at night when:

- They are injured and sleeping in the hammock aggravates the injury.
- There are other special circumstances that warrant it.

## **Going Aloft and Out in the Headrig**

The standing orders for going aloft, procedures aloft, and the usage of safety harnesses are clear and should be reviewed with a new crewmember before going aloft or out on the headrig. This orientation should be done at the dock, before sailing.



## **IX. CHECKLISTS, TASKS, AND ASSIGNED DUTIES**

### **24 Hour Duty Watch (while in Erie)**

While in Erie, one crewmember will be assigned the duty watch each day to manage particular housekeeping chores and ensure the safety of the ship and crew. This person might be a professional crewmember, FNL staff member, apprentice, or one of the local volunteers. When all hands are scheduled for shore leave/ time off, the “Duty Person” assigned will typically be a member of the professional crew. New crew members will shadow a returning crew member for the first time then be expected to do it on their own the second time around.

1. Check with off-going duty person for details regarding work to be done to ensure a smooth change of the watch. You are not relieved until you meet and speak with your relief, and witness that your relief is fit for duty and properly informed.
2. You are on duty for 24 hours, and are required to remain on premises until relieved or consent from the Chief Mate or Captain is obtained. The Erie county library is not considered part of the premises. You must sleep aboard the vessel at night. Do not go into the sub-basement or ed room unless through the nature of your work. You are responsible for checking the ship/weather conditions periodically throughout the day.
3. Report to the cook for work detail per the cook’s instructions.
4. Perform a proper Brig check in the morning and before you turn in. Use the Brig check- checklist to ensure no details are missed.
5. Check in and introduce yourself to gift shop personnel on non-work days. You are the watch; they will need to find you in the event of an emergency. Let them know where to find you. Notify the gift shop personnel of any injuries or emergencies promptly. They may be able to assist with the response.
6. Set the ship’s flags at 0800 and take them in at sunset. See the bosun for instructions on flag etiquette.
7. Make sure the ship is tidy and ready for tours: crew roused out of berth deck and five man, display hammock and mess table set up on berth deck, below decks lights turned on, appropriate hatches opened (or closed if necessary due to rain).
8. Police the site & ship for garbage and clean it up.
9. Empty garbage cans: locker rooms, break room, plaza and ship and put trash in dumpster. Empty Recycling.
10. Pump gray water tank.
11. Assist the officer on duty with the orientation of any new crew or trainees.
12. Clean the break room per the cook’s instructions. The break room must be swept and mopped after dinner. Must have all dishes put away, and all surfaces washed down for the night. Chairs down and pushed in.
13. Clean, sweep, mop the shore facility restroom floors, counters, sinks, showers, and toilets. Refill toilet paper, paper towels, and hand soap. Label the restroom as closed and ensure it is not occupied.
14. Lock the museum rear hallway glass doors and set the alarm at 2200. Get a professional crew member to set the alarm for you if necessary.

**\*Call the Mate of your division if you have routine questions or need assistance.**

**\*Call the Chief Mate if you are in doubt about anything. Billy Sabatini 508-930-9519**

IN THE EVENT OF AN EMERGENCY, CALL:

**911- Emergency Call Center.** To use the E.M.M. phone system, choose any line 1-8, then dial 9, followed by 911, or other number as needed.

Capt. Wesley Heerssen- dial 9 for an outside line, followed by 814-823-3744 (cell.)

## Brig Check Checklist- (Alongside)

### On Deck:

- Check dock lines for chafe and that chafe gear is in place as needed
- Check gangway and that gangway lines are not too tight
- Check that the manila running rigging is slack. Do not ease braces, lifts, and truss tackles.
- Check that hatch covers are open during fair weather and closed before it begins raining.
- Check that there is no gear adrift on deck
- Check that all lines are coiled and hung properly
- Empty trash as needed
- Refill the water cooler as needed

### Below Decks:

- Check all bilge compartments for high or unusual water levels. Check the Forepeak, the Berth Deck (between the ladders aft), the Ward Room (forward of the table), and in the Captain's Cabin (immediately aft of the watertight door).
- Check the stove for any fire hazards in the vicinity if it is or recently was in use.
- Check any candles that may be burning every 15 minutes to ensure that the lantern is secure, and fire does not spread.
- Check that the 12-volt batteries are not below 12.2 volts. The 12-volt DC Panel is on the starboard, forward bulkhead in the Engine Room, check Banks #1, and #2. Do not touch anything else in the Engine Room. Beware of accidentally throwing switches or valves with lanyards or by bumping into them.
- Check that Flashlights are stowed in their regular locations
- Check that all unnecessary lights are turned off, except for one light in the galley and any others that are actively in use.
- Check that there is no personal gear, tools, or ship's supplies or equipment adrift anywhere below decks. This especially applies to passage ways, on or near companionways, and in the heads.
- Empty the trash in the galley, on the berth deck, and at the Nav Station in the Ward Room as needed.



## **Brig Check Checklist (Underway)**

### **On Deck:**

- Check that lashings are tight and secure on the anchors and guns.
- Check that lines are on the proper belaying pins.
- Check that lines are flaked or coiled and hung to the Mate's satisfaction.
- Check that there is no gear adrift such as buckets, gun tools, coffee mugs, clothes, etc.
- Water ring on Charlie Noble is full of water.
- Check that everything on deck that can come adrift in a seaway is properly lashed or secured.
- Look aloft for signs of chafe, damage, or poor sail trim.
- Check that the Running Lights are working properly at night and off during the day (unless visibility is restricted).
- Empty Trash as needed.
- Check Life Rings and MOB poles are ready to deploy and secured properly

### **Below Decks:**

- Check all bilge compartments for high or unusual water levels. Check the Forepeak, the Berth Deck (between the ladders aft), the Ward Room (forward of the table), and in the Captain's Cabin (immediately aft of the watertight door).
- Check the stove for any fire hazards in the vicinity
- Check that Flashlights are stowed in their regular locations
- Check that all unnecessary lights are turned off, except for one light in the galley and any others that are actively in use.
- Check that there is no personal gear, tools, or ship's supplies or equipment adrift anywhere below decks. This especially applies to passage ways, on or near companionways, and in the heads.
- Empty the trash in the galley, on the berth deck, and at the Nav-Station in the Ward Room as needed.

## Prep for Sea Checklist- NAV-COM Officer

- \_\_\_\_\_ Radars are on and functioning properly
- \_\_\_\_\_ Both GPS units are on and functioning properly
- \_\_\_\_\_ Chart Plotter is on and functioning properly
- \_\_\_\_\_ VHF radios are on and functioning properly
- \_\_\_\_\_ VHF handheld radios are functioning properly and distributed to the Chief Mate, Bridge Deck, and Coxswain
- \_\_\_\_\_ Local Charts (with up to date corrections) are on chart table with harbor chart on the Bridge Deck
- \_\_\_\_\_ Coast Pilot, Light List, Pub 117, Nautical Almanac, USCG Navigation Rules, Bowditch, Seaway Handbook, Chart #1, and Tide Tables (if applicable) are stowed in the cabinets outboard of the port chart table.
- \_\_\_\_\_ Binoculars, dividers, triangles, and pencil on the bridge deck
- \_\_\_\_\_ Running and steaming lights are functioning properly
- \_\_\_\_\_ Both Horns are functioning properly
- \_\_\_\_\_ Fathometer is on and functioning properly
- \_\_\_\_\_ General Alarm is functioning properly
- \_\_\_\_\_ Fluxgate compass on and functioning properly
- \_\_\_\_\_ Rough log and pencil to the yeoman
- \_\_\_\_\_ Ship's Logbook is up to date and on the chart table

Completed By: \_\_\_\_\_

Date: \_\_\_\_\_

## Prep for Sea Checklist- Safety Officer

- \_\_\_\_\_ Ring Buoy lights and MOB poles are attached to ring buoys, are ready to deploy, and in good condition.
- \_\_\_\_\_ PFDs are all onboard, stowed in their correct location, and in good condition
- \_\_\_\_\_ Exposure Suits are all onboard, stowed in their correct location, and in good condition
- \_\_\_\_\_ *Cutter I* has the engine key, dead man switch key, spare dead man switch key, five work vests, eight PFDs, boat kit, at least 1 completely full fuel tank, 6 ten-foot oars, 1 eleven-foot sweep oar with a transom oar lock, and a working flashlight
- \_\_\_\_\_ Signal Flags are stowed in the mast cabin. However, the Bravo, Quebec, Hotel, and Papa flags are stowed in the chart room flag locker.
- \_\_\_\_\_ Fire Alarm, Bilge Alarm, WTD Alarm, General Alarm are functioning properly
- \_\_\_\_\_ Watertight Doors are closed and secured for sea
- \_\_\_\_\_ Emergency Lights and Spreader Lights operate from the Nav Station and are functioning properly
- \_\_\_\_\_ Life raft covers are off of rafts and stowed in sail crib.
- \_\_\_\_\_ Check the weather forecast. Print a copy and post it on the WX clipboard in chart room

Completed By: \_\_\_\_\_

Date: \_\_\_\_\_

## Prep for Sea Checklist- Boatswain

- Guns are properly secured for sea
- Top of sweeps is properly secured for sea
- Brows and net are stowed as needed.
- Dock lines are properly singled-up, chafe gear removed
- Sail covers are off and stowed in sail crib
- Port Anchor is off the rail, but not catted, with a fluke lashing and shank lashing made off to cleats to drop anchor quickly, if necessary. Fluke is just over the rail cap's edge. Cat falls are off the anchor. Anchor is on the cat stopper.
- Anchor day-shape is stowed behind the midships ladder; anchor light is under the starboard chart table. Anchor light works.
- Cutter II* has 10 work vests, a boat kit, a working flashlight, a rudder, 8 ten-foot oars and one eleven-foot sweep oar. Sails are either in the boat or on the sweeps. All gear is lashed for sea.
- Cutter III* has 10 work vests, a boat kit, a working flashlight, a rudder, 8 ten-foot oars and one eleven-foot sweep oar. Sails are either in the boat or on the sweeps. All gear is lashed for sea. Limber chest is locked, lashed, and secure for sea.
- Fenders are ready. One roving fender forward, one aft.
- Spare rope, twine, and boatswain's tools are onboard
- Paint Locker is secured for sea
- Deck is secured for sea

Completed By: \_\_\_\_\_

Date: \_\_\_\_\_

## Prep for Sea Checklist - Engineering

- Top up water tanks.
- Sound Sewage tanks.
- Top up the Day Tank
- Sound Fuel tanks.
- Record all tank soundings in the Engine Room Log, and on the Nav Station Daily Report Board.
- Check fuel shutoffs for correct position (operate weekly)
- Check all fuel valves on the fuel manifold before each start-up
- Fire up main engines and generators one hour before departure. Secure machinery when water temperature is up to normal operating temp
- Check gear shift and throttle controls to ensure they are functioning properly
- Check that the electric fire pump is lined up correctly
- Check that the Main Engine driven bilge pump clutch is operating properly
- Check all battery voltages
- Check that battery chargers are functioning
- Check that deck starts are functioning properly
- Check engine instrument gauges on deck and in engine room for proper operation
- Check main engine alarm panel in nav station.
- Secure Shore Power 30 minutes prior to departure
- Engine Room log book is up to date

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

## Prep for Sea Checklist- Galley

- All food provisions are onboard and stowed for sea, no later than 30 minutes prior to departure
- Gray water pump is operating properly
- Drink coolers are topped up with cups available
- Firewood is stowed for sea (day before departure)
- Galley pots, pans, and tools are properly stowed for sea
- Coffee pot, tea kettle, microwave, and thermoses are secured for sea
- 24-volt refrigerator is working properly. Check the day before departure and immediately before departure
- Stove is equipped, clean, and operating properly
- There are no fire hazards or combustibles near the stove

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

## Prep for Sea Checklist - Chief Mate

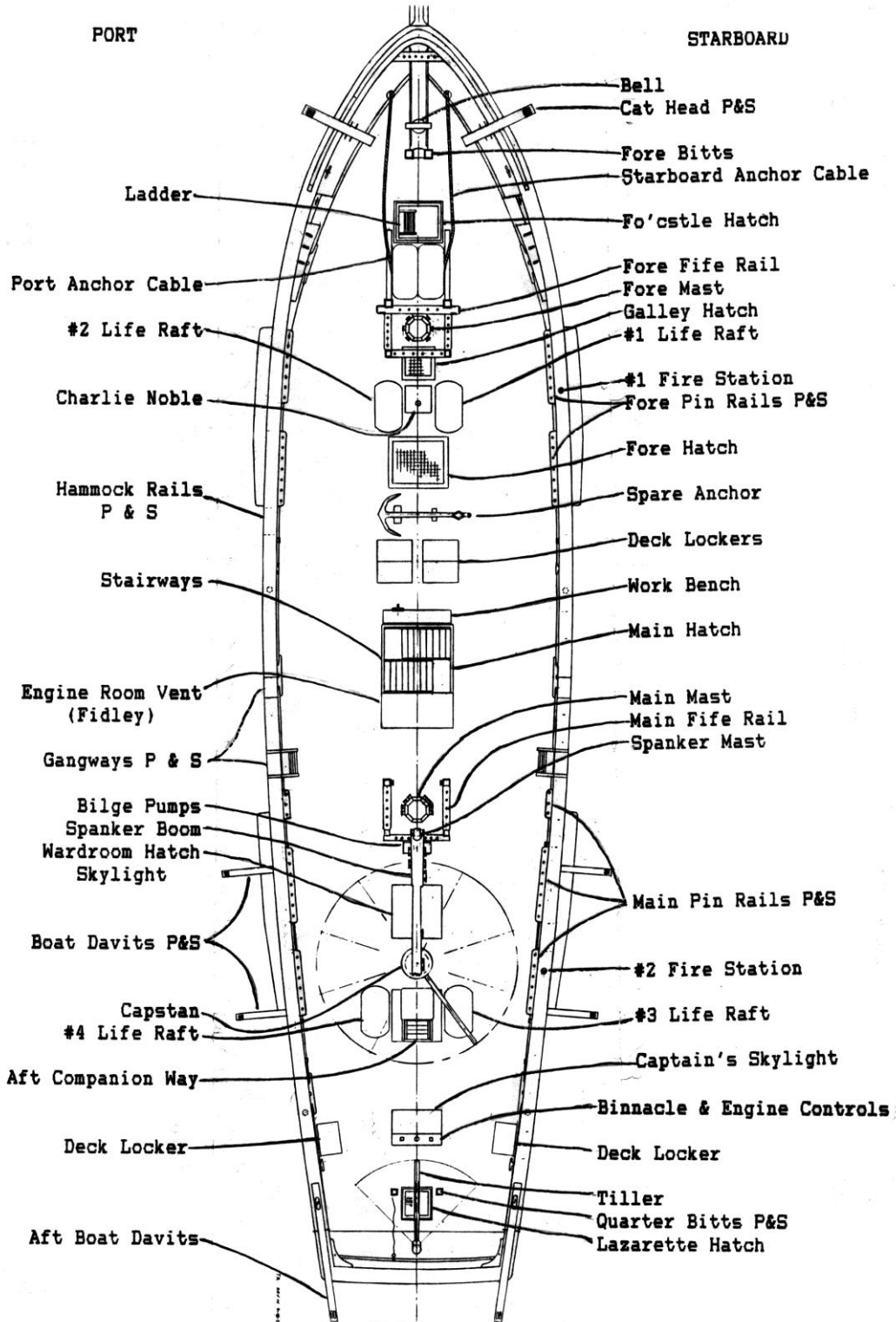
- Send divisions to station bill in turns
- Crew/Trainee/Guest lists to chart table and a copy to the office
- Emergency Contact Info lists to the Chart table and/ or Med Officer and a copy to the office
- Safety Orientation checklist for all new crew is completed and a copy to the Safety Officer
- Vessel Familiarization Training completed for all new crew at least by the day before departure
- Single up dock lines
- Stow Awnings
- Go to one brow
- Sail covers, raft covers
- Ready sail as needed
- Launch *Cutter I* and remove harbor hawser
- Brig Check
- Port Anchor is set for harbor entrance/ departure See Boatswain's checklist
- Safety Officer Checklist completed
- Galley Checklist completed
- Engineering Checklist completed
- Boatswain's Checklist completed
- Ship's Logbook is up to date
- All crewmembers have assignments on the station bill
- Check the weather forecast

Completed By: \_\_\_\_\_

Date: \_\_\_\_\_

# APPENDIX

## DECK PLAN





# SAIL AND SPAR PLAN

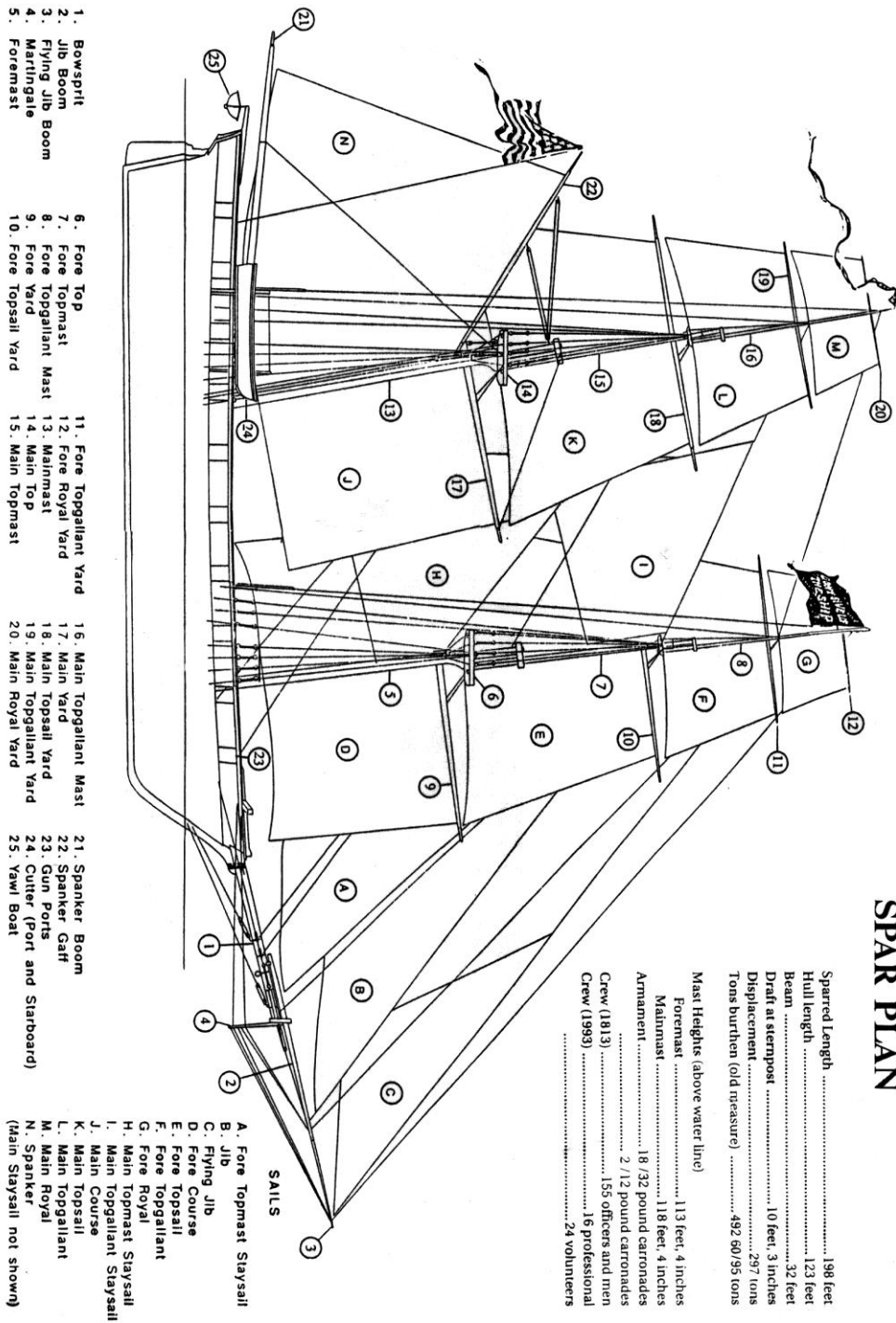
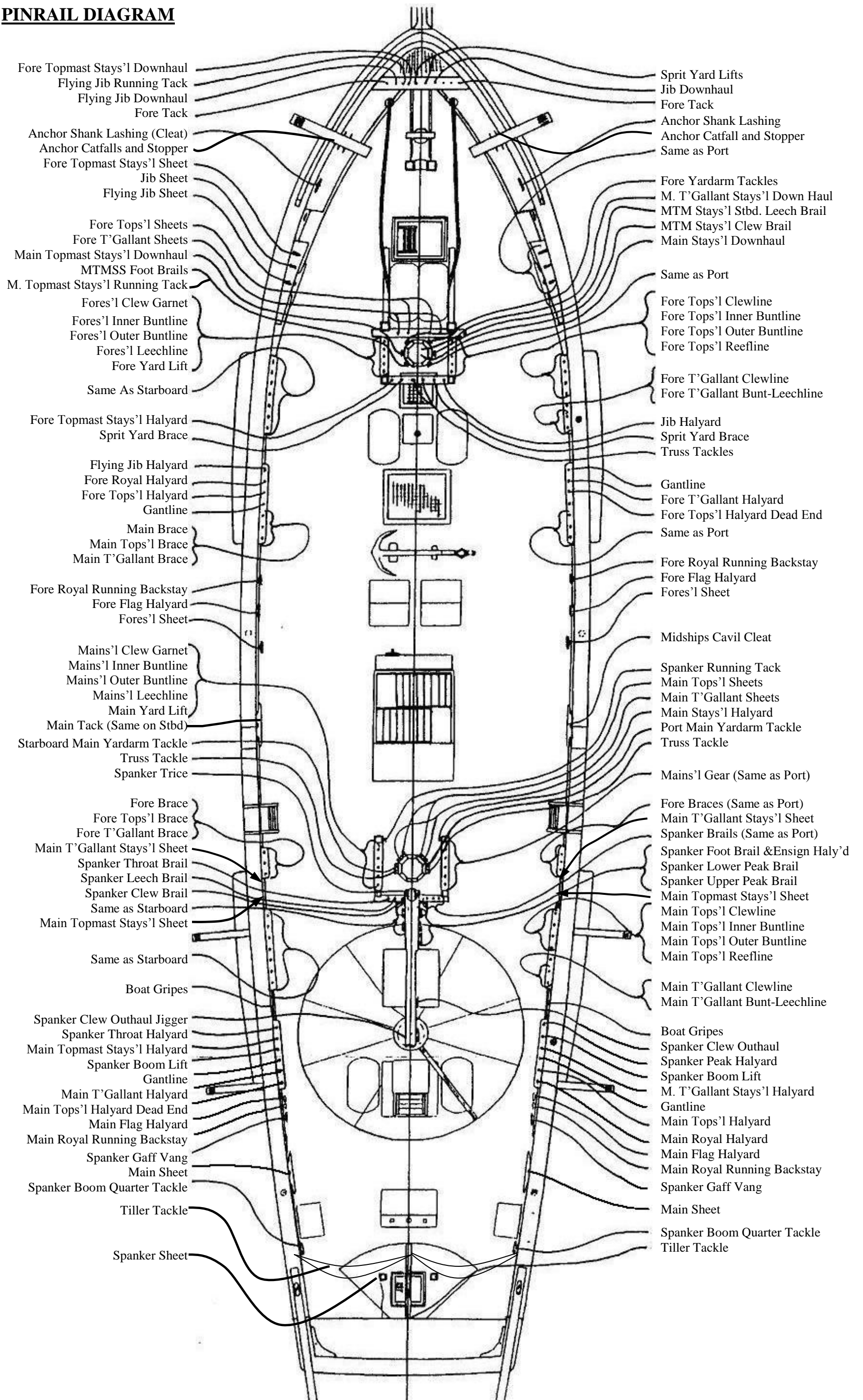


Figure 18- US Brig Niagara Sail and Spar Plan



**PINRAIL DIAGRAM**



## WATCH, QUARTER, AND STATION BILL

	BERTH	POSITION	NAME	MAN OVERBOARD (3 Prolonged)	FIRE/ EMERGENCY (Continuous Ringing)	ABANDON SHIP (7+ Short, 1 Prolonged)	BOAT	RAFT	GENERAL QUARTERS Sail Station Mooring Station	
	Aft Cabin	Captain		CON - In Command (radio)	CON- In Command (radio)	CON- In Command (radio)	1	4	CON- In Command	CON- In Command
<b>PORT Watch</b>	<b>2nd DIVISION</b>	Chief Mate		In Charge of Deck (radio)	In Charge at Scene (radio)	In Charge of Deck (radio)		2	In Charge of Deck	In Charge of Deck
		Able Seaman		Sail Handling	Don SCBA	Cutter II Coxswain	2	2	Fore	Quarter Spring
		Ordinary Seaman		Sail Handling	Fire Hose #1 Leader	Pass out PFD's	2	2	Fore	Bow Line
		Ordinary Seaman		Launch Cutter I	Sail Handling	Launch Boats	2	2	Fore	Fenders
		Apprentice		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts	2	2	Fore	Fenders
		Apprentice		Spotter (Port Fore Shrouds)	Sail Handling	PFDs/Launch Port Rafts	2	2	Fore	Fenders
		Trainee		Lookout	Lookout	Lookout	2	2	Lookout	Lookout
		Trainee		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts	2	2	Fore	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Port Rafts	2	2	Fore	Fenders
	Trainee		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts	2	2	Fore	Fenders	
	<b>4th DIVISION</b>	3rd Mate		Sail Handling	In Charge of Sail Handling	Get EPIRBs		4	Main	On Deck
		Able Seaman		Medical Officer	Medical Officer	Medical Officer		4	Main	Bow Breast
		Ordinary Seaman		Helm	Helm	Helm		4	Helm	Helm
		Ordinary Seaman		Launch Cutter I	Sail Handling	Launch Boats		4	Fore	Stern Line
		Apprentice		Spotter (Port Main Shrouds)	Dresser	PFDs/Launch Port Rafts		4	Fore	Fenders
		Apprentice		Helm	Helm	Helm		4	Helm	Helm
		Trainee		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts		4	Fore	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Port Rafts		4	Fore	Fenders
		Trainee		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts		4	Fore	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Port Rafts		4	Fore	Fenders
Trainee			Sail Handling	Damage Control Team	PFDs/Launch Port Rafts		4	Fore	Fenders	
<b>STBD Watch</b>	<b>1st DIVISION</b>	2nd Mate		In Charge of Cutter I	Damage Control Officer	Lead Launching of Rafts	1	1	Main	Main Shrouds
		Able Seaman		Cutter I Coxswain	Damage Control Team	Cutter I Coxswain	1	1	Main	Cutter I Coxswain
		Ordinary Seaman		Cutter I Crew	Fore Hose #1 Leader	Pass out PFDs	1	1	Main	Line Handler
		Ordinary Seaman		Cutter I Crew	Sail Handling	Emergency Kits/Flares to Rafts	1	1	Main	Fenders
		Apprentice		Cutter I Crew	Fire Hose # 1 Tender	PFDs/Launch Stbd Rafts	1	1	Main	Cutter I Crew
		Apprentice		Spotter (Stbd Fore Shrouds)	Damage Control Team	PFDs/Launch Port Rafts	1	1	Main	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Stbd Rafts		1	Main	Fenders
		Trainee		Sail Handling	Damage Control Team	PFDs/Launch Stbd Rafts		1	Main	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Stbd Rafts		1	Main	Fenders
		Trainee		Sail Handling	Damage Control Team	PFDs/Launch Stbd Rafts		1	Main	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Stbd Rafts		1	Main	Fenders
	<b>3rd DIVISION</b>	4th Mate		NavCom	NavCom	NavCom		3	Main	On Deck
		Able Seaman		Launch Cutter I	Don SCBA	Cutter III Coxswain	3	3	Main	Midships Spring
		Ordinary Seaman		Sail Handling	Start MEs/Throttles	Start MEs/Throttles	1	3	Main	Bow Line
		Ordinary Seaman		Sail Handling	WTD's	WTD's	3	3	WTD's	WTD's
		Apprentice		Sail Handling	Fire Hose #2 Tender	PFDs/Launch Stbd Rafts	1	3	Main	Line Handler
		Apprentice		Sail Handling	Dresser	PFDs/Launch Port Rafts	3	3	Main	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Stbd Rafts	3	3	Main	Fenders
		Trainee		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts	3	3	Main	Fenders
		Trainee		Sail Handling	Sail Handling	PFDs/Launch Stbd Rafts	3	3	Main	Fenders
Trainee		Sail Handling	Damage Control Team	PFDs/Launch Port Rafts	3	3	Main	Fenders		
Dayman	W.R. Port Fwd Cabin	Engineer		Start MEs/Throttles	Man ER/Start Pumps (radio)	Man ER/Start Pumps (radio)		4	Start ME's/Throttles	Start ME's/Throttles
Dayman	W.R. Port Fwd Cabin	Boatswain		Lead Launching of Cutter I	Sail Handling	Lead Launch of Boats		4	On Deck	On Deck
Dayman	Galley Port Fwd Cabin	Steward		Head Count	Secure Stove/ Galley-Head Count	Head Count		4	Galley/ Deck	Galley
Dayman	Galley Port Aft Cabin	Cook		Assist with Head Count	Assist with Head Count	Assist with Head Count		4	Galley/ Deck	Galley

# NIAGARA DECK AND GENERAL ARRANGEMENT

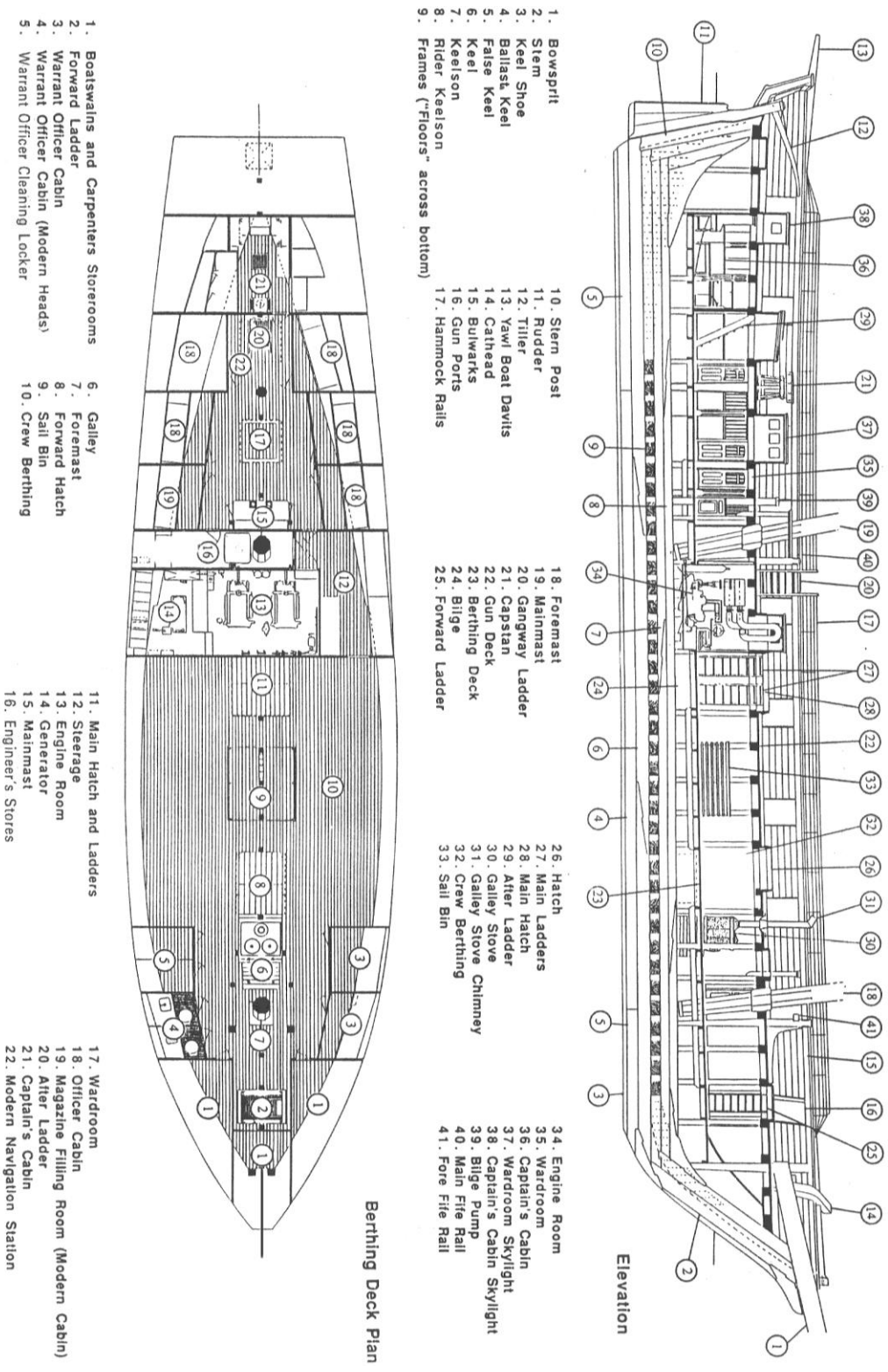
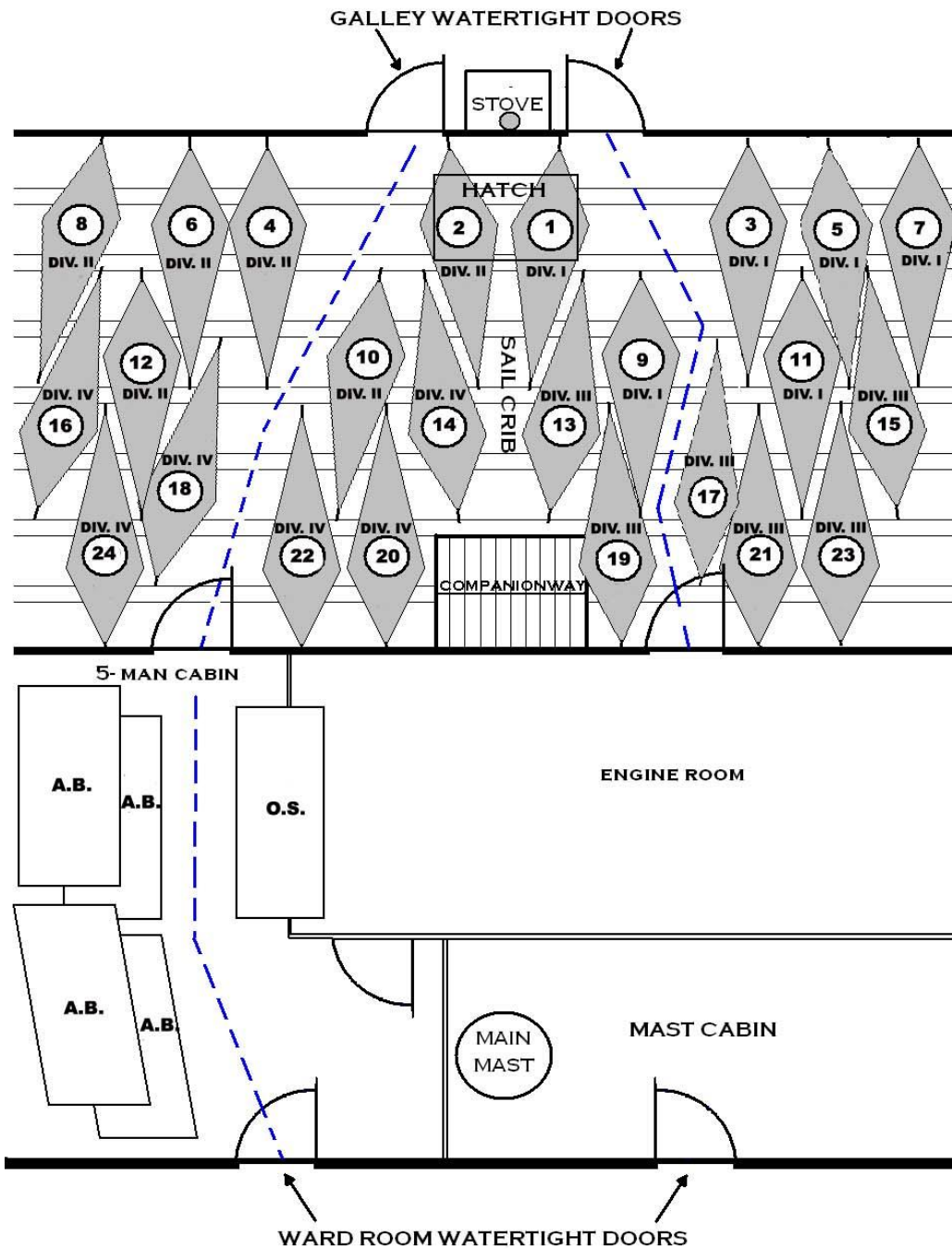


Figure 19- Deck and General Arrangement

## BERTH ARRANGEMENT DIAGRAM



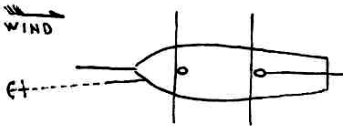
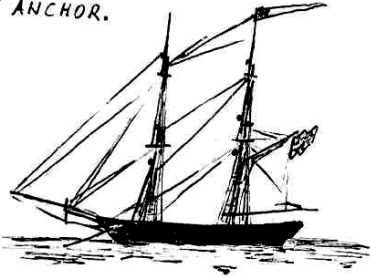
**Figure 20- Berth Arrangement Diagram**

(Hammock numbers are circled. Division assignments are labeled as DIV. I, DIV. II, etc.)

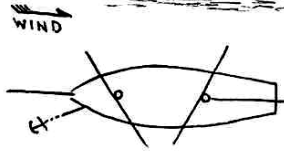
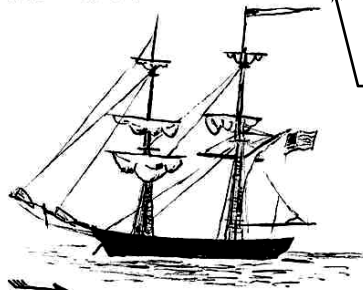
# BRIG SAILING MANEUVERS

## Sailing Off The Hook

1. AT ANCHOR.

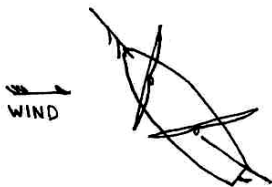
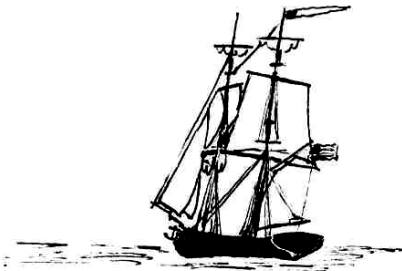


2. SAILS LOOSED, YARDS BOXED. HEAVE UP!

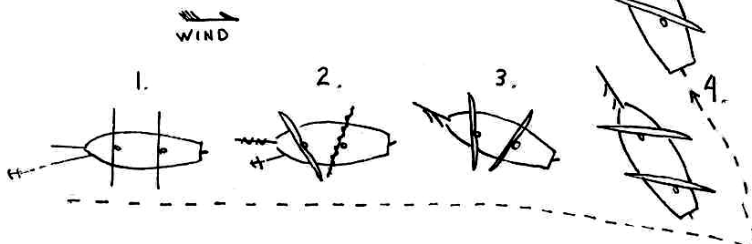
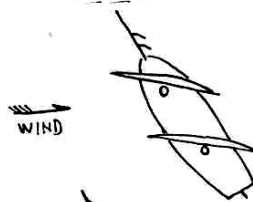
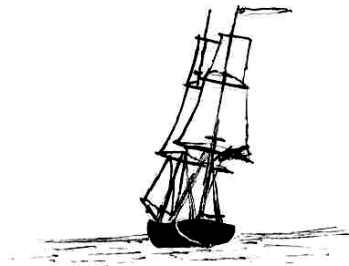


Topsails sheeted home or set after hauling back to a short stay.

3. ANCHOR IS A-WEIGH! HEADS'LS AND FORE YARDS BACKED, BOW FALLING OFF TO STARBOARD...

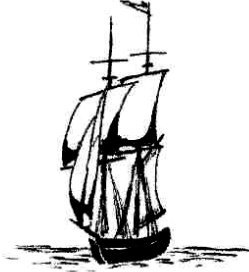


4. LET GO AND HAUL! PASS HEADS'LS! UNDER WAY, PORT TACK.

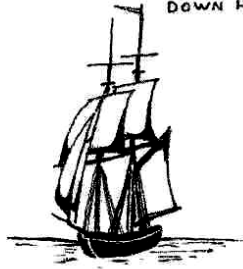


# To Tack a Brig

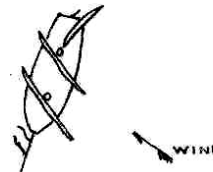
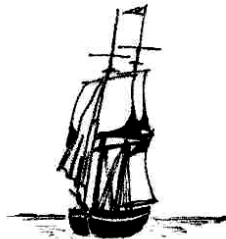
1. PORT TACK.



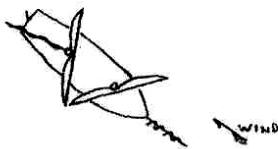
2. SPANKER TO WEATHER,  
DOWN HELM!



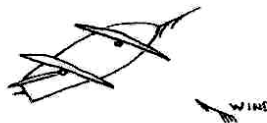
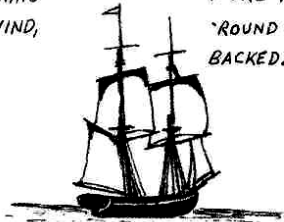
3. EASE HEAD SHEETS!



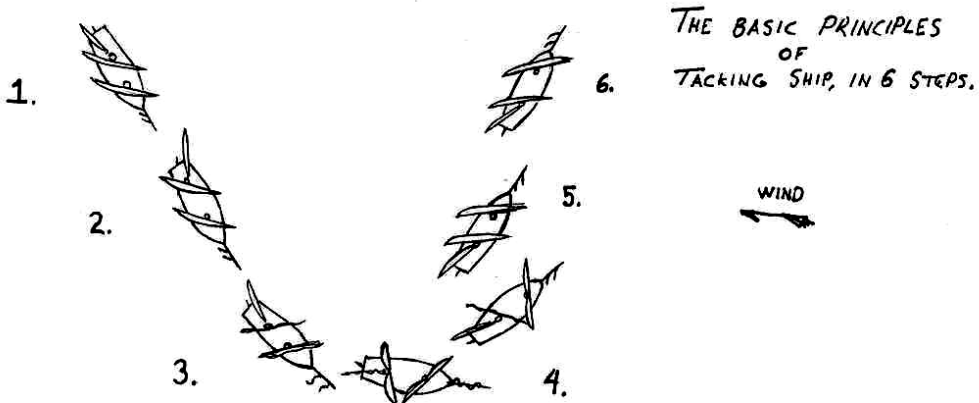
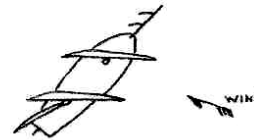
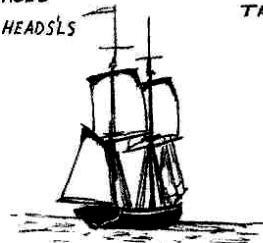
4. MAINS'L HAUL!  
HEAD OF SHIP TURNING  
THROUGH EYE OF WIND,  
"IN STAYS."



5. LET GO AND HAUL!  
FORE YARDS BRACED  
"ROUND TO FILL, HEADS'L  
BACKED..."



6. PASS HEADS'L!  
ON STARBOARD  
TACK.



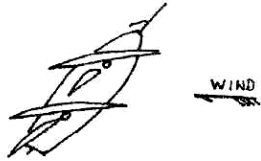
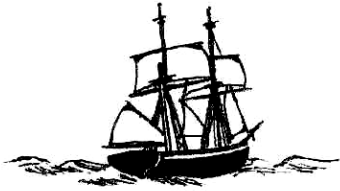
THE BASIC PRINCIPLES  
OF  
TACKING SHIP, IN 6 STEPS.

© OBSERVER

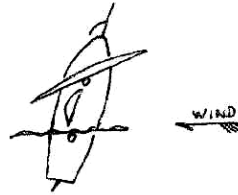


# To Ware a Brig

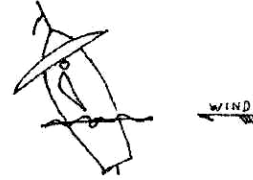
1. ON STARBOARD TACK...  
TAKE IN THE SPANKER!



2. UP HELM!  
SHIVER THE MAIN YARDS!



3. SQUARE THE FORE  
YARDS!



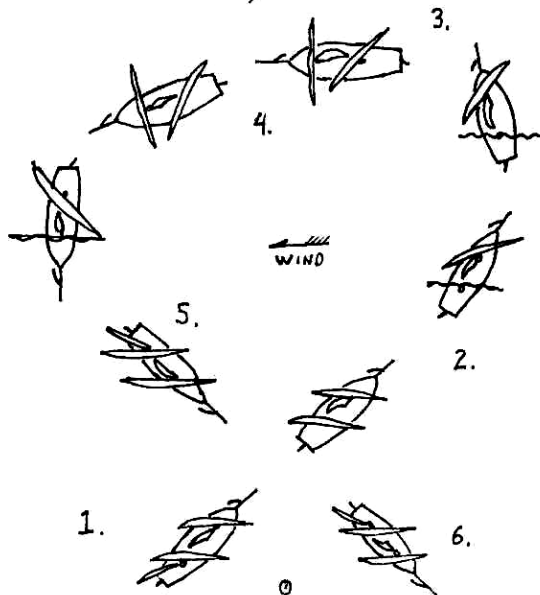
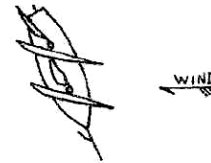
4. BEFORE THE WIND. PASS FORE  
AND AFT!



5. SET THE SPANKER!



6. BRACE UP SHARP, PORT  
TACK!



WEARING SHIP. GROUND  
LOST TO LEEWARD IS  
GREATER THAN DEPICTED.  
POSITION OF OBSERVER  
INDICATED BY ○  
NOTE THAT VESSEL CROSSES  
OWN TRACK.



**The Beaufort Wind Scale**

<i><b>Beaufort Force</b></i>	<i><b>Knots</b></i>	<i><b>Description</b></i>	<i><b>Effect at Sea</b></i>
0	0- 0.9	Calm	Sea is like a mirror
1	1-3	Light air	Scale-like ripples form, but without foam crests.
2	4-6	Light breeze	Small wavelets, short but more pronounced. Crests have a glassy appearance and do not break.
3	7-10	Gentle breeze	Large wavelets. Crests begin to break. Foam has glassy appearance. Perhaps Scattered white horses.
4	11-16	Moderate breeze	Small waves, becoming longer. Fairly frequent white horses
5	17-21	Fresh Breeze	Moderate waves, taking a more pronounced long form. Many white horses are formed. Chance of some spray.
6	22-27	Strong Breeze	Large waves begin to form. White foam crests are more extensive everywhere. Some spray.
7	28-33	Moderate Gale	Sea heaps up and white foam from breaking breaking waves begins to be blown in streaks along the direction of the wind. Spindrift begins.
8	34-40	Fresh Gale	Moderately high waves of greater length. Edges of crests break into spindrift. Foam is blown in well marked streaks Along the direction of the wind.
9	41-47	Strong Gale	High waves. Dense streaks of foam along the direction of the wind. Sea begins to roll. Spray may affect visibility.
10	48-55	Whole Gale/ or Storm	Very high waves with long overhanging crests. The sea surface takes a white appearance. Visibility is affected.
11	56-63	Violent Storm	Exceptionally high waves. Everywhere, the edges of the wave crests are blown into froth. Visibility is seriously affected.
12	64 or higher	Hurricane and Typhoon	The air is filled with foam and spray. Sea is completely white with driving spray. Visibility is very seriously affected.

**Figure 21- Beaufort Wind Scale**

## **BLACK POWDER SAFETY AND GUN DRILLS**

The purpose of carrying historically accurate replica armament onboard *Niagara* is to provide interpretation and demonstration for the benefit of visitors, guests, and other observers. Early in the sailing season each year, a gun crew from each watch is selected and trained to maintain and fire the ship's guns.

All full-time professional crewmembers receive Black Powder Safety Training in accordance with the *PHMC Safety Manual for Historic Weapons Demonstrations*. After receiving PHMC Black Powder Safety Training, they become certified as a Safety Officer for Historic Weapons Demonstrations on PHMC property. All members of the ship's gun crew will receive training from a PHMC certified Safety Officer. The *PHMC Safety Manual for Historic Weapons Demonstrations* will be issued to all members of the gun crew and training in black powder safety and the method of conducting gun drills aboard *Niagara* will be provided before anyone is permitted to join the gun crew and exercise the ship's artillery.

Before a gun drill is undertaken that utilizes black powder, it should be stressed that SAFETY is of the utmost importance in everyone's mind from the Ship's Captain to the deckhand. It is everyone's responsibility! Black powder is highly explosive and an accident is likely to result in death or serious injuries to anyone in the vicinity. No instructions from anyone shall relieve any member of the gun crew from his/her responsibility to act in accordance to the black powder safety policies and procedures established by the master of the vessel and so described in this chapter.

While underway with daysail students onboard, black powder will be carried in a limber chest in the Cutter III (outboard of the ship's rails) in quantities of not more than 5 pounds. While sailing on voyages away from Erie, not more than 25 pounds of Black Powder will be carried in a BATF magazine, in a deck box, aft and near the helm. While in a voyage port and open for public tours black powder will be stowed in the BATF magazine, which will be in a deck box and on the offshore side of the ship where it can be quickly jettisoned overboard in the event of a fire.

### **On Deck Safety Zone and Range Safety Zone**

A Safety Zone shall be established on deck with rope barriers running athwartships and across the deck 15 feet forward and 15 feet aft of the gun being fired. The rope barriers create an exclusion zone preventing any person from being directly behind the gun. This zone shall be set up before entering the magazine to retrieve black powder.

The Range Safety Zone shall extend out to 350 yards from the muzzle and 30 degrees on either side of the gun's line of fire (for a total arc of 60 degrees). The Range Zone should be clear before loading and maintained clear to the greatest extent possible via ship's course and speed before firing. The range zone must be clear when the gun is fired. When firing blank charges, the gun being fired shall have its muzzle slightly depressed to reduce inadvertent projectile range.

### **Prior to the firing or removal of black powder from the magazine the following should be performed:**

- ❑ All cigarettes, etc. are extinguished by order of the Ship's Captain or Gun Captain.
- ❑ The Safety Zone shall be set up on deck. Visitors and non-gun crew are kept at a safe distance from Black Powder (i.e. two gun positions away). The area between the magazine and the gun must be kept clear while Black Powder is carried in the pass-box from the magazine (or limber chest) to the demonstration area.
- ❑ No gun is to be fired at any time when a boat or persons are in line or oblique line of fire!
- ❑ No one, including press or photographers, is allowed within the Safety or Range Zones.
- ❑ All crew and visitors onboard are advised to cover their ears upon hearing the command "Stand by to Fire!" Sufficient time will be given to ensure visitors have time to cover their ears before firing is commenced.

## Unauthorized Gun Crew

No one is permitted to be part of the official gun crew without the Captain's permission. Crewmembers are encouraged to be a part of the gun crew, but only after receiving the gun drill training.

## General Naval Gunnery Terms and Info

### Range Terms

"Pistol shot" - approx. 25 yards

"Musket shot" - approx. 200 yards

"Gun (cannon) Shot - 1,000 yards

### Small Arms:

Muskets with Bayonets (Marines)

Long barreled 3 ft. 1 in. 6.56 in caliber

Short barreled - 2 ft. 2 in.

Practice range - 50 yards

Cutlasses

Pistols - usually with belt clip

Tomahawks (boarding axes)

Pikes (3 sides, pointed 7ft. 7 in. or 1/2 pike 4 ft.)

### Power of Penetration

(Round of shot fired by cannon)

ex. 18 Pdr. shot penetrates 4 oak planks 32 1/2 in. thick

### Penetration depended on

- Distance from target
- Shot selected (round, chain, bar, etc.)
- Weight of shot
- Single or double shotted
- Amount of powder
- Elevation of gun

### Examples of Charge Sizes for 32-Pounder Carronades

Distant charge with 1 shot = powder charge of 10 lb. 17 oz.

Full charge with 1 shot = powder charge 8 lb.

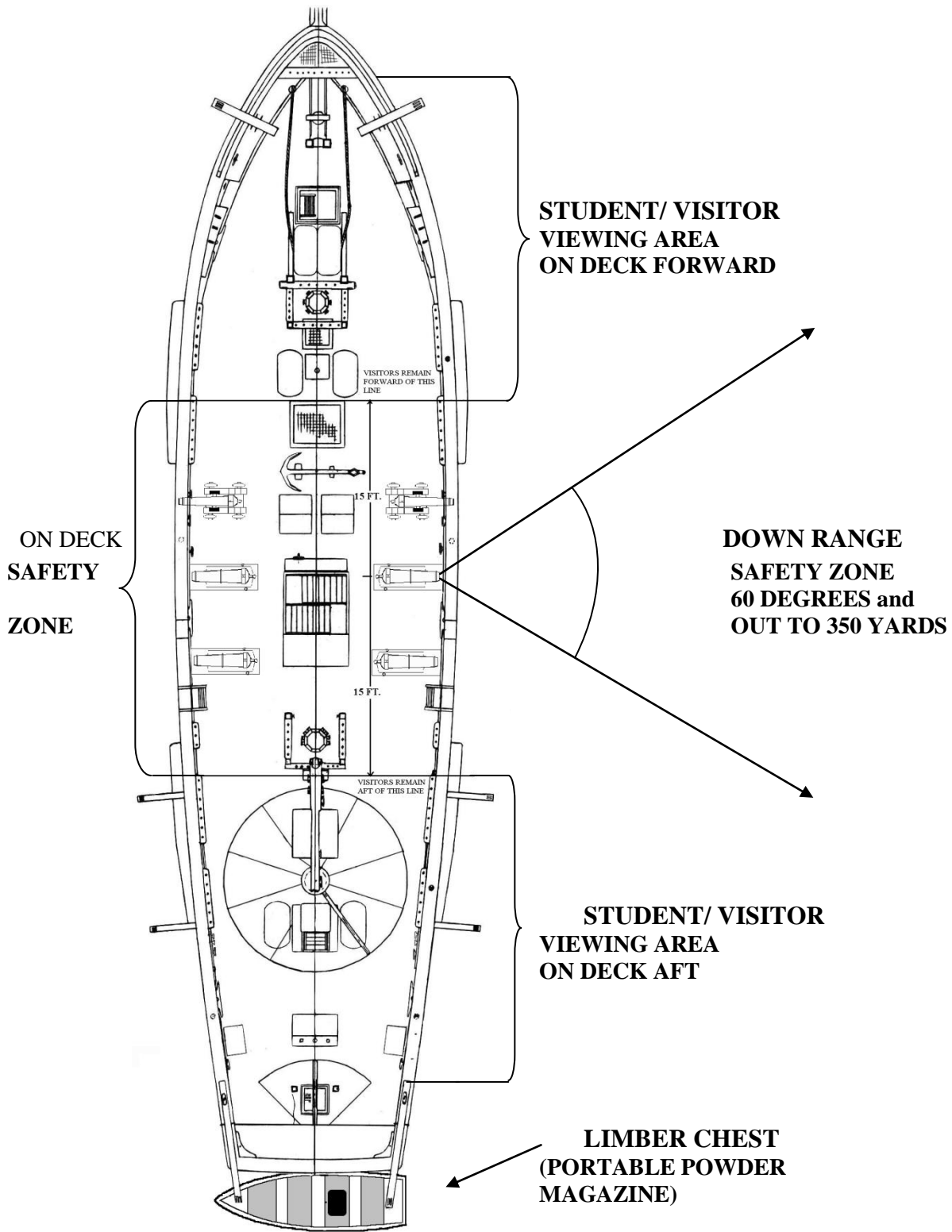
Reduced charge 2 shot = powder charge 6 lb.

Scaling and blank charge (to fire salute or clean sealing out of gun) = 2 lb. 2 oz.

at 300 yards 32 Pdr. grape shot penetrated 5" of fir, 4" of oak

Musket at 40 yards penetrated 1" oak - 4 out of 6 penetrated 2" of oak

**Figure 22- Gun Firing Safety Zones**



## **SUGGESTED READINGS**

The following is a short list of books which are pertinent to serving in traditional sailing ships. Some books are specifically instructional; some are historical accounts, and others are fiction but describe the age of sail. The titles are not limited to naval history or the War of 1812, but include merchant ships and later periods of sail.

These books constitute most of the collection in the Captain's Library onboard the ship. All hands are allowed to check out books, but books must not leave the ship and must be returned in seven days. See the Purser for details.

### **Instructive books on Seamanship**

Captain R.M. Willoughby FN1	<i>SQUARE RIG SEAMANSHIP</i>
Jan Adkins,	<i>THE BUILDING OF A WOODEN SHIP</i>
Clifford Ashley,	<i>ASHLEY'S BOOK OF KNOTS</i>
John Harland,	<i>SEAMANSHIP IN THE AGE OF SAIL</i>
Darcy Lever, Royal Navy,	<i>YOUNG SEA OFFICERS SHEET ANCHOR</i>
Captain Nares, Royal Navy,	<i>NARES SEAMANSHIP, 1862</i>
Sam Svenson,	<i>HANDBOOK OF SEAMAN'S ROPEWORK</i>
Alan J. Villiers,	<i>THE WAY OF A SHIP</i>

### **Good Stories about the Seafaring Life**

Joseph Conrad,	<i>MIRROR OF THE SEA</i>
Joseph Conrad,	<i>NIGGER OF THE NARCISSUS</i>
Joseph Conrad,	<i>YOUTH</i>
Richard Henry Dana,	<i>TWO YEARS BEFORE THE MAST</i>
Linda Grant De Pauw,	<i>SEAFARING WOMEN</i>
Rudyard Kipling,	<i>CAPTAINS COURAGEOUS</i>
Herman Melville,	<i>WHITE JACKET</i>
Herman Melville,	<i>BILLY BUDD</i>
Eric Newby,	<i>THE LAST GRAIN RACE</i>
F. Worsley,	<i>SHACKLETON'S BOAT JOURNEY</i>

### **Naval History & The War of 1812**

D.C Skaggs & G.T. Altoff,	<i>A SIGNAL VICTORY</i>
Pierre Berton,	<i>THE INVASION OF CANADA</i>
Pierre Berton,	<i>FLAMES ACROSS THE BORDER</i>
Jeffery Bolster,	<i>BLACK JACKS</i>
Donald Hickey,	<i>THE WAR OF 1812</i>
Emily Cain,	<i>GHOST SHIPS</i>
Howard I. Chapelle,	<i>HISTORY OF THE AMERICAN SAILING NAVY</i>
John Keegan,	<i>THE PRICE OF ADMIRALTY</i>
Brian Lavery,	<i>NELSON'S NAVY</i>
Robert Malcomson,	<i>HMS Detroit</i>
Theodore Roosevelt,	<i>THE NAVAL WAR OF 1812</i>
N.A.M. Rodger,	<i>THE WOODEN WORLD</i>

This song was often used at the pumps on merchant ships during a voyage but with other lyrics. It was traditionally the last song of a voyage because pumping ship was the last job done before the crew was paid off. Being the last task of the voyage, with the ship secure in port and the men about to be discharged, the crew could air complaints without fear of reprisal.

### LEAVE HER, JOHNNY

The musical score is written on three staves. The first staff is labeled 'SOLOIST:' and contains the melody for the first line of lyrics: 'I thought I heard the Old Man say,'. The second staff is labeled 'CHORUS:' and contains the melody for the second line: 'Leave her John-ny, Leave her;'. The third staff is also labeled 'CHORUS:' and contains the melody for the third line: 'You may go a-shore and draw your pay. And it's time for us to leave her.' The music is in a simple, folk-like style with a clear 4/4 time signature.

CHORUS:

Leave Her Johnny, Leave Her,  
 Oh, Leave Her Johnny, Leave Her,  
 For the work's all done and the winds don't blow  
 and it's time for us to leave her.

O the work was hard and the wages low  
 Leave her Johnny, leave her  
 The winds were foul and the ship was slow  
 And it's time for us to leave her.

She would not tack, nor wear, nor stay  
 Leave her Johnny, Leave her  
 She shipped it green both night and day  
 And it's time for us to leave her.

We had rotten meat, and weevily bread  
 Leave her Johnny, Leave her  
 It's pump or drown, the old man said,  
 And it's time for us to leave her.

Oh the mate was a bastard and the bosun worse,  
 Leave her Johnny, Leave her  
 So us poor sailors have learned to curse,  
 And it's time for us to leave her.

I thought I heard the Old Man say  
 Leave her Johnny, leave her  
 Give one more pull and then belay  
 And it's time for us to leave her.

The lyrics were typically improvised to commemorate events of the voyage



***“We have met the enemy and he is us”  
-Walt Kelly***

**PINRAIL DIAGRAM**

