



RNSYS

Spar and Jib Cranes
Basic Operation
Orientation Course



Disclosure

The intent of this presentation is provide the crane operator with an orientation to the cranes and safe operation. It is not intended to be a crane operator's course or to comprehensively teach how to lift items using a crane. If at anytime you are unsure of how to operate / engage in a lifting activity, please stop and engage the services of a senior RNSYS Boatyard Employee



NOTICE of RESPONSIBILITY



The RNSYS member who has signed out the controls (person in charge) for a crane is the person responsible for the crane and its operation. They are responsible for the lift and any persons in and around the crane area. Cranes and their use can be dangerous and can lead to personal injury and potentially death. The use of safe work practices and personal protective equipment is required when using the cranes, the person in charge, is responsible for adherence to the crane use policy and guidelines. Consumption of alcoholic beverages in and around the cranes is prohibited by law.



Presentation Outline

- Introduction to RNSYS Cranes
- Basic crane identification and controls
- Site Specific Safety Requirements
- Procedure for Using a Crane



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Crane Introduction

We have two cranes located on the property, the Jib Crane which has a lifting capacity of 10,000lbs and the Spar Crane which has a lifting capacity of 1,500lbs.



Spar Crane

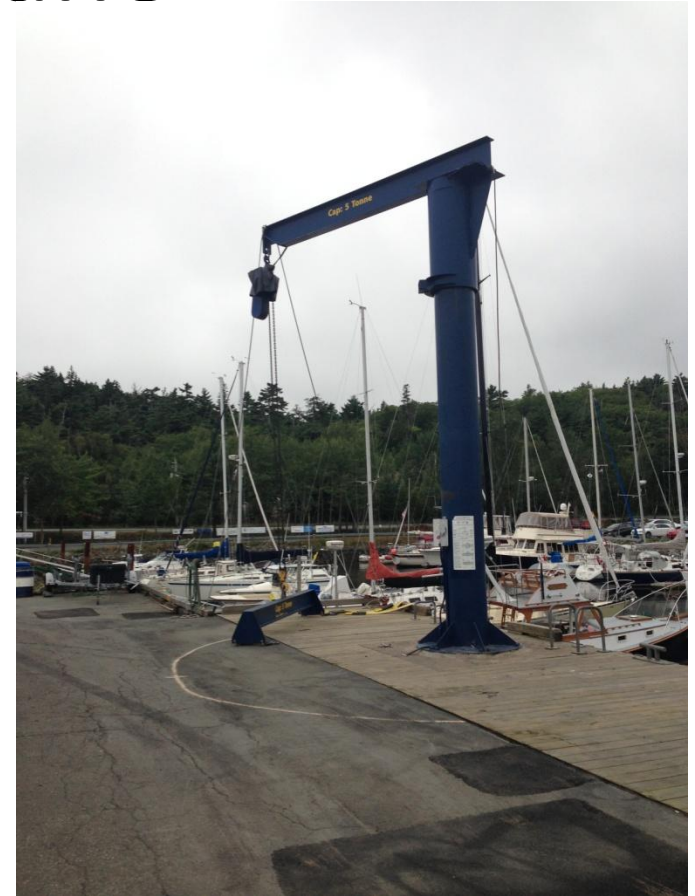


Jib Crane



Jib Crane

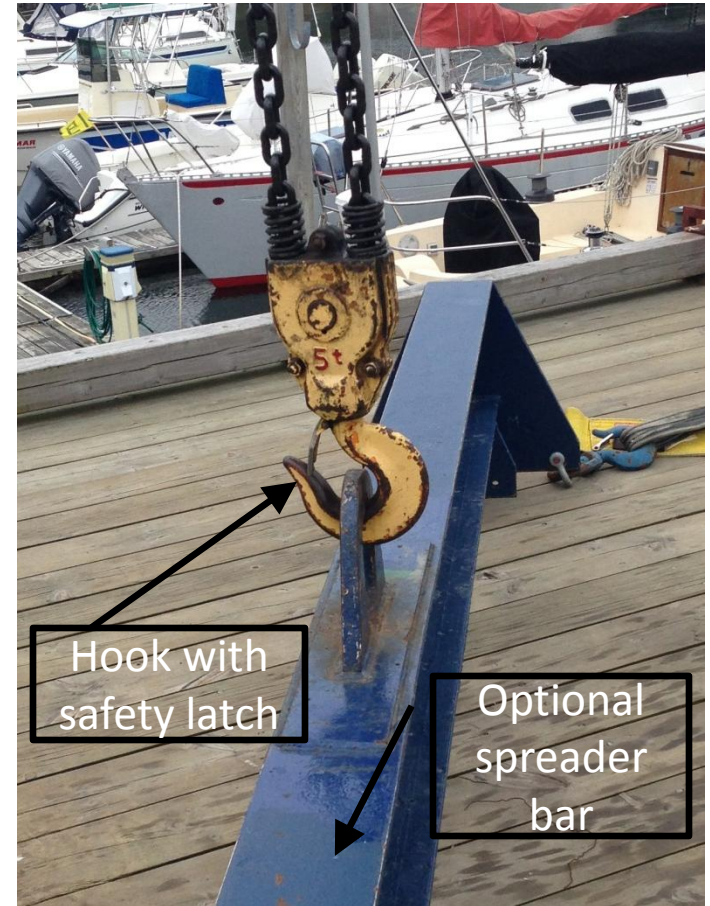
The Jib crane has the ability to lift 10,000 lbs and has a fixed boom. The lifting point is fixed at the end of the boom. The boom is fixed, i.e. it can not be raised or lowered. The jib crane can be rotated (slewed) such that it has a working radius that extends out over the water in the lagoon. The crane's hoist is electrically operated by a remote pendant style control and has a two part chain hoist attached to the hook. This crane is often used with the supplied spreader beam.





Jib Crane

The jib crane controls can be obtained from the dock office and gets connected to the crane. The hook has the same rating as the crane (5Ton) and has a safety latch. Do not use the hook without a safety latch. The supplied spreader beam should be used with this crane, however the weight of the bar must be included as part of your lift. The spreader bar helps with the slinging of wide items.

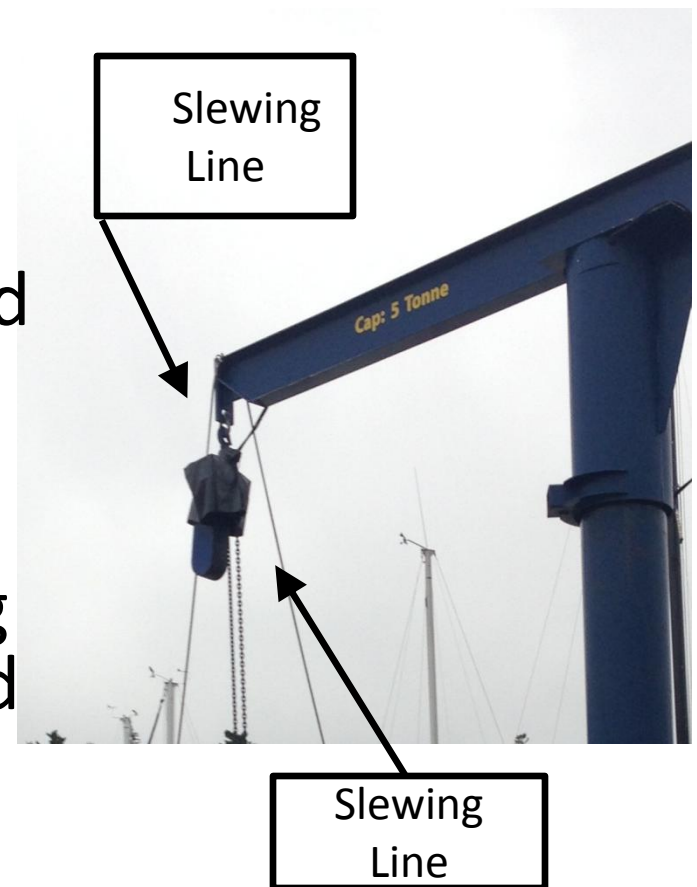




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The jib crane can be slewed manually. This is done by using the guide lines that are attached to the end of the boom. The cleats on the dock are used to secure the slewing lines which secure the boom. Note: slewing a crane that is supporting a load should be done in a controlled manner. Use the dock cleats to help control the slew rate of the crane at all times.

Jib Crane





Jib Crane

The figure on the right shows the use of a dock cleat to secure the slewing line. A 5 Ton object (10,000 lbs.) that is being slewed (rotating the crane) has significant momentum that could easily pull a person over who is only holding the line in their hands.



Jib Crane

The crane operations and typical safe working practices are attached to the base of the crane, immediately adjacent to the power switch.





Jib Crane

The pendant control is a push button controller. The crane actions, hoist up / down, are controlled by pushing and holding the button.





Spar Crane

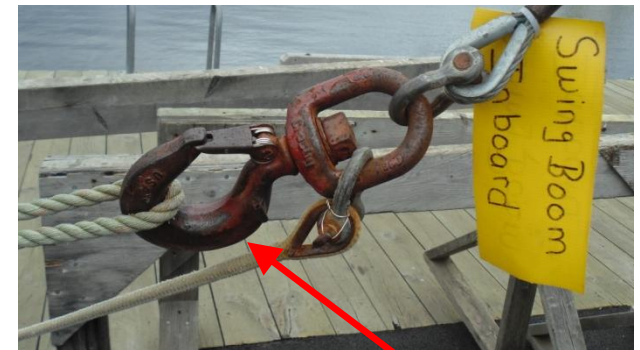
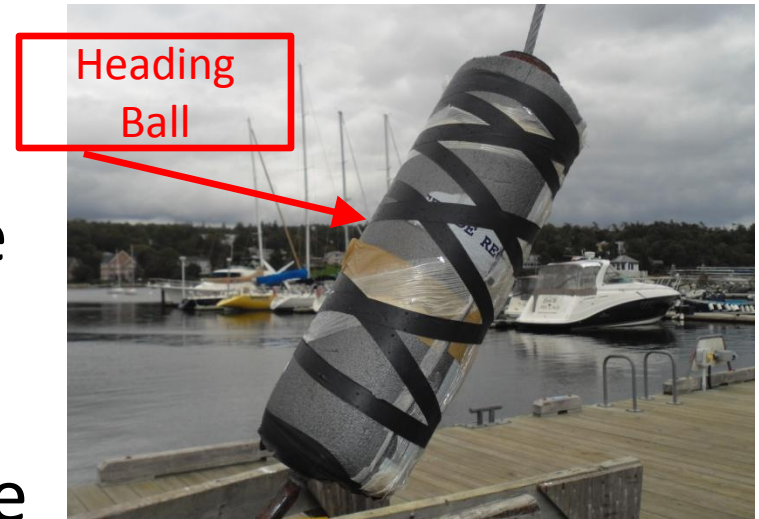
The spar crane is a boom crane that can also be slewed. In addition, the end of the boom can be raised or lowered, which can adjust the lifting point toward or away from the base of the crane. This crane has a single part lifting wire rope that is attached to a hydraulic operated winch drum. The controls are fixed to the base of the crane. It has a rated lifting capacity of 1,500 lbs.





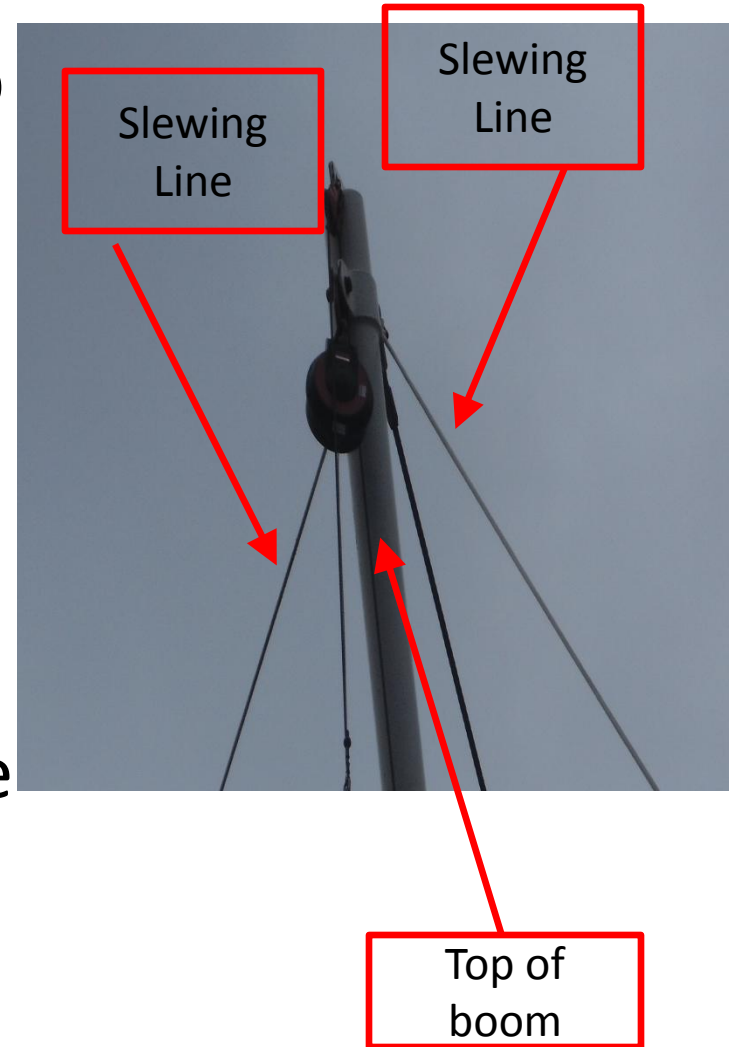
Spar Crane

The spar crane has a heading ball and a hook attached to the end. The heading ball is a weight which helps the wire rope spool properly when there is no load on the hook. The heading ball is heavy, and is one of the reasons that the crane area is a mandatory hard hat area during crane activities.



Spar Crane

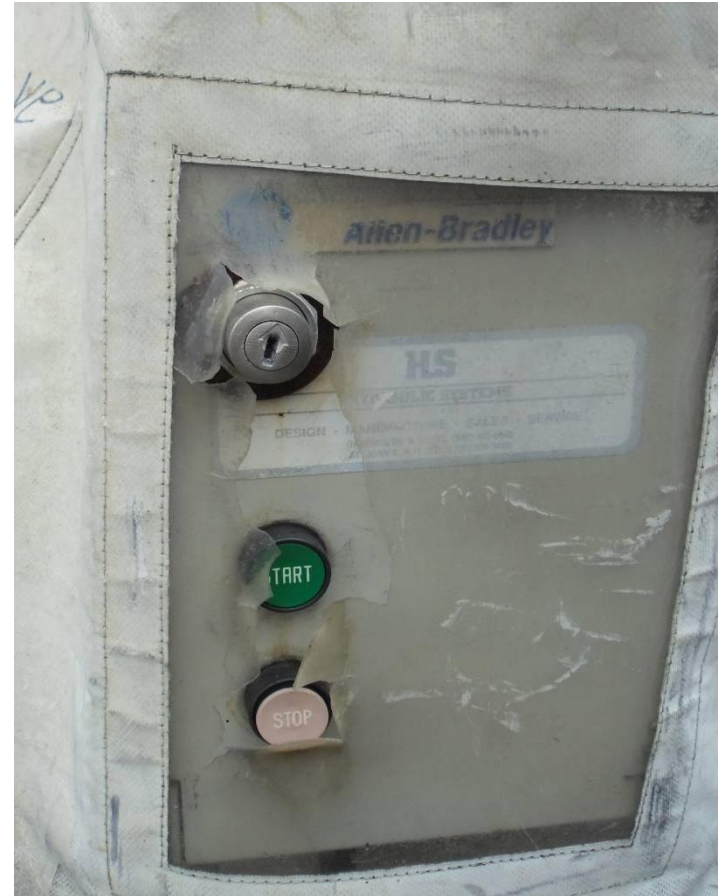
The spar crane, similar to the jib crane, can be slewed by using the slewing lines. The slewing lines are attached to the end of the boom and allow the boom to be located over the high wharf to well over the water. Slewing the spar crane with or without a load should be done carefully and be prepared to use a dock cleat / bollard to help control the rate of swing.





Spar Crane

The spar crane hoist is run by a hydraulic motor. To operate the crane you will need to sign out the key from the Dock office. To turn on the hydraulic pump, insert the key on the control box and turn it on. To start the hydraulic pump you need to press the green start button. A red STOP button is also located on the control box and is used to stop the hydraulic pump. The pump will make a noise, regardless of the crane hoist operation.



The control box is located on the land side of the base on the crane



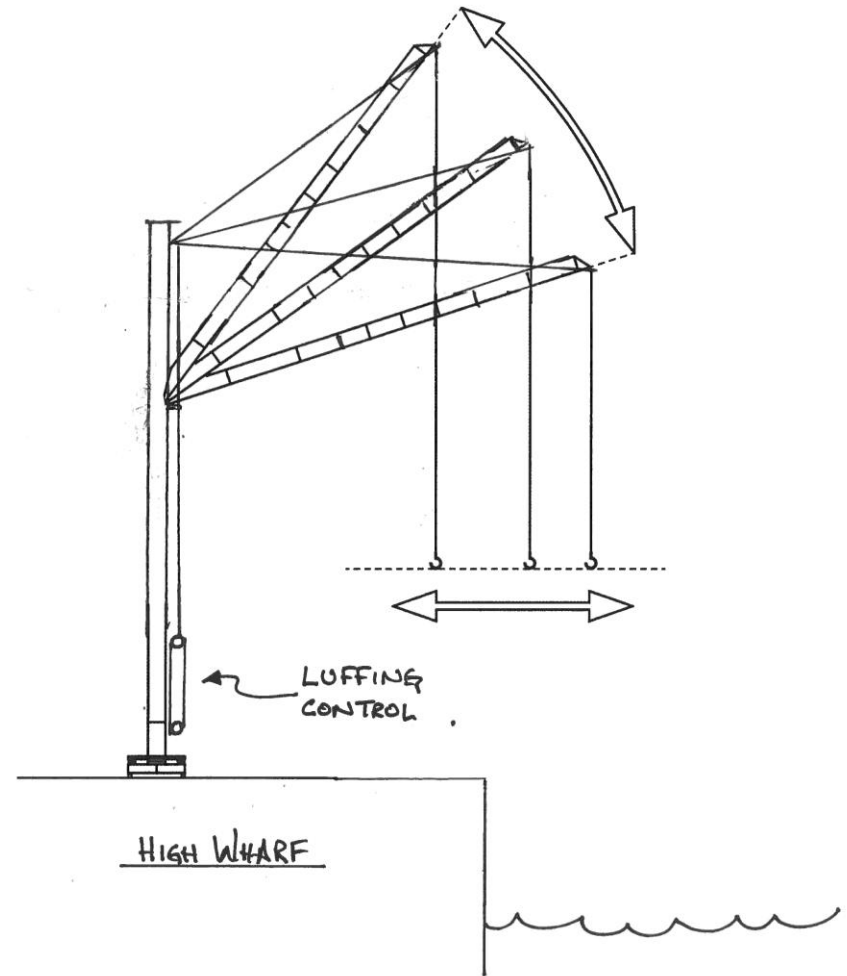
Spar Crane

The spar crane hoist is operated by a hydraulic lever. Pulling it up raises the hook, and conversely, pushing it down allows the hook to drop. The more you pull / push the faster the motion.



Spar Crane

Unlike the jib crane which has a fixed boom, the spar crane boom can be raised and lowered, “luffing”. This allows for the reach of the hook to be adjusted closer or further away from the base of the crane.





Spar Crane

The luffing control is a multi part line. Luffing the boom under load should never be attempted.

Always use the vertical cleat to control and secure the luffing line





Crane Procedures

The following are the steps involved in obtaining the controls and operating either the spar or jib cranes. Again, we impress that the member signing out the controls is the person responsible for the safe operation of the cranes, which also includes the safety of those working in and around the crane.

Safety First!



Step One

Go to the Dock office and sign out the jib crane pendant controls or the key for the hydraulic motor for the spar crane. Before staff will pass the controls over, you will be required to have successfully completed this crane orientation as well as sign a crane waiver. Please read the crane waiver.

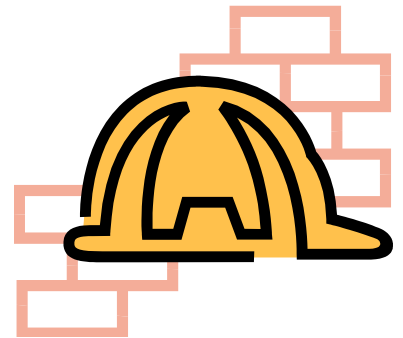




Step Two

The dock office has hard hats and other basic personal protective equipment (PPE). You can borrow these items, or supply your own; either way you will be responsible to make sure that everyone involved is using the correct PPE, especially hard hats.

When you lift items overhead or have machinery working over head, it is important to recognise the dangers associated with falling objects. The use of hard hats is mandatory in the crane areas. In addition, working under a live load is not advisable, and is only to be done when no other means of working is possible.





Step Three

Prepare your working area. Set up safety lines using the provided yellow posts, which insert into the edge of the wharf.



Spar Crane Safety line demarcation



Step Three

The safety lines are in line with the painted yellow lines that identify the hard hat area for each crane.



Jib Crane Safety line demarcation



Step Four

Inspect! Prior to using any crane, you are required to visually inspect the various aspects of the crane. Is there a safety latch, is the hook deformed, or is there obvious damage to the hoist chain or cable? If you are using slings, check them for chafe / damage. If you notice damaged items, inform the Dock office and have the equipment tagged “Out of Service” until any deficiencies are addressed.

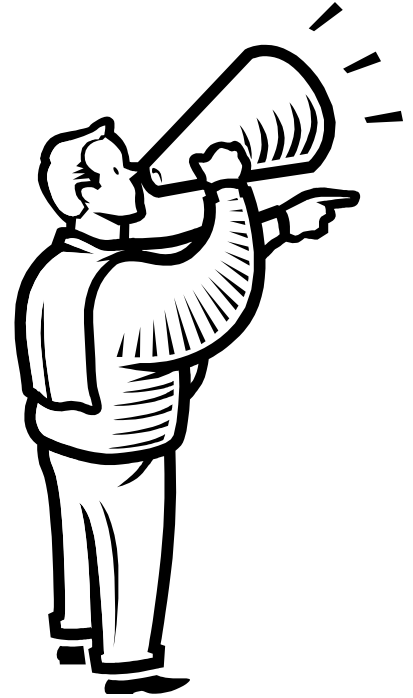


Is there a safety latch, is the hook deformed?



Step Five

Prepare your lift. Ensure that everyone knows who is in charge. If the crane operator can not see the hook or load during the entire lifting process, a signal person needs to be identified. The signal person is responsible for communicating to the crane operator the need to hoist, lower or stop hoisting. Discuss the lift with all involved so that everyone understands what their role is and the sequence of events.



Step Six

Prepare the item to be lifted. This may include attaching lifting straps, basketing the item or attaching hardware to a lifting point, “Rigging”. Each lift will be different and you will need to determine the correct method for your lift.



Step Six

When using lifting straps on a wide item, such as a boat, it is advisable to use a spreader bar to reduce the inward forces that may damage or collapse the item being lifted. Remember the weight of the spreader bar must be taken into account with respect to the total weight being lifted.



A spreader bar stops the load straps from pinching the hull



Step Seven

Check your surroundings. Prior to lifting and slewing any item, make one last check and ensure that the intended path of the object you are lifting is clear and unobstructed.





Step Eight

Start your lift slowly. Ensure that your rigging is holding and that you have positioned the center of gravity correctly. Always have the centre of gravity of the item being lifted below the hook; otherwise the object being lifted will want to rotate as it is being lifted. Once the object is lifted, do not allow people to work or pass under the load. Lift the object as required and proceed with slewing activities in a controlled manner. Do not leave the crane controls unmanned.



Step Nine

After you complete your lift release the crane slowly transferring the load of your object from the crane to the supporting structure / ground or water. Remember forces from the impact of a moving object can be much greater than the force of the dead weight alone. Slow and gentle is a good rule of thumb.





Step Ten

Clean up. Leave the cranes in a stored/secured position.

Jib Crane, secure pivot head to the west with guy lines secure to the RED cleats and main hook attached to the spreader beam.

Spar Crane, clip the hook into the holding line and **LIGHTLY** tension the hoist. Slew the boom inboard of the wharf face and secure the guy lines to the Red Bollard on the wharf face and the Red Eye Ring on the west guy wire. This will ensure, the boom will not impede vessels coming along side. Leave the areas clear of items and take down the safety lines. Return all PPE to the Dock office and most importantly return the controls / key to the dock office. Only until you do this are you “off the Hook” with respect to responsibility. Do not pass on the controls to another member without taking them into the dock office and having them complete the transfer, including signing the waiver.