American Sail Training Association

Rig Inspection Protocols for ASTA Member Vessels

Background:

Following two dismastings with fatalities on Subchapter T sailing vessels in Hawaii and the dismasting of *Pride of Baltimore II,* the United States Coast Guard has taken a greater interest in vessel rigging as part of their annual inspections.

In a response to recommendations made in a report subsequent to the dismasting of the Hawaiian passenger catamaran *Nahoku II*, the Office of the Commandant of the USCG declined to set a national minimum standard for the masting and rigging of sailing vessels, but did concur with a recommendation that Officers in Charge of Marine Inspection (with the assistance of the Senior Travelling Marine Inspector) develop local standards for rigging inspection for vessels within their operating areas.

Relevance to ASTA Member-Vessel Operations:

Initially, the suggestion was made (and partially concurred with by the Commandant's Office) that all sailing passenger vessels should be subject to annual third-party rig inspections. The Office of the Commandant acknowledged that the marine inspections department lacks the depth of knowledge to adequately inspect the myriad sailing passenger vessel rigs currently in service and encourages the use of third-party surveys. The particular challenge to the ASTA fleet in this new regime is that many of our vessels are fitted with sailing rigs that are not familiar to yacht riggers, marine surveyors, ABS/MCA inspectors, or any other body likely to be selected by the USCG for a third-party rig inspection. The inconvenience, questionable relevance , and financial burden of this makes it an unpleasant prospect for ASTA vessels.

The USCG is looking to ASTA on this topic presenting us with an excellent opportunity to steer the USCG guidance process. Recognizing that we have superior expertise within our organization, we propose to utilize our industry experts, the masters of our ships, as arbiters of the rig inspection process.

ASTA Action:

ASTA has been invited to establish a "best-practices" inspection protocol that member vessels may employ as an alternative to third-party rig inspections. A task force was formed consisting of ASTA members, ship masters, mates, and operational staff to draft a prospectus to be sent to the membership and with its approval on to Coast Guard

Headquarters. This inspection regime, along with the inspector's visual assessment of the rig and review of checklists and maintenance log, would in most cases satisfy the USCG and no third-party rig inspection or survey would be required.

Components of the protocol will be vessel-specific, meaning that some work will be required to adapt the basic format to individual vessels, and will include:

- Monthly inspections masts, spars, deck hardware, shrouds and stays, deck fittings, terminals, etc. (see below)
- Non-destructive testing as appropriate
- Documentation maintained , with supporting materials as appropriate, including photographs, diagrams, inspection checklists with signatures, etc.
- Maintenance history for identified problems and their resolution in addition to with routine maintenance.
- A reference bibliography for use in determining vessel-specific best practices

ASTA will present this monthly-inspection protocol to the USCG for their approval. Once approved, participating vessels will in many cases be able to avoid third-party inspections. For those member vessels with a system like this in place, this new protocol would merely provide a standardized manner for documentation that would be familiar to CG inspectors and approved by CG headquarters. Vessels choosing not to employ this system or vessels providing unsatisfactory evidence of compliance with the system may be required by the USCG to proceed with third-party inspections.

DRAFT

To: CDR Mark Cruder, USCG

From: American Sail Training Association

Re: ASTA Recommendations for Sailing Vessel Rig Inspection

Pursuant to a request from the United States Coast Guard and to further promote safety aboard our member vessels, the American Sail Training Association recommends the following rig inspection procedure be implemented as a minimum standard. The design and content of this proposed protocol recognizes the efforts of the Coast Guard as set forth in *Inspection Note #13 "Inspection of Sail Rigging and Masts on Inspected Small Passenger Vessels"* issued October 16, 2008 by Sector Honolulu, and is based upon work by a technical committee of masters, mates, and operational staff from member organizations and a detailed survey of current practice within the industry. The format and frequency of inspections is a representation of best practices within our industry that have been employed by numerous member vessels to maintain their sailing rigs to the satisfaction of the USCG. We propose to make this protocol an industry standard which can be recognized by an attending USCG inspector when conducting an inspection.

1. Under the supervision of the master, designated crew will conduct a monthly rig inspection based on a checklist specific to the vessel. A sample template is provided below as a reference. Vessels must add inspection categories sufficient to encompass all existent masts, rigging, and associated hull structures.
2. Documentation of monthly rig inspections, each signed by the master, must be available for inspection by the USCG.
3. Documentation of rig maintenance such as routine maintenance and renewal of standing and running rigging components with the reason for replacement must be entered into a rig maintenance logbook.

It is the intent of ASTA that the full implementation of this protocol by member vessels in conjunction with an assessment at the time of inspection by an attending USCG Marine Inspector will serve as an alternative to the third party rigging inspections that have recently been required as part of annual safety inspections and COI renewals.

Respectfully Submitted,

American Sail Training Association Ship Operations and Safety Committee

Rig Inspection Checklist

To be edited for application for specific vessels

I. Introduction

The following checklist has been created to chronicle the monthly inspection of the rigging and related hull structures aboard the ASTA member vessel _____. This checklist once completed, must be reviewed and signed off on by the master and then maintained in a file for review by company personnel and the United States Coast Guard. The compendium of monthly rigging inspection reports as well as the Rigging Maintenance Logbook shall be made available to USCG Marine Inspectors during inspections as outlined in the ASTA Rigging Inspection Protocol.

II. Methodology

The checklist is divided by mast with an additional section for the headrig. If possible a single person should be responsible for the completion of each respective section with each item initialed upon completion. Monthly inspections shall be as thorough as possible without the removal of protective coatings or invasive inspection practices (i.e. service removal). In cases where evidence suggests a more in depth investigation is required(bleeding rust, oversized holes in tangs, significant chafe, etc.), a notation shall be made on the checklist, the master shall be informed and a detailed description with corrective action entered in the maintenance logbook.

III. Maintenance Logbook

Entries in the maintenance logbook shall include any discrepancies found during the monthly inspections and the corrective actions taken. Additionally, periodic and preventative maintenance as well as equipment repair and replacement shall be logged in accordance with company guidelines.

IV. Technical Reference

In addition to the use of organizational operations and maintenance manuals, ASTA has created a technical reference bibliography as part of the Rigging Protocol. Collectively these references cover subjects related to the construction, installation, inspection and maintenance of traditional and modern sailing rigs.

Vessel Name_____ Date_____

Crew Member_____ Master _____

Area-Main Mast

A. Safety/Crew Support Aloft
   - ☐ Ratlines, ratboards, etc. and method of attachment
   - ☐ Backropes, footropes, cranelines, gantlines, jacklines, etc.

B. Mast (including uppers)
   - ☐ Examine mast column
   - ☐ Examine step, partners, wedges, compression post, etc.
   - ☐ Examine Crosstrees, spreaders, trestletrees, hounds, etc.
   - ☐ Examine mast tangs, mast bands, strops
   - ☐ Evaluate condition of protective and lubrication coatings
   - ☐ Antennas, instrument sensors, lights, wiring, etc.

C. Standing Rigging
   - ☐ Wire-Examine condition of wire for broken strands, deformation, chafe
   - ☐ Wire termination- Splices, Swages, Poured sockets, etc.
   - ☐ Fitting and Terminals-Examine for cracks, rust, corrosion, deformation, wear
   - ☐ Turnbuckles, Bottlescrews, Deadeyes and Lanyards-Examine condition and integrity
   - ☐ Chain plates-Evaluate condition and attachment
   - ☐ Coatings and coverings (service, etc)-Examine condition
   - ☐ Rigging Tension-Ensure proper tension

D. Running Rigging
   1. Evaluate condition of Halyards, Sheets, Braces, etc.
   2. Evaluate conditions of Blocks
      - ☐ Keeper plates present
      - ☐ Sheaves turning freely
      - ☐ Rope/Metal strops in good condition
      - ☐ Shackles seized/moused
      - ☐ Becket bolts secure
      - ☐ Splices, soft eyes, etc.

E. Sails
   - ☐ Evaluate condition of cloth, stitching, patches, reinforcements
   - ☐ Cringles, Earrings, etc
   - ☐ Bolt ropes
   - ☐ Lashings, Shackles, attachments
   - ☐ Reefing gear (points, nettles, outhauls, etc.)

F. Spars
   - ☐ Hardware- ironwork, parrals, bails, goosenecks, fittings

- ☐ Evaluate spar for rust, rot, corrosion, deformation
- ☐ Coatings
- ☐ Penetration points

G. Deck Hardware
- Winches/Crank-alls, etc
  - ☐ Attachment point
  - ☐ Functioning properly
  - ☐ Dogs and stops
- ☐ Tracks, travelers, pad eyes, turning blocks
- ☐ Pin rails, fife rails
- ☐ Cleats, bits, bollards, kevels, belaying pins

Area-Fore Mast

A. Safety/Crew Support Aloft
- ☐ Ratlines, ratboards, etc. and method of attachment
- ☐ Backropes, footropes, crainlines, gantlines, jacklines, etc.

B. Mast (including uppers)
- ☐ Examine mast column
- ☐ Examine step, partners, wedges, compression post, etc.
- ☐ Examine Crosstrees, spreaders, trestletrees, hounds, etc.
- ☐ Examine mast tangs, mast bands, strops
- ☐ Evaluate condition of protective and lubrication coatings
- ☐ Antennas, instrument sensors, lights, wiring, etc.

C. Standing Rigging
- ☐ Wire-Examine condition of wire for broken strands, deformation, chafe
- ☐ Wire termination- Splices, Swages, Poured sockets, etc.
- ☐ Fitting and Terminals-Examine for cracks, rust, corrosion, deformation, wear
- ☐ Turnbuckles, Bottlescrews, Deadeyes and Lanyards-Examine condition and integrity
- ☐ Chain plates-Evaluate condition and attachment
- ☐ Coatings and coverings (service, etc)-Examine condition
- ☐ Rigging Tension-Ensure proper tension

D. Running Rigging

1 Evaluate condition of Halyards, Sheets, Braces, etc.

2 Evaluate conditions of Blocks
- ☐ Keeper plates present
- ☐ Sheaves turning freely
- ☐ Rope/Metal strops in good condition

- ☐ Shackles seized/moused
- ☐ Becket bolts secure
- ☐ Splices, soft eyes, etc.

E. Sails

- ☐ Evaluate condition of cloth, stitching, patches, reinforcements
- ☐ Cringles, Earrings, etc
- ☐ Bolt ropes
- ☐ Lashings, Shackles, attachments
- ☐ Reefing gear (points, nettles, outhauls, etc.)

F. Spars

- ☐ Hardware- ironwork, parrals, bails, goosenecks, fittings
- ☐ Evaluate spar for rust, rot, corrosion, deformation
- ☐ Coatings
- ☐ Penetration points

G. Deck Hardware

- Winches/Crank-alls, etc
  - ☐ Attachment point
  - ☐ Functioning properly
  - ☐ Dogs and stops
- ☐ Tracks, travelers, pad eyes, turning blocks
- ☐ Pin rails, fife rails
- ☐ Cleats, bits, bollards, kevels, belaying pins

Area-Headrig

A. Safety/Crew Support
   - ☐ Footropes
   - ☐ Netting
   - ☐ Lifelines, jackropes, etc.

B. Bowsprit (including jib-boom)
   - ☐ Examine bowsprit and jib-boom
   - ☐ Examine heel, kingpost, partners, etc
   - ☐ Examine ironwork and hardware: cranse iron, spreaders, martingale, etc.
   - ☐ Evaluate condition of protective and lubrication coatings

C. Standing Rigging

- ☐ Wire-Examine condition of wire for broken strands, deformation, chafe
- ☐ Wire termination- Splices, Swages, Poured sockets, etc.
- ☐ Fitting and Terminals-Examine for cracks, rust, corrosion, deformation, wear
- ☐ Turnbuckles, Bottlescrews, Deadeyes and Lanyards-Examine condition and integrity
- ☐ Chain plates, stem fittings: Evaluate condition and attachment
- ☐ Coatings and coverings (service, etc)-Examine condition
- ☐ Rigging Tension-Ensure proper tension

D. Running Rigging

1 Evaluate condition of Halyards, Sheets, Braces, etc.

2 Evaluate conditions of Blocks

- ☐ Keeper plates present
- ☐ Sheaves turning freely
- ☐ Rope/Metal strops in good condition
- ☐ Shackles seized/moused
- ☐ Becket bolts secure
- ☐ Splices, soft eyes, etc.

E. Sails

- ☐ Evaluate condition of cloth, stitching, patches, reinforcements
- ☐ Cringles, Earrings, etc
- ☐ Bolt ropes
- ☐ Lashings, Shackles, attachments
- ☐ Reefing gear (points, nettles, outhauls, etc.)

F. Spars

- ☐ Hardware- ironwork, parrels, bails, goosenecks, fittings
- ☐ Evaluate spar for rust, rot, corrosion, deformation
- ☐ Coatings
- ☐ Penetration points

G. Deck Hardware

- Winches/Crankalls, etc
  - ☐ Attachment point
  - ☐ Functioning properly
  - ☐ Dogs and stops
- ☐ Tracks, travelers, pad eyes, turning blocks
- ☐ Pin rails, fife rails
- ☐ Cleats, bits, bollards, kevels, belaying pins

TECHNICAL BIBLIOGRAPHY AND REFERENCE LIST:

THIS LIST WAS DEVELOPED AS A TOOL OF REFERENCE FOR THOSE CHARGED WITH INSPECTION AND MAINTENANCE OF SAILING RIGS IN TRADITIONAL SAILING VESSELS. IT IS NOT EXHAUSTIVE, NOR WILL ALL TEXTS APPLY TO ALL VESSELS, BUT IT DOES REPRESENT DEFINITIVE WORKS PERTAINING TO RIGGING IN PERIOD SAILING VESSELS. THE INTENT IS NOT TO PRODUCE A LIST OF WORKS WHICH MUST BE KEPT ABOARD, RATHER TO PROVIDE A LIST OF RESOURCES FOR MASTERS, MATES, AND BOATSWAINS.

- *Ashley's Book of Knots,* Clifford W. Ashley
- *Auxiliary Sail Vessel Operations for the Aspiring Professional Sailor,* G. Andy Chase
- *Eagle Seamanship-Square Rigger Sailing*, USCG Academy
- *Hand Reef and Steer*, Tom Cuncliffe
- *Knight's Modern Seamanship*
- *Masting and Rigging the Clipper Ship and Ocean Carrier*, Harold Underhill
- *Naval Ships' Manual Chapter 613-Wire and Fiber Rope and Rigging* (Naval Sea Systems Command)
- *The Art of Rigging*, George Biddlecombe
- *The Complete Rigger's Apprentice*, Brian Toss
- *The Gaff Rig Handbook*, John Leather
- *The Kedge Anchor*, Wm. Brady, USN
- *The Sailmaker's Apprentice*, Emiliano Marino
- *The Young Sea Officer's Sheet Anchor*, Darcy Lever
- *Steel's Elements of Mastmaking, Sailmaking, and Rigging*, David Steel, Gill, Claude S.
- *Splicing Wire & Fiber Rope* (by Raoul Graumont &John Hensel, Cornell Maritime Press)
- *Understanding Rigs and Rigging,* Richard Henderson