Boat Crew Workshop

Regional Based Training for
Divisions 01,13,18 and 22

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Instructors

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What We’ll Discuss

• Actions necessary during a man overboard emergency
• Procedures for towing astern and alongside
• VHF radio use and Coast Guard Rescue 21 system
• GAR 2.0 and Risk Management
“Man Overboard !!”

One of the worst alarms to hear while underway
Man Overboard

Initial Actions (Pointer)

• Sound the alarm
  – **MAN OVERBOARD!!** (port / starboard side)
• Keep person in water (PIW) in sight **continuously**
• Point towards PIW (open handed)
Man Overboard
Initial Actions (Pointer)

- Move to a position in sight of the helm
  - Do not go forward on most Auxiliary boats
  - Move toward the helm station
- Keep coxswain informed
  - Direction (relative bearing)
  - Distance (yards)
  - Condition of PIW
Never take your eyes off the PIW!
Man Overboard

Initial Actions (Recover / Pick Up Man)

• Throw ring buoy in the water
  – PIW may be able to get to it
  – Serves as a reference point (datum) marking the general location of the incident

• Prepare rescue equipment
  – Heaving line
  – Boarding ladder
  – Assist getting the PIW aboard
Coxswain / Helmsman Responsibilities

- Sound the danger signal
  - 5 short blasts
  - Alert other boats around you
- Mark your Position (Datum)
  - MOB button on GPS
- Notify the Station (when time permits)
Coxswain / Helmsman Responsibilities

• Be careful not to eject other crew members by making abrupt turns or speed changes
  – Kick stern away from PIW (if able)

• **SLOW DOWN!**

*Important: Let others know what course and throttle changes you are about to make*
Coxswain / Helmsman Responsibilities

- Slow down, assess the situation, and take action *(do it right the first time!)*
  - Navigate back to PIW
  - Maintain safe speed
  - Makes recovery approach
- Brief crew on recovery procedures

Remember…assess the situation before rushing to action!
Coxswain Responsibilities

- Assign crew duties
  - Pointer (typically the first to see PIW)
  - Recovery / Pick-up crew
  - Ascertain condition of PIW
  - Recovery procedures and equipment needed

Remember…assess the situation before rushing to action!
Coxswain Responsibilities

• If additional assistance is required or PIW cannot be located:
  – Notify the Station
  – Issue “PAN-PAN” broadcast (VHF Ch-16)
    • VHF Ch-16
    • Other nearby vessels may come to your aid
  – Start search pattern at datum location
Recovery Procedures

• **If PIW is conscious and able to move freely?**
  - Use heaving line / boarding ladder
  - Any injuries / Hypothermia?

• **Treat for shock**
  - Report to the Station
Recovery Procedures

- **Is PIW injured?**
  - Do no further harm

- Can’t get PIW aboard safely?

- **Now What ??**
Recovery Procedures

• **Night Operations**
  – Is there a marker light (strobe preferred) on your ring buoy?
    • Will make it easier to navigate back to the PIW
    • Practice Risk Management

  – PIW should activate their strobe light
MOB Summary of Procedures

1. “Man Overboard!” – Continuous communication
2. Sound danger signal (5 blasts) and mark position (GPS and datum buoy)
3. Maneuver back to PIW – slow down
4. Assign duties
5. Affect rescue
6. Notify the Station (ASAP when time permits)
Towing

• Should *never* be considered routine
• Unless in distress, the vessel being towed is normally towed to a **safe haven**
• Gather as much information as possible from the disabled vessel before taking the vessel into tow
• The safety of the crew and the crew of the towed vessel is paramount

• Do not let a perceived need to engage in a towing mission override a complete, honest risk assessment process that emphasizes personnel safety
Maintain Situational Awareness

• Clear and constant communication
• Everyone is responsible for identifying and managing risks
  – What are the risks?
• **Maintain a lookout**
• Maintain communication with the towed vessel
Perform On-Scene Assessment

• Gather as much information as possible from the disabled vessel
• Discuss concerns before directing action
• Circle the disabled vessel (if able)
  – Note cleat configuration
  – Look for any signs of potential trouble
    • Fuel leaks, hull condition, seaworthiness, etc.

Notify the Station
Preparation for Stern Tow

Questions from Crew to Disabled Vessel

- Do you need assistance?
- What is the nature of your problem?
- Are you taking on water?
- Is anyone in need of medical attention?
- How many people on board (and children)?
- Anyone below deck?
- Do you have a radio or cell phone?
- Did you call anyone for assistance?
- Have everyone put on life jackets
Brief the Towed Vessel

• Brief the disabled vessel of the following:
  – General safety (PFDs, staying clear of tow rig, tow rig chafe, location of crew)
  – Steering (whether to man helm or lock rudder amidships, whether to steer on towing vessel’s stern)
  – Communications (maintain communications with the disabled vessel throughout the tow)
  – Emergencies (breakaways, signals)
  – Lighting and sound signals
Towing Safety

• While passing and connecting the tow lines use loud and clear communication between crewmembers and coxswain to prevent accidents
• Whenever the coxswain directs an action, a crewmember must take that action and reply that the action has been taken
• Whenever a crewmember advises the coxswain of status or action, the coxswain must acknowledge same
Pre-Towing Procedures

• All towing lines should be rigged so that the disabled vessel receives the eye of the line

• Crew of the disabled vessel shall be instructed to place the eye of the line over their cleat
Passing the Tow Rig

• Coxswain maneuvers alongside the disabled vessel
• Crewmember notifies coxswain: “I have a shot”
• Coxswain responds: “take the shot”
• Crew replies “taking the shot” and notifies the crew on the disabled vessel that the line is being passed - “heads up”
• Cast the heaving line so that it falls across the disabled vessel’s deck
“Line in the Water”

• Potential to “foul” the prop
  – Remember, nylon line sinks!
  – Crew members need to tend the tow line so that it cannot foul the propellers

• A taught line that touches the water that cannot foul the prop is not a “line in the water”
Stern Tow
Connect Tow Line First

Tow Line
Bridle is used to center the tow line behind the towing vessel.
Bridle is used to center the tow line behind the towing vessel.
Avoid connecting the towline to an off centerline fitting on the towed vessel. Use a bridle for an equal amount of strain on both sides of the tow.
Setting a Towing Watch

- The condition of the vessel in tow and the towline must be constantly monitored.
- Do not stand directly in line with the towing line.
Let’s do some Risk Management
Can we reduce the risk?
- Remove anchor
- Consider skiff hook (calm seas)
- Use bridle
An alongside tow allows two vessels to be maneuvered as one. Necessary when approaching a dock, mooring, or anchorage in sheltered waters, or when maneuvering in congested or restricted waters.
Hull Alignment

- Towed vessel should be located forward of the towing vessels rudder or outdrive
  - This will allow for proper steerage by the towing vessel
Safety Procedures for Side-Tow

• Deploy fenders as needed
• *Do not fend off boat with your feet or hands!*
  – Use a “walking fender”
• Have all the needed lines at the ready
• Maintain a lookout during the evolution!
Towing Alongside

Danger zone
Tow Line Nomenclature

• Line # 1: Bow Line
• Line # 2: Towing Strap (Forward Spring)
• Line # 3: Backing Line (After Spring)
• Line # 4: Stern Line

• Coxswain will determine the order of lines to be connected to the disabled boat based on sea conditions
Towing Alongside

• Determine on which side the tow will be rigged
• Coxswain decides if the towline will be disconnected from the tow, or remain connected
  – One benefit of using the towline as the bow line is that there is always a line attached to the disabled vessel and returning to a stern tow is possible should the need arise
  – Use of a towline as the bow line puts more line lying on deck and may be a tripping or fouling hazard
• Free approach
  – Approach is made as if mooring to a pier, but the first line over will be the #1 line
Rigging Order

- **Calm Conditions:**
  - Bow line (#1)
  - Stern line (#4)
  - Tow strap (#2)
  - Backing line (#3)

- **Adverse Conditions:**
  - Bow line (#1)
  - Tow strap (#2)
  - Backing line (#3)
  - Stern line (#4)

Boat Crew Seamanship Manual: *Chapter 17.D.51*
Rigging Order


D.51.a. Calm Conditions

If there is little or no movement from wind, seas or current, rig lines in the following order:

- Second line: Rig a stern line from the towed vessel’s stern to the towing vessel’s stern. This line holds the sterns together while setting up the “spring lines”.
- Third line: Rig a “tow strap” (forward spring line) from the towing vessel bow or forward mooring fitting to a point aft on the towed vessel.
- Fourth line: Rig a backing line (after spring line) from a quarter location on the towing vessel to a location forward on the towed vessel.

D.51.b. Wind, Seas, or Current

If conditions are setting the vessels into danger, (i.e., toward shoals or breakwaters), and time is critical, follow this order to rig the lines:

- Second line: Rig a tow strap so that, once secured, the towing vessel can put headway on and move clear of any dangers.
- Third line: With headway still on, rig a backing line. This will be needed to slow the towed vessel.
- Fourth line: The stern line.
1, 2 and Go!

Danger zone
Side Tow

• For maximum control of the tow, all alongside lines should be as tight as possible. Spring lines are tightened by crewmembers taking up slack obtained when the coxswain throttles forward and reverse
Communications and Rescue 21
Why Do We Use Marine Radios?

• Safety, Urgent messages from Sector
  – Distress, urgency & safety messages
  – UMIB, MARB, Weather alerts

• Communications with controlling station
  – Position / Ops reports
  – Watchstander is part of your “crew”

• Communications with Boating Public
  – Maintain comms during towing
  – Information gathering to determine if in distress
VHF Radio Equipment

- Fixed-mount unit with antenna
  - 25 watts maximum power
  - 6 to 12 foot antenna height typical on most vessels
  - Reliable range 10-15 miles

- Handheld with integral antenna
  - 5 to 6 watts maximum power
  - Reliable range 2-3 miles
VHF Radios

• FM – Static free
• Line-of-sight transmission
• Used and monitored by the U.S. Coast Guard
  – Coast Guard monitors channel 16
• “USA” and “International” frequencies
  – When not the same, the USA channel number includes the letter A (“alpha”)

51
Line-of-Sight Transmission

- Range of communication is limited to line-of-sight (they must “see” each other)
- Antenna height makes a big difference in effective range
Signal Suppression

• VHF-FM radio only receives the strongest signal
• The strongest signal “steps on” the weaker signal
• Always use the lowest power needed for communication
Maintain a Radio Log

• Keep a record of:
  – Time of transmission
  – Station called
  – Brief description of the message

• Why should we keep a radio log?
VHF Working Channels

CH 16  - Distress, urgency, safety, calling
CH 9   - Alternate calling channel
CH 13  - Bridge-to-bridge (Navigation)

CH 21A, 23A - U.S. Coast Guard only
CH 22A - Coast Guard liaison
CH 81A, 82A, 83A - U.S. Government only

CH 68, 69, 71 - Non-Commercial working
CH 70   - Digital Select Calling (DSC)*
Automated Radio Checks

- VHF Channels 24, 26, 27, 28
- Tune to proper channel for your community
- Conduct radio check normally
- Upon releasing the mic, the system will replay your transmission
Before You Transmit

Listen

- Then -

Listen Some More!
Calling Another Station

• Select channel – usually 16
• Listen – determine channel not in use
• Press button on mic
  • “Name of the boat/station you are calling”
  • “This Is (name of Your boat)”
  • “Over”
• Release mic button & listen
• Change to working channel
Calling Time Limits

• 1st Call - 30 seconds maximum
  – If no response, wait 2 minutes
• 2nd Call - 30 seconds maximum
  – If no response, wait 2 minutes
• 3rd Call - 30 seconds maximum
  – If no response, wait 15 minutes before additional calls are made to the same station
Maintaining Comms

- Press button on mic
  - *Always begin every transmission with the name of station you are calling followed by your call sign (or vessel name)*
  - Then transmit your message
  - Use the proword “Over” to indicate you are finished transmitting and awaiting an answer
Procedure Words
“Pro-words”

• Pro-words are key to the efficient use of radiotelephone time
• Radio shorthand
• Meant to reduce transmission time
  – More opportunity to hear important calls
**Procedure Words**

“Pro-words”

- **Over** – End of my transmission, response is expected
- **Out** – End of my transmission, no response expected
- **Roger** – I received your last transmission
- **Wilco** – Your last transmission was received and understood, and will be complied with

- Improper to say “**over and out**”
Distress, Urgency, and Safety Calls

- **Mayday:** Distress signal
  - Grave and imminent danger
- **Pan-Pan:** Urgency signal
  - Announces that an urgent message follows
  - Safety of a vessel or person in jeopardy
- **Sécurité** (secur-i-tay): Safety signal
  - Announces a message about safety of navigation or an important weather warning
Distress Signal

• Use when *imminent danger* exists
• Call on channel 16
• Call format:
  – “Mayday Mayday Mayday”
  – “This Is (Name of your boat)”
  – State location, nature of problem, number of POB, describe boat and condition
  – “This Is (Name of your boat), Over”
During Distress Communications

• Stop all other communications
  – “All Stations”
  – “SEELONCE Mayday”
  – “SEELONCE Distress”

• When distress is over
  – “SEELONCE FEENEE”
DSC VHF radios

- **DSC** = Digital Selective Calling
- Allows mariners to send automated digital distress messages anywhere in the world
  - “Mayday” call not required
- Channel 70 is reserved for digital distress calls
- Voice communications on Channel 70 is forbidden
Rescue 21 System
Saving Lives in the 21st Century

• Full coverage along the entire coastline
• Rescue 21 can detect weak signals (1 watt for 2 seconds)
• Maximum range out to 50-100 miles (25 watt radios)
• Recording and playback features
• Any ship with a DSC radio will also receive the signal
NOTE: Coverage rings are depicted for illustration purposes only.

NOTE: Inset maps are not to scale with the US mainland.
Rescue 21 System
Saving Lives in the 21st Century

• Press “Distress” button on VHF radio to automatically send distress message
  – Position information included if VHF radio is interfaced with GPS
  – Rescue 21 has radio direction finding capability
  – When registered with Maritime Mobile Service Identity (MMSI) sends vital vessel information
Rescue 21 and DSC VHF radios

• Obtain MMSI number
  – Your vessels address
  – Contains vital information about your boat

• Program your radio with the number and other information
Risk Management and GAR 2.0

- Provides a framework to identify and assess hazards, evaluate risk, and weigh the risk against potential benefits
Assess Risk

Identify Hazards
PEACE Model:
- Planning
- Event Complexity
- Asset (Crew / Facility)
- Communications
- Environment

Explore Mitigation
STAAR Model:
- Spread Out
- Transfer
- Avoid
- Accept
- Reduce

Overall Risk for Mission = Low, Medium, or High
Assess Gain

• **Low** – Situation with unclear benefits or low probability of providing concrete results
• **Medium** – Provides immediate and real benefits
• **High** – Provides immediate and real benefits that, if ignored, could result in loss of life
## Risk vs Gain

<table>
<thead>
<tr>
<th>Risk vs. Gain</th>
<th>High Gain</th>
<th>Medium Gain</th>
<th>Low Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Accept the Mission. Monitor Risk Factors and re-evaluate if conditions or mission/activities change.</td>
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</table>
What can go wrong? And why?

• Determine severity if it actually happens
  – Will someone get hurt?
  – Will it affect successful mission completion?
• What is the probability that it will occur?
• What is the exposure?
• Discuss mitigation strategies to reduce the risk
What can go wrong?  
• Tow line in the propeller

Why?  
• Excessive slack in the tow line.  
• Tow line snaps.
MOB Drill

What can go wrong?
• Crewmember fall in water

Why?
• Helmsman turns boat too sharply.
• Helmsman throttle down abruptly.
• Crew reaches over gunwale in high waves
# Searching for Missing Kayaker

## What can go wrong?

- Search in wrong area

## Why?

- Failure to hear proper coordinates from watchstander.
- Failure to navigate properly to the last known position.
- Paper charts are not on board.
Fireworks Patrol

What can go wrong?
• Accident with another boat after the event
• Grounding when RTB

Why?
• Too much boat traffic.
• Navigation lights on other vessel not working.
• Failure to stay in the marked channel.
Summary

- MOB procedures
  - Practice like it is real
- Towing considerations
  - Line numbers
- VHF radio basics
  - Line of sight transmissions
- Rescue 21 System / DSC radios
- Risk Management
Thanks for Listening