

The NOAA Small Boat Standards and Procedures Manual, 4th Edition

Section 10: Lifesaving and Equipment Requirements



NOAA Small Boat Summit September 13 - 15, 2017



NOAA Small Boat Program



Why the Change?

- NOAA's priority is the safety and survivability of personnel and assets
- Recreational boating safety standards do not adequately address NOAA's complex missions
- Scientific mission must be considered
- Carriage requirements based on vessel length are not always the best way to determine appropriate equipment
- NOAA should be setting the standard for conducting science from small boats



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What's New?

- **New process for determining carriage requirements**
- **The current minimum carriage of lifesaving appliances and standard equipment was evaluated by the Small Boat Safety Board and revised**
- **A Small Boat Operations and Mission Risk Assessment will dictate additional equipment carriage requirements**
- **Requires the VOC, OIC and P.I. to fully participate in the risk assessment and operational evaluations**



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Three Step Approach

- 1) Determine the required minimum carriage equipment based on class and boat configuration
- 2) Determine any additional equipment required as per a small boat's operational area
- 3) Evaluate the mission, potential risks, mitigate when possible



Participation is Essential to be Effective

- Requires the OIC, VOC and P.I.'s Involvement throughout the process.
- Some considerations:
 1. Time to rescue (remoteness)
 2. Available medical help
 3. Planned scientific operation
 4. Vessel capabilities
 5. Overall mission complexity
 5. Personnel involved



The VOC's Role

- **Direct involvement and oversight of all operations**
- **Assure input from appropriate personnel**
- **Must re-evaluate new missions**
- **Pair the correct small boat with each operation**
- **Include required additional safety gear and maintenance in the annual operating budget**



Some of the Improvements

- **A separate carriage requirement table and ASBE for non-motorized small boats**
- **Carriage requirements are further defined and centralized in the new edition of the SBSPM for Class A-II**
- **Provides a separate table for Class III and SRVs and defined carriage requirements are located within the NOAA SBP Class III and SRV Annual Inspection Book**
- **Operational mission is now a consideration when applying additional carriage requirements**



Minimum Carriage Requirements: Non-Motorized Boats



Resources to Protect Personnel	
Personal Flotation Devices (PFD)	Appropriate size and buoyancy for every person aboard with light and whistle. All components must be USCG approved and PFD type must be suited for intended operations (i.e. lake, surf, swift water...)
Thermal Protection	Required for every person if SST is $\leq 59^{\circ}\text{F}$ based on NOAA's Coastwatch (http://coastwatch.noaa.gov) reports or determined by operational risk assessment (Dry, wet, anti-exposure or USCG approved immersion suit appropriate for the mission)
Throwable Flotation device	Open deck requires USCG approved type IV PFD, enclosed deck may use a throw bag
First Aid Kit	Equipped for area of operations and personnel aboard (i.e. response time) An example inventory list is available on the SBP website .
Positioning	
GPS	Cell phone GPS lat/long positioning or handheld GPS
Compass	Magnetic or electronic handheld
Local Chart/Map	Current printed or electronic map that provides a adequate detail to navigate the area of operation
Communication	
Two different forms of communication are required at all times	
Visual	Designated standby person onshore or in another small boat able to respond
Cell Phone	Must be within cell phone range
VHF Radio	Handheld waterproof radio
Email or Text messaging	Within cell phone range or utilizing satellite service (phone, SPOT, EPIRB...)
Satellite Phone	Required when beyond cell phone range and VHF range
Damage/Emergency Response	
Emergency Beacons	EPIRB or PLB
Daytime Distress Signal Flag	Approved USCG daytime signals can be used in place of distress flag
Visual Distress Signals (If operating between sunset - sunrise)	One USCG approved electric distress light or 3 USCG approved combination day/night flares
Sound Signaling Device	Whistle or air horn, must be heard at least 1/2 mile away for at least 4-6 seconds
Anchoring or securing the small boat	Depending on the operations, an anchor or sea anchor may be required
Means of Dewatering	Bailer or manually operated bilge pump
Paddle/Paddles	Number required will depend on the small boat (i.e. kayak, raft, canoe...) Label with small boat's name or NOAA
Visual Identity and Signage	
NOAA Identification and Registration	Must comply with Section 13 of the manual
Navigation Lights	One all around white light visible from all directions or a flashlight that can be seen in sufficient time to prevent collision
Capacity Label	Permanently a fixed
GAR Slate or Placard	
Documents on File with VOC	Baseline and Mission Risk Assessments, ASBE, PQS, SBOM

Minimum Carriage Requirements: Motorized Class A, I, and II Boats



Resources to Protect Personnel	
Personal Flotation Devices (PFD)	Appropriate size and buoyancy for every person aboard with light and whistle. All components must be USCG approved. Refer to Section 10.02 of this Manual for specific PFD requirements.
Thermal Protection	Required if operating where SST is $\leq 59^{\circ}\text{F}$ (15°C) based on NOAA's CoastWatch (http://coastwatch.noaa.gov) reports or determined by operational risk assessment (Dry, wet, anti-exposure or USCG approved immersion suit appropriate for the mission).
Life Raft	Required beyond 12 nm. Refer to (life raft) Table 4 of this Section, and Section 10.03 of this Manual for specific raft requirements.
Throwable USCG approved type IV PFD- Flotation Device	Float cushions are permitted on class A and I boats for day operations. For class II boats a 18" ring life buoy is required.
First Aid Kit	Equipped for area of operations and personnel aboard (i.e. response time). An example inventory list is available on the SBP website .
Carbon Monoxide Alarm	All small boats with enclosed cabins, number of alarms must protect all spaces occupied by personnel (berthing, galley, bridge....)
MOB Recovery	Recovery gear aboard and procedure in place for conscious and unconscious victim.
Positioning	
GPS or Chartplotter	Suitable for intended operational area.
Compass	Magnetic or Electronic with independent or backup power supply.
Navigation Charts	Current printed or electronic chart that provides adequate detail to navigate the area of operation.
Navigation Rules	Appropriate book, chart, or placard for the class small boat and operating area. Small boats \Rightarrow than 12 meters (39 feet) must carry a current electronic or printed copy aboard.
Communication	
Two different forms of communication are required at all times	
Visual	Designated standby person onshore or in another small boat able to respond.
Cell Phone	Must be within reliable cell phone range.
VHF Radio	One 25 watt VHF radio is recommended. Class II small boats must have at least one radio with MMSI registration and integrated with GPS.
Email or Text messaging	Within reliable cell phone range or utilizing satellite service (phone, SPOT, EPIRB...)
Satellite Phone	Phone or other satellite communication is required when operating beyond cell phone coverage.
Damage/Emergency Response	

Minimum Carriage Requirements: Motorized Class A, I, and II Boats



Damage/Emergency Response	
Emergency Beacons (EPRIB, PLB)	In lieu of EPIRBs, PLBs are permitted for protected and partially protected operations on Class A and I small boats. For Coastal and Exposed waters Category I (auto deployment) EPIRBs are required. Category II (manual) EPIRBs may be authorized depending on small boat design and suitability.
Visual Distress Signals	Class A-one orange distress flag (day only) or 3 combination day/night red flares. Class I and II - one orange distress flag or 3 hand-held or floating orange smoke signals (day only), and one electric distress light or 3 combination (day/night) red flares, handheld, meteor or parachute (46 CFR 28.145). Refer to Table 6 of this Section for additional guidance
Sound Signaling Device	Whistle, handheld air horn, or electric horn that can be heard at least 1/2 mile for 4-6 seconds (USCG NAV RULES)
Anchor and adequate rode	Required for Class I and II. Class A small boat operating within a shallow river or non-navigable waterway must have a means to secure the boat. Guidance on acceptable ground tackle and mooring line is available on the SBP website .
Dewatering Device	A mechanical or manual means of dewatering is required for all small boats. On Class I and II small boats with compartments that have through hull fittings below the waterline or spaces below the main deck without watertight closures, these spaces must have an appropriate bilge pump with high water alarm installed at the operator station.
Fire Extinguishers	Marine type USCG approved fire extinguishers minimum requirements: Class A and I - One B-I, Class II - One B-II or two B-I, Fixed Fire system required for enclosed machinery space (approved as additional B-I). Refer to Table 5 of this Section or contact the SBP for additional carriage (46 CFR 181.500)
Visual Identity and Signage	
NOAA Identification and Registration	Must comply with Section 13 of this Manual
Navigation Lights	Must comply with USCG NAV RULES (COMDTINST M16672.2D)
Capacity Label	Permanently affixed (if not installed by the manufacturer, contact the SBP for guidance)
GAR Slate or Placard	Required
Oil and Garbage Placards	Required on all Class I and II small boats. (33 CFR 155.450 and 151.59) Guidance on purchasing placards is available on the SBP website (see Placards Required for Daily Operations).
Documents on File with VOC	Baseline and Mission Risk Assessments, ASBE, SBEX, PQS, SBOM, OEM

Operational Considerations

Required – R

Operationally based – O

Not required - N

Use this table to assist with risk considerations and operationally based carriage requirements	A-Protected	A- Near Coastal	A-Coastal	I-Protected	I- Near Coastal	I-Coastal Waters	I- Open Waters	II-Protected	II- Near Coastal	II-Coastal	II- Open Waters
Additional Type I PFDs *	O	O	O	O	O	O	R	O	O	R	R
Immersion Suits **	O	O	O	O	O	O	R	O	O	O	R
USCG approved Life Raft or IBA *** (46 CFR 28.120)	N	N	O	O	O	O	R	O	O	O	R
Automated External Defibrillator (AED)	O	O	O	O	O	O	R	O	O	O	R
Radar	N	N	O	O	O	O	O	O	O	O	O
Fathometer/Depth Sounder	O	O	O	O	O	O	R	R	R	R	R
Oars/Paddles	R	R	R	R	R	R	R	O	O	O	N
Additional GPS or Chart plotter	N	O	O	O	O	O	R	R	R	R	R
Additional VHF radio	N	O	O	N	O	O	R	N	O	R	R
Satellite Phone	O	O	O	O	O	O	R	O	O	O	R
Emergency Steerage Plan	N	N	N	O	R	R	R	R	R	R	R
Sea Anchor	N	N	O	N	N	O	R	N	O	O	R
Emergency Ditch Bag ****	N	N	O	N	O	O	O	N	O	O	O
MOB - Recovery Procedure	R	R	R	R	R	R	R	R	R	R	R

R = Required, O = Operationally based, N = Not Required

These operational route definitions only apply to this Section.

Protected Bays, Sounds and Rivers (<2 miles shoreline to shoreline with no special hazards)
Near Coastal (< 3 miles from a harbor or safe refuge)
Coastal (3-12 miles from a harbor or safe refuge)
Open Waters (beyond 12 miles from a harbor or safe refuge)



Immersion suits may be used in place of Type I PFDs

** Immersion suits are always required when operating where SST is $\leq 59^\circ\text{F}$ (15°C) based on NOAA's CoastWatch reports (<http://coastwatch.noaa.gov>) or an increased risk of hypothermia exists

*** A USCG approved life raft or inflatable buoyant apparatus (IBA) is required. Softpaks are acceptable on class I and II small boats. Raft capacity must be 100% of personnel carried aboard.

Satellite Data Products
 Data Discovery Tools
 Near Real Time Search
 Select Region
 Product = SST
 AVHRR
 Date default most recent
 Search
 Chose recent image
 Regional Offices (AOML, OMEL...) can provide more detail

Mission Considerations

What are the potential Impacts of the intended scientific mission?

- Stability
- Steerage
- Lifting capability
- Reduction in capacity
- Increased chance of MOB
- Fatigue
- Gear hazards



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Operational/Mission Considerations

- Cold weather work – Thermal Protection
- Heat extremes – sun , hydration, canopies...
- Extended periods underway (fatigue)
- Heavy traffic areas – additional lookouts, backup electronics
- Trawling – PPE, hazard areas, dangerous marine life
- Longline Sets– wire cutters, snag considerations
- Marine mammal and turtle live captures – people in the water, entanglement
- Overhead lifting – hard hats, steel toe shoes, gloves



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Case Study

Vessel

2003 Boston Whaler 24 feet
Class I, Center console vessel with no cabin
Twin 2005 outboard 150 h.p. engines - well maintained
Fuel capacity 150 gallons
Vessel capacity: 12 persons or 3500 lbs. with gear

Typical 2017 Mission:

Marine mammal biopsies
CTD casts
Drone deployment/recovery

Operational Considerations

Area of operations-Northern Gulf of Mexico, Florida
Primarily operating 10 miles from safe harbor
Once or twice/year they must extend to 15 miles
Cell Phone coverage good except at max range
Nearest onshore medical help 10 - 20 miles
Nearest emergency response – USCG Destin, FL (~ 1 hour)
Sampling during each season (winter water temp low ~ 60°)
Minimum 3 personnel required



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STEP 1: Minimum on motorized class A, I, II boats

Class I

Sampling year round, SST low ~ 60°

Distance sometimes > 12 nm

Nearest Medical help 10-20 miles

Response time ~ over an hour

Destin, FL USCG – limited resources

Required personnel 3-4

Gear 250 lbs.

Daytime operations and only in optimal conditions, traffic common in the area,

Reliable Cell phone coverage 90% time

Resources to Protect Personnel	
Personal Flotation Devices (PFD)	Appropriate size and buoyancy for every person aboard with light and whistle. All components must be USCG approved. Refer to Section 10.02 of this Manual for specific PFD requirements
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Damage/Emergency Response	

Minimum on motorized class A, I, II boats

Suitable EPIRB? Boston Whaler

Table 6

3-50 miles from the coastline	3 parachute flares, plus 6 hand flares <i>plus</i> 3 smoke signals
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Horn installed

Maximum Depth 100 feet ,

Fire extinguishers? (Two B-I)

Damage/Emergency Response	
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Operational Considerations

Required – R
 Operationally based – O
 Not required - N

Coastal & Open Waters
 Water temp ~ 60° F winter
 Raft or IBA? Size
 Medical help 1+ hour away
 AED? Expanded First Aid Kit
 Radar- weather/traffic
 Paddles?
 Additional VHF
 Communication Plan
 Sea Anchor
 Ditch bag
 MOB gear and plan

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Automated External Defibrillator (AED)	O	O	O	O	O	O	R	O	O	O	R
Radar	N	N	O	O	O	O	O	O	O	O	O
Fathometer/Depth Sounder	O	O	O	O	O	O	R	R	R	R	R
Oars/Paddles	R	R	R	R	R	R	R	O	O	O	N
Additional GPS or Chart plotter	N	O	O	O	O	O	R	R	R	R	R
Additional VHF radio	N	O	O	N	O	O	R	N	O	R	R
Satellite Phone	O	O	O	O	O	O	R	O	O	O	R
Emergency Steerage Plan	N	N	N	O	R	R	R	R	R	R	R
Sea Anchor	N	N	O	N	N	O	R	N	O	O	R
Emergency Ditch Bag ****	N	N	O	N	O	O	O	N	O	O	O
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*** A USCG approved life raft or inflatable buoyant apparatus (IBA) is required. Softpaks are acceptable on class I and II small boats. Raft capacity must be 100% of personnel carried aboard.

Mission Considerations

Biopsy sampling – dart gun or cross bow

Expanded First Aid kit

Briefing on extra precautions during sampling

Identify danger area and maximum rotation of sampler

Limited sea state for successful sampling and safety

CTD Casts – hand retrieval of 6 lb. self contained unit

Gloves for deployment and retrieval

Contingency plan in the event of fouled gear

Drone deployment – small hexacopter (3 feet diameter)

Eye protection, gloves,...

Suitable launch and recovery area

PFD considerations during deployment/recovery



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Summary

- 1. Time to rescue is a critical consideration**
- 2. Risk analysis should dictate additional carriage**
- 3. Mission and impacts on the vessel may demand additional carriage**
- 4. Additional PPE and hardware are based on operations**



Questions



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