

INTRODUCTION

Drowning recovery and rescue missions seem to generate extreme emotional attention from family members and more specifically the media. It is highly important search, rescue, and recovery members keep their comments to themselves and out of hearing range from family and media.

Kentucky has thirty-one (31) navigable waterways, more than any state other than Alaska. Fishing, swimming, skiing, canoeing, pleasure boating, jet skiing, diving, etc. will eventually cause accidents and fatalities. Therefore, search and rescue squads should be prepared well in advance to respond and cope with water rescue and recovery methods.

Some of the resources and suggestions contained in this manual are simply the application of common sense. Others come from experience and are adaptations of proven methods and techniques.

New skills and equipment are improving everyday and rescue and recovery personnel are challenged to keep apprised of new technology. Different water recovery missions may require different resources. For example, swift water rescue and recovery will require specialized training and equipment whereas drowning recoveries in ponds and lakes may not require such sophisticated training and equipment.

Several books on the market today cover swift water river rescue, inland water rescue and recovery, and dive rescue operations. Courses are occasionally conducted on these topic areas in Kentucky. Contact your state DES Area Coordinator for more information when these courses may be held.

"The face of the river, in time, became a wonder book.....which told its mind to me without reserve, delivering its most cherished secrets as clearly as if it had uttered them with a voice. And it was not a book to be read once and thrown aside, for it had a new story to tell every day."

MARK TWAIN, *LIFE ON THE MISSISSIPPI*

DROWNING RECOVERY OPERATIONS MANAGEMENT

All individuals and organizations involved in a drowning recovery operation should function as a single, task-oriented, modular, unit exercising systematic adaptability.

The drowning recovery management process can be divided into three key areas: Pre-Incident, Incident, and Post-Incident. Each area has specific critical elements:

I. PRE-INCIDENT:

A. INTERAGENCY COORDINATION

- Identify Agency Responders
- Define Lines of Authority
- Develop Comprehensive Communication
- Define Areas of Responsibilities and Tasks

B. LOGISTICAL SUPPORT

- Identify Resources
- Define and Write Specific Procedures-Especially handling of the recovered victim (contact county coroner for their procedure).
- Establish Training
- Ensure Single Communication System
- Secure Maps, Charts, Etc.
- Identify Points of Contact
- Personnel Requirements (Food, Lodging, Safety Equipment, Clothing, Sanitary Facilities, Special Needs).
- Identify Equipment (Boats, Vehicles, Gasoline, Sonar, Drag Bars, Hooks, etc.)
- Cost Coverage (Repairs, Replacement)

C. FACILITY DISPOSITION

- Establish Incident Command Post (CP)
- Establish Family Area - Designate Liaison
- Establish Staging Area - Designate Liaison
- Establish Media Area - Designate Liaison

II. INCIDENT:

A. RAPID RESPONSE (S.T.O.P.=Stop, Think, Observe, and Plan)

- Safety
- Recovery vs. Rescue
- Assessment (Interviewing Witnesses, Marking Areas, Mapping the

Area, Etc.)

B. AREA MANAGEMENT

- Establish Command Post
- Secure Area/Access Control
- Implement Facility Plan
- Identify/Inventory Resources

C. INCIDENT ACTION PLAN (IAP) DEVELOPMENT

- Develop and Implement Workable Search Patterns (* *SEE RECOVERY METHODS*)
- Resource Management
- Scheduling
- Non-Emergency Procedures
- Long-Term Planning/Operations
- Termination of Search

D. STANDARD OPERATING PROCEDURES

- Record Keeping
- Family Briefings
- Media Briefings
- Briefing/Debriefing of Search Crews
- Ongoing Evaluation

III. POST-INCIDENT:

A. FINAL DEBRIEFING

- Recognize and Include All Workers
- Should Be Written

B. DEMOBILIZATION

- Personnel
- Equipment
- Clean-up of CP and All Areas
- Critical Incident Stress Debriefing?

C. EVALUATION

- Plan Analysis
- Standard Operating Procedures
- Coordination of Resources
- Communications
- Direction and Control
- Training of Personnel

D. REPORTING

- Written After Action
- State Mission Report

COMMON PROBLEMS IN DROWNING OPERATIONS

1. LACK OF PRE-INCIDENT PREPARATION
2. LACK OF CENTRALIZED COMMUNICATIONS
3. LACK OF RESPONDER COORDINATION
4. INEFFICIENT USE OF RESOURCES
5. NEGATIVE IMAGING
6. AMBIGUITY OF AUTHORITY

INHERENT ADVANTAGES

1. TASK ORIENTATION
2. INFREQUENT, TEMPORARY FUNCTION
3. OPERATIVE RESOURCES
4. EFFECTIVE SPAN OF CONTROL
5. OPERATIVE COMMUNICATIONS

PRIMARY CONSIDERATIONS FOR ALL RESPONDERS

1. WE ARE WORKING FOR THE VICTIM(S)
2. ORGANIZE EARLY - STAY AHEAD OF THE "POWER CURVE"
3. THINK FUNCTION, NOT PEOPLE
4. THINK SAFETY - IDENTIFY ALL POTENTIAL HAZARDS
5. "SUCCESS ALWAYS OCCURS IN PRIVATE; FAILURE IN PUBLIC VIEW"
6. MANAGE ALL AVAILABLE RESOURCES EFFECTIVELY AND EFFICIENTLY
7. GATHER ALL INFORMATION AVAILABLE AND KEEP RECORD OF ALL ACTIONS TAKEN.
8. MAKE ANALYSIS AND EVALUATION AN ONGOING PROCESS
9. PLAN.....PREPARE.....PERFORM

DROWNING RECOVERY CHECKLIST

I. PRE-INCIDENT:

-] COORDINATION MEETING WITH HEADS OF ALL AGENCIES; DEVELOP RESPONSE PLANS AND S.O.P.'S.
-] RESOURCES INVENTORIED AND PERIODICALLY CHECKED
-] FACILITIES DESIGNATED
-] IDENTIFY TRAINING NEEDS

II. INCIDENT:

-] DETERMINE POINT LAST SEEN (PLS) OR LAST KNOWN POSITION (LKP)
-] GET BOATS IN AREA A.S.A.P.(FIRST HOUR IS RESCUE)
-] STRESS SAFETY
-] ESTABLISH INCIDENT COMMAND POST
-] ASSESSMENT (MARKING MAPS, INTERVIEWING, ETC.)
-] FAMILY NOTIFICATION AND COORDINATION
-] IDENTIFY AND COORDINATE RESOURCES
-] SECURE ACCESS TO SEARCH AREA AND COMMAND POST
-] DESIGNATE AREAS AND PERSONNEL FOR MEDIA, FAMILY, STAGING
-] FORMULATE INCIDENT ACTION PLAN - RECOVERY METHODS
-] IMPLEMENT S.O.P CHECKLIST
-] S.T.O.P. - STOP, THINK, OBSERVE, AND PLAN

III. POST-INCIDENT

- BRIEFING
- DEBRIEFING
- DEMOBILIZATION
- CLEANUP OF AREA
- EVALUATION
- REPORTS

STANDARD OPERATING PROCEDURE CHECKLIST

AS NEEDED: *(MINIMUM SHOULD BE DEFINED IN ADVANCE)*

- FAMILY UPDATES
- MEDIA UPDATES

HOURLY:

- RADIO CHECK
- RECORDS UPDATE (RESPONDERS AND AGENCIES PRESENT)

DAILY:

- INCIDENT ACTION PLAN EVALUATION
- RESOURCE IDENTIFICATION AND MANAGEMENT
- BRIEFING - STRESS SAFETY
- DEBRIEFING - IDENTIFY PROBLEMS, NEW INFORMATION
- ACTION PLAN FOR NEXT SHIFT

RECOVERY METHODS

Since all recovery operations vary, no single method can be recommended for all situations. The following is a list of five resource options. Each option has advantages and disadvantages - using any option or a combination of options depends on immediate conditions and resource availability.

DRAG HOOKS

Use of the standard drag bar (2-6 feet), using 500lb. minimum rope (polypropylene or nylon, 50 to 100 feet). Treble hooks (5/0 to 9/0 size with flattened barbs) are attached to the bar using sections of small chain (6 to 10 inches). The hooks should be small enough to bend under heavy pressure or attached to chains with "hog rings" to allow a break away from snags. Flattening the barbs increases the likelihood of shaking free from logs, debris, etc. Remember, the hooks usually snag clothing, and a submerged body weighs less than 20 lb.. Huge hooks and extreme force are not needed. "Magnum" gear only makes it harder to break free from snags and may cause the loss of the entire unit. Dragging must be conducted slowly and methodically. You should use buoy markers when possible to define a grid search. Overlap sweeps are indicated to insure full coverage and use a jiggling motion keeping contact with the bottom and not raising over one foot (1') at the highest point. If dragging is properly conducted, the bottom will be felt with each drop of the bar. A body will feel "big" but "light" in weight. When an object is hooked, stop the boats forward progress and slowly/carefully surface the object. (Hint: mark the mainline 5 to 10 feet above the drag to eliminate any surprises!).

ADVANTAGES:

- Enables use of numerous volunteers & boats
- Coverage of large areas
- Low cost and little training required

DISADVANTAGES:

- Manpower requirements
- Time consuming
- Could be upsetting to family

SONAR GRAPHS

The sonar graph uses sound waves to "map" underwater terrain and objects. Various units can be used to scan marked areas to identify objects for later verification by drag hooks and divers. In proper conditions, specific objects can be marked and individually checked.

ADVANTAGES:

- Coverage of large areas with minimal manpower, fewer boats, and in less time.
- Coverage of areas with diverse bottom terrain
- Enhances effectiveness of divers, dragging, and search dogs.

DISADVANTAGES:

- Sensitive equipment requiring knowledgeable/trained operator
- Ineffective in swift current or rough surface.

RECOVERY DIVERS

It is imperative for divers to be specially trained and certified in rescue and recovery techniques and skills. This is the most specialized of all options and involvement is dictated by the diver. There is a distinct difference in diving at various depths. Some divers are rated to dive in depths of up to 100 feet while others are qualified to dive to 60 feet. Some divers have only "wet" suits which will limit their dive time in cold water. Other divers have "dry" suits and can withstand colder water for longer periods of time. It is also very important to rely upon local personnel who have knowledge of the terrain of the water in the area.

ADVANTAGES:

- Complete coverage of small, specific, target areas
- Minimal manpower requirements
- More acceptable to family for recovery

DISADVANTAGES:

- Availability
- Requires special skills, training, and conditions
- Requires special equipment
- Limited range of use

SEARCH DOGS

Specially trained which sniff the waters surface for human scent. Human scent and gases given off by the drowned victim eventually floats to the surface of the water. The dog works slowly in a boat with their head and nose pointed to the surface of the water. When the dog alerts, it is usually detecting human scent. This is a serious and proven option and should not be dismissed just because of unfamiliarity.

ADVANTAGES:

- Coverage of areas with adverse bottom terrain, current or depth
- Minimizes manpower requirements
- No cost/Low cost

DISADVANTAGES:

- Rapid availability
- Sensitivity to conditions
- Utilization of non-qualified, untrained handler and/or dog*

**Due to the complex nature of this option, the Incident Commander should contact the Disaster and Emergency Services Duty Officer at (502) 564-7815 (24-hour operation number).*

WADE LINE

A group of individuals join hands and wade through an area in a sweeping fashion. Individuals wade closely side-by-side in an effort to make contact with the submerged victim.

ADVANTAGES:

- Use of available, untrained volunteers
- Near complete coverage of shallow, beach-type areas not accessible by boat.

DISADVANTAGES:

- Limited to shallow areas
- Potential for traumatic situation for non-trained volunteers

CRITICAL MEDICAL CONSIDERATION

When a person drowns, they can be revived by CPR, however, the amount of time elapsed is the main consideration for most resuscitation efforts. Another primary influencing factor is water temperature. Several cases have been documented where a person has been underwater and clinically dead for over an hour, yet revived with no permanent damage to the patient. The longest recorded time was over two and one-half hours.

Do not rule out attempts to revive any victim recovered in cold water for less than two hours. Medical personnel should be notified and at the scene on stand-by basis. Plans should be established in advance with local EMS agencies for response to drownings. Local EMS capabilities will normally dictate procedures to be followed.

The colder the water the better the chance of resuscitation, but all resuscitation attempts, within reason, should be made on any drowning victim.

GENERAL INFORMATION ON DROWNED VICTIMS

The average body has about the same specific gravity as water. This means that the body will displace its own volume of water and the volume water displaced will weigh about the

same amount as the body. Therefore, the average body will almost float; sometimes bodies of victims who are obese and bodies of small children do not sink, but remain floating on the surface (15% of cases). As long as the body is totally submerged in the water, it will weigh about 5 to 12 lbs. (depending on the size of the victim). For this reason, heavy drag hooks is not needed to make recovery. The slightest hook in the clothes or body will bring it to the surface provided gentle pressure is used and the hook is not torn out of the body or clothing.

When a person falls into the water, the momentum of the fall will tend to make the body sink. The victim will be holding some air in their lungs, and there will be some trapped in their clothing, instinctive swimming movements will bring the victim back to the surface. The victim may gasp, take in air and water, and sink again; this cycle may be repeated until they finally sink to the bottom.

The position of the body in the water largely depends upon the amount of water in the lungs and stomach and the type of the clothing worn by the victim. In drowning cases where there is little water or no water in the lungs and stomach, the body will be in an almost upright position. With less air in the lungs and stomach, the body will be in a crouched position, and with almost no air in the lungs or stomach, it will be in a crawling position.

A body will rise slowly to the surface when sufficient gas has formed in the intestinal tract to make the body buoyant; the gas is the result of bacterial decomposition. The time to generate the necessary gas will depend upon the temperature of the water and contents of the victim's stomach when they drowned. In summer, the average time is eighteen (18) to twenty-four (24) hours. In winter, or when the water is very deep and cold, the time will be much longer, perhaps as much as 30 to 60 days. A body will not rise suddenly from the bottom, but rises gradually as more gas is formed and the body becomes buoyant.

A body will usually remain the general area where it submerged and will likely be found within 30 to 60 feet of that location. Even with a strong current, it will probably be found within 120 feet of where it went down. It has been established that the average body under average conditions will be within one and one-half the times the depth of water; for an example, if the water is 30 feet deep, the body will probably be found within forty-five feet of where it went down.

Where a current exists, or where the victim was wearing a life jacket, a body may drift to the first eddy or deep hole, depending upon the force of the current and obstructions on the bottom. If the body is floating, it may hang up on some obstruction down current or down stream. If a recovery operation has sufficient manpower available at the scene, it is recommended to send personnel down stream on the chance that the body is floating.

Immediately after submersion, if the water is very calm, the victim may be located by a thin stream of air bubbles coming from the body. These bubbles are caused by water pressure on the chest and abdomen forcing out the air remaining in the body. Even under these circumstances, the body may be 9 to 12 feet from the spot where the bubbles are breaking the surface of the water. Other things can give off similar streams of air bubbles, but any such clues should be checked out.

Most drownings fall into four categories. The majority of drowning victims exhibit the same behavior, which appear to be very similar characteristics and are considered syndromes.

IMMEDIATE DISAPPEARANCE SYNDROME (IDS): A person who can usually swim but suddenly disappears in about 15 minutes after immersion. Witnesses relate they saw the victim swimming, usually toward shore, but when they looked again, the subject had "suddenly disappeared!"

DROWNING NON-SWIMMER SYNDROME (DNS): This syndrome needs very little explanation. However, there are characteristics which are common and rescuers should recognize their implications. These outward signs are; head tilted back, mouth open (to establish and maintain an airway, seldom any vocal response), arms in unison flailing away at the water with a smaller persons arms moving more rapidly. All of these behaviors are the result of the persons attempt to breathe. Once in this pattern, they usually can't see, hear, or think. Rescuers can't reason with them and there is a strong possibility the victim will grab them violently and will be pushed under in an attempt to climb upward. Small children and backyard pools are a prime example of this category. A distraction such as a telephone call or doorbell ringing offers sufficient time for drowning. The adult thinks the child will call out for help if they get into trouble and this is completely untrue. Parents with small children need to be reminded that drowning is as quiet and it is swift.

SUDDEN DISAPPEARANCE SYNDROME (SDS): This category normally involves the unexpected disappearance of poor swimmers or fatigued, cold debilitated persons who may be partially supported by air trapped in their clothing. They either attempt to swim or struggle. They will usually will sink rapidly below the surface.

HYPOTHERMIA INDUCED DEBILITY (HID): This drowning category is induced by the immersion in cold water.

PROGRESSION OF BODY CHANGES

HOURS:

- 5 to 7 Early rigor mortis appears in 2 to 3 hours. Fully established by 5 to 7 hours and lasting longer
- 7 to 9 Body will be face down on the bottom with rigor fully established.
- 12 to 18 Rigor fully established; gas will begin to develop in the intestines depending upon food content.
- 24 to 36 Rigor still present. Skin markedly wrinkled, especially hands and feet. Rigor will subside in 2 to 4 days.

DAYS:

- 2 Skin will start to slip in hot weather.
- 2 to 3 Body will float in warm hot weather. Skin will be slipping and comes off easily.
- 3 to 4 Discoloration at the root of the neck.
- 5 to 6 Neck and face discolored and swollen. Body will float within 6 to 30 days depending upon water temperature. Decomposition present.

WEEKS:

- 2 Skin peeling and hair loosening can be easily pulled out. Nails can be pulled out easily.
- 3 Face swollen and discolored.
- 4 Body greatly swollen with gases present. Hair easily wiped away. Hands and feet easily separated from the body.

OPERATIONAL ASSESSMENT

The initial thought that the Incident Commander gives to the operation is essential if a rapid and successful recovery operational is to be made. The following should be considered:

1. Where was the victim last seen?
2. How long has the victim been submerged?
3. How was the victim dressed?
4. Type of bottom to be searched?
5. Current flow?
6. Wind direction?
7. Depth of water?
8. Width of water?
9. Obstructions, snags, eddys, etc?
10. Banks undergrowth, trees, etc.

LOCATING A START POINT

To gain a fix on the possible location of the victim, all witnesses should be questioned on the location of the last sighting. A line to some prominent object combined with a distance will often give a reasonable accuracy. Even greater accuracy is possible if two or more witnesses can give cross lines to prominent objects.

When the location of the last sighting has been determined it should be marked by a buoy or other marker as soon as possible. The next task for search teams is to estimate or determine the current and possible movement of the drowned victim in the time elapsed from when the incident occurred. Buoys can be laid to define the boundaries of the probable area to be searched.

DROWNING RECOVERY OPERATION EVALUATION

NAME: _____

ORGANIZATION: _____

TOTAL HOURS WORKED: _____ DATES WORKED: _____

TASK(S) COMPLETED: _____

RATE THE FOLLOWING ON A (1) TO (5) SCALE: 5 = EXCELLENT; 1 = BAD

COMMUNICATION1 2 3 4 5

LEADERSHIP/DIRECTION.....1 2 3 4 5

EQUIPMENT.....1 2 3 4 5

PERSONAL TREATMENT (LENGTH OF SHIFT, REST BREAKS,
ACCOMMODATIONS, SAFETY, ETC.....1 2 3 4 5

WHAT WAS THE MOST EFFECTIVE ASPECT OF THE OPERATION?: _____

THE LEAST EFFECTIVE: _____

PLEASE PROVIDE SUGGESTIONS TO IMPROVE RECOVERY OPERATIONS: _____

BOAT OPERATOR RESPONSIBILITIES

1. Checking the boat each operational period of the day to ensure it is ready for use.
2. Knowing the rules of safe water operation and regulations affecting the particular area of operation.
3. Knowing the buoyage system.
4. Making sure the boat is properly and securely loaded.
5. Making certain the crew and passengers are fully briefed on and observe all safety precautions.
6. Knowing and using visual and radio communications procedures and signals relating to the operation of the boat or mission.
7. Being familiar as possible with the area of operation.
8. Acquiring the latest possible weather forecast and navigational charts and data of the area of operation.
9. Ensuring that all safety precautions and operational instructions are met.
10. Keeping records and reports of the boat's condition and activities.
11. Able to effect minor maintenance and repairs.
12. Securing the boat and its equipment on completion of the operation.
13. Conduct training for crew members to assure efficient working of the boat and continuity of crew skills.

CREW RESPONSIBILITIES

1. Ensuring that the boat is ready for each day's operation.
2. Handling lines and stowing equipment safely within the boat.
3. Operating any signaling or communications equipment carried in the boat.
4. Acting as a lookout for obstructions or debris while underway.
5. Assist in seating any passengers carried in the boat.

COMPLETION OF OPERATIONS

On completion of operations for the day, the crews final responsibility is to check and service the boat and its equipment and to prepare the boat for the next crew or next days operation. It should be appreciated that the boat may be called out again immediately.

Any spare time between tasks can be used to an advantage to maintain the boat and equipment in a serviced condition. Under no circumstances, after the completion of a task, is the boat to be stored in an unserviced condition. All equipment must be stored in its proper place and the boat log book updated. All crews must check the log to ensure that defects have been corrected and that everything has been serviced prior to commencing any task. Batteries must be placed on charge and gas tanks refilled to ensure that they are ready for the next operation

RECORDING OF TASKS AND BOAT LOGS

Under the Incident Command System, the Boat Operator should await directions from the IC. The Boat Operator must bear in mind that where danger to life exists, the first and foremost consideration must be for the searchers and crews.

It is the primary responsibility for the Boat Operator to maintain a log listing such as:

1. A list of tasks given at each search operation.
2. Names of crew members and the total number of man-hours accumulated for the mission.
3. Fuel consumption for each mission.
4. Equipment malfunctions.
5. Maintenance records for the boat.
6. Any other records as required by squad standard operating procedures.

COMMON NAUTICAL TERMINOLOGY

PARTS OF THE BOAT:

- BENCHES:** Seats that run fore and aft. These may also provide flotation.
- BILGE:** The inside bottom of the boat adjacent to the keel. The bilge is also the foul water that collects inside the boats bilges.
- BUNG:** The drain plug in the transom.
- CHINE:** The turn of the hull where the hull sides join the bottom of the hull.
- DRAUGHT:** Depth below the water line of the lowest portion of the boat and motor.
- FOREDECK:** A small deck at the front of the hull.
- FREEBOARD:** Height between the water line and the gunwhale.
- GUNWHALE:(pronounced gunnel)** The continuous strip around the top of the hull.
- HULL:** The main body or shell of the boat.
- KEEL:** The member joining the two halves of the hull bottom usually along the hull center line.
- KEELSON:** A reinforcing member to protect the keel and assist in directional stability.
- ROWLOCKS:**The brackets which are used as pivot points between the hull and the oars.
- STEM:** The rising of the vertical section at the front of the boat where the hull sides meet to form the bow.
- THWARTS:** The seats built into the hull. Originally those that run across the hull. These may also provide flotation and add to the structural integrity.
- TRANSOM:** The flat back section of the boat joining the two hull sides to form the stern upon which an outboard motor may be mounted.
- TUCK:** The plywood section attached to the center of the transom where the motor is clamped to the hull. It reduces slippage and wear when the motor is seated.

TERMS DEFINING BOAT MOVEMENT

- BROADSIDE:** Moving sideways.
- GIVE WAY:** Alter course, stop or go astern to avoid collision
- HEADWAY:** Moving ahead.
- MAKE WAY:** Beginning to move through the water.
- MAKING LEEWAY:** Underway and being blown sideways by the wind.
- STEERAGE WAY:** Sufficient speed for steering to be effective.
- STERNWAY:** Moving astern (backwards through the water).
- UNDERWAY:** When not at anchor or moored.

DIRECTION / LOCATION

- ABEAM:** At right angles to the fore and aft line of a boat.
- ABREAST:** Level with.
- ALONGSIDE:** Side by side.
- BOW:** The front of the boat.
- PORT:** The left side of a boat looking towards the bow.
- STARBOARD:** The right side of a boat looking towards the bow.
- STERN:** The rear or back end of the boat.

OTHER TERMS

- ABOARD:** Inside or on the boat.
- ADRIFT:** Broken away from mooring.
- AMIDSHIPS:** Is the center of the boat either with reference to her width or length.

AWASH: Level with the water surface.

AWEIGH: When the anchor is lifted out of the water.

BEARING: A direction or in a direction.

BELAY: To secure a rope to a cleat or belaying pin.

BROACHING: When a boat yaws too widely and swings broadside into the wind.

BY THE HEAD: When the boat is loaded too heavily forward or the bow lies low in the water. "Down by the head".

BY THE STERN: When the boat is loaded too heavily aft, the stern lies lower than

CAVITATION: Is the aeration of the water causing loss of propeller drive and

CLEATS: Fittings to which lines are tied.

DRAG: A boat is said to be dragging when the anchors are not holding.

HEEL: When the boat lists or leans to port or starboard.

LEE SIDE: The sheltered side of the boat from the weather.

LIST: A boat is said to have a list if it leans to one side.

OVERHAUL: To overtake another boat. Also means to examine or initiate repairs.

PAINTER: A line at the bow of a boat used for securing it to a dock.

RIDING: A boat held in position by an anchor or buoy and is free to move 360 degrees.

SOUND: To find the depth of the water.

STEM THE TIDE OR CURRENT: Using power to hold the position of the boat against the wind or water.

TRIM: The way the boat sits in the water.

WAKE: The track or disturbance a boat leaves in the water as the result of its movement.

WARP: An anchor line.

WASH: A wave created by the boat moving through the water.

WEATHER SIDE: The side of the boat facing the wind.

YAWING: To run off course.

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