

# RESCUE BOAT OPERATIONS

## INSTRUCTOR GUIDE



*published by*

California Department of Forestry and Fire Protection  
Office of State Fire Marshal/State Fire Training  
PO Box 944246  
Sacramento, CA 94244-2460

*First Edition, First Printing, September 1998*

# STATE FIRE

The Fire Service Training and Education Program (FSTEP) was established to provide specific training needs of local fire agencies in California. State Fire Training coordinates the delivery of this training through the use of approved curricula and registered instructors.

The FSTEP series is designed to provide both the volunteer and career fire fighter with hands-on training in specialized areas such as fire fighting, extrication, rescue, and pump operations. All courses are delivered through registered instructors and can be tailored by the instructor to meet your department's specific need.

Upon successful completion of an approved FSTEP course, participants will receive an Office of State Fire Marshal course completion certificate.

# TRAINING

## ACKNOWLEDGEMENTS

The development of the material contained in this guide was coordinated by the Curriculum Development Division of the CDF / State Fire Marshal's Office and approved by the State Training and Education Advisory Committee (STEAC). This curriculum is appropriate for fire service personnel and for personnel in related occupations.

RONNY J. COLEMAN, CHIEF  
California State Fire Marshal

DANIEL E. FRANCES  
Department Training Chief

KEITH A. LARKIN  
Division Chief, Curriculum Development Division

ART COTA  
Division Chief, Certificate & Course Delivery

Acknowledgment and thanks are extended to the following members of the CDF / State Fire Training Staff for their diligent efforts and contributions that made the final publication of this document possible.

RANDY D. SHELTON  
Deputy State Fire Marshal

ALICIA HAMILTON  
Fire Service Training Specialist

KIM KIRKPATRICK  
Curriculum Technician

We gratefully acknowledge the following individuals who served as the principal developers for this document.

**Arthur Gonsalves      Tony Hargett**

Sacramento County Fire District  
Swift Water Rescue Team Members  
Developers, Instructors, Coordinators

Special acknowledgment goes to Amie C. Brockmire III of the Tuolumne County Sheriff's Department and Doug McDonald of the Novato Fire Protection District for providing Tony and Arthur assistance in developing this curriculum.

The material contained in this document was compiled and organized through the cooperative effort of numerous professionals within, and associated with, the California fire service.

We gratefully acknowledge the following individuals who served as the principal developers for this document.

**ARTHUR GONSALVES**

**TONY HARGETT**

Sacramento County Fire Protection District  
Swift Water Rescue Team Members

Special acknowledgement goes to **Arnie C. Brockmire III** of the Tuolumne County Sheriff's Department and **Doug McDonald** of the Novato Fire Protection District for providing Tony and Arthur assistance in developing this curriculum.

*The amount of water on our earth is immense, yet 97.2% is in the world's oceans and ice caps and glaciers account for another 2.15%. This leaves us with only .65% in our rivers, streams, and lakes. Knowing this, aren't you amazed at the amount of energy, planning, and money that is now being dedicated to water rescue training and operations by agencies in the United States?*

*Although the quantity of water flowing over the earth's dry land is small at any one time, during the course of any year we can see very large volumes of water move through the surface streams and river channels.*

*Due to our physical environment, natural forces at work have made us increasingly aware of the devastation that floods and uncontrolled dynamic flows can cause. News stories graphically portray the large numbers left dead or homeless by floods, mudflows, and levy breaks. Earth science, at this introductory level, is a broad and nonquantitative study in the topics of hydrology, oceanography, geology, etc.*

*In this document, we have attempted to develop a text that is not only informative and timely, but one that is highly usable as well. This course is based on your ability to use equipment with dynamic water to perform rescues of persons in need of your assistance. The continuance of their life may resolve on your ability.*

Tony Hargett  
September 1998

# INTRODUCTION TO THE MANUAL

This publication is intended to serve as an instructor guide and includes lesson plans, overhead transparency masters, student activities, and quizzes. Suggested application methods have been identified throughout the lessons for you to use during your presentation.

The success of your students depends greatly on your conformance to the student behavioral objective prescribed at the start of each lesson. The remaining portion of the lesson plan is only a guide; and as such, should not preclude you from adapting the lesson plans to best meet the needs of your students. Group activities and direct application of the skills addressed in this curriculum are essential to the overall success of the course.

## INSTRUCTOR GUIDE

Material on these pages is intended to serve as an outline of instruction in lesson plan form. For each topic identified in the course outline, a lesson plan has been developed that contains: a time frame, level of instruction, behavioral objective, materials needed, references, preparation statement, and lesson content.

- **TIME FRAME:** The minimum, estimated duration required for "in class" presentation based on a 7-hour, one-day course.
- **LEVEL OF INSTRUCTION:** Identifies the instructional level which the material was designed to fulfill. Obviously, you have the latitude to increase the level based on available time, local conditions, and the students' apperceptive base.
- **BEHAVIORAL OBJECTIVE:** The behavioral objective is a statement of the student's performance desired at the end of instruction. You must ensure that enough information is given in the presentation and/or activities to enable the student to perform according to the goal.
- **MATERIALS NEEDED:** This should be a complete list of everything you will need to present the lesson, including handout materials, visual aids, quizzes, and so on.
- **REFERENCES:** These are the specific references the curriculum development team utilized when developing the lesson plan. In addition, references may be listed as additional study aids for instructors to enhance the lesson – books, manuals, bulletins, scripts, visual aid utilization plans and the like.

- **PREPARATION:** The motivational statements in this section connect the student with the lesson plan topic through examples or illustrations relating to their occupation, injury, and even mortality. You may modify this section to better fit your students' environment.
- **LESSON CONTENT:** Includes information utilized in the four-step method of instruction.

TECHNICAL LESSON PLAN

Presentation

Everything you say or display

Content

Notes

Distribution of  
Activity Sheets  
Study Sheets  
Information Sheets

Application

Everything the student participates in

Questions

Classroom Exercise

Audio/Visual Cues

*CDF/State Fire Training gladly  
accepts your comments and  
suggestions for future enhancements  
or revisions to this document. Please  
forward to:*

*CDF/State Fire Training  
Curriculum Development Division  
4501 State Highway 104  
Ione, California 95640-9705*

# RESCUE BOAT OPERATIONS

COURSE OBJECTIVE: To...

- a) Introduce emergency service personnel to the codes and regulations that impact rescue boat operations
- b) Provide emergency service personnel with a thorough knowledge of rescue boat operations.
- c) Prepare emergency service personnel with a strong working knowledge of rescue boat operations in both static and dynamic water.
- d) Provide emergency service personnel an opportunity to apply their knowledge through demonstrations.
- e) Provide emergency service personnel with knowledge for maintaining and performing inspections on rescue boats.

COURSE CONTENT:.....24:00 HOURS

## Lesson Plans

1-1	Rescue Boat Safety Training .....	1:00
2-1	Philosophy Of Rescue Boat Use .....	0:30
3-1	Rescue Boat Types, Uses and Limitations.....	1:00
4-1	Recognized standard set up for an IRB.....	1:00
5-1	Methods of River Reading.....	1:00
6-1	Traveling in Dynamic Water.....	1:30
7-1	Operational Terminology.....	1:00
8-1	IRB Crew Positions.....	0:30
9-1	How To Perform Daily and Weekly Checks.....	0:30
10-1	Boat Care and Maintenance.....	0:30
11-1	Performing a Pre-Operation Inspection.....	0:30
12-1	Launching a Rescue Boat.....	0:30
13-1	How to Hover and Ferry A Rescue Boat.....	1:00
14-1	Shoring A Rescue Boat.....	0:30
15-1	How to Trailer A Rescue Boat .....	1:00
16-1	IRB High Speed Turns.....	2:00
17-1	How To Execute A Rescuer Drop-Off.....	2:00
18-1	Performing A Victim Pick-Up.....	2:00
19-1	Performing A Victim Pick-Off.....	2:00
20-1	Righting An Overtumed IRB.....	1:00
21-1	Paddle Operations.....	1:00
22-1	Rescue Boat Operations During Floods.....	1:00
23-1	Boat Wraps and Pins.....	1:00

## TEXT & REFERENCES

- California Boating And Waterways Safety Course, 1996
- Monroe, J.S., R. Wicander Physical Geology. St. Paul: West Publishing, 1992
- Ray, Slim. Swiftwater Rescue. Asheville: Atwood, 1996
- State Fire Training PWC Rescue Operations Instructor Guide, 1996
- Los Angeles County Fire Boat Operations Manual
- Rescue 3 Internaltional Curriculum, 1991
- U.S. Life Saving Associations Instructors Manual
- Tarbuck, E.J., F.K. Lutgens Physics Of Moving Water. New York: Macmillan, 1991

# **CDF / STATE FIRE TRAINING**

## **RESCUE BOAT OPERATIONS**

\_\_\_\_\_  
 Month                      Date                      Year

<u><b>DAY 1</b></u>	<u><b>SUBJECT</b></u>	<u><b>INSTRUCTOR</b></u>	<u><b>TIME</b></u>
LP 1-1	Rescue boat safety training with test	_____	60
LP 2-1	Philosophy of rescue boat use	_____	30
LP 3-1	Rescue boat types, uses & limitations	_____	90
LP 4-1	Recognized standard set - up for an IRB	_____	60

### **LUNCH**

LP 5-1	Methods of river reading	_____	60
LP 7-1	Operational terminology	_____	60
LP 21-1	Rescue boat operations during floods	_____	60
LP 22-1	Boat wraps and pins	_____	60

### **DAY 2**

LP 9-1	Daily and weekly checks	_____	30
LP 10-1	Rescue boat care and maintenance	_____	30
L.P. 8-1	IRB Crew positions	_____	30
L.P. 11-1	Pre-operational inspections	_____	30
L.P. 12-1	Launching a rescue boat	_____	30
L.P. 14-1	Shoring a rescue boat	_____	30
L.P. 13-1	Hover and ferry a rescue boat	_____	60

### **LUNCH**

#### **Day 2 Continued...**

L.P. 6-1	Traveling in dynamic water	_____	90
L.P. 20-1	Righting an overturned IRB	_____	90
L.P. 15-1	Trailer a rescue boat	_____	60

**DAY 3**

L.P. 16-1 High speed turns with an IRB \_\_\_\_\_ 120

L.P. 17-1 Executing a rescuer drop off \_\_\_\_\_ 120

**LUNCH**

L.P. 18-1 Performing a victim pick-up \_\_\_\_\_ 120

L.P. 19-1 Performing a victim pick-off \_\_\_\_\_ 120

**CDF / STATE FIRE TRAINING  
RESCUE BOAT STATIC BOUY COURSE**

**TRAINING COURSE TIMES**

STUDENT NAME	First Time Through	Second Time Through	Start to Finish
①	:	:	:
	:	:	:
②	:	:	:
	:	:	:
③	:	:	:
	:	:	:
④	:	:	:
	:	:	:
⑤	:	:	:
	:	:	:
⑥	:	:	:
	:	:	:

**DAY THREE COMPETITION**

TEAM NO.	VICTIM PICK UP	VICTIM PICK OFF

# CDF / STATE FIRE TRAINING

## RESCUE BOAT OPERATOR / RESCUER CERTIFICATION SKILLS LIST

STUDENTS NAME: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_

INSTRUCTORS NAME: TONY HARGETT DATE CERTIFIED: May 15, 1994

### COMPLIANCE AND COMPLETION OF THE FOLLOWING SKILLS

11-1 Performing a pre-operation inspection	Completion Date: ___/___/___
12-1 Launching of a rescue boat	Completion Date: ___/___/___
8-1 Rescue boat crew positions and duties	Completion Date: ___/___/___
14-1 Shoring of a rescue boat	Completion Date: ___/___/___

Rescue boat team through buoy course	CourseTime: ____:____
Rescue boat team performing two person rescue	CourseTime: ____:____

13-1 Hover and ferrying a rescue boat	Completion Date: ___/___/___
6-1 Traveling in dynamic water	Completion Date: ___/___/___
16-1 High speed turns with IRB	Completion Date: ___/___/___
17-1 Performing a rescuer drop off	Completion Date: ___/___/___
18-1 Performing a victim pick-up	Completion Date: ___/___/___
19-1 Performing a victim pick-off	Completion Date: ___/___/___
20-1 Righting an overturned IRB	Completion Date: ___/___/___

15-1 Trailering a rescue boat	Completion Date: ___/___/___
10-1 Rescue boat care and maintenance	Completion Date: ___/___/___
9-1 Performing a daily and weekly check	Completion Date: ___/___/___

Instructors Signature _____	Certification Date: ___/___/___
-----------------------------	---------------------------------

# INSTRUCTOR GUIDE

TOPIC: **Rescue Boat Safety Training**

TIME FRAME 1:00

LEVEL OF INSTRUCTION: I

BEHAVIORAL OBJECTIVE:

Conditions: A written quiz

Behavior: The student will

- Recognize regulations governing the operation of rescue boats on all waterways.
- Demonstrate a working knowledge of rescue boat safety.
- Identify the procedure of reporting a boating accident.
- Understand the operations of a jet drive system.

Standard: With a minimum of 80 % accuracy according to Information Sheet 1-2, Pages 1 through 13

MATERIALS NEEDED:

- Writing board with markers / erasers
- Overhead projector and screen
- Overhead transparencies 1-1 through 1-13
- Written quiz
- Student Information Sheet 1-1 Pages 1 through 13

REFERENCES:

- Student Information Sheet 1-1 Pages 1 through 13
- California Boating and Waterways Regulations

PREPARATION: To prepare you for the training you are about to undertake, you must thoroughly understand watercraft safety. In the future, you may be called upon to operate your rescue boat in calm waters for an evacuation, or in swift moving waters to remove a trapped victim from a tree. These situations can be even more dangerous if the proper safety procedures are not used and followed by all rescue personal on the scene. If not followed, you the rescuer, could easily become the victim.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>I. California Boating Laws</p> <p>A. A rescue boat is subject to the same laws and regulations that govern boats within the State of California.</p> <p>B. This includes registration, equipment requirements, accident reports, and safety requirements.</p> <p>II. Boat Registration</p> <p>A. California law requires current registration of most vessels. All vessels must be registered and numbered except:</p> <ol style="list-style-type: none"><li>1. Boats propelled manually.</li><li>2. Boats 8' or less in length propelled solely by sail.</li><li>3. <b>Certain vessels owned by public agencies.</b></li><li>4. Vessels documented by the Coast Guard.</li><li>5. Foreign vessels.</li><li>6. Ship's lifeboats.</li><li>7. Vessels principally used in other states.</li><li>8. Sailboards.</li></ol> <p>B. A registered vessel receives</p> <ol style="list-style-type: none"><li>1. Certificate of ownership</li><li>2. Certificate of number</li><li>3. Set of registration stickers</li></ol> <p>C. The Certificate of number must accompany the vessel.</p>	<p>What do these regulations include?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>This is like your vehicle registration. If stopped by law enforcement they will ask for your certificate of number.</p> <p>This is like your vehicle identification number. If stopped by law enforcement they may want to record your HIN.</p> <p>D. The set of registration stickers must be properly displayed with your registration numbers.</p> <p>Letter must be read from left to right. Must be displayed high above the waterline. Must be on the forward half of the bow. Must be located of both sides. Must be in bold block letters. Must be at least three inches high. Must contrast to color of background. Place registration sticker in line and three inches towards the stern from the numbers.</p>	<p>What is a comparison to the certificate of number for you vehicle?</p> <p>What is a comparison to the Hull indetificatuion number for you vehicle?</p> <p><u>OHT 1.1</u></p>
<p>III. Personal Equipment Requirement.</p> <p>A. Personal Flotation Device (PFD)</p> <ol style="list-style-type: none"><li>1. Required by LAW !!!</li><li>2. Most important piece of safety equipment.</li><li>3. Must say "U.S. Coast Guard Approved" on the label.</li><li>4. Should fit comfortably snug.</li></ol>	<p><u>OHT 1.2</u></p>
<p>B. 1B-1 Fire Extinguisher, (enclosed fuel storage)</p> <ol style="list-style-type: none"><li>1. Must be located on boat at all times.</li><li>2. Must be maintained to operate efficiently</li></ol>	<p><u>OHT 1.3</u></p>



# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>It is important to know and maintain the weight limitations of your boat.</p> <p>C. Boat speeds on many waterways are limited by law and circumstances</p> <p>When no limits are posted, operate so as to not endanger others.</p> <p>As the operator of a boat, you are responsible for all actions of your vessel.</p>	
<p>VI. Navigational Rules</p> <p>A. Navigational rules are the rules of the waterway.</p> <p>It is required and assumed that you know the navigational rules and will operate you vessel accordingly.</p> <p>When meeting head on, neither craft has the right of way. Both crafts shall alter their course to the right. Pass each other on the left.</p> <p>When crossing in front of another craft, the craft on the right has the right of way. The craft to the right shall maintain it's course and speed until it passes your route of travel.</p> <p>When approaching another craft from the stern and overtaking that craft, you must pass with care keeping your boat away from the other craft. If your the craft that is being overtaken, maintain your speed and course.</p> <p>In general, fishing crafts, rafts and vessels under sail have the right of way because they are either stationary or very slow to control.</p>	<p><u>OHT 1.7</u></p> <p><u>OHT 1.8</u></p>
<p>VII. California Waterway Marking System</p> <p>A. When operating a watercraft away from a main body of water, (larger river, the ocean, a lake) red buoys will mark the right side of the channel and green buoys will mark the left.</p>	<p><u>OHT 1.9</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>The opposite is true when traveling down a waterway, red buoys will mark the left side of the channel and green buoys will mark the right.</p> <p>If a number buoy is present instead of a colored buoy, even numbers represent red buoys and odd numbers represent green buoys.</p> <p>B. Safety buoys indicate a hazard, a law, or information.</p> <p>VIII. Trailing</p> <p>A. You must register your trailer with DMV.</p> <p>B. A trailer must be load rated to tow your vessels weight.</p> <p>C. Assure that the trailer hitch and the vehicle towing ball are of equal rating and the same size. Never attempt to use a smaller ball than what is required by the trailer hitch.</p> <p>D. Trailer lights should be inspected prior to every outing. Check tail, brake and flashing capabilities.</p> <p>E. When launching or loading your watercraft :</p> <ol style="list-style-type: none"><li>1. Disconnect the trailer lights.</li><li>2. Allow the trailer hubs to cool to touch if possible. Sudden cooling of the bearings can cause water to enter and cause damage.</li><li>3. Back the trailer into the water until boats' motor is submerged and has adequate clearance above and below the jet or prop.</li><li>4. Launching procedures will be covered in more detail in a later lesson plan.</li></ol> <p>IX. Accidents</p> <p>A. If you are involved in an accident with your watercraft, you are required to:</p> <ol style="list-style-type: none"><li>1. Give assistance to others involved.</li></ol>	<p><u>OHT 1.10</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>2. Give your full identification to any other person injured or the owner of any damaged property.</p> <p>3. If a disappearance or death occurs, the operator shall <b>by the quickest means available</b>, notify Boating and Waterways and the nearest Law Enforcement agency.</p> <p>Contact a Rescue or Law Enforcement agency and let them handle the Boat &amp; Waterways notification.</p> <p>B. A written report must be completed and sent to Boating and Waterways if:</p> <ol style="list-style-type: none"><li>1. a person dies, disappears or is injured beyond basic first aid.</li><li>2. total damage to all property is more than \$500 or there is a complete loss of a craft</li></ol> <p>C. When accidents include disappearance, or death occurring within 24 hours, or an injury requiring more than basic first aid, the report must be completed within 48 hours of the occurrence.</p> <p>D. All other reportable accidents must be submitted within 10 working days.</p> <p>E. Operator inattention and lack of knowledge to own limitations are the main cause of accidents.</p> <p>Your watercraft can quickly reach high speeds and can turn sharply. Without knowledge of your operational limitations, you could be involved in an accident.</p> <p>Drive courteously, and above all use good common sense. Don't do anything to another watercraft you wouldn't want done to you.</p>	<p>What would be the more realistic thing to do?</p> <p><u>OHT 1.11</u></p> <p><u>OHT 1.12</u></p>



# INSTRUCTOR GUIDE

RESCUE BOAT SAFETY TRAINING

PRESENTATION	APPLICATION
--------------	-------------

## SUMMARY:

Your knowledge of this information will allow you to respond safely. Your understanding of the way to properly operate your rescue boat, will keep you safe and others safe around you. Being considerate while operating your boat around, swimmers, fisherman, and other boaters, will serve as a positive example for waterway safety.

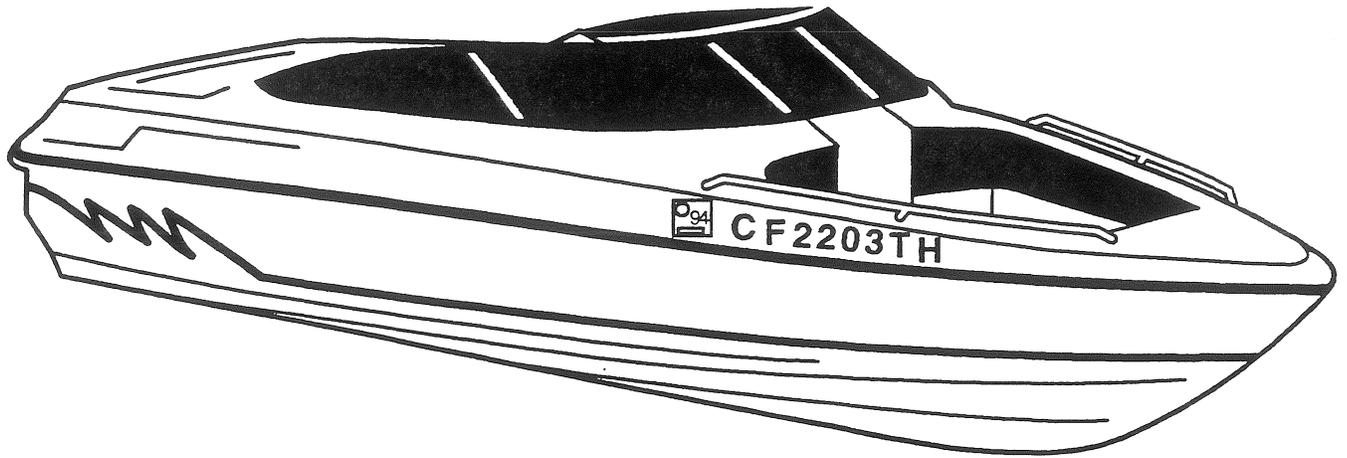
## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

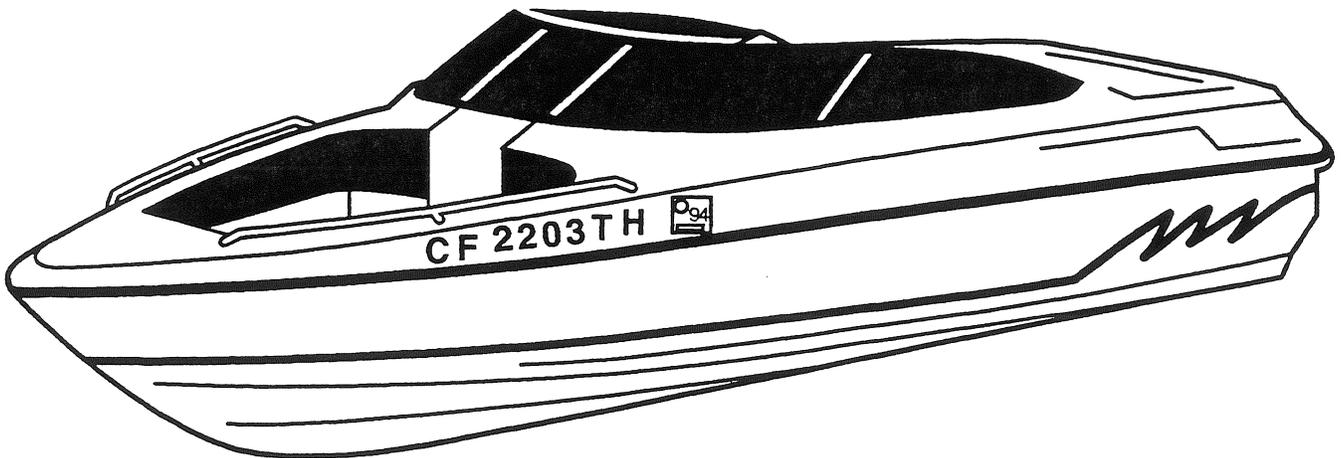
## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz. Study your Information Sheets for our next lesson.

# REGISTRATION # LOCATION



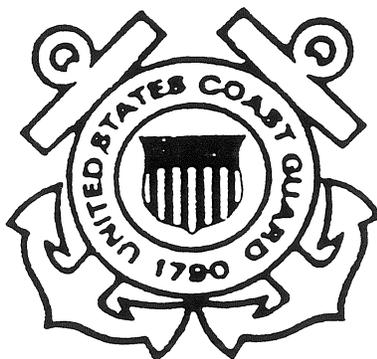
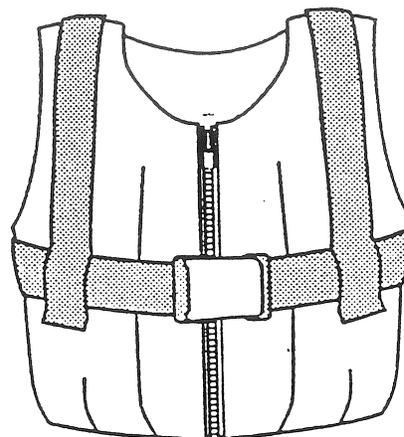
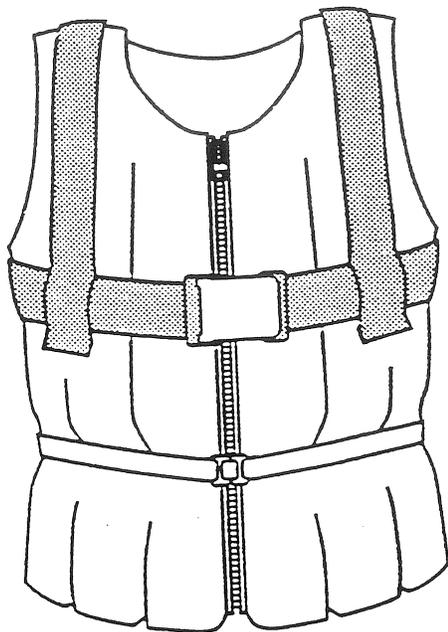
STARBOARD SIDE



PORT SIDE

# PERSONAL FLOTATION DEVICE

*MOST IMPORTANT PIECE OF EQUIPMENT*

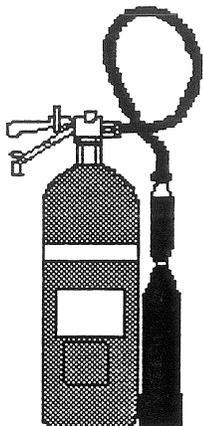


Off-Shore Life Jacket  
(Type I PFD)

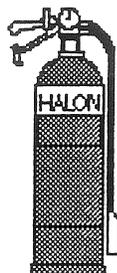


Flotation Aid (Type III PFD)

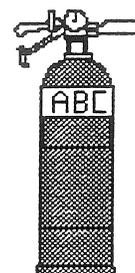
# FIRE EXTINGUISHER



Carbon Dioxide  
Extinguisher



Halon  
Extinguisher



Dry Chemical  
Extinguisher

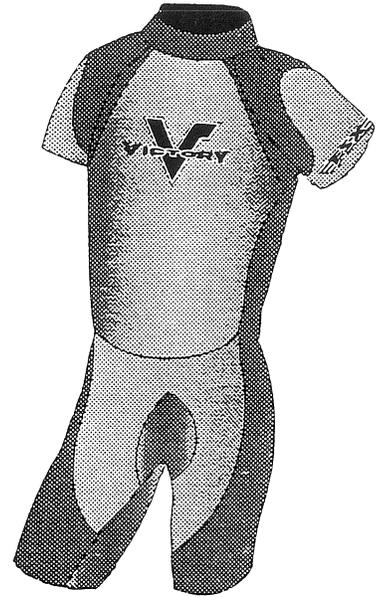
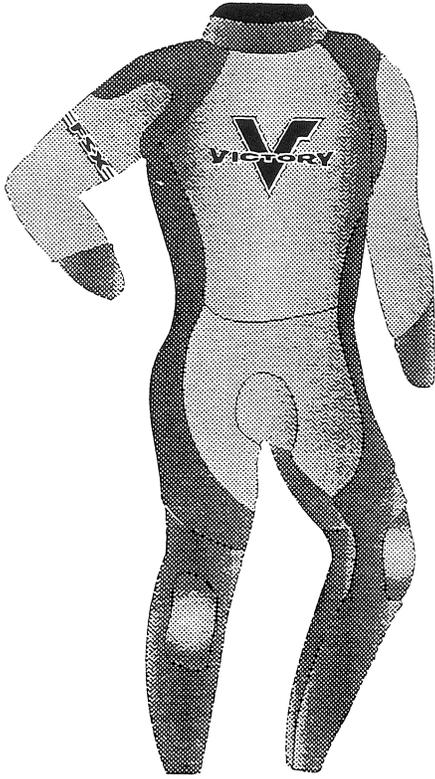
All extinguishers must be readily accessible (preferably not stowed next to common fire sources), and they must be kept in a serviceable condition.

## FIRE EXTINGUISHER REQUIREMENTS

Boat Length	Without fixed extinguishing system in machinery space	With fixed extinguishing system in machinery space
Less than 26 ft.	1 B-I	None
26 ft. to under 40 ft.	2 B-I or 1 B-II	1 B-I
40 ft. to 65 ft.	3 B-I or 1 B-II and 1 B-I	2 B-I or 1 B-II

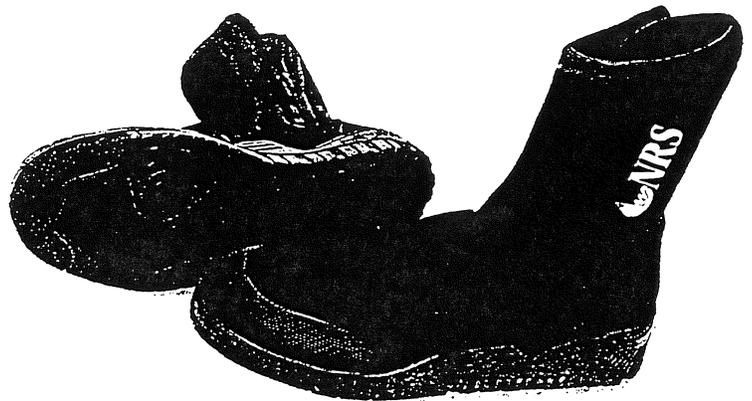
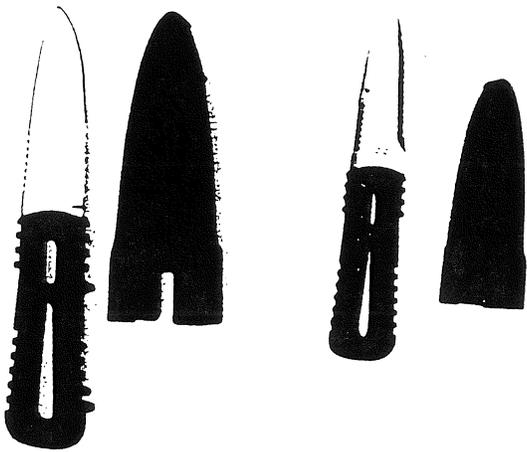
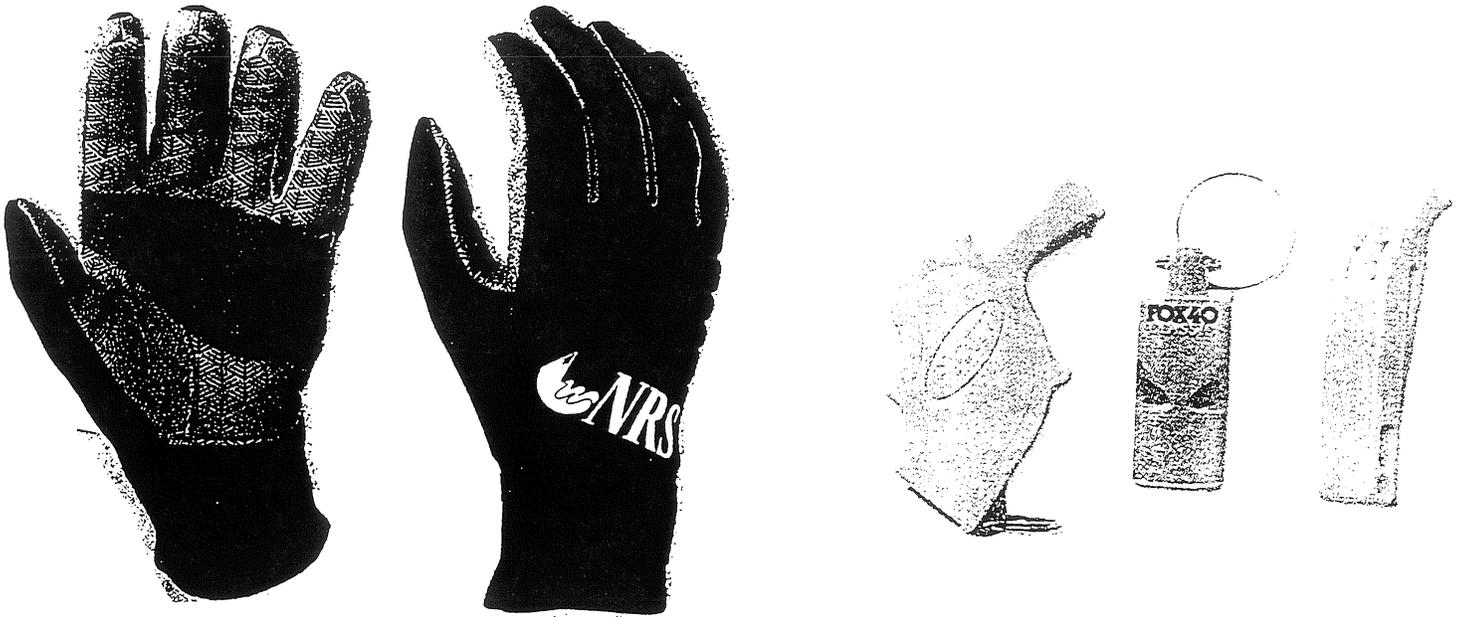
# BODY AND HEAD PROTECTION

---



# RECOMMENDED EQUIPMENT

---



# **BASIC SAFETY REGULATIONS**

---

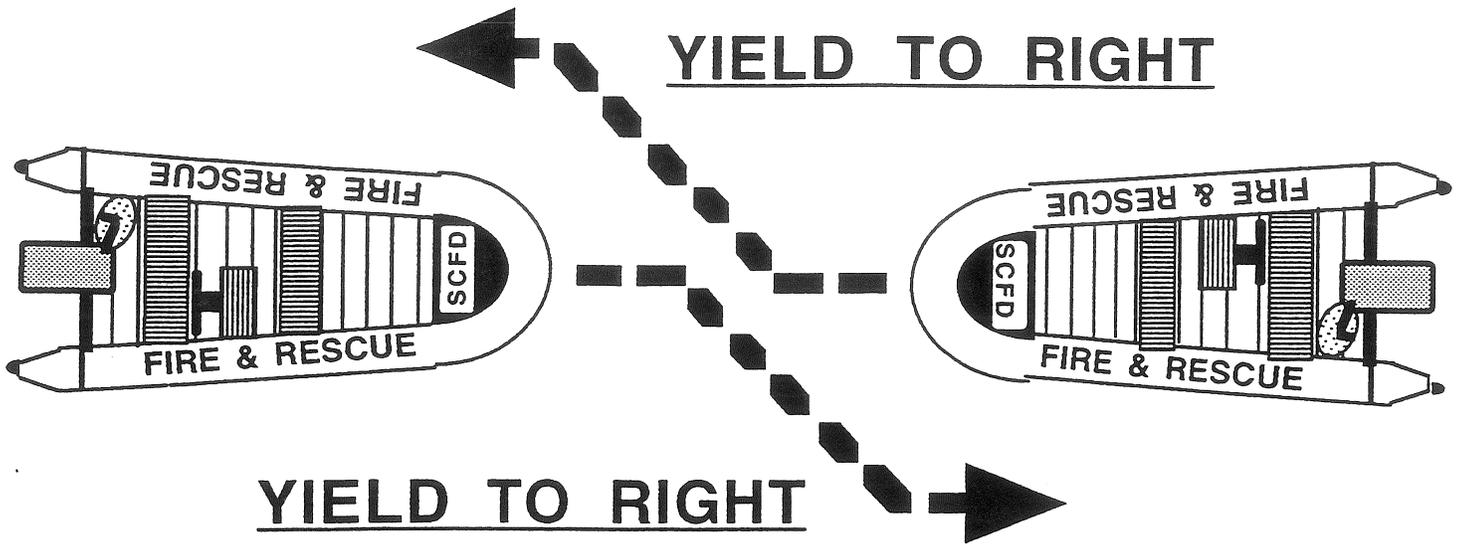
*PAY ATTENTION  
KEEP A SHARP LOOKOUT*

*DO NOT OVERLOAD THE  
RESCUE BOAT  
KNOW THE WEIGHT LIMITATIONS*

*KNOW YOUR SPEED LIMITATIONS  
DO NOT EXCEED YOUR COMFORT RANGE  
KNOW THE LEGAL SPEED LIMITS  
IF UNSURE, MAINTAIN 5 MPH*

# NAVIGATIONAL RULES

## WHEN APPROACHING HEAD ON



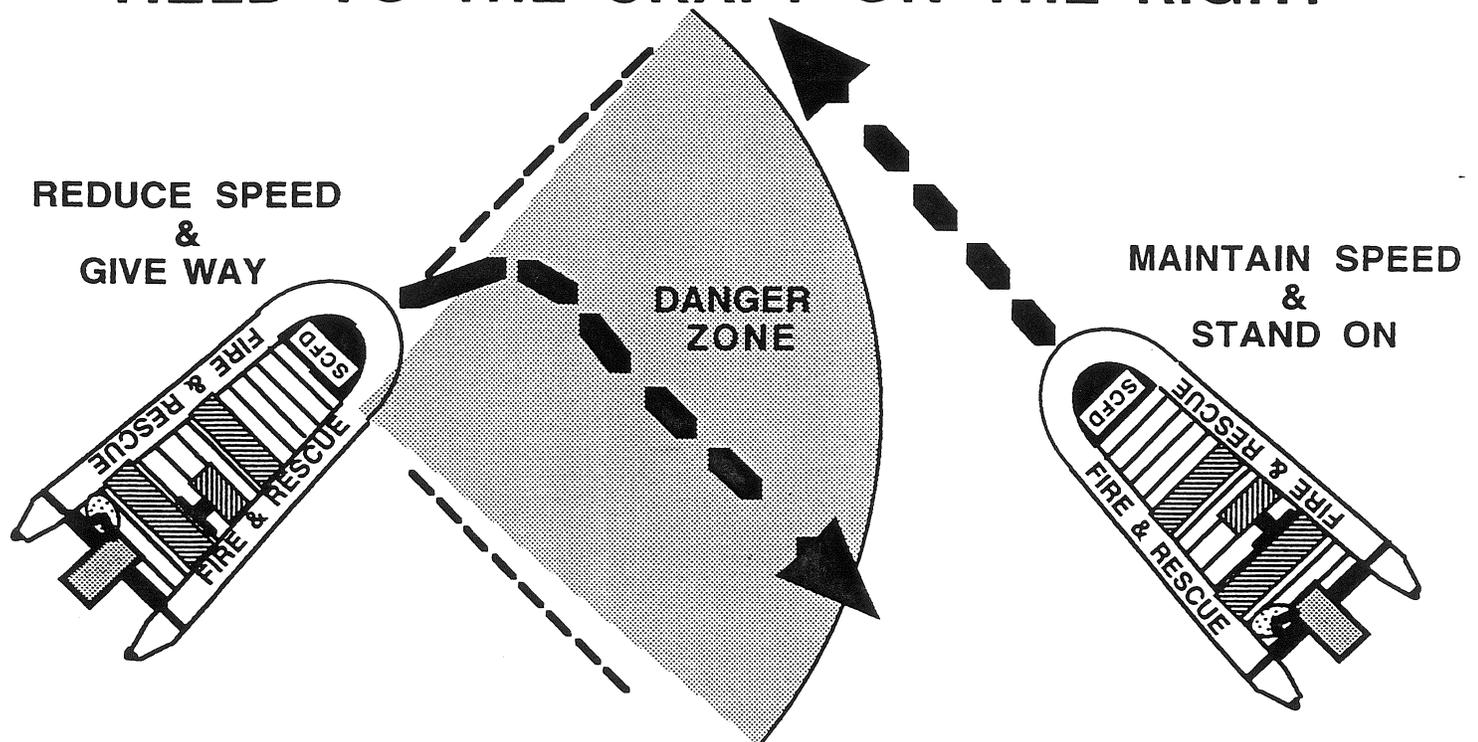
---

---

## WHEN CROSSING ANOTHERS PATH

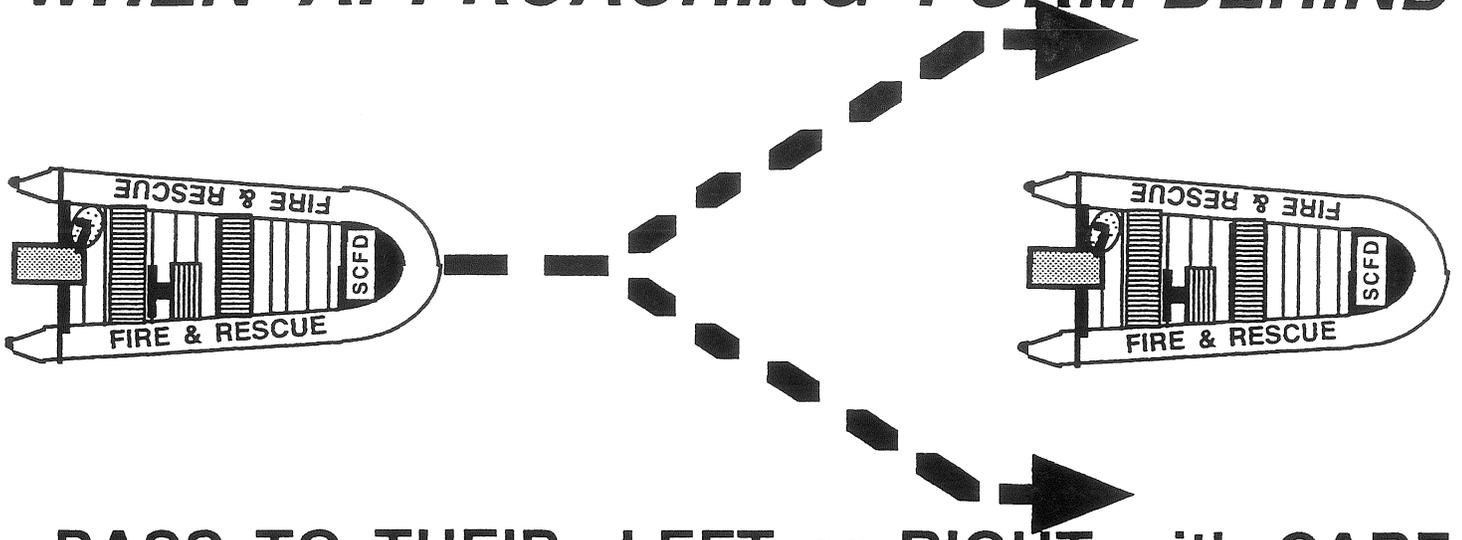
Attempt to make eye contact

### YIELD TO THE CRAFT ON THE RIGHT



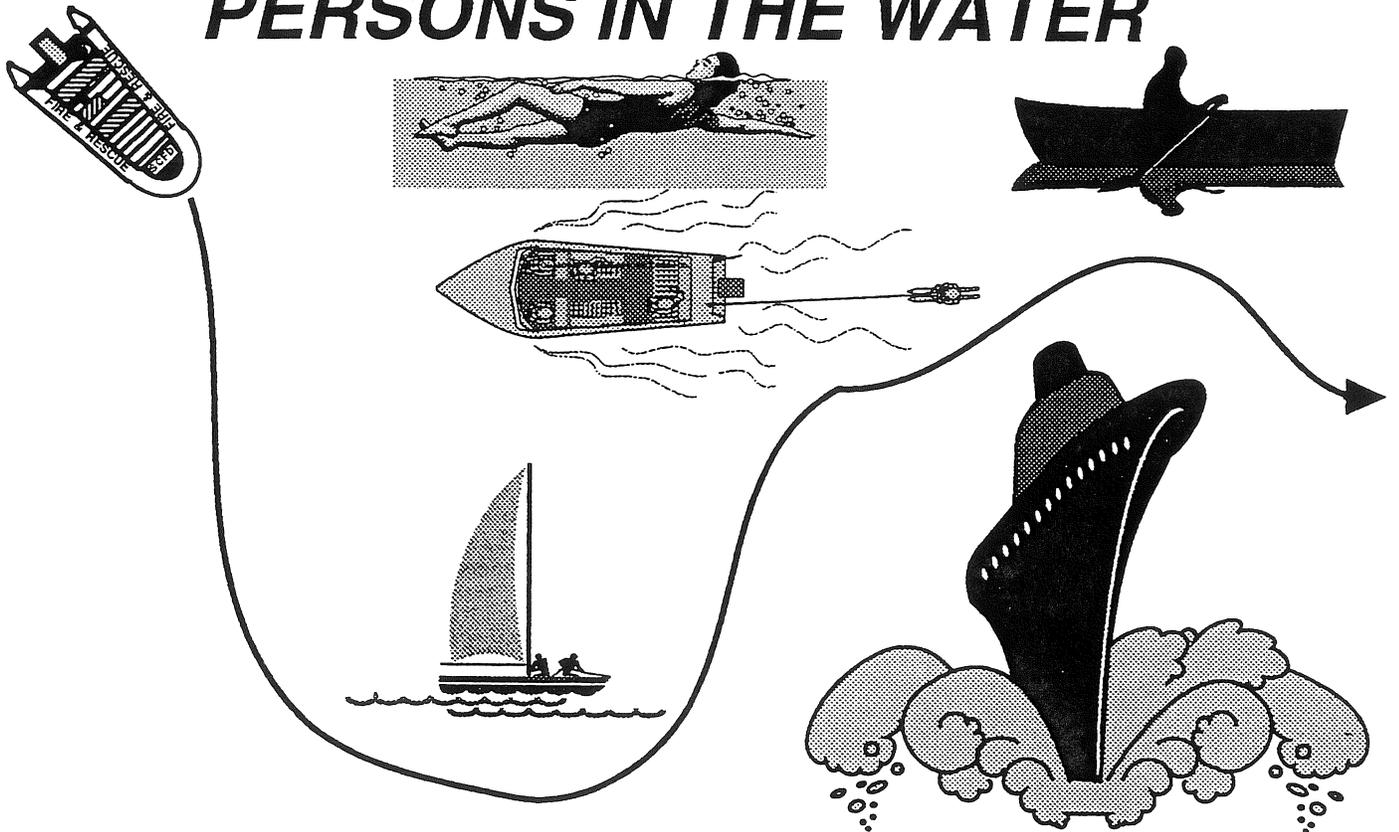
# NAVIGATIONAL RULES

## WHEN APPROACHING FROM BEHIND



**PASS TO THEIR LEFT or RIGHT with CARE**

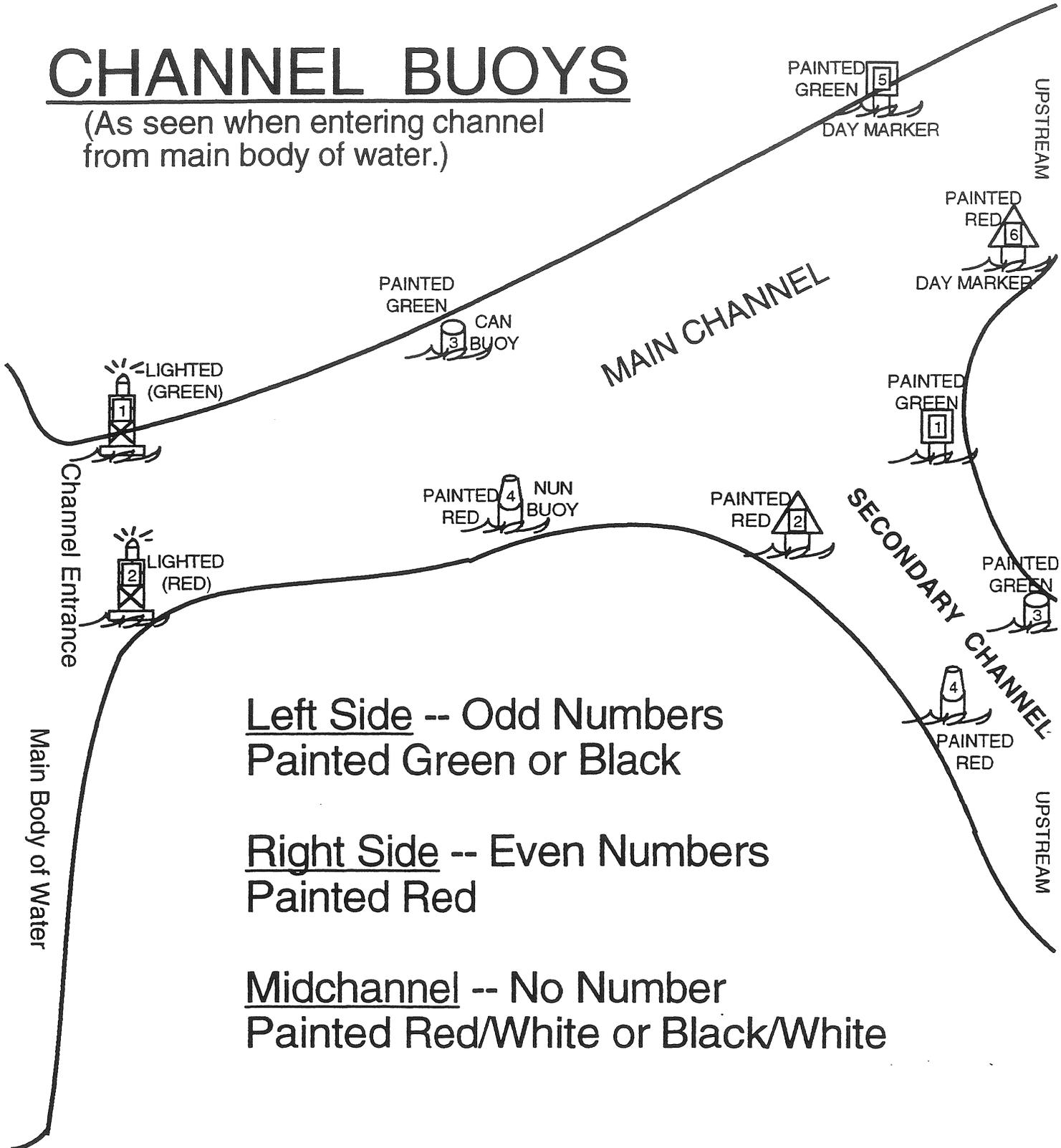
## YIELD TO ALL OTHER CRAFT AND PERSONS IN THE WATER



# CALIFORNIA WATERWAY MARKING SYSTEM

## CHANNEL BUOYS

(As seen when entering channel from main body of water.)



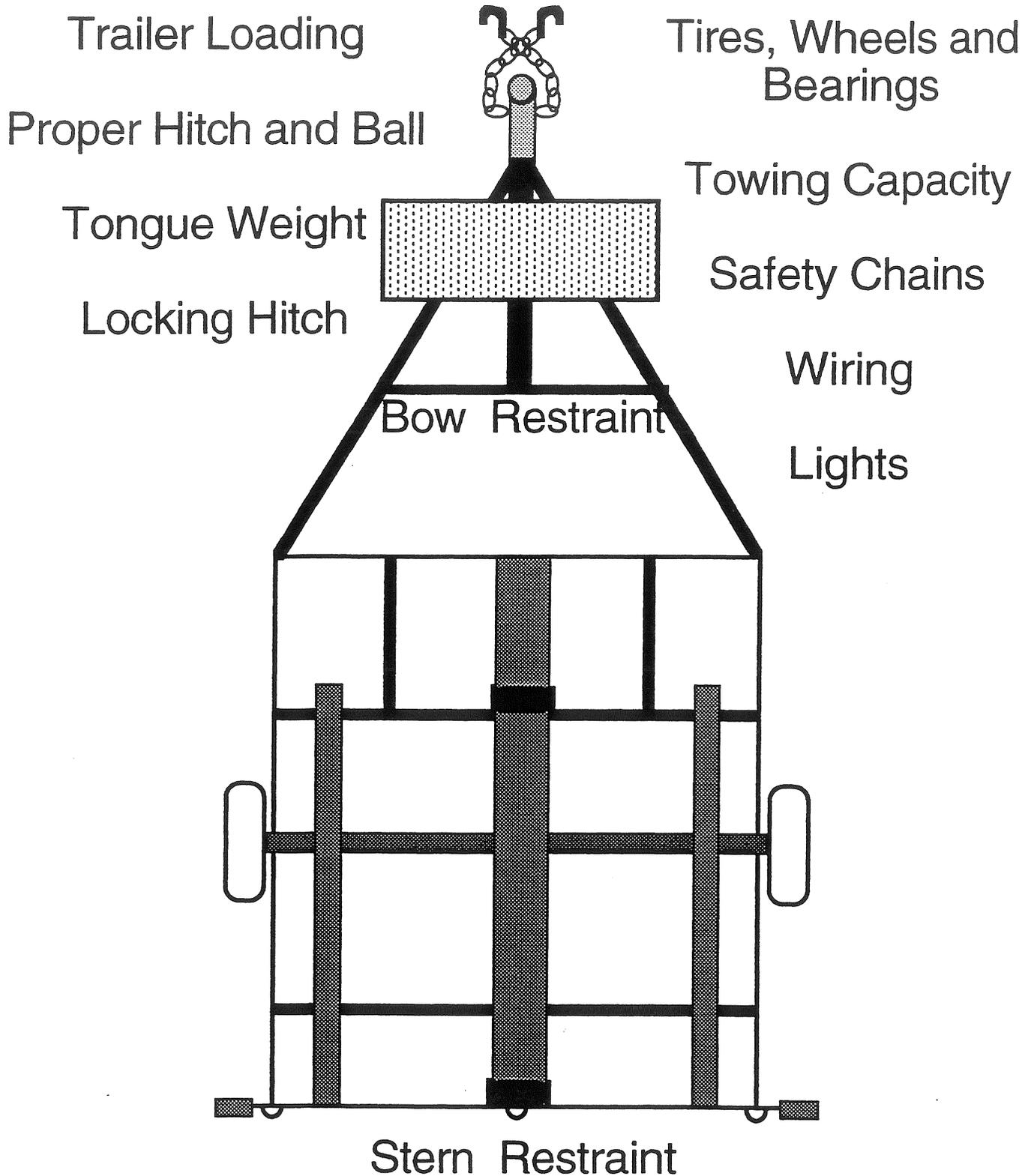
Left Side -- Odd Numbers  
Painted Green or Black

Right Side -- Even Numbers  
Painted Red

Midchannel -- No Number  
Painted Red/White or Black/White

# RESCUE BOAT TRAILER

---



# BOATING ACCIDENT FORM

## CALIFORNIA BOATING ACCIDENT REPORT

THE OPERATOR OF EVERY RECREATIONAL VESSEL IS REQUIRED BY SECTION 656 OF THE HARBORS AND NAVIGATION CODE TO FILE A WRITTEN REPORT WHENEVER A BOATING ACCIDENT OCCURS WHICH RESULTS IN DEATH, DISAPPEARANCE, INJURY THAT REQUIRES MEDICAL TREATMENT BEYOND FIRST AID, TOTAL PROPERTY DAMAGE IN EXCESS OF \$800 OR COMPLETE LOSS OF A VESSEL. REPORTS MUST BE SUBMITTED WITHIN FORTY-EIGHT (48) HOURS IN CASE OF DEATH OCCURRING WITHIN 24 HOURS OF THE ACCIDENT, DISAPPEARANCE, OR INJURY THAT REQUIRES MEDICAL TREATMENT BEYOND FIRST AID. ALL OTHER REPORTABLE ACCIDENTS MUST BE SUBMITTED IN WRITING WITHIN TEN (10) DAYS. REPORTS ARE TO BE SUBMITTED TO THE DEPARTMENT OF BOATING AND WATERWAYS, 1629 S STREET, SACRAMENTO, CA 95814-7291, (916) 322-1833. FAILURE TO SUBMIT THIS REPORT AS REQUIRED IS A MISDEMEANOR AND IS PUNISHABLE BY A FINE NOT TO EXCEED ONE THOUSAND DOLLARS (\$1,000) OR IMPRISONMENT NOT TO EXCEED SIX (6) MONTHS OR BOTH.

COMPLETE ALL BLOCKS (PRINT OR TYPE ALL INFORMATION. INDICATE THOSE NOT APPLICABLE BY "N.A." THOSE UNKNOWN BY "UN.")

1. OPERATOR'S NAME AND ADDRESS AGE _____		2. RENTED BOAT <input type="checkbox"/> YES <input type="checkbox"/> NO	3. OPERATOR'S EXPERIENCE THIS TYPE OF BOAT <input type="checkbox"/> UNDER 20 HOURS <input type="checkbox"/> 20 TO 100 HOURS <input type="checkbox"/> 100 TO 500 HOURS <input type="checkbox"/> OVER 500 HOURS		OTHER BOAT OPERATING EXPERIENCE <input type="checkbox"/> UNDER 20 HOURS <input type="checkbox"/> 20 TO 100 HOURS <input type="checkbox"/> 100 TO 500 HOURS <input type="checkbox"/> OVER 500 HOURS
HOME PHONE ( ) WORK PHONE ( )					
4. OWNER'S NAME AND ADDRESS HOME PHONE ( ) WORK PHONE ( )		5. NUMBER OF PERSONS ON BOARD	7. FORMAL INSTRUCTION IN BOATING SAFETY <input type="checkbox"/> NONE <input type="checkbox"/> AMERICAN RED CROSS <input type="checkbox"/> USCG AUXILIARY <input type="checkbox"/> STATE <input type="checkbox"/> US POWER SQUADRON <input type="checkbox"/> OTHER (SPECIFY)		
		6. NUMBER OF PERSONS TOWED (I.E. SKIING ETC.)			

### YOUR VESSEL—VESSEL NO. 1

8. BOAT REG. NO.	9. BOAT NAME	10. BOAT MANUFACTURER	11. BOAT MODEL	12. MFGR. HULL IDENT. NO.	
13. TYPE OF BOAT <input type="checkbox"/> OPEN MOTORBOAT <input type="checkbox"/> CABIN MOTORBOAT <input type="checkbox"/> AUXILIARY SAIL <input type="checkbox"/> SAIL ONLY <input type="checkbox"/> HOUSEBOAT <input type="checkbox"/> RAFT <input type="checkbox"/> CANOE <input type="checkbox"/> KAYAK <input type="checkbox"/> JET SKI/WETBIKE <input type="checkbox"/> ROWBOAT <input type="checkbox"/> OTHER (SPECIFY)		14. HULL MATERIAL <input type="checkbox"/> WOOD <input type="checkbox"/> ALUMINUM <input type="checkbox"/> STEEL <input type="checkbox"/> FIBERGLASS <input type="checkbox"/> RUBBER/VINYL <input type="checkbox"/> PLASTIC <input type="checkbox"/> OTHER (SPECIFY)		15. PROPULSION <input type="checkbox"/> OUTBOARD <input type="checkbox"/> INBOARD <input type="checkbox"/> INBOARD-OUTBOARD <input type="checkbox"/> JET <input type="checkbox"/> SAIL <input type="checkbox"/> PADDLE/OARS <input type="checkbox"/> OTHER (SPECIFY) TYPE OF FUEL _____	16. BOAT DATA NUMBER OF ENGINES _____ LENGTH _____ MAKE OF ENGINE _____ BEAM (WIDTH) _____ HORSEPOWER (TOTAL) _____ DEPTH (TOP OF INNER TRANSOM TO KEEL) _____ YEAR BUILT (ENGINE) _____ YEAR BUILT (BOAT) _____
			17. PRIMARY BOAT USE <input type="checkbox"/> RECREATIONAL <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> FOR-HIRE <input type="checkbox"/> WORK BOAT	18. PREVIOUS ACCIDENTS INVOLVING THIS BOAT DATES _____	

### OTHER VESSEL INVOLVED—VESSEL NO. 2

19. BOAT REG. NO.	20. BOAT NAME	21. BOAT MANUFACTURER	22. BOAT MODEL	23. MFGR. HULL IDENT. NO.
24. NAME OF OPERATOR AGE _____ HOME PHONE ( ) WORK PHONE ( )		25. ADDRESS		
26. NAME OF OWNER HOME PHONE ( ) WORK PHONE ( )		27. ADDRESS		

### WITNESSES

NAME _____	AGE _____	ADDRESS _____	TELEPHONE NUMBER _____
NAME _____	AGE _____	ADDRESS _____	TELEPHONE NUMBER _____
NAME _____	AGE _____	ADDRESS _____	TELEPHONE NUMBER _____

### ACCIDENT DATE AND LOCATION

29. DATE OF ACCIDENT	30. TIME ____ AM ____ PM	31. NAME OF BODY OF WATER	33. LOCATION (AS PRECISELY AS POSSIBLE) (LAT/LONG)
		32. LAST PORT OF CALL	
34. STATE	35. NEAREST CITY OR TOWN	36. COUNTY	

### ENVIRONMENTAL CONDITIONS

37. WEATHER <input type="checkbox"/> CLEAR <input type="checkbox"/> CLOUDY <input type="checkbox"/> FOG <input type="checkbox"/> RAIN <input type="checkbox"/> SNOW <input type="checkbox"/> HAZY	38. WATER CONDITIONS <input type="checkbox"/> CALM (WAVES 6") <input type="checkbox"/> CHOPPY (6"-2') <input type="checkbox"/> ROUGH (2'-6") <input type="checkbox"/> VERY ROUGH (6') <input type="checkbox"/> STRONG CURRENT	39. TEMPERATURE (ESTIMATE) AIR _____ °F WATER _____ °F	40. WIND <input type="checkbox"/> NONE <input type="checkbox"/> LIGHT (0 TO 6 MPH) <input type="checkbox"/> MODERATE (7 TO 14 MPH) <input type="checkbox"/> STRONG (15 TO 25 MPH) <input type="checkbox"/> STORM (25 MPH AND OVER)	41. VISIBILITY <input type="checkbox"/> GOOD <input type="checkbox"/> FAIR <input type="checkbox"/> POOR	42. WEATHER ENCOUNTERED <input type="checkbox"/> WAS AS FORECAST <input type="checkbox"/> NOT AS FORECAST <input type="checkbox"/> FORECAST NOT OBTAINED
---	--	---	---	---	---

THIS CONFIDENTIAL REPORT IS USED IN RESEARCH FOR THE PREVENTION OF ACCIDENTS, AND A COPY IS FORWARDED TO THE UNITED STATES COAST GUARD. (COMPLETE BOTH SIDES)

A-1 (REV. 12-88)



# ALCOHOL FACTS

---

**ALCOHOL IS A FACTOR IN A HIGH PERCENTAGE OF BOATING ACCIDENTS**

**BLOOD ALCOHOL CONCENTRATION OF .08% OR ABOVE IS ILLEGAL IF OPERATING A PERSONAL WATERCRAFT**

**YOUR ABILITY TO BALANCE WILL BE REDUCED**

**PEOPLE BECOME MORE DARING AFTER THE CONSUMPTION OF ALCOHOL**

**ALCOHOL DOES NOT WARM UP YOUR BODY**

**YOU MAY RECEIVE AN INCREASED PENALTY IF YOU REFUSE TO BE TESTED**

# ALCOHOL FACTS

---

**ALCOHOL IS A FACTOR IN 59% OF  
BOATING ACCIDENTS**

**BLOOD ALCOHOL CONCENTRATION OF  
.08% OR ABOVE IS ILLEGAL IF OPERATING  
A PERSONAL WATERCRAFT**

**YOUR ABILITY TO BALANCE  
WILL BE REDUCED**

**PEOPLE BECOME MORE DARING AFTER  
ONE OR TWO DRINKS OF ALCOHOL**

**ALCOHOL DOES NOT  
WARM UP YOUR BODY**

**YOU MAY RECEIVE AN INCREASED  
PENALTY IF YOU REFUSE TO BE TESTED**

TOPIC: Philosophy Of Rescue Boat Use

TIME FRAME: 0:30

LEVEL OF INSTRUCTION I

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The student will

- identify prerequisites required to operate a rescue boat for emergency services
- adhere to the training rules while operating a rescue boat
- recognize the components needed for a successful rescue operation

Standard: With a minimum 80 % accuracy according to Information Sheet 2-1, Pages 1 through 2

MATERIALS NEEDED:

- Overhead projector and screen
- Overhead transparencies 2-1 through 2-2
- Written quiz
- Information Sheet 2-1 Pages 1 through 2

REFERENCES:

- Rescue 3 International Swift Water Rescue Manual
- California boating and waterways regulations

PREPARATION:

The public has become aware of the number of deaths that occur every year on the local water ways. It is your responsibility to learn and know the safety philosophy towards operating a rescue boat. Adherence to these philosophies will mean a safer operation and will increase your chances of completing your rescue mission. You must feel completely confident in your swift water skills, your river reading and swimming capabilities, to maintain your high level of proficiency in the water. You must also be very confident in your training and continue to maintain your skills as a rescue boat operator and or crew member. This

can only be done with constant training. Your ability to follow these guidelines at all times will assist you in preventing any accidents or misfortunes. The rules are developed for the protection of the emergency service personnel while performing rescues, training or other job related duties.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>I. Personnel who will operate the rescue boats must be:</p> <ul style="list-style-type: none"><li>A. Swift Water Rescue Technician 1 at a minimum. The student must be <u>swimmer</u> SRT 1.</li><li>B. Certified in boat safety by completing the boat safety exam Lesson Plan 1 with an 80% or better</li><li>C. Completed the 24 hour rescue boat rescue operations course, satisfactorily passing all skills of rescue boat operation.</li></ul> <p>II. Towing of rescue boats</p> <ul style="list-style-type: none"><li>A. Rescue boat should only be transported on an approved trailer.</li><li>B. Your rescue boat trailer should be towed by a mechanically maintained vehicle rated to tow the weight of the rescue boat and trailer.</li><li>C. Your trailer should have two safety chains. When connected to the tow vehicle, the chains should be crossed enabling them to catch the hitch if it becomes uncoupled.</li></ul> <p>III. Rules that will be enforced when operating rescue boats during safety and rescue training.</p> <ul style="list-style-type: none"><li>A. Rescue boat will only be operated when student is in full safety attire.</li></ul> <p>Full safety attire consist of thermal protection (if needed), coast guard approved personal flotation device, and swift water helmet.</p> <ul style="list-style-type: none"><li>B. Your rescue boat will be at idle speed when within twenty five feet of other crafts, persons in the water (excluding rescue members) , or the shore.</li></ul>	<p>What prior training should a person have before operating a rescue boat in an emergency situation?</p> <p>Who has seen those bolt together trailers? Do you think they would be all right to use?</p> <p><u>OHT 2.1</u></p> <p>What does full safety attire consist of ?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>C. No rescue boat will be operated directly behind another rescue boat unless the rear watercraft is at least one hundred feet behind the forward watercraft.</p> <p>D. A rescue boat will <u>never</u> be driven directly onto shore. The bow person / rescuer will stop the boat before it comes into shore. The operator will have turned off the engine by this time.</p> <p>This practice can cause hull and possibly pump damage to the rescue boats with jet drive systems and propeller damage to those with props.</p> <p>E. Rescue boats should only be operated in the seated position.</p> <p>If standing is required to navigate a river, due to reflection or horizon obstruction, short periods of standing will be permitted while the boat is hovering.</p> <p>F. Do not, at anytime while operating a rescue boat, speed in congested areas. You can be held responsible for your wake. Maintain idle speed.</p> <p>G. Do not, while operating the rescue boat, exceed the weight limitation.</p> <p>Immediate overloading of the rescue boat for transportation of victims to a close location is permitted.</p> <p>H. Do not continue to operate a rescue boat that shows evidence of power loss or has a overheating warning beeper sounding.</p> <p>I. Always follow right of way and navigational requirements when operating the rescue boat.</p> <p>J. When possible stay to the left or port side when over taking another water craft.</p>	<p>Why shouldn't rescue boat be driven onto shore?</p> <p>When would you be required to stand in your rescue boat?</p> <p>When would you realistically overload your rescue boat?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>K. A rescue boat should never be started in less than one foot of water. Two feet or more if a prop is being used.</p> <p>L. While at full plan, a Rescue boat should never be operated in less than four to six inches of water.</p> <p>Maintain a full plane and if water becomes less than four to six inches deep, immediately shut off power and plane over low water and then restart once in deeper water and continue. If using a prop, not less than eighteen inches deep at full plan and the motor must be shut off &amp; raised out of the water.</p> <p>M. Besides the lower unit being deeper in the water than a jet drive, in very shallow water, even if the motor is turned off, the prop is exposed and can be damaged.</p> <p>IV. Objectives for Rescue boat</p> <p>A. Enhance water rescue program</p> <p>B. They are not the answer to every question.</p> <p>C. Additional component</p> <ol style="list-style-type: none"><li>1. Shore Crews<ol style="list-style-type: none"><li>a. Upstream spotters and downstream protection.</li></ol></li><li>2. In Water Crews</li><li>3. Rescue Boat Crews</li><li>4. Personal Watercraft &amp; Crew</li><li>5. Helicopters for sighting and scene illumination</li></ol>	<p>INSTRUCTOR NOTE: Recommend to the agency that they determine their own crafts draft and depth requirements.</p> <p>What would you do if you thought the water was less than four to six inches deep?</p> <p>Why should a motor with a prop be raised out of the water?</p> <p><u>OHT 2.2</u></p> <p>What are some of the other components that can be required in river responses?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
--------------	-------------

D. All components may be needed for a successful rescue operation.

What are some of the instances you have experienced where all the components would have helped made a successful rescue?

## SUMMARY:

The swimming and boating public is counting on you and your ability to make this rescue boat program work. If you follow the philosophy stated in this lesson plan, you will be able to identify the prerequisites needed to operate a rescue boat. Your adherence to the training rules will provide you safe operations while recognizing the needed components for a successful rescue. Dedicated training will prepare you for future rescue boat operation.

## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz. Study for our next session.

# RULES TO LIVE BY

---

1. Must be in proper protective equipment
2. Maintain an idle when near other crafts and people
3. Maintain at least 100 feet behind the forward craft
4. Never drive the R/B onto shore
5. Maintain a sitting position when operating the R/B
6. Only one R/B on the training course at a time
7. Do not speed in congested areas. Idle speed
8. Never exceed the weight limit of your Rescue Craft
9. Maintain attention of your R/B engine
10. Always follow the rules of the road / water
11. Never start your R/B in less than 2 feet of water
12. Pay attention to water depth when operating R/B

# OBJECTIVES OF BOAT RESCUE

1. ENHANCE YOUR WATER RESCUE PROGRAM
2. OPERATE WHERE OTHER CRAFT CANNOT
3. COMPLIMENT OF TRAINED WATER RESCUE TEAM COMPONENTS
  - A. SHORE CREW
  - B. IN WATER CREW
  - C. BOAT CREW
  - D. PWC CREW
4. ALL TEAM COMPONENTS ARE NEEDED
5. DEVELOP AND TRAIN FOR DIFFERENT TYPES OF RESCUES
6. WORK AS PART OF A TEAM WITH OTHERS THAT USE RESCUE BOATS

LAW ENFORCEMENT

COAST GUARD

FIRE DEPARTMENTS

TOPIC: **Rescue Boat Types, Uses, and Limitations**

TIME FRAME 1:00

LEVEL OF INSTRUCTION I

BEHAVIORAL OBJECTIVE:

Conditions: A written quiz

Behavior: The student will

- identify the watercrafts used by emergency services
- recognize the terminology used for rescue boats
- identify the terminology used during rescue boat operations

Standard: With a minimum 80 % accuracy according to Information Sheet 3-1, Pages 1 through 8

MATERIALS NEEDED:

- Overhead projector and screen
- Overhead transparencies 3-1 through 3-8
- Graphic quiz
- Student Information Sheet 3-1 Pages 1-8

REFERENCES

- California Boating and Waterways Manual
- Student Information Sheet 3-1 Pages 1 through 8
- Rescue boat owners manual
- Los Angeles County Fire Boat Operations Manual

PREPARATION:

There are many types of water emergencies and numerous factors that must be considered before you attempt a rescue by boat. Some of those decisions are made way before the emergency occurs. Knowing what type of watercraft to have on hand, its capabilities and limitations, are just as important to your safety, as it is for the the survival of the victim. Picking the right boat for the situation will make your jobs easier and safer.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>I. Types of rescue watercrafts</p> <p>A. There are many different types of watercrafts used for water rescues today. But they all can be broken down into three categories.</p> <ol style="list-style-type: none"><li>1. Rigid hull boats. Made of aluminum, wood, plastics, and or fiberglass.</li><li>2. Inflatable boats. Made of a high strength polymer using air pressure to maintain it's shape.</li><li>3. Rigid inflatables,(or RIB's). Which is a combination of the inflatable boat with a rigid hull.</li></ol> <p>B. All three types can be used for rescues and have proven themselves very capable in their own way.</p> <p>C. Good points and bad points:</p> <ol style="list-style-type: none"><li>1. Inflatable Boats<ol style="list-style-type: none"><li>a. Good Points<ol style="list-style-type: none"><li>1. Its very buoyant / stable</li><li>2. Its weight capabilities</li><li>3. Can take an impact</li><li>4. Can be self bailing</li><li>5. Light weight / can be carried</li><li>6. Can be launched almost anywhere</li><li>7. Can be repaired quick &amp; easy</li><li>8. Can be folded</li></ol></li><li>b. Bad Points<ol style="list-style-type: none"><li>1. Can be punctured</li><li>2. Can be affected by the wind</li><li>3. Little harder to operate</li><li>4. ?</li></ol></li></ol></li></ol>	<p><u>OHT 3.1</u></p> <p>Ask students for thier experiences with different boats</p>





# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>D. Application and availability are some of the factors used to determine which boat is to be used for a rescue. The boat you acquire should fit your needs, your skill level, and your water rescue arena.</p>	
<p>E. While rigid hull boats have been used, an inflatable boat has proven better suited to perform rescues from a swiftwater environment.</p>	
<p>F. Rigid hull boats are better suited for oceans, lakes, and deep, slow moving rivers.</p>	<p>Which boat is better suited for swiftwater rescues ?</p>
<p>III. Types of Propulsion Systems</p>	
<p>A. There are basically three types of propulsion systems.</p> <ol style="list-style-type: none"> <li>1. The Jet Drive</li> <li>2. The Propeller</li> <li>3. Manual Power</li> </ol>	
<p>1. The Jet System is comprised of a:</p> <ol style="list-style-type: none"> <li>1. Jet Pump</li> <li>2. Impeller</li> <li>3. Directional Nozzle</li> </ol>	<p><u>OHT 3.7</u></p>
<p>B. Water is sucked in through the intake grate and forced out by the impeller through the directional nozzle.</p>	<p>How does the Marine jet drive system work ?</p>
<p>C. The directional nozzle gives the watercraft it's great maneuverability.</p>	



# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"><li>2. While more maneuverable at low speeds, the below water level propeller offers a rotating blade at the stern of the rescue boat. Extreme caution must be used around the prop. whether its moving or not. A prop guard should be used to help minimize the danger of personal injury.</li> <li>3. The propeller hangs lower below the boat, increasing the chances of striking an object or the bottom.</li> <li>4. The propeller system is the desired choice of propulsion in oceans, lakes and deep running rivers.</li></ul> <p>3. Manual Power</p> <p style="padding-left: 40px;">Paddles and Rope Systems</p> <ul style="list-style-type: none"><li>A. Paddles are used to propell and turn the boat.<ul style="list-style-type: none"><li>1. Harder to travel upstream</li></ul></li> <li>B. Rope System used to move a boat up and down stream. Like used with spider boats.<ul style="list-style-type: none"><li>1. Extended set-up time.</li><li>2. Technically experienced people needed.</li></ul></li></ul>	<p>A prop guard is recommended for all USAR outboards</p>

## SUMMARY:

With the information you have acquired on the types, use and limitations of rescue boats you will be able to pass onto the public, other firefighters and other fire fighting and law enforcement agencies, what is available to us through different water craft dealers and the different types of watercrafts available. You will also be able to converse with fellow water rescue team members the proper terminology used during training and actual emergencies leaving no chance for missed communication.

## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz. Study for our next session.

# INFLATABLE BOATS

---

## I. POSITIVES:

- ⊗ VERY BUOYANT AND STABLE
- ⊗ LARGE WEIGHT HOLDING CAPABILITIES
- ⊗ LITTLE OR NO DAMAGE UPON AN IMPACT
- ⊗ LIGHT WEIGHT, CAN USUALLY BE CARRIED BY CREW
- ⊗ CAPABLE OF BEING LAUNCHED ALMOST ANYWHERE
- ⊗ REPAIRS CAN BE PERFORMED QUICKLY AND EASLLY
- ⊗ CAN BE BROKEN DOWN AND FOLDED TO TRANSPORT

## 2. NEGATIVES:

- ⊗ SPONSONS CAN BE PUNCTURED
- ⊗ AFFECTED MORE BY WIND DUE TO IT'S LIGHT WEIGHT
- ⊗ MORE TRAINING TO OPERATE PROFICIENTLY

# RIGID HULL BOATS

---

## 1. POSITIVES:

-  EASIER TO OPERATE
-  OFFERS A MORE STABLE PLATFORM
-  CAPABLE OF CARRYING MORE EQUIPMENT
-  MOST CASES THEY OFFER MORE DECK SPACE DUE TO LACK OF SPONSONS
-  MOST TIMES ARE FASTER DUE TO DESIGN
-  MOST TIMES ARE EASIER TO LEARN HOW TO OPERATE

## 2. NEGATIVES:

-  MUCH HEAVIER THAN AN INFLATABLE
-  USUALLY NEEDS RAMP OR LAUNCH AREA
-  TAKES ON WATER AND HOLDS IT
-  USUALLY ARE HIGHER IN PRICE
-  MORE DIFFICULT AND COSTLY TO REPAIR

# RIGID HULL INFLATABLES

---

## 1. POSITIVES:

- ⊗ INFLATABLE SPONSONS OFFER HIGH BUOYANCY AND WEIGHT CAPABILITY
- ⊗ SPONSONS CAN TAKE AN IMPACT WITH USUALLY LITTLE DAMAGE
- ⊗ SPONSONS CAN BE QUICKLY REPAIRED IF DAMAGED
- ⊗ SMOOTH RIDE AND STABILITY AT HIGH SPEED
- ⊗ MOST TIMES ARE EASIER TO LEARN HOW TO OPERATE

## 2. NEGATIVES:

- ⊗ MUCH HEAVIER THAN JUST AN INFLATABLE
- ⊗ USUALLY NEEDS RAMP OR LAUNCH AREA
- ⊗ USUALLY ARE HIGHER IN PRICE
- ⊗ MORE DIFFICULT AND COSTLY TO REPAIR
- ⊗ CAN ALSO BE AFFECTED BY WINDS DUE TO LARGE SPONSONS

# PERSONAL WATERCRAFT

---

## 1. POSITIVES:

-  FAST
-  MANUEVERABLE
-  SMALLER IN SIZE
-  SHALLOW DRAFT
-  GOVERNMENT LOAN PROGRAM
-  MANY EMPLOYEES INTERESTED

## 2. NEGATIVES:

-  HULL DAMAGE HAPPENS QUICKLY
-  COSTLY REPAIR OF FIBERGLASS HULL
-  LITTLE DECK AREA ON PWC TO WORK FROM
-  NEED RAMP OR LAUNCH AREA
-  DESIRE TO "HOT-DOG" THE PWC IS HIGH

# AIR BOATS

---

## 1. POSITIVES:

- ⊗ TRAVELS WELL IN SHALLOW WATER
- ⊗ TRAVELS WELL IN DEBRIS RIDDEN WATER
- ⊗ CAN TRAVEL ON LAND AND ICE
- ⊗ NO RISK OF PROP OR JET DAMAGE
- ⊗ LARGE FLAT WORKING AREA
- ⊗ LARGE FLAT BOTTOM MAINTAINS GOOD STABILITY

## 2. NEGATIVES:

- ⊗ VERY NOISY
- ⊗ HIGH CENTER OF GRAVITY
- ⊗ NOT A GOOD CHOICE OF CRAFT WHEN IN A SWIFT WATER ENVIRONMENT
- ⊗ WILL TAKE ON AND HOLD WATER
- ⊗ DIFFICULT TO TRAIN AND OPERATE

# HOVER TYPE CRAFTS

---

## 1. POSITIVES:

- ⊗ TRAVELS WELL IN SHALLOW WATER
- ⊗ TRAVELS WELL IN DEBRIS RIDDEN WATER
- ⊗ CAN TRAVEL ON LAND AND ICE
- ⊗ NO RISK OF PROP OR JET DAMAGE

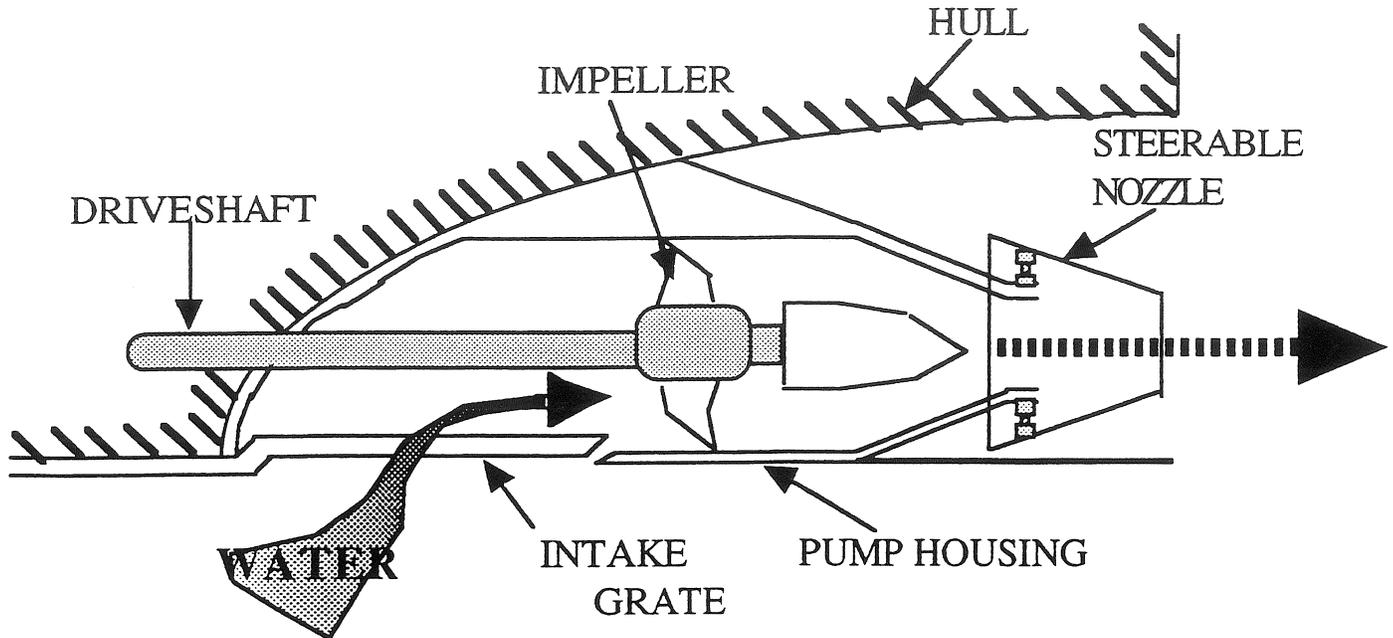
## 2. NEGATIVES:

- ⊗ VERY NOISY
- ⊗ VERY LITTLE WORKING ROOM ON CRAFT
- ⊗ NOT A GOOD CHOICE OF CRAFT WHEN IN A SWIFT WATER ENVIRONMENT
- ⊗ AFFECTED BY WIND
- ⊗ DIFFICULT TO TRAIN AND OPERATE
- ⊗ OPERATION AFFECTED BY AIR DENSITY

# MARINE JET DRIVE

---

## JET DRIVE



**RESCUE BOATS**

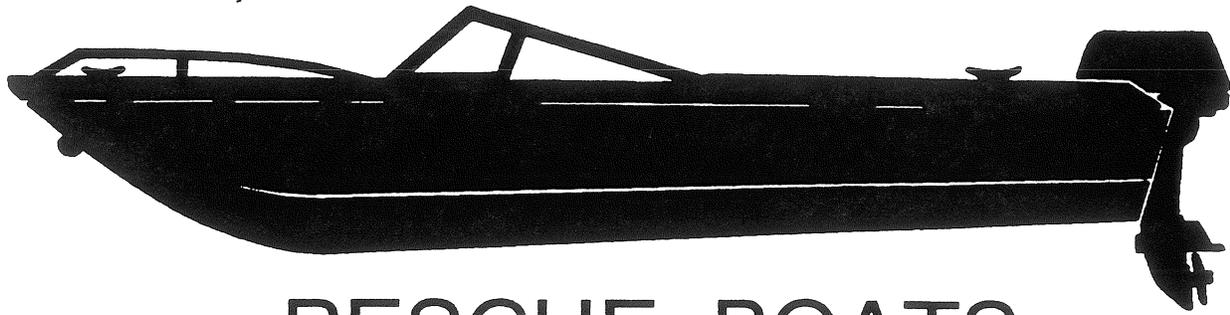
**PERSONAL WATERCRAFT**

**SKI BOATS**

**SPEED BOATS**

# PROPELLER DRIVE

---

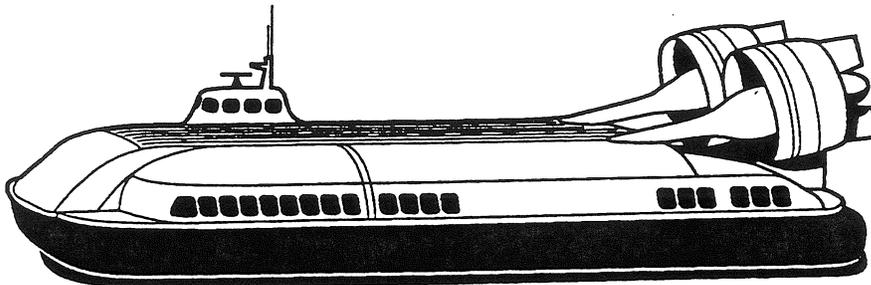


RESCUE BOATS

SKI BOATS

SPEED BOATS

LARGE SHIPS



AIR BOATS

HOVER CRAFTS

PERSONNEL MOVEMENT  
CRAFTS

TOPIC: **Standard Set-up For IRB's**

TIME FRAME: 1:00

LEVEL: II

BEHAVIORAL OBJECTIVE:

Conditions: A written quiz

Behavior: The student will

- recognize what boat configuration is best suited for a rescue boat.
- recognize what changes can be made to make a rescue boat safer for rescuers.
- recognize what modifications can be made to make a rescue easier to handle and maneuver.

Standard: With a minimum 80 % accuracy according to Information Sheets 4-1, Pages 1 through 3.

MATERIALS NEEDED:

- IRB with changes
- Overhead projector and screen
- Overhead transparencies 4.1 through 4.3
- Graphic quiz
- Student Information Sheet 4-1 Pages 1 through 3

REFERENCES:

- Los Angeles County Fire Boat Operations Manual
- Student Information Sheets 4-1 Pages 1 through 3

PREPARATION:

All of us being in the rescue business should have a basic understanding of what we need to be "rescuers". In this business, a multitude of tools and equipment are available to assist us in our work. Our budgets are generally our only limitations as to what equipment we have. In the specific area of river rescue, a great deal of importance is put on the boat or rescue craft you have available. Again there is a vast array of vessels available to us. There are rigid hulls, inflatables, rigid inflatables, semi-v's, deep-v's, flat bottoms and so on. This is not to mention the different manufacturers. The following are suggestions and

modifications that can be made to your IRB that have been proven and tested over time. Changes also can be made to adapt to your department and area needs.

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
<p>I. The Boat</p> <p>A. Bow line</p> <ol style="list-style-type: none"><li>1. Should be short, about 4 feet long</li><li>2. With a handle</li><li>3. Strong enough to pull weight of boat.</li><li>4. Intended for the left hand of the Bowperson</li></ol> <p>B. Handstraps</p> <ol style="list-style-type: none"><li>1. One for Bowperson<ol style="list-style-type: none"><li>a) on starboard side</li><li>b) just in front of Bowperson's seated position, strap lying length wise with the boat.</li><li>c) top of sponson and just inside of top mid-line.</li><li>d) wide strap (about 2")</li><li>e) big enough for a hand.</li><li>f) glued to sponson</li><li>g) intended for the right hand of Bowperson</li></ol></li><li>2. One for Boat Operator<ol style="list-style-type: none"><li>a) on port side</li><li>b) just in front of the Operators' seated position, strap lying length with the boat.</li><li>c) top of sponson, mid-line</li><li>d) wide strap (about 2")</li><li>e) big enough for a hand</li><li>f) glued to sponson</li></ol></li></ol>	<p>OHT 4.1</p>

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
<p>g) - intended for the left hand of the Operator.</p> <p>C. Footstraps</p> <p>1. One for Bowperson</p> <ul style="list-style-type: none"><li>a) in the front half of boat on the floor</li><li>b) approximately mid-line, running length wise with the boat.</li><li>c) wide strap, (about 2" to 4")</li><li>d) big enough to fit wet-suit booties or tennis shoes.</li><li>e) intended for Bowperson's left foot.</li></ul> <p>2. One for Boat Operator</p> <ul style="list-style-type: none"><li>a) in the rear half of boat on the floor</li><li>b) approximately mid-line, running length wise with the boat.</li><li>c) wide strap, (about 2" to 4")</li><li>d) big enough to fit wet-suit booties or tennis shoes.</li><li>e) intended for Operator's left foot.</li></ul> <p>D. Rigid Floor</p> <p>1. Will cause boat to be more stable</p> <ul style="list-style-type: none"><li>a) harder working surface</li><li>b) enables sharper turns.</li><li>c) more control in rough water</li><li>d) helps prevent "caterpillar effect"</li></ul> <p>E. No-slip Flooring</p>	

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
<p>F. Fuel Bladder</p> <ol style="list-style-type: none"><li>1. Heavy duty rubber-like tank.</li><li>2. Lighter than metal tanks.</li><li>3. Can tell at a glance fuel level</li><li>4. Softer to land on. Won't cause injury.</li><li>5. Not black in color.<ol style="list-style-type: none"><li>a) If left in direct sunlight, black tank will expand and possibly rupture.</li><li>b) Red in color works better.</li></ol></li><li>6. Make sure air is removed from tank.</li></ol> <p>G. Fuel Bladder (or tank ), moved to the bow of the boat.</p> <ol style="list-style-type: none"><li>1. Helps distribute weight more evenly in boat.<ol style="list-style-type: none"><li>a) better control of craft in turns</li><li>b) better control of craft while in one person operations.</li><li>c) helps in windy situations</li><li>d) more room for the Operator</li><li>e) the fuel line should be run along the port sponson, between the sponson and the floor.</li></ol></li><li>2. Should be secured in place.<ol style="list-style-type: none"><li>a) using rope, cord or webbing.</li></ol></li></ol>	

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
<p>H. Re-right or Roll Over Rope with Pouch</p> <ol style="list-style-type: none"><li>1. Should be made of good quality rope or webbing.</li><li>2. Should be 6 to 10 feet in length.</li><li>3. Should be kept in a pouch that is fasten to the boat.<ol style="list-style-type: none"><li>a) on the top of the starboard sponson</li><li>b) mid-ship</li><li>c) marking can be placed on the underside of the craft to show the location of the pouch.</li><li>d) a roll over rope can also be placed on the port side if desired.</li></ol></li></ol> <p>I. Lanyard for the kill switch</p> <ol style="list-style-type: none"><li>1. Should be around the wrist of the Operator</li><li>2. A spare lanyard should be carried by the Bowperson.<ol style="list-style-type: none"><li>a) if the Operator leaves the boat unexpectedly, the Bowperson will still be able to run the boat.</li><li>b) the lanyard should be made buoyant by attaching a small floating device.</li><li>c) a third lanyard should be kept in the on shore tool kit.</li></ol></li></ol> <p>J. Motor Tilt-up Lock Switch</p> <ol style="list-style-type: none"><li>1. When operateing the boat, the motor tilt-up lock switch should be kept in the off position. That is .....that the motor will not stay up.<ol style="list-style-type: none"><li>a) the switch, located on the motor near the back of the transom.</li><li>b) should be painted a bright YELLOW for ease of locating.</li></ol></li></ol>	

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
<p>K. Knife</p> <ol style="list-style-type: none"><li>1. Should be a long blade utility knife.<ol style="list-style-type: none"><li>a) long blade so you can reach down to the prop.</li></ol></li><li>2. Blunt tip (or the point removed)<ol style="list-style-type: none"><li>a) so you don't accidentally puncture the boat.</li></ol></li><li>3. Mounted on the transom<ol style="list-style-type: none"><li>a) inside of the boat</li><li>b) port side of the motor closes to the Operator.</li><li>c) inside a sheath.</li></ol></li></ol> <p>L. Self-bailers or scuppers</p> <ol style="list-style-type: none"><li>1. Two, located in the lowest point of the transom.</li><li>2. One on each of the motor</li><li>3. 2 1/4" to 3 1/4" in diameter</li><li>4. With about 10 inches of tubing extending out the back of the transom.</li><li>5. The tube having a slit in each side.</li></ol> <p>M. Prop guard or jet drive</p> <ol style="list-style-type: none"><li>1. To lessen chance of injury</li></ol>	

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
<p>N. Waterproof tool bag.</p> <ol style="list-style-type: none"><li>1. Suggested items kept in bag listed below.<ol style="list-style-type: none"><li>a) simple tool kit</li><li>b) spark plug wrench</li><li>c) spare spark plug</li><li>d) small can of WD40</li><li>e) extra nuts, bolts and sheer pin</li></ol></li></ol> <p>II. Other Items Kept in the Boat</p> <ol style="list-style-type: none"><li>A. Paddles (2)</li><li>B. Waterproof radio bag</li><li>C. Throw bags (at least 2)</li><li>D. Life ring</li><li>E. Extension pole</li><li>F. Binoculars</li><li>G. Extra PFD's<ol style="list-style-type: none"><li>a) for victims</li><li>b) without knives</li></ol></li></ol> <p>III. Items kept on shore</p> <ol style="list-style-type: none"><li>A. Floating Miller board</li><li>B. First Aid kit</li><li>C. Larger set of tools</li><li>D. Boat air pump</li></ol>	<p>OHT 4.2</p> <p>OHT 4.3</p>

# INSTRUCTOR GUIDE

STANDARD SET-UP FOR IRB'S

PRESENTATION	APPLICATION
E. Extra lanyard	
F. Fuel can	
G. Fuel mixing cup	
H. Fuel Oil mix	
I. Patch kit	
J. Duct tape	
K. Flashlights with batteries	

## SUMMARY:

Being prepared means having the right equipment for the situation and also having the ability to use that equipment in a proper and safe manner. Having the right equipment and knowing how to use it, will make your job easier, quicker and safer.

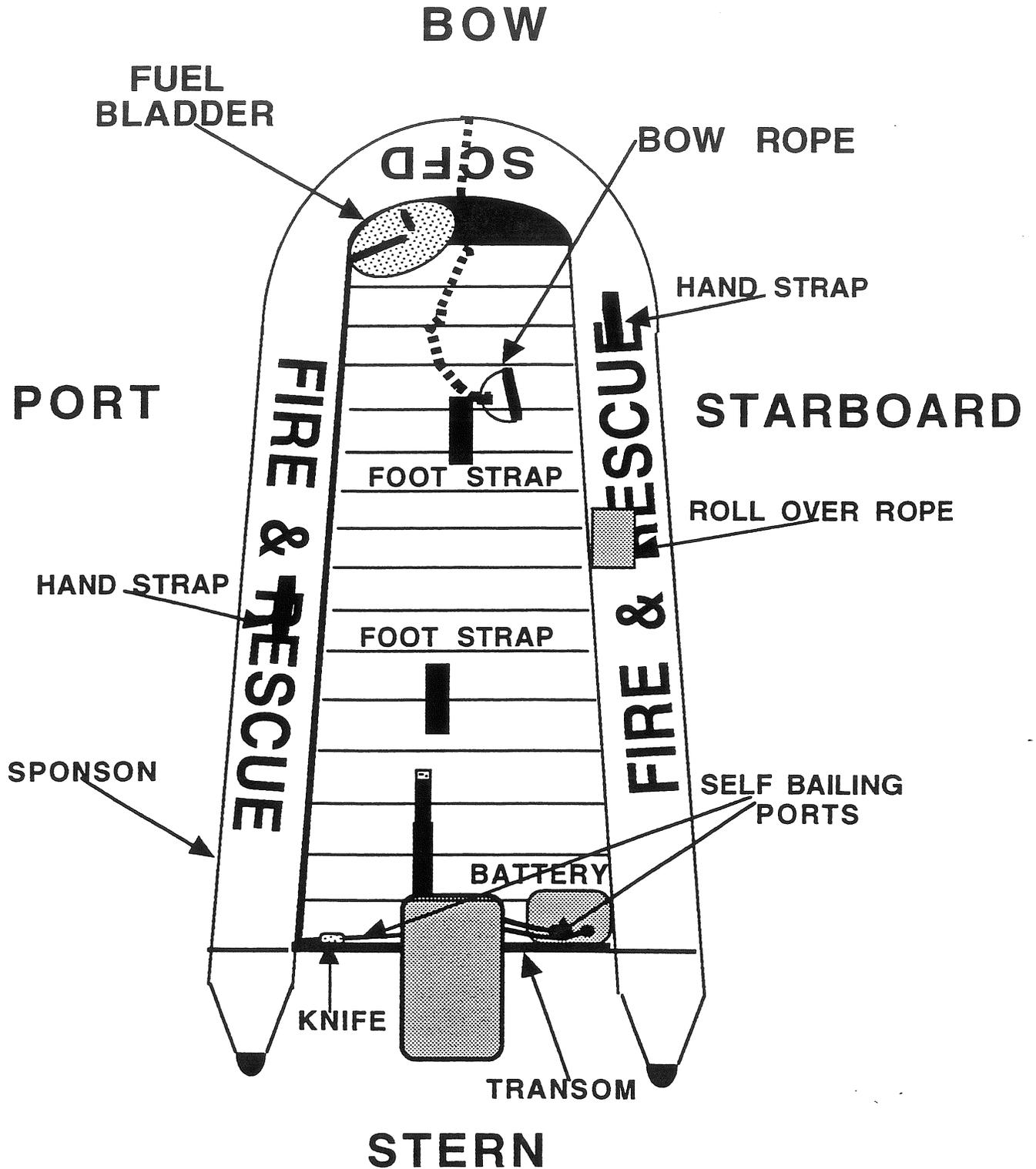
## EVALUATION:

The student will be evaluated by completing a written examination.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

# IRB SET - UP



# IRB SET - UP

---



## LIST OF ITEMS TO KEEP IN BOAT

PADDLES

WATERPROOF RADIO BAG

THROW BAGS (AT LEAST TWO)

EXTENSION POLE

LIFEGUARD TUBE

BINOCULARS

VICTIM PFD'S (NO KNIFE)

TOOL KIT w / EXTRA LANYARD

# IRB SET - UP

---



## LIST OF ITEMS TO HAVE BACK ON SHORE

FLOATING MILLER BOARD

B.L.S. FIRST AID KIT

LARGER SET OF TOOLS FOR REPAIR

BOAT AIR PUMP

EXTRA LANYARD

FUEL CAN (FULL)

FUEL / OIL MIXING CUP

PATCH KIT

DUCT TAPE

FLASHLIGHTS W/ BATTERIES

EXTRA PROPELLER

TOPIC: **Methods Of River Reading**

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: I

BEHAVIORAL OBJECTIVE:

Condition: A written examination

Behavior: The student will interpret and apply the knowledge of the methods of river reading.

Standard: With a minimum 70 % accuracy according to the Information Sheet 5-1, Pages 1 through 2.

MATERIALS NEEDED:

- Writing board with markers / erasers
- Overhead projector and screen
- Overhead transparencies 5-1 through 5-6
- Information Sheet 5-1 through 5-6

REFERENCES:

- Physical Geology, James S. Monroe & Reed Wicander 1992
- River Rescue, Les Bechdel & Slim Ray 1989

PREPARATION:

The principles of reading river topography is just as important to your safety as it is to the life saving efforts for the victim. Establishing a safe and quick path up or down river can be essential to the overall rescue operation when performing dynamic water rescues. Your ability to master river reading topography will be crucial to either a successful, professional rescue, or the failure of one and the loss of a life. People perish in dynamic water sources every year. Your ability to travel in dynamic water, where people are in need of your assistance is imperative. You must have complete confidence in your ability to read river topography.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>I Running Water</p> <p>A. Laminar Flow</p> <ol style="list-style-type: none"><li>1. Lines are parallel with one another</li><li>2. Flow occurs in parallel layers</li><li>3. No mixing between layers</li></ol> <p>B. Turbulent Flow</p> <ol style="list-style-type: none"><li>1. Streamlines are intertwined</li><li>2. Complex mixing of fluid</li><li>3. Almost all dynamic water ways</li></ol> <p>C. Water Speed</p> <ol style="list-style-type: none"><li>1. Velocity of River 100 foot span divided by time of travel in seconds. (ex. <math>100 / 17 = 5.9</math> FPS)</li><li>2. Computing To Miles Per Hour Feet Per Second X 3600 (seconds in an hour) = ? ? / 5280 (feet in a mile) = Miles Per Hour</li></ol> <p>D. Force of water</p> <ol style="list-style-type: none"><li>1. Current velocity<ol style="list-style-type: none"><li>a) Measure of down stream distance traveled in time</li><li>b) Expressed in miles per hour</li><li>c) Varies within streams</li></ol></li></ol>	<p>Who can tell me the difference between laminar flow and turbulent flow ?</p> <p><u>OHT 5.1</u></p> <p>What is the flow in our local water ways ?</p> <p><u>OHT 5.2</u></p> <p><u>INSTRUCTOR NOTE</u> Compute an example water velocity on a dry marker or chalk board.</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"><li>d) Channel Shape</li><li>e) Channel roughness</li><li>2. Force<ul style="list-style-type: none"><li>a) Rescuers Legs</li><li>b) Rescuers Body</li><li>c) Pressure against your rescue boat.</li><li>d) Expressed in pounds per square inch</li></ul></li></ul>	<p><u>INSTRUCTOR NOTE</u> Describe a situation during a flood when this much force would be on the rescuers legs.</p> <p><u>INSTRUCTOR NOTE</u> Describe a situation during river rescue when this much force would be on a rescuers body.</p> <p><u>INSTRUCTOR NOTE</u> Portray a situation where a boat could be swamped and under this much pressure.</p>
<p>II Stream Erosion</p> <ul style="list-style-type: none"><li>A. Potential energy<ul style="list-style-type: none"><li>1. Water at rest</li><li>2. Dams, high elevation, water tables</li></ul></li><li>B. Kinetic energy<ul style="list-style-type: none"><li>1. Energy of motion</li><li>2. Most dissipated as heat within stream by turbulence.</li><li>3. 5 percent available for erosion</li><li>4. Dissolved particle and solid particles</li></ul></li></ul>	<p><u>OHT 5.3</u></p> <p>What percentage of water is available to erode ?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>C. Hydraulic action</p> <ol style="list-style-type: none"><li>1. Power of running water</li><li>2. Set particles in motion</li></ol> <p>D. Abrasion</p> <ol style="list-style-type: none"><li>1. Exposed rock worn and scraped</li><li>2. Sediment in water causes most erosion</li></ol> <p>III Stream deposition</p> <p>A. Most during Floods</p> <p>B. Most deposition is in slower water</p> <p>C. Current Vector</p> <ol style="list-style-type: none"><li>1. Most rivers are sinuous (winding).</li><li>2. Velocity of stream is faster on outside of curve.<ol style="list-style-type: none"><li>a) Point of little deposition</li><li>b) Area of deeper water</li></ol></li><li>3. Velocity is slower on inside of curve.<ol style="list-style-type: none"><li>a) Point of deposition</li><li>b) Area of shallow water</li></ol></li></ol> <p>IV River Characteristics</p> <p>A. Elevation drop</p> <ol style="list-style-type: none"><li>1. Low head dam</li><li>2. Ledge hydraulic</li><li>3. Weirs (used in major rivers to drop high flows)</li></ol>	<p>Where would be the best route to travel up a river ?</p> <p><u>OHT 5.4</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>a) Difficult to see from upstream</p> <p>b) Impossible to get out of without help</p> <p>c) Backwash / Washing machine action</p> <p>d) Boil line</p> <p>B. "V's"</p> <p>1. Upstream</p> <p>a) Object pointing above surface</p> <p>b) Downstream water flow around an object</p> <p>c) Yes and No</p> <p>1) Objects protruding just out of the water will be hazardous to your craft, to you and your victim.</p> <p>2) Larger objects like pillars, trees or buildings (in floods), which also cause up stream "V's", will form an eddy that could be helpful.</p> <p>2. Downstream</p> <p>a) Hydraulic effect of down stream flow caused by convergence of channel.</p> <p>b) Flow will take the path of least resistance.</p> <p>c) Usually points to direction of travel due to water picking lowest point in river bottom</p> <p>d) Yes. In most cases, it shows the route of deeper water.</p> <p>C. Haystack, Standing waves</p>	<p><u>OHT 5.5</u></p> <p>Do we want to be around upstream "V's" ?</p> <p>Are downstream "V's" helpful to us?</p> <p>Who has gone over rapids and been tossed up and down in the water?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>1. Rhythmic series of waves caused by:</p> <ul style="list-style-type: none"><li>a) Convergence of main river channel</li><li>b) Underwater obstacles or ledges</li><li>c) Increasing river gradient changing hydraulic effect of holes to series of waves</li><li>d) Yes. However, the ride will be jarring and you will experience a loss of power from both jet drive systems and props due to the sudden impacts against your boat.</li></ul> <p>D. Eddies</p> <p>1. Horizontal reversal of water flow where the pressure of the current along side an object causes the water behind the obstacle to reverse flow upstream.</p> <ul style="list-style-type: none"><li>a) Use for escape from main current</li><li>b) To use as a vantage point to read the river.</li><li>c) Beware of the pull into an eddy, and use it for your advantage if needed.</li></ul> <p>E. River Spit</p> <p>1. A spit is simply a continuation of a shore line that projects down river commonly between a cove and the rivers current.</p> <p>2. Avoid crossing over spits until an inspection has been done to determine depth of water</p>	<p>What causes a haystack wave to occur within a river?</p> <p>Is it safe to take rescue boats over haystacks?</p> <p>How can we use eddys to our advantage in river rescue ?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>F. Current Vector</p> <ol style="list-style-type: none"><li>1. That part of the river moving the fastest and is usually the deepest part.</li><li>2. Flow is mostly laminar due to little or no obstructions</li><li>3. Most objects will be carried within the current vector</li><li>4. When hover and ferry maneuvers are performed, it will be within the current vector.</li></ol> <p>G. Helical Flow (turbulence)</p> <ol style="list-style-type: none"><li>1. The flow of water between the current vector and the shore line</li><li>2. Water slows as it contacts the shore and friction is produced.</li><li>3. Other water passing by will also contact shore and slow down causing upstream circles along the shore.</li><li>4. Helical flow is what you look for to bring you out of the current vector and into the shore line.</li><li>5. May also aid in the search for victims when in a recovery mode.</li></ol>	<p><u>OHT 5.6</u></p> <p>What does the current vector allow us to do with our rescue boats?</p> <p>How can the helical flow aid us in our river rescue objectives?</p>

## SUMMARY:

Your ability to read the rivers topography is extremely important as a majority of rescues occur in a dynamic water environment. Traveling along the river will be a necessity for any water rescue. Your knowledge of the flow, topography, and characteristics of a river or flooded area, will allow your water rescue boat team to expeditiously respond from one point on the river to another. It is also critical that you know what your rescue boat will do once involved in these river hazards.

## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

## ASSIGNMENT:

Review your notes and appropriate pages in your handbook or Information Sheets in order to prepare yourself for the upcoming quiz. Study for our next session.

# **RUNNING WATER**

---

THE TWO DIFFERENT TYPES OF FLOWS CONFINED  
WITHIN PARALLEL BOARDERS SUCH AS A RIVER OR A

CHANNEL ARE

**LAMINAR AND TURBULENT**

## **LAMINAR FLOW**



LINES OF FLOW CALLED STREAMLINES ARE ALL  
PARALLEL WITH ONE ANOTHER. ALL FLOWS OCCUR IN  
PARALLEL LAYERS WITH NO MIXING BETWEEN LAYERS.  
LAMINAR FLOW IS GENERALLY SHALLOW AND CAUSES  
LITTLE EROSION.

## **TURBULENT FLOW**



**TURBULENT FLOW:** THE STREAMLINES INTERWINE, CAUSING A COMPLEX MIXING  
OF THE FLUID. OCCURS IN ALMOST ALL STREAMS.  
TURBULENT FLOW IS VERY ENERGETIC AND THUS IS  
CAPABLE OF CONSIDERABLE EROSION AND SEDIMENT

# DETERMINING VELOCITY

To compute the velocity of a river divide a 100 foot span by time of travel

$$\frac{100 \text{ foot span}}{\text{Time of travel}} \quad \frac{100'}{17 \text{ sec}} = 5.9 \text{ ft. per second (fps)}$$

$$5.9 \times 3600 \begin{matrix} \text{(seconds in)} \\ \text{an hour} \end{matrix} = 21,240 \div 5280 \begin{matrix} \text{(feet in)} \\ \text{a mile} \end{matrix} = 4.0 \text{ mph}$$

<i>Time To Travel 100 Feet</i>	<i>Feet Per Second</i>	<i>Miles Per Hour</i>
<i>5 seconds</i>	<i>20.0 fps</i>	<i>13.60 mph</i>
<i>10 seconds</i>	<i>10.0 fps</i>	<i>6.80 mph</i>
<i>15 seconds</i>	<i>6.7 fps</i>	<i>4.56 mph</i>
<i>20 seconds</i>	<i>5.0 fps</i>	<i>3.40 mph</i>
<i>25 seconds</i>	<i>4.0 fps</i>	<i>2.72 mph</i>
<i>30 seconds</i>	<i>3.3 fps</i>	<i>2.35 mph</i>

# THE FORCE OF WATER

<i>Current Velocity</i>	<i>On Legs</i>	<i>On Body</i>	<i>On Swamped Watercraft</i>
<i>3 MPH</i>	<i>16.8 lbs</i>	<i>33.6 lbs</i>	<i>168 lbs</i>
<i>6 MPH</i>	<i>67.2 lbs</i>	<i>134 lbs</i>	<i>672 lbs</i>
<i>9 MPH</i>	<i>151 lbs</i>	<i>302 lbs</i>	<i>1512 lbs</i>
<i>12 MPH</i>	<i>269 lbs</i>	<i>528 lbs</i>	<i>2688 lbs</i>

# STREAM EROSION

---

## POTENTIAL ENERGY

Water at rest  
Dams, Water Tables, Lakes

## KINETIC ENERGY

Energy of motion  
Dissipates as heat in turbulence  
5 % available for erosion  
Dissolves solid particles

## HYDRAULIC ACTION

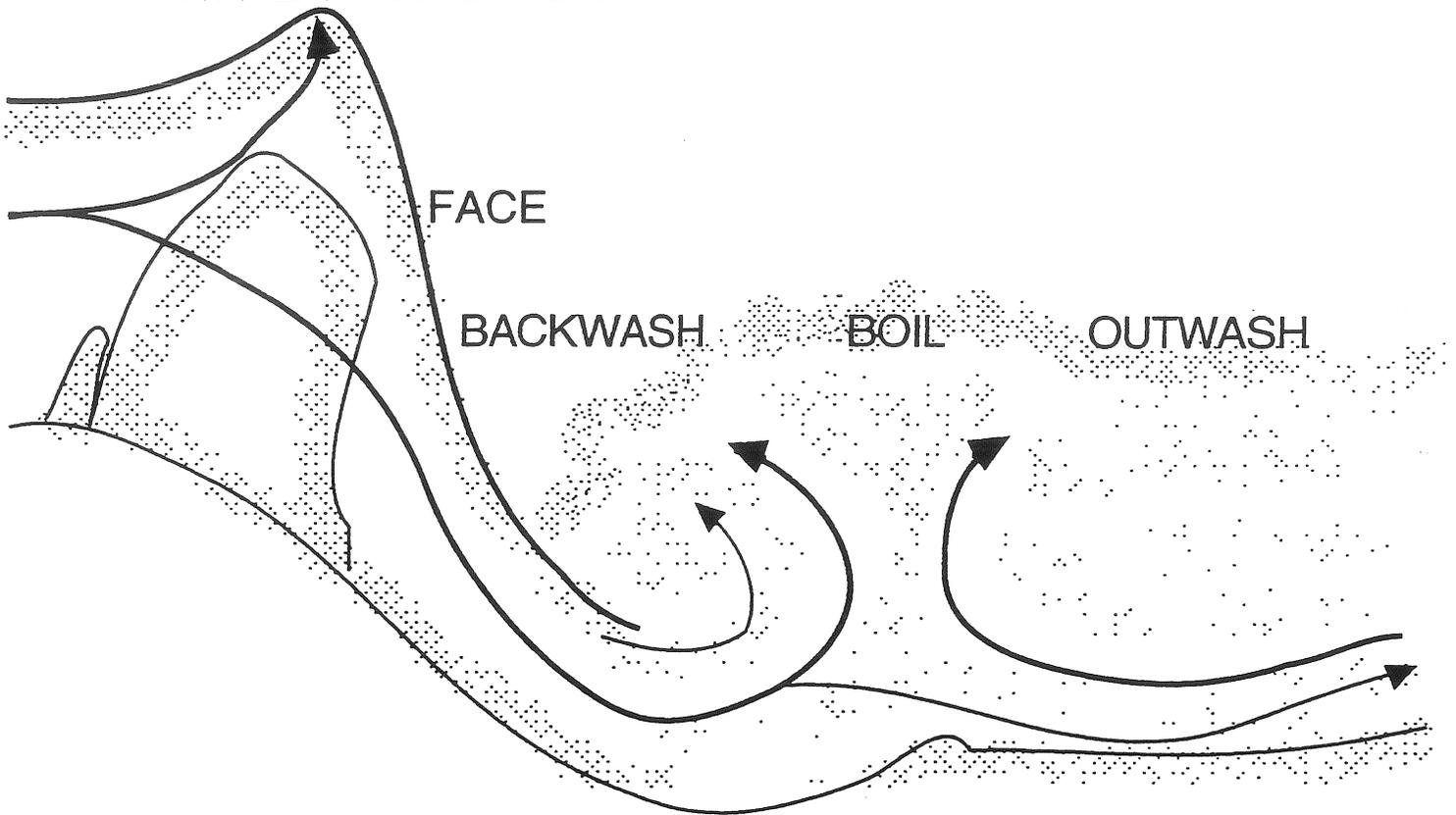
Power of running water  
Gets particles in motion  
Causes abrasion

## ABRASION

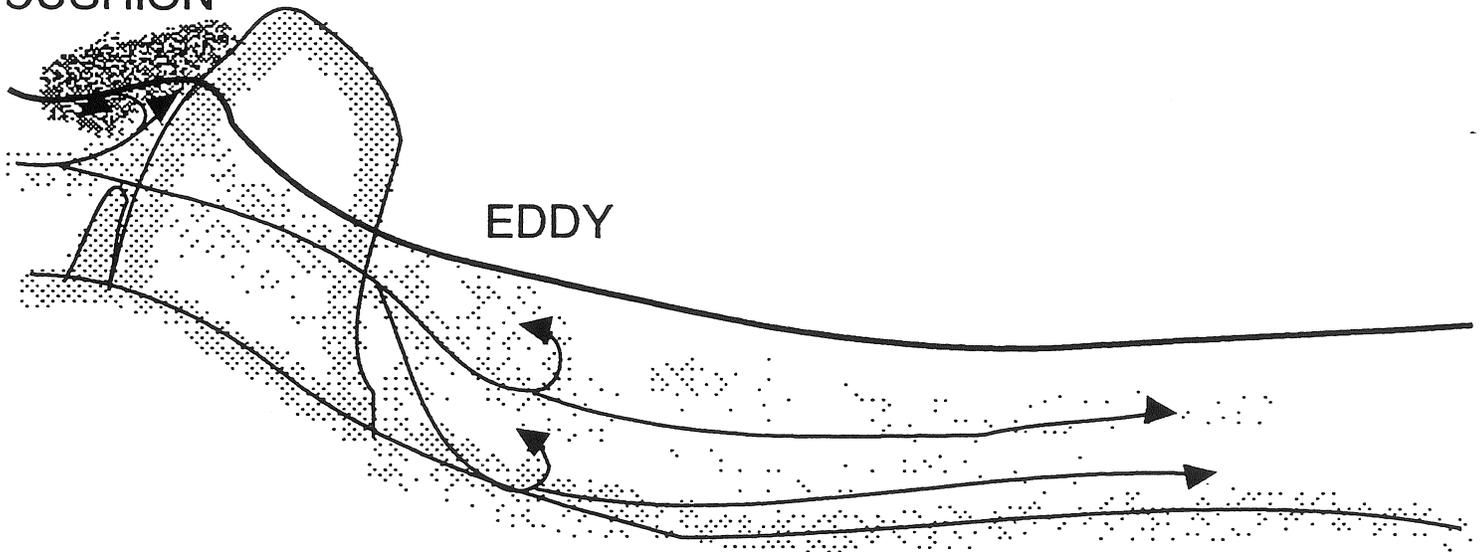
Exposed rock worn and scraped  
Sediment in water causes most erosion

# RIVER CHARACTERISTICS

## WAVE / HAYSTACK

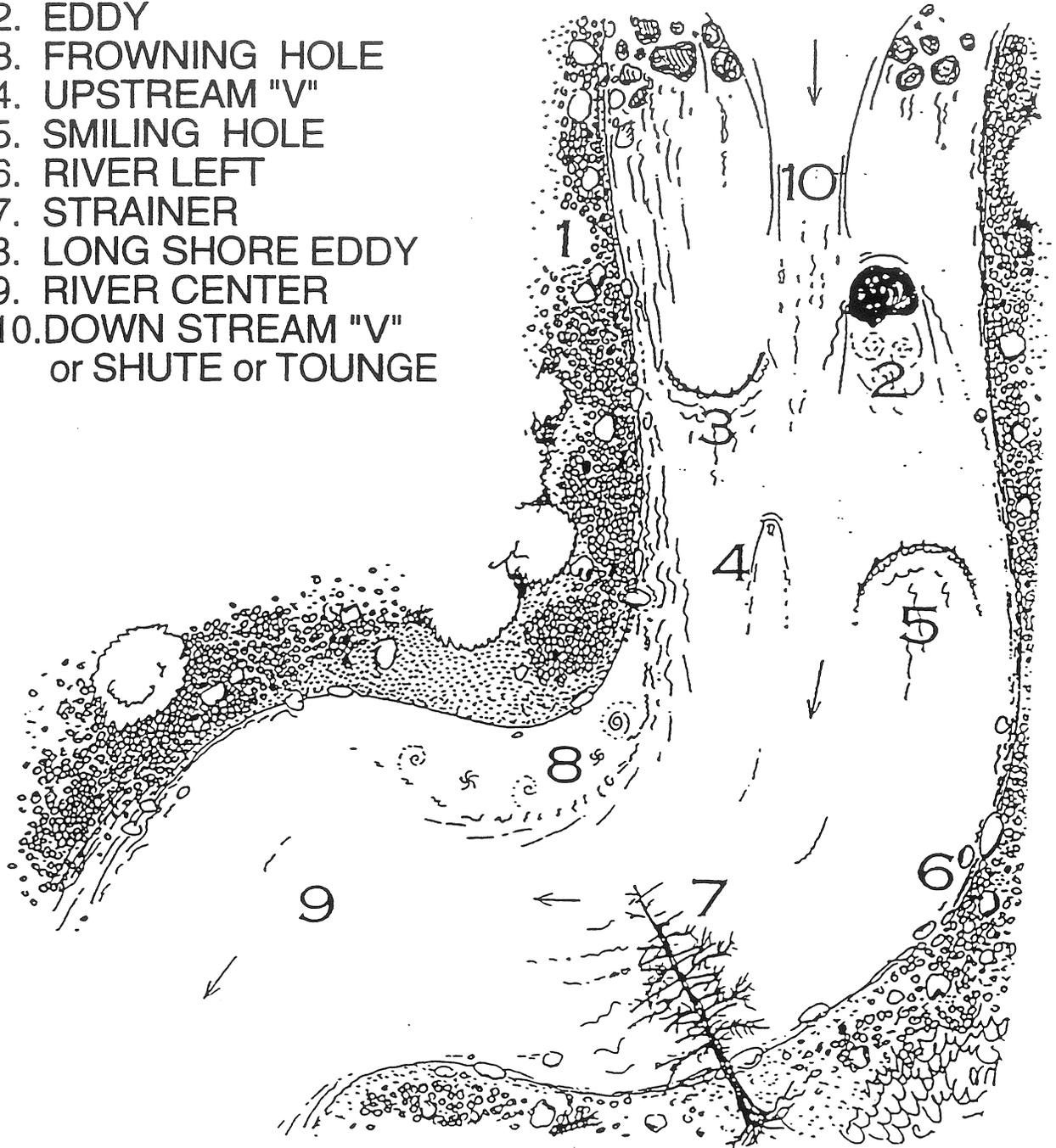


## CUSHION

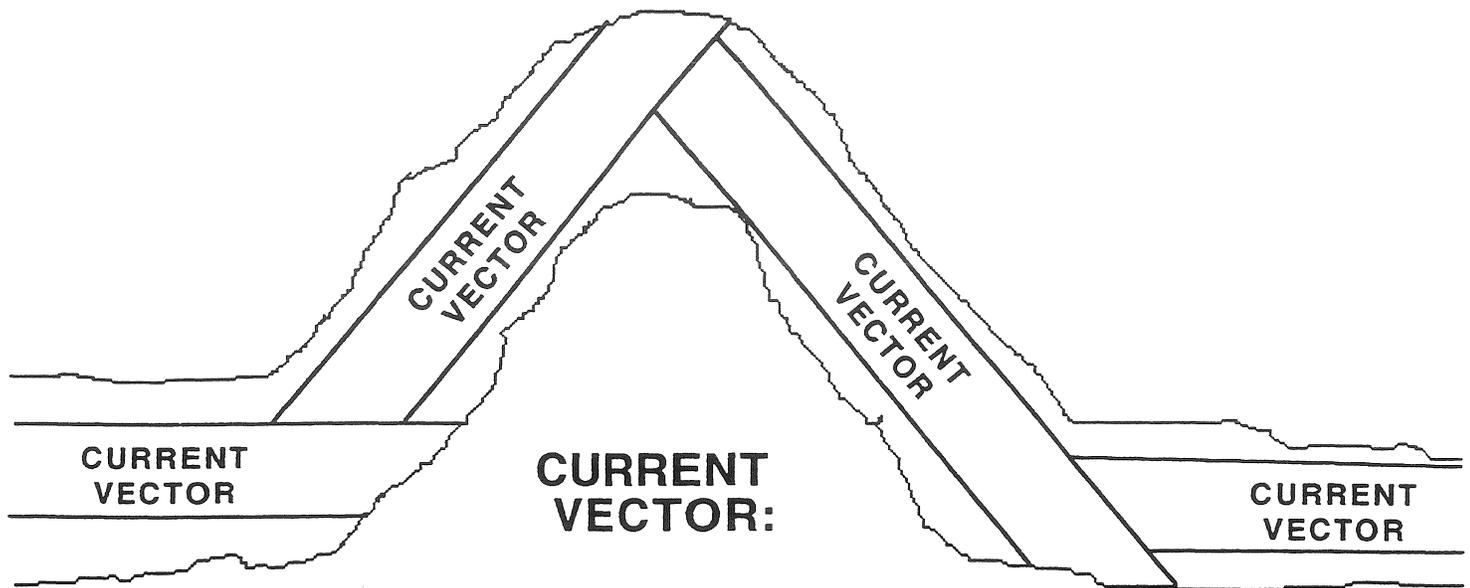


# RIVER CHARACTERISTICS

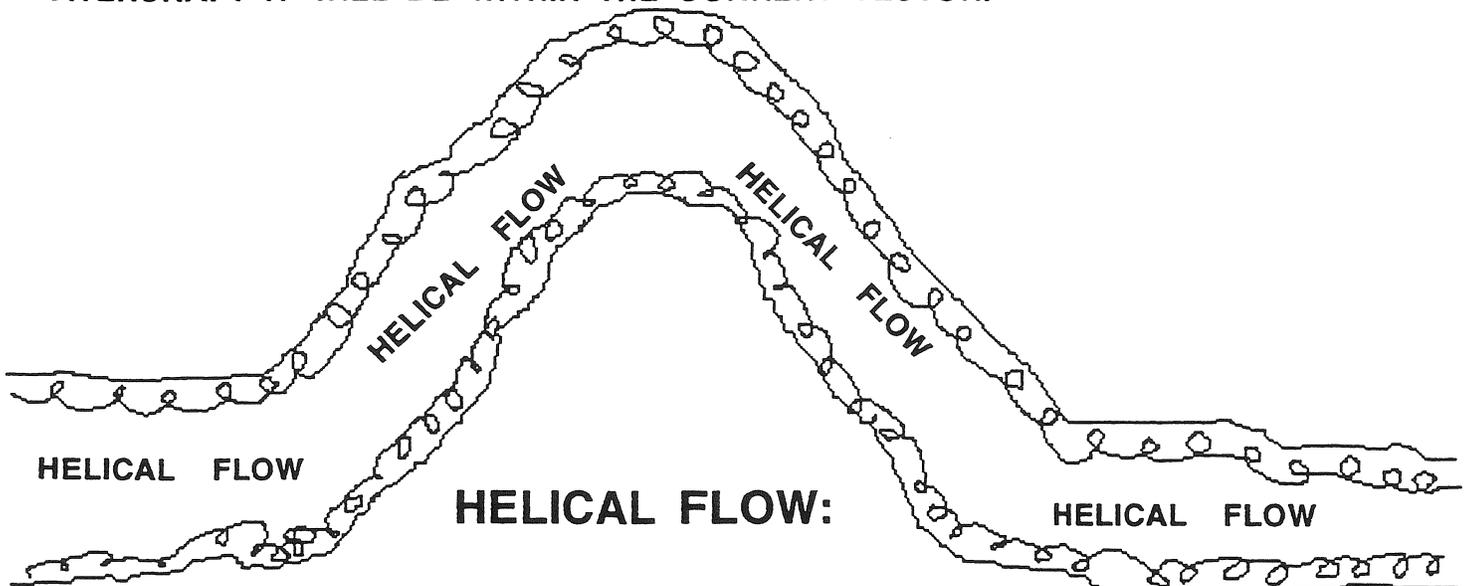
1. RIVER RIGHT
2. EDDY
3. FROWNING HOLE
4. UPSTREAM "V"
5. SMILING HOLE
6. RIVER LEFT
7. STRAINER
8. LONG SHORE EDDY
9. RIVER CENTER
10. DOWN STREAM "V"  
or SHUTE or TOUNGE



# RIVER CHARACTERISTICS



IS THAT PART OF THE MOVING WATERS FLOW WHICH IS GREATLY LAMINAR. IT IS NORMALLY THE DEEPEST PART OF THE FLOW AND RUNS THE FASTEST. THERE IS LITTLE TURBULENCE DUE TO THE LACK OF ROCKS OR OBSTRUCTIONS BELOW THE SURFACE. THIS PART OF THE WATERS FLOW WILL CARRY MOST OBJECTS PLACED IN THE CURRENT. AS YOU FERRY ANGLE AND HOVER YOUR PERSONAL ATERCRAFT IT WILL BE WITHIN THE CURRENT VECTOR.



IS THAT FLOW WHICH FILLS IN BETWEEN SHORE AND CURRENT VECTOR OR LAMINAR FLOW. AS THE WATER CONTACTS THE SHALLOW SURFACE NEAR THE SHORE, THE WATER STARTS TO FLOW IN A CORKSCREW MOTION. IT RISES UP TO THE SURFACE NEXT TO THE MAIN CURENT AND FLOWS TOWARD THE BANK, THEN DIVES DOWN ALONG THE BOTTOM TILL IT REACHES THE MAIN CURENT AGAIN. THE HELICAL FLOW IS SLOWER THAN THE CURRENT VECTOR AND ALLOWS A PERSON THE CHANCE TO PULL HIM OR HERSELF OUT OF THE MAIN CURENT, BUT BE PREPARED BECAUSE IT MAY ALSO PULL YOU BACK INTO THE MAIN CURRENT.

TOPIC: **Traveling In Dynamic Water**

TIME FRAME: 1:30

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue Boat, Dynamic Water Source

Behavior: The student will

- recognize obstructions in a dynamic body of water
- understand the power of dynamic water against a rescue boat
- choose the best route through obstacles in a dynamic water source
- navigate a rescue boat through a dynamic water source
- understand river hydrology by reading shore geology

Standard: Completion of all operations shall be performed within course guidelines in accordance to job breakdown.

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- Rescue boat

REFERENCES:

- Physical Geology, James S. Monroe & Reed Wicander 1992
- Understanding The Physics Of Moving Water, McCoy & Winder Epson House 1989

PREPARATION:

People recreate near and perish in dynamic water sources every year. Your ability to travel in dynamic water, to the area where people are in need of help is imperative. Reading the water and being able to control the rescue boat

and place it exactly where it is needed most, will be left to you and you alone. You must have complete confidence in your ability to operate in dynamic water to complete a successful rescue. When lives are held in the balance due to your ability, it is not the time to decide you need more training.

# INSTRUCTOR GUIDE

TRAVELING IN DYNAMIC WATER

## OPERATIONS

## PRESENTATION

## KEY POINTS

- | OPERATIONS                               | PRESENTATION | KEY POINTS  |
|--|--------------|---|
| 1. Travel within laminar flow of current |              | 1a. While traveling up river or down river, maintain the rescue boats long axis of the hull, parallel to the current.   |
| 2. Speed while on dynamic water          |              | 2a. When traveling on dynamic water, you will obtain either a full plane or maintain an idle speed, both up and down river.<br><br>b. If control of the rescue boat can be obtained at lower speeds <u>with-out plowing</u> , it is acceptable to use the lower speed.  |
| 3. Avoid Plowing                         |              | 3a. Keep the rescue boat in a horizontal position in the water.<br><br>b. Plowing will place the intake grate closer to river bottom, allowing ingestion of debris, or cause a propeller to strike an object, or river bottom.<br><br>c. Plowing a rescue boat will offer you less visibility due to the angle of the boat.<br><br>d. Due to the force of moving water in front of the rescue boat during plowing, fuel consumption is increased.<br><br>e. The engine receives more wear during plowing than when the boat is planing on the water.<br><br>f. Plowing also diminishes handling capabilities. |
| 4. Turning in dynamic water              |              | 4a. Look behind you and to both sides, assuring there is no one near.<br><br>b. Make your turns as fast and precise as possible.<br><br>c. Maintain safety and security of personnel.   |

# INSTRUCTOR GUIDE

TRAVELING IN DYNAMIC WATER

OPERATIONS

PRESENTATION

KEY POINTS

5. Choosing where to start your turn

d. When hull is perpendicular to current, it will act as a wall in the water and allow uncontrolled travel of your watercraft downstream and possibly cause you to lose control.

5a. Always choose the point at which you wish to end up, after the turn.

b. On a down river turn, (your heading down river), start your turn equal with or upriver from the point you wish to end up when completed.

c. On an up river turn, start your turn upriver from the point you wish to end up.

6. Up river and down river "V"s

6a. A "V" pointing up river is caused by an object near or breaking the water surface. AVOID ALL UPSTREAM "V"s unless large enough to use their eddies.

b. A "V" pointing down river is the merging of water from two shallower areas.

c. These will usually be the path of travel; however

d. Inspect these "V"s if you are not familiar with the area.

7. Current vector

7a. Most rivers are sinuous, (bending in and out.)

b. Their flow velocity varies from one side to the other.

c. As water flows around curves it flows faster near the outer bank.

d. This velocity causes little deposition which will usually offer the deepest part of the river.

e. Attempt to travel on the outside of river turns.

# INSTRUCTOR GUIDE

TRAVELING IN DYNAMIC WATER

OPERATIONS

PRESENTATION

KEY POINTS

8. Cushions, pillows and haystacks

- 8a. Caused by items immediately or farther below the surface.
- b. Pushes water up toward the surface and also causes white water in some instances.
- c. Stay clear of most cushions and pillows.
- d. Avoid haystacks until the area is inspected for depth.

9. Eddies

- 9a. Horizontal reversal of water flow.
- b. Low pressure of an eddy will pull a watercraft into the eddy.
- c. Use eddies to hold your rescue boat at a specific point.

10. Eddy fence

- 10a. This is the area on both sides of an eddy. It is the intersection of the water rushing down stream and the water rushing upstream into the eddy.
- b. This water moves in the opposite direction of the main flow.
- c. With the change of flow, it can be beneficial to use an eddy fence when turning a rescue boat. (An eddy turn)

11. Hydraulics (Hole, Stopper, Keeper)

- 11a. Vertical reversal of water flow.
- b. Such as at a dam sight.
- c. Water is forced downward into a loop style reversal.
- d. Water surfaces and splits, part goes down stream and the other part recesses back up stream.
- e. The churning white water consist of between 40 to 60% air.

# INSTRUCTOR GUIDE

TRAVELING IN DYNAMIC WATER

OPERATIONS

PRESENTATION

KEY POINTS

12. Strainers

- 12a. Any item that allows water to go through it but does not allow you or your rescue boat.
- b. Most common are trees which have fallen into the river.
- c. During times of floods, they may be fences, guard rails, or power lines.
- d. The force of the water will hold objects against the strainer.

13. Deposition

- 13a. Normally located at slower places along the river such as inside of turns, outside edge of coves etc....
- b. Also caused by the delta of other tributaries.
- c. Avoid areas of deposition until inspected for depth.

14. Traveling down stream

- 14a. While traveling down stream, you must be moving faster than the current to maintain control of your boat.

15. Ropes and lines

- 15a. Outside ropes & lines should not be attached to your craft while in dynamic waters. Ropes attached to other crafts can act as a sea anchor making your boat hard to control. Lines can also become caught on rocks, fences, strainers, and other obstacles causing the craft to be forced to the bottom. Abandoned lines in the water can also become entangled with your outdrive causing the same problems. A knife should be carried on the transom for just that reason.

## SUMMARY:

You should be extremely confident in your ability to travel along a dynamic water source. A moving rescue boat contacting an obstruction, or placed against the awesome power of dynamic water, can do great damage to you and your rescue boat. You should be capable of reading the signs of a river and deciding the best route to travel. This ability will assure a safe passage from your point of entry, to the victim and back to a victim removal point.

## EVALUATION:

Each student will travel a dynamic water course completing the trip until confident with their river reading ability in accordance to the job breakdown.

The student will travel a dynamic water source and read the river without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, travel up and down a dynamic water source, reading the river until confident for certification skill sign off.

TOPIC: **Operational Terminology**

TIME FRAME 1:00

LEVEL OF INSTRUCTION I

BEHAVIORAL OBJECTIVE:

Conditions: A written quiz

Behavior: The student will

- identify the rescue boats used by emergency services
- recognize the terminology used for rescue boats
- identify the terminology used during rescue boat operations

Standard: With a minimum 80 % accuracy according to Information Sheet 7-1, Pages 1 through 7

MATERIALS NEEDED:

- Overhead projector and screen
- Overhead transparencies 7-1 through 7-7
- Graphic quiz
- Student Information Sheet 7-1, Pages 1 through 7

REFERENCES

- California Boating and Waterways Manual
- Student Information Sheet 7-1, Pages 1 through 7
- Boat owners manual

PREPARATION:

You must comprehend a thorough grasp of rescue boat terminology. Your understanding of rescue boat terminology will assist you during training and rescue operations. The need to know the terminology that others are using for a specific part or tool, will mean the difference between confusion and understanding during rescue operations with fellow rescue boat team members. Your understanding of operational terminology must be clear in your mind before actually ever getting into a rescue boat to attempt an emergency operation.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
I. Rescue Boat Terminology	
A. Inflatable	<u>OHT 7.1</u>
1. Tubes	
2. Sponsons / Pontoons	
3. Transom	
4. Thrust board	
B. Rigid hull inflatable	
1. Collar	<u>OHT 7.2</u>
2. Rigid Hull	
3. Transom	
C. Rigid hull boat	
1. Gunnels	<u>OHT 7.3</u>
2. Hull	
3. Chines	
4. Transom	
II. Operational Terminology	
A. Operator / Motorman / Coxswain	<u>OHT 7.4</u>
The operator is the person that operates the rescue boat during training and rescue operations. This should be the person most comfortable and most skilled at that particular rescue boat operation.	

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>B. Bowperson / Rescuer</p> <p>The bow person / rescuer is located at the bow of the boat to help with boat stability, turns, and as a look out. When the boat is put to shore, he is responsible for it. Boats with a 2 person crew, the bowperson is also the rescuer / swimmer. He will perform the actual victim contact during training and rescue operation.</p> <p>C. Rescue Swimmer</p> <p>The rescue swimmer is usually the third person on the rescue team. This person is the first to leave the boat to assist with a victim, leaving the operator and bowperson to control the boat.</p> <p>D. Crewperson / Deckhand</p> <p>Usually refers to others assigned as crew for a boat. Larger boats may have 3 or 4 crewpersons. ( In some Dept. refers to bowperson.)</p> <p>E. Mounting and Dismounting</p> <p>This is simply the action of getting in or out of the boat. This action must be communicated and understood between all persons in the boat. Sudden mounting or dismounting, with -out communications can cause a rescue boat to tip or become difficult to operate.</p> <p>F. Swiftwater launching and loading</p> <p>This is the action of placing or removing a rescue boat from a trailer into a dynamic body of water. Due to the force of dynamic water, it is easiest and safest to launch and load a rescue boat from a trailer with the rear of the rescue boat and trailer pointed or angled with the down stream flow of the water. This will allow the bow to be positioned up stream for control. The waters force will also assist in launching the rescue boat and give better control when loading.</p>	

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>G. Positive and negative attitudes</p> <p>The attitude is simply the upstream or down stream direction of a rescue boat. A rescue boat pointed upstream is under the most optimum control and is referred to as being in a positive attitude. A rescue boat pointed downstream is under the control of the dynamic flow unless it's traveling faster then the current. This is referred to as being in a negative attitude.</p>	<p><u>OHT 7.5</u></p> <p>Why is the rescue boats direction in the water important?</p>
<p>H. River right, river center, and river left</p> <p>As you stand and look downstream at a river, river right will be the right side of the river. River center will be in the middle and river left will be on the left side of the river. These terms are used when describing locations in a certain area. Such as: "Watch for the snags on river right."</p>	<p>What is River Right, River Center and River Left?</p>
<p>I. Hover</p> <p>To hover is to maintain a constant position on a dynamic flow of water. The operator must apply just enough power to the watercraft to over come the force from the dynamic flow. This is constantly used during rescue boat operations.</p>	<p><u>OHT 7.6</u></p>
<p>J. Ferry</p> <p>To ferry is to create a high pressure on one side of the rescue boat and a low pressure on the other side of the rescue boat. The operator must come to a hover position and then angle the boat against the dynamic flow. The pressure difference will push the rescue boat from one side of the dynamic flow to the other. The proper angle of the rescue boat will cause it to move in the desired direction and at a desired speed.</p>	<p><u>OHT 7.7</u></p>

# INSTRUCTOR GUIDE

## PRESENTATION

## APPLICATION

### K. Plowing

Plowing occurs when the boat is moving at such a speed, that water is caused to build up under the bow of the craft causing the bow to rise and the stern of the boat to be forced deep into the water. This action causes the intake of a jet drive system, or the propeller, to be closer to river bottom allowing the pump intake to ingest debris into the pump which could cause damage to the jet drive system, or the propeller will be damaged by contact with river bottom. This action occurs during initial acceleration from a hover position, and when proper speed is not maintained.

### L. Debris

Debris is any substance that is found within the confines of a static or dynamic body of water. Debris can be garbage thrown into the water or natural vegetation growing from the bottom. In either case debris ingested into the jet pump intake will damage the jet drive system and possibly leave the rescue boat useless. Debris can also damage a propeller and or the coolant pump, leaving a rescue boat with diminished power or totally disabled.

### M. Hand signals - Bowperson

Hand signals are used by the bowperson to help convey information about the water, to the operator. The bowperson should point at any obstacles in the water, i.e., rocks, logs, swimmers, and also fishing lines from shore. Pointing and motioning downward is used to signal shallow water. A "tommy hawk" motion with an open hand, is used to suggest a route of travel.

### N. Hand signals - Rescuer / Swimming

Hand signals are used by the rescuer / swimmer to let the others know if he / she is O.K. or needs help.

## SUMMARY:

Knowing the make up and terminology of different types of boats is very important in an emergencies situation. When the need arises, you may be forced to use any boat that is available. You will also be able to converse with fellow water rescue team members, the proper terminology used during training and actual emergencies leaving no chance for missed communication.

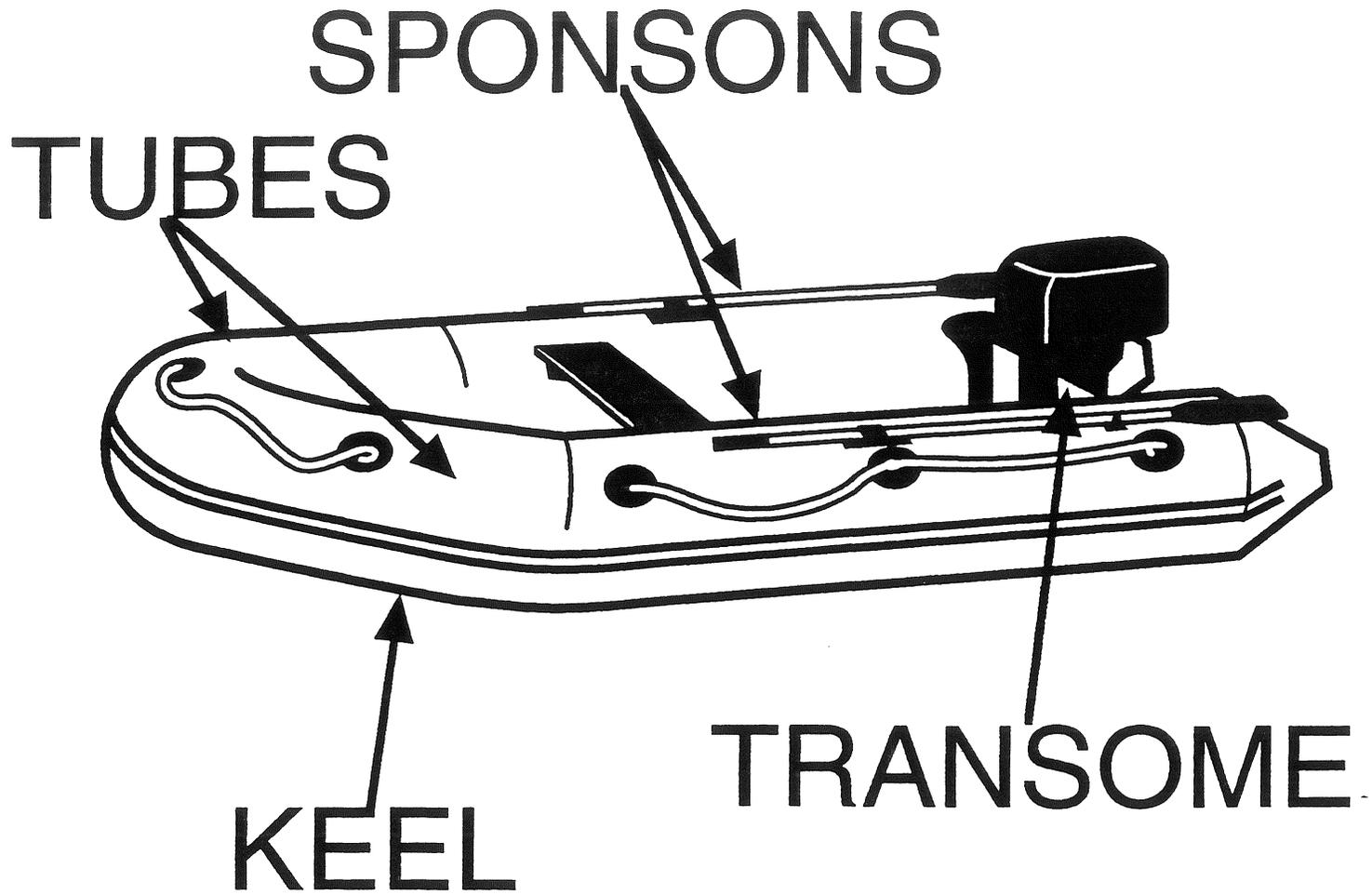
## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

## ASSIGNMENT:

Fill in the terminology blank spots of the different rescue boat graphics.  
Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz. Study for our next session.

# INFLATABLE RESCUE BOAT



# RIGID HULL INFLATABLE RESCUE BOAT

---

TRANSOME

COLLAR

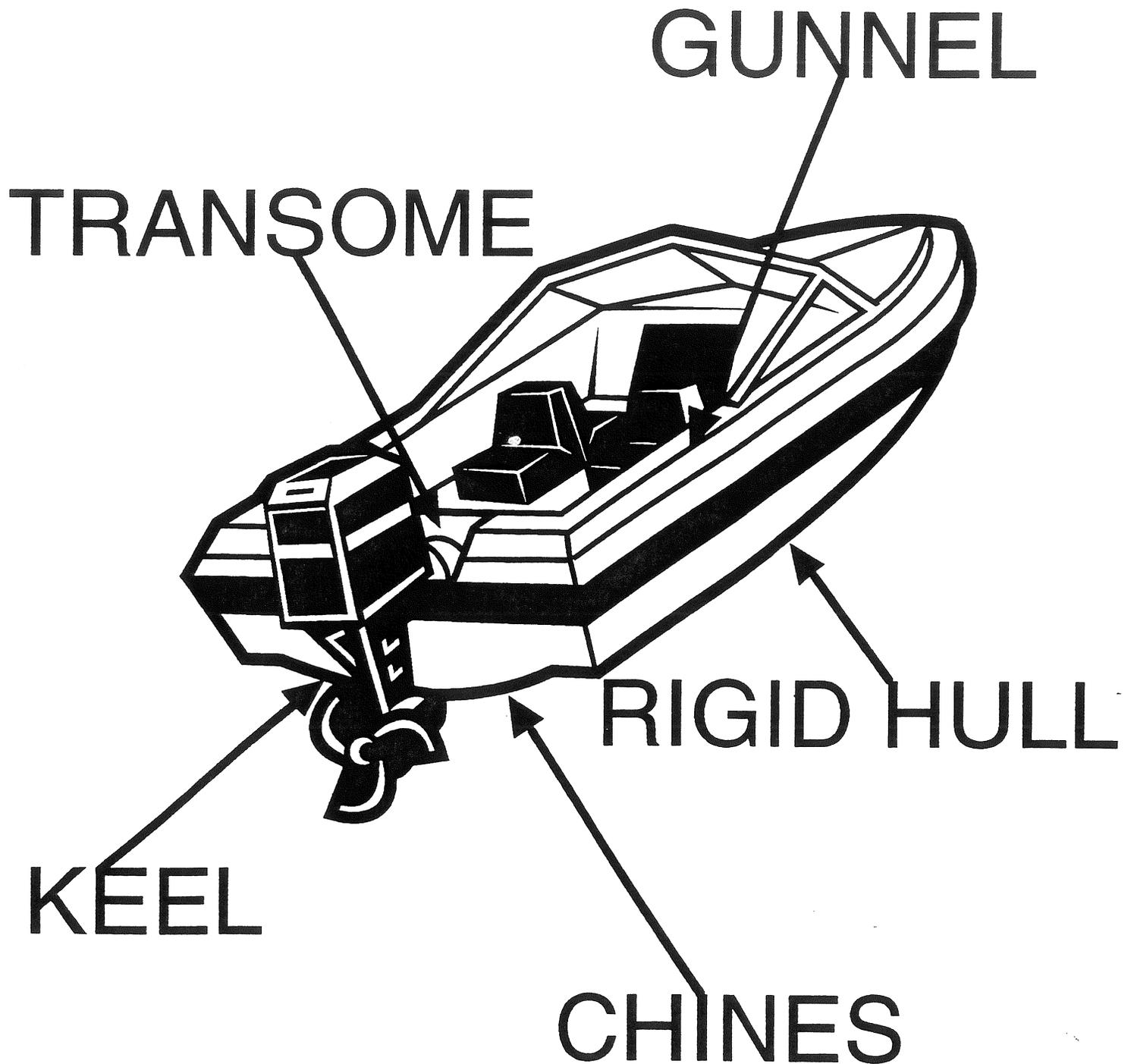


RIGID HULL

KEEL

# RIGID HULL RESCUE BOAT

---



# RESCUE BOAT OPERATIONAL TERMINOLOGY

---

-  Operator / Motorperson / Coxswain
-  Bowperson / Rescuer
-  Rescue Swimmer
-  Crewperson / Deckhand
-  Mounting and Dismounting
-  Swiftwater Launching and Loading

# **RESCUE BOAT OPERATIONAL TERMINOLOGY**

---

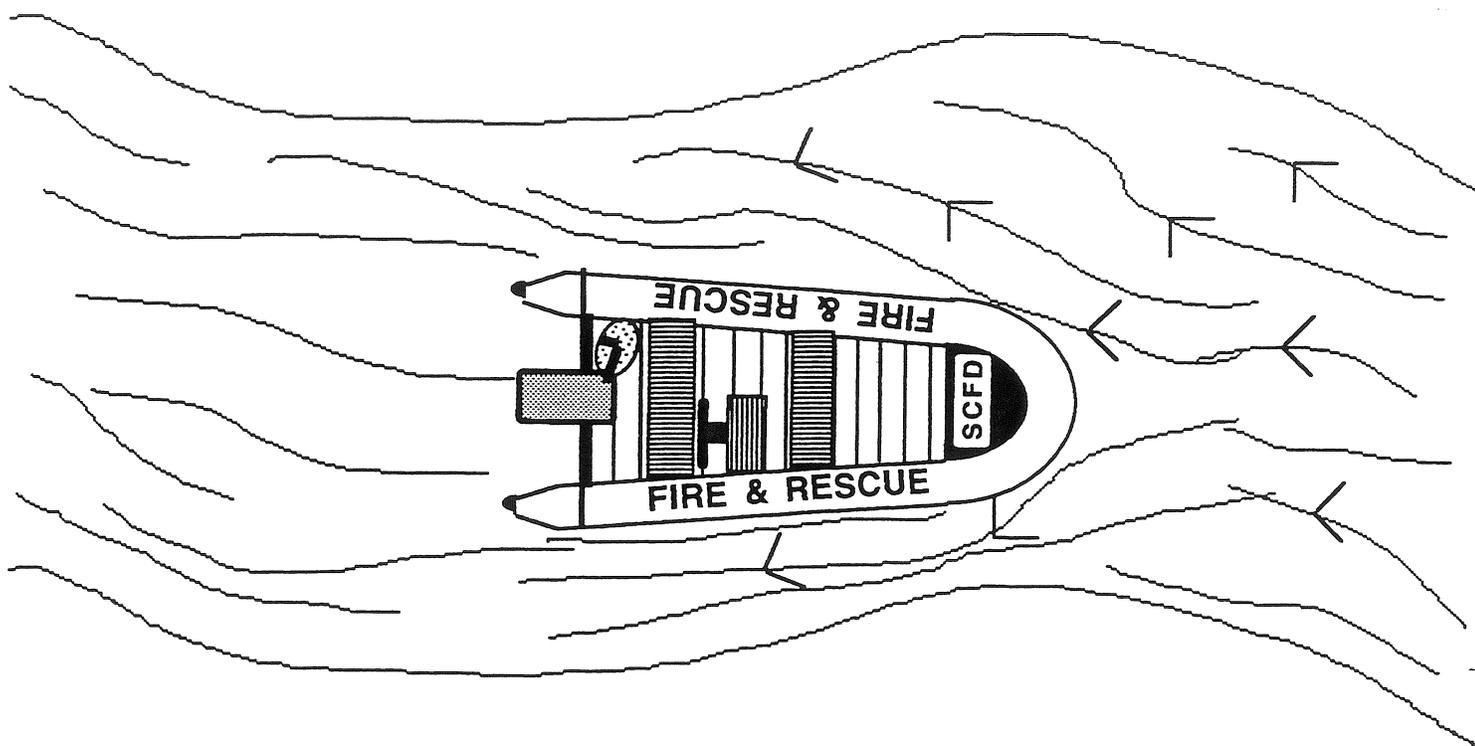
- ⊕ Positive and Negative Attitudes
- ⊕ River Right, River Center, River Left
- ⊕ Hover a Rescue Boat
- ⊕ Ferry a Rescue Boat
- ⊕ Plowing a Rescue Boat
- ⊕ Debris
- ⊕ Hand Signals

# OPERATIONS TERMINOLOGY

---

## THE HOVER POSITION

BECOMING STATIONARY IN ONE SPOT WHILE THE DYNAMIC WATER FLOWS AROUND YOU



THIS MANEUVER IS USED THROUGHOUT ALL OPERATIONS WITH A RESCUE BOAT

YOUR SPEED MUST EQUAL THAT OF THE DYNAMIC WATERS FLOW AND YOUR ANGLE MUST BE NETURAL TO ALLOW NO SIDE TO SIDE FERRYING OF THE RESCUE BOAT

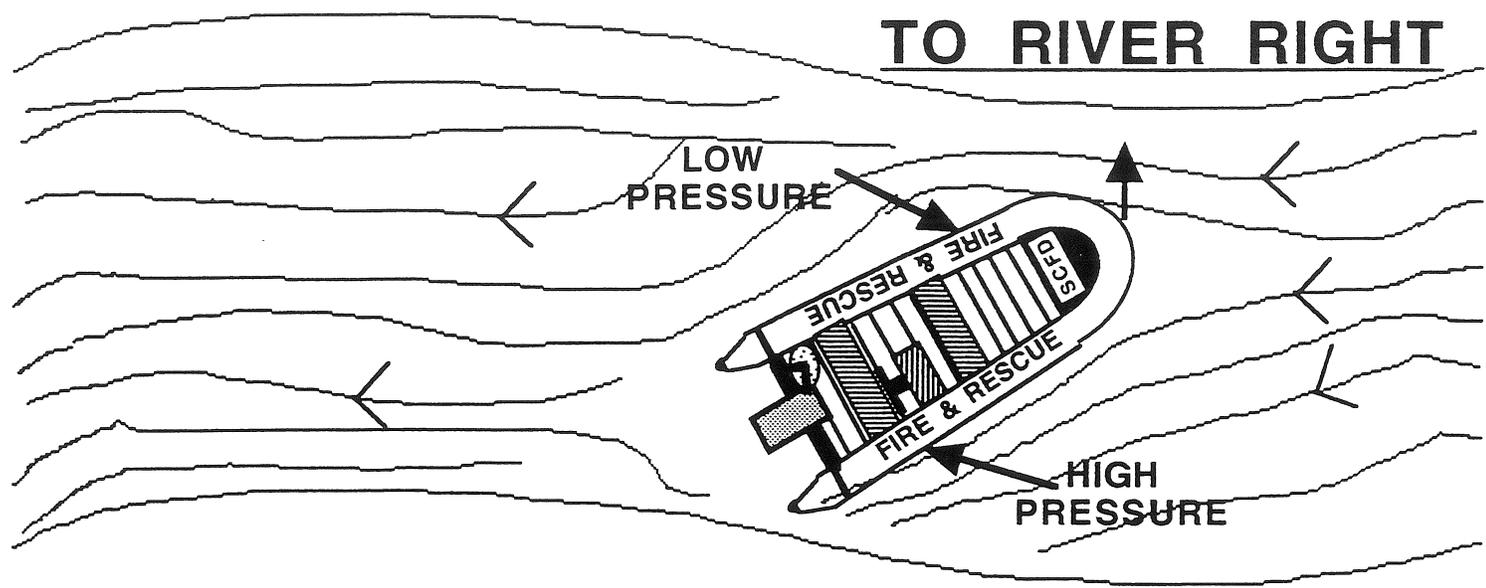
# OPERATIONS TERMINOLOGY

## THE FERRY POSITION

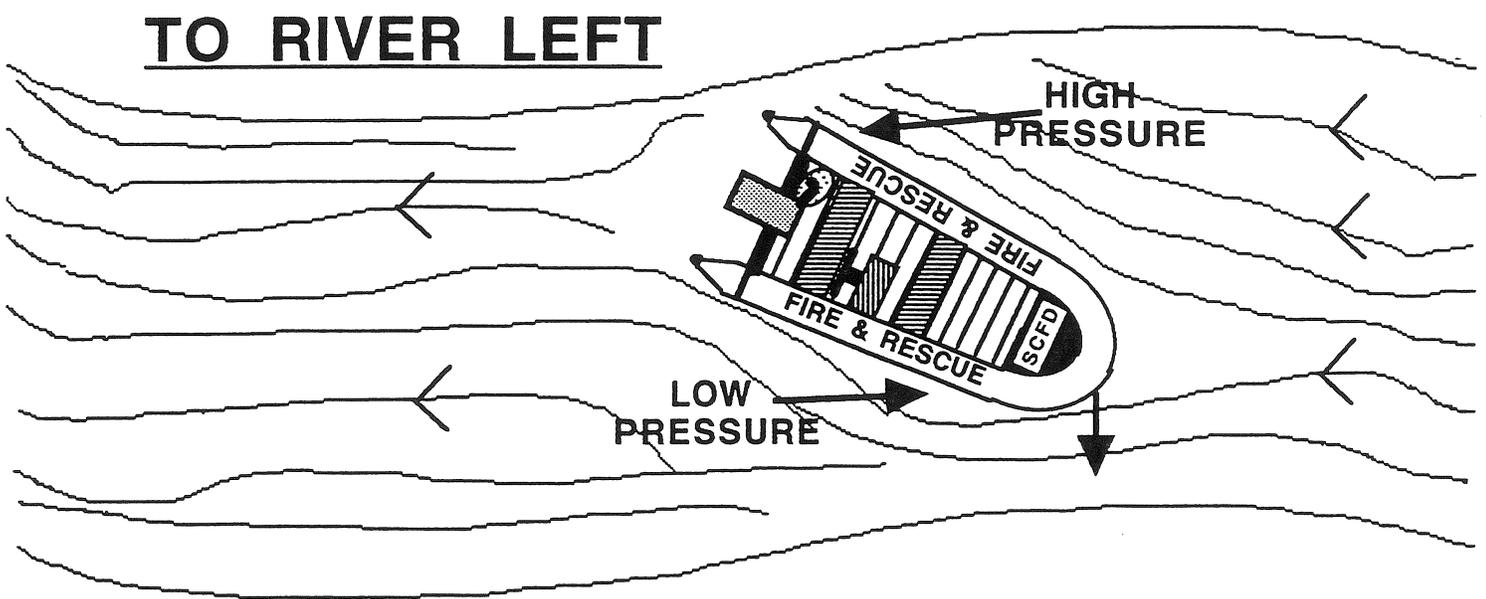
THIS MANEUVER ALLOWS YOU TO CROSS A DYNAMIC FLOW WHILE MAINTAINING A POSITION BETWEEN TWO POINTS ON EITHER SIDE OF THE FLOW.

THIS WILL ALSO BE USED IN OPERATIONS WHILE ON YOUR RESCUE BOAT

### TO RIVER RIGHT



### TO RIVER LEFT



TOPIC: **IRB CREW POSITIONS**

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue boat on trailer

Behavior: The students will

- identify appropriate locations for rescue boat personnel
- use proper names for those positions
- recognize the responsibilities of each position

Standard: Completion of all operations shall be performed with in one minute in accordance to job breakdown

MATERIALS NEEDED:

- This job breakdown
- Inflatable Rescue boat
- Boat trailer
- Student Information Sheet 8-1, Page 1

REFERENCES:

- Owners manual
- US. Lifesaving Association Boat Instructor Lesson Plans
- Student Information Sheet 8-1, Page 1

PREPARATION:

During floods and major water disasters, trained boat personnel may be asked to come help from all over the United States. Teams from different areas may be required to work together to save lives. These teams must be able to work interchangeably and be able to communicate with each other. This won't be possible if one team operates their boat from the starboard side while others are operating their boats from the port side. Using totally different terminology just increases the difficulty. Once you learn the basic positions and terminology's, you will be able to adapt to minor changes out in the field.

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

A. Normal Riding Position for IRB's with Two Person Crew

1. Boat Operator

- 1a. Seated on port rear sponson
- b. Facing inside of boat
- c. Left hand in port sponson handle
- d. Right hand on motor throttle
- e. Left foot in rear foot strap
- f. Right foot on floor in position of comfort

2. Bowperson

- 2a. Seated on starboard front sponson
- b. Facing inside of boat
- c. Left hand on bow line
- d. Right hand in starboard front sponson handle
- e. Left foot in front foot strap
- f. Right foot on floor in position of comfort

3. Rescue Swimmer (or any third person)

3a. Seated on the floor

- b. In the middle of the craft

B. Normal Riding position for IRB with One Person Crew

1. Boat Operator

- 1a. Kneeling on the floor of the boat
- b. In center of the craft
- c. Directly in front of the motor
- d. Left hand on throttle (Using the left hand on the throttle places your body in the center of the boat. You will get use to it.)

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

- e. Using body weight to balance craft
- f. Leaning forward when necessary to help keep the bow down
- g. All speed and directional changes must be made **gently**.

## SUMMARY:

Knowing the position your assigned to and its duties, will enable a boat crew to work closely together for the safety of themselves, their boat and the people we serve and protect.

## EVALUATION:

Each student will identify the position and their locations in the boat within one minute in accordance to the job breakdown.

The student will demonstrate the proper positions without the use of the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, demonstrate the normal riding position in an IRB until confident for certification skills sign off.

TOPIC: **Performing Daily And Weekly Checks**

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue boat on trailer

Behavior: The students will

- perform a daily check on a rescue boat
- perform a weekly check of a rescue boat
- recognize the significance of these checks

Standard: Completion of all operations shall be performed with in twenty minutes in accordance to job breakdown

MATERIALS NEEDED:

- Rescue boat log book
- Two stroke oil
- Unleaded gasoline
- Flashlight
- Pressure gauge
- This job breakdown

REFERENCES:

- Rescue boat owner's manual
- Your agencies maintenance policy

PREPARATION:

Performing the daily and weekly boat checks will assure your water rescue team is ready to perform. Maintaining complete service of your rescue boat will mean a more successful water rescue operation. The task doesn't take long and isn't difficult to perform. Certain points of your rescue boat receive more use and that relates to more wear. It is these points that must be checked daily to assure they are in top operational working condition. It is during this task that items can be repaired or replaced. Your daily compliance is extremely important to that victim who will be needing your assistance at a moments notice.

# INSTRUCTOR GUIDE

DAILY AND WEEKLY CHECKS

OPERATIONS

PRESENTATION

KEY POINTS

1. Daily check

- 1a. Check fuel tank or bladder for fullness
- b. If using a fuel bladder, remove any air from bladder
- c. Check all fuel lines and connections
- d. Check sponsons for correct pressure
- e. Check all valves for leaks
- f. Check all hand and foot straps
- g. Check bowline
- h. Check steering for smoothness by moving handle back and forth. Lubricate if needed
- i. Check throttle for smooth operation and quick return. Lubricate if needed
- j. Check neutral and reverse lever for smoothness of operation. Lubricate if needed
- k. Inspect jet drive for loose bolts or debris still in the intake
- l. If prop driven; Check prop and securing nut
- m. Check prop guard for debris or loose parts
- n. Check bow and stern restraints for tightness and security
- o. On rigid hull boats, make sure bilge plug has been replaced and is in tightly
- p. Ensure that all equipment is stored and is secured
- q. Fill out Boat Log Book

# INSTRUCTOR GUIDE

DAILY AND WEEKLY CHECKS

OPERATIONS

PRESENTATION

KEY POINTS

## 2. Weekly check

### 2a. Perform Daily check

- b. Squeezes fuel ball, then check all fuel lines & connections and inspect for damage or leaks
- c. Place engine in test tank, then turn over engine, run the throttle up and down a few times.
- d. Disconnect fuel line from engine
- e. Run engine until carburetor is purged
- f. Check all electrical connections
- g. Inspect entire hull area for rips, punctures or seams that are coming apart.
- h. If a rigid-hull boat; check for dents, cracks and missing rivets
- i. Perform inventory of all assigned equipment
- j. Check fire extinguisher, tool kit, and other items kept in storage
- k. Refer to owners manual for routine maintenance

## 3. Weekly Trailer Service

### 3a. Check all bolts for tightness and all welds for cracks or rusting

- b. Check all the functions of the trailer lights
- c. Check for any damage to hitch receiver and to any tie down rings
- d. Check tire pressure and condition
- e. Insert grease into buddy bearings during the first check of every month to assure smooth operation

# INSTRUCTOR GUIDE

DAILY AND WEEKLY CHECKS

OPERATIONS

PRESENTATION

KEY POINTS

- f. Wipe down entire trailer
- g. Fill out Boat Weekly Log book

## SUMMARY:

You will come to see that the dedicated commitment to daily and weekly checks of your personal watercraft will provide you many hours of reliable service. Recognize the importance of these checks. As with any mechanical device your rescue boat and trailer will need repair and replacement of certain parts which receive a great deal of use. It is during these checks that discovery of defective parts be repaired or replaced. The community that you serve assumes that you have kept your equipment in top operational condition. Keep it serviced to save a life.

## EVALUATION:

Each student will perform a daily and weekly check completing the task within twenty minutes in accordance to the job breakdown.

The student will perform a daily and weekly check without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform a daily and weekly check until confident for certification skills sign off.

TOPIC: Boat Care and Maintenance

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Conditions: Rescue Boat on Trailer with Motor

Behavior: The student will

- recognize the parts and proper names of maintenance components
- perform a post operation clean up
- simulate submerged motor restart procedure

Standard: Completion of all operations shall be performed within 15 minutes in accordance to the job breakdown

MATERIALS NEEDED:

- Rescue boat
- Boat trailer
- Boat motor
- Silicone spray
- Boat tool kit
- This job breakdown

REFERENCES:

- Los Angeles County Fire Department Lifeguard Operation's Inflatable Rescue Boat Instructor's Manual
- Owners Manual

PREPARATION:

Taking care of your boat is just as important as knowing how to operate it. Regular maintenance before and after use, will help familiarize you with the basic workings of your boat. Knowing what's right, on the boat will help you recognize what's wrong when the need to trouble-shoot arises. After each used, the boat should be wash off and dried; equipment cleaned and checked; fuel replenished; and the motor put back in service. Knowing that your boat and its equipment are in working order, will give you the confidence on your next outing, to go out and complete your objective.

# INSTRUCTOR GUIDE

BOAT CARE AND MAINTENANCE

OPERATIONS

PRESENTATION

APPLICATION

## 1. Post Operation Clean Up

- 1a. Place boat on trailer
  - b. Lock motor in the "tilt" position
  - c. Remove all equipment out of the boat (i.e. PFD's, throw bags, paddles, etc. )
  - d. Wash down interior and exterior of boat and drain.
  - e. Lift bow to assist in drainage through rear self bailing ports.
  - f. Disconnect fuel line from motor.
  - g. With a water supply to the engine, run engine to purge the carburetor of fuel. (This can also be done while trailing the boat.)
  - h. If boat was used in saltwater, rinse and flush with fresh water.
  - i. Disconnect and remove fuel bladder (or tank) for refueling.
  - j. Refill with proper mixture & date it.
  - k. Wipe down and dry engine.
  - l. Spray engine with silicone.
  - m. Wipe down and dry boat.
  - n. Check boat and motor for any damage.
  - o. Rope bags and re-righting rope should be laid out until dry.
  - p. Update boat log book and fuel log
  - q. Follow any other requirements stated in your owners manual.
- 2a. For submerged motor restart, see and follow the check list; "Submerged Motor Restart Procedures"

## 2. Submerged Motor Restart

## SUMMARY:

Each member of the crew should know how to use and care for the boat. You will learn over time, indicators that are particular to your boat, that will help you trouble-shoot any problems that you may have. The more you use and practice with your craft, the more you will learn. Keeping it running and in good condition is safer for you and your victims.

## EVALUATION:

Each student will participate in a Post Operation Clean Up on a rescue boat, completing the task in 15 minutes in accordance to the job breakdown.

The student will participate in a Post Operation Clean Up on a rescue boat, without the job breakdown.

Instructor will evaluate each student using the job breakdown checklist & timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the Post Operation Clean Up skill until confident for certification skill sign off.

TOPIC: **Performing A Pre-Operation Inspection**

TIME FRAME 0:30

LEVEL OF INSTRUCTION II

BEHAVIORAL OBJECTIVE:

Condition: Rescue Boat on a trailer

Behavior: The student will

- identify the items checked for a pre-operation inspection
- perform a pre-operation inspection on an inflatable rescue boat
- identify the responsibilities of each crew member

Standard: Completion of all operations shall be performed within two minutes in accordance to job breakdown

MATERIALS NEEDED:

- Pre-operation inspection job breakdown
- Rescue Boat on trailer
- Flashlight
- Student Information Sheet 11-1 Pages 1-2

REFERENCES

- Rescue Boat owner's manuals

PREPARATION:

Your ability to quickly and efficiently perform a pre-operation inspection of your rescue boat is crucial to your safety and success of the mission. The rescue boat shall be inspected before each use, whether for training or a rescue operation. Each team member must know his or her responsibilities, and be able to perform a pre-operation inspection in a timely manner. Once completed, the boat can be used for its intended purpose.

# INSTRUCTOR GUIDE

PRE-OPERATION INSPECTION

OPERATIONS

PRESENTATION

KEY POINTS

NOTE:

A. At the time of a incident, both crew members must act independently to accomplish the goal of pre-checking your equipment.

1. Pre-operation inspection of an Inflatable Rescue Boat. (IRB)

The Bowperson is responsible for checking the boat itself, and its equipment.

- 1a. Quickly check the hull area for any damage; rips, tears, or open seams, that may have occurred during past training or rescue operations.
- b. Check air pressure in sponsons and the inflatable keel. Air pressure should be great enough to overcome the effects of cold water.
- c. Check bow line and bow line handle.
- d. Check hand and foot straps for integrity.
- e. Check bilge plug is tightly in place, or that self-bailers are not obstructed and will function properly.
- f. All equipment should be secured and in its proper location, i.e. oars, throw bags, throw rings and re-right rope.
- g. Report any deficiencies to the Operator.

2. The Operator is responsible for the motor and the fuel.

- 2a. Check intake grate for any foreign material.
- b. Check impeller or prop for damage or debris.
- c. Check nut that holds the prop on.
- d. Check prop guard.

# INSTRUCTOR GUIDE

PRE-OPERATION INSPECTION

OPERATIONS

PRESENTATION

KEY POINTS

## 3. Launching

- e. Make sure outboard motor turns easily and is unrestricted.
  - f. Check that safety chains are secured properly to the transom and the motor.
  - g. Assure that the clamps holding the motor to the transom are tight.
  - h. Insure that the motor tilt-up lock switch is in the unlocked position. (that is....the motor will swing up after hitting an object, but will fall back into the water.)
  - i. Throttle lever should operator smoothly and return quickly.
  - j. Assure bilge plug is tightly in place, or that self-bailers are not obstructed and will function properly.
  - k. Check all hoses and clamps on the fuel line.
    - l. Make sure fuel bladder, (or tank) is full and all air is removed. If a hard tank is used, open the vent at this time.
  - m. Checks to make sure fuel bladder, (or tank) is secured to the boat.
  - n. Squeeze fuel bulb 4 or 5 times, or until it becomes filled with fuel.
- 3a. See lesson plan #12, Launching A Rescue Boat.

## SUMMARY:

It is important to perform a thorough pre-operation inspection before launching your rescue boat into any body of water. You will feel confident during your training or rescue operation, knowing that all major items have been inspected. This simple and quick two minute, (or less), inspection is well worth the time and should be required by any agency using rescue boats for emergency services.

## EVALUATION:

Each student will perform a pre-inspection of a rescue boat, completing the task within two minutes in accordance to the job breakdown.

The student will perform a pre-inspection of a rescue boat without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform pre-inspections of a rescue boat until confident.

TOPIC: **Launching A Rescue Boat**

TIME FRAME: 0:30

LEVEL OF INSTRUCTION II

BEHAVIORAL OBJECTIVE:

Condition: Rescue boat on trailer

Behavior: The student will

- select an appropriate location to launch the rescue boat
- back the tow vehicle and rescue boat into a body of water
- launch a rescue boat into dynamic water

Standard: Completion of all operations shall be performed within three minutes in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- Launching job breakdown
- Rescue Boat on trailer with tow vehicle
- Information sheet 12-1 Page 1

REFERENCES:

- Rescue boat owner's manual
- Towing vehicle owner's manual

PREPARATION:

Quickness of placing a rescue boat into action is imperative to conducting an efficient and successful rescue. The operation must be performed smoothly and with coordination between the two or three team members. The possibility of onlookers and media watching your operation is very conceivable. Your successful completion of this maneuver will allow you to launch a rescue boat in a timely, safe and smooth manner.

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

1. Select a shore launching point

- 1a. River right or left, if in dynamic water
- b. Free of grass or snags
- c. Cove or long shore eddy
- d. Sandy or small rocks
- e. Accessible by towing vehicle

2. Back trailer to water line

- 2a. Use a spotter
  - b. If in dynamic water, angle the towing vehicle and trailer so the rescue boat enters the water with the aft of the rescue boat facing down river.
  - c. Disconnect stern tie down restraints.
  - d. Disconnect bow ring restraint.
  - e. Unplug trailer lights from tow vehicle.
  - f. Perform a pre-operation inspection. (see LP #11)

3. Back trailer into water

- 3a. The operator, wearing personal protection equipment, should enter the boat and prepare to start the motor.
  - b. With spotter, back trailer into water until the rescue boat is in about a foot of water. The operator can double as the spotter while in the rescue boat.
  - c. The operator starts and warms up the motor for 15 - 30 seconds minimum.
  - d. With spotter, continue backing trailer into water until the rescue boat can be launch from trailer by using the reverse control or manually removed by pushing or pulling off trailer.

**INSTRUCTOR NOTE**

It is strongly recommended by the developers of this curriculum that the instructor establish a safety plan covering, but not limited to, the following.

Maintain a minimum of a BLS trauma bag on scene.

Notify the local EMS provider of your location and type of training.

Identify the highest degree of medical ability amongst the students and the instructors.

Strictly enforce all in water SRT protocols.  
ex. down stream protection  
whistle and hand signals

Pre-plan the actions to stabilize an injured person and make it known to all.

Maintain a radio or cell phone for communications.

Maintain a tool kit to keep equipment working safely.

**If training as an agency, follow your agencies standard operating procedures.**

- e. If in dynamic water, the operator will obtain a positive attitude hover position in two to four feet of water (minimum), depending on the rescue boats propulsion system.
- f. Pull trailer out of water and place near water line out of the way of other incoming equipment.

## SUMMARY:

The operation you have just performed must be done quickly and with confidence. This is the first stage of our rescue operation and it must be performed flawlessly. Time is of the essence, error and poor performance could result in a delay and unsuccessful rescue. Your ability to skillfully back-up the tow vehicle with the trailer behind it, will start the sequence of a successful rescue operation.

## EVALUATION:

Each student will launch the rescue boat completing the task within three minutes in accordance to the job breakdown.

The student will launch the rescue boat without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the launching skill until confident for certification skill sign off.

TOPIC: **How To Hover And Ferry A Rescue Boat**

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue Boat, Dynamic Water Source

Behavior: The student will

- recognize a suitable point to perform hover and ferry maneuvers
- perform a hover maneuver
- perform a ferry maneuver

Standard: Completion of all operations shall be performed within one minute in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- Rescue boat

REFERENCES:

- Understanding the physics of moving water

PREPARATION:

You are about to be trained in one of the most important aspects for the use of rescue boats. That is that they can maintain their position within a dynamic flow. This maneuver is very important when performing water rescues and body recovery. Hovering and ferrying will be the two most practiced maneuvers you will use while executing rescue operations. It is imperative that you are proficient at these two maneuvers. Your ability to perform them could mean the difference between a successful rescue or being rescued yourself.

# INSTRUCTOR GUIDE

HOVER AND FERRY A RESCUE BOAT

OPERATIONS	PRESENTATION	KEY POINTS
1. Choose a spot to hover		<ul style="list-style-type: none"><li>1a. Operator to hover rescue boat in two feet of water (minimum) for jet drive. Three to four feet if a prop is used.</li><li>b. Maintain an upstream positive attitude.</li><li>c. Choose a spot that contains as little debris and marine vegetation as possible. Either can become ingested into the intake of a jet drive or damage a propeller.</li></ul>
2. Hover rescue boat		<ul style="list-style-type: none"><li>2a. Approach hover spot from down river traveling up river.</li><li>b. Slow rescue boat speed as you approach hover location.</li><li>c. Maintain the rescue boat in a horizontal position, do not plow.</li><li>d. Maintain just enough speed to overcome the speed of the current.</li><li>e. Attempt to keep the rescue boat in one spot as long as you can before the current moves you away.</li></ul>
3. Ferry rescue boat		<ul style="list-style-type: none"><li>3a. Obtain a steady hover position.</li><li>b. Choose a spot to ferry to, at either river right, or river left. Attempt to ferry to a point of little debris or marine vegetation.</li><li>c. Angle rescue boat either to river left or river right. Once you have angled the rescue boat, you will determine the speed required to maintain you position while crossing the dynamic flow.</li></ul>

# INSTRUCTOR GUIDE

HOVER AND FERRY A RESCUE BOAT

OPERATIONS

PRESENTATION

KEY POINTS

- d. Once you are angled, the boat will develop a stern, upriver high pressure and a bow, down river low pressure. You can increase you crossing speed by placing more of you bow perpendicular to the current. The speed of which you are crossing the river, is in direct relationship to your angle. To much angle will force your craft down river.
- e. Allow current to push rescue boat across river.
- f. Maintain the needed speed to overcome the force of the current against the hull of the rescue boat.

## SUMMARY

The hover and ferry maneuvers will be used every time you operate a rescue boat on a dynamic water source. These two maneuvers must be completed with competence and expertise. Your ability to maintain one position while water rushes by you is the main benefit to these rescue boat. These are the two maneuvers that will allow you to make contact with a victim in need either for rescue, assistance, or for performing a search.

## EVALUATION:

Each student will hover and ferry the rescue boat completing the task within one minute in accordance to the job breakdown.

The student will hover and ferry the rescue boat without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the hover and ferry skill until confident for certification skill sign off.

TOPIC: Shoring A Rescue Boat

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue Boat, body of water

Behavior: The student will

- identify a location to shore a rescue boat
- perform hover and ferry maneuvers
- allow dismounting of rescuer and operator
- recognize benefit of proper shoring for victim

Standard: Completion of all operations shall be performed with in two minute in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- Rescue boat

REFERENCES:

- Owners Manual

PREPARATION: Upon completion of training, or a rescue operation, it is imperative that proper shoring of the rescue boat be performed to keep from damaging the hull, prop, or jet. Whether the craft has a rigid hull or its made of a rubber type material, cobbles, pebbles, sand and sharp objects can cause irreparable damage. This maneuver has to be perfected because when performing rescue operations a victim may be on the boat that is frightened, nervous, injured, or weak and cold. Confidence and smoothness are assets for this maneuver and will be demonstrated by the skillful communication between the Operator and the Bowperson. This maneuver being performed close to shore,

will be seen by bystanders and, if on scene, the local media.

# INSTRUCTOR GUIDE

OPERATIONS	PRESENTATION	KEY POINTS
1. Select a shore point	1a. River right or river left	b. Free of grass or snags c. Cove or long shore eddy if possible d. Sandy or small rocks
2. Position boat	2a. Obtain up river attitude	b. Hover river center from selected shore point c. Line up with point on shore
3. Ferry towards shore	3a. Selected shore point at river right or river left	b. Change angle of boat c. Adjust angle to speed of current d. Maintain throttle to speed of current
4. Operator gives command	4a. "Prepare to go ashore"	
5. Bowperson	5a. Acknowledge	b. Moves right leg to outside of starboard sponson c. Watches water depth d. Calls out when the motor should be shut-off. ( about 18-24" for props, 12-18" for jets.)
6. Operator kills the motor	6a. By pushing the stop button or	b. Pull off the lanyard to the kill switch
7. Bowperson informs Operator	7a. If the motor should be raised out of the water due to water depth	
7. Operator gives command	7a. When water is shallow enough	b. "Disembark"

# INSTRUCTOR GUIDE

SHORING A RESCUE BOAT

OPERATIONS

PRESENTATION

KEY POINTS

8. Bowperson leaves boat

- 8a. Steps into the water or
- b. Steps onto shore if water is too deep.
- c. Keeps possession of the bowline
- d. Boat is kept in a positive attitude
- d. Is responsible for the craft until it is tied, pulled up on shore, or the responsibility is taken by the Operator
- e. Assure secure shore position before leaving watercraft location

## SUMMARY:

While this maneuver may seem simple and unworthy of continued training, but you will soon see the importance of training on this maneuver. You must locate a spot that will do minimal damage to your watercraft if you must bring it up on shore. The communication between the operator and bowperson must be professional and effective. Also remember that the smoothness of this maneuver will bring comfort to a rescued victim as you bring them onto shore.

## EVALUATION:

Each student will shore a rescue boat, completing the task within two minute in accordance to the job breakdown.

The student will shore a rescue boat without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, review shoring a rescue boat skill until confident for certification skill sign off.

TOPIC: **How To Trailer A Rescue Boat**

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue boat in a static or dynamic water source

Behavior: The students will

- identify an appropriate location to back the rescue boat trailer into the water
- trailer rescue boat
- secure rescue boat to trailer

Standard: Completion of all operations shall be performed with in three minutes in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- Rescue boat
- Rescue boat trailer
- Tow Vehicle

REFERENCES:

- Rescue boat owners manual
- Tow vehicle owners manual

PREPARATION:

Once a successful training or rescue operation has been completed, all equipment must be placed back in service. The first step to placing the rescue boat back in service is to properly trailer it. The maneuver is relatively simple; however, it requires communication and coordination. You may be trailering the rescue boat because your training is complete, or you may be trailering the rescue boat because a drowning victim needs your abilities in another part of the river or another body of water such as a flood area. Your

precise ability of this maneuver is important. Become proficient at it.

# INSTRUCTOR GUIDE

TRAILERING A RESCUE BOAT

## OPERATIONS

## PRESENTATION

## KEY POINTS

1. Select a point to trailer the rescue boat

- 1a. River right or river left
- b. Free of grass or snags
- c. Cove or long shore eddy
- d. Sandy or small rocks
- e. Obtainable by towing vehicle

2. Back trailer to water line

- 2a. Make sure lights are still unplugged from towing vehicle
- b. Using a spotter, back trailer in with rear of trailer slightly angled down river if in dynamic water
- c. Back into water until hull rails are three quarters submerged

3. Trailer rescue boat

- 3a. Maintain rescue boat in a positive attitude if in dynamic water
- b. Rescuer/bow person of rescue boat team shall be positioned at bow restraints on trailer ready to accept rescue boat
- c. Ferry angle to trailer rails if in dynamic water, then straighten out rescue boat to enter trailer rails straight
- d. Carefully accelerate rescue boat onto rails with assistance of rescuer/bow person
- e. Boat operator shall remain in the rescue boat
- f. Rescuer/bow person shall attach bow restraint

4. Remove trailer from water

- 4a. Rescuer/bow person to drive tow vehicle out of water after getting go ahead from boat operator

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

5. Secure rescue boat to trailer

- b. Remove trailer from water until stern of rescue boat is approximately ten feet from water line
- c. Rescuer/bow person to plug trailer lights back into tow vehicle after assuring both end connectors are dry
- d. Boat operator shall shut off fuel in accordance to agencies policies
- e. Remove and properly stow dead man tether
- 5a. Rescuer/bow person shall attach stern restraints to rescue boat.
- b. Boat operator shall store dead man tether and dismount rescue boat
- c. Place rescue boat back in service

## SUMMARY:

Placing the rescue boat back on the trailer is usually the indication that the training session or rescue operation has been completed. However, the entire operation isn't complete until the loaded trailer has been removed from the water and the rescue boat is secured. Identifying a proper location to back the trailer into, will determine the ease of trailering the rescue boat onto the trailer. Like all the other maneuvers, this task could be watched by many bystanders, or media personalities. You should strive to become proficient at trailering your rescue boat.

## EVALUATION:

Each student will trailer a rescue boat completing the task within three minutes in accordance to the job breakdown.

The student will trailer a rescue boat without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, trailer a rescue boat as a boat operator and a rescuer/bow person until confident for certification skills sign off.

TOPIC: IRB High Speed Turns

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Inflatable Rescue Boat In Water

Behavior: The student will

- recognize the proper distances needed to make a high speed turn
- identify the need for good communication between operator and bowperson
- identify the turn positions of the operator and bow person
- with acquired balance, accomplish a high speed turn

Standard: Completion of all operations shall be performed within thirty seconds in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swiftwater helmet
- High speed turn job breakdown
- Rubber inflatable boat

REFERENCES:

- Lesson plans from U.S. Lifesaving Association's Instructors Boat Course

Being able to turn your boat while maintaining your speed as much as possible, is essential in swiftwater operations. Slowing down to make a turn will cause your outdrive to ride lower in the water, increasing your chances of striking an object. It is imperative that you apply your self to this maneuver. In swift moving waters, the less time your boat spends sideways to the current, the more control you will

have. It may not always be necessary to perform all turns this quickly, but when you find yourself in a critical situation in tight quarters, having the knowledge and skill could save you and your boat.

# INSTRUCTOR GUIDE

OPERATIONS	PRESENTATION	KEY POINTS
<p>1. IRB is traveling at high rate of speed, on plane.</p>		<p>1a. Operator and bowperson in normal riding positions:</p> <p>Bowperson; seated on starboard front sponson, left-hand on bow line, right-hand in sponson handle, left-foot in floor strap.</p> <p>Operator; seated on port rear sponson left-hand in sponson handle right-hand on throttle, left-foot in floor strap.</p>
<p>TO TURN TO STARBOARD, (right turn)</p>		
<p>2. Operator announces turn.</p>		<p>2a. "Right turn.....ready....now!" (The term "right" is used instead of "starboard" due to familiarity.)</p>
<p>3. Operator starts right turn</p>		<p>3a. Reduces power</p> <p>b. Turns motor fully, by pulling handle back toward his body.</p> <p>c. Leaning upper body toward center of boat.</p> <p>d. Resume full power until turn is completed.</p>
<p>4. Bowperson helps with right turn</p>		<p>4a. Pulls to the right, placing body over starboard sponson and out over water as much as possible.</p> <p>(Safety foot &amp; hand straps for both the bowperson and the operator are a must for high speed turns.)</p>
<p>5. Operator completes turn.</p>		<p>5a. Reduces power</p> <p>b. Turn motor back to "mid-ship" position.</p>

# INSTRUCTOR GUIDE

IRB HIGH SPEED TURNS

OPERATIONS

PRESENTATION

KEY POINTS

6. Bowperson helps with plane

c. Moves body back to riding position.

d. Resumes full throttle.

6a. Finishes turn then assumes the "bow" position, helping to keep the boat on plane and to regain any lost speed. (Takes about 3 to 6 seconds.)

(Bow position;

Bowperson places upper body weight across the bow of the boat, facing forward, parallel with boat.)

b. Resumes normal riding position.

TURN TO PORT, ( left turn)

7. Operator announces turn

7a. "Left turn.....ready....now!"  
(The term "left" is used instead "port" due to familiarity.)

8. Operator starts turn

8a. Reduces power

b. Turns motor fully by pushing handle away from his body.

c. Leans upper body back, out over port sponson.

d. Resumes full power until turn is completed.

9. Bowperson helps with left turn.

9a. Shifts body to port-side, left hip against port sponson.

10. Operator straightens boat

10a. Reduces power

b. Turns motor back to "mid-ship" position.

c. Moves body back to normal riding position.

d. Resumes full throttle.

# INSTRUCTOR GUIDE

IRB HIGH SPEED TURNS

OPERATIONS

PRESENTATION

KEY POINTS

11. Bowperson

- 11a. Finishes turn then assumes the "Bow" position, helping to keep the boat on plan and regain any lost speed. (Takes about 3 to 6 seconds.)
- b. Resumes normal riding position.

## SUMMARY:

Every member of the water rescue team should be proficient at performing high speed turns. At any time, you may be asked to be the boat operator or its bowperson. You must know the commands and the proper position. Communication between you and your partner is vital in these operations. Team work is a must. Continued training, using these techniques, will provide you with the timing, balance, and experience required to perform in an emergency situation.

## EVALUATION:

Each student will complete left and right turns from both the operator and bowpersons' position, completing the task within thirty seconds in accordance to the job breakdown.

The student will execute these maneuvers without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform figure eight turns until confident for certification skill sign off.

TOPIC: **How to Execute a Rescue Drop-Off**

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue Boat, Dynamic Water Source

Behavior: The students will

- recognize the role this maneuver will play in water rescue operations
- have the ability to place a rescuer in the water
- identify the best condition for placing a rescuer in the water
- perform a rescuer drop-off using a rescue boat

Standard: Completion of all operations shall be performed with in one minute in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- Rescue boat
- Information Sheets 17-1 Page 1

REFERENCES:

- Lesson plans from U.S. Life Saving Association's Instructors Boat Course
- Information Sheets 17-1 Page 1

PREPARATION:

Picking up a victim out of a dynamic water source in most cases can and should be done without leaving you rescue craft. But sometimes its necessary to put a rescuer in the water to get a victim off of a strainer, sandbar, or just to help them back to the boat. Allowing the rescuer to enter the water smoothly, safely, and with little chance of being

injured by your boat, is another important responsibility of the boat operator. Dropping a rescuer in a static water source can be easily done by placing the motor in neutral and having the rescuer exit the boat on the port side. Once the rescuer is away from the boat, placing it back in gear. But placing the motor in neutral while on a moving river is not recommended. Keeping the motor running while the rescuer drifts past the prop is something that should not be taken lightly. The following drill will show you how to overcome this problem. Enabling you to place a rescuer safely in the water and allowing the rescuer to enter the water knowing he/she will not end-up checking the prop for debris. You must feel extremely confident with your ability to perform this maneuver.

# INSTRUCTOR GUIDE

EXECUTING A RESCUER DROP-OFF

## OPERATIONS

## PRESENTATION

## KEY POINTS

### 1. Communicate

If the water is moving too fast, and is deep enough for the rescuer to fall from the boat;

### 2. Position boat

### 3. Rescuer enters water

### 4. The turn

### 5. Boat reposition

### 6. Safety check

- 1a. With your rescuer about where the rescuer will be dropped off
- b. If the water is moving slow enough that the rescuer can and will, swim away from the boat or not
- c. Depth of the water
- d. Immediate area is clear for a full turn

2a. Operator to obtain a hover position just up stream from drop zone.

b. Bow pointed upstream

3a. Rescuer exits boat on port side. (If boat operator is located on the starboard side as in ridge hull boats, then the rescuer should exit on the starboard side.)

4a. Operator executes a hard left, (port) turn

b. Boat completes a full circle around rescuer

c. Operator keeps eye contact with rescuer during turn

5a. Boat assumes a hover position just up stream of rescuer

b. Bow pointed up stream

6a. Boat operator uses SRT hand signals to check welfare of rescuer. (Pointing at rescuer then tapping top of head)

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

7. Equipment

b. Rescuer answers back by tapping top of his head.

7a. Any equipment needed that was not taken with the rescuer, can be sent to him at this time.

## SUMMARY:

Placing a rescuer in the water can be one of the easiest skills you learn, but also one of the most dangerous. If done correctly, the moving prop will be swung a full boat length away from the rescuer. Keeping your rescuer / swimmer in sight and checking his or her condition after entering the water is extremely important. Being proficient at this task could be imperative to your rescue operation.

## EVALUATION

Each student will perform a Rescuer Drop-off as an operator and rescuer completing the task within one minute in accordance to the job breakdown.

The student will perform a victim pick-up without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the operator and rescuer positions of the Rescuer Drop-off maneuver until confident for certification skills sign off.

TOPIC: **IRB Victim Pick-Ups**

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Inflatable Rubber Boat, body of water, dynamic or static

Behavior: The student will

- recognize the need to safely approach a victim in static or dynamic water
- recognize the safe manner in which to bring aboard a victim.
- perform a victim pick-up

Standard: Completion of all operations shall be performed with in three minutes in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- IRB type rescue boat
- Rescue swimmer as victim

REFERENCES:

- Lesson plans from U.S. Life Saving Association's Instructors boat course

PREPARATION:

Being able to launch the boat, operate it safety, and maneuver it into the proper position, is futile if you are unable to successfully remove the victim from the water and place them in the boat. You are being taught the ability to reach, and aid persons in need of your assistance. You must know what to do, and when to do it. The result of this training will increased your confidence, and give you the knowledge to quickly & safely help those in need.

# INSTRUCTOR GUIDE

IRB VICTIM PICK-UPS

OPERATIONS

PRESENTATION

KEY POINTS

1. Operator positions boat

- 1a. Slightly down stream from victim
- b. Confirm water is deep enough for a full power turn.
- c. Boat positioned with bow upstream for control.
- d. Assume hover position.

(Note;

The current will bring the victim to the boat, allowing time for the operator to position the craft and the bowperson to take his "rescue position".)

2. Rescuer/Bowperson readies for victim

- 2a. Spots victim and communicates any position changes to the operator.
- b. Moves to the port side and squats down placing knees against the port sponson.
- c. Communicates with victim; gives instructions and reassures.
- d. Makes contact with victim and positions him facing away from the port sponson.
- e. Bowperson reaches under victims armpits, (or grabs PFD) and announces "ready".

3. Operator makes turn

- 3a. Turns motor to make a hard left turn
- b. Accelerates to full power, causing the craft to circle to the left around the victim.

(Note;

This action will cause the left sponson to drop low in the water, allowing the victim to be pulled into the boat with less effort.)

- c. Assist with victims legs if necessary

# INSTRUCTOR GUIDE

OPERATIONS	PRESENTATION	KEY POINTS
4. Bowperson brings victim aboard		4.a Keeping back straight, uses legs to rock back, pulling victim with him.
5. Operator returns boat to previous position		5a. Positioned with bow up stream for control
		b. Assumes hover position.
6. Bowperson readies victim for travel		6a. Checks victim for injuries
		b. Victim is placed in a PFD.
		c. Has victim sit in center of boat and instructs him not to move.
		d. Assumes the riding position.
<p>If its imperative to pick-up a victim in severe water condition, (i.e.; Surf or large waves), the victim can be pulled into the craft without the boat being turned hard to port.</p>		

## SUMMARY:

Being able to quickly and safely remove a victim from a potentially hazardous situation, is what this part of our job is all about. Being able to accomplish that task with minimal risk to ourselves, our craft, and the public, is what classifies us as professionals. As you become more competent with watercraft operations, you must continue to train to fine-tune your skills. The ability to take the knowledge given in these classes, to learn from the experiences and mistakes of others, and apply them to the situations at hand, constitutes a well prepared Water Rescue Team.

## EVALUATION:

Each student will perform a victim pickup completing the task within three minutes in accordance to the job breakdown.

The student will complete this task without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the victim pick-up until confident for certification skill sign off.

<u>TOPIC:</u>	<b>Performing A Victim Pick-Off</b>
<u>TIME FRAME:</u>	2:00
<u>LEVEL OF INSTRUCTION:</u>	II
<u>BEHAVIORAL OBJECTIVE:</u>	
Condition:	Rescue Boat, Static or Dynamic Water Source
Behavior:	The students will <ul style="list-style-type: none"><li>• recognize the role this maneuver will play in water rescue operations</li><li>• identify the best maneuvers to approach a victim stranded on an obstacle</li><li>• perform a victim pick-off using a rescue boat.</li></ul>
Standard:	Completion of all operations shall be performed with in one minute in accordance to job breakdown
<u>MATERIALS NEEDED:</u>	<ul style="list-style-type: none"><li>• Thermal protection</li><li>• Personal flotation device</li><li>• Swift water helmet</li><li>• This job breakdown</li><li>• Rescue Boat</li><li>• Information Sheets 19-1 Page 1</li></ul>
<u>REFERENCES:</u>	<ul style="list-style-type: none"><li>• Lesson plans from U.S. Life Saving Association's Instructors Boat Course</li><li>• Information Sheets 19-1 Page 1</li></ul>
<u>PREPARATION:</u>	The victim pick-off maneuver is another important life saving maneuver. Many victims will fall out of their watercraft and be poor swimmers. All they want is something under their feet so they can keep their head out of the water. They will end up on a shallow rock in the middle of the river, grasping a bridge pillar even hanging on to small trees, barely able to support their weight. You must feel extremely confident with your ability to perform this maneuver. Persons will

attempt to jump onto you or your watercraft. Eddy's will attempt to suck you into what ever the victim is hanging on to. Learn and be extremely confident with this maneuver. A successful rescue will depend upon your ability.

# INSTRUCTOR GUIDE

VICTIM PICK-OFF

OPERATIONS	PRESENTATION	KEY POINTS
1. Locate victim		1a. Listen to where witnesses say they last saw the victim and what the victim was wearing. b. Look completely around bridge pillars or dense tree areas. c. Get out of your boat and thoroughly inspect islands if needed. d. Inspect snags and strainers for entangled victim. e. A helicopter should be used if available.
2. Before approaching the victim		2a. Make verbal contact with the victim, reassuring them and firmly instructing them not to jump for the boat.
3. In most cases, a victim pick-off can be approached from three locations.		3a. The safest approach should be from downstream using the eddy. b. Using a ferry angle to approaching from the sides, can place you closer to the victim but the current or surf will have an effect on your boat. c. Approaching from upstream should be used as a last resort.
4. If victim is conscious		4a. Approach using ferry and make light contact with obstacle, (pillar, tree, rock, etc.). b. After contact is made, pressure should be applied to hold your position. c. Victim is helped into the boat. d. While boat is stationary, victim is briefly checked and given a PFD. He is also instructed to sit still in the middle of the boat.
5. If victim is unconscious		5a. After making contact with obstacle, rescuer exits craft.

# INSTRUCTOR GUIDE

VICTIM PICK-OFF

OPERATIONS

PRESENTATION

KEY POINTS

- b. Retrieves victim and returns to the boat.
- c. Rescuer administers first aid.

## SUMMARY:

As with the victim pick-up, this maneuver will be used often to aid victims trapped or injured on an obstacle located within a body of water. This maneuver is much more complicated because you are trying to line a moving object up with a stationary object while the water continues to move and the turbulence around the stationary object pushes and pulls the boat. You must practice this maneuver extensively before attempting the rescue of a victim on an obstacle.

## EVALUATION:

Each student will perform a victim pick-off completing the task within one minute in accordance to the job breakdown.

The student will perform a victim pick-off without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the victim pick-off maneuver as both operator and bowperson until confident for certification skills sign off.

TOPIC: **Re-Righting A Capsized IRB**

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Inflatable Rescue Boat, Static Water Source and Dynamic Water Source

Behavior: The students will

- recognize the role this maneuver will play in self-rescue
- have the ability to communicate and work as a team
- have the ability to correct a capsized boat while in static water
- perform the re-right procedure while in a dynamic water source

Standard: Completion of all operations shall be performed within two minutes in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- Rescue device
- This job breakdown
- IRB
- Student Information Sheet 20-1 Page 1

REFERENCES:

- Los Angeles County Fire Department Lifeguard Operations Instructor's Manual
- Student Information Sheet 20-1 Page 1

PREPARATION:

Inflatable Rescue Boats, IRB's, are used in many types of water and weather conditions. Some of these conditions can be very hazardous to the boat and crew. Hitting a wave incorrectly, using the wrong speed, placing your weight in a

mistaken location or just an unfavorable gust of wind, can overturn your boat. Being prepared for this possibility means that you know how to "high side" your boat to try to prevent it from going over. But you must also know what to do if it does capsize. Knowing how to re-right your boat could mean the difference between scrubbing the mission or completing it, swimming back or motoring in, being reprimanded or getting a pat on the back. Accidents do happen, but knowing how to turn a bad situation into a good one is what our jobs are all about.

# INSTRUCTOR GUIDE

RE-RIGHTING A CAPSIZED IRB

OPERATIONS	PRESENTATION	KEY POINTS
1. If a capsize is imminent		1a. The operator should switch off the motor. (or pull off the lanyard to the kill switch )  b. The operator should also try to pull the choke "full on" to prevent water from entering the carburetor.
2. Once the craft has capsized		2a. The boat crew should immediately attempt to re-right the boat.
3. Re-right the boat		3a. The crew member closest to the re-right or roll over pouch, should remove the rope or cord and throw it across the keel to the other side of the craft.  b. The other crew member grabs the rope and pulls himself up onto the overturn boat.  c. Standing on the opposite sponson, the second crew member pulls on the rope by leaning back to use his weight.  d. The boat flip over, right itself.
4. Re-entering the boat		4a. If possible, both members of the crew should pull themselves back in the boat at the same time  b. From different sides of the craft
5. The current		5a. If the boat is sideways to the current, (bow pointing to river right or left), the person pulling the boat over should have his back to the current. Doing so will allow the current to assist you.

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

6. Variations

- 6a. Both crew member can climb on to the upturned keel and using the rope, pull the boat over.
- d. While one crew member is climbing on to the keel, the other crew member can grab the side rope or handles on the opposite sponson, facing the boat, tuck his knees to his chest, and ride the boat over as it flips. He will end up in the boat, able to help the other member back in.

7. Once the operator and bowperson are aboard the boat

- 7a. The operator should immediately attempt to restart the motor

8. If motor will not start

- 8a. Follow check list for Submerged Motor Restart Procedure

## SUMMARY:

You will come to realize that the task of re-righting your IRB will not be used very often. But an experienced boat operator and bowperson should know where the "roll-over" rope is located, how to use it to re-right your boat, and be able to do so with without hesitation or panic.

## EVALUATION

Each student will perform a boat flip and re-right within two minute in accordance to the job breakdown.

The student will perform a IRB re-right without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the IRB re-right maneuver until confident for certification skills sign off.

TOPIC: Paddle Operations

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: Rescue Boat, Dynamic Water Source

Behavior: The students will

- recognize the need for this training during river travel and during rescue operations.
- complete the conversion from motor operations to paddling operations.
- identify when paddle operations are preferred over motor operations.
- perform paddle operations during river travel

Standard: Completion of all operations shall be performed within one minute in accordance to job breakdown

MATERIALS NEEDED:

- Thermal protection
- Personal flotation device
- Swift water helmet
- This job breakdown
- Rescue boat
- Information Sheets 21-1 Page 1 through 3

REFERENCES:

- Captain Mark Greenlee, Modesto Fire Dept.
- Information Sheets 21-1 Page 1 through 3

PREPARATION:

Converting from motor operations to paddle operations can save you, your boat and your victim. Paddle operations are an integral part of rescue boat operations. While machinery is more reliable, it is still machinery and carries the possibility of breaking down, becoming damaged or simple not working. Paddles are the controls for the mission from

then on, and they work well to complete your rescue operation. Paddles will get you from a failed rescue to a successful one simply by knowing how to use them and control the craft in any type of water. This lesson plan will educate you in the use of paddles for rescue boat operations.

# INSTRUCTOR GUIDE

OPERATIONS	PRESENTATION	KEY POINTS
1. Crew positions		1a. The pilot remains on the port tube in the same position as when he/she was operating the motor. b. The rescuer remains on the starboard tube in the same position.
2. Call for paddles		2a. Upon confirmed acknowledgment that the motor will no longer serve the need or the motor fails to perform. b. The operator of the motor communicates to the rescuer that they must use paddles. c. The operator states "GOING TO PADDLES". d. Both the operator and rescuer grab paddles and readies them for operation. e. The operator calls the strokes as the raft travels down the river.
3. When to call for paddles		3a. When water is too shallow b. When motor has stopped running c. When near a victim and small movements should be performed.
4. Paddling terminology consist of the following terms:		4a. Forward paddle b. Back paddle c. Right turn d. Left turn e. Draw stroke f. Pry stroke

# INSTRUCTOR GUIDE

OPERATIONS	PRESENTATION	KEY POINTS
5. Forward paddle		<ul style="list-style-type: none"><li>5a. Grip the paddle with one hand at the top and the other mid-way down the shaft.</li><li>b. Using your entire body, lean forward, reach out into the water with the paddle.</li><li>c. Using your arm strength and the weight of your body, pull the paddles towards you, parallel to the side of the boat.</li><li>d. The boat will move forward with each stroke.</li></ul>
6. Back paddle		<ul style="list-style-type: none"><li>6a. Grip the paddle with one hand at the top and the other mid-way down the shaft.</li><li>b. Using your entire body, lean forward, insert the paddle into the water behind you.</li><li>c. Use your hip or the boat as a fulcrum or pivot point and lean backwards.</li><li>d. Pull the paddle forward keeping the paddle in the water</li></ul>
7. Right turn		<ul style="list-style-type: none"><li>7a. The rescuer will perform a back paddle</li><li>b. The operator will perform a forward paddle</li><li>c. This action will turn the boat to the right</li><li>d. The operator is responsible to inform the rescuer when to stop the turn.</li></ul>
8. Left turn		<ul style="list-style-type: none"><li>8a. The operator will perform a back paddle</li><li>b. The rescuer will perform a forward paddle</li></ul>

# INSTRUCTOR GUIDE

OPERATIONS	PRESENTATION	KEY POINTS
9. Draw stroke		<ul style="list-style-type: none"><li>c. This action will turn the boat to the left</li><li>d. The operator is responsible to inform the rescuer when to stop the turn.</li></ul> <ul style="list-style-type: none"><li>9a. Used to make quick pivots or to move the boat sideways.</li><li>b. The operator or rescuer leans out away from the boat.</li><li>c. Place the paddle in the water parallel to the tube they are sitting on.</li><li>d. Pull towards the tube.</li><li>e. This will move the boat sideways slightly but enough to avoid danger.</li><li>f. This stroke can be considered a forward stroke performed perpendicular to the boat.</li></ul>
10. Pry Stroke		<ul style="list-style-type: none"><li>10a. Used to make quick pivots or to move the boat sideways.</li><li>b. The operator or rescuer places their paddles along side the boat tube they are sitting on.</li><li>c. Using the boat or your hip as a fulcrum or pivot point push the paddle out perpendicular to the boat in a strong stroke.</li><li>d. This will move the boat sideways slightly but enough to avoid danger.</li><li>e. This stroke can be considered a back stroke performed perpendicular to the boat.</li></ul>

# INSTRUCTOR GUIDE

OPERATIONS

PRESENTATION

KEY POINTS

11. Motor position

- 11a When traveling down river in deep or laminar flow, maintain motor position in down mode to act as a rudder.
- b. When traveling down river in shallow or turbulent flow pull engine up and lock to keep prop/jet out of water.
- c. Perform down river travel as instructed in river travel lesson plan.

## SUMMARY:

Converting your operation from motor operations to paddles can be both confusing and tiring. Paddling a boat against dynamic water to obtain your best position for river travel takes excellent coordination and an understanding of the river. During paddling operations, the two person team must work together understanding all the commands to reach an agreed objective. Your knowledge and ability of this lesson will insure your successful completion when you must convert to paddle operation.

## EVALUATION

Each student will perform the paddle operation as an operator and rescuer, completing the task within one minute in accordance to the job breakdown.

The student will perform river travel under paddle operation without the job breakdown.

Instructor will not answer questions during the evaluation of each student.

Instructor will evaluate each student individually using the job breakdown checklist and timer and sign off student if successfully completed.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz.

Under the supervision of your instructor, perform the operator and rescuer positions of the paddle operation maneuver until confident for certification skills sign off.

TOPIC: **Rescue Boat Flood Operations**

TIME FRAME 1:00

LEVEL OF INSTRUCTION I

BEHAVIORAL OBJECTIVE:

Conditions: A written quiz

Behavior: The student will

- identify the watercrafts used during times of floods
- determine an area is safe for rescue operations
- identify characteristics caused by moving flood waters around large structures found during floods.
- identify rescue locations which victim retrieval is most efficient.
- identify most effective location to launch and trailer boat during floods.

Standard: With a minimum 80 % accuracy according to Information Sheet 21-1, Pages ? through ?

MATERIALS NEEDED:

- Overhead projector and screen
- Overhead transparencies 22-1 through 22-6
- Information Sheet 22-1, Pages 1 through 6

REFERENCES

- FEMA case studies on past floods
- Rescue 3 Flood seminar course
- 1993 flood of the Mississippi River Video
- Physical Geology, Monroe & Reed: Wicander 1992

PREPARATION:

Occasionally, a stream, river, or flood channel receives more water than its channel can handle, and it floods, occupying part or all of its flood plain. Since as a society we always want to be near water, we tend to allow ourselves to build in these known flood plains. Most of the time the water being transported stays within its natural or manmade bearers. However, when it doesn't, and there will come a time when it doesn't, emergency water rescue

teams are placed into action to rescue the people stranded by these flood waters. It is extremely important to understand that people will wait and let their house get flooded knowing emergency water rescue teams will come and retrieve them from their flooded house or businesses. While these persons are derelict in the thought process, you must still be able to maneuver a rescue boat through the flood waters and use the dynamic characteristics available to retrieve persons needing removal from the flood waters.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>I. Types of rescue watercrafts for floods</p> <ul style="list-style-type: none"><li>A. Inflatable boats<ul style="list-style-type: none"><li>1. Lesson Plan 3</li></ul></li><li>B. Rigid Hull boats<ul style="list-style-type: none"><li>1. Lesson Plan 3</li></ul></li><li>C. Personal Watercrafts<ul style="list-style-type: none"><li>1. Lesson Plan 3</li></ul></li><li>D. All three types can be used for rescues and have proven themselves very capable in their own way.</li></ul>	<p><u>OHT 22.1</u></p>
<p>II Determining an area is safe for rescue operations</p> <ul style="list-style-type: none"><li>A. Water type<ul style="list-style-type: none"><li>1. Is the water contaminated?<ul style="list-style-type: none"><li>a) Sewer systems</li><li>b) Waste plants</li><li>c) Agriculture land</li><li>d) Industry</li><li>e) Residential</li></ul></li><li>2. What type of contaminates?<ul style="list-style-type: none"><li>a) Waste byproduct</li><li>b) Chlorine</li><li>c) Insecticide</li><li>d) Industrial contaminate</li><li>e) Fuel</li></ul></li><li>3. Where has the flooding occurred?<ul style="list-style-type: none"><li>a) City streets</li><li>b) Urban streets</li><li>c) Farm Land</li><li>d) Combinations of two</li></ul></li></ul></li></ul>	<p><u>OHT 22.2</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>4. What has the flooding involved?</p> <ul style="list-style-type: none"><li>a) Businesses</li><li>b) Hilly terrain</li><li>c) Only flat flood plain</li><li>d) City</li><li>e) Residential</li></ul> <p>B. Water in a Flood Plain</p> <p>1. How big is the break area allowing the water to enter into the flood plain area?</p> <p>2. How fast is the water moving that has overcome it's banks to flood plain area?</p> <p>3. What is being covered by the water entering into the flood plain.</p> <ul style="list-style-type: none"><li>a) Streets</li><li>b) Fences</li><li>c) Houses</li><li>d) Buildings</li><li>e) Hazardous Material Areas</li><li>f) Agricultural Areas</li><li>g) Etc.</li></ul> <p>4. What is the content of the water</p> <ul style="list-style-type: none"><li>a) Heavy debris</li><li>b) Light debris</li><li>c) Hazardous Materials</li><li>d) Deceased animals</li><li>e) Deceased Humans</li><li>f) Etc.</li></ul> <p>5. Pressure of water on inanimate objects</p> <ul style="list-style-type: none"><li>a) 3 MPH = 40 psi</li><li>b) 6 MPH = 160 psi</li><li>c) 12 MPH = 640 psi</li></ul> <p>6. Increase or addition to initial break</p> <ul style="list-style-type: none"><li>a) Keep escape routes open</li><li>b) Future weather</li><li>c) Flash floods</li></ul>	<p><u>OHT 22.3</u></p>



# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>3. Open Area</p> <ul style="list-style-type: none"><li>a) Slow water flow</li><li>b) Swift water flow</li><li>c) Islands</li><li>d) Use the eddy characteristic formed by the dynamic flow around the island</li><li>e) Roads can make low head dams</li></ul> <p>4. Deceased Victims</p> <ul style="list-style-type: none"><li>a) Performing a pick-up rescue</li><li>b) Performing a pick-off rescue</li><li>c) Us covers or body bags</li><li>d) Handle with extreme care and discretion</li></ul> <p>C. Flood Characteristics</p> <p>1. Structures</p> <ul style="list-style-type: none"><li>a) Pillows</li><li>b) Eddies</li><li>c) Eddy Fence</li></ul> <p>2. Vehicles</p> <ul style="list-style-type: none"><li>a) Pillows</li><li>b) Eddies</li><li>c) Eddy Fence</li></ul> <p>3. Open Areas</p> <ul style="list-style-type: none"><li>a) Heavy current</li><li>b) Hydraulics</li><li>c) Hay Stacks</li><li>d) Cross currents</li><li>e) Convergence's</li><li>f) Roads can make low head dams</li></ul>	<p><u>OHT 22.6</u></p>

## SUMMARY:

Operating a rescue craft in flood waters can prove to be extremely complicated and frustrating. No matter which craft you choose you will soon find out that each has its limitations. When performing flood rescue operations assure that crews are in appropriate protective gear. Flood waters can carry a variety of caustic chemicals and bacteria that can do damage to your body. Remember the water from a flooded area had to arrive through movement. Observe flood currents and characteristics and act accordingly. Above all operate slowly and use common sense.

## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz. Study for our next session.

# TYPES OF RESCUE BOATS FOR FLOOD OPERATIONS

---

-  Inflatable Rescue Boats
-  Rigid Hull Inflatable Rescue Boat
-  Rigid Hull Rescue Boat
-  Personal Watercraft
-  Air Rescue Boats
-  Hovercraft Rescue Boats

# WATER CONCERNS FOR RESCUE OPERATIONS

---

- ⊗ Is the water contaminated?
  
- ⊗ What type of contaminants are in the water?
  
- ⊗ Ability to test for contaminants in the water?
  
- ⊗ What is being flooded?
  - a) city streets
  - b) urban streets
  - c) farm land
  
- ⊗ What has the flooding involved?
  - a) hills
  - b) farm land
  - c) flood plain

# CONCERNS OF WATER IN A FLOOD PLAIN

---

-  How big is the break allowing water into the flood plain?
-  How fast is the water coming into the flood plain area?
-  What is the water covering?
-  What is the water carrying and what is it picking up as it flows?
-  What is the pressure of the water on inanimate objects?
-  Are there additional breaks?

# RESCUE OPERATIONS IN FLOOD PLAIN AREAS

---

- ④ Do you know the area...well?
- ④ Can you find someone who does know the area?
- ④ Know your objectives
  - a) search
  - b) rescue
  - c) recovery
  - d) animal rescue
- ④ Don't place you or your water rescue team in danger?
  - a) assure your team is trained, proficient & comfortable
  - b) assure your boat operator is competent
  - c) assure your craft is capable of the operation

# **VICTIM CONTACT DURING FLOOD RESCUE OPERATIONS**

---

- ⊕ Victim contact from structures
  - a) pick-up or pick-off
  - b) use eddy from the house
  
- ⊕ Victim contact from vehicles
  - a) pick-up or pick-off
  - b) use eddy from the vehicle if stable
  
- ⊕ Victim contact from open areas
  - a) determine water flow
  - b) use eddys of islands
  - c) roads can cause a low head dam
  
- ⊕ Contact of deceased victims
  - a) pick-up or pick-off
  - b) use covers or body bags
  - c) handle with extreme care

# WATER CHARACTERISTICS DURING FLOODS

---

## Structures

- a) pillows
- b) cushions
- c) eddys & eddy fence
- d) hydraulics

## Vehicles

- a) pillows
- b) cushions
- c) eddys & eddy fence

## Islands

- a) pillows
- b) cushions
- c) eddys & eddy fence

## Open areas

- a) heavy current
- b) hay stacks
- c) cross currents
- d) low head dams

TOPIC: **Boat Pins and Wraps**

TIME FRAME: 1:00

LEVEL OF INSTRUCTION I

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The student will

- recognize a true boat wrap or pin emergency
- identify if a wrapped or pinned boat causes a hazard for others coming down stream
- recognize the force of the water on the wrapped or pinned boat
- develop a plan to remove the wrapped or pinned boat using the force of the water to assist.
- determine if the boat can be removed with or without the mechanical advantage of a rigging system

Standard: With a minimum 70 % accuracy according to Information Sheet 22-1, Pages 1 through 8

MATERIALS NEEDED:

- Overhead projector and screen
- Overhead transparencies 23-1 through 23-6
- Written quiz
- Student Information Sheet 23-1 Pages 1 through 8

REFERENCES:

- Rescue 3 International Swift Water Rescue Manual
- Swiftwater Rescue, Slim Ray: 1997 CFS Press
- Student Information Sheet 23-1 Pages 1 through 8

PREPARATION:

Boats, whether rafts or rigid hulled, sometimes get pinned and need to be recovered. You as a water rescue team member must determine if this is an actual emergency or just the removal of a boat from a stationary object. In many rivers throughout California, rafters with little to no boat operational knowledge, float down rivers inundated with

bridge pillars, rocks, islands, construction equipment and other hazards. This allows inexperienced boat operators to pin or wrap their craft around these objects. While most people who drive cars or motorcycles will lean into a turn, they will not lean into an obstacles in the way of their boats travel. This is why a great many rafters and boaters end up out of their craft and floating down stream. This lesson plan is to teach you how to remove pinned and wrapped watercrafts while maintaining a high degree of safety.

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>I. Terminology</p> <p>A. Pinned: a boat held against a stationary object in a dynamic flow, holding the boat firmly in place.</p> <p>B. Wrapped: When a boat is pinned, it often times becomes full of water from the upstream force and this force wraps the boat around the stationary object.</p> <ol style="list-style-type: none"><li>1. This wrapping can occur quickly.</li><li>2. When and if it does it can hold a person between the boat and the stationary object .</li><li>3. The force can be unbearable and sever enough to crush a person to death.</li></ol> <p>II. The true boat pin or wrap emergency</p> <p>A. Persons trapped in the boat submerged in water.</p> <p>B. Persons trapped between the boat and the stationary object and submerged in water.</p> <p>C. Persons trapped between the boat and the stationary object.</p> <p>D. Persons in one way or another tethered to the boat that is pinned or wrapped.</p> <p>E. Persons hanging on to a boat that is pinned or wrapped.</p> <p>III Recognize if the pinned or wrapped boat is a hazard to others coming down stream.</p> <p>A. Make sure persons coming from upstream have a clear and safe path of travel around the pinned or wrapped craft.</p>	<p>Who knows the difference between a boat pin and a boat wrap? <u>OHT 23.1</u></p> <p>What constitutes a true boat pin or wrap emergency?</p> <p><u>OHT 23.2</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>B. Place up stream spotters as lookouts to inform others floating down stream to avoid river left, right or center due to a pinned or wrapped craft</p> <p>C. If at all possible, place a rescue team member, or rescue craft near the pinned or wrapped craft to divert on coming crafts into the rescue or removal operation.</p> <p>D. A warning device such as a whistle should be used to get the upstream crafts attention.</p> <p>IV. Recognize the force of the water on a pinned boat.</p> <p>A. The force of water is great. Since water does not compress at this low pressure, all of the force will be placed onto the pinned craft. This weight is transferred to whatever is between the craft and the stationary object.</p> <p>B. Rescuers are to be extremely careful not to get any part of their body between the craft and the stationary object.</p> <p>C. When reaching in to place ropes or for grab handles, the rescuer again should not place either his arms or legs in a position between the boat and the stationary object.</p> <p>D. With the great force of water pushing against a pinned boat, a collapse can occur at any time. If any part of a rescuers body is between the boat and the stationary object, that rescuer is now a victim.</p> <p>E. A rescurer must also maintain that at anytime the additional surface area of a pinned boat against a stationary object may allow the object to start moving. <b>AN EXTREME HAZARD</b></p>	<p>What is the weight of the water pushing against a craft?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>F. To place ropes around a pinned or wrapped boat allow the travel of the water to carry the rope for you. Then reach under the boat to grab the rope flipping it along the inside of the pin or wrap. This movement keeps your rescuers safe and proceeds with removing the boat from the stationary object.</p> <p>V. Develop a plan to remove the boat from the stationary object.</p> <p>A. A boat pinned against a stationary object is only there because of the pressures placed against the boat by the flow of the water.</p> <p>B. If this flow or pressure is changed or interrupted, the boat can be removed from the stationary object.</p> <p>C. Avoid pulling the boat directly up stream against the full force of the current. Instead pull more on a 45° to the current, or if you are able, pull the boat up vertical out of the water.</p> <p>D. Deflating one side or the other of an inflatable boat that is pinned or wrapped allows less force from the water.</p> <ol style="list-style-type: none"> <li>1. This must be done with care not to allow water back into the air chamber you are deflating.</li> <li>2. Water into an air chamber would cause more weight and more force against the stationary object.</li> </ol>	<p>Can pinned and wrapped boats only be removed from stationary objects by use of ropes and rigging? <u>OHT 23.3</u></p> <p>What can be done to change the pressure flow or interrupt the flow of the water against the pinned or wrapped boat ?</p> <p>How can deflating part of an inflatable boat assist with removal ?</p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>3. Be prepared to move when deflating a portion of the inflatable boat, since just this action could push it loose and down stream.</p> <p>4. Secure a rope to the inflatable boat before deflating any chamber so if the raft does come loose, it will be tethered and not allowed to wrap itself around the next item down stream.</p> <p>IV. Setting up a rigging system for a mechanical advantage.</p> <p>A. Access to the pinned or wrapped boat.</p> <ol style="list-style-type: none"><li>1. Can you wade out to the boat due to shallow water.</li><li>2. Is foot entrapment a definite possibility.</li><li>3. Can you swim out and catch the eddy behind the stationary object ?</li><li>4. Can you operate from the stationary object or is there no place to hang on or stand ?</li></ol> <p>B. Getting rope out to the boat.</p> <ol style="list-style-type: none"><li>1. Can ropes be safely thrown to the rigger at the boat ?</li><li>2. Do the ropes have to be ferried over by a swimmer ?</li><li>3. If this is not an immediate emergency and ropes are needed, can a line gun be obtained ?</li><li>4. The rigger must have a place to operate and not get hypothermia due to the cold water.</li></ol> <p>C. Tying off to a boat for removal.</p> <ol style="list-style-type: none"><li>1. Remember when you set up lines across water you have developed a clothes line for others to run into. Take safety in mind when</li></ol>	<p><u>OHT 23.4</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>rigging a boat. Remember to use your upstream spotters.</p> <ol style="list-style-type: none"><li>2. Your goal is to upset the equilibrium of force due to the current. This can simply be done by dumping the water and pulling the boat to shore.</li><li>3. You can have up to four lines across part of a dynamic flow during this operation.<ol style="list-style-type: none"><li>a) A recovery line or tether.</li><li>b) A roll over line to dump the water.</li><li>c) A haul line, possibly connected to a mechanical advantage rigging.</li><li>d) Even a track line may be set up to get rescuers out to the boat.</li></ol></li><li>4. Tie to a point that is secure and will not fail.<ol style="list-style-type: none"><li>a) This can be a bow restraint.</li><li>b) The thwarts in a rigid or inflatable boat.</li><li>c) Multiple "D" rings on an inflatable.</li><li>d) Around the entire boat itself. But must have an extra line to maintain the tether.</li></ol></li><li>5. Once this haul line is in place, there are many ways to pull to release the boat from the stationary object.<ol style="list-style-type: none"><li>a) The "Armstrong Method" can be used if the boat is not too deeply submerged. Simple pulling up on one end will release the boat from the stationary object.</li><li>b) The haul line can be pulled by many persons known as the "Ten Boy Scout Method".</li><li>c) Next is a mechanical advantage using a "Z-drag" or "Pig Rig", such as taught in Swift Water Rescue Two.</li></ol></li></ol>	

PRESENTATION	APPLICATION
<p>D. The Hull wrap, Taco Method and Rescue Boat</p> <ol style="list-style-type: none"><li>1. The Hull Wrap.<ol style="list-style-type: none"><li>a) The hull wrap consist of anchoring the boat at the point below the water surface and on the up stream side.</li><li>b) The rope then goes deeper under water and under the boat to come up on the down stream side of the boat.</li><li>c) The rope then comes back over the top of the boat in an upstream direction.</li><li>d) Pulling on this haul line will rotate the boat, spilling the water and lifting the boat off of the stationary object.</li></ol></li><li>2. The Taco Method<ol style="list-style-type: none"><li>a) Use part of the boat as an anchor to pull the other part out of the water.</li><li>b) A rigging system is set up inside the length of the boat.</li><li>c) The rigging pulls the two ends together and allows less water sruface area.</li><li>d) This is normally done on larger inflatables and where the distance to shore is great.</li></ol></li><li>3. Using a Rescue Boat<p>Only use your rescue boat when you are sure of the following:</p><ol style="list-style-type: none"><li>a) Using your rescue boat will not place you, the members of your team or your boat in danger.</li><li>b) The rescue is a true emergency and not a boat recovery.</li><li>c) The water around the pinned or wrapped boat is deep enough for efficient operations.</li><li>d) Under no circumstance will you tie or secure a line/ rope to your rescue boat.</li></ol></li></ol>	<p><u>OHT 23.5</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<p>e) Always assure the ropes of the pinned or wrapped craft will not obstruct the operation of the rescue boat.</p> <p>Once those objectives are clear the method to use a rescue boat for removal of a pinned or wrapped craft is as follows:</p> <p>a) Use your boat with a team member holding onto a haul line and maneuver rescue boat away from the pinned or wrapped craft at a 45° angle.</p> <p>b) Using rescue boat bow, push one end of the pinned or wrapped craft in attempt to free the craft with the power of the rescue boat.</p> <p>E. Safety management during boat removal</p> <ol style="list-style-type: none"><li>1. Establish upstream spotters to alert others of the operations ahead and to alert the rescuers of the operations of what is coming down stream.</li><li>2. Establish down stream safety to assist rescuers who have fallen into the current or washed off.</li><li>3. Use your best rescuers for the task and assure they have all the proper safety equipment on.</li><li>4. Do not allow any part of any rescuers body between the boat and the stationary object.</li><li>5. If a hazardous down stream situation exists, consider tethering your rescuers. But make sure the rescuers are trained in this type of operation and wearing the proper safety equipment.</li></ol>	<p><u>OHT 23.6</u></p>

# INSTRUCTOR GUIDE

PRESENTATION	APPLICATION
<ol style="list-style-type: none"><li>6. Since inflatables only have glued on "D" rings it is possible for these rings to fail when pulled with to much force. Protect your haulers by placing a light weight at least out half way on the haul line to prevent snap back during failure. Also have the lead haul person face away from the load.</li><li>7. Do not place you haulers between the rope and a solid object. When the boat is pulled from it's pin the boat may pull the hauler into a solid object with the rope and pin the hauler.</li><li>8. Make sure you can quickly release you system if something goes wrong. All should have a knife ready as a last resort.</li><li>9. Finally, can the water flow be reduced for a few minutes to allow you to walk out and carry the boat off the stationary object. <b>DON'T KILL A RESCUER FOR A BOAT.</b></li></ol>	

## SUMMARY:

The removal of a pinned or wrapped boat is only an emergency if there are persons trapped below water in the boat, or pinned between the boat and the stationary object, or if the pinned or wrapped boat is causing a hazard for others coming down the same current. If none of these hazards exist, do not endanger yourself or any one else to remove a boat. The removal of a boat is good practice for riggers and haulers. Boats and personal watercraft can also be used to ferry rope out to the boat if the water is too deep, or too swift. While the boat must be removed, use careful thought and the least amount of equipment and personnel to remove it.

## EVALUATION:

The student will be evaluated in accordance with stated performance objectives at a time to be determined by the instructor.

## ASSIGNMENT:

Review your notes and appropriate Information Sheets in order to prepare yourself for the upcoming quiz. Study for our next session

# TERMINOLOGY AND TRUE EMERGENCIES

---

## Pinned

a boat held against a stationary object in a dynamic flow, holding the boat firmly in place

## Wrapped

a pinned boat that becomes full of water from the upstream force. This force wraps the boat around a stationary object

## True Emergency

- a) persons trapped in the boat submerged in water
- b) person trapped between boat and stationary object submerged in water
- c) person trapped between boat and stationary object
- d) person connected to boat
- e) person hanging on to boat

# RECOGNIZING HAZARDS AND THE FORCE OF WATER

---

- ⊕ Is pinned boat hazard too others
  - a) assure others coming from upstream have a clear path around pinned boat
  - b) use up-stream spotters
  - c) use rescue members to help divert others around pinned boat
  - d) Communicate with everyone around the pinned boat. Use a whistle if needed

## ⊕ Force of Water

- a) water will deliver its full weight against a pinned boat in a dynamic flow
- b) rescuers do not get between boat and stationary object
- c) be prepared for the boat to collapse or shift
- d) any contact with the boat is added weight to the boat

# DEVELOP A PLAN TO REMOVE THE PINNED BOAT

---

- ⊕ A pinned boat is only there because of the water's force placed against it
- ⊕ If flow or pressure is changed, boat can be removed
- ⊕ Avoid pulling boat directly against current. Pull on a 45° to the current
- ⊕ Deflating one side will interrupt the pressure against the boat
  - a) do not allow water into a deflated chamber
  - b) water in a chamber will add dead weight
  - c) be ready to move incase boat becomes free
  - d) tie rope around boat

# ATTEMPTING A RIGGING SYSTEM

---

- ⊗ Can you access the boat safely?
  - a) wade out if possible
  - b) careful of foot entrapment
  - c) swim out and catch eddy behind object
  - d) can you work from object
  
- ⊗ Getting rope out to boat
  - a) can they be safely thrown
  - b) do they have to be ferried
  - c) is a line gun needed
  - d) can boat rigger stay safe and warm
  
- ⊗ Tying off boat for removal
  - a) stop all downstream travel
  - b) only one rope may be needed
  - c) tie to a secure point on boat
  - d) rigging may need to be set up on shore

# METHODS OF BOAT REMOVAL

---

## The Hull Wrap

- a) anchor rope on boat below the surface on upstream side
- b) rope goes over top of boat
- c) rope is pulled upstream

## The Taco Method

- a) rigging is set up within the boat
- b) rigging pulls two ends of boat together dumping out water

## Using a Rescue Boat

- a) do not place team members in danger
- b) water is deep enough for operation
- c) never secure a rope between the two boats

# **SAFETY MANAGEMENT DURING BOAT REMOVAL**

---

- ⊗ Establish upstream spotters
- ⊗ Establish down stream safety
- ⊗ Use your most confident members
- ⊗ Do not allow members between boat and stationary object
- ⊗ Consider tethering rescue member
- ⊗ Protect haulers from rope snap in case of failure of rope or anchor
- ⊗ Do not place haulers between rope and solid object
- ⊗ Make sure you can release rigging system quickly
- ⊗ Can the water flow be reduced

