

# River Exercise - Roles and Responsibilities

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Michael "Misha" Novitzky, novitzky@mit.edu  
Department of Mechanical Engineering, CSAIL  
MIT, Cambridge MA 02139

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## 1 Roles and Responsibilities the Night before an Exercise

### 1.1 Radio Gear

Ensure the radios are on their respective chargers. Ensure the cabling and headsets are in their correct home.

### 1.2 RC Controllers

The RC controllers for each robot should be placed on their respective chargers.

### 1.3 Front Seat Batteries

These batteries typically last the entire day. At a minimum ensure that a combination of the required batteries for the upcoming exercise.

## 1.4 Back Seat Batteries

The backseat batteries tend to lose performance if not cycled regularly.

## 1.5 Computer Readiness

Check that each computer to be used for the upcoming exercise can properly connect to the network, has the most updated code compiled, and at a minimum can perform a hardware in the loop simulation or each vehicle properly shows up on pMarineViewer. Are the laptops on their chargers?

1. Batteries charging
2. MOOS-IvP, COLREGS, Aquaticus
  - (a) svn update
  - (b) build.sh
3. Launch mission

## 2 Roles and Responsibilities Prior to an Exercise

### 2.1 Shoreside Setup

1. Initiate shoreside on the proper computer.
2. Connect to big screen TV.
3. Ensure all vehicles appear properly on the map.

### 2.2 Mokai Deployment

Always wear a lifejacket!

1. Move Mokai out into the open.
2. Check fuel level (if allowed).
3. Check battery level (above 12.8 V).
4. Move Mokai to the edge of the dock.
5. Minimum of two people slide Mokai out of dolly and into the water (stern first).
6. Secure Mokai to dock with line.

If using the Mokai as a node on the network:

1. Grab a laptop capable of interfacing with the GPS, Compass, and Bullet wifi.
2. Log into the laptop and ensure the wifi is off (this avoids major errors later).

3. Connect the Bullet ethernet cable to a Power Over Ethernet (POE) adapter.
4. Connect a battery to the POE cable.
5. Connect the ethernet male end of the POE into the laptop.
6. Connect the compass USB cable.
7. Connect the GPS USB cable.
8. Launch the Mokai as a vehicle in the appropriate mission.
9. (if applicable) Make sure the Mokai is properly displayed on the shoreside.

### **2.3 Robot Setup**

1. Move the robot out into the open.
2. Grab:
  - (a) Front seat battery
  - (b) Backseat battery
  - (c) PABLO box
  - (d) RC controller
3. Turn on the front seat.
4. Wait until the lights flash 2 pulses slowly
5. In parallel, power up the PABLO box
6. Wait until the green light on the Raspberry Pi indicates total boot up (little blinking typically around 1 minute)
7. Plug in the PABLO boxes ethernet cable into the robot.
8. From a remote computer, SSH into the PABLO unit and launch the appropriate mission.
9. Ensure the robot is properly displayed on the shoreside

### **2.4 Environment Setup**

1. Water for drinking
2. Sunscreen
3. Hats
4. Deploy the tent
5. Populate the tent with chairs for lookouts

## **2.5 Radio Setup and Disbursement**

Radios must be disbursed to these roles:

1. PCOM
2. Chase Boat(s)
3. Mokai Operators

Other roles having radios is helpful but not totally necessary as they can communicate through PCOM.

## **3 Roles and Responsibilities During an Exercise**

### **3.1 Operations Manager**

primarily observes exercises and ensures proper operations and safety of all vessels. Obtains situational awareness through pMarineViewer and communication with all other operators. Typically requests PCOM to relay messages to proper personnel.

### **3.2 PCOM**

Official communicator of all operations. Main role is to communicate human vehicle startup, commencement of exercise, pausing of exercise, and finish of exercise. As a an additional role will communicate the exercise status and aid human operators in robot interaction.

### **3.3 Lookout**

Primary role is safety. Watches for river traffic which can include kayakers, crewe boats, and other boats. Will communicate with Chaseboat, robot controllers, PCOM, and all PavLab vessels to ensure situational awareness of all potential interfering traffic.

### **3.4 Robot Controllers**

Operators with one or more robot remote controls with the ability to take manual override when necessary. These operators ensure safe robot operations by taking control prior to collisions. They also take over during deployment and return. They make sure batteries are fresh and the robots are operational.

### **3.5 Chase Boat**

Operator in a motorboat that ensures safe operations of PavLab exercises. Typically intervenes with potential river traffic to politely divert them from operating area. Will effect robot and mokai operator recovery when necessary.

### **3.6 Mokai Operators**

The Mokai operators ensure safety and collision avoidance while on the water. Will also execute whatever is necessary for the exercise.

## **4 Post Exercise Roles and Responsibilities**

Typically the group is fatigued after an exercise but this is one of the most crucial phases of an exercise.

1. Move logged data off of vehicles.
2. Extract vehicles from the water.
3. RC controls on chargers.
4. Radios on chargers.
5. Radio cables and headsets to their homes.
6. Move vehicles into the lab.
7. Ensure logged data has been moved properly.
8. Place used batteries on chargers (this includes laptops).