



**THE ACADEMY OF  
INTERNATIONAL STUDIES  
PRESENTS**

***Life Savers***

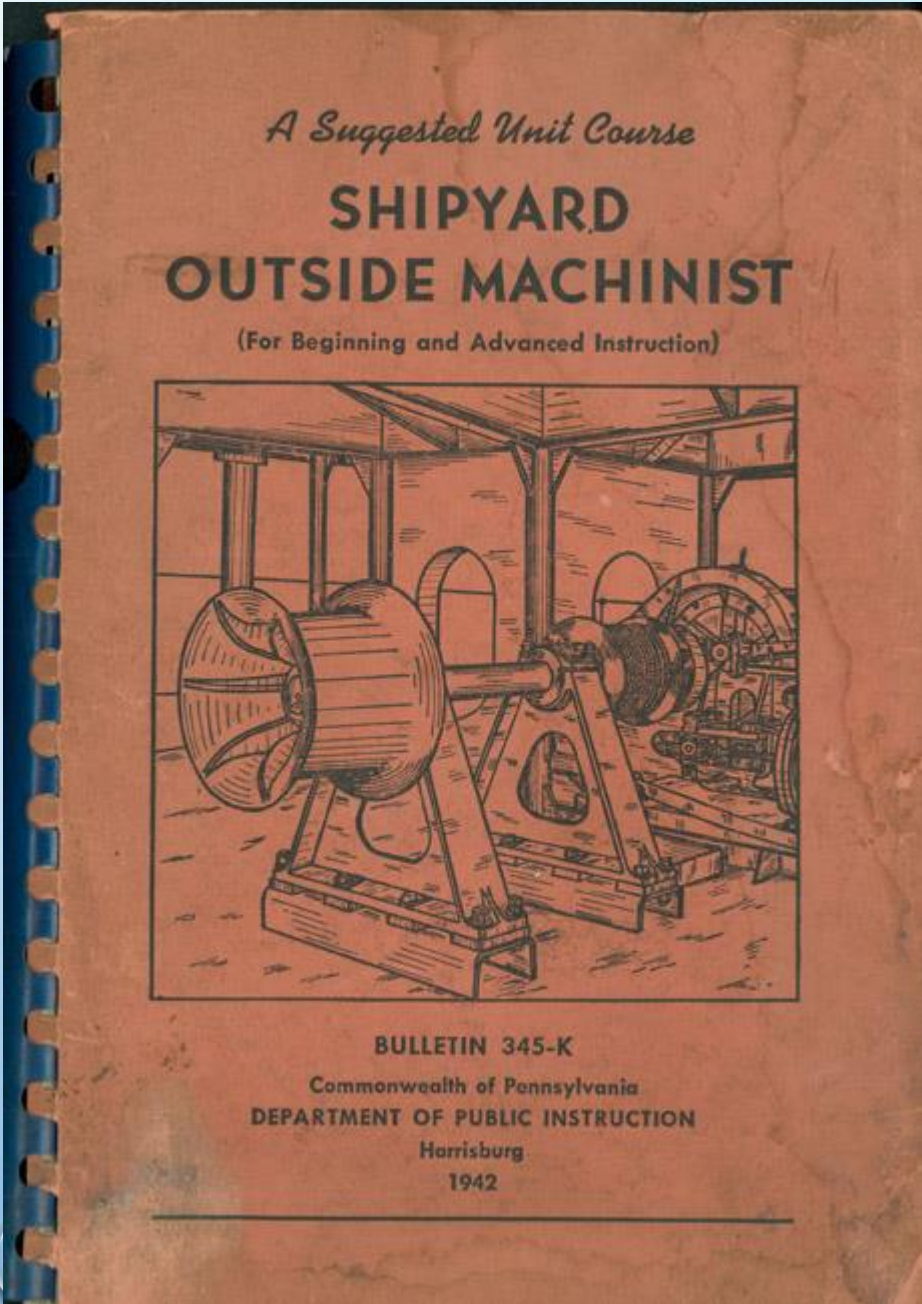


An underwater photograph showing the surface of the ocean from below. Sunlight filters through the water, creating a shimmering, dappled effect on the surface. The water is a deep, clear blue. The text "Careers In Shipbuilding:" is overlaid in the center in a white, sans-serif font.

# Careers In Shipbuilding:

# Outside Machinist

- AN OUTSIDE MACHINIST INSTALLS AND REPAIRS EQUIPMENT, SETS UP AND HANDLES MANUFACTURING MACHINERY, AND ENSURES THAT PRODUCTION EQUIPMENT IS PROFICIENT AND FUNCTIONAL. THE MACHINIST OPERATES MACHINES MANUALLY OR THROUGH A CONTROLLER AND INSPECTS EQUIPMENT AND MATERIALS.
- COMPENSATION : NATIONAL MEDIAN WAGES: \$18.52 HOURLY, \$38,520 ANNUAL
- VSRA MEDIAN WAGE REPORT: \$19.78 HOURLY  
VSRA MACHINIST TRADE HELPER/APPRENTICE: \$12.00-\$13.00 HOURLY
- IT REQUIRES A HIGH SCHOOL DIPLOMA AS WELL A TRAINING IN A VOCATIONAL SCHOOL THAT IS RELATED TO THE JOB AND/OR AN ASSOCIATE'S DEGREE.



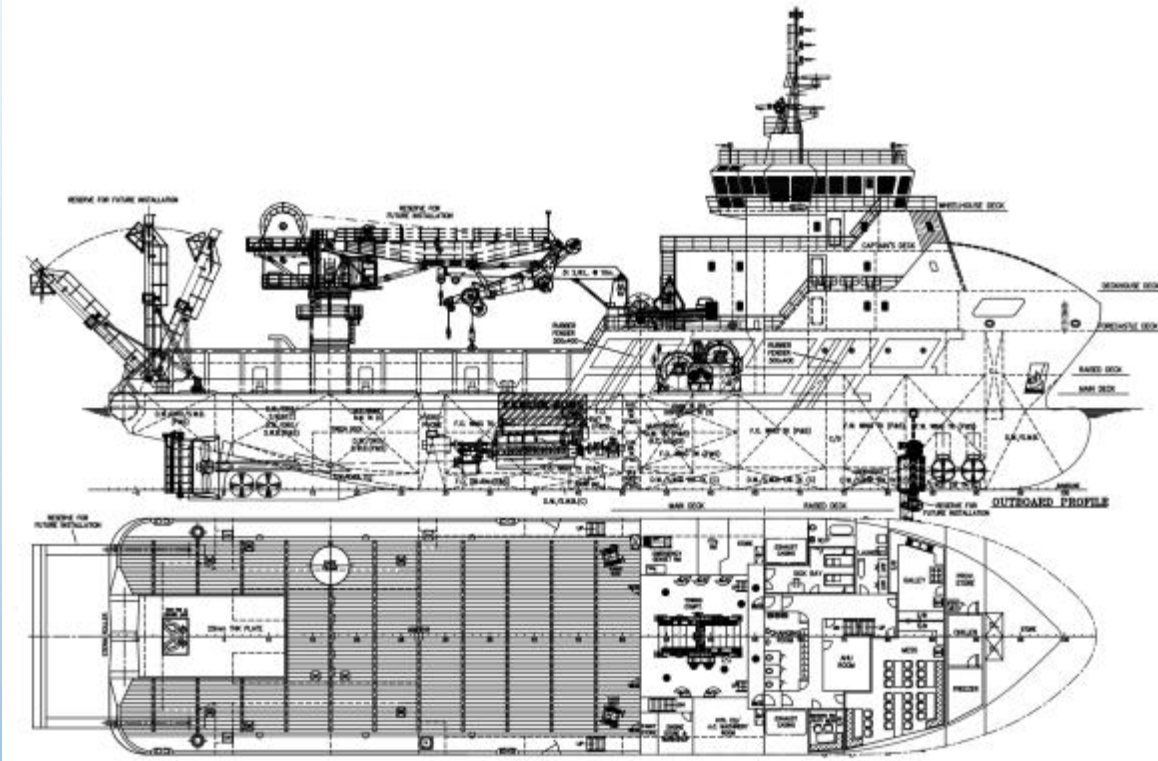
# Engineering Designer

Engineering designers work with the boat and make sure the designs fit the ship.

These workers have to maintain time while completing the job.

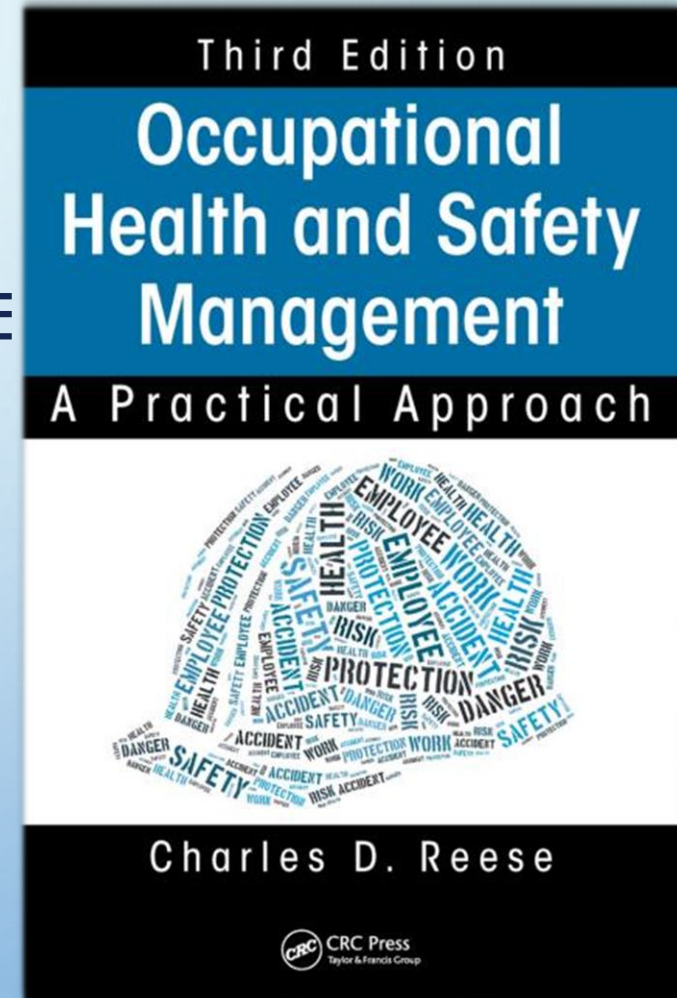
They also have to send the designs to the manufacturing company.

The designers provide plans, schedules, and help during the process of making the design. Naval architecture involves basic and applied research, design, development, design evaluation and calculations during all stages of the life of a marine vehicle.



# SHIPYARD SAFETY MANAGER

A SHIPYARD SAFETY MANAGER'S JOB IS TO ACT AS THE COMPANY SECURITY OFFICER, THE COMPANY'S ALTERNATE DESIGNATED PERSON ASHORE AND DOCUMENT CONTROLLER. THE SAFETY MANAGER IS RESPONSIBLE FOR ENSURING THAT OFFICIAL DOCUMENTS AND CERTIFICATES ARE RENEWED OR UPDATED AT THE CORRECT DATE/TIME. THEY ALSO MAKE SURE EVERYTHING IS GOING WELL AT SHORE-SIDE AND SHIPYARD JOBS. SHIPYARD SAFETY MANAGERS ARE PAID AROUND \$73,000 EACH YEAR.



# Environmental Officer



## Requirements

People seeking this position need a bachelor's or an associate's degree including or supplemented by 18 semester credit hours one year of experience in the areas of freshwater or marine sciences, wildlife sciences, forestry, environmental engineering, or environmental technology.

## Duties

The Environmental Officer ensures that the pollution prevention and waste handling equipment is working properly and pay special attention to recycling and hazardous material handling issues. They review all environmental records for completeness and accuracy. The officers also check pest management records, ballast water handling, sewage and gray water discharge logbook, the oil record book, and the garbage record book.

# Marine Electricians

## Education

A high school diploma or a GED

## Salary

\$58,990 a year

## Qualification

Should be able to install and take care of electrical equipment and systems on board ships and boats. Should also be able to handle emergency repairs on ships in port, in dry dock, and out at sea.





# SHIP INNOVATIONS & LEGO DIGITAL DESIGN



# Mark VI Patrol Boat



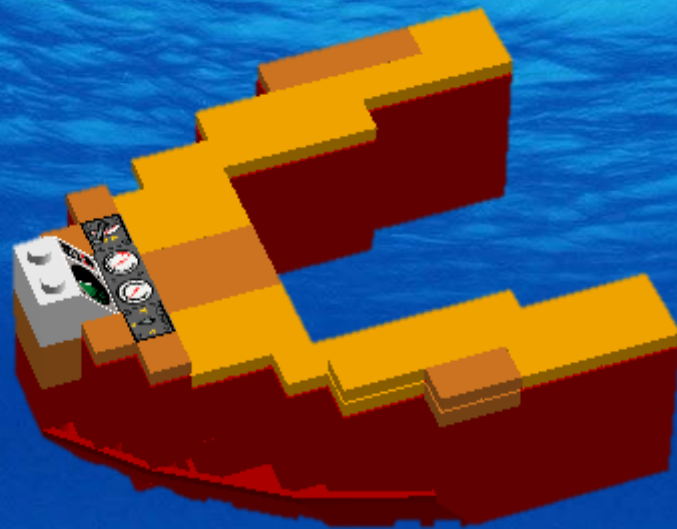
The Mark VI was made to become the Navy's next generation of Patrol Boats and to replace the smaller 68ft Mark V and 34ft Sea Ark. The Navy plans to have 48 Mark VI boats. They are big enough to hold up to ten crewmen and eight passengers. The boats were and still are being built in the Port of Tacoma, Washington. The first bundle of 37 boats were delivered to the Navy in August of 2014 and put into action in 2015. The rest of the 11 boats are scheduled to be built in March of 2018.



# MARK VI PATROL BOAT: LEGO DIGITAL DESIGN



WHY DO YOU NEED OUR  
INVENTION?





**HOW MANY PEOPLE HAVE FALLEN  
OVERBOARD, ESPECIALLY THE ONES  
THAT HAVE NEVER RETURNED?**

**IN 85% OF DROWNING DEATHS PEOPLE WERE NOT  
WEARING LIFE JACKETS.**

**“Last night, news broke that the 74-year-old passenger was missing, with the ship turning back to try to find her in the water.**

**The American coastguard sent out a plane and helicopter to scour 400 square miles of the ocean, but after finding no signs the search was halted with the guest presumed overboard.”**

**-24 Dec 2016**



## **Could this have been prevented?**

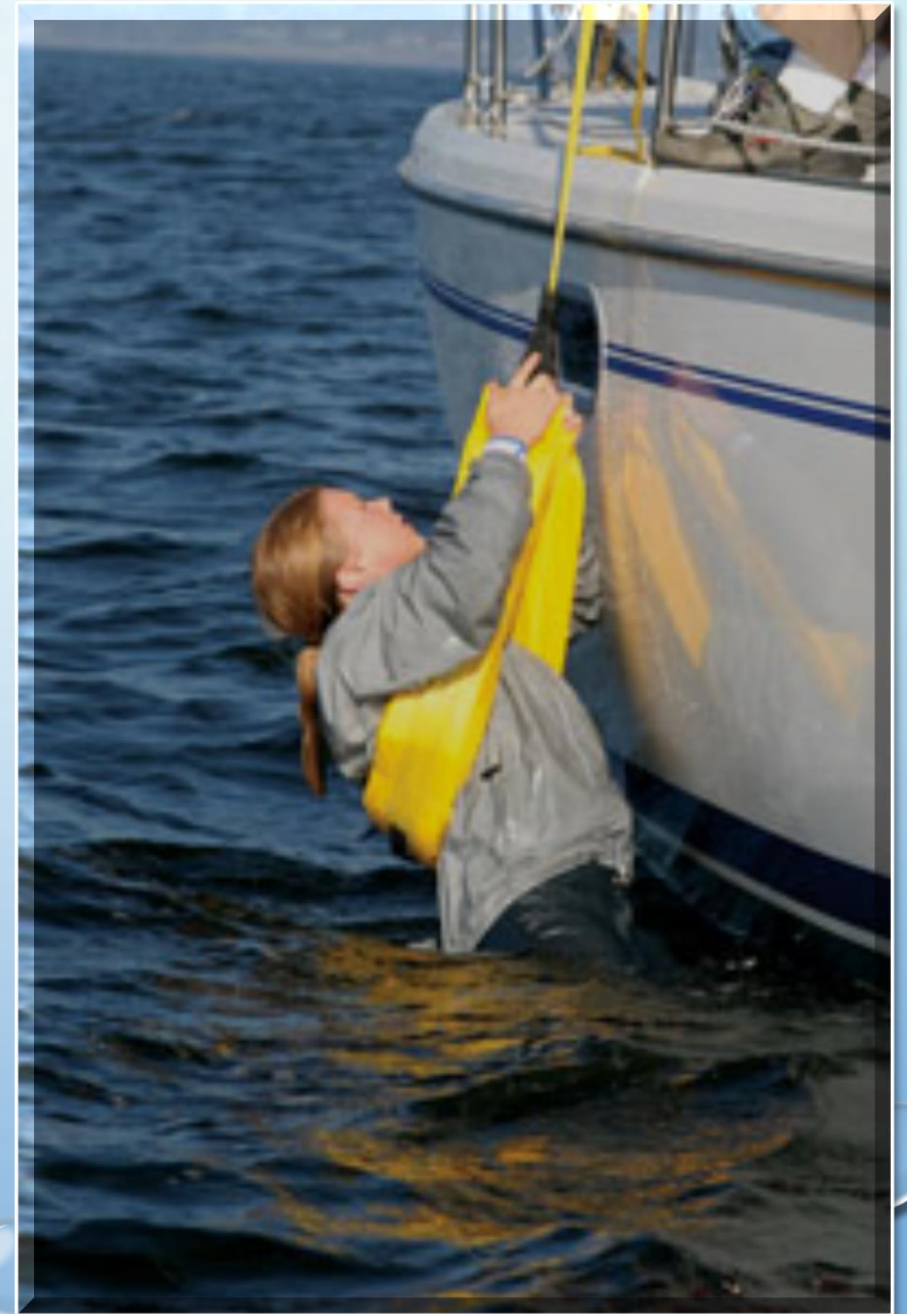


**“Surveillance video indicates she fell overboard from the 10th deck early Friday morning. The footage suggests she was sitting on a deck railing and fell backwards into the water, Carnival said.**

**Planes spent 20 hours searching for Bromberg in an area of more than 4,300 square miles before suspending search efforts on Sunday night.” -May 16, 2016**

## THE LIFE SLING

The Life Sling is the EARL's greatest competitor. There are over 100 documented cases of it being used. This manual device is used especially for hauling the soaked person back into the boat. It is efficient, yet uncomfortable. It isn't remote controlled. It can't fetch soaked people, It can only help you get someone out of the water and into the boat.



# EMILY: A HIGH-TECH LIFESAVING BUOY



**EMILY HAS A REMOTE TO CONTROL ITS DIRECTION AND SPEED. IT IS POWERED BY A JET PUMP, SO THERE'S NO PROPELLER TO HURT THE STRANDED PERSON. IT HAS A RECTANGLE SHAPE AND A HIGH-QUALITY CONSTRUCTION REINFORCED HULL. EMILY WILL SURVIVE ANY IMPACT WITH ROCKS, REEFS, ETC. EMILY STANDS FOR EMERGENCY INTEGRATED LIFESAVING LANYARD. IT WAS RELEASED ON MAY 5, 2016.**

## Specifications

- Length: 50"
- Beam: 15"
- Draft: 2"
- Displacement: 25 pounds
- Power: 1 kilo-watt
- Top Speed: 22mph





# NORAS PERFORMANCE: A U-SAFE BOAT

## THE U-SAFE BOAT:

- IS REMOTE CONTROLLED
- WAS DESIGNED FOR THE RESCUING OF SHIPWRECKS
- DEVELOPED IN COLLABORATION WITH THE PORTUGUESE NAVY
- IS STILL A PROTOTYPE AND HASN'T BEEN RELEASED





OUR INVENTION:

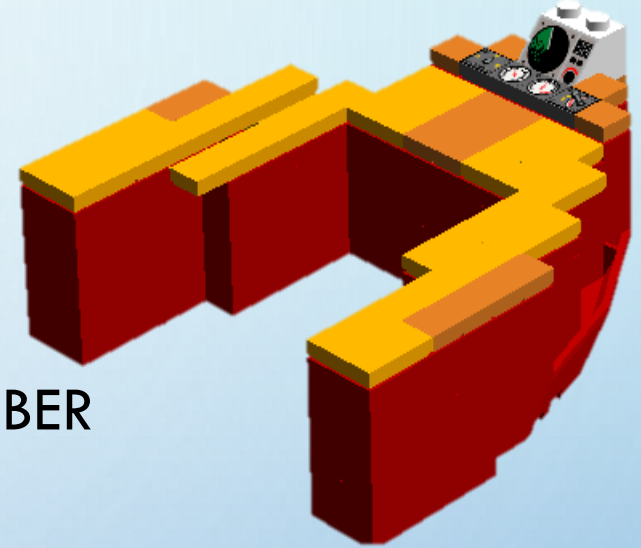
# Emergency Autonomous Robotic Lifesaver

## How it rescues:

All people on the ship will wear an H<sub>2</sub>O sensitive badge or clip. This clip has a GPS tracker and proximity sensor. When a passenger falls overboard and the clip is submerged, it will send a signal to the EARL. An alarm will sound, alerting everyone on the ship that someone is overboard. If the ship is on autopilot, it will automatically redirect to within 25 feet of the person. EARL will be deployed, travel to the person using the GPS tracker, and safely rescue them.

## OUR DESIGN:

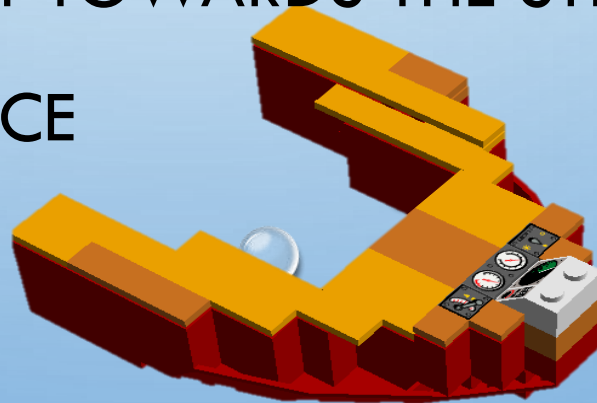
- IS HORSESHOE SHAPED
- HAS A GPS TRACKING DEVICE
- IS HIGHLY DURABLE
- IS AUTOMATIC
- HAS A KEVLAR (A SYNTHETIC FIBER WITH HIGH STRENGTH) REINFORCED BODY



# E.A.R.L. WRIST BAND



- THE WRIST BAND USES A PROXIMITY SENSOR
- IF YOU ARE 35 FEET AWAY FROM THE SHIP, IT WILL SOUND AN ALARM
- ONCE THE WRIST BAND GETS WET, IT WILL ACTIVATE THE LIFE BUOY AND REDIRECT THE SHIP'S AUTOPILOT TOWARDS THE STRANDED PERSON
- IT USES A G.P.S TRACKING DEVICE



# AUTOPILOT INTEGRATION

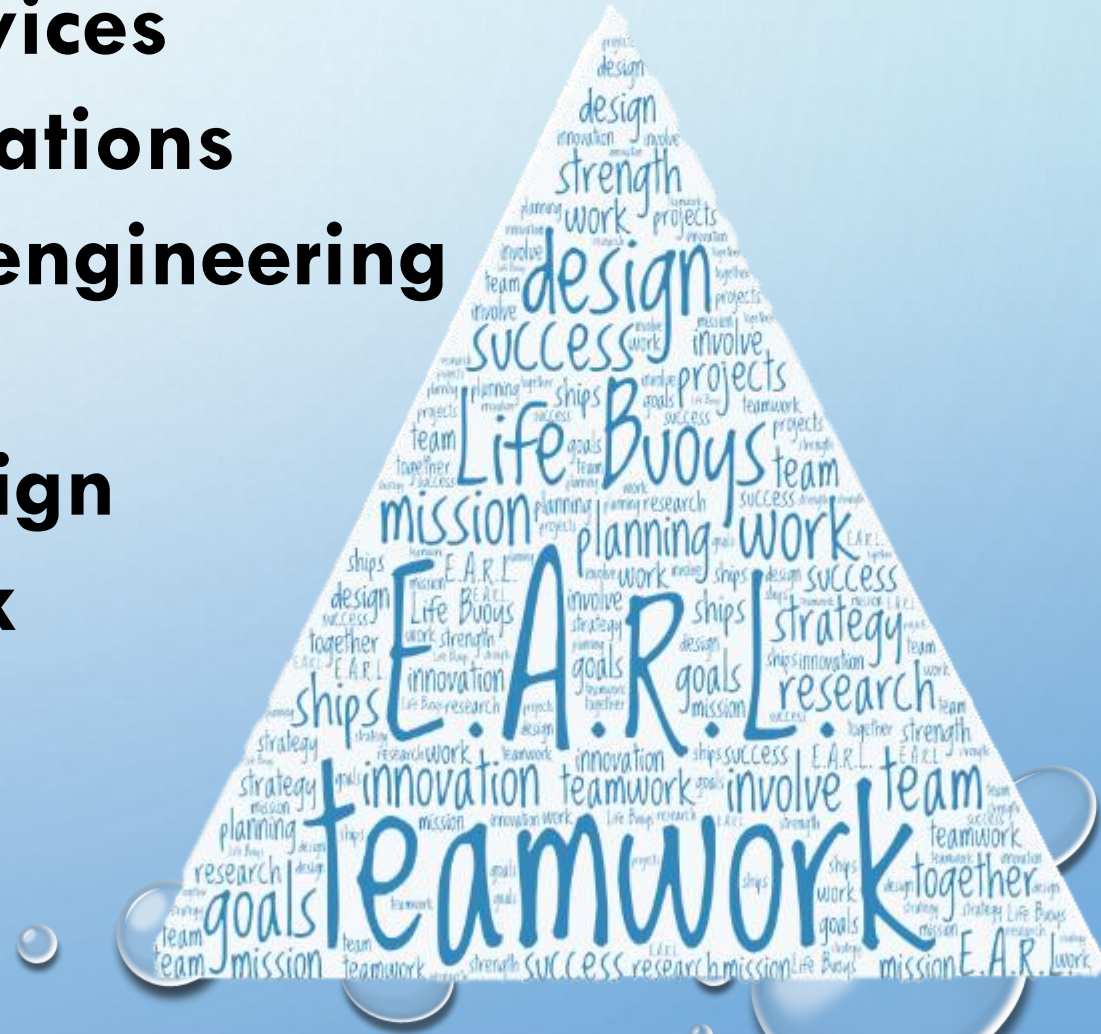
## \*OPTIONAL ACCESSORY FOR VESSEL\*

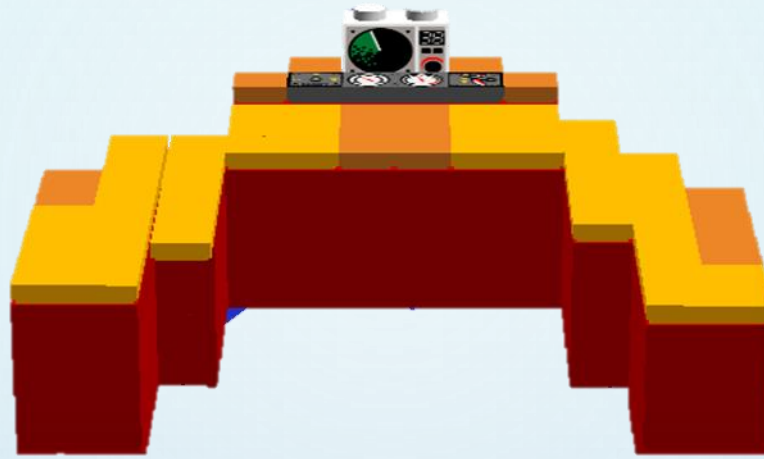
- THE AUTOPILOT IS A SYSTEM USED TO CONTROL THE TRAJECTORY OF A BOAT, SHIP, OR AIRCRAFT WITHOUT HANDS CONTROLLING IT.
- THE AUTOPILOT'S COMPUTER WILL RECEIVE A CONSTANT SIGNAL FROM E.A.R.L. WRISTBANDS.
  - WHEN WRISTBANDS GET WET AND ARE GREATER THAN 35 FT AWAY, AN EMERGENCY SIGNAL WILL BE SENT TO THE COMPUTER AND AN ALARM WILL SOUND.
- AUTOPILOT WILL REROUTE THE VESSEL TO COME WITHIN 25FT AWAY FROM THE OVERBOARD PASSENGER WHEN A WRISTBAND NOTIFIES IT THAT THE PASSENGER FELL OFF THE SHIP.



# Overall, We Learned . . .

1. The importance of floatation devices
2. Problems with floatation devices
3. New floatation device innovations
4. Shipbuilding engineers and engineering design
5. How to use Lego Digital Design
6. The importance of teamwork





**Let the Lifesavers save  
you!**

**OUR FLOATATION DEVICE IS WAY MORE THAN A  
BUOY; IT'S A LIFESAVER!**

# Citations

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