



2020 SeaPerch Challenge – Pool Event Rules

These rules may be modified for individual regional competitions so please check with your local regional coordinator.

1. General Pool Event Rules

- a. The ROV, Spare Parts, and Adjustments
 - i. The team must use the same ROV that was presented at compliance for both pool events.
 - ii. Each team must have their own ROV – teams are not allowed to share an ROV.
 - iii. Teams are not allowed to share ROV attachments or devices.
 - iv. Spare parts are allowed; however spare ROVs are not allowed.
 - v. The ROV may be worked on or adjusted during competition; however, the run timer will continue to time the run.
 - vi. Adjustments to buoyancy, including adding or removing buoyancy materials, may be made at any time including during competition runs, however the run timer will continue to time the run.
 - vii. Parts connected to the ROV may be adjusted between the two pool events. However, no parts or materials may be added or removed to the ROV after compliance checks are completed except for buoyancy material.
- b. Auxiliary Equipment, Batteries, and Power Supplies
 - Note: These rules are specific to the 2020 International SeaPerch Challenge. Teams should verify power requirements, allowable power sources, and set-ups with their local regional coordinator.
 - i. 12-volt direct current (VDC) power connections for the standard SeaPerch power cable alligator clips will be supplied for each competition lane. This power connection is for the ROV only, no auxiliary equipment may be connected to this power connection.
 - ii. Teams may provide their own battery for the ROV.
 - iii. Teams may provide an additional battery for auxiliary equipment such as cameras, advanced controllers, and electromechanical ROV attachments.
 - iv. Team supplied batteries must not be larger than 6.5" long x 3" wide x 4" high and must be 12 VDC with a maximum of 9 amp hour rating.
 - v. Teams may not bring anything to the pool deck that requires 110-volt power.



2020 SeaPerch Challenge – Pool Event Rules

- c. Diver Assistance and ROV Tether Handling
 - i. The ROV must move only under its own power. Teams will incur a 2-minute penalty if they pull or otherwise maneuver the ROV by the tether.
 - ii. If the ROV or tether becomes tangled on the course structure or is otherwise unable to move on its own power, a team member must notify the judge that they would like to try to free the ROV, or request diver assistance to free or retrieve the ROV. Under this circumstance teams may pull on the tether, however the run timer will continue, and a 2-minute penalty will be added to the elapsed time. If the ROV is pulled by the tether or moved by a diver, the ROV must be returned to the location that it was moved from before it may continue competing.
- d. On Deck
 - i. Only two student team members are allowed on the pool deck in the competition area during an event. No teachers, coaches, mentors, or others are allowed in the competition area unless prior arrangements have been made to accommodate special needs.
 - ii. The on-deck team members may switch drivers at any time and as many times as they choose.
 - iii. All team members must wear shoes with rubber soles while on the pool deck.
 - iv. Teams will be given a 2-minute setup period after arriving at the competition lane. During this setup period, teams should adjust the ROV's buoyancy and make any other necessary adjustments. The lane judges will start the run timer at the end of the setup period.



2. Obstacle Course Rules

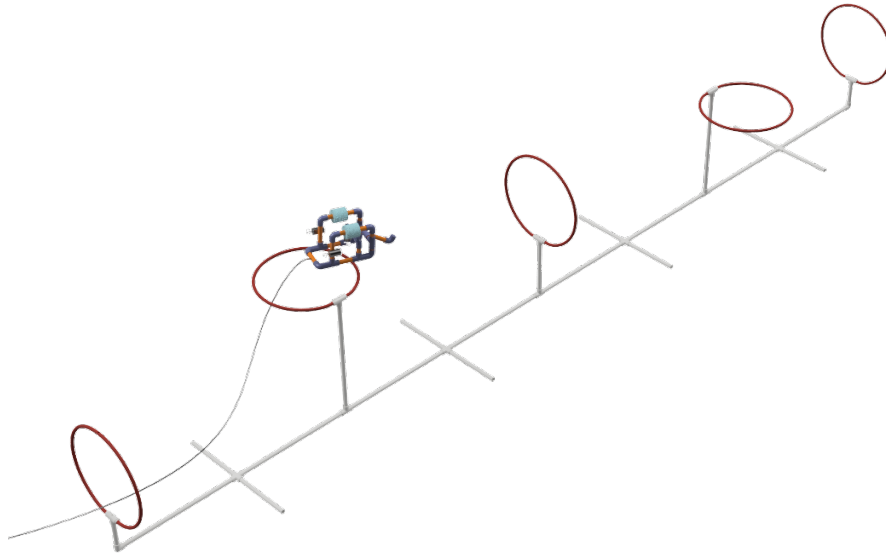


Figure 1 – Obstacle Course

- a. Teams will be given up to two run attempts during a 10-minute competition period.
- b. Teams may start their second run immediately after completing their first run but must wait for the judge to reset the stopwatch and give the start signal.
- c. Teams may abort their first run at any time without completing the course if they are experiencing problems and want to assure, they have enough time for a second run.
- d. **Course Navigation:**
 - i. *Start of run:* The ROV must be surfaced, within 6" of the wall, and under its own power. Team members are not allowed to touch the ROV after the lane judge starts the countdown to start the run.
 - ii. The ROV is required to pass through each of the five obstacle course hoops in order starting at the hoop closest to the pool wall. The ROV must surface after clearing the hoop furthest from the pool wall. Surfacing is considered complete when any part of the ROV breaks the water surface. The ROV must re-submerge and pass through each of the 5 hoops in order heading back to the pool wall.
 - iii. *End of Run:* The run is complete when the ROV touches the pool wall while surfaced (any part of the ROV breaks the water surface). The run will be aborted if the allotted 10 minutes expires even if the ROV has not completed the course.



3. Waterway Cleanup Mission Rules

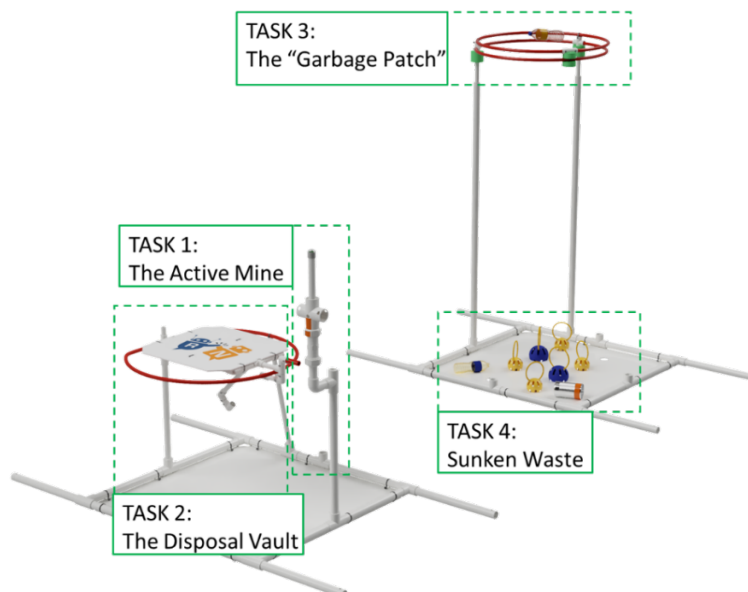


Figure 2 – Waterway Cleanup Mission Course

- a. Teams are allowed one 13-minute run for the Waterway Cleanup Mission.
- b. Only one object may be transported at a time by the ROV.
- c. **Course Navigation:**
 - i. *Start of run:* The ROV must be surfaced, within 6" of the wall, and under its own power. Team members are not allowed to touch the ROV after the lane judge starts the countdown to start the run.
 - ii. No tasks are mandatory in order to complete other tasks, and tasks may be completed in any order.
 - iii. *Mission Completion (End of Run):* The run is complete when the ROV touches the pool wall while surfaced (any part of the ROV breaks the water surface). The run will be aborted if the allotted 13 minutes expires even if the ROV has not completed all tasks.
 - iv. *Scoring:* Teams will only be awarded Finish Time Bonus points if all tasks within the course have been successfully completed.
 - v. *Suspended Course:* The course for the International SeaPerch Challenge will be suspended from the pool's lane dividers at a depth between 5 and 6 feet. Any object that falls to the pool floor is out-of-play. ROVs are not permitted to descend below the course platform to retrieve out-of-play objects.
 - vi. *Adjacent Lanes:* Teams are not allowed to maneuver the ROV into an adjacent lane for any purpose and will be penalized if they attempt to recover objects from an adjacent lane.



d. Task 1 – The Active Mine

- i. *Task Requirement:* The ROV must maneuver to the Active Mine and disarm it by either rotating or removing the Arming Device. When armed, the Active Mine's LED will be lit and the indicator stripes on the Active Mine and the Arming Device will be aligned. For regional competitions that are using a non-electronic Active Mine the indicator marks will be the sole indicator of the Active Mine's armed/disarmed state.

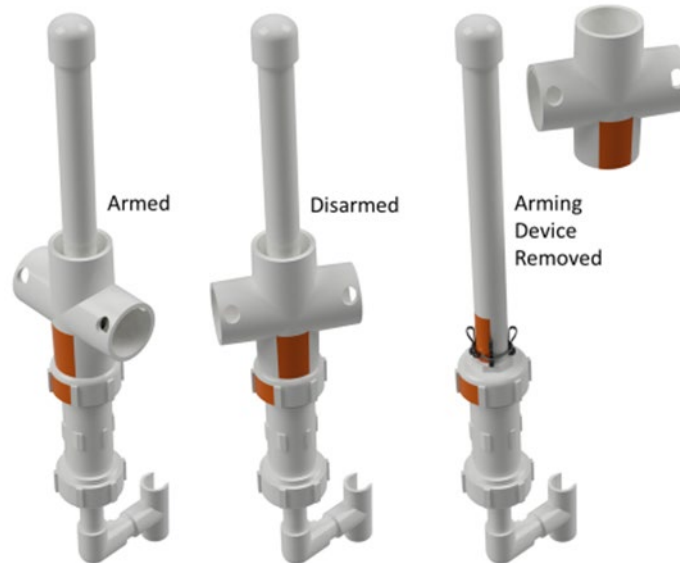


Figure 3 – Active Mine (non-electronic version) armed/disarmed states.

- ii. *Scoring:*
 - i. Rotating the Arming Device: The team will receive points for disarming the Active Mine.
 - ii. Removing the Arming Device: If a team successfully removes the Arming Device, they will be awarded points only if they deposit the Arming Device on the Disposal Platform's base plate.
- iii. *Other Notes:*
 - i. If the Active Mine is rearmed after disarmament (the LED is reactivated, or the indicator stripes are realigned) the team does not lose their points.

This diagram illustrates the Disposal Vault Gate Closing Arm mechanism. The main components are labeled as follows:

- Disposal Vault Gate:** The hinged lid of the disposal vault, shown in an open position.
- Disposal Vault Gate Latch:** A red component at the top of the gate's hinge assembly.
- Disposal Vault Gate Closing Arm:** A yellow arm with a hook at the end, positioned to close the gate.
- Active Mine with Arming Device Removed:** A blue cylindrical object with a yellow hook, positioned on the disposal platform.
- Disposal Vault:** The main rectangular container for disposal.
- Disposal Platform:** The flat surface inside the vault where items are placed.

- 
- THE
seaperch
CHALLENGE



f. Task 3 – The Garbage Patch

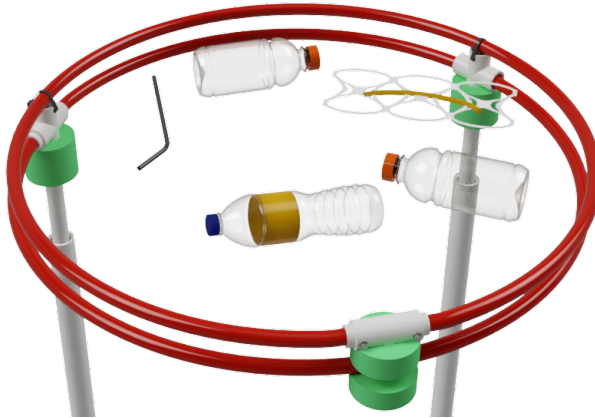


Figure 5 – The Garbage Patch

- i. **Task Requirement:** The ROV must retrieve items from the Garbage Patch Containment ring, transport the items to the pool deck where the team must retrieve the item and deposit it on the pool deck.
- ii. **Scoring:** Points are awarded for each item removed from the Garbage Patch and successfully retrieved onto the pool deck.
- i. **Other Notes:**
 - i. Teams will be given a net in the International SeaPerch Challenge and are not allowed to lean over the side of the pool to retrieve the items.
 - ii. The ROV must be within one (1) foot of the side of the pool before a team member can retrieve an item.
 - iii. The ROV may push or pull items over or under the containment ring. Canisters may be retrieved in any order but may only be retrieved and transported one at a time.



g. Task 4 – Sunken Waste



Figure 6 – Sunken Waste on Waste Platform

- i. *Task Requirement:* Retrieve sunken waste and mines from the Waste Platform and deposit the items on the Disposal Vault Platform.
- ii. *Scoring:* Points are awarded for objects deposited on the Disposal Vault Platform when the mission is complete (when ROV returns to the pool wall and the timer is stopped).
 - i. Points will not be awarded for objects that fall or are knocked off the Vault platform.
 - ii. Additional points are awarded for objects that are deposited into the Disposal Vault Hoop. The objects can be dropped into the hoop or the ROV can descend through the hoop and deposit the object on the platform base.