Stock and Open Class General Rules

Compliance Check

- Each ROV must be presented for a compliance check during check-in and approved prior to the team competing in any pool event.
- Violations to stated rules discovered after passing compliance check will require the team to correct the violation before.

Frame Materials

- Teams are allowed to use any safe material to construct the ROV frame.

Multiple ROVs and Spare Parts

- The same ROV that was presented for compliance check must be used for both pool events.
- Teams are not allowed to have backup or spare ROVs.
- Teams are allowed to bring spare parts and components without limitation.

Power Sources

- Teams will use a 12 volt direct current (VDC) power source during competition.
- 12 VDC power sources will be supplied for each competition lane that allows a connection using the standard SeaPerch controller alligator clips.
- Teams may provide their own battery, however the battery 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.
- Teams may not bring anything to the pool deck that requires 110 volt power.
- See class specific power source rules below.

Motors

- Teams may only utilize stock SeaPerch motors for propulsion (Jameco Electronics P/N 232022 or direct replacement 12 Volt DC Motor 740mA 9820 RPM).
- All motors must be waterproofed.

Electrical Connections

- All electrical connections on the ROV must be insulated (sealed) with non-conductive waterproof material.
- All exposed wiring or connectors on the controller must be insulated.

ROV Size Limitations

- The ROV must fit through the 18” nominal diameter hoops.
- No dimension shall be larger than 18”.

Buoyancy Adjustments

- Adjustments to buoyancy, including adding or removing buoyancy materials, may be made between pool events and during competition runs.

Parts Adjustments

- 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 with the exception of buoyancy material and the magnet/holder designed to be left on the Beacon (see 2019 SeaPerch Challenge Pool Event Rules for further clarification).

Stock Class (High School and Middle School Divisions)

Budget

- The actual value of any modifications to the final competition ROV must be $25 or less.
- All parts and materials that are not included in the standard SeaPerch ROV kit that the team brings to the competition lanes must be included in the budget, i.e. (but not limited to) the ROV and all parts connected to the ROV, a non-standard tether cable, a non-standard controller, and a power reducing resistor.
- Donated material will be assessed at the cost to procure the material from retail or verified sources.
- Spare parts and tools are not included in the budget.
- Materials used on earlier prototypes are not included in the budget.
- Proof of budget compliance must be made available to the compliance inspectors or lead competition judges upon request.
- 3D printed parts will be valued at $0.05 per gram.

Motors

- ROVs may only utilize three (3) thrusters. A thruster is defined as a propulsion device that moves the ROV in any direction.
- Additional non-stock motors may be utilized for actuation or other non-propulsion uses.

Controllers

- ROV propulsion (thruster) controls must use simple on/off switches only, no power conditioning or pulse-width modulation (PWM) controls are allowed in Stock Class. Use of a fixed or variable resistor to reduce voltage is acceptable. Use of microcontrollers such as Arduino or Raspberry Pi are not permitted in Stock Class.
- Non-propulsion controls may use power conditioning or pulse-width modulation (PWM) controls, and may use microcontrollers such as Arduino or Raspberry Pi as long as the entire system is within the $25 budget as described previously.

Open Class

Teams must register as Open Class if one or more of the following applies:

- The cost of the competition vehicle is more than $25 as described in the

Stock Class Budget section.

- The ROV includes more than three (3) thrusters. A thruster is defined as a propulsion device that moves the ROV in any direction.
- ROV propulsion (thruster) controls are not simple on/off switches and use power conditioning Teams use power conditioning or pulse-width modulation (PWM) thruster controls including Arduino, Raspberry Pi, or other microcontrollers.
- A separate power source is allowed to power auxiliary equipment such as cameras, however the additional power source must meet the criteria described in the Stock and Open Class General Rules Power Source section. No more than two (2) power sources are permitted.