

2020 GPSSC SeaPerch Competition Rules	Stock Class (Captain)	Open Class (Admiral)
VEHICLE BUDGET ¹		
The total cost of modifications to the final vehicle shall be \$25.00 or less.	X	
The cost of modifications to the final vehicle may exceed \$25.00.		X
Proof of budget compliance shall be provided to any judge upon request at any time during the competition.	X	
VEHICLE CONSTRUCTION AND MATERIALS		
The vehicle's primary structure shall be built using only PVC, CPVC, PEX pipe and fittings.	X	
The vehicle may include parts that are 3D printed or additive manufactured.	X	X
3D printed parts shall be costed out at \$0.05 per gram and count against the vehicle modification budget.	X	
The vehicle shall not be constructed using any parts containing glass.	X	X
The vehicle must fit through an 18" diameter hoop.	X	X
VEHICLE POWER SUPPLY		
The vehicle must be designed for, and utilize, a single 12-volt power source.	X	X
The vehicle may utilize a secondary power source to power non-propulsion auxiliary equipment. The secondary power supply shall not exceed 12 volts.		X
VEHICLE MOTORS AND PROPULSION ²		
The vehicle shall use stock SeaPerch motors (Jameco Electronics 232022) for propulsion. Alternative propulsion motors are not permitted and shall result in disqualification from competition. **	X	X
Alternative motors may be incorporated for non-propulsion use.	X	X
The vehicle shall include no more than 3 propulsors (i.e. motor-propeller assemblies).	X	
The vehicle may include more than 3 propulsors (i.e. motor-propeller assemblies).		X
All propulsor motors shall be waterproofed.	X	X
VEHICLE CONTROLLERS		
Vehicle controls shall only utilize simple on/off switches for propulsor control.	X	
Vehicle controls may utilize fixed or variable resistors to reduce voltage.	X	X
Vehicle controls may incorporate microcontrollers such (Arduino, Raspberry Pi, etc.) for propulsor control.		X
Vehicle controls may utilize power conditioning or pulse-width modulation (PWM) controls for propulsor control.		X
Vehicle controls may utilize PWM, microcontrollers, or other devices for non-propulsion control.	X	X
VEHICLE MODIFICATIONS		
The vehicle shall not be modified in any way after completing compliance except adding or removing weight specifically for the purposes of tuning buoyancy is permitted.	X	X
The same vehicle and vehicle configuration shall be used for both competition pool events.	X	X
POOL COMPETITION CONDUCT		
No more than two (2) team members shall be allowed on the pool deck during any competition round.	X	X
Nothing other than the vehicle shall be put into the water during a competition round.	X	X
All vehicle movement shall occur under its own power. A team member changing (or correcting) the position of a vehicle by pulling on the control tether shall result in disqualification from competition.	X	X
Teams may remove their vehicle at any time during a competition round to make balancing and tuning adjustments. The competition clock shall not stop during such adjustments.	X	X
Vehicle failures shall be reported by a team member to the Head Judge. Re-runs resulting from in-pool malfunctions can only be granted by the Head Judge.	X	X
Teams competing in the High School Division shall include at least one student in 9 th grade or above.	X	X
PRESENTATION CONDUCT		
SeaPerch presenters shall distribute a Corporate Brochure to judges prior to beginning their presentation.		X
SeaPerch presentations shall not exceed ten (10) minutes.	X	X
No more than eight team members shall be allowed to staff the presentation. All team members present shall be required to participate in the presentation and answer at least one question from a judge.	X	X
A maximum of one advisor may be present during the presentation.	X	X
Teams shall facilitate a five (5) minute question-and-answer period following the ten (10) minute presentation.	X	X
Using physical models or other display aids (physical or digital) is permitted.	X	X
Videotaping the presentation is permitted by one team member.	X	X

2020 GPSSC SeaPerch Competition Rules	Stock Class (Captain)	Open Class (Admiral)
TECHNICAL DESIGN REPORT		
The Technical Design Report shall be a product of the students' own efforts, ideas, and designs. Teachers, mentors, and others may advise students, but shall not create content for the notebook.	X	X
All tables and graphics such as computer-aided design (CAD) or other types of drawings, photos, and sketches must be the work of the students that are part of the SeaPerch team.	X	X
The Technical Design Report consists of seven (7) mandatory sections and two (2) mandatory appendices in the following order: 1. Abstract (1/2 page maximum) -- 2. Task Overview (1/2 page maximum) -- 3. Design Approach (2 page maximum) -- 4. Experimental Results (1 page maximum) -- 5. Reflection & Next Steps (1 page maximum) -- 6. Acknowledgements -- 7. References -- Appendix A: Budget -- Appendix B: Fact Sheet.	X	X
The Technical Design Report may include additional information not specified above as Appendix C. Appendix C is not mandatory.	X	X
The Technical Design Report mandatory sections shall not exceed five (5) pages.	X	X
There is no page limit for Technical Design Report Appendices.	X	X
The Technical Design Report shall be submitted on an 8 ½ " x 11" paper format only, single spaced with margins ≥ 0.8 in. There shall be a footer on every page including team name and page number.	X	X
The Technical Design Report shall be typed using Times New Roman 12 pt font.	X	X
Technical Design Report shall be submitted electronically in PDF format.	X	X
Design Notebook shall be submitted to seaperchnotebooks@gmail.com no later than 5:00 pm on 21 FEBRUARY 2020. Notebooks submitted after 5:00 pm on 21 FEBRUARY 2020 will not be reviewed or scored.	X	X
The maximum file size for the PDF file is 16 MB. Files larger than 16 MB will not be accepted.	X	X

¹ Budget Guidelines:

- Donated material shall be assessed at what the cost would be to procure the material.
- Spare parts and tools are not included in this budget.
- Only materials and supplies used on competition vehicles and controllers and are not part of the standard SeaPerch ROV kit shall be included in the craft budget summary.

² Motors and Propulsion

- Propulsors are defined as anything that directly exerts force against the water causing the ROV to move in any direction.

2020 GPSSC SeaGlide Competition Rules	Tier 1	Tier 2
BUDGET ¹		
The total cost of modifications to the final SeaGlide vehicle shall be \$50.00 or less.	X	
The total cost of modifications to the final SeaGlide vehicle shall be \$100.00 or less.		X
Proof of budget compliance shall be provided to any judge upon request at any time during the competition.	X	X
CONSTRUCTION AND MATERIALS		
The SeaGlide hull shall be built using the container provided in the SeaGlide kit.	X	X
The SeaGlide vehicle may include parts that are 3D printed or additive manufactured.	X	X
The SeaGlide vehicle shall not be constructed using any parts containing glass.	X	X
The SeaGlide must be tethered with 30 feet of lightweight string.	X	X
POWER SUPPLY		
The SeaGlide vehicle must be designed for, and utilize, a single 9-volt power source.	X	X
MOTORS AND PROPULSION ²		
The SeaGlide vehicle may not have a separate means of propulsion.	X	X
Any external servos for rudder control must be waterproofed.	X	X
CONTROLLERS		
The SeaGlide vehicle controls shall only utilize simple on/off switches and included SeaGlide IR remote	X	X
The SeaGlide vehicle shall operate fully autonomously once activated.	X	X
Vehicle controls shall only incorporate Arduino microcontrollers for ballast engine and rudder control	X	
VEHICLE MODIFICATIONS DURING COMPETITION		
The SeaGlide vehicle shall not be modified in any way after completing compliance except by adding or removing weight for the purposes of tuning buoyancy.	X	X
POOL COMPETITION RULES		
No more than two (2) team members shall be allowed on the pool deck during any competition round.	X	X
Nothing other than the vehicle and launching platform shall be put into the water during a competition round.	X	X
All SeaGlide vehicle movement shall occur under its own power. Guiding the position of a vehicle by pulling on the retrieval tether shall result in disqualification from competition.	X	X
Teams may retrieve and reset their SeaGlide vehicle at any time during a competition round. The competition clock shall not stop during such adjustments.	X	X
Vehicle failures shall be reported by a team member to the Head Judge. Re-runs resulting from in-pool malfunctions can only be granted by the Head Judge.	X	X
PRESENTATION RULES		
SeaGlide presentations shall not be less than six (6) minutes or more than eight (8) minutes in duration.	X	X
Teams shall facilitate a five (5) minute question-and-answer period following the presentation.	X	X
There is no limit on the number of team members allowed to participate in the SeaGlide Presentation.	X	X
Advisors and observing team members (i.e. team members not actively involved in presenting) may not contribute during the presentation or question-and-answer period.	X	X
Using physical models or other display aids (physical or digital) is permitted.	X	X
Videotaping the presentation is permitted by one team member.	X	X
COMMERCIAL RULES		
SeaGlide teams shall produce a commercial focusing on vehicle design and features.	X	X
The SeaGlide commercial shall not be less than sixty (60) seconds or more than ninety (90) seconds in length.	X	X

¹ Budget Guidelines:

- Donated material shall be assessed at what the cost would be to procure the material.
- Spare parts and tools are not included in this budget.
- Only materials and supplies used on competition vehicles and controllers and are not part of the standard SeaGlide kit

² Motors and Propulsion

- Propulsors are defined as anything that directly exerts force against the water causing the AUV to move in any direction.