Technical Design Report: Instructions

2024 SeaPerch Season   *www.seaperch.org*

These instructions apply to participation in the *required* Technical Design Report event at the 2024 International SeaPerch Challenge. Please check with your local regional competition coordinator for rules and required submissions related to that event which may differ from the International SeaPerch Challenge.

A Technical Design Report succinctly describes your unique SeaPerch ROV and the engineering design process, providing insight into the iterative design process and allowing for data analysis that supports the final ROV design.

This report is a *required, scored* component of the 2024 International SeaPerch Challenge and should describe the team's approach to designing its novel SeaPerch ROV designed for the **pool courses (obstacle course & mission course).**

PRO TIP: Teams are <u>highly encouraged</u> to start and keep an Engineering Notebook at the beginning of their SeaPerch build. Submitting an Engineering Notebook is not required for participation in the 2024 International SeaPerch Challenge but does form the basis for creating a well—written Technical Design Report. Need some help getting started? Visit https://seaperch.org/resources/design-process/ for some helpful resources.

Paper Contents

The Technical Design Report consists of seven mandatory sections. All reports must be limited to 5 pages (excluding *References* and *Acknowledgements*). Sections must appear in the order listed below.

Reports must be written in English, typed, and submitted in PDF format.

Please refer to the ***Scoring Rubric*** for more information about how each section of the Technical Design Report will be scored.

1. Abstract (1/2 page)
A well-written abstract should concisely explain the key points or essence of your paper and quickly explain to the reader what the paper is about.

2. Task Overview (1/2 page)
This section should include an overview of the task(s) your ROV will attempt and should discuss the characteristics and features of the tasks that affected the final design. Avoid directly quoting course descriptions or problem statements for real-world applications and instead use your own words to describe what your ROV will/would do within the application.

3. Design Approach (2 pages)
Given the tasks described in the previous section, describe your team's strategy and approach to developing a novel SeaPerch design. Novelty may occur at various levels of the design and build process including specific components, collections of components, or even team approaches to the process.

Focus attention on the creative aspects of your system and how your team conceived of, refined, and implemented these ideas. Describe your experience in making design decisions and how prospective ideas were considered among the team. Include engineering and scientific terms and concepts to demonstrate the team's understanding of the challenges of constructing and operating an underwater ROV.

4. Experimental Results (1 page)
This section should describe various tests accomplished in-water and/or in simulation. What were your results? How did these tests impact your team's subsequent design(s)? Include images, charts, and figures to demonstrate your results.

5. Reflection & Next Steps (1 page)
Reflect on this season's experience. What did you learn? Were there aspects of the project that you particularly enjoyed or that challenged you? How do you think that your new knowledge or experience will assist you in future endeavors? Include a discussion of next steps for the team and/or the team's ROV.

6. Acknowledgements (no page limit)
Participating in the competition involves identifying resources and support beyond the efforts of individual team members. This support can take many forms, such as technical advice, labor, equipment, facilities, and monetary contributions. Acknowledging those who have supported your efforts is important.

7. References (no page limit)
As with any technical publication, original ideas and content not generated by the paper's authors should be properly cited. While there are many citation styles, the American Psychological Association (APA) style guide should be used. Use in-text citations, where appropriate.