

2019 SeaGlide White Paper Guide

Due by 5:00 p.m. on: 2/21/2019

Submit to: SeaGlideNotebooks@gmail.com

General Notes:

1. It is expected that the paper submitted was written only by students and is original and unique for this competition year. Papers with substantial portions copied from previous years' submittals will have major point deductions applied.
2. When submitting your papers to SeaGlideNotebooks@gmail.com please put the school's name in the email subject line (i.e. "HSG-2019-XX SeaGlide White Paper Submission for John Paul Jones High School").
3. **File Name:** The file name for your school's paper should start with your school's SeaGlide School ID Number (SG##) and should follow this convention: HSG-2019-##-YOUR SCHOOL NAME-WhitePaper.pdf
NOTE: The file name must contain the official school name (matching how you submitted to the competition), not the team name.
4. **File Size:** Files should be limited to 3 MB.
5. **File Type:** Files should be submitted in Microsoft Word, Google Docs, or **Adobe PDF (preferred)** format.
6. Any teams that violate any of the above rules will have points deducted.

White Paper: 3 - 5 Pages

Develop this paper assuming that the readers are not aware of the specific details of the challenge, of the craft, and possible solutions to the problem.

- The White Paper should be written for the Tier 2 level of the competition. If you are competing at the Tier 2 level, then write about what was done for the competition. If you are competing at the Tier 1 level, then do some research about what would be required to compete at the Tier 2 level.
- 3-5 pages of technical content/text, not including Arduino Code.
- Drawings, graphs, photographs, calculations, and/or tables should be included. These do not count towards length of technical content/text.
- Students should address how they solved or would solve the Tier 2 Scenario if they had enough time and/or resources.
- Number all pages.

| White Paper Section | Max Pts | Details |
|--|---------|---|
| I. Front Matter | | |
| Cover Page | 1 | The title page should have the team and school name and some artwork. The title page should contain the following: Team Name, School, School District, Advisor Name and Contact Info, School ID # |
| II. Purpose | | (1 paragraph) |
| Clearly state the purpose. | 7 | Sentence 1: Describe the problem. Sentence 2: Describe the current SeaGlide's capabilities and limitations prior to modifications. Sentence 3: Describe how you're going to modify the SeaGlide to complete the Tier 2 scenario. |
| III. Background | | (2 - 3 paragraphs) |
| Provide background on the problem and various solutions to it. | 10 | Include references to scientific literature. Topic 1: Describe problems that exist with searching the ocean for a lost object. Topic 2: Describe other technologies used to solve these problems and their limitations. Topic 3: Describe the benefits and limitations of the SeaGlide. |
| IV. Solution | | (1 - 2 pages) |
| Describe the solutions that were or would be developed to solve the problem. | 25 | Identify what specific steps/actions were or would be completed to develop the Tier 2 design by discussing the topics below. Include references to scientific literature. This section should refer to the software solutions that were developed and are included in the SeaGlide Coding Appendix. Topic 1: State the solution that was or would be developed to solve the Tier 2 problem. Topic 2: Describe how the solution works. Topic 3: Describe how your solution solves the problem and/or improves the SeaGlide. |

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| Describe the engineering process and alternate designs. | 30 | <p>This section should describe the engineering process that was used to choose the final design. Describe how science and engineering concepts were applied to the design. Describe the impact they have on the SeaGlide's performance. Explain any research or experimentation that was completed or should be completed. Use of tables, graphs, drawings, and calculations are encouraged.</p> <p>Topic 1: Describe the formal engineering process used to develop the solutions. Discuss steps taken by the team to achieve the solution, such as brainstorming, testing, and research.</p> <p>Topic 2: Describe alternate designs that were considered and why the final design was chosen. Include topics like cost versus performance analysis (e.g. manual waterproofing vs purchasing a waterproof servo)</p> <p>Topic 3: Identify technical calculations or testing they took to achieve design priorities, such as buoyancy, glide cycle performance (e.g. period, frequency, amplitude) and material properties evaluations.</p> |
| V. Closing Remarks – Summary and Sales Pitch | | (2 - 3 paragraphs) |
| Summary of Innovations/ Sales Pitch | 15 | <p>Topic 1: Summarize the innovations that were developed to set your team apart from others. Reiterate how the solution resolves the problem, highlight any additional benefits/advantages, and make your case as to why the proposed design should be adopted.</p> <p>Topic 2: Describe how the team did and/or will recruit members and describe the qualifications and expertise of your team.</p> <p>Topic 3: Provide the cost of your final design.</p> |
| VI. References | | |
| List of References | 6 | References should be cited throughout the document and listed. Use the APA citation style. |
| VII. Content/Organization | | |
| Content/Organization | 6 | The white paper should include all required elements and have a professional appearance. This shall include section headings, page numbers, chart and figure titles with corresponding references in the text, appropriate use of references, and good organization. |
| VIII. Appendix A: SeaGlide Computer Code: Tier 2 | | |
| SeaGlide Computer Code | 0 | This section should contain the Arduino code that was developed for the SeaGlide. It should be clearly commented and indented. This should not include the basic buoyancy engine code provided to all teams. If modification to the basic code were made to improve performance; then add the specific sections with clear comments. |
| Total | 100 | |