### Overall Report

**Document Specifications**

- Document met requirements: length no more than 10 pages, inclusive of SID, safety checklist, and all appendices.
- Font size of at least 12 points, used Times New Roman, Arial, or Calibri font, all measurements were in SI units (except things traditionally specified in other units, e.g. PVC diameter).

**Use of Images and Data**

- Effective use of photos and sketches to capture the vehicle’s design features.

**Document Design**

- Photo of complete vehicle was included.

**Acknowledgements and References**

- Document provided a properly documented list of references - books, journals, web sites, etc. used as sources; documented contributions of companies, individuals who contributed funds, equipment, and/or technical/moral support.

**Project Management**

- Developed a schedule to aid in building the vehicle.

**Engineering Design Rationale**

- Described a logical, step-by-step planning and design process.

**Innovation**

- Innovation demonstrated in vehicle design, tools, or other features.

**Problem Solving**

- Described how the company brainstormed ideas and used information and data to evaluate them.

**Vehicle Systems**

- Described how components and materials were selected.

**Payload and Tools**

- Payload tools were designed to meet mission requirements.

**Teamwork**

- Included a description of the company (overview or company profile) and personnel (individual members and their roles and responsibilities).

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**Max Points:** 52  **Weight:** 40%

- Provided clear description and sensible rationale for design choices related to cost and size.
- Explained how the design evolved to meet the mission specifications.
- Explained the number and placement of thrusters.
- Description of buoyancy that demonstrates application of buoyancy principles.
- Explained build (in-house) vs. buy (outsource) decisions and how they related to mission requirements.
- Explained new vs. reused/inherited decisions and how reused components meet this year’s requirements.

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**Max Points:** 44  **Weight:** 15%

- Provided adequate acknowledgement of contributions of companies and individuals that contributed funds, equipment, and/or other support to the team.

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**Max Points:** 12  **Weight:** 10%

- Provided clear description and sensible rationale for design choices related to cost and size.
- Explained how the design evolved to meet the mission specifications.
- Explained the number and placement of thrusters.
- Description of buoyancy that demonstrates application of buoyancy principles.
- Explained build (in-house) vs. buy (outsource) decisions and how they related to mission requirements.
- Explained new vs. reused/inherited decisions and how reused components meet this year’s requirements.

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**Max Points:** 20  **Weight:** 10%

- Provided clear description and sensible rationale for design choices related to cost and size.
- Explained how the design evolved to meet the mission specifications.
- Explained the number and placement of thrusters.
- Description of buoyancy that demonstrates application of buoyancy principles.
- Explained build (in-house) vs. buy (outsource) decisions and how they related to mission requirements.
- Explained new vs. reused/inherited decisions and how reused components meet this year’s requirements.

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All 4 requirements met = 4 points
3 requirements met = 3 points
2 requirements met = 2 points
1 requirement met = 1 point
## System Integration Diagrams (SID)

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**Note:** Pre-competition safety inspectors will review and score in greater detail

### Safety

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**Content**

Described the safety rationale, including how it covers personnel, equipment, and operational safety.

Highlighted safety features and other vehicle-specific safety precautions related to tasks.

### Safety Procedures

Document included a checklist for construction and operation.

### Critical Analysis

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**Testing and Troubleshooting**

Described troubleshooting strategies and techniques used.

### Accounting

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**Budget**

Thorough and accurate description of budget planning and following [Cost provided in USD]

A clear distinction was made between items purchased, re-used, and donated.

All donations (items, services, and time) were acknowledged [Financial donations provided in USD]

### Discretionary Points

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Document described exceptional design of vehicle, sensors, instruments, software, tools or other features.

Other (explanation/example is required in comments)

### Deductions

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Evidence that the work was performed by coaches, mentors, parents, or other non-team members.

Significant overuse of commercial or reused components without adequate justification.

### Final Score

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<th>Max Points</th>
<th>50 + Discretionary &amp; Deductions</th>
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**SCORING RUBRIC - ALL QUESTIONS (Except Discretionary & Deductions)**

- **Missing:** Not included, can’t evaluate
- **Needs Work:** Effort made, meets some key requirements. Understanding or treatment of key requirements needs more depth. Judges had to question deeply to find answers.
- **Partially Meets Requirement:** Response demonstrates understanding and addresses most key requirements. Simple probing from judges encouraged team to answer.
- **Meets Requirement:** Response demonstrates thorough understanding and addresses all key requirements.
- **Exceeds Requirement:** Response extends beyond key requirements, demonstrating exceptional depth and breadth of understanding.

**SCORING RUBRIC - DISCRETIONARY POINTS**

- **Novelty, Depth of Understanding, Depth of Analysis, Effectiveness (functions as intended), Quality of Implementation**
  - None 0
  - Minor 1
  - Fair 2
  - Good 3
  - Extraordinary 4

**SCORING RUBRIC - DEDUCTIONS**

- **Extent to which team relied on outside help, existing work and/or purchased components and services**
  - None 0
  - Minor 1
  - Fair 2
  - Medium 3
  - Extreme 4

Last Modified: 3/12/2024

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