

**The International Hydrofoil Society (IHS)**  
**Mandles Prize for Hydrofoil Excellence – 2021**

**Competition Rules**  
**September 30th, 2020**



**BACKGROUND**

Mr. Martinn Mandles and his wife Connie have generously funded up to \$4,500 a year in IHS hydrofoil achievement awards for students commencing in 2014. A brief biography for Mr. Mandles is contained in **Appendix A**.

**I. COMPETITION PHILOSOPHY**

The principal objectives of the competition are:

- To promote hydrofoil engineering technology.
- To increase the participating students' understanding of and competence in ship and craft engineering and design.
- To stimulate interest in hydrofoils and hydrofoil-assisted ship and craft engineering, design and construction as a career choice.
- To foster scientific or public interest in hydrofoils.

Secondary objectives are:

- To recognize and reward outstanding student hydrofoil and hydrofoil-assisted ship and craft engineering, design and construction projects.
- To provide an opportunity for outstanding student hydrofoil projects to be presented to current students of ship engineering, design and construction and the broader membership of the profession.

The Selection Committee's judgment will be based solely on the material presented in the submitted entries; therefore, technical content is critically important. References cited are an important aspect of technical content and should reflect the best technical authorities and background information. The Selection Committee is primarily interested in evidence that students have achieved a good understanding of the engineering, design or construction process, as indicated by their approach, the validity and comprehensiveness of the work done, the critical design decisions made along the way and the rationale for those decisions, particularly decisions made based on trade-off studies performed.

The work presented in a student entry is the basis for the Committee's technical score. An entry that is well written, with clear figures, tables and drawings, is well-organized and complete will score high. Sections IV and V below provides guidelines on organization and contents. The entry must clearly address each item of the desired contents for it to be deemed complete and should be structured to make it easy for the Committee judges to find the desired items.

Some common deficiencies which should be avoided are:

- Some key topics are not addressed (or can't be found)
- Missing, illegible or poorly labeled figures and drawings
- No explanation of the approach/methodology used for an analysis
- No rationale presented for a critical technical decision
- No discussion of an important analytic result
- No discussion of critical technical issues that could invalidate the concept or design
- No discussion of a possible approach to solving a problem discovered

## **II. GENERAL**

1. Participants must be undergraduate or graduate students in an accredited college or university. They may compete as individuals **or teams of up to seven persons**. More than one project may be submitted from a school and an individual student may participate in more than one project. Guidance may come from faculty advisers or mentors but must be referenced and acknowledged. In order to open the competition to a wider spectrum of qualified entries, submissions based on work completed since 2016 will be eligible for the IHS Mandles Prize for Hydrofoil Excellence.

2. Projects that are developed in response to formal classroom requirements are eligible for the competition, as well as thesis projects or projects done independently of the curriculum. **The key aspect is that the entry must be on a topic that is focused on the application of hydrofoil technology.**

3. Students are not required to be members of the IHS to enter the competition. However, each person who enters, individually or as part of a team, will receive IHS membership and subscription to the IHS Newsletter.

**4. Students intending to enter the competition must submit a Competition Application Form (see page 7) by May 1, 2021. Receipt of this form enables the IHS to communicate with students if the need arises.**

5. Entries must be in English and in digital (PDF or MS Word) format. Each entry must include the names, signatures and email addresses of all students who participated. The faculty adviser's name, signature and email address must also accompany the entry with a statement certifying that the work was done by the students.

6. First Prize will be \$2500, with the award going directly to the student(s) submitting the winning project. A commemorative plaque will be presented to each winner and to their faculty adviser.

7. IHS will have the option to present up to two \$1000 Honorable Mention awards each year, with the award going directly to the student(s) submitting the winning project(s). A commemorative plaque will be presented to each winner and to their faculty adviser.

8. If an individual student or team decides to withdraw from the competition, the Selection Committee Chair (IHS Vice-President Mark Bebar) should be notified by email: [markbebar@juno.com](mailto:markbebar@juno.com)

9. The winner(s) of the competition will have the opportunity to present the winning project at a future meeting of the International Hydrofoil Society. Please note that travel expenses will not be covered by IHS.

### **III. SCHEDULE**

Significant contest dates are as follows:

Competition Application Form (see page 7): due on or before May 1, 2021

Entry (student report submission): due on or before June 30, 2021

Awards announced: on or before August 31, 2021

Awards presented: on or before September 30, 2021

**Competition Application Forms must be sent to Mark Bebar at: [markbebar@juno.com](mailto:markbebar@juno.com) and Ray Vellinga at: [IHSpresident2016@gmail.com](mailto:IHSpresident2016@gmail.com) on or before May 1st, 2021 and entries must be submitted by June 30, 2021. Submissions after that date will not be judged or considered for an award.**

#### **IV. ENTRY REQUIREMENTS**

The submitted entry should accomplish the following:

1. Demonstrate a thorough understanding of the technical objectives and demonstrate that specified requirements are met.
2. Describe the technical approach used to satisfy each of the objectives.
3. Present descriptions, sketches, system analyses and discussion of techniques used in sufficient detail to permit technical evaluation.
4. Besides the main body, all entries must include:
  - Cover Page with Title and contact information including: individual names or team member names, institutional affiliation, address, phone numbers, university website URL and email addresses. Email addresses especially are essential for all students and faculty advisers.
  - One-page Abstract including interesting and innovative features and aspects of the hydrofoil design, engineering or construction

“The required format, adopted from American Society of Naval Engineers (ASNE) Technical Paper Guidelines, is contained in **Appendix B** of these Rules. Use of these guidelines will facilitate the publication of winning entries in technical journals if that opportunity is offered.

**Note: Total page count, not including Cover Page and Abstract, shall not exceed 20 pages.**

5. Outline – The following general outline is recommended:
  - Title
  - Abstract
  - Introduction and Background
  - Methodology
  - Analysis and Discussion
  - Results (key findings, technical description of hydrofoil-related concept, subsystem development, craft design, or prototype construction)
  - Conclusions and Recommendations for future engineering, design or construction
  - References

## V. FACTORS FOR JUDGING

1. Technical Content (65 points)
  - Background, sources, references
  - Understanding of subject and material
  - Breadth and depth of analysis
  - Systems engineering approach
  - Valid theories and reasoning
  - Appropriate methods and their application
  - Appropriate use of figures and tables
  - Interpretation of results
  - Handling of uncertainties, risks, negative factors
  - Appropriateness and clarity of conclusions
2. Documentation (15 points)
  - Organization, headings, fonts
  - Completeness and clarity of writing
  - Grammar, spelling, punctuation
  - Well-executed figures and tables
3. Other Factors (20 points)
  - Degree to which the paper is directly about hydrofoils\*
  - Magnitude, complexity and difficulty of the project
  - Originality and innovativeness
  - Value to other or future technologists and designers

**\*This competition is about marine vessels utilizing hydrofoils to produce substantial lift relative to vessel displacement via dynamic forces and their subsystems and components that are specific to hydrofoil craft.**

**NOTE:** All entries are non-returnable. Decisions regarding finalists and winners are at the sole discretion of the Selection Committee and the International Hydrofoil Society (IHS). IHS retains the right to use any and all submitted work for press, publication and exhibit purposes. Copyright to the work is retained by the original author(s).

**Appendix C, Approval and Release for Publication, must be completed and signed and a scanned image included with all reports submitted in response to this competition.**

**Competition Application Form**  
**The International Hydrofoil Society**  
**2021 Mandles Prize for Hydrofoil Excellence**

Project Title: \_\_\_\_\_  
 \_\_\_\_\_

School: \_\_\_\_\_

<u>Name</u>		Graduation Date	Degree
<u>Individual or Team Member:</u> Name and email address:			
<u>Team Member:</u>			
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Team Member:			

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Name and Signature of Faculty Adviser

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Date

Adviser's email address: \_\_\_\_\_

Adviser's Telephone Number: \_\_\_\_\_

**[Note: The Faculty Adviser will be the contact person for follow-up queries or guidance, if necessary.]**

**Please complete and return signed form (scanned) by email not later than May 1, 2021 to Mark Bebar at: [markbebar@juno.com](mailto:markbebar@juno.com) and Ray Vellinga at [IHSpresident2016@gmail.com](mailto:IHSpresident2016@gmail.com)**



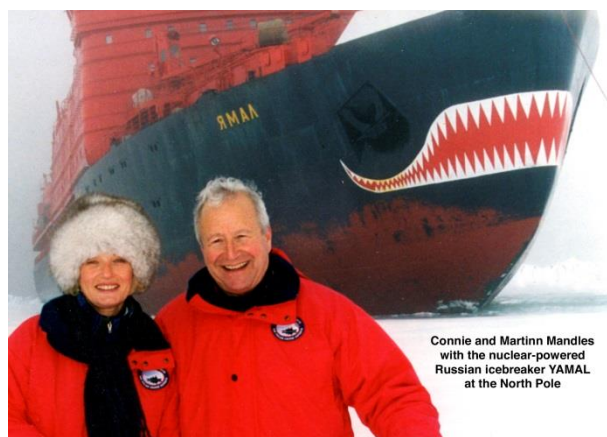
## APPENDIX A

### **Martinn Mandles - Biography**

Martinn Mandles started as a hydroplane racer in high school and became both an airplane and hydrofoil “pilot” before earning an engineering degree from Stanford University in 1964. As such, he was the first co-pilot of Boeing’s Aqua-Jet hydrofoil research hydroplane, and on the first flight crew of the Boeing built FRESH-1 high-speed research hydrofoil. Upon his return from Vietnam in 1967, Mr. Mandles became the Navy’s first captain of Boeing’s first hydrofoil gunboat, PGH 2, *USS Tucumcari*. After completing five years of military service in 1969, he commenced a 37-year career at ABM Industries (NYSE:ABM), where he was Chairman of the Board from 1997-2006.

An accomplished aviator and avid adventurer, Martinn was the first non-NASA American pilot to graduate from the Russian Cosmonaut Basic Training Program at Star City near Moscow, and has visited both the North and South Poles, as well as the North Face Base Camp of Mt. Everest in Tibet and countless other challenging destinations worldwide. Two of these adventures are illustrated here.

IHS member Martinn and his wife Connie reside in Los Angeles, where he now serves as an executor and trustee of several major trusts.



Connie and Martinn Mandles  
with the nuclear-powered  
Russian icebreaker YAMAL  
at the North Pole

## APPENDIX B

# LAYOUT OVERVIEW

## HEADER

### Author(s) Name(s):

- Times New Roman 12

### Paper Title:

- Times New Roman 18

## BODY LAYOUT

### Columns:

- It is preferred that authors use two columns, but one is acceptable.

### Font Type and Size:

- Subhead Text: Times New Roman Bold 14
- Body Text: Times New Roman 11

### Order of Content:

1. Abstract (Summarize principal points, between 200-300 words)
2. Introduction
3. Body Text and Figures\*
4. Conclusion
5. References/Bibliography
6. Acknowledgements (*Optional*):
  - List those who contributed to or facilitated the project addressed by the paper but were not listed as an author.
7. Author Bios
  - Include a short biography of each author who participated in the preparation of the paper. The principal author should be listed first.

\* – Figures, graphs and pictures should be included in the paper where applicable. Please use Arial 10 as the font for figure captions.

# SAMPLE LAYOUT

**Author(s) Name(s)** John Smith, P.E., Thomas H. Davis, Dr. Jennifer Boudreau  
Engineering Company XYZ and atSEA Engineering

**Paper Title** **Marine Engineering in the 21st Century:  
Tackling Issues and Creating Solutions to Today's Problems**

**ABSTRACT** **Abstract**

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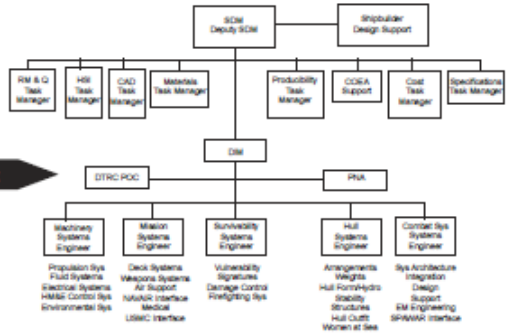


Figure 1: Description of Chart Above (2009)

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## CONCLUSION **Conclusion**

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**John Smith, P.E.**, is the Supervisory Marine Engineer for Engineering Company XYZ. In his role, he manages the Marine Engineering department and coordinates the research and development of new technologies. He received his bachelors degree in Marine Engineering at University College.

**Thomas H. Davis** is a marine systems engineer with Engineering Company XYZ. He has more than 20 years of experience in marine systems technologies and development and has lead multiple team projects under DoD supervision. He received his BME from the College of University in 1985.

**Dr. Jennifer Boudreau, Ph.D.**, is the Chief Marine Engineer for Innovation at atSEA Engineering, where she has more than 30 years experience. Dr. Boudreau is responsible for the research, development and production of new marine technologies. She holds three patents related to the field. She received her Ph.D. from College University.

**APPENDIX C**

**Approval for Release and Publication**

By signing this agreement, the author(s) certify that they have obtained all appropriate approval and clearance for public release which might be required to permit the work to be published. The authors agree to provide objective evidence of such review and approval if requested.

Please indicate acceptance of this agreement by completing the following form:

1. The submitted work is unclassified and all appropriate approvals and releases for publication have been obtained.
2. The work is original and has not previously been published and is not currently being considered for publication elsewhere. (Please indicate any exceptions.)

Project Title: \_\_\_\_\_

School: \_\_\_\_\_

Author(s) name(s), email addresses and signature(s):

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Date \_\_\_\_\_

Faculty Adviser email address and signature: \_\_\_\_\_

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\* If signed by only one of multiple authors, the signing author certifies that all authors understand and agree to the terms set forth in this agreement.

For questions about any aspect of this agreement, please contact Mark Bebar at:

[markbebar@juno.com](mailto:markbebar@juno.com) or Ray Vellinga at: [IHSpresident2016@gmail.com](mailto:IHSpresident2016@gmail.com)