



# 2012 Newport News Shipbuilding Apprentice School Boat Design Competition



Sponsored by:  
The Apprentice School Student Section of  
The Society of Naval Architects and Marine Engineers (SNAME)  
Newport News Shipbuilding  
The Mariners' Museum

# Overview

- Opportunity
- We provide:
  - Design Requirements Documentation
  - Calculations Package
  - Feedback for Student Questions
- Student Section Responsibilities
- Contact Information



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# Opportunity

- Expose high school students to ship design and construction



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# Opportunity

- NETWORK with shipbuilding management, The Apprentice School & Webb Institute students



**Webb Institute**  
An Exceptional College of Engineering



**(left to right): Vice President of Operations, Danny Hunley; Dr. Robert Leber; Chris Skiba; Competition Founder, Dr. Richard Boutwell; and Naval Architecture Manager, William Boze.**

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# Opportunity

- Actively participate in the growth of the competition and SNAME
- Visibility and recognition for your school, your student chapter, and YOU!
- Be part of a significant contribution to SNAME, your school, and the industry

Experience the reward of being part of something larger than yourself



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# Student Teams

- No limit to the number of teams per school



- A maximum team size of 6 students is recommended



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## We Provide the High School Teams:

- Design Guidelines Documentation
  - The Design Process
  - Design Judging
  - List of Materials
  - Competition Judging
  - Explanation of the Calculations Package
- Microsoft Excel Calculations Workbook
- Answers to Student Questions by Newport News Shipbuilding Naval Architects



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## We Provide the Student Sections:

- Review of the Judging Criteria at the SNAME National Conference
- Training on using the Judging Rubrics
- Training on the Judging Process



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# Section / Station Areas

*Note: You only need to fill in the Inner Edge offsets for each station if you have a catamaran design!!! On a monohull, they would all be zero and it wouldn't matter.*

**h =**  (ft) Distance between waterlines

**DWL =**  0.00

Outer Edge Station # 0			
Waterline #	HB <sub>o</sub> (ft)	SM	f(A) (ft)
1		1	0.00
2		4	0.00
3		2	0.00
4		4	0.00
5		2	0.00
6		4	0.00
7		1	0.00
Sf(A) =			0.00

Outer Edge Station # 1			
Waterline #	HB <sub>o</sub> (ft)	SM	f(A) (ft)
1		1	0.00
2		4	0.00
3		2	0.00
4		4	0.00
5		2	0.00
6		4	0.00
7		1	0.00
Sf(A) =			0.00

Outer Edge Station # 2			
Waterline #	HB <sub>o</sub> (ft)	SM	f(A) (ft)
1		1	0.00
2		4	0.00
3		2	0.00
4		4	0.00
5		2	0.00
6		4	0.00
7		1	0.00
Sf(A) =			0.00

Inner Edge Station # 0			
Waterline #	HB <sub>i</sub> (ft)	SM	f(A) (ft)
1		1	0.00
2		4	0.00
3		2	0.00
4		4	0.00
5		2	0.00
6		4	0.00
7		1	0.00
Sf(A) =			0.00

Inner Edge Station # 1			
Waterline #	HB <sub>i</sub> (ft)	SM	f(A) (ft)
1		1	0.00
2		4	0.00
3		2	0.00
4		4	0.00
5		2	0.00
6		4	0.00
7		1	0.00
Sf(A) =			0.00

Inner Edge Station # 2			
Waterline #	HB <sub>i</sub> (ft)	SM	f(A) (ft)
1		1	0.00
2		4	0.00
3		2	0.00
4		4	0.00
5		2	0.00
6		4	0.00
7		1	0.00
Sf(A) =			0.00

Area = 0.00 ft<sup>2</sup>

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# AWP, LCF & Stability

	Sf(A) = 0.00	Sf(AN) = 0.00	Sf(AN <sup>2</sup> ) = 0.00	Sf(HB <sub>i</sub> <sup>3</sup> ) = 0.00
Area <sub>WP</sub> =	0.00 ft <sup>2</sup>			
LCF =	0.00 ft from the bow (+ aft)			
I <sub>bow</sub> =	0.00 ft <sup>4</sup>	Moment of Inertia of the waterplane about the bow		
I <sub>LCF</sub> =	0.00 ft <sup>4</sup>	Moment of Inertia of the waterplane about the LCF		
I <sub>CL</sub> =	0.00 ft <sup>4</sup>	Moment of Inertia of the waterplane about the centerline		
Volume =	0.00 ft <sup>3</sup>	from VCB calc		
VCB = KB =	0.00 ft	from VCB calc		
LCB =	0.00 ft	from LCB calc		
Length =	0.00 ft	length of your vessel at the design waterline		
Weight =	0.00 lb	from your weight calculation		
VCG = KG =	0.00 ft	from your weight calculation		
LCG =	0.00 ft	from your weight calculation		
BM <sub>T</sub> =	0.00 ft			
GM <sub>T</sub> =	0.00 ft (should be positive, indicates positive stability)			
BM <sub>L</sub> =	0.00 ft			
GM <sub>L</sub> =	0.00 ft (should be positive, indicates positive stability)			
MT1" =	0.00 ft-lb/in (moment to trim 1")			
Trim =	0.00 in of trim	if the LCG is aft of the LCB, then the ship will trim by the stern (+ trim)		
		if the LCG is forward of the LCB, then the ship will trim by the bow (-trim)		



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# Competition Day

- See the End Product

## Competition Finalist



← 2010 Boat Competition Champions



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# Competition Day JOIN IN ON THE FUN!



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# Student Section Responsibilities

- Sponsor a local high school team
- Communicate with the high school and our competition team
- Foster a relationship between your student section, the community, and the other SNAME student sections
- Join our Team by JUDGING the Student Entrees



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# Contact Information

For More Information Visit:

- <http://www.sname.org/SNAME/DesignCompetition/>  
For full documentation, video, and competition information

## CONTACT:

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