**Announcement of Opportunity**

**A Unique NASA Opportunity to Design, Build, and**

**Launch High-Power Rockets in the Spring of 2013**

**Application Deadline:  31 October 2012  
Rocket Launch Competition (in Wisconsin):  April 27-28, 2013 (tentative)\***

**About the Program**

The Wisconsin Space Grant Consortium (WSGC) announces the 2012-2013 (Midwest) Regional Rocket Launch Competition. This competition is an opportunity for college and university students to design and construct high-power rockets to be launched at a competition in the spring of 2013 from Bong Recreational Area, south of Milwaukee, WI.

Up to fifteen teams from states around the Midwest will be selected to take part in this competition. This competition is open to student teams from Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio, and Wisconsin – the states in the Space Grant “Great (Lakes) Midwest Region.” To apply for inclusion in this competition, interested teams of approximately four students should contact their State Space Grant Consortium (see link below).

Teams are allowed to seek advice from industry, Tripoli, NAR, and others. “Engineering” teams will compete to design a one-stage, high-power rocket that will achieve an apogee of 3000 ft as accurately as possible. The competition will also include design analysis, oral presentation, and assessment of data results, scored by professional engineers from both academia and industry. Additionally, there will be a separate "non-engineering" competition.

\*Exact launch date should be confirmed in January after the State of WI DOT schedules dates for 2013.

**Purpose**

It is the purpose of this Announcement of Opportunity to support innovative, visionary projects that are student-led and are designed to fully realize Space Grant’s goal of assisting in training the next generation of aerospace professionals**.**

**Eligibility**

All student teams must be sponsored by their state’s Space Grant Consortium. Any non-U.S. citizen team members must bring that fact to the attention of their Space Grant, for possible alternative funding. Each team will be required to have a committed faculty mentor and are allowed to seek advice/mentorship from industry, Tripoli, NAR, and others. Graduate students are permitted to join a team but may not comprise the majority of the team members. Teams comprised of 50% or more engineering students must compete in the “engineering” category**.**

**No experience is necessary to compete. Teams will be given the basic training and information required at a kick-off meeting shortly after selection.**

**“Engineering Competition” Parameters\*\***

The objective of this year's competition is to design a one-stage, high-powered rocket that will accurately achieve an apogee of 3000 feet and be recovered safely and in flyable condition. An electronically deployed parachute recovery system, with a motor-ejection-based backup, is required. The winner of the flight portion of the competition will be the team whose rocket completes a successful flight and achieves an apogee nearest to 3000 feet. All structural components and materials must be obtained from reputable high-power rocketry vendors, or an engineering analysis demonstrating their suitability must be included with the design.  
  
**Equipment provided by WSGC:**

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| --- | --- |
| Rocket Motor | Teams will use a Cesaroni I540 motor |
| Rocket Size | No more than 4" in Diameter |
| Flight recorder | Teams will be required to carry, on their rocket, a compact altimeter/accelerometer to be supplied the day of the launch. (This is separate from the team's electronic deployment system and it will be inserted at time of launch to record acceleration & altitude vs. time. Dimensions and mass will be forthcoming.) |
| Rocket Limits | Max Body Tube Diameter: 4 Inches  Max Overall Length in Launch Configuration: 72 Inches  Max Weight in Launch Configuration (Less Motor): 7.5 lbs |

Additional details will be available in the competition handbook that will be made available after teams are selected.

Questions sent to Dan Hawk, Project Director, at [hawkd@uwgb.edu](mailto:hawkd@uwgb.edu) or the Wisconsin Space Grant Consortium at [wsgc@uwgb.edu](mailto:wsgc@uwgb.edu) will be answered on an individual basis and duplicate questions will be posted to a separate FAQ page.

Interested students with questions about the capabilities of the launch motors should access <http://www.thrustcurve.com>. Those seeking help in getting started are highly encouraged to contact Frank Nobile ([Maxq3@aol.com](mailto:Maxq3@aol.com)) or Bob Justus ([bob@mhbofni.com](mailto:bob@mhbofni.com)) of Tripoli Rocket Association (a high-power rocketry association) or a member of Tripoli or other rocket organization in your area. Students interested in gaining information or experience by observing rocket launches are encouraged to contact these individuals or to attend one of the regular rocket launches held by Tripoli at Bong Recreational Area (or in your area). More information and launch schedules can be accessed at [http://www.tripoliwisconsin.org](http://www.tripoliwisconsin.org/)**.**

**More specific engineering parameters will be addressed once the teams are selected.**

\*\*Should there be any change in the specifications of the rocket or motor(s) to be used, an amendment to this announcement will be released. However, the current heightened state of alert in the United States may require an adjustment in launch specifications at short notice. Teams are therefore encouraged to be flexible and adaptable.

**Competition Scoring**

**The total score for each student team will be based on the following:**

|  |  |
| --- | --- |
| Design report (due three weeks prior to launch) | 25% |
| Presentation of design report, safety inspection (on-site in Milwaukee) | 15% |
| Flight performance | 40% |
| Predicted vs. actual results from on-board accelerometer | 15% |
| Educational Outreach | 5% |

Design reports (including budget) will be judged by a panel of experts from aerospace and related fields (parameters of this report will be provided to participating teams upon selection). Students will also be required to give an oral presentation of their design report before the launch, including their predicted results for the accelerometer, and submit their rocket for a safety inspection. Determination of the score for flight performance will include the apogee nearest to 3000 feet. Subsequent to the flight, teams will be provided actual accelerometer results gathered in flight, for comparison to predicted results**.**

**The competition includes an “Educational Outreach” element, by which each team shares information pertinent to aerospace with a group. For purposes of the competition, this will simply be scored as "completed" or "not completed". Outreach possibilities could include, but are not limited to:**

* Meet with a K-12 class or student organization to explain how rockets work.
* Make a presentation in the community or to a group on campus to describe the rocket competition and your team’s design.
* Make a presentation to a group on campus describing opportunities at NASA or through their state’s Space Grant that are available to college students before they graduate.

**Details on how to document that the outreach requirement has been met will be available in the competition handbook.**

**Applying to the Program**

**Each state will have its own process for team selection. Please go to** [**http://www.nasa.gov/offices/education/programs/national/spacegrant/home/Space\_Grant\_Consortium\_Websites.html**](http://www.nasa.gov/offices/education/programs/national/spacegrant/home/Space_Grant_Consortium_Websites.html) **to learn how to contact your state’s Space Grant Consortium.**

Additional details are posted at <http://www.uwgb.edu/wsgc/regional.aspx>.

Questions about the competition may be directed first to Dan Hawk hawkd@uwgb.edu and second to:

Program Office

Wisconsin Space Grant Consortium  
University of Wisconsin – Green Bay  
Green Bay, WI 54311  
920-465-2108  
[wsgc@uwgb.edu](mailto:wsgc@uwgb.edu)