



2015-2016
ANNOUNCEMENT OF OPPORTUNITY
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FIRST NATIONS LAUNCH (FNL)

Informational Telecon:	January 11, 2016 @ 7:00 pm (Telecon #: 262.551.2124)
Notice of Intent to Compete Due:	January 18, 2016
Selection Announcement:	January 22, 2016
Kick-off Meeting:	January 26, 2016 @ 7:00 pm (Telecon #: 262.551.2124)
Preliminary Virtual Safety Review Meeting:	March 19, 2016 (TBC)
Final Virtual Inspection:	April 4-8, 2016
First Nations Launch Competition:	April 21-23, 2016 (TBC)

About the Program:

NASA's Wisconsin Space Grant Consortium (WSGC) is pleased to announce the 7th Annual First Nations Launch (FNL) National Rocket Competition. This competition is an opportunity for students attending a Tribal College or University, or who are members of a campus AISES chapter, to design, build, and fly a rocket to be launched at a competition at the Richard Bong State Recreational Area in Kansasville, WI.

Purpose:

The First Nations Launch competition offers Tribal Colleges and Universities, in addition to AISES chapter students, the opportunity to demonstrate engineering and design skills through direct application in high-powered rocketry. The competition requires teams of undergraduate students to conceive, design, fabricate, and compete with high-powered rockets. The restrictions on rocket motors and dimensions are limited so that knowledge, creativity, and imagination of the students are challenged. The end result is a unique aerospace experience for students that provides a great aerospace experience unique to Native American communities.

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

Team Awards:

Grand Prize Award:	\$3000 Team Travel Award w/invitation to Kennedy Space Center
2nd Place:	\$1000
3rd Place:	\$500
Aesthetic Award:	To be awarded at the FNL banquet to the team whose rocket has the most innovative and professional appearance.
Team Spirit Award:	To be awarded at the FNL banquet to the team chosen by their peers as the team that shows interactive spirit, helpfulness, and cooperation.
Team Advisor/Mentor Stipend:	\$1000

TRIBAL CHALLENGE

Rocket Design Objectives: The objective of the WSGC 2016 First Nations Launch **Tribal Challenge** is:

Student teams will launch a dual deployment high-powered rocket, carrying a **scientific payload** which will collect comparative data from an experiment of your choice throughout the flight from ground to apogee or whole flight duration (predicted vs. actual). All teams are expected to retrieve their rockets in “flyable” condition. The students must conduct all work on the rocket and payload. No outside assistance is permitted. While no professional assistance is permitted, we encourage consultation with local or regional rocket safety professionals on safety matters and rocket design.

Competition Engineering Parameters: Student teams will be required to design and fabricate a high-powered rocket using one reloadable CTI motor, no larger than a K, and capable of withstanding high velocities. The rocket must contain an experiment that is integrated into the rocket or the payload with all components descending under parachute creating a “Safe Flight Mission.” A successful “Safe Flight Mission” includes a launch, a successfully deployed recovery system, and all rocket sections recovered in flyable condition.

Experiments can include but are not limited to measurements of speed, velocity, temperature, wind speed, material response and behavior, etc. Data can be recorded through the use of electronic devices (i.e. altimeter, accelerometer, etc.). The data collected must show differences between ground level (at the launch pad) to the end of the flight. All data from experiments must be collected after the flight, analyzed on site, documented, and reported to the field coordinator as soon as possible after flight or before the closing of the range on launch day (i.e. measurements of atmospheric or environmental molecules, etc.). All data collected must be downloaded to a portable memory device (flash memory stick). Each team will present their estimated apogee before flight.

Teams must use an electronic device for the primary deployment at apogee followed by a back-up motor ejection charge. The rocket apogee must not exceed 3500 feet above ground level (AGL). Two (2) reloadable motors per team will be provided of your choice I-K impulse.

1. Each team must assemble, fly, and successfully recover a “low—power” rocket provided by WSGC. Pictures of the team at their launch site with the rocket, before and after their launch, must be posted to WSGC’s Facebook page prior to submitting the preliminary design report (PDR) and budget.
2. Due to unpredictable cloud cover, apogee must not exceed 3500 AGL.
3. All projects must have a minimum of two (2) scheduled virtual inspections with the designated safety officer during the construction process (see [FNL Calendar](#)).
4. All projects must be completely constructed (or *90%) and ready to fly two (2) weeks prior to launch date. *90% = Airframe, motor mount, fins, payload airframe, couplers, bulkheads, should be permanently attached as designed.
5. All projects must be designed to enable the motor deployment charge as a back-up recovery system at apogee.
6. Electronic altimeters are required for primary deployment events (apogee and main).
7. All final competition project designs must have a documented flight/stable simulation profile (i.e. RockSim, OpenRocket, etc.).
8. All projects must have an aero-dynamic design. No odd rockets. **NOTE:** Odd rockets include flying pyramids, saucers, flying spools, etc.
9. The “Center of Pressure” (CP) and the “Center of Gravity” (CG) must be indicated on the rocket.

AISES CHALLENGE

Rocket Design Objectives: The objective of the WSGC 2016 First Nations Launch **AISES Challenge** is:

Student teams will design and construct a high-powered rocket that will carry a payload capable of deploying a **self-constructing** “space station” or satellite during its descent. All teams are expected to retrieve their rockets in “flyable” condition. The students must conduct all work on the rocket and payload. No outside assistance is permitted. While no professional assistance is permitted, we encourage consultation with local or regional rocket safety professionals on safety matters and rocket design.

Competition Engineering Parameters: Student teams will be required to design and fabricate a high-powered rocket to withstand high velocities. The challenge is to create, articulate, or deploy your payload into the largest space station/satellite as possible after apogee. Utilizing the payload airframe itself or deploying your project from inside the payload section is acceptable. The space station/satellite must construct itself while descending and land safely under parachute. The space probe must reflect the features of a real space station/satellite.

The team rocket must achieve an altitude between 3,000 - 4,000 feet above ground level (AGL) using one reloadable CTI motor no larger than a K impulse. Team participants will be evaluated in part on the accuracy of their projected apogee target. All teams are expected to have a “Safe Flight Mission.” A successful “Safe Flight Mission” includes a launch, a successfully deployed recovery system, and all rocket sections recovered in flyable condition.

1. Each team must assemble, fly, and successfully recover a “low—power” rocket provided by WSGC. Pictures of the team at their launch site with the rocket, before and after their launch, must be posted to WSGC’s Facebook page prior to submitting the preliminary design report (PDR) and budget.
2. Two (2) reloadable motors per team will be provided of your choice I-K impulse.
3. Due to unpredictable cloud cover apogee must not exceed 4000’ AGL.
4. All projects must have a minimum of two (2) scheduled virtual inspections with the designated safety officer (TBA) during the construction process (see [FNL Calendar](#)).
5. All projects must be completely constructed (or *90%) and ready to fly two (2) weeks prior to launch date. *90% = Airframe, motor mount, fins, payload airframe, couplers, bulkheads, should be permanently attached as designed.
6. All projects must be designed to enable the motor deployment charge as a back-up recovery system at apogee.
7. Electronic altimeters are required for primary deployment events (apogee and main)
8. All final competition project designs must have a documented flight/stable simulation profile (i.e. RockSim, OpenRocket, etc.).
9. All projects must have an aero-dynamic design. No odd rockets. **NOTE:** Odd rockets include flying pyramids, saucers, flying spools, etc.
10. The “Center of Pressure” (CP) and the “Center of Gravity” (CG) must be indicated on the rocket.
11. Payloads must have an aero-dynamic design consistent with the rest of the rocket with minimal appendages at the launch pad.
12. The Space Station/Satellite Space Probe must be at least double in size (diameter or length) of the payload bay during descent under parachute recovery.
13. The Space Station/Satellite Space Probe construction event can be spring loaded, electronically servo controlled, compressed air, or with a series of ejection charges.
14. The Space Station/Satellite Space Probe must begin its main construction phase while it is descending during the primary parachute recovery.

Standing Competition Parameters for all Teams

Interested students with questions about the capabilities of the launch motors or seeking help in getting started are highly encouraged to contact **Frank Nobile** (Maxq3@aol.com), FNL Technical Advisor, or **Bob Justus** (bob@mhbfn.com) of Tripoli Rocketry Association (a high-powered rocketry association), a rocket association near them, or a representative at a local Tripoli Prefecture (<http://www.tripoli.org/Prefectures>). Students interested in

gaining information or experience by observing rocket launches are encouraged to contact the local Tripoli Prefecture, or to attend one of the regular rocket launches held within the team's local area.

Equipment/Reimbursable funds provided by WSGC:

Competition Rocket Motor	Two (2) reloadable motors per team will be provided of your choice I-K impulse. NOTE: Motor selection deadline is March 14, 2016.
Project/Travel Award	Reimbursed up to \$3,000*. Reimbursement requests will be submitted to National Space Grant Foundation. NOTE: Reimbursement deadline is June 1, 2016.
Low-Power Rocket	Each that participates in the Virtual Kick-Off Meeting will receive a low-power rocket for demonstration flight requirements.

**Due to funding availability, WSGC found it necessary to adjust the project/travel award to \$3,000 per team. This change is effective 1.7.16.*

Eligibility:

To qualify for the competition, individuals/teams must:

- be enrolled at a Tribal College/University or attending a university with an active AISES program
- have a committed faculty mentor
- select a team leader

Individuals/teams:

- should be comprised of approximately 4-6 students
- may seek advice/mentorship from Industry, Tripoli, NAR, and others
- can compete without experience (*Teams will be given the basic training and information required*)

To apply:

A faculty advisor must complete the following steps:

- Register as faculty on the WSGC website (<https://spacegrant.carthage.edu/about/login/>).
- Submit the "Create Rocket Launch Team (NOI)" Grant Application Form (<https://spacegrant.carthage.edu/forms/account/login/?next=/forms/application/first-nations-rocket-competition/>).
- If applying for both the Tribal and AISES Challenge, please indicate in the Rocket Launch Team NOI which competition is the school's preference. (*Eighteen teams will be selected to compete in the First Nation's Launch. WSGC will give priority to first-time participants. In the event, there are still team openings after each school is represented, WSGC will select the remaining participant slots from the applicants that submitted an NOI to both competitions.*)

Once the faculty advisor completes the Notice of Intent (NOI), identifies the team name, lists the student participants, and chooses which competition the team will compete in, each student will need to:

- Register as an undergraduate student on the WSGC website (<https://spacegrant.carthage.edu/about/login/>).
- Complete the First Nations Rocket Competition application (<https://spacegrant.carthage.edu/forms/account/login/?next=/forms/application/first-nations-rocket-competition/>).

The Notice of Intent and student applications must be submitted by January 18, 2016 to compete in the competition. Teams needing assistance securing a faculty advisor should contact WSGC. Teams are encouraged to seek advice from Industry, Tripoli, National Association of Rocketry (NAR), and your state's local Space Grant Consortium. Eighteen teams will be selected to compete in First Nation's Launch.

If you have question about the First Nations Launch Program, please contact:

Frank Nobile

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First Nations Launch Technical Advisor
E-mail: maxq3@aol.com

Wisconsin Space Grant Consortium

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Please follow us on   for Program Updates

Funded through National Space Grant Foundation Cooperative Agreement 2016 HESS-05

NASA Grant # NNX13E43A