

2020-2021



# ANNOUNCEMENT OF OPPORTUNITY

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## FIRST NATIONS LAUNCH (FNL) High-Power Rocket Competition APRIL 23-25, 2021

<b>Registration Opens:</b>	September 1, 2020
<b>Zoom Early Bird Informational Telecon:</b>	September 28, 2020 @ 4:00 pm CDT
<b>Early Bird Non-binding Notice of Intent to Compete Due:</b>	October 12, 2020
<b>Early Bird Request for Rocketry Workshop Due:</b>	October 12, 2020
<b>Visit FNL at the AISES Conference:</b>	October 15-17, 2020
<b>Zoom Informational Telecon:</b>	October 20, 2020 @ 4:00 pm CDT
<b>Non-binding Notice of Intent to Compete Due:</b>	October 26, 2020
<b>Request for Rocketry Workshop Due:</b>	October 26, 2020
<b>Selection Announcement:</b>	October 30, 2020
<b>Zoom Kick-off Meeting:</b>	November 3, 2020 @ 4:00 – 5:00 pm CST
<b>Award Acceptance Material Due:</b>	November 23, 2020
<b>Proposal, and Preliminary Budget Due:</b>	November 23, 2020

\* The material contained in this document is based upon work supported by a National Aeronautics and Space Administration (NASA) grant or cooperative agreement. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of NASA.

**Team Challenge Awards** *(based on availability of funds):*

- Grand Prize Award:** \$3000 w/invitation and travel stipend for a VIP Tour at a NASA Center
- 2nd Place:** \$2000
- 3rd Place:** \$1000
- Written Reports Award:** Certificate
- Oral Presentation Award:** Certificate

**Competition Awards** *(based on availability of funds):*

- Aesthetic Award:** Awarded to the team whose rocket has the most innovative and professional appearance.
- Team Spirit Award:** Awarded to the team chosen by their peers as the team that shows interactive spirit, helpfulness, and cooperation.
- Altitude Award:** Awarded to the team whose actual apogee is closest to the predicted apogee in the Flight Readiness Report.
- Judges Award:** Awarded to the team chosen by the judges as the team who met the goals of the program and exemplified hard work and determination.
- Nobile Award:** Awarded to the team chosen by Tripoli Rocketry Association who met all safety expectations by designing and building the competition rocket according to TRA standards and recommendations.
- Next Step Award:** Up to \$15000 Project/Team Travel Award w/invitation to Student Launch at Marshall Space Flight Center and/or RockOn! At Wallops Flight Facility
- Outreach Award:** \$500
- Patch Contest Award:** \$100

**Team Advisor/Mentor Stipend:** \$1000 *(\$500 for on-campus activities, \$500 for travel to the competition)*

**TRA Membership:** One-year Tripoli Rocketry Association Membership upon Level 1 Certification through First Nations Launch.

**Equipment/Reimbursable funds provided by WSGC:**

Competition Rocket Motor	Two (2) motors per team will be provided per the competition parameters. WSGC also provides ejection charges and a motor casing for competition flights. <b>NOTE: Motor selection deadline: March 1, 2021</b>
Project/Travel Award	Reimbursed up to \$4000. WSGC provides lodging in Kenosha, WI during the launch weekend. Each team receives up to three (3) hotel rooms per night for a maximum of three (3) nights at the hotel selected for the competition. WSGC provides the following meals: Friday breakfast and lunch, and Saturday lunch and dinner. <u>Teams are responsible for their own transportation to and from the competition locations.</u> <b>NOTE: Reimbursement deadlines are: March 05 and May 10, 2021</b>
Learning Resources	Each team that participates in the Virtual Kick-Off Meeting will receive a low-power rocket for demonstration flight requirements.  Each new school registered to compete will receive two reference resources: Model Rocket Design and Construction Third Edition and Modern High-Power Rocketry 2.  <i>Teams participating in the competition for the first time will be eligible to send three team members (advisor, team lead, and team member) to attend a Launch 2 Learn rocket workshop hosted by WSGC with all expenses paid. Returning teams may sponsor team members to attend the two-day workshop. Cost includes: 1) registration fee (\$200), and 2) travel expenses. Additional workshops will include a per diem for FNL (3) representatives.</i>

**About the Program:** NASA's Wisconsin Space Grant Consortium (WSGC) is pleased to announce the 12<sup>th</sup> Annual First Nations Launch (FNL) National Rocket Competition. This competition is an opportunity for students attending a Tribal College or University (TCU), a Native American-Serving Nontribal Institution (NASNTI), or who are members of an active American Indian Science and Engineering Society (AISES) collegiate chapter to design, build, and fly a high-powered rocket to be launched at a competition at the Richard Bong State Recreational Area in Kansasville, WI.



**Purpose:** The Wisconsin Space Grant Consortium First Nations Launch competition offers Tribal Colleges and Universities (TCU), Native American-Serving Nontribal Institution (NASNTI), as well as active American Indian Science and Engineering Society (AISES) collegiate chapters the opportunity to demonstrate engineering and design skills through direct application in high-power rocketry. The competition requires teams of undergraduate students to conceive, design, fabricate and compete with high-power rockets. FNL is a 'First Step' experience designed for students with no prior experience working with high-powered rockets. Rocket motors and dimensions are restricted by competition parameters so that knowledge, creativity and imagination of the students are challenged. The end result is a great aerospace learning experience unique to the 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.*



### **Moon Engineering Challenge**

Teams are required to design and construct a warning sensor system (flight recorder) mounted inside a high-power rocket. The rocket shall reach an apogee of 3,500-4,000 ft AGL, and the warning sensor system will be designed to record two flight events aboard the rocket during its ascent, including one nominal separation event and one airframe anomaly. Both events must be recorded on the flight recording system, and a video showing one event is required.



### **Mars Engineering Challenge**

Teams are required to design and construct two (2) trackable space debris objects stowed inside a high-power rocket. The rocket shall reach an apogee of 3,500-4,000 ft AGL and deploy the debris at drogue or main chute ejection. The debris will be designed to descend under its/their own recovery system and have a total weight not to exceed 32oz (907g). A telemetry system is required to demonstrate the debris can be tracked from the ground.

## First Nation Launch Project Deliverables

Deliverables required for successful participation are listed below:

1. Participation in the virtual Kick-off Meeting.
2. A reusable rocket with required payload system ready for competition launch.
3. A rocket simulation file of the 1) designed rocket at each design phase and 2) “as-built” competition rocket, due the day before competition launch.
4. An Estes rocket must be flown before PDR and a video of the flight uploaded prior to PDR. WSGC will provide the rocket. A launch pad will be provided by WSGC for new teams.
5. Reports (PDF format) and virtual presentations (PowerPoint format) completed and submitted to the WSGC FNL grant management team by the team lead on applicable due dates.
6. Participation in PDR and CDR virtual reviews (Zoom teleconference).
7. Participation in one (1) Virtual Technical Inspections with Tripoli Wisconsin (Zoom teleconference).
8. Flight (avionics) data must be turned in on competition launch day, via flash drive.
9. Provide 2-3 photos featuring the team designing, building and flying the competition rocket to be submitted to the WSGC Grant Management page.

Review the following competition requirements in the Competition Handbook:

1. General
2. Vehicle
3. Recovery System
4. Challenge
5. Safety
6. Proposal

**Application Requirements:** Team/Individual applicants who meet the following requirements can apply for this program by registering and applying online at [spacegrant.carthage.edu/about/login](https://spacegrant.carthage.edu/about/login).

To qualify for the competition, individuals/teams must:

- be enrolled at a Tribal College/University, a Native American-Serving Nontribal Institution (NASNTI), 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
- can compete without experience (*Teams will be given the basic training and information required*)
- shall seek advice/mentorship from Industry, Tripoli, NAR, and others

***\*Note from Tripoli:** Without exception, university teams must involve an experienced mentor, preferably a TAP or L3CC, during the design and construction phases of their rocketry projects if they expect to fly them at Tripoli events. The mentor must be certified at or above the level of motor the team wishes to fly AND experienced in the type of construction, propulsion, and recovery the team uses.*

*Although it is ultimately up to the judgment of the RSO and Launch Director, University teams who build a rocket that requires a motor higher than their member cert levels, and then as an afterthought contact a club hoping to fly (without ever involving an experienced mentor) should be told no.*

**To Register and Apply:** The faculty advisor must first register with WSGC before students/team members register. One exception to the order of registration exists. If the student team lead has never registered with WSGC, he/she must register before the advisor begins the Notice of Intent (NOI).

A faculty advisor must complete the following steps:

- **REGISTER** as faculty on the WSGC website (<https://spacegrant.carthage.edu/about/login/>). Applicants will be prompted to update personal information annually.
- Complete and submit the “Rocket Launch Team (Create NOI)” Grant **APPLICATION** form (<https://spacegrant.carthage.edu/forms/account/login/?next=/forms/application/first-nations-rocket-competition/>). The following information/documents will be submitted during this step:

- Individual W9
- Media Release
- Challenge selection: If applying for both the Moon and Mars Challenge, please indicate in the Rocket Launch Team NOI which competition is the school's preference. *(Up to twenty-four teams will be selected to compete in the First Nation's Launch. WSGC will give priority to early registrants and first-time participants).*
- Student team lead
- Co-Advisor (if applicable)

Once the faculty advisor completes the Notice of Intent (NOI), identifies the team name, lists the co-advisor (if applicable), team lead and student participants, and chooses which competition the team will compete in, each team member (including a co-advisor) will need to:

- **REGISTER** as an undergraduate student on the WSGC website (<https://spacegrant.carthage.edu/about/login/>). Applicants will be prompted to update personal information annually (if previously registered).
- Complete and submit the First Nations Rocket Competition **APPLICATION** form (<https://spacegrant.carthage.edu/forms/account/login/?next=/forms/application/first-nations-rocket-competition/>). The following information/documents will be submitted during this step:
  - Team Name submitted by the Faculty Advisor
  - Student Challenge (Moon or Mars)
  - Media Release
  - Individual W9 (Co-Advisor Only)

**Award Acceptance Components:** As part of the award acceptance, participants will submit the following documents on the WSGC application website under Program Applications/Your Applications:

**Advisor**

- Award Agreement Letter
- W9
- Media Release

**Team Lead**

- Award Agreement Letter
- Proposal and Preliminary Budget
- Media Release

**All Team Members**

- Media Release

**Please direct questions about the First Nations Launch program to:**

**Wisconsin Space Grant Consortium**

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