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.
Meet the Team

**Wisconsin Space Grant Consortium**
- Kevin Crosby, Director, kcrosby@carthage.edu
- Christine Bolz, Assistant Director cbolz@carthage.edu
- Rob Cannon, FNL Program Manager rcannon@carthage.edu
- Megan Goller, Accounts Assistant mgoller@carthage.edu
- Connie Engberg, Project Support Assistant cengberg@carthage.edu

**First Nations Launch Administrative Team**
- Frank Nobile, Technical Coordinator, Wisconsin Tripoli maxq3@aol.com
- Mark Abotossaway, Structures Engineer – Blue Origin mark.a.abotossaway@gmail.com
- Bob Justus, Illinois Tripoli bob@mhbofni.com

**NASA**
- Wendi Laurence, Activity Manager - Guardians of Honor
- Theresa Martinez, Kennedy Space Center
What is “First Nations Launch”?

- A competition offered to Tribal Colleges and Universities (TCU), Native American-Serving Nontribal Institutions (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.

- 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 great aerospace learning experience unique to the Native American communities.
NASA Artemis Student Challenge: First Nations Launch
Competition Weekend

April 26, 2024
- Carthage College in Kenosha, WI
  - Welcome Breakfast
  - Rocket Fair
  - Motor Build Workshop
  - Breakout Sessions
  - Final Safety Inspections
    - All: Rockets
    - Mars: Drones
  - Oral Presentations

April 27, 2024
- Launch Day at Richard Bong Recreational Area in Kansasville, WI
- Closing Banquet at Carthage College in Kenosha, WI

April 28, 2024
- Rain Date
2024 First Nations Launch Teams

- 24 NASA Sponsored Teams
  - *International Teams
- 4-6 members per team on average

Moon & Mars Challenges
- NOI Due
  - October 20, 2023
- Proposal and Preliminary Budget Due
  - December 11, 2023
- Kick-Off Meeting
  - November 1, 2023

Gateway Challenge
- NOI Due
  - December 18, 2023
- Proposal and Preliminary Budget Due
  - January 22, 2024
- Kick-Off Meeting
  - January 3, 2024
Launch 2 Learn (L2L): Introductory Rocket Workshop

In-Person @ Carthage College (max 15 participants)
- Recommended for Gateway Challenge/New Teams
- Up to three individuals maximum per school (one advisor, two students)
- Travel, lodging, and most meals are provided
- Workshop Materials provided:
  - Rocket kit, motor, and Tripoli Rocketry Association Level 1 Certification (pending successful certification launch)

Virtually (max 30 participants)
- Up to three individuals maximum per school (one advisor, two students)
- Rocket kit and supplies provided by FNL
- Motor and Tripoli Rocketry Association Level 1 Certification supplies at TRA Certification Launch

Submit a Notice of Intent to Compete: https://spacegrant.carthage.edu/about/login

REGISTER for the L2L Workshop:
https://spacegrant.carthage.edu/first-nations-launch/launch-2-learn-rocket-certification-workshop
Gateway Challenge

- Teams shall design and construct a dual deploy high-power rocket from the following list of kits:
  - Loc Precision “YANK Iris”
  - Loc Precision “EZI 65”
  - Loc Precision “Mystic Buzz”

- Teams may customize their kit with special add-ons provided by the manufacturer

- Pyro energetics of Jolly Logic altimeter shall be used for main deployment recovery

- There is no payload/challenge associated with this challenge, with focus being on the safe and complete selection, simulation, procurement, assembly/fabrication, and flight of the kit rocket.

- The flight shall be stable and reach an apogee between 2200’ - 2800’ AGL.
Gateway Challenge

- When ordering your kit, make sure to include the following components:
  - E-bay module
  - 38mm motor adapter
- Two motors have been preselected per kit
Moon Challenge

- Teams shall design, test, and fabricate a rocket that will air deploy a lander with a fabricated retractable payload chassis at apogee.
- The payload chassis must be equipped with a recovery device (streamer, parachute), camera, and GPS System/tracking device (RF, audible).
- The rocket flight shall be stable and reach an apogee of 2000’ AGL.
Teams are required to design, test, and fabricate a rocket that will air deploy a drone with a fabricated retractable air frame payload with size and weight limitations designed to deploy at apogee and return safely to the ground under control.

The drone payload must descend under drone parachute until it reaches 400’ AGL, wherein the drone parachute will release and a TRUST certified drone pilot will pilot the drone to a predetermined landing zone.

The rocket flight shall be stable and reach an apogee of 2500’ AGL.
Competition Summary

- Moon/Mars projects are judged on:
  - Written design reports
  - Virtual presentations (including launch weekend presentation)
  - Launch day flight/challenge performance

- These coincide with project milestones:
  - Proposal, PDR, CDR, FRR and PLAR

- Bonus points may be earned through outreach efforts

- An example of one item (among dozens of items scored on launch weekend) include:
  - Electronic payload bays are judged on neatness and simplicity at launch weekend
Supplied by WSGC to Teams

- Marketing/Recruitment Materials
  - Posters and Postcards
- Rocketry Workshop (Up to 3 members per team)
  - Level 1 Rocketry Workshop during October (in-person at Carthage College) and January (Virtual)
- Project Travel Award of $4000
  - Reimbursements issued through Carthage College
  - Additional travel funds for teams traveling from Mountain, Pacific, Hawaiian, or Alaska time zones
- Two (2) Rocketry Reference Books (New College/Universities)
  - Modern Rocket Design and Construction
  - Modern High Powered Rocketry 2
- Report Feedback
  - Teams will receive report feedback 1 week prior to next report
- Low-Powered Rocket for Demo Flight
  - Each team to fly low-powered demo flight
- Motors (1) and Casing at Competition
  - Competition motor and a motor build workshop during Competition Launch
- Ejection Charges at Competition
- Hotel Accommodations Launch Weekend
  - Max three (3) rooms for three (3) nights at select hotel
- Select Meals Launch Weekend
  - Friday: breakfast, lunch and heavy appetizers in the evening
  - Saturday: breakfast, lunch and dinner
## Scoring Breakdown for Moon/Mars Teams

<table>
<thead>
<tr>
<th>Event</th>
<th>Form(s)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competition Proposal</strong></td>
<td>Written Report</td>
<td>5 pts</td>
</tr>
<tr>
<td>Preliminary Design Review (PDR)</td>
<td>Written Report</td>
<td>15 pts</td>
</tr>
<tr>
<td>PDR Presentation w/ judges</td>
<td>Virtual Presentation</td>
<td>5 pts</td>
</tr>
<tr>
<td>Critical Design Review (CDR)</td>
<td>Written Report</td>
<td>15 pts</td>
</tr>
<tr>
<td>CDR Presentation w/ judges</td>
<td>Virtual Presentation</td>
<td>5 pts</td>
</tr>
<tr>
<td>Flight Readiness Review (FRR)</td>
<td>Written Report</td>
<td>15 pts</td>
</tr>
<tr>
<td>FRR Virtual Safety Inspection</td>
<td>Virtual Presentation</td>
<td>5 pts</td>
</tr>
<tr>
<td>Post-Launch Assessment Review Report (PLAR)</td>
<td>Written Report</td>
<td>10 pts</td>
</tr>
<tr>
<td>Launch Weekend Oral Flight Readiness Presentation</td>
<td>Oral Presentation</td>
<td>5 pts</td>
</tr>
<tr>
<td>Launch Weekend - Mission Performance</td>
<td></td>
<td>10 pts</td>
</tr>
<tr>
<td>Launch Weekend - Challenge</td>
<td></td>
<td>10 pts</td>
</tr>
<tr>
<td>Conduct an Education Outreach Project</td>
<td></td>
<td>BONUS</td>
</tr>
<tr>
<td>Submit Education/Public Outreach Form</td>
<td></td>
<td>Up to 10 pts</td>
</tr>
</tbody>
</table>

Submissions received after 11:59 pm Central on the due date will receive a deduction of 20% for each day they are late.
Design Reports Overview

Purpose:
- To communicate the engineering and design effort involved
- To perform analysis of predicted performance
- To compare actual to predicted performance
- To SHOW the design and construction (pictures, diagrams, etc.)

Reports are due when posted on website calendar:
- https://spacegrant.carthage.edu/first-nations-launch/calendar

Must use the Report / Presentation templates:
- https://spacegrant.carthage.edu/first-nations-launch/rubric/

There are 5 reports and 3 presentations for the year
2023-2024 FNL Calendar [https://spacegrant.carthage.edu/first-nations-launch/calendar/]

Sep 1, 2023  Announcement of Opportunity

Sep 12, 2023  Informational Meeting @ 4:00 pm CDT (Zoom)

Sep 25, 2023  Launch 2 Learn Registration
  (Level 1 Rocket Certification Workshop @ Carthage College Nov. 4-5, 2023)
  w/Non-Binding Notice of Intent (NOI) to Compete Due

Oct 10, 2023  Informational Meeting @ 4:00 pm CDT (Zoom)

Oct 20, 2023  Visit FNL at Booth #1538 during the AISES Conference [https://conference.aises.org/]

Oct 20, 2023  Non-binding Notice of Intent to Compete Due (Moon/Mars)
  Early Bird Non-binding Notice of Intent to Compete Due (Gateway)

Oct 27, 2023  Award Announcement (Moon/Mars/Gateway)

Oct 31, 2023  TRA/NAR Mentor Webinar @ 4:00 pm CDT (Zoom)

Nov 1, 2023  Kick-off Meeting @ 4:00 pm CDT (Zoom) (Moon/Mars)

Nov 4-5, 2023  Launch 2 Learn Level I Rocket Certification Workshop @ Carthage College (registration required)

Nov 7, 2023  Proposal, Budget, and Design Review Development Webinar @ 4:00 pm CST (Zoom) (Moon/Mars)

Nov 9, 2023  FNL Office Hours @ 1:00 - 3:00 pm CST (Zoom)

Nov 13, 2023  Award Acceptance Material Due (Moon/Mars)

Nov 14, 2023  Payloads Webinar @ 4:00 pm CST (Zoom)

Nov 21, 2023  Project Management Webinar @ 4:00 pm CST (Zoom)

Nov 28, 2023  Introduction to RockSim Webinar @ 4:00 pm CST (Zoom)

Nov 30, 2023  FNL Office Hours @ 1:00 - 3:00 pm CST (Zoom)
2023-2024 FNL Calendar [https://spacegrant.carthage.edu/first-nations-launch/calendar/]

Dec 11, 2023  Proposal Due (Moon/Mars)
            Preliminary Budget Due (Moon/Mars)
            Flysheet Due (Moon/Mars)
            RockSim Due (Moon/Mars)

Dec 12, 2023  Build & Assembly Techniques Webinar @ 4:00 pm CST (Zoom)

Dec 14, 2023  FNL Office Hours @ 1:00 - 3:00 pm CST (Zoom)

Dec 18, 2023  Notice of Intent to Compete Due (Gateway)
            Request for Virtual Rocketry Workshop Due

Dec 22, 2023  Award Announcement (Gateway)

Jan 3, 2024   Kick-off Meeting @ 4:00 pm CST (Zoom) (Gateway)

Jan 4, 2024   FNL Office Hours @ 1:00 - 3:00 pm CST (Zoom)

Jan 9, 2024   Gateway Project Management Webinar @ 4:00 pm CST (Zoom)

Jan 10, 2024  Launch 2 Learn Kit Reveal @ 4:00 pm CST (Zoom)

Jan 15, 2024  Award Acceptance Material Due (Gateway)

Jan 16, 2024  Avionics/Altimeters Webinar @ 4:00 pm CST (Zoom)

Jan 18, 2024  FNL Office Hours @ 1:00 - 3:00 pm

Jan 20-21, 2024 Launch 2 Learn Rocket Certification Virtual Workshop (Registration Required)

Jan 22, 2024  Preliminary Design Review (PDR) Report Due (Moon/Mars)
            Budget Due (Gateway)
            Flysheet Due (Gateway/Moon/Mars)
            RockSim Due* (Gateway/Moon/Mars)
            Flight Demo Due - Upload rocket demo flight video on Facebook and/or Twitter
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Jan 24, 2024</td>
<td>Recovery Webinar @ 4:00 pm CST (Zoom)</td>
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<tr>
<td>Jan 30-Feb 2, 2024</td>
<td>PDR Virtual Presentations (Zoom) (Gateway/Moon/Mars)</td>
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<tr>
<td>Feb 5, 2024</td>
<td>Final Requests Due to Change to Different Competition Challenge</td>
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<tr>
<td>Feb 19, 2024</td>
<td>Patch Design Due</td>
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<tr>
<td>Feb 20, 2024</td>
<td>Advisor/Mentor Meeting @ 4:00 pm CST (Zoom)</td>
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<tr>
<td>Feb 22, 2024</td>
<td>FNL Office Hours @ 1:00 - 3:00 pm CST (Zoom)</td>
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<tr>
<td>Feb 26, 2024</td>
<td>Critical Design Review (CDR) Report Due (Moon/Mars)</td>
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<td></td>
<td>Flysheet Due (Gateway/Moon/Mars)</td>
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<tr>
<td></td>
<td>RockSim Due (Gateway/Moon/Mars)</td>
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<tr>
<td></td>
<td>Final Motor Selection Due (Gateway/Moon/Mars)</td>
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<tr>
<td></td>
<td>Official Team Roster &amp; Lodging List Due (Gateway/Moon/Mars)</td>
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<td>Team Bio Due (Gateway/Moon/Mars)</td>
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<td>Team Photo Due (Gateway/Moon/Mars)</td>
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<td></td>
<td>All Team Member Registration on WSGC Website &amp; FNL Application Due (Gateway/Moon/Mars)</td>
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<tr>
<td>Feb 29, 2024</td>
<td>FNL Office Hours @ 1:00 - 3:00 pm CST (Zoom)</td>
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<tr>
<td>Mar 4, 2024</td>
<td>Reimbursements Due (First payout) (Gateway/Moon/Mars)</td>
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<tr>
<td>Mar 5-8, 2024</td>
<td>CDR Virtual Presentations/Initial Virtual Safety Inspection with WSGC (Zoom) (Gateway/Moon/Mars)</td>
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<tr>
<td>Mar 14, 2024</td>
<td>FNL Office Hours @ 1:00 - 3:00 pm CDT (Zoom)</td>
</tr>
<tr>
<td>Mar 26, 2024</td>
<td>Launch Operations Webinar @ 4:00 pm CDT (Zoom)</td>
</tr>
<tr>
<td>Mar 28, 2024</td>
<td>FNL Office Hours @ 1:00 - 3:00 pm CDT (Zoom)</td>
</tr>
</tbody>
</table>
2023-2024 FNL Calendar

Apr 1, 2024  Flight Readiness Review (FRR) Report Due* (Moon/Mars)
              Flysheet Due* (Gateway/Moon/Mars)
              RockSim Due* (Gateway/Moon/Mars)
              Educational Outreach Forms Due* (Gateway/Moon/Mars)

Apr 8-12, 2024 Final Virtual Safety Inspection with Tripoli Rocketry Association (Zoom) (Gateway/Moon/Mars)

Apr 11-14, 2024 Student Launch Initiative (Next Step Award 2023)

Apr 16, 2024  Advisor/Mentor Meeting @ 4:00 pm CDT (Zoom)

Apr 22, 2024  Oral Presentations PPT Due (Gateway/Moon/Mars)

Apr 25, 2024  Teams Arrive in Wisconsin

Apr 26, 2024  Welcome Breakfast/Competition Kick-off @ 8:00 am CDT - Carthage College, Kenosha, WI
              Activities planned to include: Team Workday, Motor Build Workshop, Breakout Sessions, Final Rocket Safety Inspections, Final Drone Safety Inspections (Mars only), Oral Presentations

Apr 27, 2024  Launch Day @ 7:30 am – 3:00 pm CDT – Richard Bong Recreational Park, Kansasville, WI
              Closing Banquet @ 6:30 pm CDT – Carthage College

Apr 28, 2024  Launch Rain Date

May 13, 2024  Final Reimbursements Due*
              Post Launch Assessment Review (PLAR) Report Due* (Gateway/Moon/Mars)
              2-3 Team Project Photos Due*

Jun 1, 2024  Notification of Winners

Jun TBD, 2024  RockOn! 2024 @ Wallops Flight Facility (Moon Next Step Award 2024)

Summer TBD, 2024  Grand Prize Trip to a NASA Center (Moon and Mars Challenge Grand Prize Winners)
Advisor Support

- **New Advisor Mentorship**
  - Can pair up new with veteran advisors

- **Team Outreach Efforts**
  - Can provide ideas and support for outreach activities

- **Team NAR/TRA Rocketry Mentor** (required)
  - Will assist in finding your local rocketry club/precinct

- **Next Step Opportunities**
  - NASA Student Launch
  - NASA RockOn!
  - Spaceport America Cup
Additional Resources

- **FNL Website**
  - [https://spacegrant.carthage.edu/fnl](https://spacegrant.carthage.edu/fnl)
  - Tools and Tips
  - Calendar
  - FAQ
  - Application Process
  - Report Template and Scoring Rubrics
  - Patch Contest
  - Competition Prizes
  - Awards
  - History

- **Instructional Videos/Webinars**
  - [https://spacegrant.carthage.edu/first-nations-launch/rocket-instructional-videoswebinars/](https://spacegrant.carthage.edu/first-nations-launch/rocket-instructional-videoswebinars/)
Any Questions?