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| 2018 First Nation Launch |
| First Nation Launch Competition Proposal |
| For Wisconsin Space Grant Consortium |

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| [School Name][Date] |

Please use this template as a guide to writing your team design reports. The headers (and bullets) outline the minimum information required. For continuity across teams, do not re-order the sections. You can however, add more information or sections when deemed necessary, or further detail is required.

There are some unique formatting features to this template. Please learn and utilize them. You may add to the formatting, but do not delete any existing formats.

Any [square] bracketed text is expected to be filled by your team. Bulleted text is expected to be deleted/replaced with your content.

Delete this text box prior to submission.

**Table of Contents**

[1 Team Information 2](#_Toc487478389)

[2 Facilities and Equipment 3](#_Toc487478390)

[3 Safety 4](#_Toc487478391)

[4 Technical Design 6](#_Toc487478392)

[5 Project Plan 7](#_Toc487478393)

# Team Information

School Name: [insert school]

Location: [insert school location]

Team Name: [insert team name]

NAR/TRA Mentor: [insert NAR/TRA mentor name]

School Advisor: [insert school advisor name]

Team Members [insert team member bio, include name, major, project role]

# Facilities and Equipment

* Description of school facilities and hours of accessibility, necessary personnel, equipment, and supplies that are required to design and build a high powered rocket and payload.
* Computer Equipment: Describe the type of computer equipment accessible to the team for communications, and document development to support design reviews. The team will provide the capability to communicate via email on a daily basis with the WSGC FNL team. The information technology identified could include computer hardware, computer-aided drafting (CAD) capability, internet access and email capability.
* The team shall provide additional computing equipment needed to perform WebEx video teleconferencing. Minimum requirements include:
	+ Windows, Mac, Linux, Unix, or Solaris computer systems.
	+ Broadband internet connection.
	+ Speakerphone capabilities in close proximity to the computer. (Cellular phones are not recommended for use as a speakerphone).
	+ USB Webcam or analog video camera.
	+ Personal name and contact information for WebEx/connectivity issues.
	+ Teams will not need to purchase their own WebEx seat.

# Safety

The Federal Aviation Administration (FAA) [www.faa.gov] has specific laws governing the use of airspace. A demonstration of the understanding and intent to abide by the applicable federal laws (especially as related to the use of airspace at the launch sites and the use of combustible/ flammable material), safety codes, guidelines, and procedures for building, testing, and flying large model rockets is crucial. The procedures and safety regulations of the NAR [http://www.nar.org/safety.html] should be used for flight design and operations. The NAR/TRA mentor and Safety Officer shall oversee launch operations and motor handling.

* Provide a written safety plan addressing the safety of the materials used, facilities involved, and person responsible, i.e., Safety Officer, for insuring that the plan is followed. A risk assessment should be done for all these aspects in addition to proposed mitigations. Identification of risks to the successful completion of the project should be included.
* Provide a description of the procedures for NAR/TRA personnel to perform. Ensure the following:
	+ Compliance with NAR high power safety code requirements [http://nar.org/NARhpsc.html].
	+ Performance of all hazardous materials handling and hazardous operations.
* Describe the plan for briefing students on hazard recognition and accident avoidance, and conducting pre-launch briefings.
* Describe methods to include necessary caution statements in plans, procedures and other working documents.
	+ For example: Control of all hazardous materials (applicable MSDS: Materials Safety Data Sheets (MSDS) for your project must be included in your proposal under safety plan).
* Each team shall provide a plan for complying with federal, state, and local laws regarding unmanned rocket launches and motor handling. Specifically, regarding the use of airspace, Federal Aviation Regulations 14 CFR, Subchapter F, Part 101, Subpart C; the handling and use of low-explosives (Ammonium Perchlorate Rocket Motors, APCP), Code of Federal Regulation 27 Part 55: Commerce in Explosives; and fire prevention, NFPA 1127 “Code for High Power Rocket Motors.”
* Each school team shall provide a plan to possess the capability to purchase, store, transport, and use rocket motors.
* A written statement that all team members understand and will abide by the following safety regulations:
	+ Range safety inspections of each rocket before it is flown. Each team shall comply with the determination of the safety inspection.
	+ The Range Safety Officer (RSO) has the final say on all rocket safety issues. Therefore, the RSO has the right to deny the launch of any rocket for any reason.
	+ Any team that does not comply with the safety requirements will not be allowed to launch their rocket.

# Technical Design

* A proposed and detailed approach to rocket and payload design.
	+ Include general vehicle dimensions, material selection and justification, and construction methods.
	+ Include projected recovery system design.
	+ Include projected motor type and size.
	+ Include projected science or engineering payload with hypothesis and/or stated goal for said payload. Include justification as to how the payload is appropriate for the level of students involved in the project. For returning teams, a similar payload can be proposed if the team is mostly new students who were not involved in the previous year’s work, but this needs to be shown. Otherwise, the team of returning students must propose a payload appropriate to a second or multiple years of expertise. An improvement of a previous year’s payload may be awarded, but justification must be given as to how the updated payload has technically evolved and matured. Keep in mind that veteran teams get no preference in the evaluation. All proposals must have the required level of detail and teams must not assume that review panel members remember what had been accomplished during the previous year. Repeat projects are discouraged.
	+ Address the requirements for the vehicle, recovery system, and payload.
	+ Address major technical challenges and solutions

# Project Plan

* Provide a detailed development schedule/timeline covering all aspects necessary to successfully complete the project.
* Provide a detailed budget plan to cover all aspects necessary to successfully complete the project.
* Provide a detailed funding plan.
* Provide a written plan for soliciting additional “community support,” which could include, but is not limited to, expertise needed, additional equipment/supplies, monetary donations, services (such as free shipping for launch vehicle components, if required, advertisement of the event, etc.), or partnering with industry or other public, private, or parochial schools.
* Address major programmatic challenges and solutions.
* Develop a clear plan for sustainability of the rocket project in the local area. This plan should include how to provide and maintain established partnerships and regularly engage successive classes of students in rocketry. It should also include partners (industry/community), recruitment of students, funding sustainability, and educational engagement.