



# University of North Dakota Advanced Rocketry Club

NASA Student Launch Initiative and

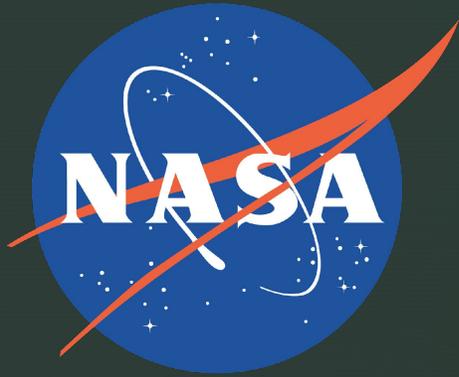
Minnesota Space Grant Midwest Rocketry Competition



# Who we are

- We are a UND Student Organization that designs, builds, and tests high powered rockets for competitions like NASA Student Launch and the Minnesota Space Grant Midwest Rocketry Competition.
- Our members range in different, from mechanical engineering to physics, and levels of study, with several graduate students a part of the team.
- We use the engineering design process to create our high-powered rockets and focus on educating our newer members.





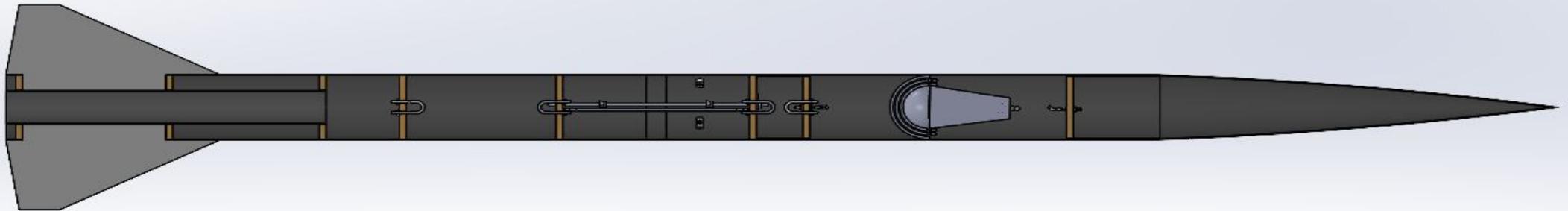
# NASA Student Launch

- Every year NASA hosts an annual Student Launch for collegiate teams across the country.
- This competition requires for the team to come up with a design for a rocket that is capable of traveling 1 mile and carrying a payload.
- The payload design changes year to year, each requiring a different “mission” to be completed by the payload.
- The team is expected to produce several reports throughout the year: a proposal, preliminary design review, critical design review, flight readiness review, and post launch assessment review. The PDR, CDR, and FRR require a presentation to a NASA panel to defend our design choices.
- This year’s payload mission is to have a payload capable of tracking the rocket post-launch without using GPS.



## NASA SL Rocket

- 6 in diameter high-powered rocket
- Approximately 9 ft long
- 6,000 ft altitude
- Approximately 40lbs







# NASA SL Payload

- Capable of self-righting, with gyroscopes
- Uses radio emitters to triangulate the rocket position

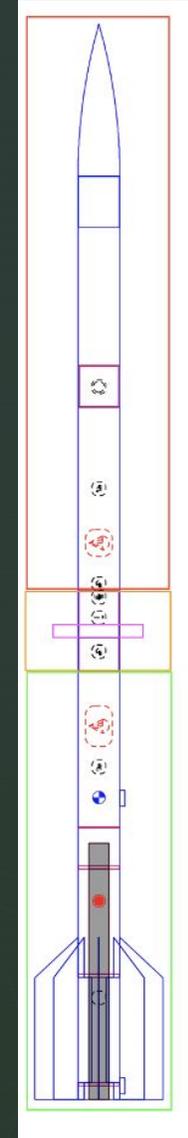
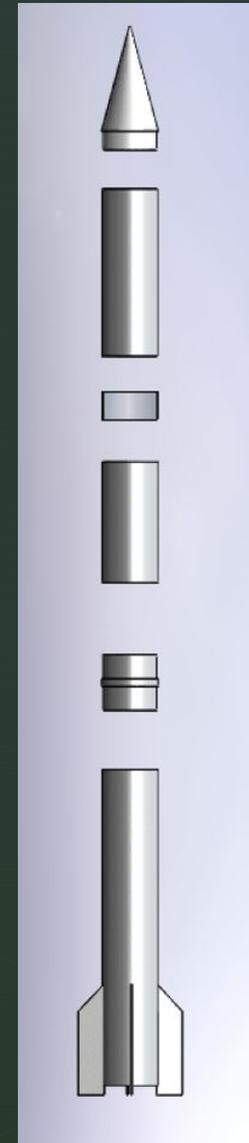
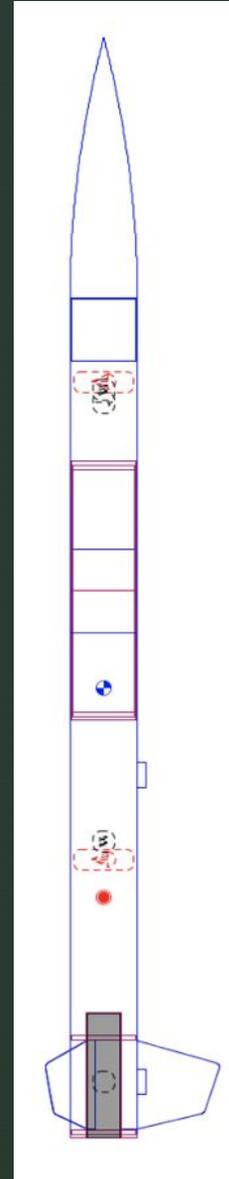
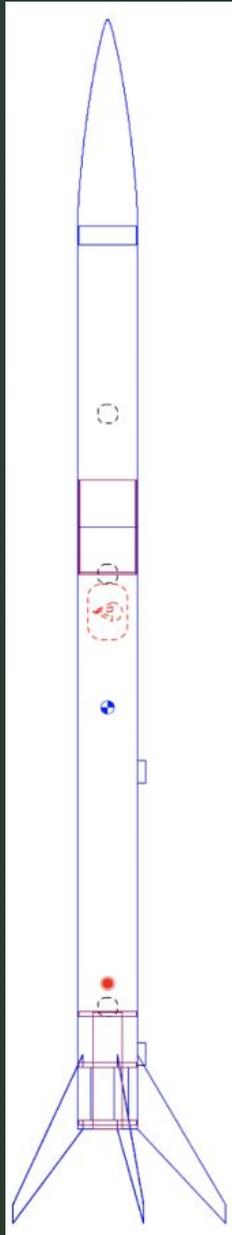
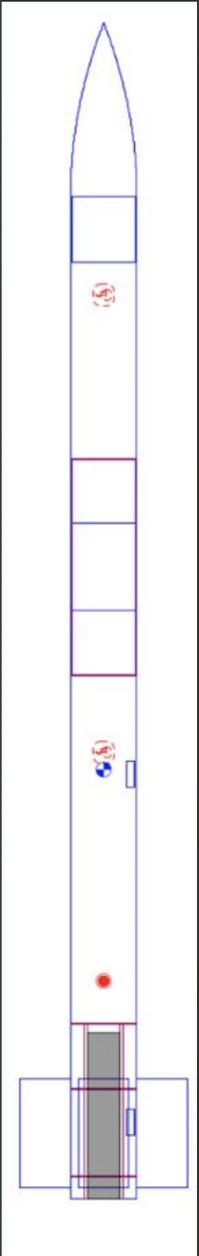




# Midwest Rocketry Competition

- Competition ran by the Minnesota Space Grant
- Goal is to design, document, fabricate, and fly student-built high-powered rockets, with this year's objective "Return to Flight: Fleet Challenge"
- The team will be designing and constructing a fleet of five rockets with distinguishing design differences to display a variety of rocket styles and build techniques
- One of these rockets must be a "core" rocket, a specified kit rocket flown on a specific motor
- For the fleet class, two rockets must also be built for a certification flight (one Level 1 and one Level 2)

# Midwest Rocketry Rockets



# Lessons Learned

- Taking into account the uncertainty of North Dakota winter weather when planning our full-scale launches for NASA SL
- Communication is key, especially for a growing organization
- Setting up a structure to ensure information is passed down, ensuring the club continues to thrive in the future

▸ Thank you NDSPC for all your support!

