



Stage 5

Stage 4

Stage 3

Team 4054

Malini, Mayilan, Stephen,
Susannah, Vivek, and Madison

Stage 0

Stage 1

Meet the Crew



**Malini
Balachandran**



Madison Zhao



Stephen Jin



Susannah Gordon



Maylian Thanigai



Vivek Uppoor

Design Process

Research

One of our
Open
Rocket
designs

Three Steps: Research,
Design and Test on
Open Rocket Software

Design

Test



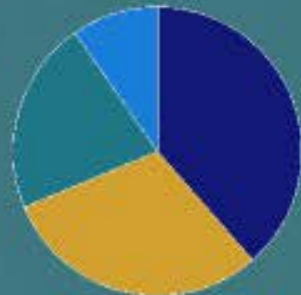
Research

- Looked at TARC requirements



First Designs

- Done with Open
- Rocket Software



Performance Requirements Reliability Architecture

- Added weight components, fins, recovery systems, etc.

Simulations

- Discovered a few problems:
 - Discontinuity
 - Instability
- Solutions:
 - Adjusted transition
 - Changed fin blueprints

Construction Process

October 20-December 13

December 13-April 4

1st
Rocket

2nd
Rocket

Backup
Rocket



Curious George

Cutting:

- Booster (BT80)-
 - 9.45 in, diameter 2.6 in
 - Cargo(BT70)-
 - 11in, diameter 2 in
-

Printing:

- 3D printed transition-
 - Insert Dimensions
-

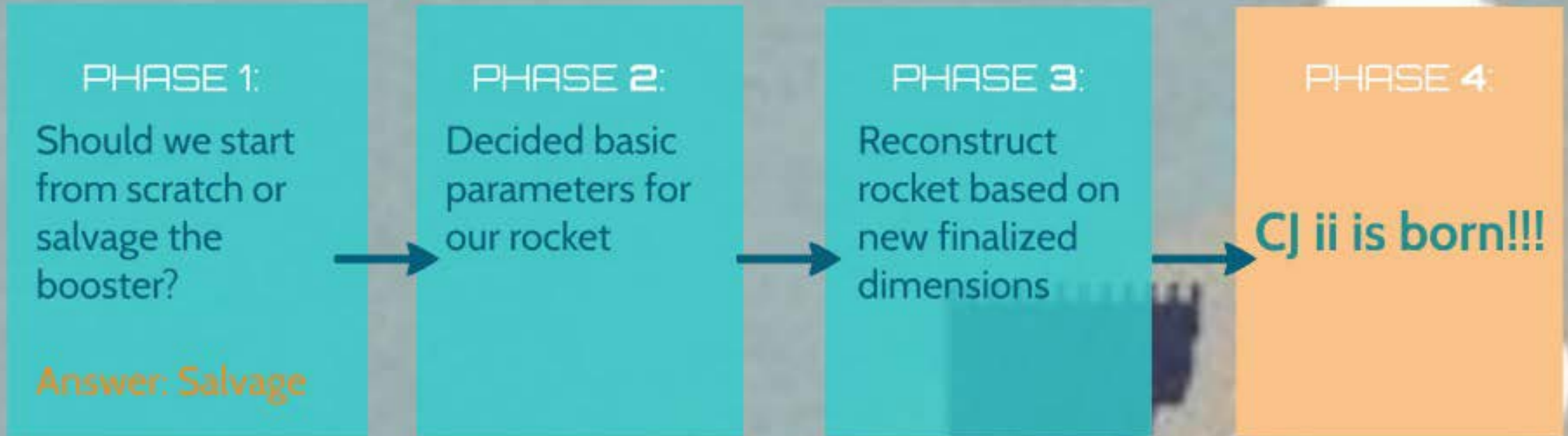
Sanding:

- Everything was too big!!
 - Give everything a smooth/filleted profile
-

Features:

- Booster-Black
 - Cargo-Gold
 - Parachutes- 12inch (2)
-

CJ ii





Papa Smurf

- Created as a backup
- Designed identical to first rocket
- Landed in a tree



Launches

Testing

- Monday, Oct 14, (MDw)
- Saturday, Dec 28, (MDw)
- Saturday, Jan 20 (VA)
- Saturday, Feb 10 (VA)
- Monday, Feb 19 (MDw)

Qualification

- Saturday, Mar 10(VA)
- Sunday, Mar 11 (VA)
- Saturday, Mar 17 (VA)
- Saturday, Mar 24 (MDw)

National Fly-Off

- Saturday, May 5 (MDw)
- Saturday, May 11/12 (VA)

Launches

- 12 launches total
- Flight Numbers:
 - 10-Design Testing
 - 13-Qualification Prep



Oct 14:

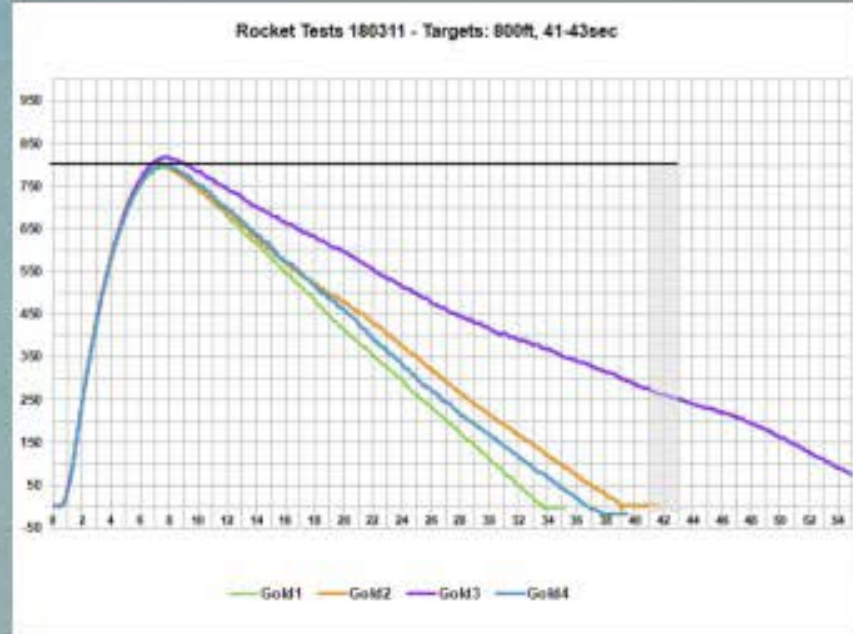
First rocket
launch of the
season!



Mar. 11- Qualification #1

Details of Launch:

Motor	Weight	Alt	Recovery	Altitude	Time	Comment
F39-6	514g	11	2-15"	799ft	36.58sec	Qual 1, score 18.68



ALTIMETER
DATA

*4=Qualification
3=Thermal



Mar. 24-Qualification #2/3

Details of Launch:

	Motor	Weight	Alt	Time	Height	Recovery	Comment
4	F39-6	504g	11	2-15"	808ft	42.26sec	Qualification 2, score 8.00
5	F39-6	506g	11	2-15"	827ft	46.625sec	Qualification 3, score 41.50





Problems Faced

-  Lawn Darts (Dec. 28)
-  Igniter problems (Jan 20)
-  Motors (Feb. 19)

Lawn Darts

Igniters

Motors



LAWN DART

Thursday, December 28th

Components:

Motor: F44-8W

Weight: 430g

Alt: 10

Recovery: 2-15"

Altitude: 800ft

Time: 16sec

Problems:

- Igniter was faulty
- Parachute did not deploy
- LAWN DART
- Altimeter broke upon impact

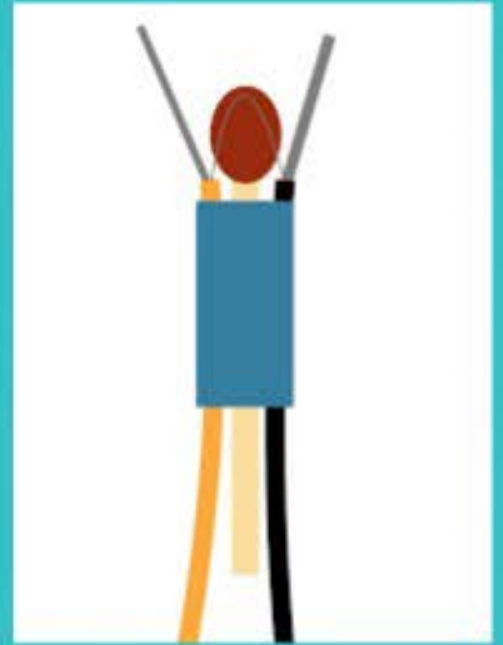
Solutions:

- Changed design
- Got a new shot cord
- Redesigned to make altimeter go in nose-cone

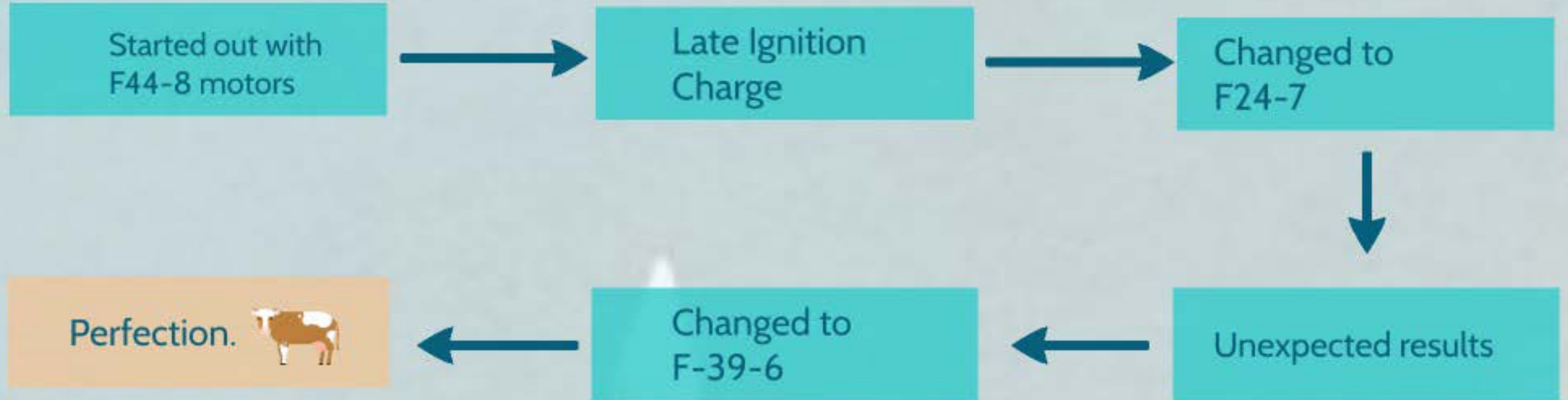
Igniter Problems

Igniters kept
failing

- First fires
- Securing w/ tape
- Switched motors

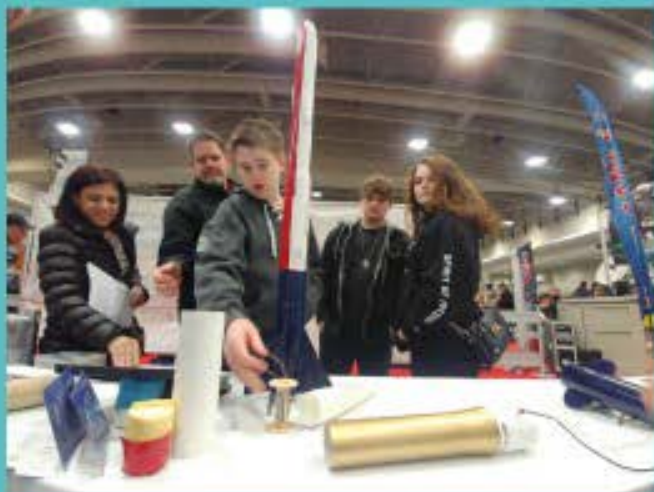


MOTORS



Reaching Out

- Science Day 2018 and 2017
- Cub scout rocket launch Fall 2017
- Team at USA Science and Engineering Festival 2018
- Hometown Holidays (Memorial Day I Rockville) 2017



Showing TARC rocket at
Engineering Festival



Maylian helping out at
Hometown Holidays



Inspiring future aerospace
engineers!

Joining the team





Thanks for
watching,
Make sure
to like and
subscribe!