

NG Super Sonic Rocket 67% Build Update

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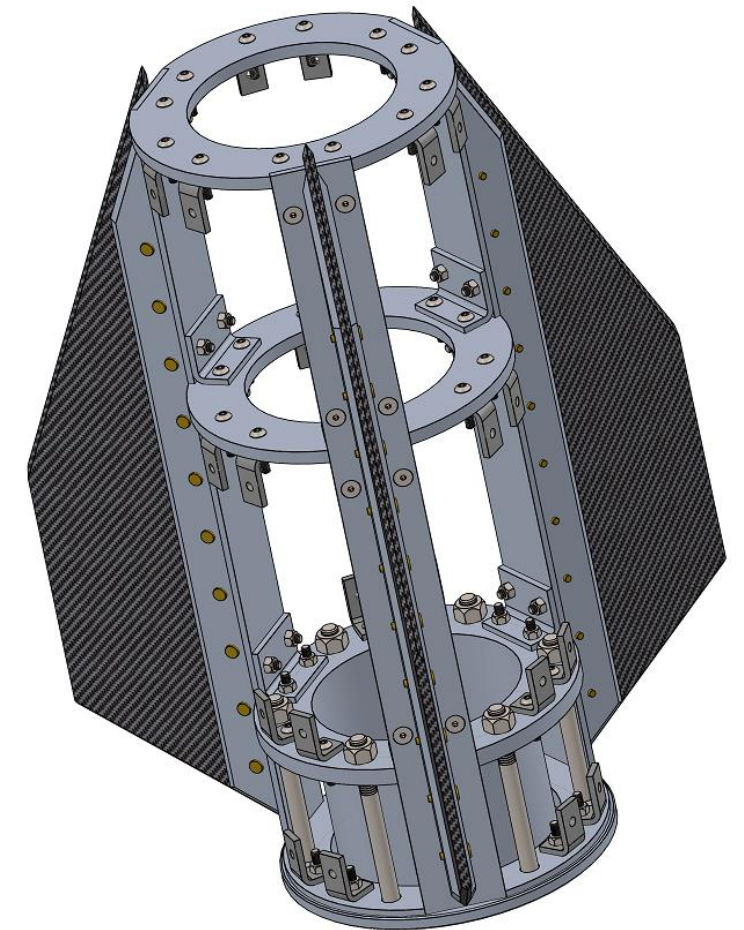
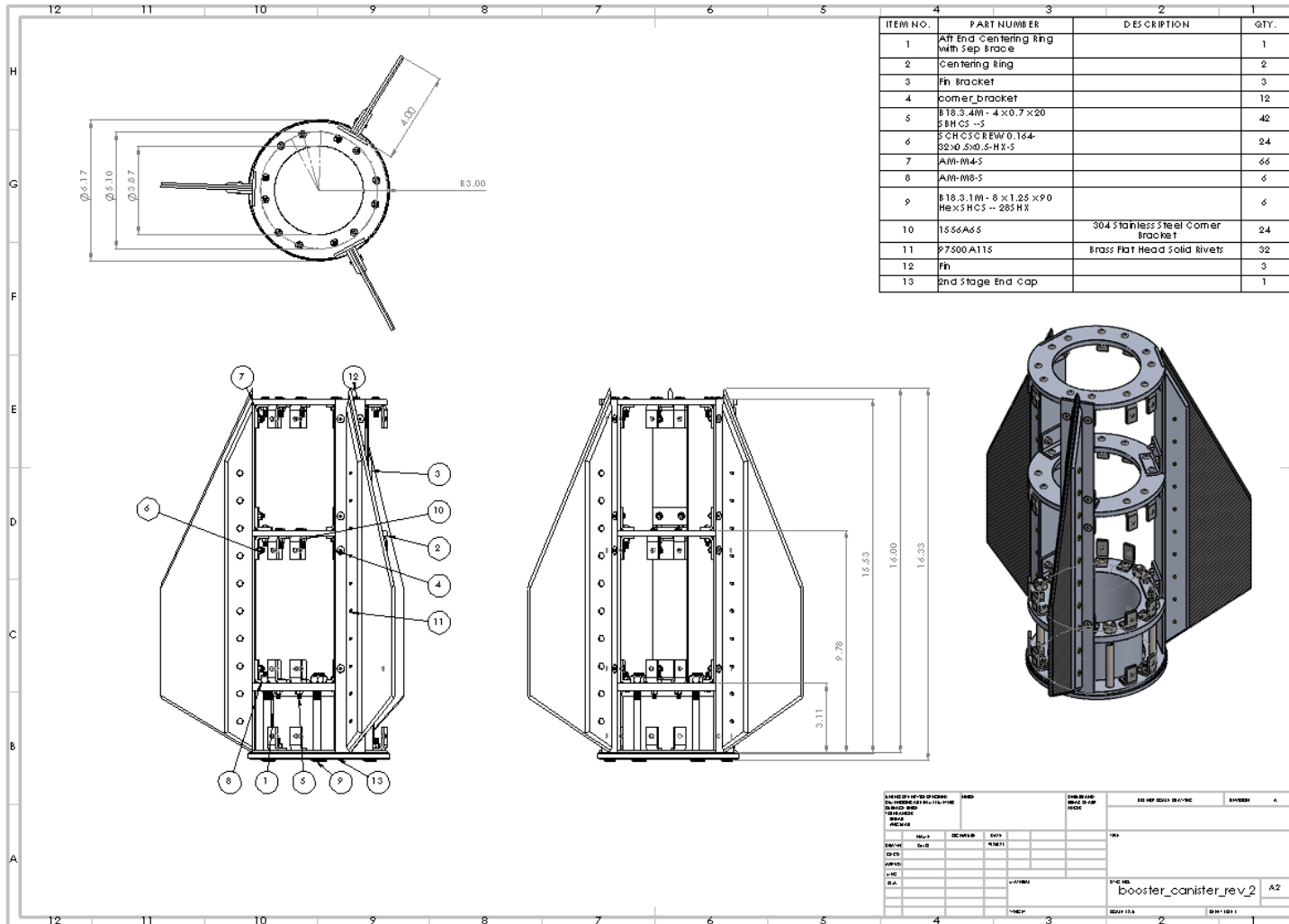


Figure 1: Two stage rocket
University of Sheffield [1]

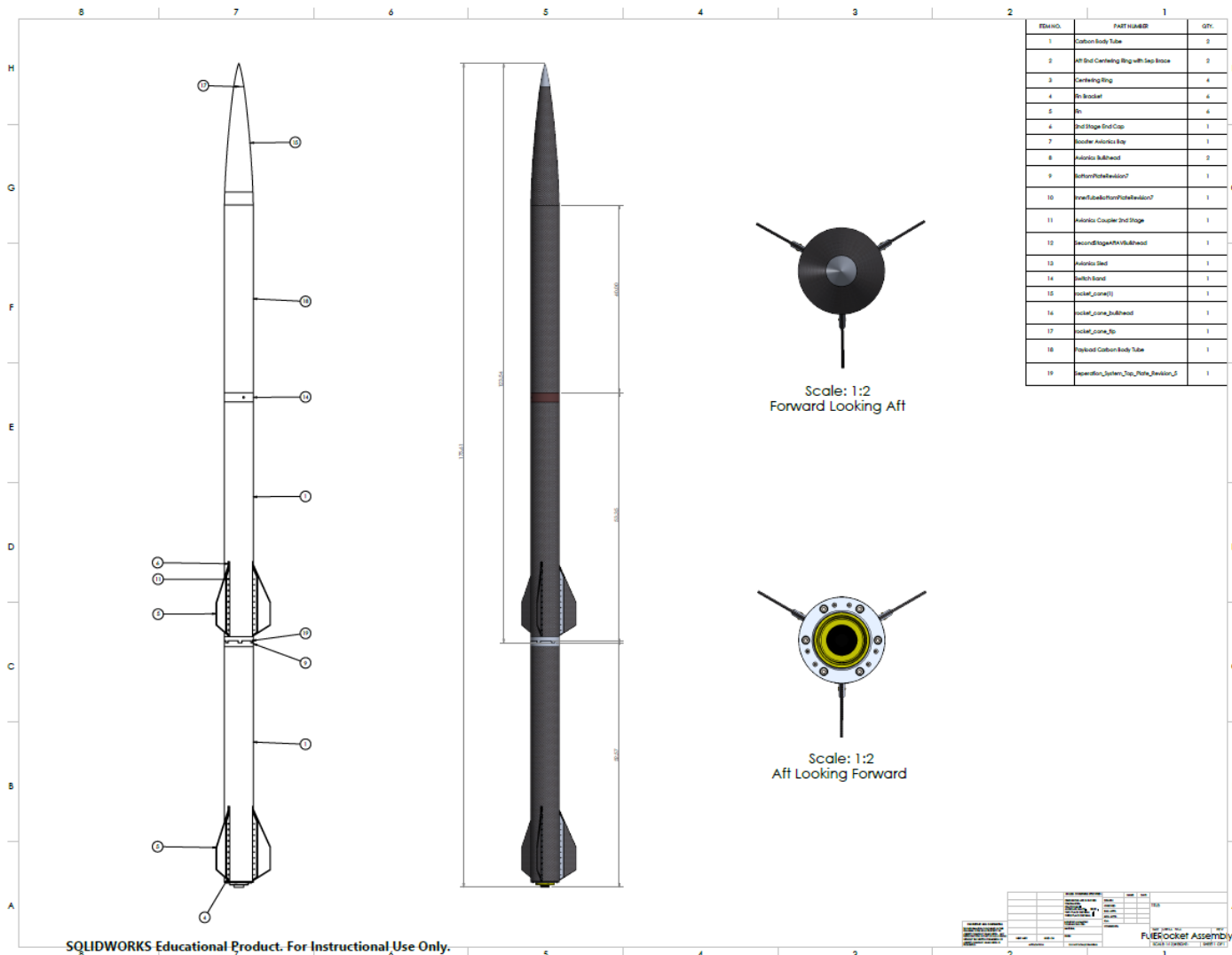
Design Effort

- Fin Canisters Updates
 - Fully Designed
 - Hardware included
- Separation System Design
 - 99% Designed / Being Machined by Perry Wood
- Full Vehicle Design is 95% Completed
 - Updating Simulation files

Booster Fin Canister



Full Launch Vehicle Design



Bill of Materials (BOM) (1/2)

SUBSYSTEM	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	QTY.	PRICE (\$)	TOTAL PRICE (\$)	ACQUISITION METHOD	PRIMARY VENDOR
NOSECONE	1	1	Nose Cone Shell	Carbon Fiber	1	N/A	N/A	Manufacture	NovaKinetics
	2		Nose Cone Coupler	Carbon Fiber	1	N/A	N/A	Manufacture	NovaKinetics
	3		Nose Cone Bulkhead	6061 Aluminum	1	N/A	N/A	Manufacture	IMS
	4		eyebolt-type2_ai	Steel	1	N/A	N/A	Donated	
	5		Metal Nose Cone Tip	Steel	1	N/A	N/A	Manufacture	
	6	92949A347	Button Head Hex Drive Screw	18-8 SS	2	\$3.79	\$3.79	Order	McMaster Carr
BODY	7		2nd Stage Body Tube (50in. X 6.17in.)	Carbon Fiber	1	N/A	N/A	Manufacture	NovaKinetics
	8		Payload Body Tube	Carbon Fiber	1	N/A	N/A	Manufacture	NovaKinetics
	9		Lower Body Tube	Carbon Fiber	1	N/A	N/A	Manufacture	NovaKinetics
FIN CANISTERS	10		Aft End Centering Ring with Sep Brace	6061 Aluminum	2	N/A	N/A	Manufacture	IMS
	11		Centering Ring	6061 Aluminum	4	N/A	\$88.65	Manufacture	IMS
	12		Fin Bracket	6062 Aluminum	6	N/A	N/A	Manufacture	IMS
	13		Corner Bracket	6063 Aluminum	24	N/A	N/A	Manufacture	IMS
	14	92095A196	M4 Button Head Hex Drive Screw	Passivated 18-8 Stainless Steel	36	\$8.69	\$17.38	Order	McMaster Carr
	15	91263A516	Hex Drive Flat Head Screw	Zinc-Plated Alloy Steel	26	\$8.82	\$17.64	Order	McMaster Carr
	16	94645A101	M4 Nylon Lock Nut	Zinc-Plated Steel	60	\$14.05	\$28.10	Order	McMaster Carr
	17	94645A210	M8 Nylon Lock Nut	Zinc-Plated Steel	6	\$11.16	\$11.16	Order	McMaster Carr
	18	91292A213	18-8 Stainless Steel	Stainless Steel	12	\$7.94	\$23.82	Order	McMaster Carr
	19	1556A65	Stainless Steel Bracket	Stainless Steel	18	\$2.59	\$2.59	Order	McMaster Carr
	20	97483A095	Aluminum Flush Mount Rivets	6061 Aluminum	32	\$15.35	\$15.35	Order	McMaster Carr
	21		Fin	Carbon Fiber	6	\$340.21	\$340.21	Order	Composite Envisions
	22		2nd Stage End Cap	6061 Aluminum	1			Manufacture	IMS







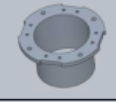
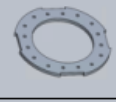
Bill of Materials (BOM)

AVIONICS	23		Avionics Coupler 2nd Stage	Steel	1	N/A	N/A	Donated	NAU Rocket Club
	24		Avionics Bulkhead	6061 Aluminum	2	N/A	N/A	Donated	NAU Rocket Club
	25		flat washer type a narrow_ai	6062 Aluminum	12	N/A	N/A	Donated	NAU Rocket Club
	26		eyebolt-type2_ai	Steel	2	N/A	N/A	Donated	NAU Rocket Club
	27		Avionics Sled (3D Printed)	3D Polymer	2	N/A	N/A	Donated	NAU Rocket Club
	28		Raven 4 v9		4	N/A	N/A	Donated	NAU Rocket Club
	29		GPS Tracker v15		2	N/A	N/A	Donated	NAU Rocket Club
	30	92001A321	18-8 Stainless Steel Wing Nut	18-8 SS	8	N/A	N/A	Donated	NAU Rocket Club
	31	90322A657	High-Strength Steel Threaded Rod	Steel	4	N/A	N/A	Donated	NAU Rocket Club
	32		Switch Band	Carbon Fiber	1	N/A	N/A	Donated	NAU Rocket Club
	33		hex thick nut_ai	Steel	2	N/A	N/A	Donated	NAU Rocket Club
RECOVERY	34		Main Parachute	Nylon	1	N/A	N/A	Donated	NAU Rocket Club
	35		Drogue, Booster	Nylon	1	N/A	N/A	Donated	NAU Rocket Club
	36		Drogue, SS	Nylon	1	N/A	N/A	Donated	NAU Rocket Club
	37		Main parachute, Booster	Nylon	1	N/A	N/A	Donated	NAU Rocket Club
	38		Aerotech 98/15360 Motor casing	6061 Aluminum	2	N/A	N/A	Donated	NAU Rocket Club
	39		Aerotech N1000W	Propellant	1	\$1,257.99	\$1,257.99	Order	Aerotech
	40		Aerotech N3300R	Propellant	1	\$1,153.99	\$1,302.69	Order	Aerotech
	41		Shock Cord 8800lbs	Kevlar	2			Donated	NAU Rocket Club
	42		Tender Decender	6061 Aluminum	2			Donated	NAU Rocket Club
	43								
				Total Parts Needed	358			Total Parts Received	305
SEPERATION SYSTEM OMITTED DUE TO NDA BUT INCLUDED IN FINAL CALCULATIONS BELOW				Total Cost (\$):	\$3,419.33			Parts Required (%)	85.20%
				Total Spent	\$841.37			Assembled (%)	30.00%

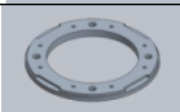





Purchasing Plan

ITEM NO.	PART	DESCRIPTION	QUANTITY	PRICE	TOTAL UNIT PRICE	VENDOR	STATUS	RESOURCE
1	92949A347	Button Head Hex Drive Screw	2	\$ 3.79	\$ 3.79	McMaster Carr		https://www.mcmaster.com/92
2	3528N21	M6 Distorted-Thread Flange Locknut	6	\$ 6.49	\$ 6.49	McMaster Carr		https://www.mcmaster.com/35
3	92095A196	M4 Button Head Hex Drive Screw	36	\$ 8.69	\$ 17.38	McMaster Carr		https://www.mcmaster.com/92
4	91294A193	Hex Drive Flat Head Screw	26	\$ 12.50	\$ 12.50	McMaster Carr		https://www.mcmaster.com/91
5	94645A101	M4 Nylon Lock Nut	60	\$ 14.05	\$ 14.05	McMaster Carr		https://www.mcmaster.com/94
6	94645A210	M8 Nylon Lock Nut	6	\$ 11.16	\$ 11.16	McMaster Carr		https://www.mcmaster.com/94
7	91292A213	18-8 Stainless Steel	6	\$ 7.94	\$ 15.88	McMaster Carr		https://www.mcmaster.com/91
8	1556A65	Stainless Steel Bracket	18	\$ 2.59	\$ 2.59	McMaster Carr		https://www.mcmaster.com/15
9	3528N12	M8 Distorted-Thread Flange Locknut	6	\$ 12.85	\$ 12.85	McMaster Carr		https://www.mcmaster.com/35
10	97483A095	Aluminum Flush Mount Rivets	32	\$ 15.35	\$ 15.35	McMaster Carr		https://www.mcmaster.com/97
11	Avionics Bulkhead		2	N/A	N/A	Donated		NAU Rocket Club
12	Avionics Coupler 2nd Stage		1	N/A	N/A	Donated		NAU Rocket Club
13	flat washer type a narrow_ai		12	N/A	N/A	Donated		NAU Rocket Club
14	eyebolt-type2_ai		3	N/A	N/A	Donated		NAU Rocket Club
15	Avionics Sled	3d Printed Avionics Sled	1	N/A	N/A	Donated		NAU Rocket Club
16	Raven 4 v9	Flight altimeter	2	N/A	N/A	Donated		NAU Rocket Club
17	GPS Tracker v15		1	N/A	N/A	Donated		NAU Rocket Club
18	92001A321	18-8 Stainless Steel Wing Nut	8	N/A	N/A	Donated		NAU Rocket Club
19	90322A657	High-Strength Steel Threaded Rod	4	N/A	N/A	Donated		NAU Rocket Club
20	Switch Band		1	N/A	N/A	Donated		NAU Rocket Club
21	Hex thick nut_ai		2	N/A	N/A	Donated		NAU Rocket Club
22	Carbon Fiber	2 x 2 Twill (24" x 36" x 0.122")	1	\$ 340.21	\$ 340.21	Composite Envison		NovaKinetics
23		Aerotech N1000W (Propellant)	1	\$ 1,257.99	\$ 1,257.99	Aerotech		https://wildmanrocketry.com/pr
24		Aerotech N3300R (Propellant)	1	\$ 1,153.99	\$ 1,302.69	Aerotech		https://wildmanrocketry.com/pr
		Total Items:	274	Total Required:	\$ 3,236.25	Cost Percent Purchased:		20.88%
		Total Aquired:	272	Total Purchased:	\$ 675.57	Percent Donated:		13.87%
						Total Percent Aquired:		99.27%

Manufacturing Plan (1/2)

DESCRIPTION	MATERIAL	MANUFACTURING LOCATION	MACHINIST	TIME (hr.)	IMAGE	QTY.	TOTAL TIME	QTY COMPLETED	COMPLETED TIME
Nose Cone (26 in. x 6.17 in.)	Carbon Fiber	Novakinetics	Avery / Lindsey	48		1	48	0	10
Nose Cone Tip	Steel	Engineering Workshop	Avery / Lindsey	2		1	2	1	0
2nd Stage Body Tube (50 in. x 6.17 in.)	Carbon Fiber	Novakinetics	Avery / Lindsey	48		1	48	1	48
Payload Body Tube (40 in. x 6.17 in.)	Carbon Fiber	Novakinetics	Avery / Lindsey	48		1	48	1	48
Lower Body Tube (50 in. x 6.17 in.)	Carbon Fiber	Novakinetics	Avery / Lindsey	48		1	48	1	48
Fins	Carbon Fiber	Composite Envisions	Avery / Lindsey	1		6	6	6	6
Fin Brackets	Al (6061)	Engineering Workshop	Koi Quiver / Austin	3		8	24	8	24
Aft End Centering Rings	Al (6061)	Engineering Workshop	Koi Quiver / Austin	2		1	2	1	2
Centering Ring	Al (6061)	Engineering Workshop	Koi Quiver / Austin	2		4	8	4	8

Manufacturing Plan (2/2)

2nd Stage End Cap	Al (6061)	Engineering Workshop	Koi Quiver / Austin	2		1	2	1	2
Corner Bracket (1)	Al (6061)	Engineering Workshop	Koi Quiver / Austin	0.5		24	12	12	12
Corner Bracket (2)	Al (6061)	Engineering Workshop	Koi Quiver / Austin	0.5		36	18	22	18
Avionics Bulkhead	Al (6061)	Engineering Workshop	Austin	0.5		4	2	4	2
Avionics Sled	3D Print	Engineering Workshop	Austin	6		2	12	0	0
Avionics 2nd Stage Aft Bulkhead	Al (6061)	Engineering Workshop	Austin	1		1	1	1	1
				Total		92	281	63	229
				Completed Machining (%)		68.48%			
				Machining Time (%)		81.49%			
				Completed Build (%)		30.00%			

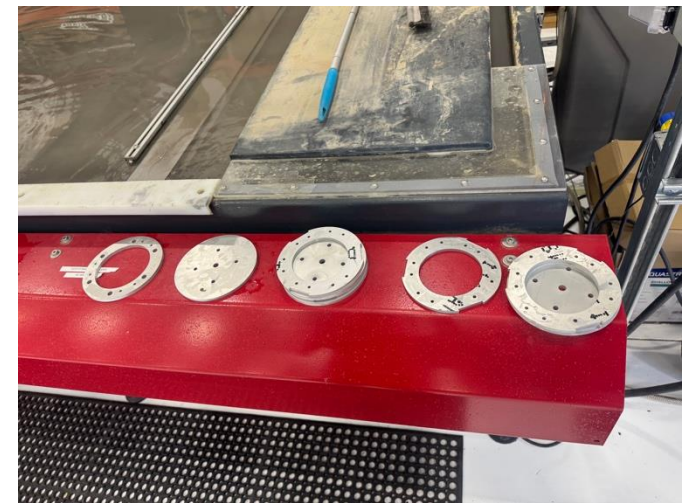
Gantt Chart Updates

Stage 2				
Flight computer Procurement Check up	Austin, Lindsey, Avery	100%	9/23/24	10/4/24
Fin Canster material aquirement	Avery, Lindsey	100%	9/30/24	10/4/24
Motor assembly material Procurement	Avery, Lindsey, Austin, J	75%	9/30/24	10/4/24
Sep Sys material Procurement	Avery, Lindsey, Austin	100%	10/2/24	10/4/24
Team/Staff Meeting 5	Team	100%	9/26/24	9/26/24
Nose Cone Mold Procurment/Machine	Lindsey	75%	10/2/24	10/4/24
Sep. Sys. Test Plan - Final	Koi	75%	9/30/24	10/4/24
Flight Computer Order	Austin, Avery	100%	10/2/24	10/4/24
Fin Construction	Avery, Lindsey	80%	10/7/24	10/11/24
Body Tube Construction	Avery, Lindsey	100%	10/7/24	10/11/24
Nose Cone Construction	Avery, Lindsey	40%	10/7/24	10/11/24

Gantt Chart Updates

Coupler carbon construction	team	50%	10/7/24	10/11/24		
Sep. Sys Instrum Test.	Koi, Austin	60%	9/22/24	10/4/24		
Team Staff Meeting 6	Team	100%	10/3/24	10/3/24		
Coupler hardware Procurement	Team	100%	10/9/24	10/12/24		
Sep Sys manufacture	Team/Perry	25%	10/7/24	10/17/24		
Full Coupler Construction	Team	10%	10/7/24	10/17/24		
Motor assembly manufacture	Team	0%	10/7/24	10/17/24		
Fin canster manufacture	Austin, Koi	50%	10/7/24	10/17/24		
Website Check 1	Avery	100%	10/7/24	10/11/24		
Hardware Status Update - 67% Build	Team	10%	10/14/24	10/17/24		
Assembly hardware Procurement	Lindsey, Avery	90%	10/9/24	10/11/24		

Demonstration



Conclusion

Thank you!

Questions?

