

John Doe - "Go High" Project

**FAA Class 3 FAA/AST minimum data requirements (in addition to 101.29)**

PROPULSION:

P10000

Total Impulse = 14502.3 lb-sec

Burn Time = 6.25 sec

Motor is not certified.

Solid Propellant.

Time (sec)	Thrust (lb)
0.00	0.00
0.01	2716.50
1.05	2779.45
2.09	2788.67
3.13	2781.47
4.04	2247.08
5.08	1917.50
5.99	921.54
6.12	259.44
6.25	0.00

Time (sec)	Mass Flow Rate (lb/sec)
0.00	0.00
0.01	13.40
1.05	13.71
2.09	13.76
3.13	13.72
4.04	11.08
5.08	9.46
5.99	4.55
6.12	1.28
6.25	0.00

AERODYNAMICS:

Aerodynamic Reference Area = 0.2066 ft<sup>2</sup>

Ca, Axial Force Coefficient (dimensionless)

Axial Force Coefficient Assumed Constant with Angle of Attack

Using Zero Degree Angle of Attack Value

Mach Number	Angle of Attack	
	0.0 deg	15.0 deg
0.01	.956	.956
0.10	.669	.669
0.25	.594	.594
0.50	.546	.546
0.90	.613	.613
0.95	.676	.676
1.05	.931	.931
1.10	.949	.949
1.25	1.119	1.119
1.50	1.112	1.112
1.75	1.050	1.050
2.0	.989	.989
2.5	.883	.883
3.0	.808	.808

CN, Normal Force Coefficient (dimensionless)

CN $\alpha$  through Zero Degrees Angle of Attack Used.  
Slope Held Constant to 15 deg Angle of Attack.

Mach Number	Angle of Attack	
	0.0 deg	15.0 deg
0.01	.0	5.804
0.10	.0	5.807
0.25	.0	5.867
0.50	.0	5.997
0.90	.0	6.417
0.95	.0	6.539

1.05	.0	6.611
1.10	.0	6.977
1.25	.0	6.755
1.50	.0	6.294
1.75	.0	5.806
2.0	.0	5.233
2.5	.0	4.281
3.0	.0	3.590

CP, Center of Pressure

Center of Pressure at Zero Degrees Angle of Attack Used.  
Held Constant with Angle of Attack.

Inches from Nose Tip

Mach Number	Angle of Attack	
	0.0 deg	15.0 deg
0.01	160.0	160.0
0.10	160.0	160.0
0.25	160.0	160.0
0.50	160.0	160.0
0.90	160.0	160.0
0.95	160.0	160.0
1.05	160.0	160.0
1.10	159.0	159.0
1.25	156.01	156.01
1.50	151.04	151.04
1.75	151.04	151.04
2.0	151.04	151.04
2.5	151.04	151.04

3.0            151.04            151.04

CY assumed equal to CN

Lateral CP assumed equal to Pitch CP.

GEOMETRY:

Length of Rocket = 219.25 in

Diameter of Rocket = 6.155 in

Fin Set

    Fin Location (from nose tip) = 195.71 in

    No Fin Cant

MASS PROPERTIES:

Time (sec)	Weight (lb)	Center of Gravity (in) (from nose tip)
0.00	183.00	150.00
0.10	181.75	149.69
1.00	169.56	146.74
2.00	155.82	143.41
3.00	142.08	139.78
4.00	129.44	136.64
5.00	119.06	134.12
6.00	111.86	132.64
6.25	111.46	132.52