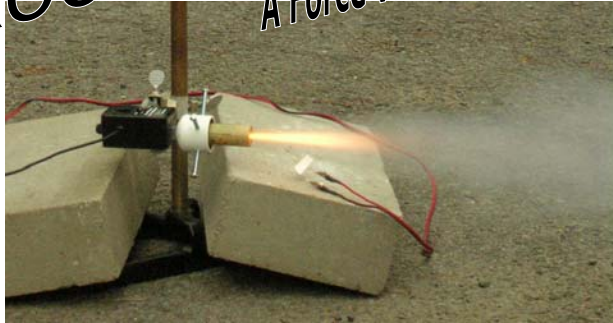


Rockets

A Force vs Time Lab



Equipment

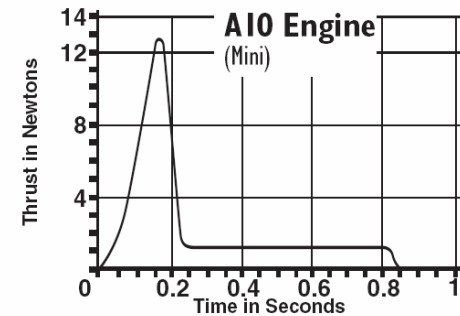
- LabPro
- Dual Range Force Sensor
- Estes rocket engines
- a mount to secure the rocket engine to the force probe



Rocket/Force Probe Set-up

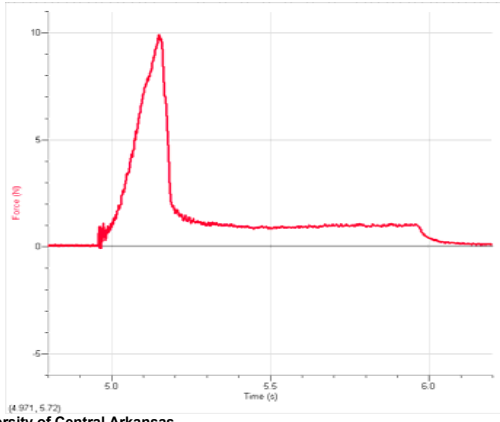


Estes thrust curve from Estes Catalog 2007



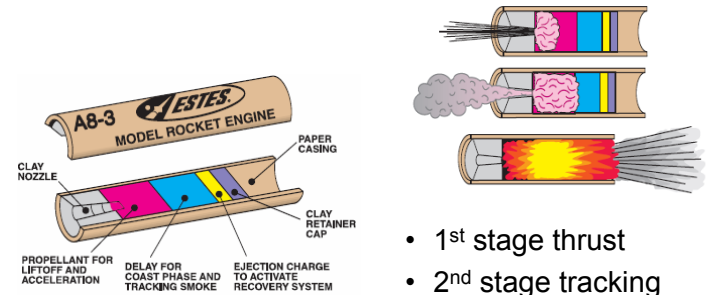
LoggerPro Data

Actual data using an A-10 model rocket engine (July 5, 2007)



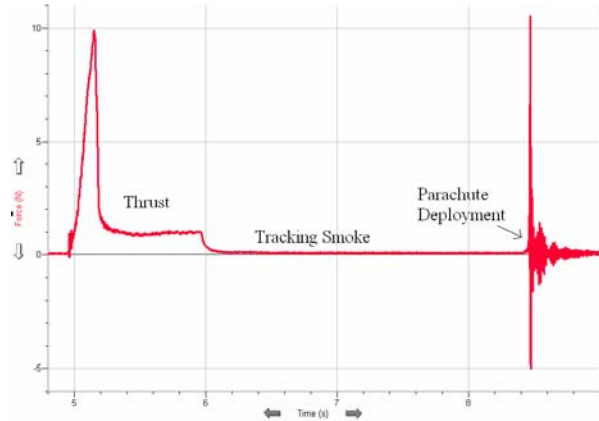
(4.971, 5.72)

How it works

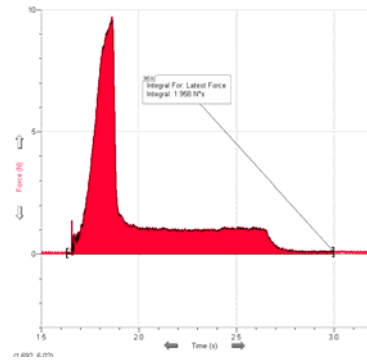


- 1st stage thrust
- 2nd stage tracking smoke
- 3rd stage deploys parachute

Complete Engine Thrust



Total Impulse



Engine	Total Impulse	(N*s)	% error
Type	Measured	Actual	
A	1.958	2.5	21.68
B	3.913	5	21.74
C	8.951	10	10.49
D	17.23	20	13.85

Reasons for error:
-manufacturing differences
-imperfect leveling

Additional Information

- Vernier Website:
<http://www.vernier.com/>
- Estes Catalog:
<http://www.estesrockets.com/assets/downloads/2007estescatalog.pdf>

