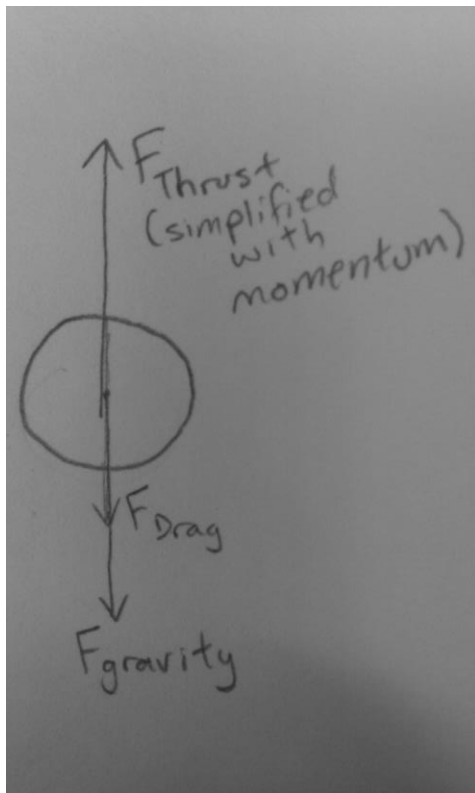Miranda Lao and Liz Leadley

Machine Gun Jetpack

Question: How can you cross the Atlantic Ocean with a machine gun jetpack?

Free Body Diagram:

Miranda Lao and Liz Leadley

Machine Gun Jetpack

Equations of Motion:

Velocity gained from a single bullet firing:

$V_{Thrust} = (-m_{bullet} * V_{bullet\ at\ muzzle}) / M_{gun}$

Acceleration between firings:

$a = -9.8$

(Currently only using gravity, soon to include drag)

Mass lost by firing is the mass of the whole round, not just the bullet; however, only the bullet is imparted a velocity which affects the momentum of the system.

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Graphs: