

Ideal Nozzle Simulation Inputs:

a: 0.05 meter ** 2 / kilogram

n: 0.65

m: -0.2

Oxidiser:

Initial Volume: 0.41 liter

Initial Mass: 0.71 lbs

Injector Mass Flow Rate: 0.027 kilogram / second

Number of Injectors: 1

Ideal O/F Ratio: 4.83

External Temp: 70 degF

Time Step: 0.01 second

Simulation Results:

Total Burn Time: 11.72 second

Impulse: 1243.33 newton * second

Average Thrust: 106.09 newton

Motor: J106

Nozzle Results:

Suggested Throat Diameter: 0.172 inch

Suggested Exit Diameter: 0.391 inch

Suggested Diffuser Length: 0.408 inch

Fuel Grain

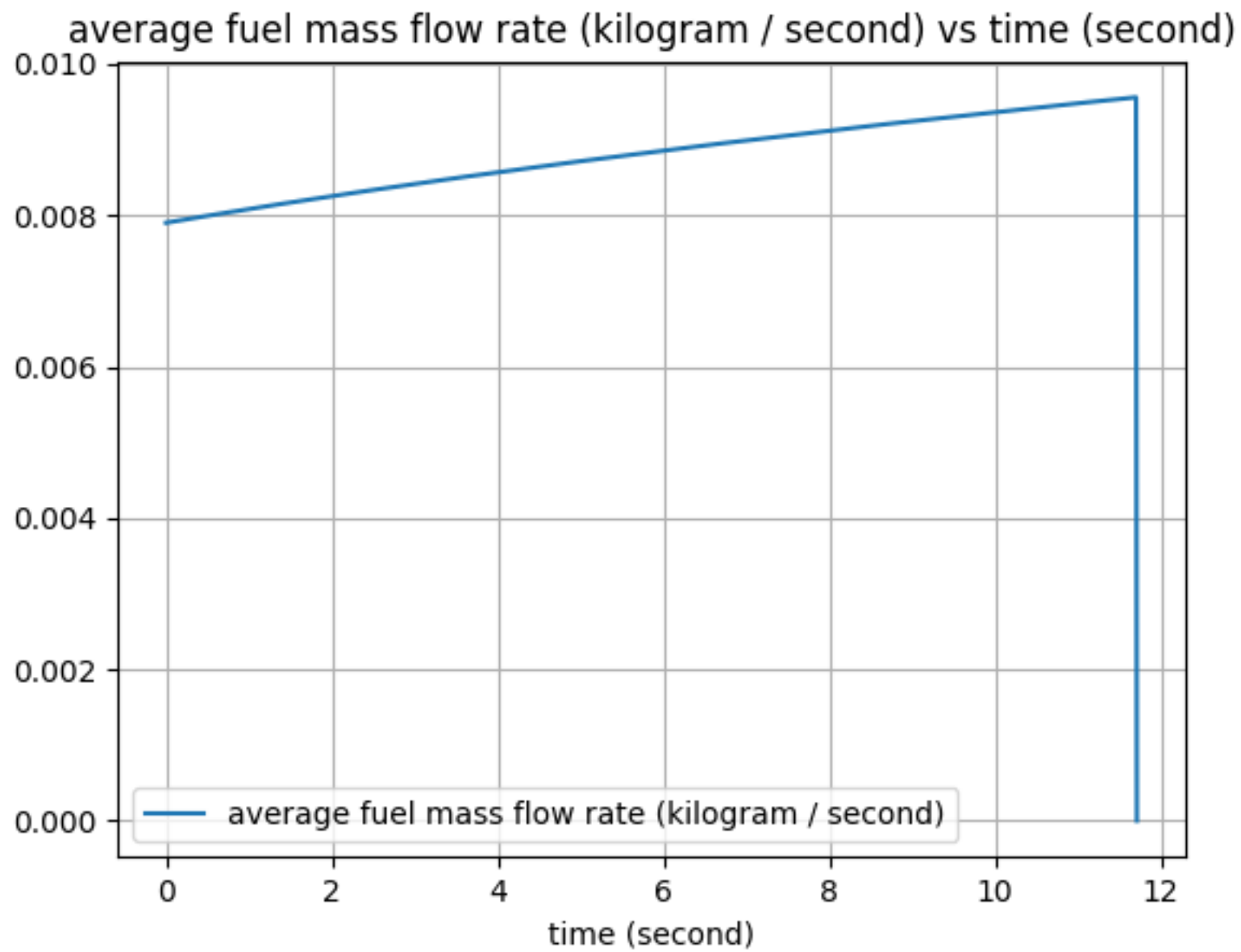
Port Length: 13.4 inch

Fuel Density: 3.96 kilogram / meter ** 3

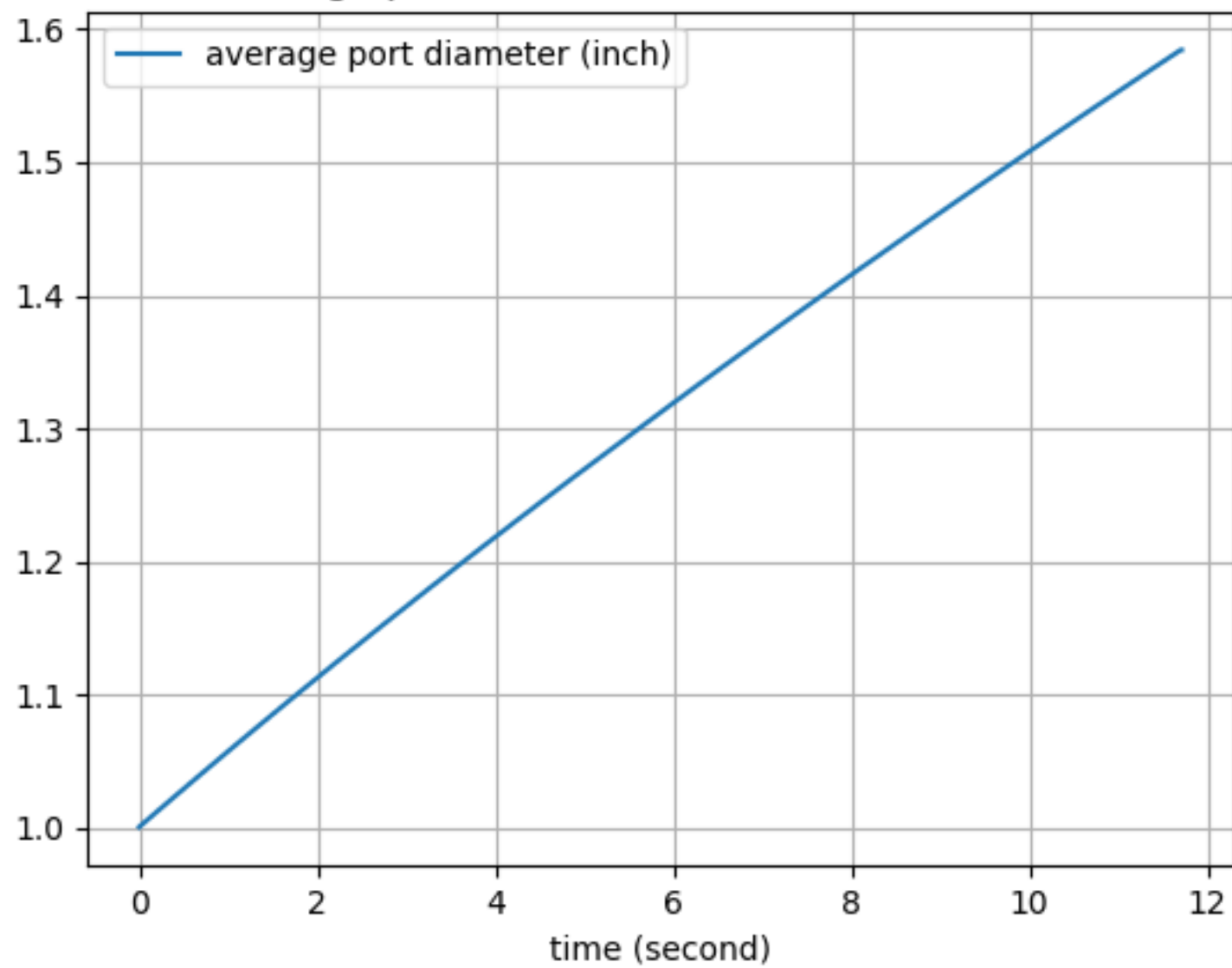
Grain Diameter: 1.75 inch

Initial Port Diameter: 1.0 inch

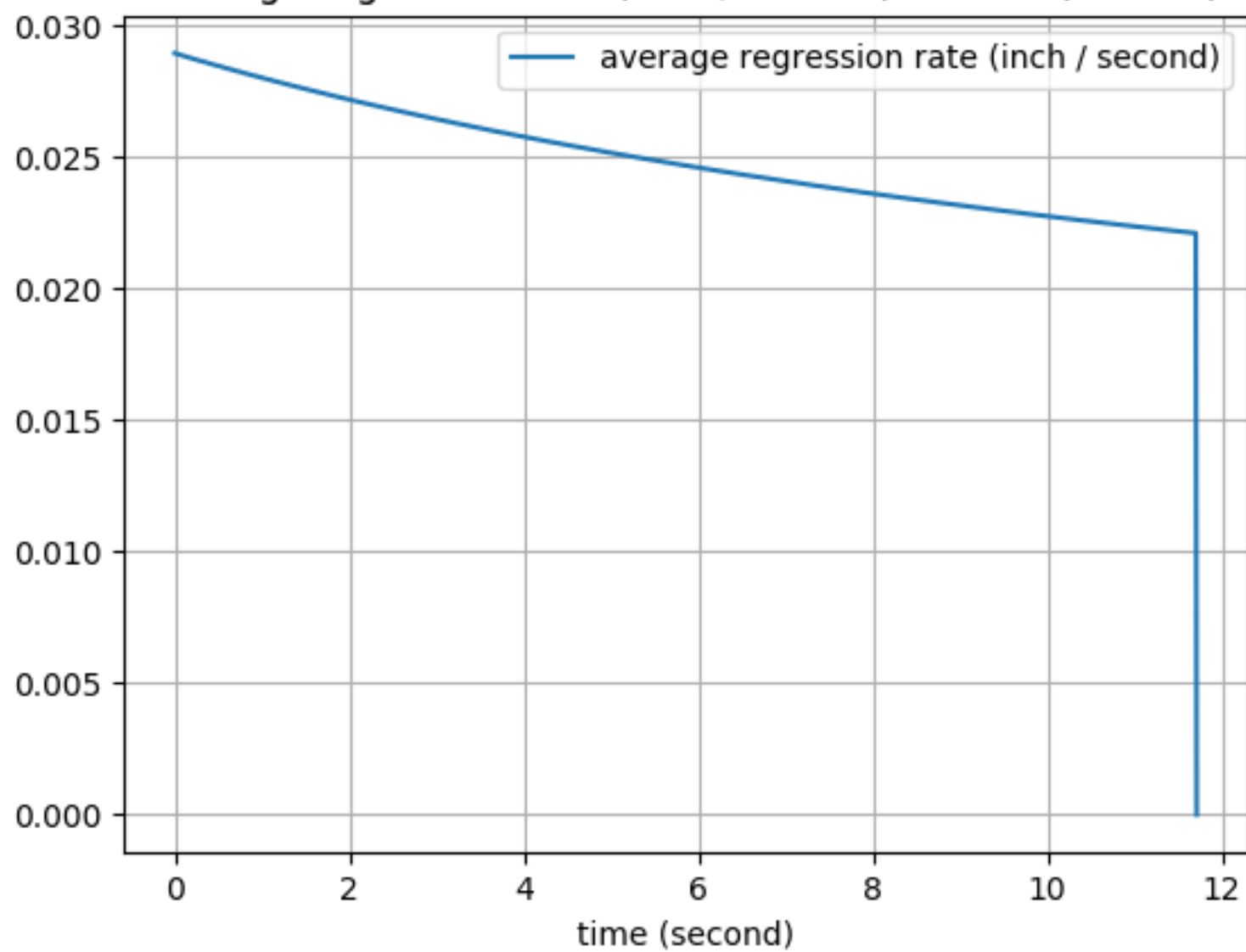
Final Port Diameter: 1.584 inch



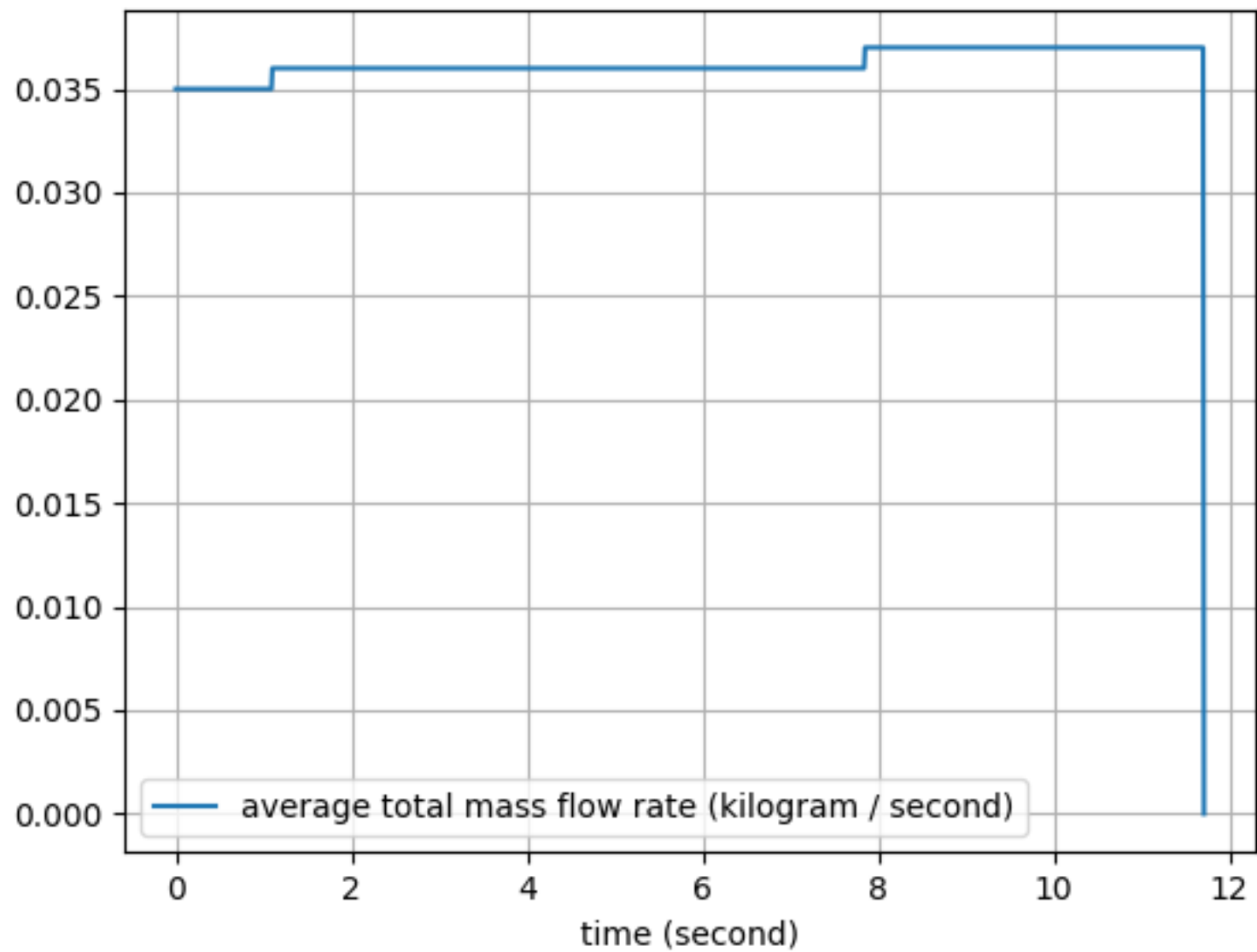
average port diameter (inch) vs time (second)



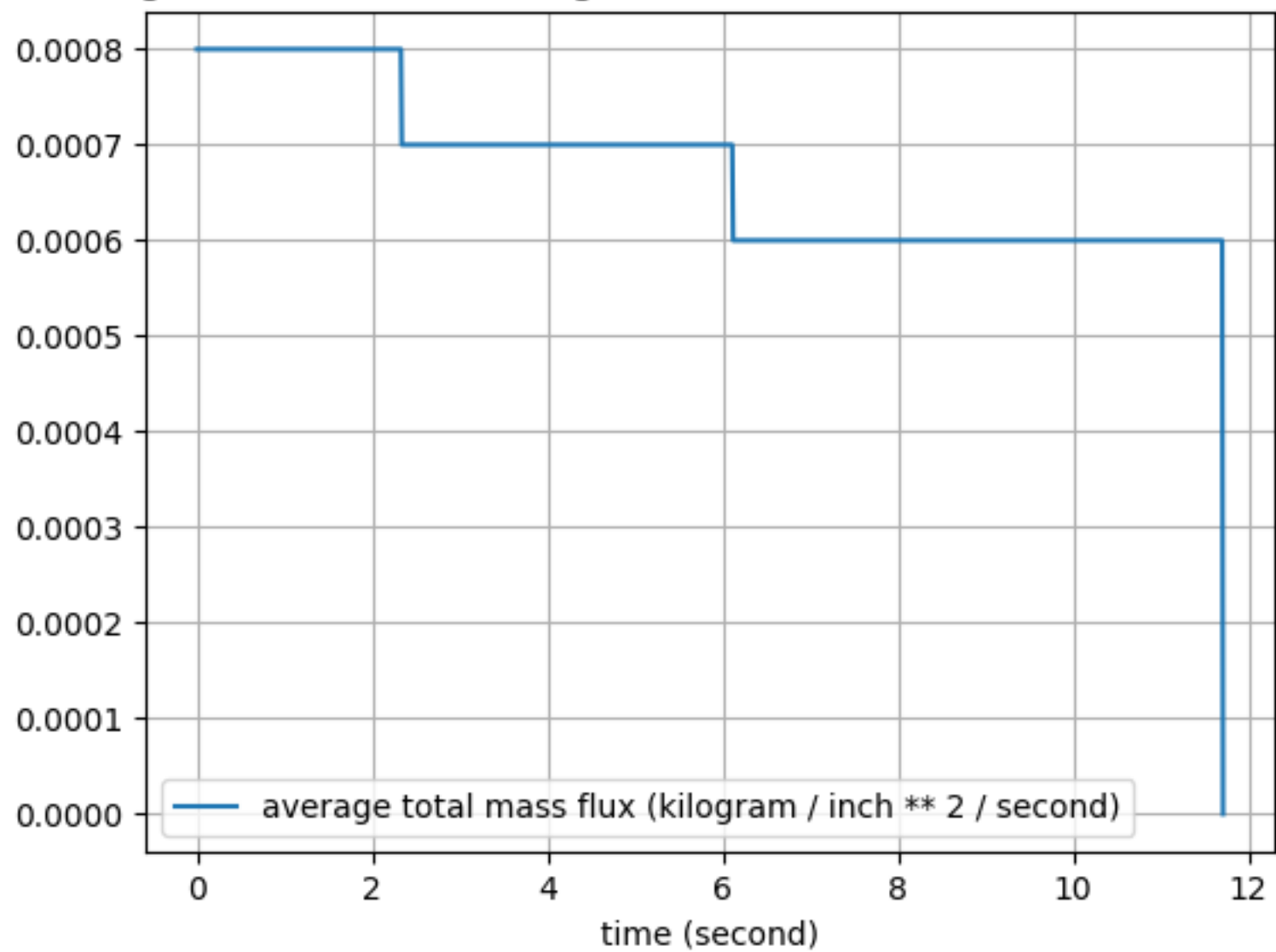
average regression rate (inch / second) vs time (second)



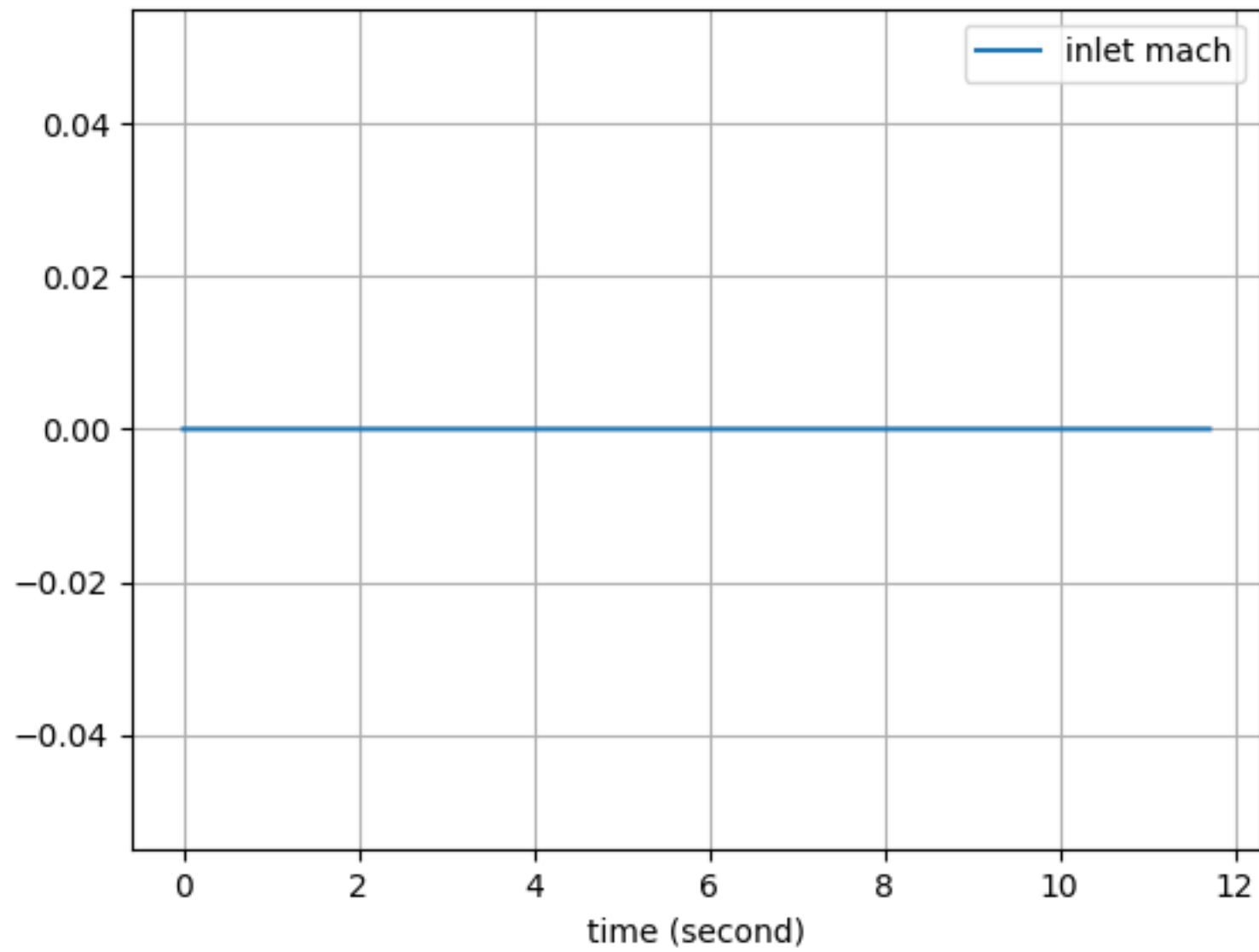
average total mass flow rate (kilogram / second) vs time (second)



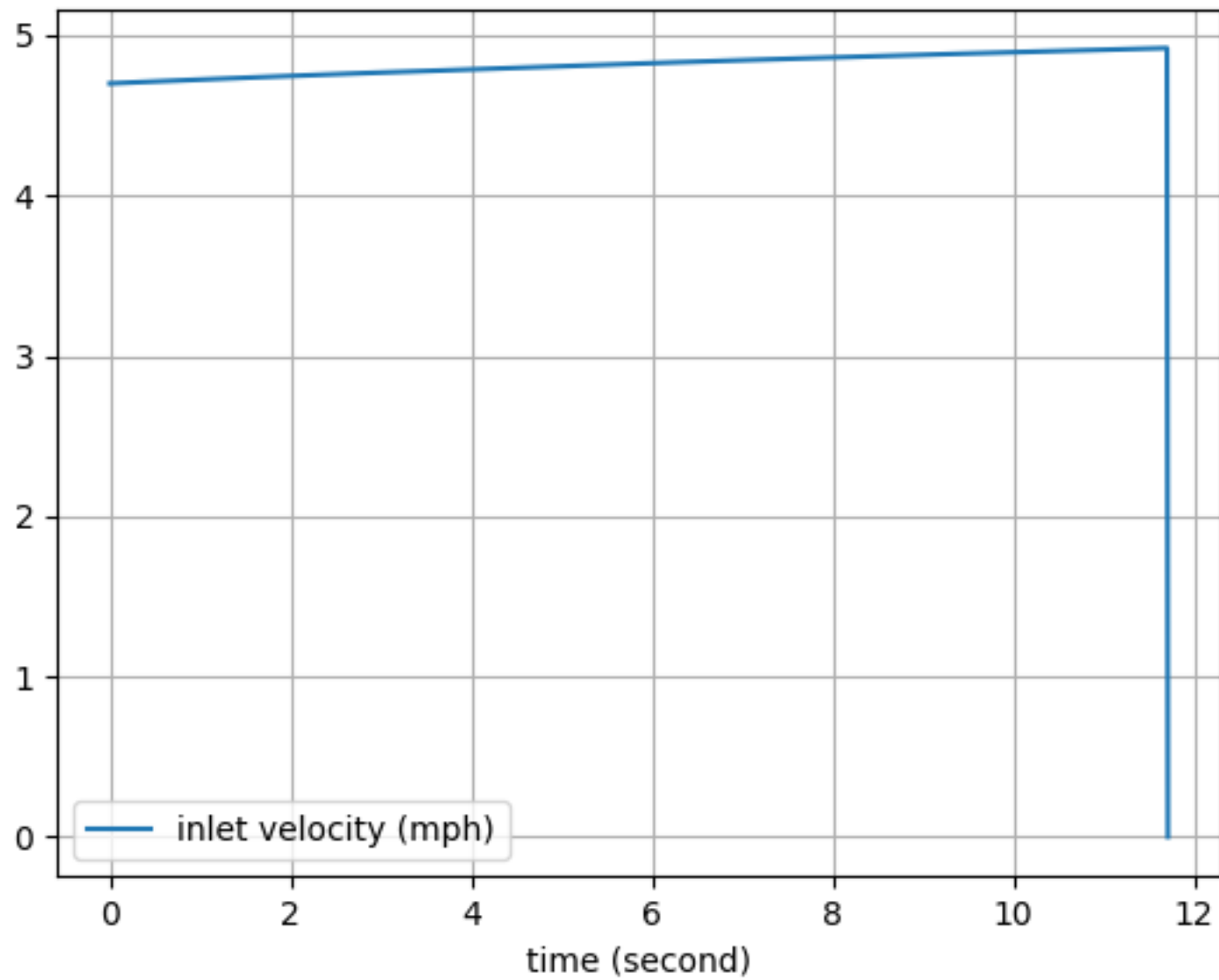
average total mass flux (kilogram / inch ** 2 / second) vs time (second)



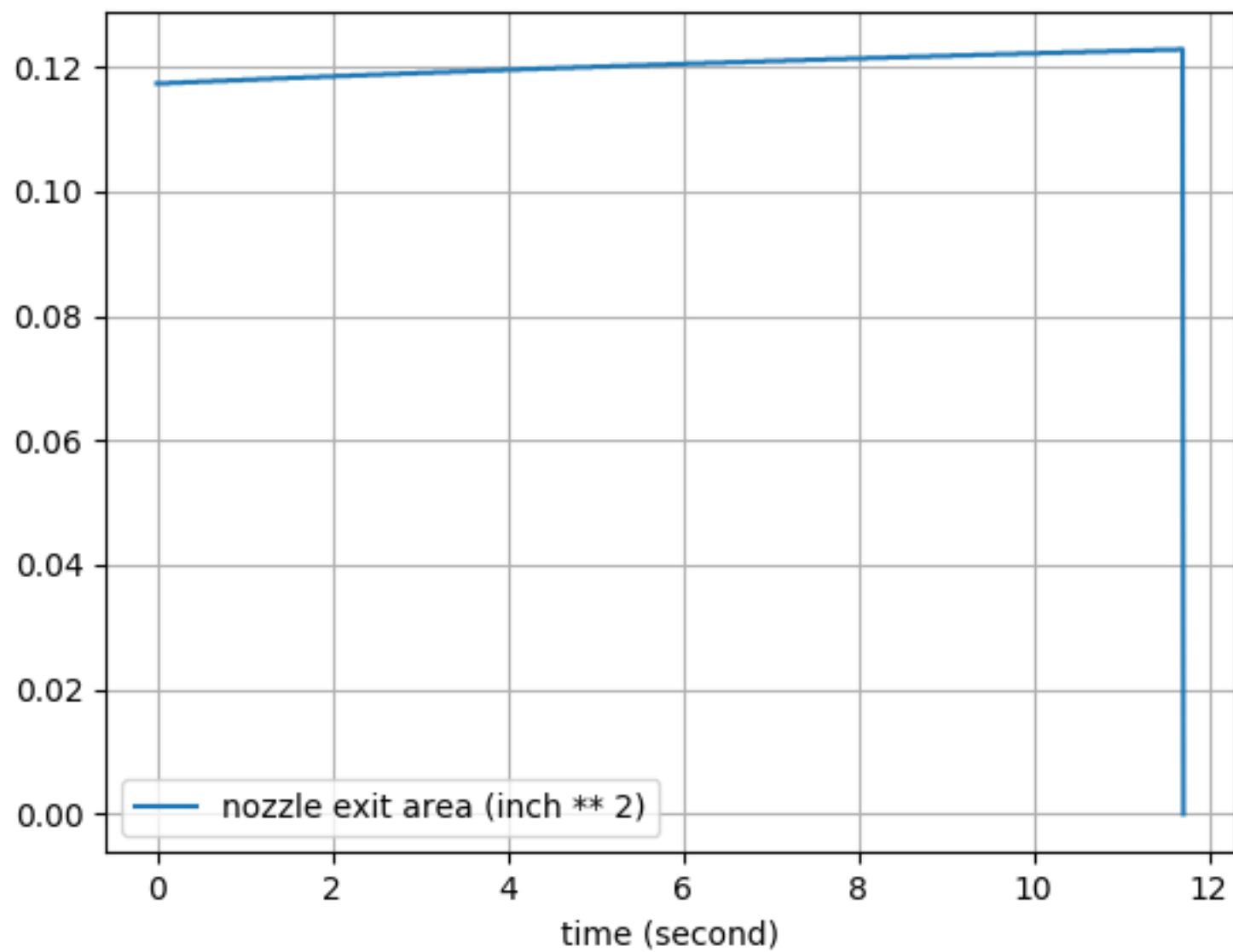
inlet mach vs time (second)



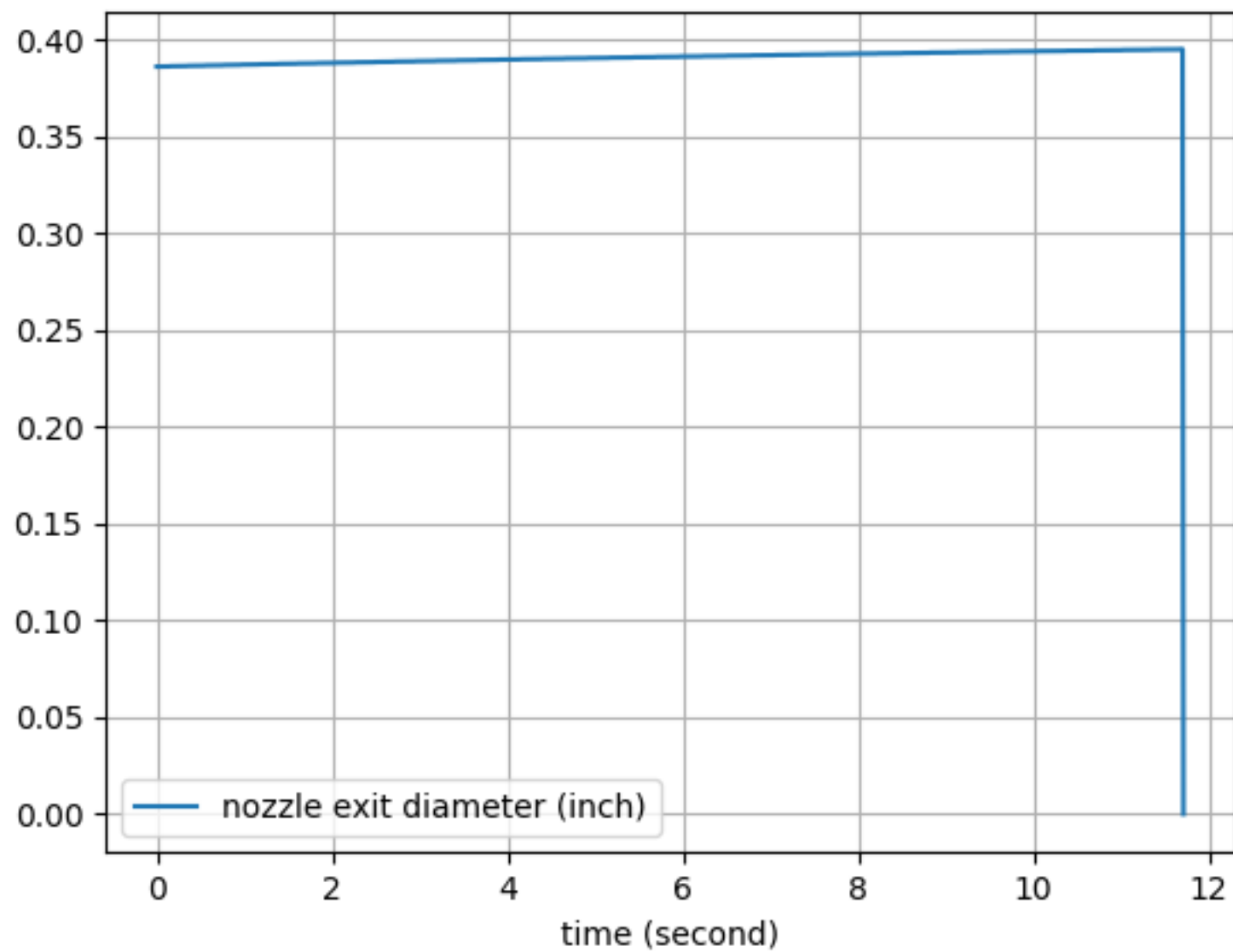
inlet velocity (mph) vs time (second)



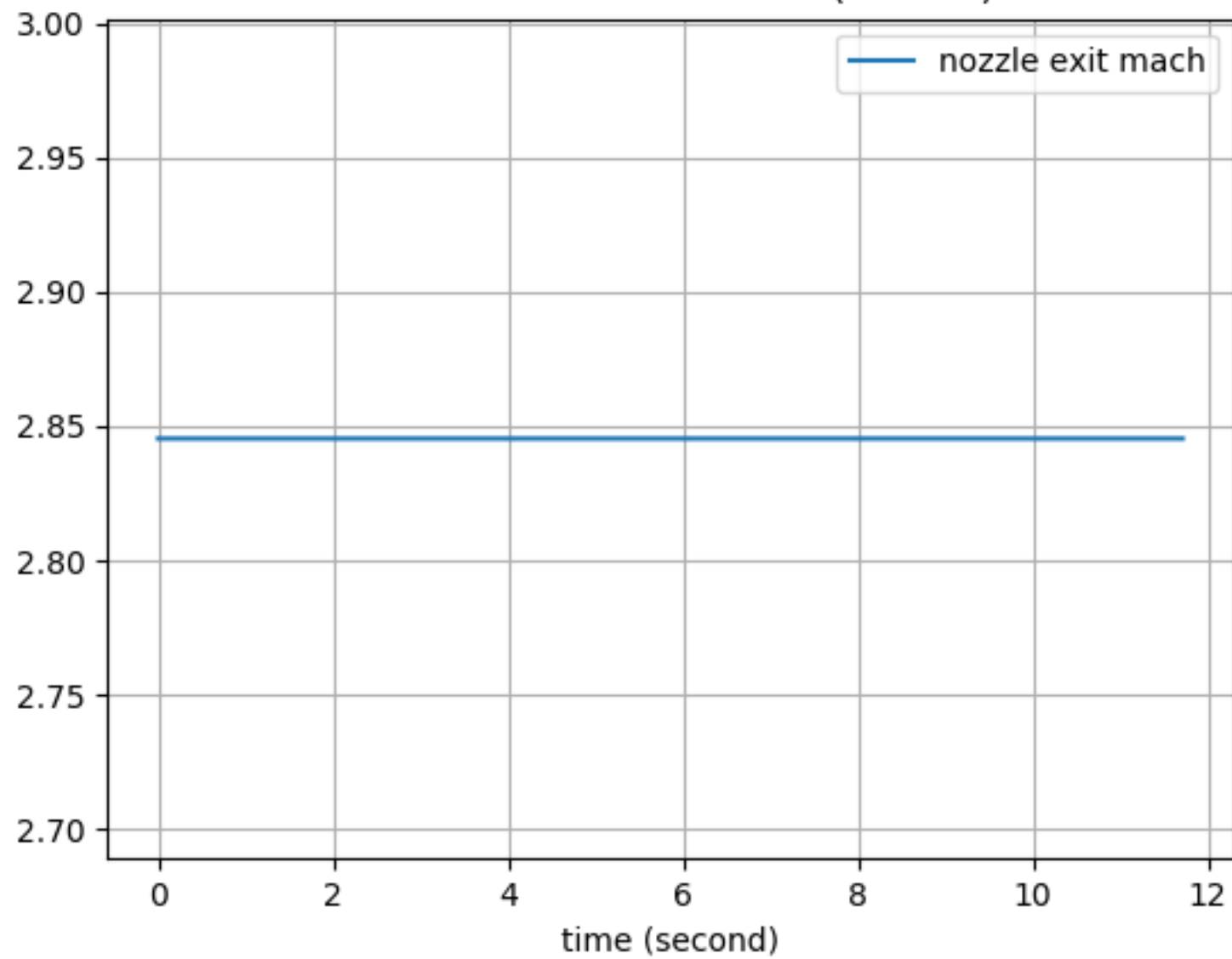
nozzle exit area (inch ** 2) vs time (second)



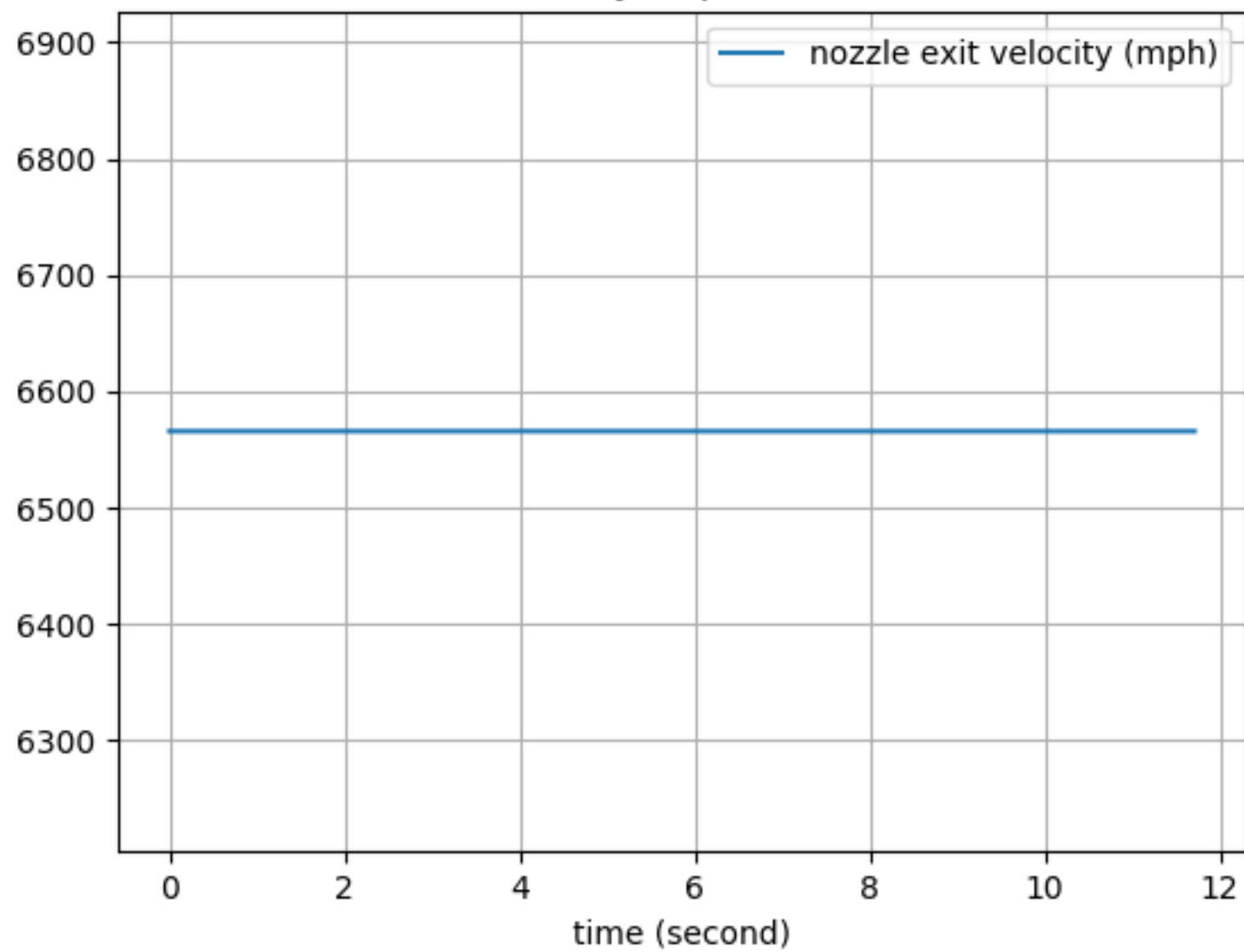
nozzle exit diameter (inch) vs time (second)

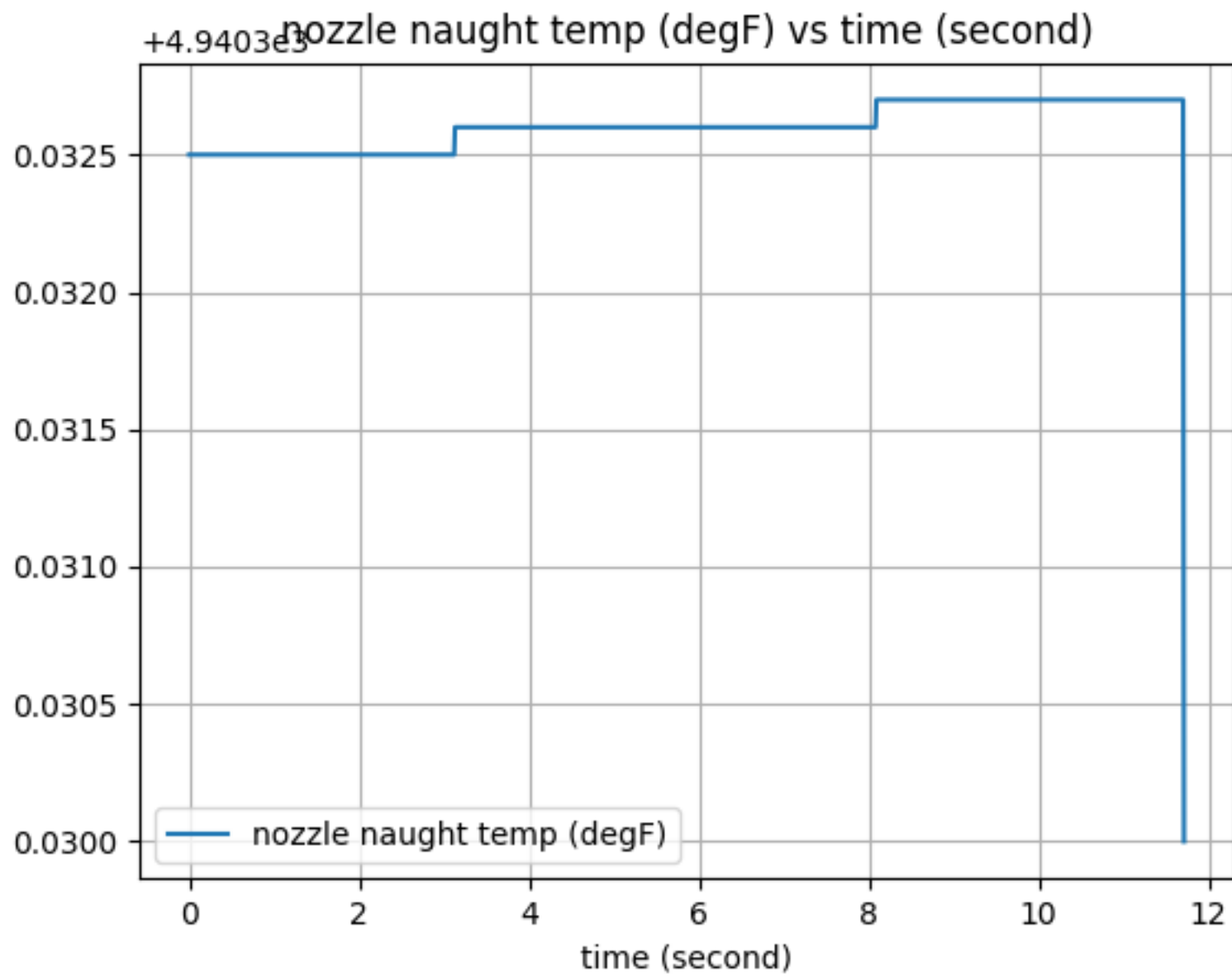


nozzle exit mach vs time (second)

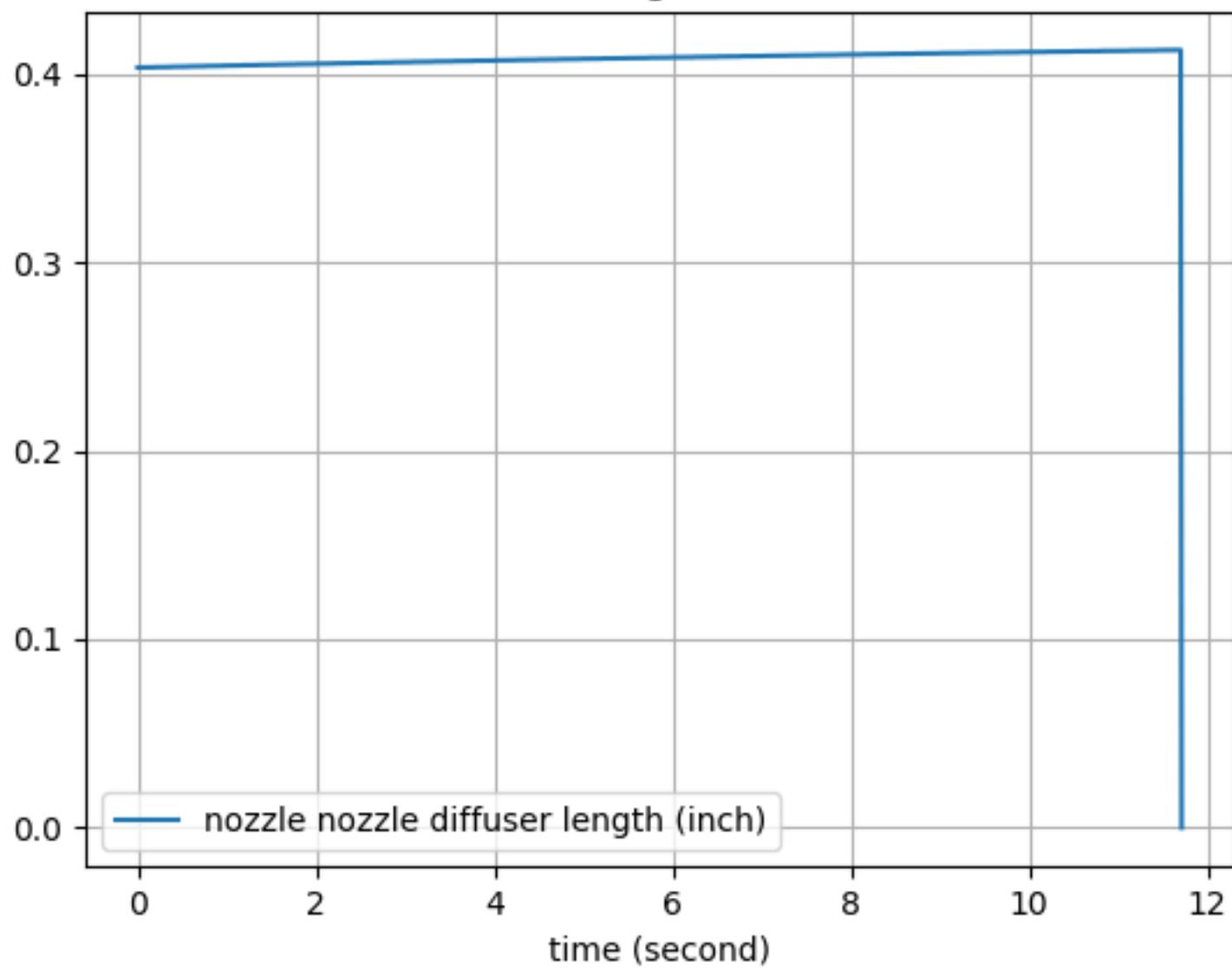


nozzle exit velocity (mph) vs time (second)

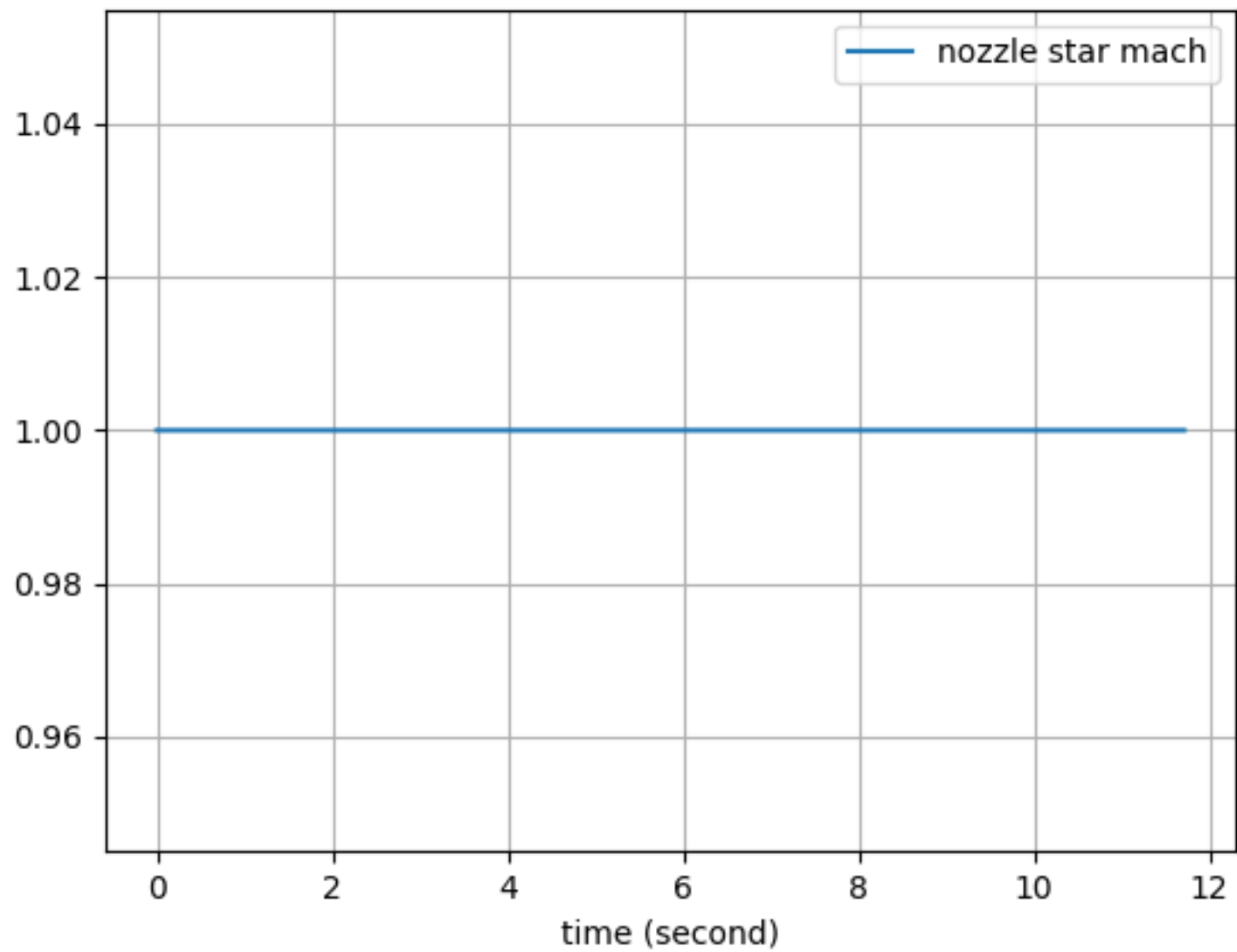




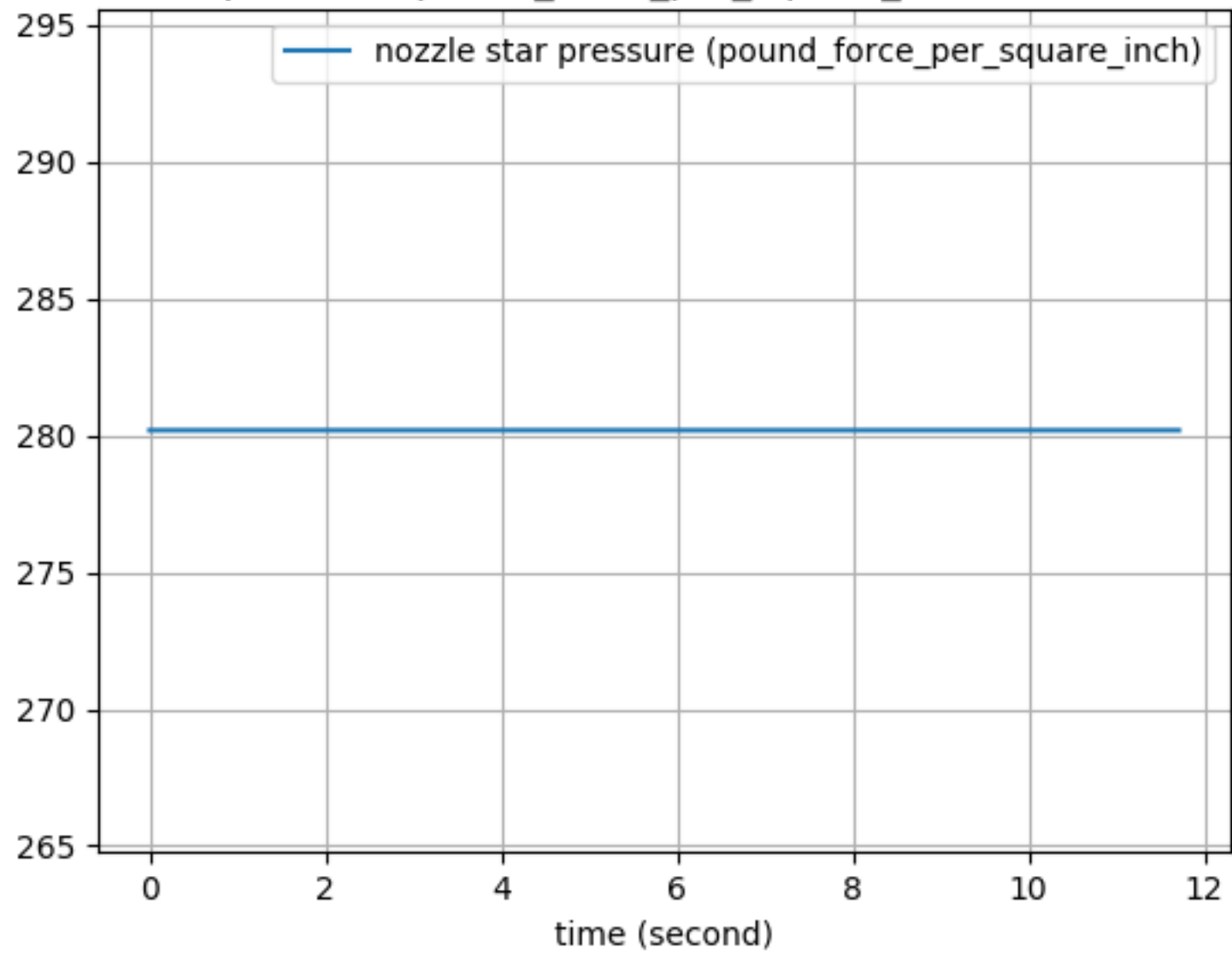
nozzle nozzle diffuser length (inch) vs time (second)



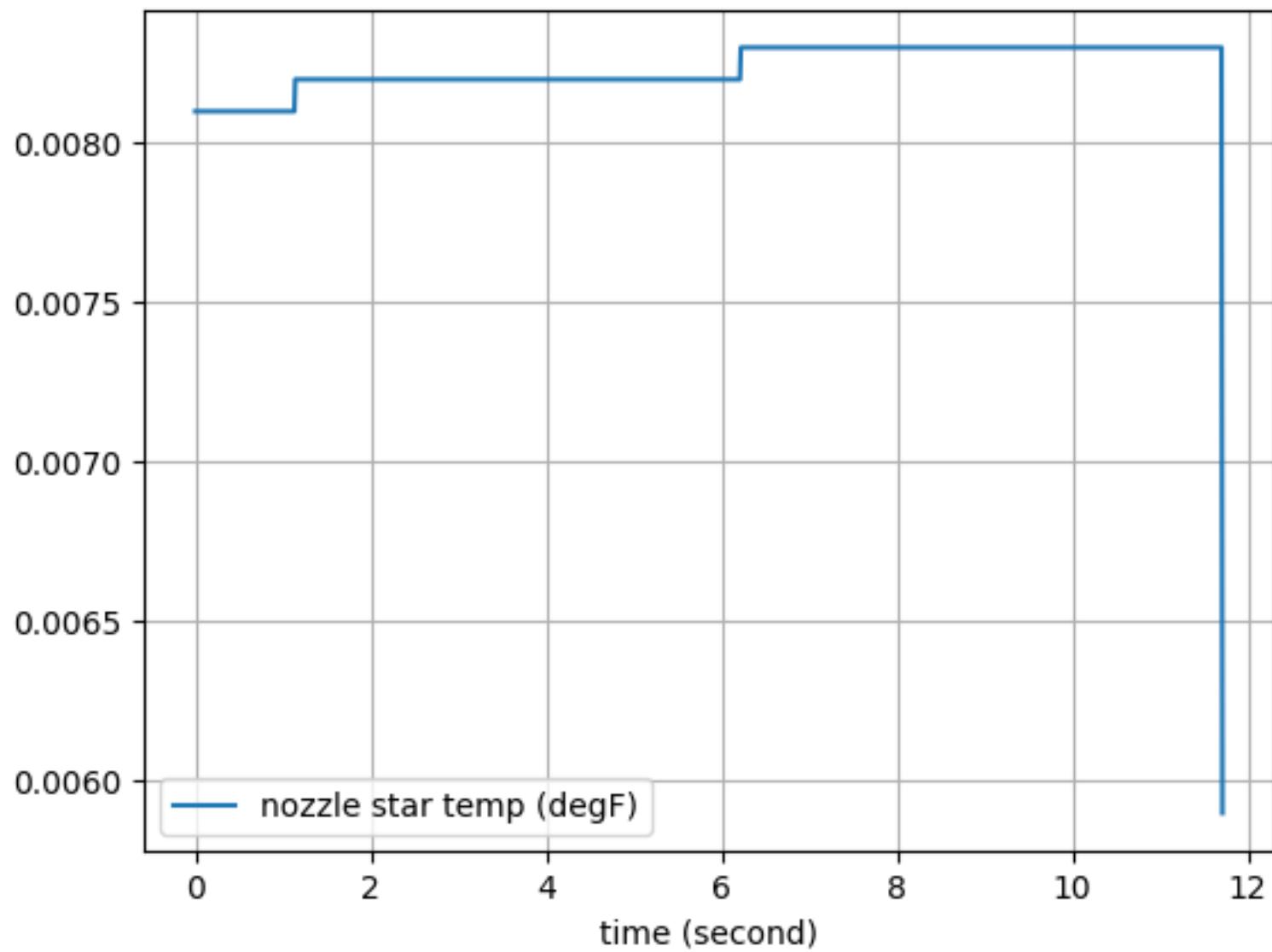
nozzle star mach vs time (second)



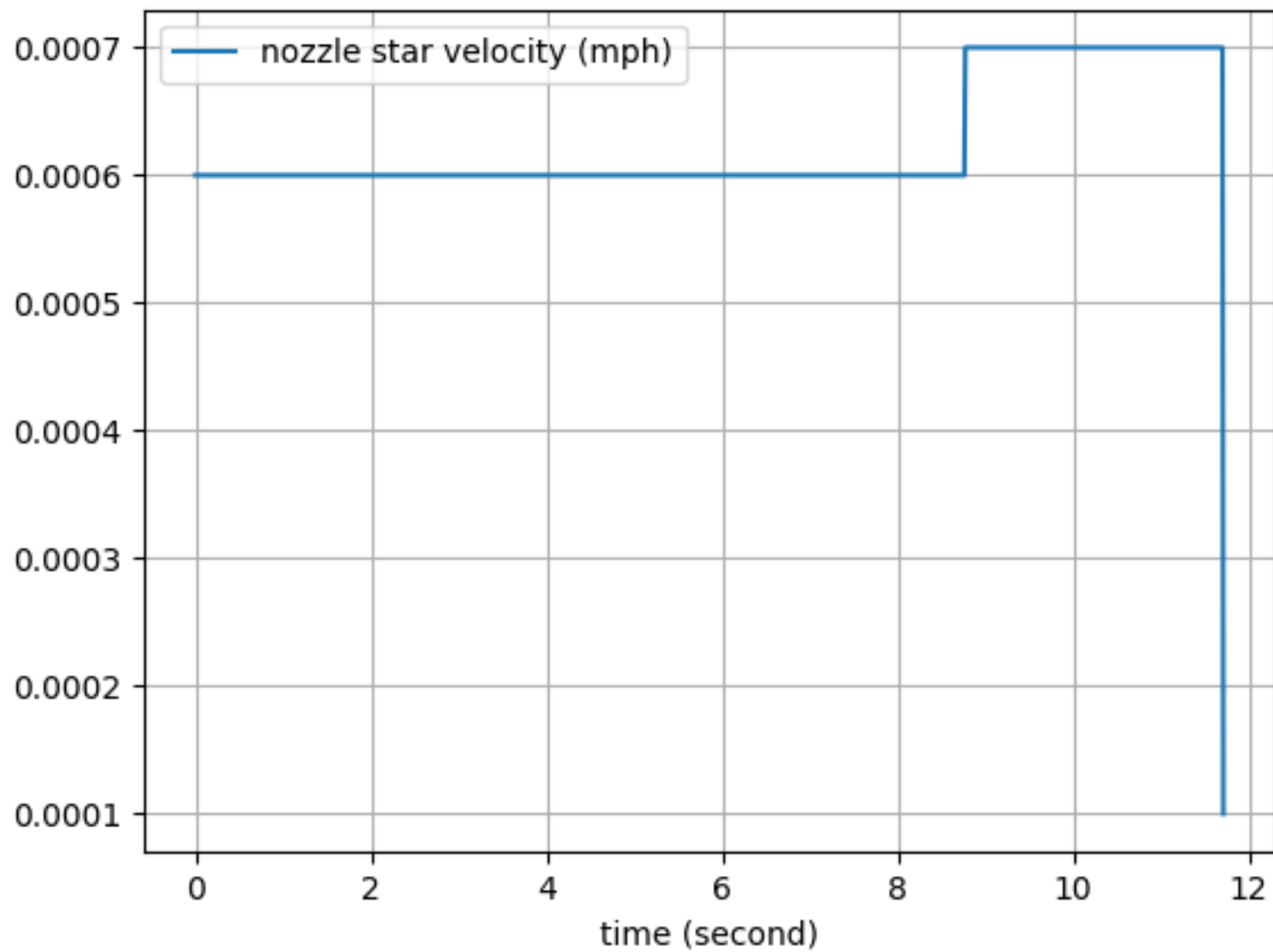
nozzle star pressure (pound_force_per_square_inch) vs time (second)

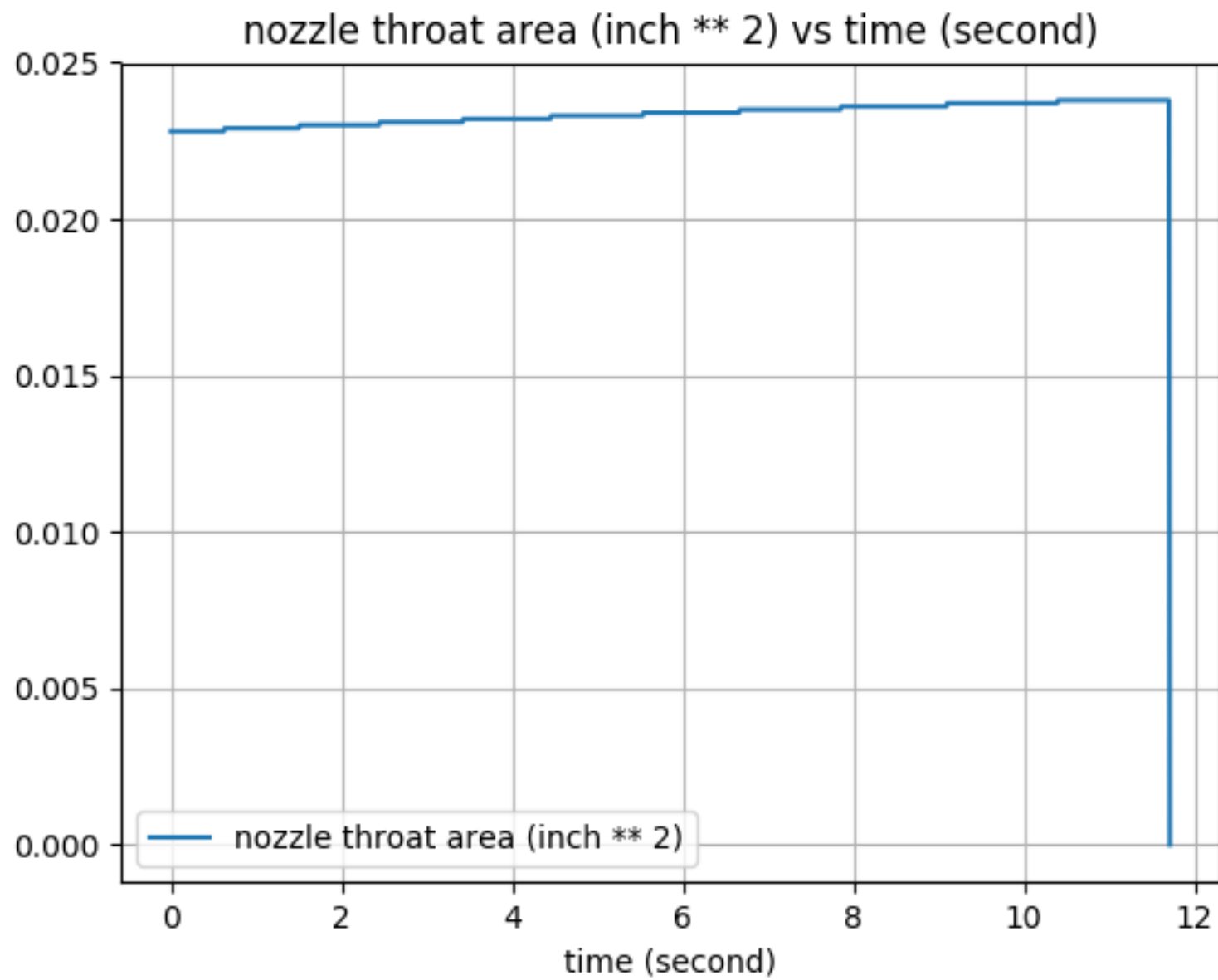


+4.40305e9 nozzle star temp (degF) vs time (second)

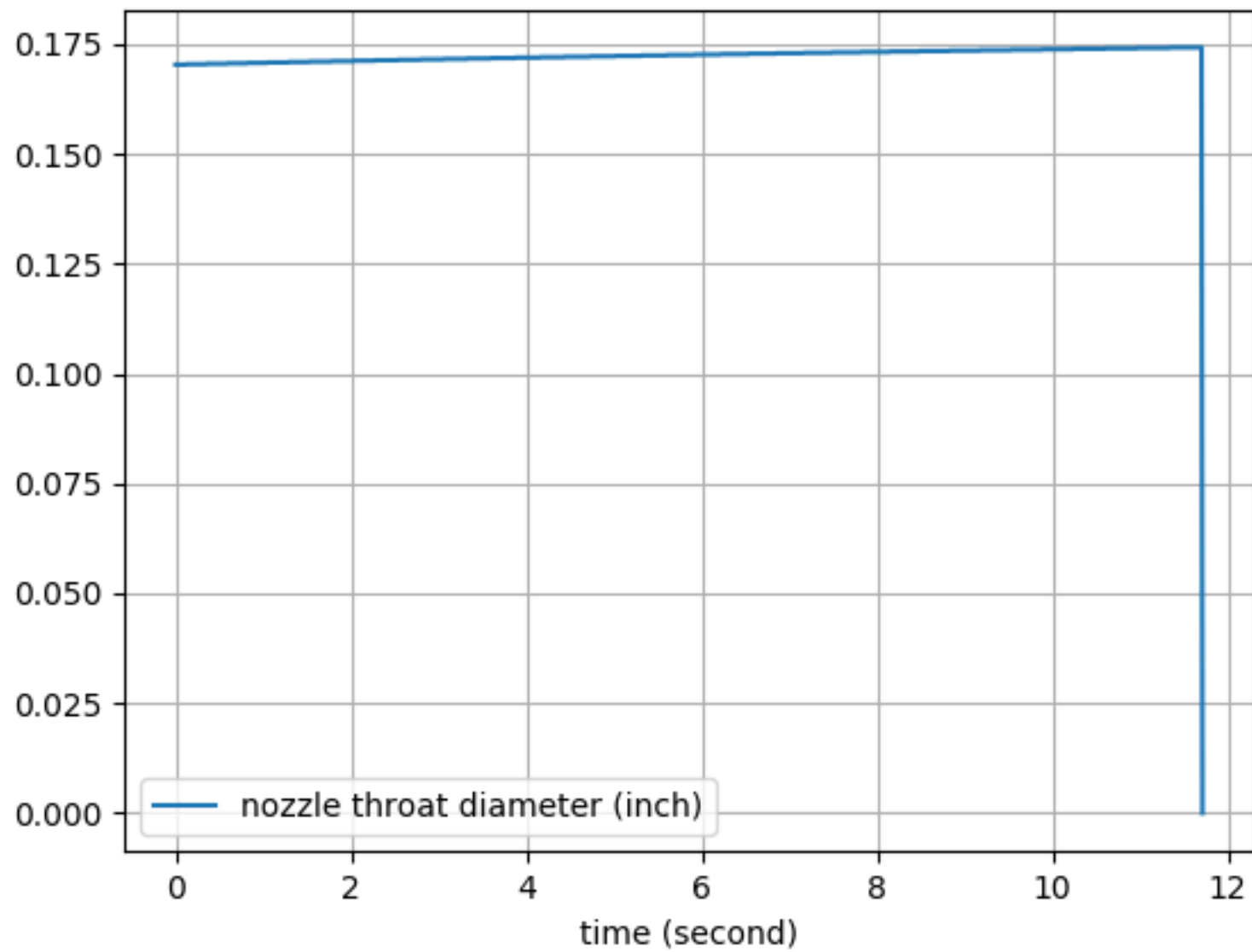


nozzle star velocity (mph) vs time (second)

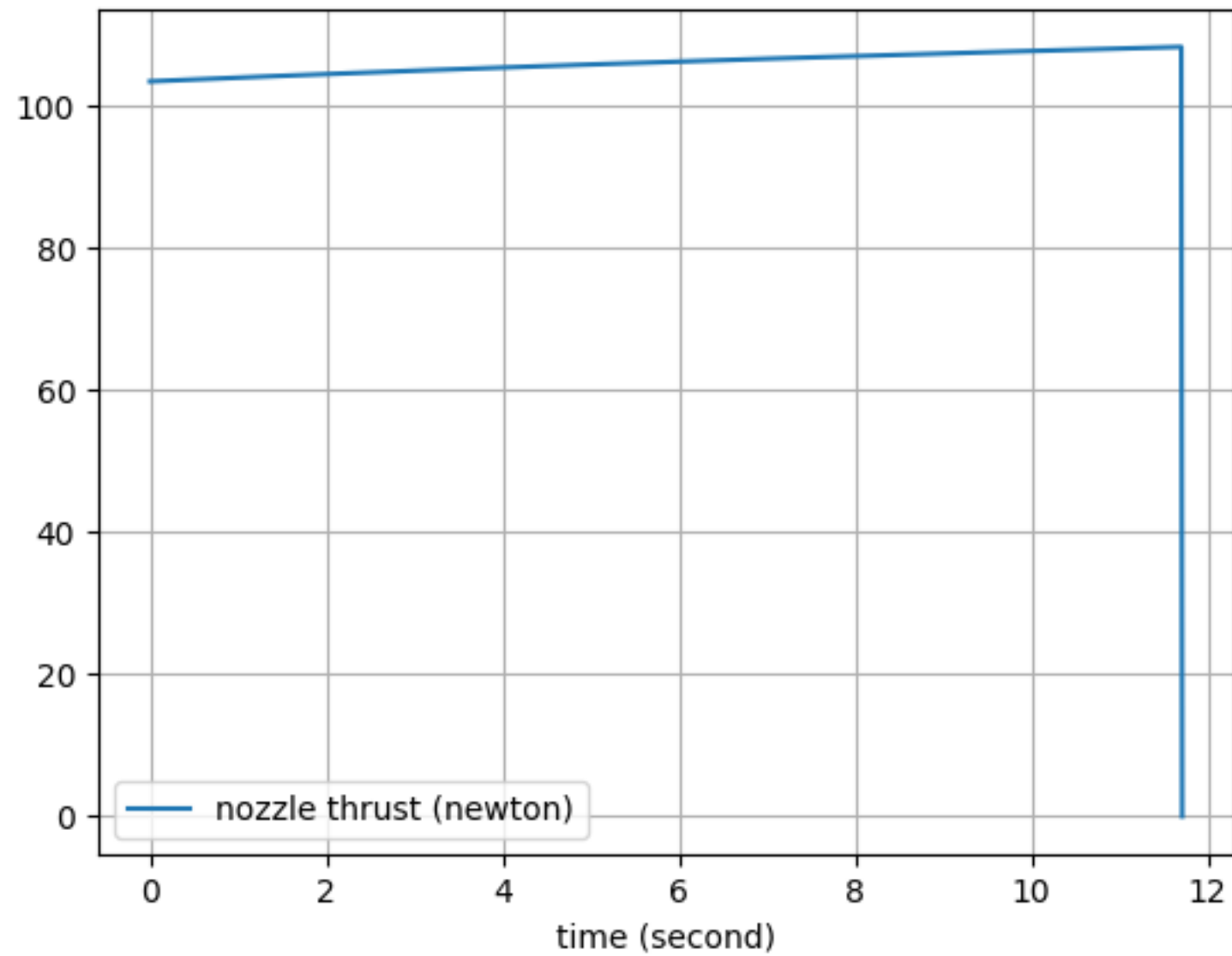




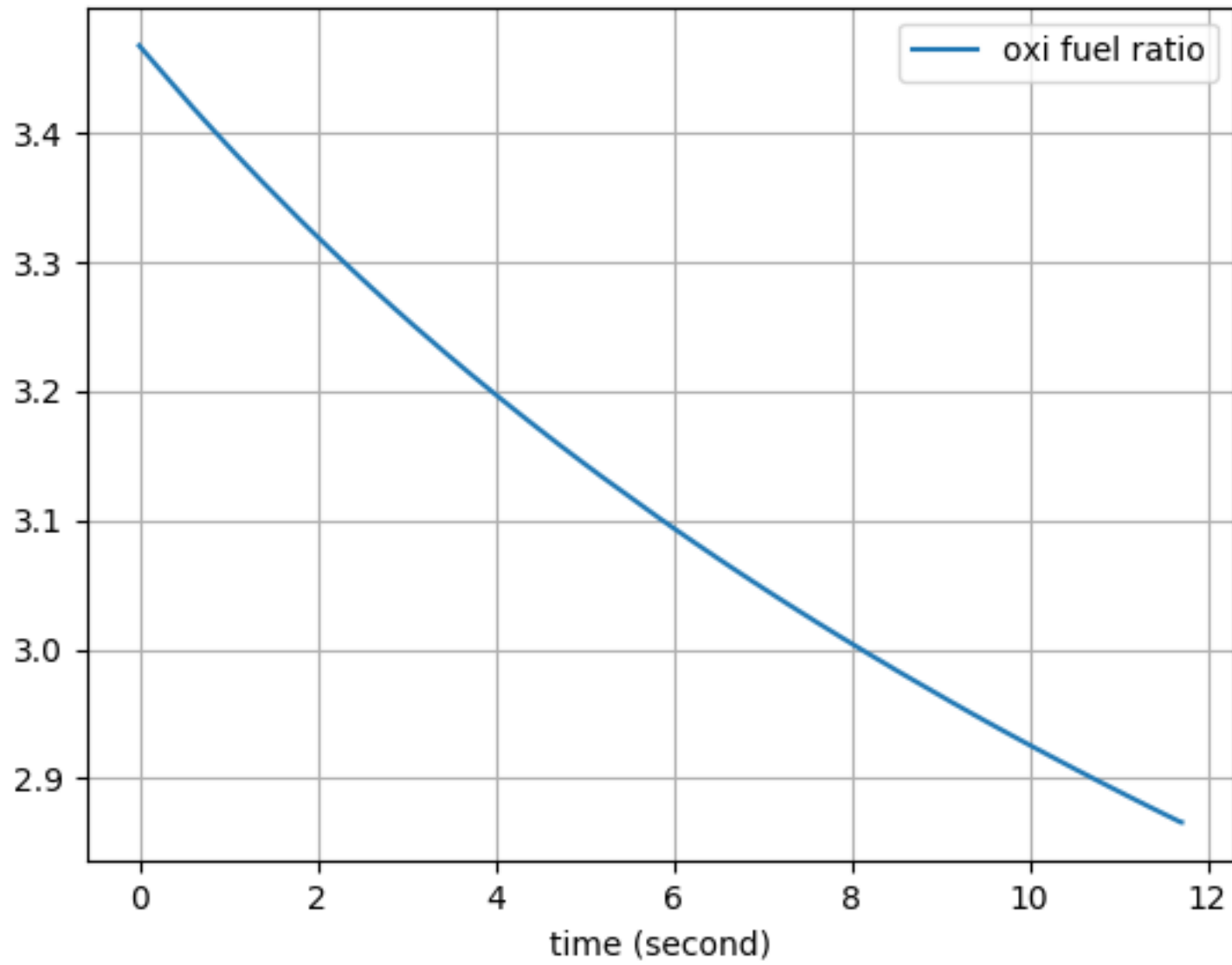
nozzle throat diameter (inch) vs time (second)



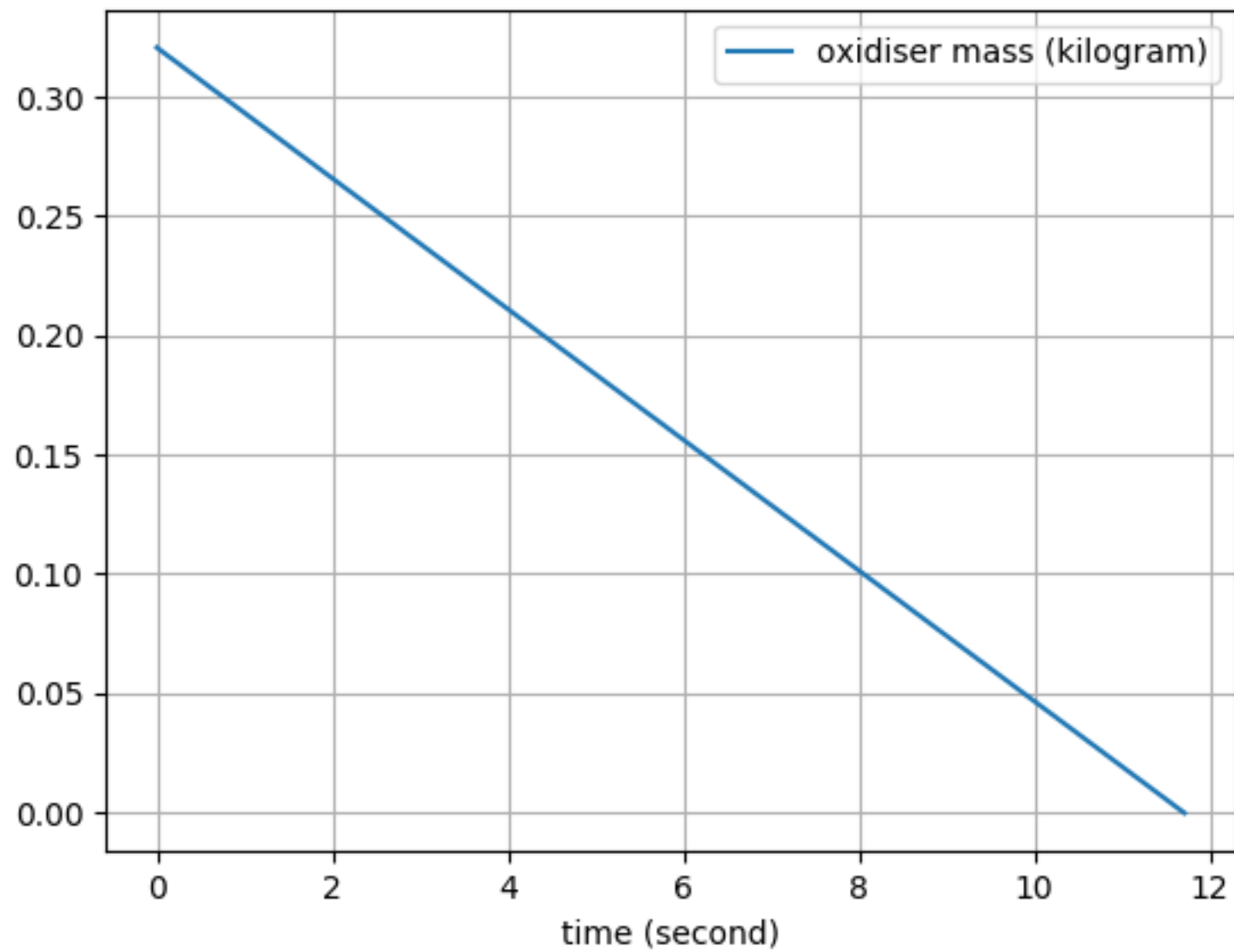
nozzle thrust (newton) vs time (second)



oxi fuel ratio vs time (second)



oxidiser mass (kilogram) vs time (second)



oxidiser mass flow rate (kilogram / second) vs time (second)

