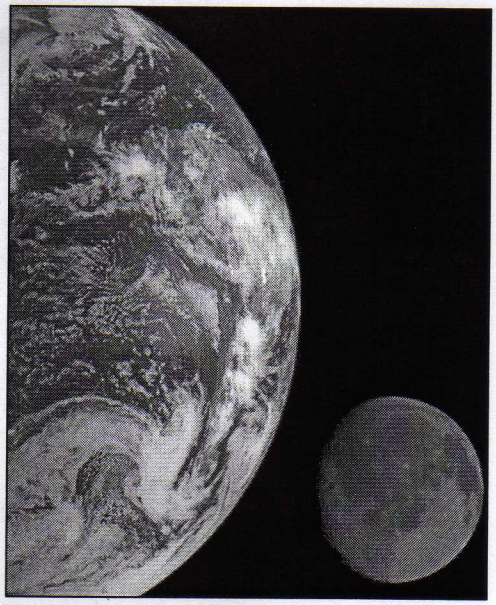
Navigation Plan: Earth to Moon

How will you stay on course?



Team name: Conundrum (ESTHER KARPF HOMESCHOOL)

Spacecraft name: Spanikopita

Launch time and date: April 1 6:00 am

Duration of journey: 121.5 days

Expected impact date: July 31 6:00 pm

Description of route and orbital paths:

Refer to picture:

a) Launch into a low Earth orbit; orbit the Earth 1 1/2 times

1. Fire thrusters to escape low Earth orbit to transfer orbit (5.5 days)

A) The moon has now moved here since launch.

b) Using the moon's gravity, we go to a LGALRO orbit.
B) Where moon is after one LGALRO (38 days for a LGALRO orbit, or one lunar orbit (28 days) plus 10 days)

c) Second, LGALRO orbit.
C) Where the moon will be after second LGALRO (1 lunar orbit plus ten days)

d) Third, LGALRO orbit.
2. Fire thrusters
D) After the third LGALRO the moon is now in optimum position for impact (1 lunar orbit plus ten days)

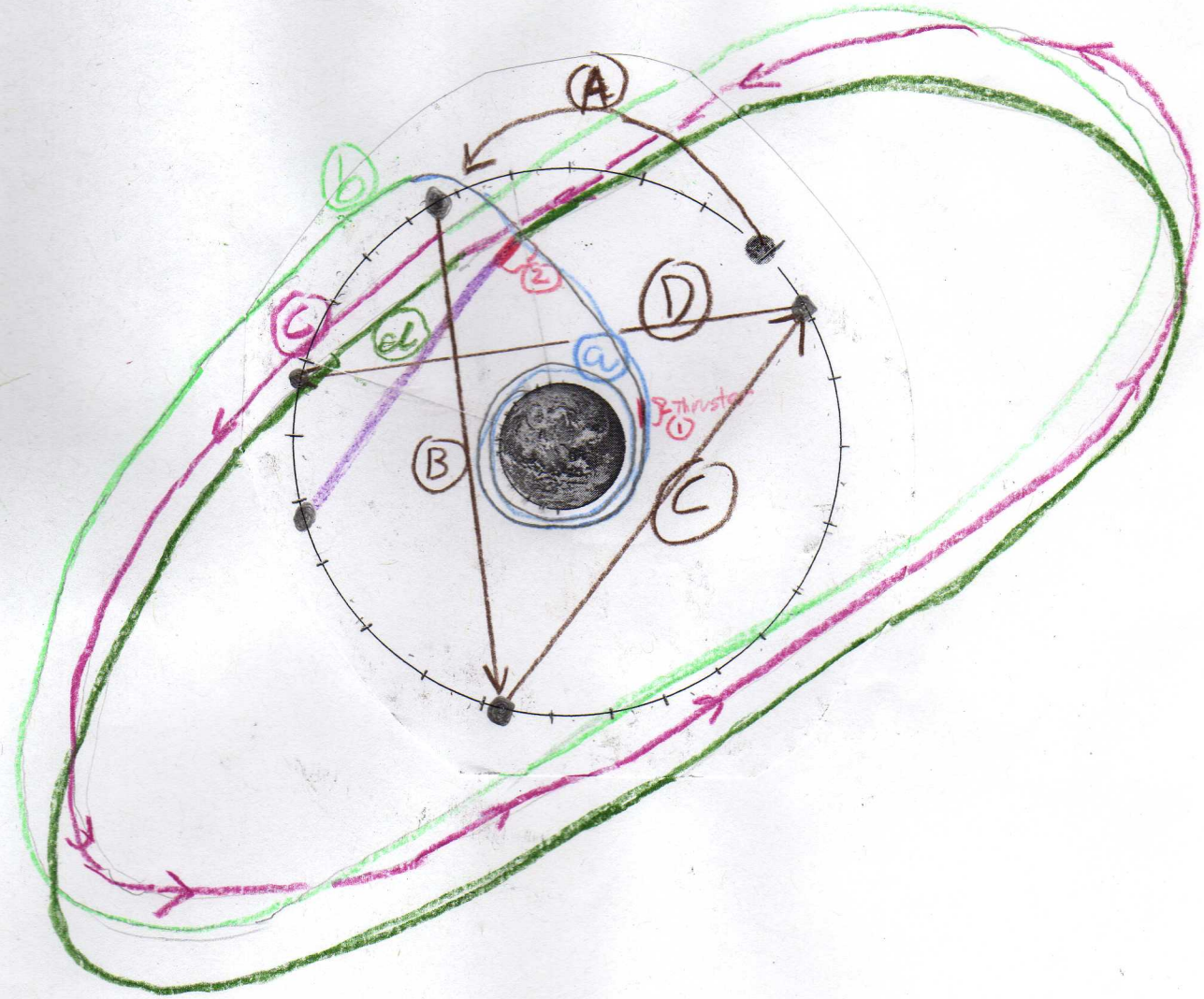
e) New trajectory at the end of the third LGALRO aligned with the target crater at lunar N. pole Impact.

Navigation instruments:
Star tracker. A star tracker works by taking photos of the stars and comparing them to the pictures of the stars in its database, that way you know where you are in relation to certain stars.

We will also use the deep space network to navigate.

Methods of guidance, navigation, control, and tracking:

A gyroscope connected to fins controlled by DSN. The Deep Space Network calculates the position of the spacecraft by triangulating its position in space. After the DSN calculates the position, it sends information to the spacecraft to move the fins to correct the position. The DSN has the most powerful satellite dishes in all known space.

We will use a bipropellant liquid hydrogen and liquid oxygen with a de Laval nozzle. The de Lalval nozzle can withstand high heat and pressure. This combination of fuel gives us moderate control.

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