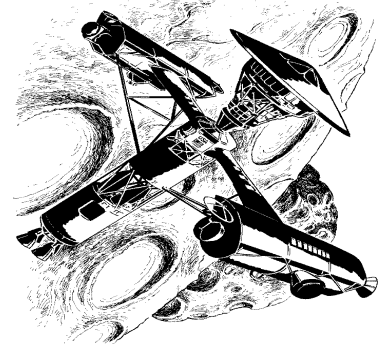


From: Chief Engineering Officer
To: Engineering Team #3
Regarding: Light Lag



As you know, one of the disadvantages of the geosynchronous orbit is the signal delay that we get when a satellite is 22,240 miles away from the surface of the earth.

Given that the speed of light is around 186,000 miles per second, we end up with a delay of around a quarter of a second from the time a signal is sent up to the satellite to the time it is received by an antenna back here on earth.

I would like to take a look at what would happen with satellites in other orbits. What if, for example, we had a satellite which orbits in 12 hours? Would the light lag be half as much, or something different?

Please work out the numbers for the chart below. Keep in mind that the relationship between a satellite's time duration of orbit (t) and its distance from the center of the earth (d) is given by this equation:

$$t = kd^{3/2}$$

Duration of orbit	Light lag
24 hours	.24 seconds
18 hours	
12 hours	
8 hours	
6 hours	
3 hours	
2 hours	

Be sure to double check your answers—I'm taking this data to the Board of Directors meeting next week.

--Guglielmo