Electromagnetic Rail Launch System

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In the experiment "Electromagnetic Rail Launch System", a projectile is launched off two different copper rails that interchange with the spring Armature launch base. The hypothesis, if the length of the electromagnetic rail is increased then the velocity of the aircraft will increase. The first rail (60.96 cm) had many design flaws dealing with severe electrical arcing. After multiple revisions of the connection from the capacitor directly to the rail system and replacement of the iron Armature to graphite the experiment was able to be conducted. The graphite Armature failed to support the attachment Rod to the space shuttle, fracturing multiple times in half. The project was continued with the projectile of the same size and weight used in all trials. A capacitor bank was constructed and a charging unit to provide power to the rails and (320 V and 160 V), monitored by a volt meter. The speed of the projectile was measured with a digital chronograph in m/s. The velocity was consistent between voltage increase and rail distance. By doubling the voltage on each separate rail it proved to be at least 100 times faster regardless of the length of the rail. The constant variable was the size and weight of the projectile. The independent variable was the length of the copper rails and voltage. The dependent variable was the velocity measured in m/s. This experiment could provide research into alternative methods of propelling aircraft that would be environmentally friendly, more efficient and less hazardous to surrounding launch areas.

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