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New Technology in the Armed Forces  
Mr. Phil Lunsford  
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The United States Armed Forces is the main line of defense to protect our country from the threats of the world. If the armed forces are not well equipped, our soldiers can not fight and protect their country. With the advancements in technology, the armed forces have acquired many advanced weapons and vehicles to use to fight these threats to our country. Throughout this paper, I will discuss new advancements in weapons, vehicles, and other technology that the armed forces use to fight the enemy.

We begin discussing advancements in hand help weapons. Pistols, rifles, and automatic weapons have evolved over many years. Browning, Smith and Weston, Colt, and Benelli are among the many brands of firearms made today. The first guns ever created were made out of wood and metal, and fired only one round at a time. Soldiers that used these pistols and rifles had to reload after every shot. These guns were called mussel loaders. These guns were called mussel loaders because the gun was reloaded at the open end of the barrel using wadding, gun powder, and a lead ball, which is the ammunition that was fired. The ammunition had to be packed with a packing rod, and the firing mechanism consisted of a lever that slammed down on the chamber where the gun powder was located. When the lever struck the gun powder, either by causing a spark, or by using a burning stick, the powder would ignite, and then the lead ball would be propelled out of the end of the barrel with tremendous force. The weapons that are created today are much more advanced than the primitive weapons used back during the American Civil War. Pistols and rifles are made out of light weight metal and use clips to hold the ammunition that can range from five bullets and go all the way up to thirty bullets. The bullet is fired in a much better way. The bullet is pressed into a brass casing

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which also holds the gun powder. On the bottom of the casing, there is a small, round area called the primer, which, when struck, ignites the gun powder and propels the bullet out of the casing.

Along with the advancement in how guns are made, and how bullets are fired, there are many additions that have been placed on pistols and rifles to help aim, and shoot, more accurately. Scopes have been mounted on automatic rifles, and long range rifles, for better control of the gun. These scopes have built in crosshairs, and magnifying lenses, to allow a soldier to see further and fire more accurately at longer distances. Scopes can magnify the view of a distant object so well, that a trained sniper can hit a target up to two miles away. This helps protect the soldier in many ways. The further away a soldier is from the enemy, the less chance he has of being spotted. This also protects a soldier when calling in support from air, land, and sea. If the soldier is away from the strike zone, he has less chance of being hit by friendly fire. Rifles also have a rifled barrel, which help spin the bullet as it leaves the weapon. The spin on a bullet helps by giving the bullet more distance and a straighter path of flight. There are also silencers, and better exhaust vents being placed on rifles, as well as pistols. These silencers keep the sound, of the bullet being fired, very quiet so the enemy can't hear where the bullet is being fired from. Exhaust vents help to control the flow of the propellant as it leaves the gun, so the air doesn't change the path of the bullet, as it leaves the gun. To help with the recoil of a bullet being fired, butt pads and recoil springs have been placed on the gun so the soldier doesn't feel the force as much on his body after every bullet is fired. This can impair his abilities during a long battle.

Now that we have discussed the basics about firearms, let us dive deep into how technology has advanced a soldier's viewing capabilities and how technology has increased the capabilities of small arms and large arms. A soldier cannot fight if he cannot see the terrain he is located in, or if he cannot see the enemy he is fighting. Soldiers are now equipped with binoculars that have built-in night vision and infra-red. Night vision takes ambient light and intensifies the light thousands of times so the dark terrain is visible as if the sun was in the sky. Ambient light comes from the moon, stars, and glow from neighboring cities. Thermal imaging, or infra-red, picks up on heat coming from machines, people, or animals. Thermal imaging doesn't require light as night vision does. There are also advancements with lasers. Lasers have become part of weapon sighting on rifles, pistols, and missiles. Lasers can illuminate targets for small arms, define distances, designate targets for seekers, radars, chemical detection, and jamming. These same systems are also used on small arms and automatic weapons. Night vision, infrared, and laser sighting have been built into rifles like the M16, M4, MP5, and also long range rifles like the M203 and the 308 Winchester sniper rifle (Night).

Along with the advancement in visual tools for soldiers to see better, a new weapon has been invented for soldiers to see around corners of buildings and other obstructions to assess an area and to engage any enemies within range. This weapon is called the Corner Shot APR. This gun uses a 5.56 mm bullet and bends in the middle of the gun. There is a digital, color screen attached to the first half of the gun, and the firing mechanism of the weapon is on the front half. The gun operates just like any other gun,

except it has a camera built in so see your target as well as reduce the risk of injury, or death, to the soldier (Golan).

Small arms have had much advancement for helping the ordinary soldier overcome any obstacle. These advancements extend to all parts of weaponry in the armed forces. Another part of battle that is a key factor in victory is the long range battle. Snipers are trained to sneak into a hot zone and kill a target from a very long distance. To achieve this goal, their weapon must be able to rise to the challenge. Sniper rifles have unique characteristics that make them very efficient in long range battle. One key piece of a sniper rifle is the scope. The scope on a sniper rifle allows a sniper to accurately kill up to sixteen hundred and fifty yards, which is about a mile in distance. The scope has night vision capabilities, and the rifle comes equipped with a bipod attached to the bottom to increase the stability of the rifle. A standard US sniper rifle can be converted from any assault rifle. The most common is made from an M16 assault rifle. More high powered rifles that are modified into long distance rifles consist of modified Russian Dragunov's, AK-47's, and M21's. These guns allow more accuracy at a longer distance, but need a higher powered cartridge to acquire this distance. The M16 uses a 5.56 x 45 mm cartridge, the M21 uses a 7.62 x 51 mm cartridge, and the AK-47 uses a 7.62 x 39 mm cartridge. One of the most high powered sniper rifles made at this time is the French made PGM Hecate II. It uses a .50 BMG round which is a 12.7 x 99 mm cartridge. It has a muzzle velocity of 825 m/s. Along with these sniper rifles, there are also heavy machine guns made to use the same rounds that sniper rifles use. A fifty caliber machine gun uses the same round as the PGM Hecate II sniper rifle. The fifty caliber machine gun

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is used as a standard mounted gun on top of US Hummers, APC's, Bradley's, and small tanks (Designated).

Next is one of the heavy hitter weapons of the United States Armed Forces. This weapon was first utilized in 1970, and invented by Hughes Aircraft Company. It is called a Tube-launched, Optically tracked, Wire guided missile. In short terms, it is called a TOW missile. This missile is used for many purposes. It is used for tank destruction, bunker destruction, and enemy vehicle destruction. The TOW missile uses a fine wire system that is attached to the back of the missile. The wires attached to the missile send constant data to the computer on the missile to control its movements, as well as to calculate distance to target so it knows when to detonate. There are a few different versions of the TOW missile in use today. There is the basic BGM-71A TOW that uses standard equipment and was the start of the TOW project. It has a five inch diameter warhead and can reach up to three thousand meters. The next version implemented was the BGM-71C. This missile started its usage in 1982. It came with a five inch diameter warhead, and came with an extended probe, which was not on the 71A version. This probe allowed for better penetration into tanks and bunkers. The range of this missile is increased to three thousand and seven hundred and fifty meters. The missile is launched out of a tube, which is either mounted on a Hummer, and tank, or a tri-pod mounted to the ground. Since the missile is guided by wires, the operator must keep the optical site trained on the target until the missile makes contact. This means that if the base station where the missile was fired from turns away from the target, the missile deviates and follows a new path to a new target. This missile offers tremendous fire power, and offers

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a safe way for infantry, trucks, and tanks to move from one point to the next without fear of heavy armor vehicles standing in the way (Military).

The United States Armed Forces have so much advanced technology at their disposal that the enemy doesn't stand a chance in a fight. We have the most advanced close-quarters combat weapons, some of the most advanced long ranged weapons for distance battle, and the best technology for mounted guns and missile launchers. The weapons that the United States Armed Forces have spans so much further that we can only begin to imagine what our army can do. As long as we advance ourselves the way we have been for the past century, we will always be on top.

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Tow Missile  
Launch



PGM Hecate II

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