LSAT & SAAC & NGSW

Vorachet JAROENSAWAS
Capability Architect
22 December, 2022

Mobility is an important aspect of the job of a soldier. A Warfighter is rendered ineffective if he cannot maneuver himself or his weapon system in such a way that he can engage a target or avoid being engaged by a target. Furthermore, with the increasing use of high-energy ammunition and the potential addition of advanced fire control systems, future weapon systems will be inherently heavier, necessitating the use of weight-reduction technologies to maintain Soldier mobility on the battlefield. Weight reduction technologies, such as advanced weight materials and material processing, as well as advanced manufacturing techniques, should be prioritized in terms of technology investment.

The Small Arms Ammunition Configuration (SAAC) and the Lightweight Small Arms Technologies (LSAT) programs were both conducted by the US Army in the early 2010s to identify and develop new small arms ammunition and weapons systems. The SAAC program focused on developing new ammunition that was more powerful and effective, while the LSAT program focused on developing new weapons systems that were lighter and more portable.

The results of the SAAC and LSAT programs were used to inform the development of the Next Generation Squad Weapon (NGSW) program, which is a current program to replace the standard M4 carbine and M249 squad automatic weapon with new weapons that are more powerful, effective, and portable. The NGSW program is expected to be completed in the early 2020s.

The SAAC, LSAT, and NGSW programs are all important steps in the US Army's efforts to modernize its small arms systems. The new weapons that are developed as part of these programs will give the US Army a significant advantage over its enemies in future conflicts.

Here is a more detailed overview of each program:

Small Arms Ammunition Configuration (SAAC) program: The SAAC program was conducted from 2013 to 2017. The goal of the program was to identify a capability gap requiring the infantry squad to deliver increased energy on target and at range using small arms weapons. The study concluded that the current ammunition used by the US Army is not sufficient to meet the needs of the infantry squad in future conflicts. The SAAC study recommended that the US Army develop new ammunition that is more powerful, has a longer range, and is more effective against enemy targets. The SAAC study was a critical step in the development of the NGSW program. The study's findings helped to identify the future ammunition requirements for the infantry squad and led to the development of new weapons and ammunition that are more lethal, accurate, and capable of penetrating body armor at longer ranges.

Here are some of the key findings of the SAAC study:

- The current 5.56mm round is no longer capable of defeating current and emerging threats.
- A new caliber of ammunition is needed that is larger than the 5.56mm round.
- The new caliber should be capable of defeating body armor at ranges of up to 600 meters.
- The new ammunition should also be more accurate and have a longer range than the current 5.56mm round

Lightweight Small Arms Technologies (LSAT) program: The LSAT program was conducted from 2008 to 2013. The goal of the program was to develop a new family of small arms weapons that are lighter and more portable than the current weapons used by the US Army. The LSAT program resulted in the development of a new rifle, machine gun, and pistol. The LSAT weapons are made of composite materials and use cased-telescoped ammunition, which makes them lighter and more portable than the current weapons.

References
Kori Spiegel (US Army ARDEC), Paul Shipley (AAI Corporation). Lightweight Small Arms Technologies
- NDIA JSSAS Annual Symposium, 2008
- NDIA JSSAS Annual Symposium, 2006
- US Army ARDEC OMB No. 0704-0188, 2006

Goals:

- 35% weapon weight reduction
- 40% ammunition weight reduction
- Reduced training & maintenance
- Maintain cost of current systems

Next Generation Squad Weapon (NGSW) program: The Next Generation Squad Weapon (NGSW) program is a United States military program created in 2017 to replace the standard M4 carbine and M249 squad automatic weapon with new weapons that are more powerful, effective, and portable. The NGSW program is expected to be completed in the early 2020s. The NGSW program is currently in the engineering and manufacturing development (EMD) phase. Two companies, General Dynamics and Textron Systems, are competing to develop the NGSW weapons. The NGSW weapons will use new ammunition that is more powerful and effective than the current ammunition used by the US Army. The NGSW weapons will also be lighter and more portable than the current weapons.

The SAAC, LSAT, and NGSW programs are all important steps in the US Army's efforts to modernize its small arms systems. The new weapons that are developed as part of these programs will give the US Army a significant advantage over its enemies in future conflicts.

Significant Upgrade of the US Army's weapons - The Next Generation Squad Weapon (NGSW)

Reference
Army Officials Brief the Media on the Next Generation Squad Weapon, April 20, 2022
https://www.defense.gov/News/Transcripts/Transcript/Article/3006668/army-officials-brief-the-media-on-the-next-generation-squad-weapon/

On May 17, 2023, Army officials briefed the media on the Next Generation Squad Weapon (NGSW). The NGSW is a family of weapons that will replace the M4 carbine and M249 squad automatic weapons in the Army. The NGSW is designed to be more lethal, accurate, and durable than the current weapons.

The NGSW consists of three weapons: a rifle, a carbine, and a machine gun. The rifle and carbine will fire a new 6.8mm cartridge that is more powerful than the 5.56mm cartridge used by the M4. The machine gun will fire a 7.62mm cartridge that is more powerful than the 7.62mm cartridge used by the M249.

The NGSW is also equipped with a new fire control system that includes a ballistic computer and a thermal sight. The fire control system will allow soldiers to make more accurate shots at longer ranges.

The Army plans to begin fielding the NGSW to soldiers in 2024. The program is expected to cost $4.8 billion.

Some of the key features of the NGSW:

- The NGSW will fire a new 6.8mm cartridge that is more powerful than the 5.56mm cartridge used by the M4.
- The NGSW is equipped with a new fire control system that includes a ballistic computer and a thermal sight.
- The NGSW is designed to be more lethal, accurate, and durable than the current weapons.
- The Army plans to begin fielding the NGSW to soldiers in 2024.

The NGSW is a significant upgrade to the Army's current squad weapons. The NGSW program is expected to be completed in 2023, and the new weapons are expected to be fielded to the U.S. Army in 2024.

Here are some of the benefits of the NGSW program:

- **Increased lethality**: The 6.8mm cartridge is more powerful than the 5.56mm cartridge, and it can penetrate body armor at longer ranges.
- **Improved range**: The NGSW weapons have a maximum range of 1,200 meters for the rifle and 800 meters for the automatic rifle. This is significantly longer than the range of the M4 carbine and the M249 SAW.
- **Reduced weight**: The NGSW weapons are lighter than the M4 carbine and the M249 SAW. This makes them easier to carry and operate, especially for soldiers who are carrying a lot of other gear.
- **Improved reliability**: The NGSW weapons are designed to be more reliable than the M4 carbine and the M249 SAW. This means that they are less likely to jam or malfunction in combat.